

**DASY5 Validation Report for Head TSL**

Date: 01.06.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1014**

Communication System: UID 0 - CW; Frequency: 750 MHz

Medium parameters used:  $f = 750$  MHz;  $\sigma = 0.91$  S/m;  $\epsilon_r = 42.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.11, 10.11, 10.11) @ 750 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:**

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 60.13 V/m; Power Drift = -0.01 dB

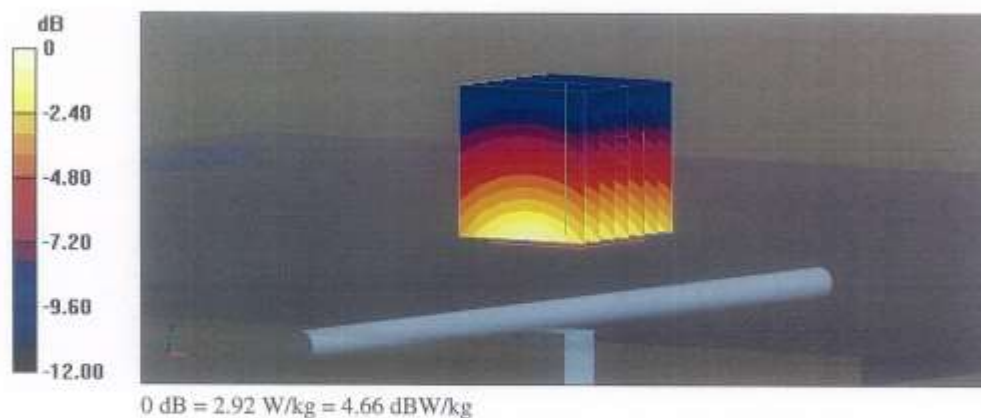
Peak SAR (extrapolated) = 3.32 W/kg

**SAR(1 g) = 2.16 W/kg; SAR(10 g) = 1.41 W/kg**

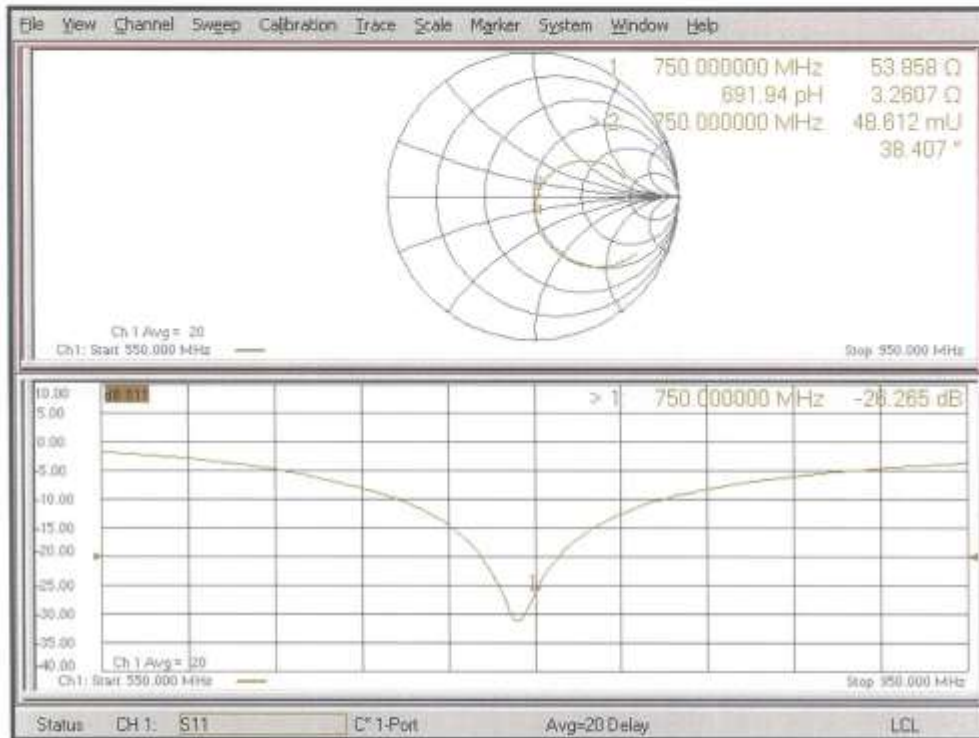
Smallest distance from peaks to all points 3 dB below = 18.4 mm

Ratio of SAR at M2 to SAR at M1 = 65.2%

Maximum value of SAR (measured) = 2.92 W/kg



Impedance Measurement Plot for Head TSL



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Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **D835V2-4d165\_Aug21**

## CALIBRATION CERTIFICATE

Object **D835V2 - SN:4d165**

Calibration procedure(s) **QA CAL-05.v11  
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz**

Calibration date: **August 03, 2021**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature  $(22 \pm 3)^{\circ}\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (MATE critical for calibration)

| Primary Standards               | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|---------------------------------|--------------------|-----------------------------------|------------------------|
| Power meter NRP                 | SN: 104778         | 09-Apr-21 (No. 217-03291/03292)   | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103244         | 09-Apr-21 (No. 217-03291)         | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103245         | 09-Apr-21 (No. 217-03292)         | Apr-22                 |
| Reference 20 dB Attenuator      | SN: BH9394 (20k)   | 09-Apr-21 (No. 217-03343)         | Apr-22                 |
| Type-N mismatch combination     | SN: 310962 / 06327 | 09-Apr-21 (No. 217-03344)         | Apr-22                 |
| Reference Probe EX3DV4          | SN: 7349           | 28-Dec-20 (No. EX3-7349_Dec20)    | Dec-21                 |
| DAE4                            | SN: 601            | 02-Nov-20 (No. DAE4-601_Nov20)    | Nov-21                 |
| Secondary Standards             | ID #               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B              | SN: GB39512475     | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: US37292783     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: MY41092317     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| RF generator R&S SMT-06         | SN: 100972         | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |
| Network Analyzer Agilent E8358A | SN: US41080477     | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |

|                |                       |                                   |               |
|----------------|-----------------------|-----------------------------------|---------------|
| Calibrated by: | Name<br>Michael Weber | Function<br>Laboratory Technician | Signature<br> |
| Approved by:   | Katja Pokovic         | Technical Manager                 |               |

Issued: August 3, 2021

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D835V2-4d165\_Aug21

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|        |                               |                              |
|--------|-------------------------------|------------------------------|
| 결<br>제 | 담당자<br>ML 박성준<br>2021. 08. 11 | 확인자<br>H 최정경<br>2021. 08. 11 |
|--------|-------------------------------|------------------------------|

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Accreditation No.: **SCS 0108**

**Glossary:**

|       |                                 |
|-------|---------------------------------|
| TSL   | tissue simulating liquid        |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A   | not applicable or not measured  |

**Calibration is Performed According to the Following Standards:**

- IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss:** This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.



### Measurement Conditions

DASY system configuration, as far as not given on page 1.

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY52                 | V52.10.4    |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| Distance Dipole Center - TSL | 15 mm                  | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm      |             |
| Frequency                    | 835 MHz $\pm$ 1 MHz    |             |

### Head TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 41.5           | 0.90 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 42.2 $\pm$ 6 % | 0.94 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ----           | ----                 |

### SAR result with Head TSL

|                                                       |                    |                              |
|-------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                              |
| SAR measured                                          | 250 mW input power | 2.49 W/kg                    |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | 9.68 W/kg $\pm$ 17.0 % (k=2) |

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 250 mW input power | 1.60 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 6.25 W/kg $\pm$ 16.5 % (k=2) |

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 50.9 $\Omega$ - 2.0 j $\Omega$ |
| Return Loss                          | - 33.1 dB                      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.389 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|

**DASY5 Validation Report for Head TSL**

Date: 03.08.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d165**

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.94$  S/m;  $\epsilon_r = 42.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

**DASY52 Configuration:**

- Probe: EX3DV4 - SN7349; ConvF(9.69, 9.69, 9.69) @ 835 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:**

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 63.23 V/m; Power Drift = -0.03 dB

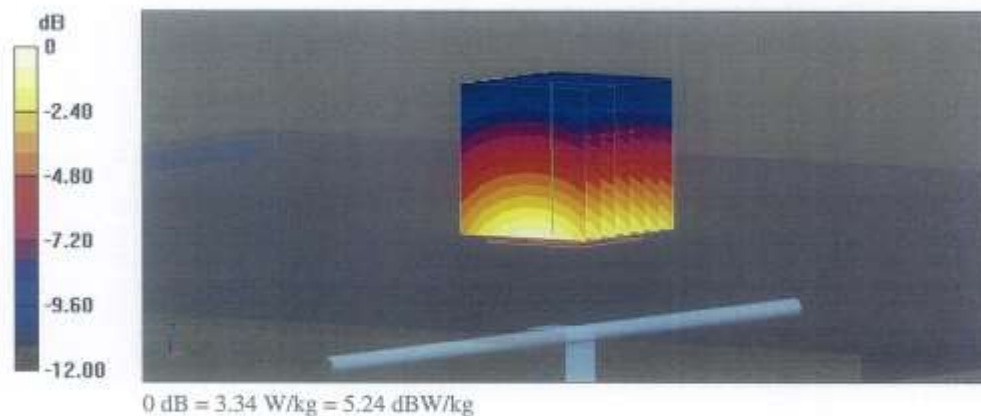
Peak SAR (extrapolated) = 3.83 W/kg

**SAR(1 g) = 2.49 W/kg; SAR(10 g) = 1.6 W/kg**

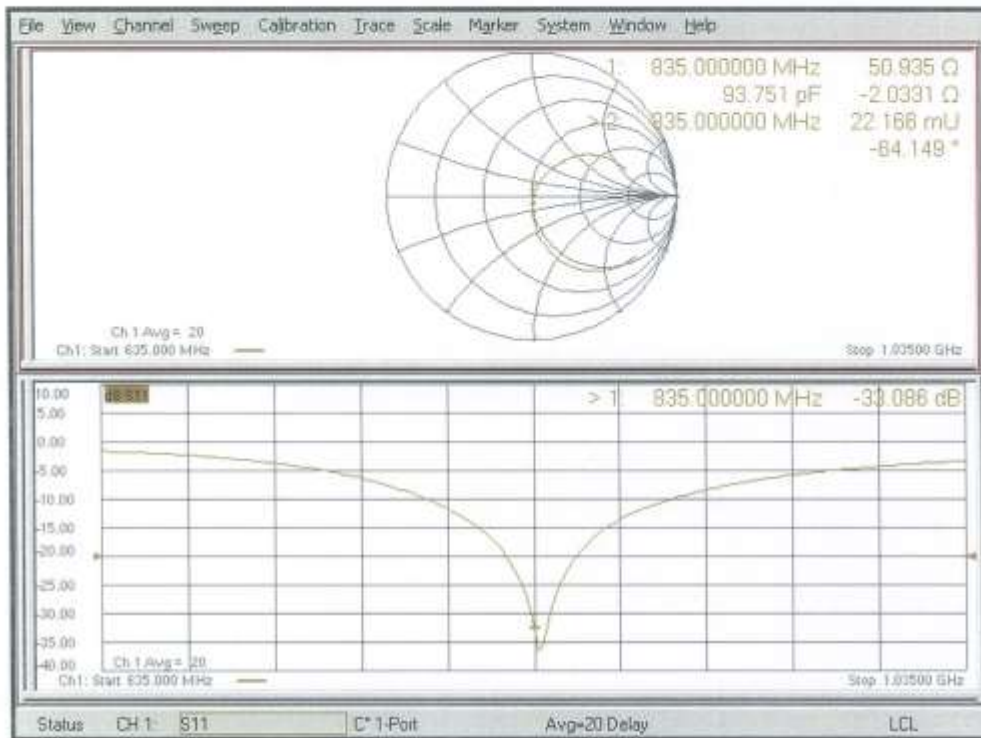
Smallest distance from peaks to all points 3 dB below = 16 mm

Ratio of SAR at M2 to SAR at M1 = 65.2%

Maximum value of SAR (measured) = 3.34 W/kg



Impedance Measurement Plot for Head TSL





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Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **D1800V2-2d015\_Jul21**

## CALIBRATION CERTIFICATE

Object **D1800V2 - SN:2d015**

Calibration procedure(s) **QA CAL-05.v11  
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz**

Calibration date: **July 30, 2021**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards               | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|---------------------------------|--------------------|-----------------------------------|------------------------|
| Power meter NRP                 | SN: 104778         | 09-Apr-21 (No. 217-03291/03292)   | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103244         | 09-Apr-21 (No. 217-03291)         | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103245         | 09-Apr-21 (No. 217-03292)         | Apr-22                 |
| Reference 20 dB Attenuator      | SN: BH9394 (20k)   | 09-Apr-21 (No. 217-03343)         | Apr-22                 |
| Type-N mismatch combination     | SN: 310982 / 06327 | 09-Apr-21 (No. 217-03344)         | Apr-22                 |
| Reference Probe EX3DV4          | SN: 7349           | 28-Dec-20 (No. EX3-7349_Dec20)    | Dec-21                 |
| DAE4                            | SN: 601            | 02-Nov-20 (No. DAE4-601_Nov20)    | Nov-21                 |
| Secondary Standards             | ID #               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B              | SN: GB39512475     | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: US37282783     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: MY41092317     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| RF generator R&S SMT-06         | SN: 100972         | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |
| Network Analyzer Agilent E8358A | SN: US41080477     | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |

|                |                        |                                   |               |
|----------------|------------------------|-----------------------------------|---------------|
| Calibrated by: | Name<br>Michael Weller | Function<br>Laboratory Technician | Signature<br> |
| Approved by:   | Katja Pokovic          | Technical Manager                 |               |

Issued: August 3, 2021

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Certificate No: D1800V2-2d015\_Jul21

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|--------|-------------------------|-------------------------|
| 결<br>재 | 담당자<br><br>2021. 08. 11 | 확인자<br><br>2021. 08. 11 |
|--------|-------------------------|-------------------------|

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Accreditation No.: SCS 0108

**Glossary:**

|       |                                 |
|-------|---------------------------------|
| TSL   | tissue simulating liquid        |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A   | not applicable or not measured  |

**Calibration is Performed According to the Following Standards:**

- IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss:** This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

### Measurement Conditions

DASY system configuration, as far as not given on page 1.

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY52                 | V52.10.4    |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| Distance Dipole Center - TSL | 10 mm                  | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm      |             |
| Frequency                    | 1800 MHz $\pm$ 1 MHz   |             |

### Head TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 40.0           | 1.40 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 40.4 $\pm$ 6 % | 1.39 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ---            | ---                  |

### SAR result with Head TSL

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition          |                              |
| SAR measured                                            | 250 mW input power | 9.63 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 38.8 W/kg $\pm$ 17.0 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 250 mW input power | 4.99 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 20.0 W/kg $\pm$ 16.5 % (k=2) |

**Appendix (Additional assessments outside the scope of SCS 0108)****Antenna Parameters with Head TSL**

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 49.1 $\Omega$ - 2.8 j $\Omega$ |
| Return Loss                          | - 30.4 dB                      |

**General Antenna Parameters and Design**

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.214 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

**Additional EUT Data**

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|



**DASY5 Validation Report for Head TSL**

Date: 30.07.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d015**

Communication System: UID 0 - CW; Frequency: 1800 MHz

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.39$  S/m;  $\epsilon_r = 40.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

**DASY52 Configuration:**

- Probe: EX3DV4 - SN7349; ConvF(8.63, 8.63, 8.63) @ 1800 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 109.5 V/m; Power Drift = -0.09 dB

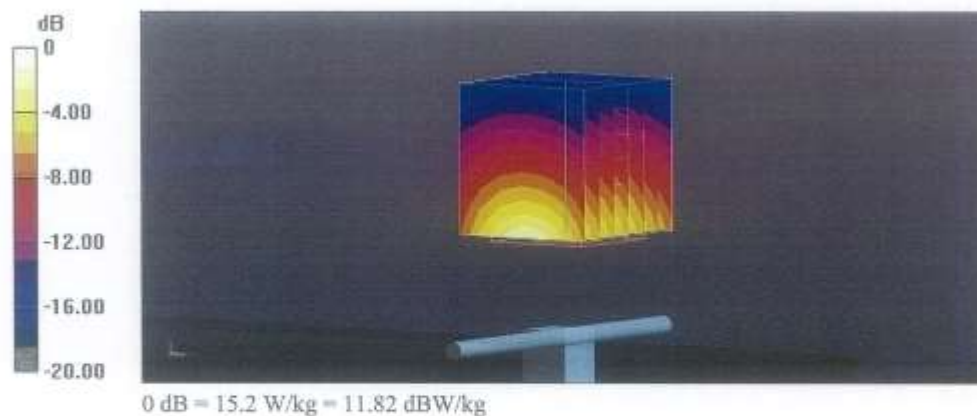
Peak SAR (extrapolated) = 18.3 W/kg

**SAR(1 g) = 9.63 W/kg; SAR(10 g) = 4.99 W/kg**

Smallest distance from peaks to all points 3 dB below = 10 mm

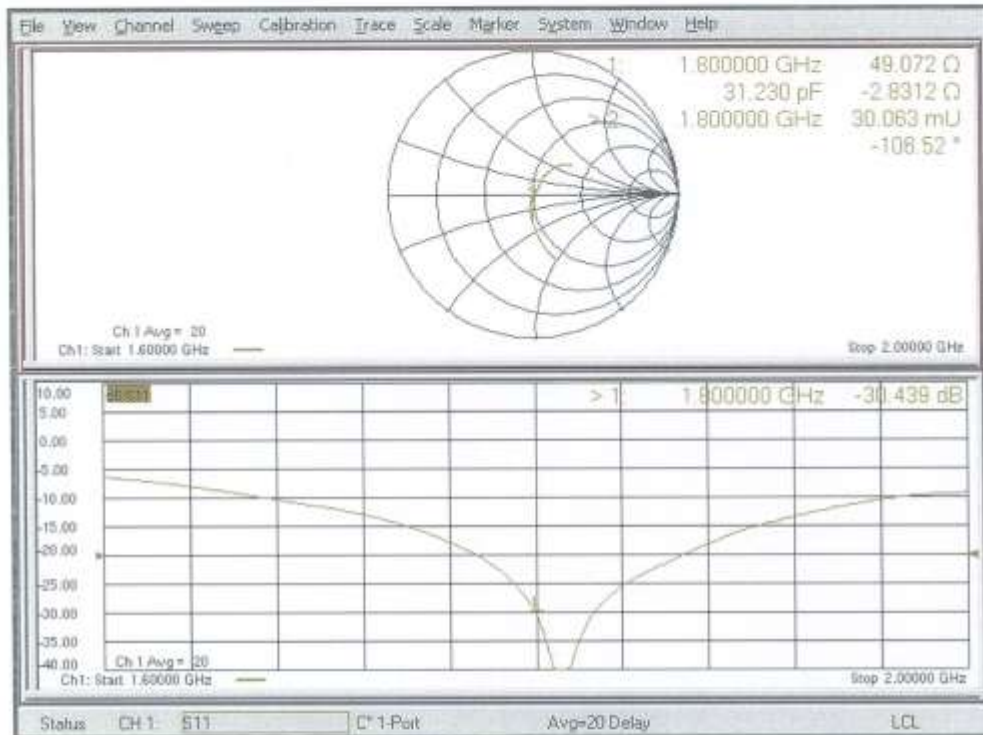
Ratio of SAR at M2 to SAR at M1 = 53%

Maximum value of SAR (measured) = 15.2 W/kg





Impedance Measurement Plot for Head TSL



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Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **D1900V2-5d061\_Nov21**

## CALIBRATION CERTIFICATE

Object: **D1900V2 - SN:5d061**

Calibration procedure(s): **QA CAL-05.v11  
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz**

Calibration date: **November 24, 2021**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature ( $22 \pm 3$ )°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards               | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|---------------------------------|--------------------|-----------------------------------|------------------------|
| Power meter NRP                 | SN: 104778         | 09-Apr-21 (No. 217-03291/03292)   | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103244         | 09-Apr-21 (No. 217-03291)         | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103245         | 09-Apr-21 (No. 217-03292)         | Apr-22                 |
| Reference 20 dB Attenuator      | SN: BH9394 (20k)   | 09-Apr-21 (No. 217-03343)         | Apr-22                 |
| Type-N mismatch combination     | SN: 310982 / 06327 | 09-Apr-21 (No. 217-03344)         | Apr-22                 |
| Reference Probe EX3DV4          | SN: 7349           | 28-Dec-20 (No. EX3-7349_Dec20)    | Dec-21                 |
| DAE4                            | SN: 601            | 01-Nov-21 (No. DAE4-601_Nov21)    | Nov-22                 |
| Secondary Standards             | ID #               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B              | SN: GB39512475     | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: US37292783     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: MY41092317     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| RF generator R&S SMT-06         | SN: 100972         | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |
| Network Analyzer Agilent E8358A | SN: US41080477     | 31-Mar-14 (in house check Oct-20) | In house check: Oct-22 |

Calibrated by: **Jeffrey Katzman** (Name) **Laboratory Technician** (Function)  (Signature)

Approved by: **Niels Kuster** (Name) **Quality Manager** (Function)  (Signature)

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Certificate No: D1900V2-5d061\_Nov21

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Issued: November 25, 2021

|   |                      |                          |
|---|----------------------|--------------------------|
| 재 | PL 박정훈<br>2021.12.09 | 확인자<br>김영진<br>2021.12.09 |
|---|----------------------|--------------------------|

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Accreditation No.: **SCS 0108**

**Glossary:**

|       |                                 |
|-------|---------------------------------|
| TSL   | tissue simulating liquid        |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A   | not applicable or not measured  |

**Calibration is Performed According to the Following Standards:**

- IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss:** This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

### Measurement Conditions

DASY system configuration, as far as not given on page 1.

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY52                 | V52.10.4    |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| Distance Dipole Center - TSL | 10 mm                  | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm      |             |
| Frequency                    | 1900 MHz $\pm$ 1 MHz   |             |

### Head TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 40.0           | 1.40 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 39.9 $\pm$ 6 % | 1.40 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ----           | ----                 |

### SAR result with Head TSL

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition          |                              |
| SAR measured                                            | 250 mW input power | 10.3 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 41.2 W/kg $\pm$ 17.0 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 250 mW input power | 5.36 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 21.4 W/kg $\pm$ 16.5 % (k=2) |

**Appendix (Additional assessments outside the scope of SCS 0108)****Antenna Parameters with Head TSL**

|                                      |                             |
|--------------------------------------|-----------------------------|
| Impedance, transformed to feed point | $50.9 \Omega + 7.2 j\Omega$ |
| Return Loss                          | - 22.9 dB                   |

**General Antenna Parameters and Design**

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.194 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

**Additional EUT Data**

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|



**DASY5 Validation Report for Head TSL**

Date: 24.11.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d061**

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.4$  S/m;  $\epsilon_r = 39.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.43, 8.43, 8.43) @ 1900 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 01.11.2021
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 111.1 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 18.9 W/kg

**SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.36 W/kg**

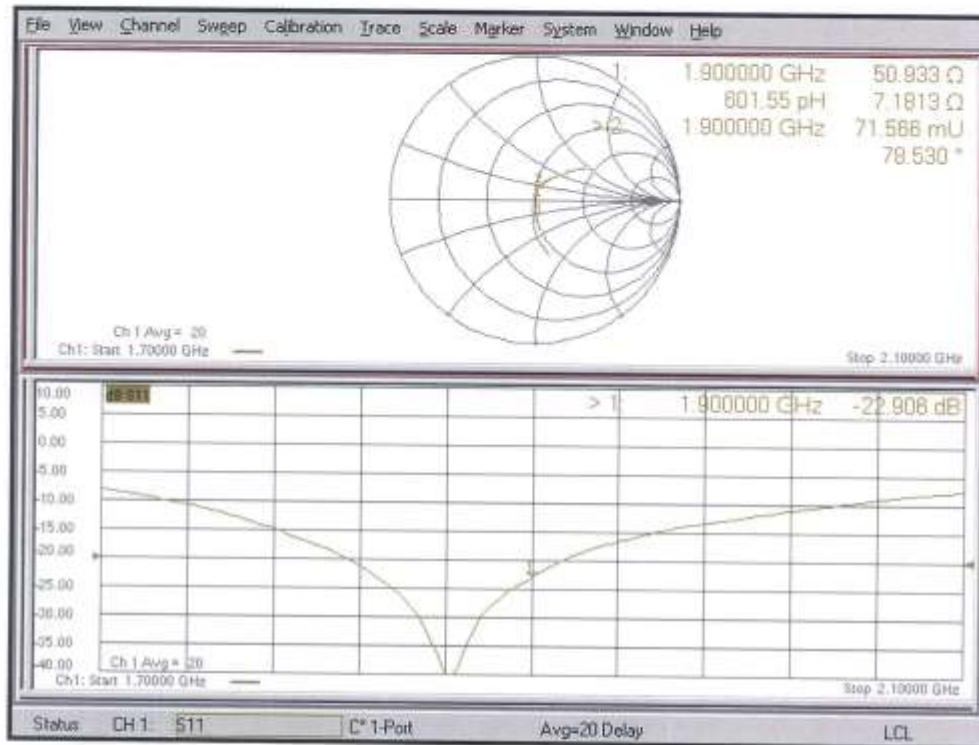
Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 55.1%

Maximum value of SAR (measured) = 15.8 W/kg



Impedance Measurement Plot for Head TSL



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Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **D2300V2-1010\_Aug21**

## CALIBRATION CERTIFICATE

Object **D2300V2 - SN:1010**

Calibration procedure(s) **QA CAL-05.v11  
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz**

Calibration date: **August 17, 2021**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature  $(22 \pm 3)^{\circ}\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards               | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|---------------------------------|--------------------|-----------------------------------|------------------------|
| Power meter NRP                 | SN: 104778         | 09-Apr-21 (No. 217-03291/03292)   | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103244         | 09-Apr-21 (No. 217-03291)         | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103245         | 09-Apr-21 (No. 217-03292)         | Apr-22                 |
| Reference 20 dB Attenuator      | SN: BH9394 (20k)   | 09-Apr-21 (No. 217-03343)         | Apr-22                 |
| Type-N mismatch combination     | SN: 310982 / 06327 | 09-Apr-21 (No. 217-03344)         | Apr-22                 |
| Reference Probe EX3DV4          | SN: 7349           | 28-Dec-20 (No. EX3-7349_Dec20)    | Dec-21                 |
| DAE4                            | SN: 601            | 02-Nov-20 (No. DAE4-601_Nov20)    | Nov-21                 |
| Secondary Standards             | ID #               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B              | SN: G839512475     | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: US37292783     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: MY41092317     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| RF generator R&S SMT-06         | SN: 100972         | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |
| Network Analyzer Agilent E8358A | SN: US41080477     | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |

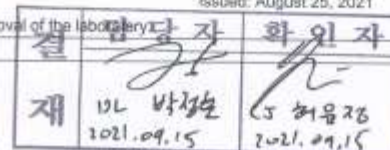
|                |                              |                                          |               |
|----------------|------------------------------|------------------------------------------|---------------|
| Calibrated by: | Name<br><b>Leif Klysner</b>  | Function<br><b>Laboratory Technician</b> | Signature<br> |
| Approved by:   | Name<br><b>Katja Pokovic</b> | Function<br><b>Technical Manager</b>     |               |

Issued: August 25, 2021

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D2300V2-1010\_Aug21

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Accreditation No.: **SCS 0108**

**Glossary:**

|       |                                 |
|-------|---------------------------------|
| TSL   | tissue simulating liquid        |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A   | not applicable or not measured  |

**Calibration is Performed According to the Following Standards:**

- a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- c) DASY System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The source is mounted in a touch configuration below the center marking of the flat phantom.
- *Return Loss:* This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.



### Measurement Conditions

DASY system configuration, as far as not given on page 1.

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY52                 | V52.10.4    |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| Distance Dipole Center - TSL | 10 mm                  | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm      |             |
| Frequency                    | 2300 MHz $\pm$ 1 MHz   |             |

### Head TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 39.5           | 1.67 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 38.5 $\pm$ 6 % | 1.71 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ---            | ---                  |

### SAR result with Head TSL

|                                                       |                    |                              |
|-------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                              |
| SAR measured                                          | 250 mW input power | 12.6 W/kg                    |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | 49.5 W/kg $\pm$ 17.0 % (k=2) |

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 250 mW input power | 6.02 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 23.8 W/kg $\pm$ 16.5 % (k=2) |



## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 49.5 $\Omega$ - 2.2 j $\Omega$ |
| Return Loss                          | - 32.7 dB                      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1,170 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|

## DASY5 Validation Report for Head TSL

Date: 17.08.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN:1010**

Communication System: UID 0 - CW; Frequency: 2300 MHz

Medium parameters used:  $f = 2300$  MHz;  $\sigma = 1.71$  S/m;  $\epsilon_r = 38.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.98, 7.98, 7.98) @ 2300 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

### Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 117.0 V/m; Power Drift = 0.06 dB

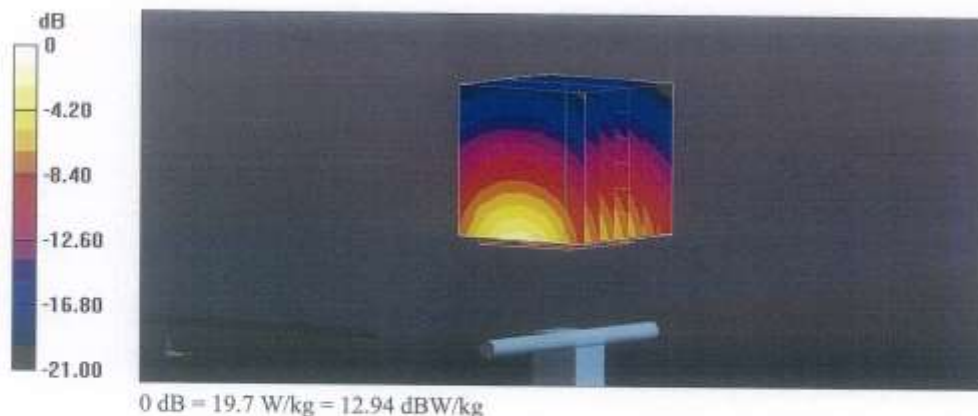
Peak SAR (extrapolated) = 23.5 W/kg

SAR(1 g) = 12.6 W/kg; SAR(10 g) = 6.02 W/kg

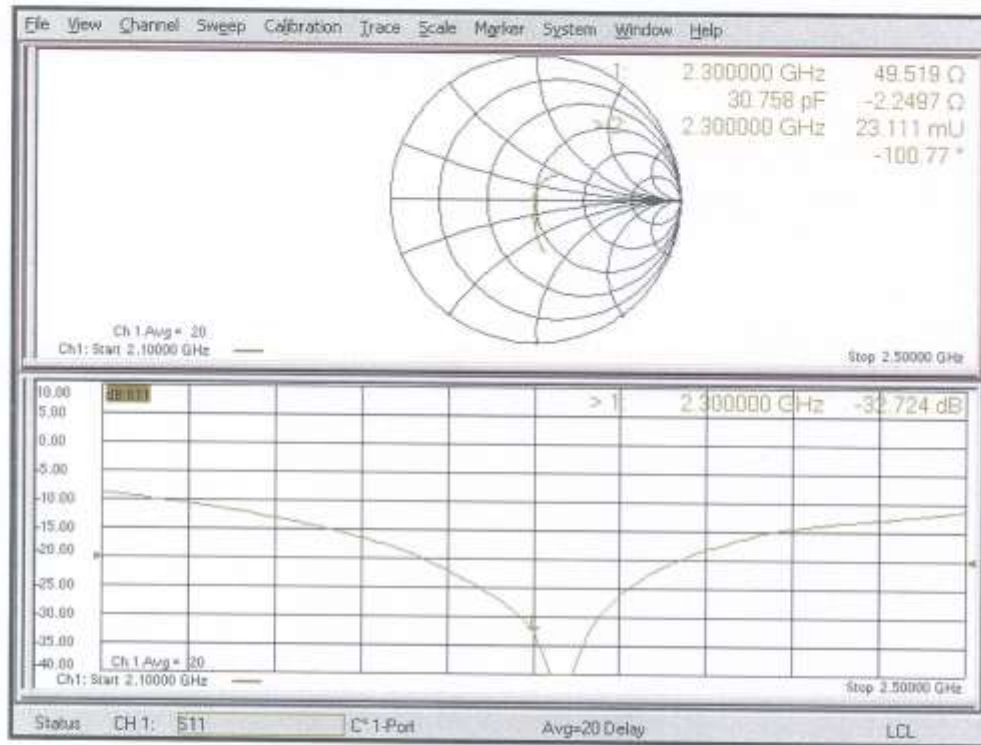
Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 54.2%

Maximum value of SAR (measured) = 19.7 W/kg



Impedance Measurement Plot for Head TSL



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Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **D2450V2-965\_Jun21**

## CALIBRATION CERTIFICATE

| Object                                                                                                                                                                                                                                                                        | 결재                                                                                  | 담당자                               | 확인자                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------|------------------------|
| D2450V2 - SN:965                                                                                                                                                                                                                                                              | 재                                                                                   | 김 / 박 26<br>2021.09.05            | 김 / 최 26<br>2021.09.05 |
| Calibration procedure(s)                                                                                                                                                                                                                                                      | QA CAL-05.v11<br>Calibration Procedure for SAR Validation Sources between 0.7-3 GHz |                                   |                        |
| Calibration date:                                                                                                                                                                                                                                                             | June 15, 2021                                                                       |                                   |                        |
| This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).<br>The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate. |                                                                                     |                                   |                        |
| All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.                                                                                                                                                |                                                                                     |                                   |                        |
| Calibration Equipment used (M&TE critical for calibration)                                                                                                                                                                                                                    |                                                                                     |                                   |                        |
| Primary Standards                                                                                                                                                                                                                                                             | ID #                                                                                | Cal Date (Certificate No.)        | Scheduled Calibration  |
| Power meter NRP                                                                                                                                                                                                                                                               | SN: 104778                                                                          | 09-Apr-21 (No. 217-03291/03292)   | Apr-22                 |
| Power sensor NRP-Z91                                                                                                                                                                                                                                                          | SN: 103244                                                                          | 09-Apr-21 (No. 217-03291)         | Apr-22                 |
| Power sensor NRP-Z91                                                                                                                                                                                                                                                          | SN: 103245                                                                          | 09-Apr-21 (No. 217-03292)         | Apr-22                 |
| Reference 20 dB Attenuator                                                                                                                                                                                                                                                    | SN: BH9394 (20k)                                                                    | 09-Apr-21 (No. 217-03343)         | Apr-22                 |
| Type-N mismatch combination                                                                                                                                                                                                                                                   | SN: 310982 / 06327                                                                  | 09-Apr-21 (No. 217-03344)         | Apr-22                 |
| Reference Probe EX3DV4                                                                                                                                                                                                                                                        | SN: 7349                                                                            | 28-Dec-20 (No. EX3-7349_Dec20)    | Dec-21                 |
| DAE4                                                                                                                                                                                                                                                                          | SN: 601                                                                             | 02-Nov-20 (No. DAE4-601_Nov20)    | Nov-21                 |
| Secondary Standards                                                                                                                                                                                                                                                           | ID #                                                                                | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B                                                                                                                                                                                                                                                            | SN: GB39512475                                                                      | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A                                                                                                                                                                                                                                                         | SN: US37292783                                                                      | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A                                                                                                                                                                                                                                                         | SN: MY41092317                                                                      | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| RF generator R&S SMT-06                                                                                                                                                                                                                                                       | SN: 100972                                                                          | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |
| Network Analyzer Agilent E8358A                                                                                                                                                                                                                                               | SN: US41090477                                                                      | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |
| Calibrated by:                                                                                                                                                                                                                                                                | Name<br>Michael Weber                                                               | Function<br>Laboratory Technician | Signature<br>          |
| Approved by:                                                                                                                                                                                                                                                                  | Name<br>Katja Pokovic                                                               | Function<br>Technical Manager     | Signature<br>          |
| Issued: June 16, 2021                                                                                                                                                                                                                                                         |                                                                                     |                                   |                        |
| This calibration certificate shall not be reproduced except in full without written approval of the laboratory.                                                                                                                                                               |                                                                                     |                                   |                        |

Certificate No: D2450V2-965\_Jun21

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Accreditation No.: **SCS 0108**

**Glossary:**

TSL tissue simulating liquid  
ConvF sensitivity in TSL / NORM x,y,z  
N/A not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.



### Measurement Conditions

DASY system configuration, as far as not given on page 1.

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY5                  | V52.10.4    |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| Distance Dipole Center - TSL | 10 mm                  | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm      |             |
| Frequency                    | 2450 MHz $\pm$ 1 MHz   |             |

### Head TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 39.2           | 1.80 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 37.7 $\pm$ 6 % | 1.87 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ----           | ----                 |

### SAR result with Head TSL

|                                                       |                    |                              |
|-------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                              |
| SAR measured                                          | 250 mW input power | 13.7 W/kg                    |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | 53.3 W/kg $\pm$ 17.0 % (k=2) |

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 250 mW input power | 6.30 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 24.8 W/kg $\pm$ 16.5 % (k=2) |

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

|                                      |                               |
|--------------------------------------|-------------------------------|
| Impedance, transformed to feed point | 57.8 $\Omega$ + 6.6 $j\Omega$ |
| Return Loss                          | - 20.5 dB                     |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.153 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|

**DASY5 Validation Report for Head TSL**

Date: 15.06.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:965**

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.87$  S/m;  $\epsilon_r = 37.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.96, 7.96, 7.96) @ 2450 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 116.7 V/m; Power Drift = -0.01 dB

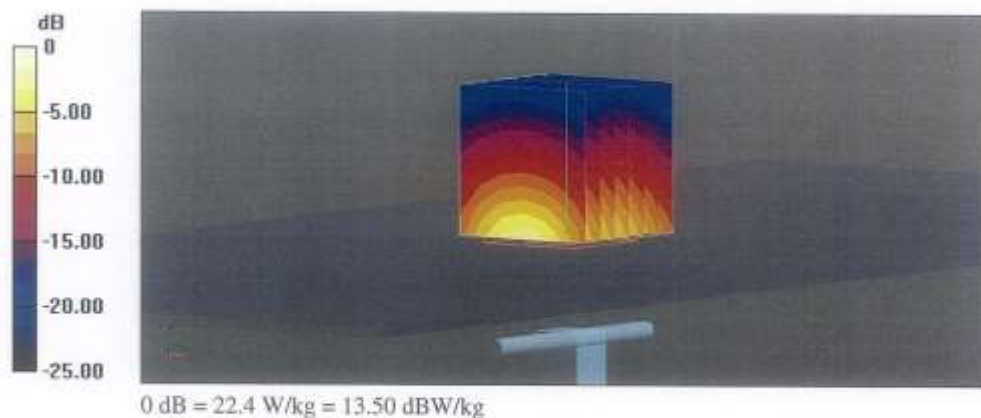
Peak SAR (extrapolated) = 27.3 W/kg

**SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.30 W/kg**

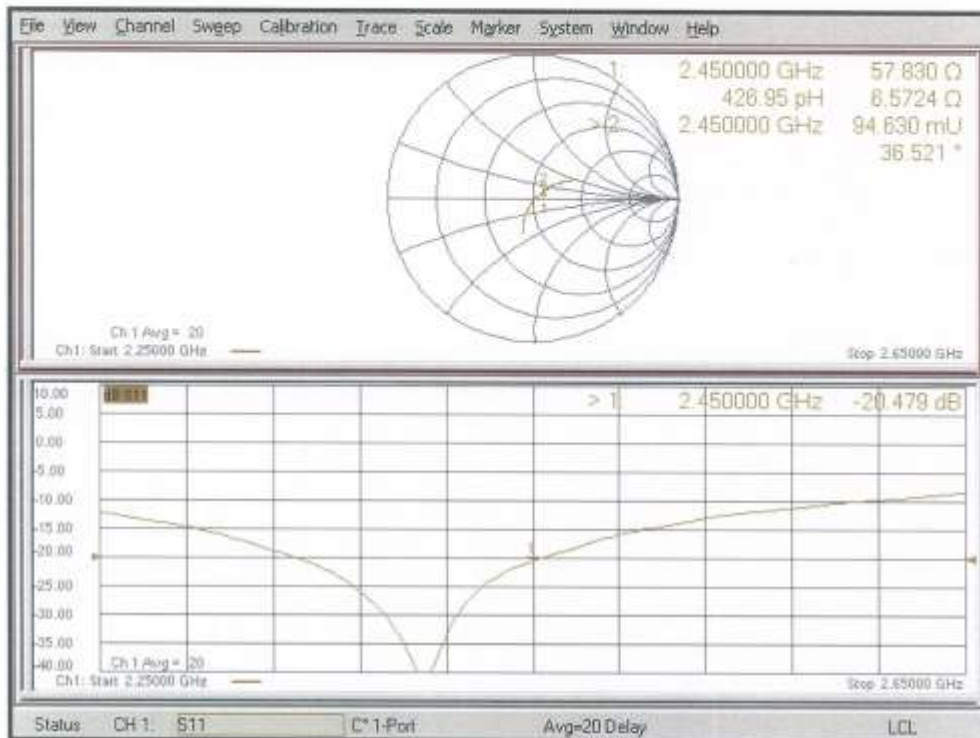
Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 50%

Maximum value of SAR (measured) = 22.4 W/kg



Impedance Measurement Plot for Head TSL



**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



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The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **D2600V2-1106\_Jul21**

## CALIBRATION CERTIFICATE

Object **D2600V2 - SN:1106**

Calibration procedure(s) **QA CAL-05.v11  
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz**

Calibration date: **July 30, 2021**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards               | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|---------------------------------|--------------------|-----------------------------------|------------------------|
| Power meter NRP                 | SN: 104778         | 09-Apr-21 (No. 217-03291/03292)   | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103244         | 09-Apr-21 (No. 217-03291)         | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103245         | 09-Apr-21 (No. 217-03292)         | Apr-22                 |
| Reference 20 dB Attenuator      | SN: BH9394 (20k)   | 09-Apr-21 (No. 217-03343)         | Apr-22                 |
| Type-N mismatch combination     | SN: 310982 / 06327 | 09-Apr-21 (No. 217-03344)         | Apr-22                 |
| Reference Probe EX3DV4          | SN: 7349           | 28-Dec-20 (No. EX3-7349_Dec20)    | Dec-21                 |
| DAE4                            | SN: 601            | 02-Nov-20 (No. DAE4-601_Nov20)    | Nov-21                 |
| Secondary Standards             | ID #               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B              | SN: GB39512475     | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: US37282783     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: MY41082317     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| RF generator R&S SMT-06         | SN: 100972         | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |
| Network Analyzer Agilent E8358A | SN: US41080477     | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |

Calibrated by: **Michael Weber** (Name: Michael Weber, Function: Laboratory Technician, Signature: *[Signature]*)

Approved by: **Katja Pokovic** (Name: Katja Pokovic, Function: Technical Manager, Signature: *[Signature]*)

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D2600V2-1106\_Jul21

Page 1 of 6

|                        |                     |
|------------------------|---------------------|
| Issued: August 3, 2021 |                     |
| 결<br>재                 | 확<br>인<br>자         |
| OL 박종현<br>2021. 08. 11 | 최종현<br>2021. 08. 11 |



**Calibration Laboratory of  
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Accreditation No.: **SCS 0108**

**Glossary:**

|       |                                 |
|-------|---------------------------------|
| TSL   | tissue simulating liquid        |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A   | not applicable or not measured  |

**Calibration is Performed According to the Following Standards:**

- IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss:** This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

### Measurement Conditions

DASY system configuration, as far as not given on page 1.

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY52                 | V52.10.4    |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| Distance Dipole Center - TSL | 10 mm                  | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm      |             |
| Frequency                    | 2600 MHz $\pm$ 1 MHz   |             |

### Head TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 39.0           | 1.96 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 37.3 $\pm$ 6 % | 2.05 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ---            | ---                  |

### SAR result with Head TSL

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition          |                              |
| SAR measured                                            | 250 mW input power | 14.5 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 56.3 W/kg $\pm$ 17.0 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 250 mW input power | 6.41 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 25.2 W/kg $\pm$ 16.5 % (k=2) |

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 49.1 $\Omega$ - 6.2 j $\Omega$ |
| Return Loss                          | - 24.0 dB                      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.149 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|

**DASY5 Validation Report for Head TSL**

Date: 30.07.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1106**

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 2.05$  S/m;  $\epsilon_r = 37.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

**DASY52 Configuration:**

- Probe: EX3DV4 - SN7349; ConvF(7.84, 7.84, 7.84) @ 2600 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 118.1 V/m; Power Drift = 0.02 dB

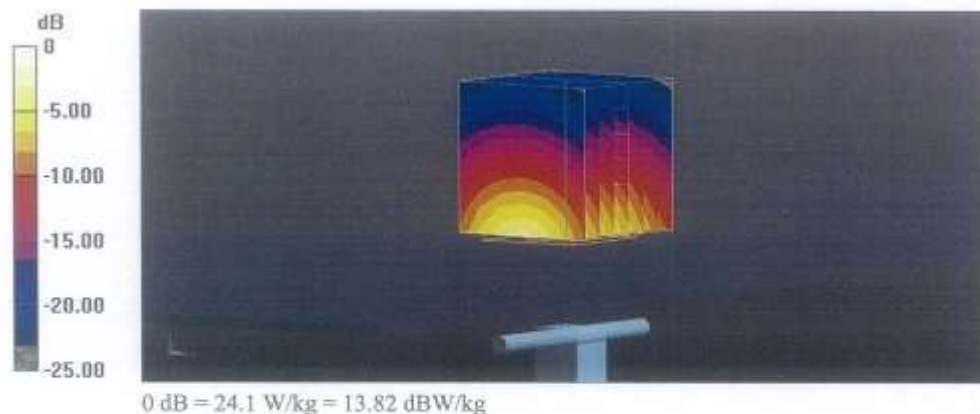
Peak SAR (extrapolated) = 29.0 W/kg

**SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.41 W/kg**

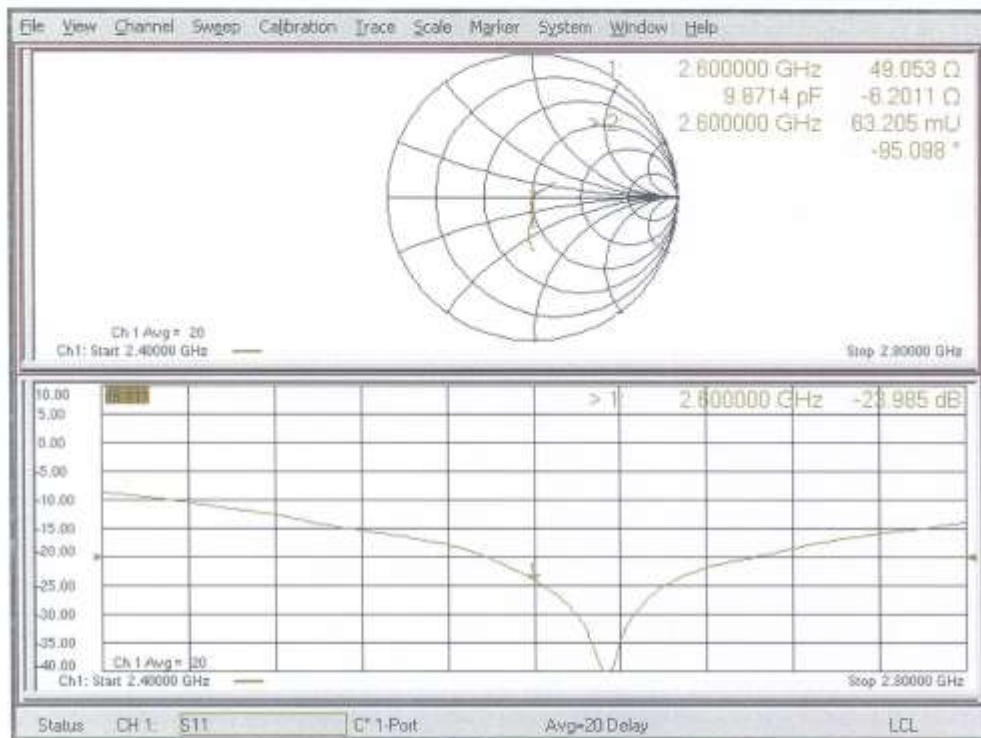
Smallest distance from peaks to all points 3 dB below = 8.9 mm

Ratio of SAR at M2 to SAR at M1 = 50%

Maximum value of SAR (measured) = 24.1 W/kg



Impedance Measurement Plot for Head TSL





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Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **D3500V2-1040\_Feb21**

| CALIBRATION CERTIFICATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                   | 결재                                | 담당자                    | 화인자          |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------|------------------------|--------------|-------------------|------|----------------------------|-----------------------|-----------------|------------|---------------------------------|--------|----------------------|------------|---------------------------|--------|----------------------|------------|---------------------------|--------|----------------------------|------------------|---------------------------|--------|-----------------------------|--------------------|---------------------------|--------|------------------------|----------|--------------------------------|--------|------|---------|--------------------------------|--------|---------------------|------|-----------------------|-----------------|--------------------|----------------|-----------------------------------|------------------------|-----------------------|----------------|-----------------------------------|------------------------|-----------------------|----------------|-----------------------------------|------------------------|-------------------------|------------|-----------------------------------|------------------------|---------------------------------|----------------|-----------------------------------|------------------------|
| Object                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D3500V2 - SN:1040                                                                 | DL 박지현                            | DL 박지현                 | DL 박지현       |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Calibration procedure(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | QA CAL-22.v6<br>Calibration Procedure for SAR Validation Sources between 3-10 GHz | 2021. 02. 09                      | 2021. 02. 09           | 2021. 02. 09 |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Calibration date:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | February 17, 2021                                                                 |                                   |                        |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| <p>This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).<br/>The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.</p> <p>All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity &lt; 70%.</p> <p>Calibration Equipment used (M&amp;TE critical for calibration)</p> <table border="1"> <thead> <tr> <th>Primary Standards</th> <th>ID #</th> <th>Cal Date (Certificate No.)</th> <th>Scheduled Calibration</th> </tr> </thead> <tbody> <tr> <td>Power meter NRP</td> <td>SN: 104778</td> <td>01-Apr-20 (No. 217-03100/03101)</td> <td>Apr-21</td> </tr> <tr> <td>Power sensor NRP-Z91</td> <td>SN: 103244</td> <td>01-Apr-20 (No. 217-03100)</td> <td>Apr-21</td> </tr> <tr> <td>Power sensor NRP-Z91</td> <td>SN: 103245</td> <td>01-Apr-20 (No. 217-03101)</td> <td>Apr-21</td> </tr> <tr> <td>Reference 20 dB Attenuator</td> <td>SN: BH9394 (20K)</td> <td>31-Mar-20 (No. 217-03106)</td> <td>Apr-21</td> </tr> <tr> <td>Type-N mismatch combination</td> <td>SN: 310982 / 06327</td> <td>31-Mar-20 (No. 217-03104)</td> <td>Apr-21</td> </tr> <tr> <td>Reference Probe EX3DV4</td> <td>SN: 3503</td> <td>30-Dec-20 (No. EX3-3503_Dec20)</td> <td>Dec-21</td> </tr> <tr> <td>DAE4</td> <td>SN: 601</td> <td>02-Nov-20 (No. DAE4-601_Nov20)</td> <td>Nov-21</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Secondary Standards</th> <th>ID #</th> <th>Check Date (in house)</th> <th>Scheduled Check</th> </tr> </thead> <tbody> <tr> <td>Power meter E4419B</td> <td>SN: GB39512475</td> <td>30-Oct-14 (in house check Oct-20)</td> <td>In house check: Oct-22</td> </tr> <tr> <td>Power sensor HP 8481A</td> <td>SN: US37292783</td> <td>07-Oct-15 (in house check Oct-20)</td> <td>In house check: Oct-22</td> </tr> <tr> <td>Power sensor HP 8481A</td> <td>SN: MY41092317</td> <td>07-Oct-15 (in house check Oct-20)</td> <td>In house check: Oct-22</td> </tr> <tr> <td>RF generator R&amp;S SMT-06</td> <td>SN: 100972</td> <td>15-Jun-15 (in house check Oct-20)</td> <td>In house check: Oct-22</td> </tr> <tr> <td>Network Analyzer Agilent E8358A</td> <td>SN: US41080477</td> <td>31-Mar-14 (in house check Oct-20)</td> <td>In house check: Oct-21</td> </tr> </tbody> </table> |                                                                                   |                                   |                        |              | Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration | Power meter NRP | SN: 104778 | 01-Apr-20 (No. 217-03100/03101) | Apr-21 | Power sensor NRP-Z91 | SN: 103244 | 01-Apr-20 (No. 217-03100) | Apr-21 | Power sensor NRP-Z91 | SN: 103245 | 01-Apr-20 (No. 217-03101) | Apr-21 | Reference 20 dB Attenuator | SN: BH9394 (20K) | 31-Mar-20 (No. 217-03106) | Apr-21 | Type-N mismatch combination | SN: 310982 / 06327 | 31-Mar-20 (No. 217-03104) | Apr-21 | Reference Probe EX3DV4 | SN: 3503 | 30-Dec-20 (No. EX3-3503_Dec20) | Dec-21 | DAE4 | SN: 601 | 02-Nov-20 (No. DAE4-601_Nov20) | Nov-21 | Secondary Standards | ID # | Check Date (in house) | Scheduled Check | Power meter E4419B | SN: GB39512475 | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 | Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 | Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 | RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 | Network Analyzer Agilent E8358A | SN: US41080477 | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |
| Primary Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ID #                                                                              | Cal Date (Certificate No.)        | Scheduled Calibration  |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power meter NRP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SN: 104778                                                                        | 01-Apr-20 (No. 217-03100/03101)   | Apr-21                 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power sensor NRP-Z91                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN: 103244                                                                        | 01-Apr-20 (No. 217-03100)         | Apr-21                 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power sensor NRP-Z91                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN: 103245                                                                        | 01-Apr-20 (No. 217-03101)         | Apr-21                 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Reference 20 dB Attenuator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SN: BH9394 (20K)                                                                  | 31-Mar-20 (No. 217-03106)         | Apr-21                 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Type-N mismatch combination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SN: 310982 / 06327                                                                | 31-Mar-20 (No. 217-03104)         | Apr-21                 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Reference Probe EX3DV4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SN: 3503                                                                          | 30-Dec-20 (No. EX3-3503_Dec20)    | Dec-21                 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| DAE4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN: 601                                                                           | 02-Nov-20 (No. DAE4-601_Nov20)    | Nov-21                 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Secondary Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ID #                                                                              | Check Date (in house)             | Scheduled Check        |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power meter E4419B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SN: GB39512475                                                                    | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power sensor HP 8481A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SN: US37292783                                                                    | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power sensor HP 8481A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SN: MY41092317                                                                    | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| RF generator R&S SMT-06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SN: 100972                                                                        | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Network Analyzer Agilent E8358A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SN: US41080477                                                                    | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Calibrated by:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Name<br>Michael Weber                                                             | Function<br>Laboratory Technician | Signature<br>          |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Approved by:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Katja Pokovic                                                                     | Technical Manager                 |                        |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| <p>This calibration certificate shall not be reproduced except in full without written approval of the laboratory.</p> <p>Issued: February 23, 2021</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                   |                        |              |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |

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Accreditation No.: **SCS 0108**

**Glossary:**

|       |                                 |
|-------|---------------------------------|
| TSL   | tissue simulating liquid        |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A   | not applicable or not measured  |

**Calibration is Performed According to the Following Standards:**

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

### Measurement Conditions

DASY system configuration, as far as not given on page 1:

|                              |                            |                                  |
|------------------------------|----------------------------|----------------------------------|
| DASY Version                 | DASY5                      | V52.10.4                         |
| Extrapolation                | Advanced Extrapolation     |                                  |
| Phantom                      | Modular Flat Phantom       |                                  |
| Distance Dipole Center - TSL | 10 mm                      | with Spacer                      |
| Zoom Scan Resolution         | dx, dy = 4 mm, dz = 1.4 mm | Graded Ratio = 1.4 (Z direction) |
| Frequency                    | 3500 MHz $\pm$ 1 MHz       |                                  |

### Head TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 37.9           | 2.91 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 37.1 $\pm$ 6 % | 2.93 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ----           | ----                 |

### SAR result with Head TSL

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition          |                              |
| SAR measured                                            | 100 mW input power | 6.67 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 66.3 W/kg $\pm$ 19.9 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 100 mW input power | 2.50 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 24.9 W/kg $\pm$ 19.5 % (k=2) |

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

|                                      |                               |
|--------------------------------------|-------------------------------|
| Impedance, transformed to feed point | 54.5 $\Omega$ - 5.2 $j\Omega$ |
| Return Loss                          | - 23.6 dB                     |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.140 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|



## DASY5 Validation Report for Head TSL

Date: 17.02.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 3500 MHz; Type: D3500V2; Serial: D3500V2 - SN:1040**

Communication System: UID 0 - CW; Frequency: 3500 MHz

Medium parameters used:  $f = 3500$  MHz;  $\sigma = 2.93$  S/m;  $\epsilon_r = 37.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(7.91, 7.91, 7.91) @ 3500 MHz; Calibrated: 30.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

**Dipole Calibration for Head Tissue/Pin=100 mW, d=10mm, f=3500MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0:**

Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 71.60 V/m; Power Drift = 0.03 dB

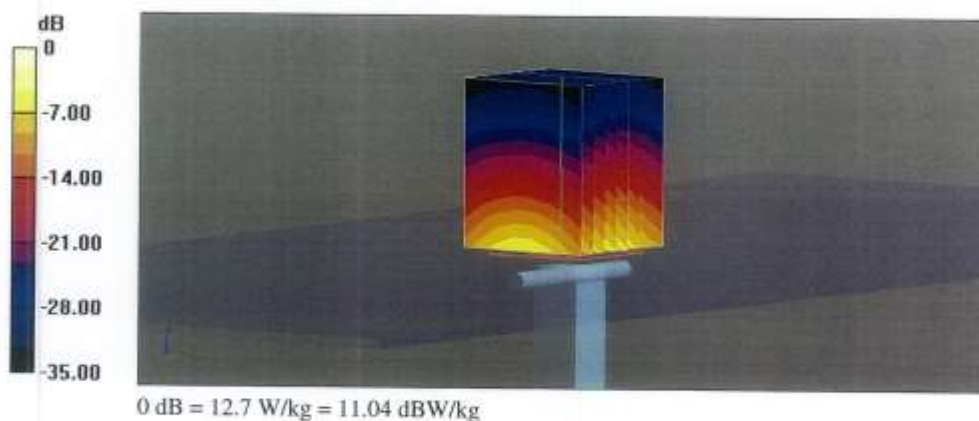
Peak SAR (extrapolated) = 18.1 W/kg

**SAR(1 g) = 6.67 W/kg; SAR(10 g) = 2.5 W/kg**

Smallest distance from peaks to all points 3 dB below = 8.6 mm

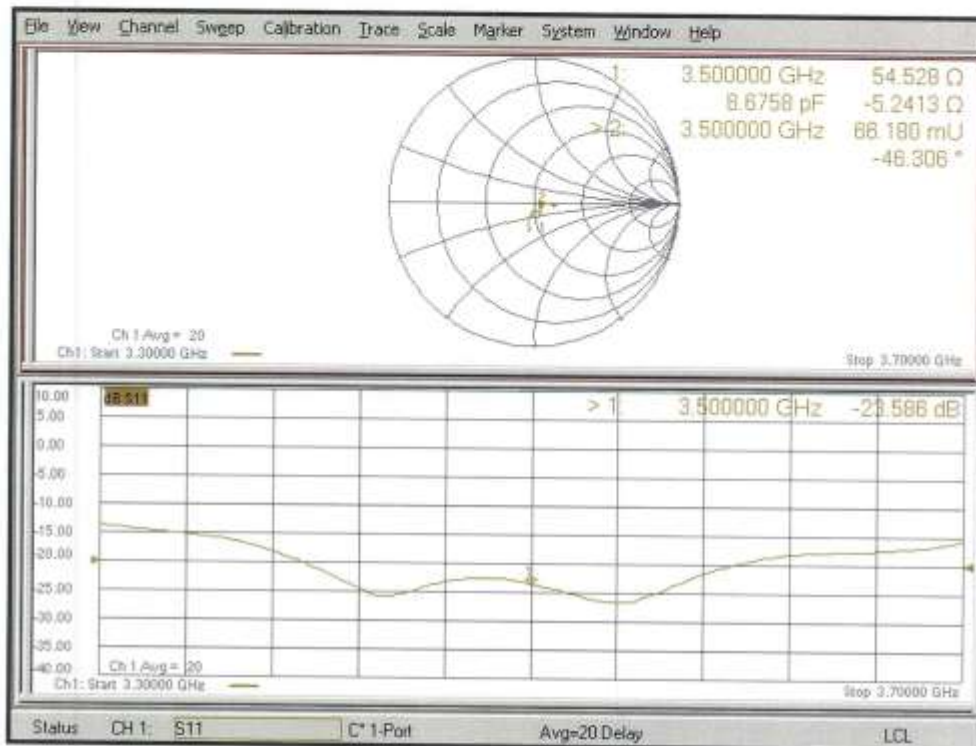
Ratio of SAR at M2 to SAR at M1 = 75.1%

Maximum value of SAR (measured) = 12.7 W/kg





Impedance Measurement Plot for Head TSL



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Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **D3700V2-1105\_Nov21**

## CALIBRATION CERTIFICATE

Object **D3700V2 - SN:1105**

Calibration procedure(s) **QA CAL-22.v6  
Calibration Procedure for SAR Validation Sources between 3-10 GHz**

Calibration date: **November 22, 2021**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards               | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|---------------------------------|--------------------|-----------------------------------|------------------------|
| Power meter NRP                 | SN: 104778         | 09-Apr-21 (No. 217-03291/03292)   | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103244         | 09-Apr-21 (No. 217-03291)         | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103245         | 09-Apr-21 (No. 217-03292)         | Apr-22                 |
| Reference 20 dB Attenuator      | SN: BH9394 (20k)   | 09-Apr-21 (No. 217-03343)         | Apr-22                 |
| Type-N mismatch combination     | SN: 310982 / 06327 | 09-Apr-21 (No. 217-03344)         | Apr-22                 |
| Reference Probe EX3DV4          | SN: 3503           | 30-Dec-20 (No. EX3-3503_Dec20)    | Dec-21                 |
| DAE4                            | SN: 601            | 01-Nov-21 (No. DAE4-601_Nov21)    | Nov-22                 |
| Secondary Standards             | ID #               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B              | SN: GB39512475     | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: US37292783     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: MY41092317     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| RF generator R&S SMT-06         | SN: 100972         | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |
| Network Analyzer Agilent E8358A | SN: US41080477     | 31-Mar-14 (in house check Oct-20) | In house check: Oct-22 |

Calibrated by: **Jeffrey Katzman** Name: **Jeffrey Katzman** Function: **Laboratory Technician** Signature:

Approved by: **Niels Kuster** Name: **Niels Kuster** Function: **Quality Manager** Signature:

Issued: November 24, 2021

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D3700V2-1105\_Nov21

Page 1 of 6

|    |                      |                      |
|----|----------------------|----------------------|
| 발행 | 담당자                  | 확인자                  |
| 재  | DL 박정환<br>2021.12.04 | CS 김민준<br>2021.12.09 |

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**Glossary:**

TSL tissue simulating liquid  
ConvF sensitivity in TSL / NORM x,y,z  
N/A not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss:** This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

### Measurement Conditions

DASY system configuration, as far as not given on page 1.

|                              |                            |                                  |
|------------------------------|----------------------------|----------------------------------|
| DASY Version                 | DASY52                     | V52.10.4                         |
| Extrapolation                | Advanced Extrapolation     |                                  |
| Phantom                      | Modular Flat Phantom V5.0  |                                  |
| Distance Dipole Center - TSL | 10 mm                      | with Spacer                      |
| Zoom Scan Resolution         | dx, dy = 4 mm, dz = 1.4 mm | Graded Ratio = 1.4 (Z direction) |
| Frequency                    | 3700 MHz $\pm$ 1 MHz       |                                  |

### Head TSL parameters at 3700 MHz

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 37.7           | 3.12 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 37.9 $\pm$ 6 % | 3.10 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ---            | ---                  |

### SAR result with Head TSL at 3700 MHz

|                                                       |                    |                              |
|-------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                              |
| SAR measured                                          | 100 mW input power | 6.64 W/kg                    |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | 66.6 W/kg $\pm$ 19.9 % (k=2) |

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 100 mW input power | 2.41 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 24.1 W/kg $\pm$ 19.5 % (k=2) |

**Appendix (Additional assessments outside the scope of SCS 0108)****Antenna Parameters with Head TSL at 3700 MHz**

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 46.0 $\Omega$ + 0.1 j $\Omega$ |
| Return Loss                          | - 27.7 dB                      |

**General Antenna Parameters and Design**

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.131 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

**Additional EUT Data**

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|



## DASY5 Validation Report for Head TSL

Date: 22.11.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 3700 MHz; Type: D3700V2; Serial: D3700V2 - SN:1105**

Communication System: UID 0 - CW; Frequency: 3700 MHz

Medium parameters used:  $f = 3700$  MHz;  $\sigma = 3.10$  S/m;  $\epsilon_r = 37.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(7.73, 7.73, 7.73) @ 3700 MHz; Calibrated: 30.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 01.11.2021
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

### Dipole Calibration for Head Tissue/Pin=100 mW, d=10mm 3700/Zoom Scan, dist=1.4mm

(8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 69.84 V/m; Power Drift = 0.05 dB

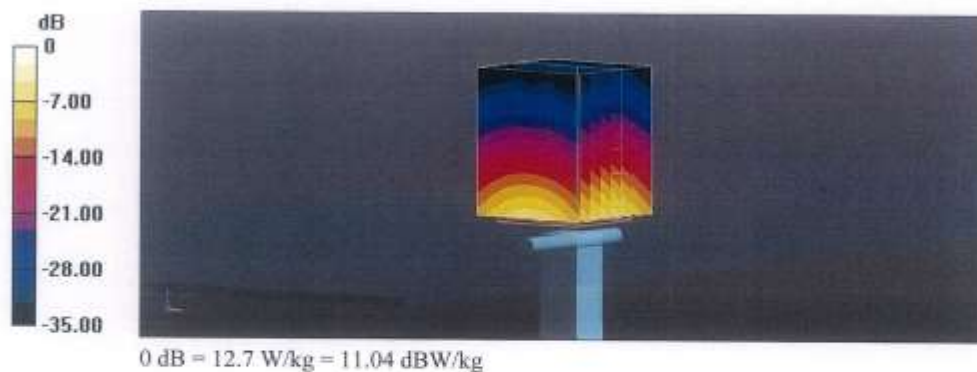
Peak SAR (extrapolated) = 18.4 W/kg

**SAR(1 g) = 6.64 W/kg; SAR(10 g) = 2.41 W/kg**

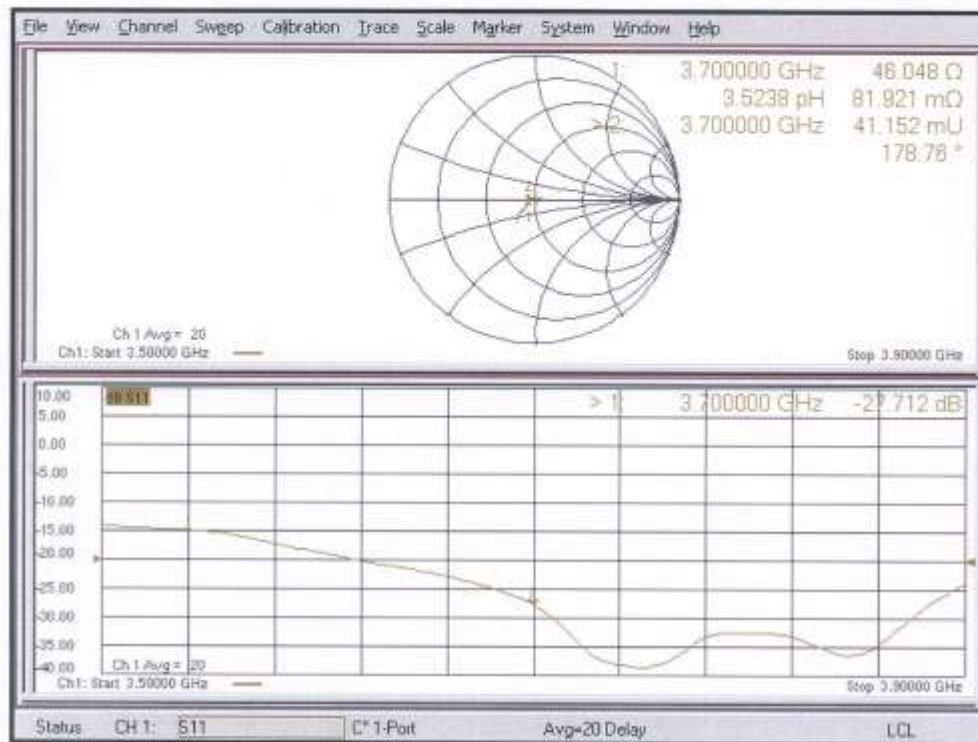
Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 74.1%

Maximum value of SAR (measured) = 12.7 W/kg



**Impedance Measurement Plot for Head TSL**



**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**S** Service suisse d'étalonnage  
**C** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **D3900V2-1019\_Jun21**

## CALIBRATION CERTIFICATE

| Object                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Calibration procedure(s)                                                          | Calibration date                  | 결<br>재                          | 담당자                    | 확인자        |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------|---------------------------------|------------------------|------------|-------------------|------|----------------------------|-----------------------|-----------------|------------|---------------------------------|--------|----------------------|------------|---------------------------|--------|----------------------|------------|---------------------------|--------|----------------------------|------------------|---------------------------|--------|-----------------------------|--------------------|---------------------------|--------|------------------------|----------|--------------------------------|--------|------|---------|--------------------------------|--------|---------------------|------|-----------------------|-----------------|--------------------|----------------|-----------------------------------|------------------------|-----------------------|----------------|-----------------------------------|------------------------|-----------------------|----------------|-----------------------------------|------------------------|-------------------------|------------|-----------------------------------|------------------------|---------------------------------|----------------|-----------------------------------|------------------------|
| D3900V2 - SN:1019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | QA CAL-22.v6<br>Calibration Procedure for SAR Validation Sources between 3-10 GHz | June 09, 2021                     | OL / 박정호<br>2021.06.09          | CS / 이준형<br>2021.06.09 |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| <p>This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).<br/>The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.</p> <p>All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity &lt; 70%.</p> <p>Calibration Equipment used (M&amp;TE critical for calibration)</p> <table border="1"> <thead> <tr> <th>Primary Standards</th> <th>ID #</th> <th>Cal Date (Certificate No.)</th> <th>Scheduled Calibration</th> </tr> </thead> <tbody> <tr> <td>Power meter NRP</td> <td>SN: 104778</td> <td>09-Apr-21 (No. 217-03291/03292)</td> <td>Apr-22</td> </tr> <tr> <td>Power sensor NRP-Z91</td> <td>SN: 103244</td> <td>09-Apr-21 (No. 217-03291)</td> <td>Apr-22</td> </tr> <tr> <td>Power sensor NRP-Z91</td> <td>SN: 103245</td> <td>09-Apr-21 (No. 217-03292)</td> <td>Apr-22</td> </tr> <tr> <td>Reference 20 dB Attenuator</td> <td>SN: BH9384 (20k)</td> <td>09-Apr-21 (No. 217-03343)</td> <td>Apr-22</td> </tr> <tr> <td>Type-N mismatch combination</td> <td>SN: 310982 / 06327</td> <td>09-Apr-21 (No. 217-03344)</td> <td>Apr-22</td> </tr> <tr> <td>Reference Probe EX3DV4</td> <td>SN: 3503</td> <td>30-Dec-20 (No. EX3-3503_Dec20)</td> <td>Dec-21</td> </tr> <tr> <td>DAE4</td> <td>SN: 601</td> <td>02-Nov-20 (No. DAE4-601_Nov20)</td> <td>Nov-21</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Secondary Standards</th> <th>ID #</th> <th>Check Date (in house)</th> <th>Scheduled Check</th> </tr> </thead> <tbody> <tr> <td>Power meter E4419B</td> <td>SN: G838512475</td> <td>30-Oct-14 (in house check Oct-20)</td> <td>In house check: Oct-22</td> </tr> <tr> <td>Power sensor HP 8481A</td> <td>SN: US37292783</td> <td>07-Oct-15 (in house check Oct-20)</td> <td>In house check: Oct-22</td> </tr> <tr> <td>Power sensor HP 8481A</td> <td>SN: MY41092317</td> <td>07-Oct-15 (in house check Oct-20)</td> <td>In house check: Oct-22</td> </tr> <tr> <td>RF generator R&amp;S SMT-06</td> <td>SN: 100972</td> <td>15-Jun-15 (in house check Oct-20)</td> <td>In house check: Oct-22</td> </tr> <tr> <td>Network Analyzer Agilent E8358A</td> <td>SN: US41080477</td> <td>31-Mar-14 (in house check Oct-20)</td> <td>In house check: Oct-21</td> </tr> </tbody> </table> |                                                                                   |                                   |                                 |                        |            | Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration | Power meter NRP | SN: 104778 | 09-Apr-21 (No. 217-03291/03292) | Apr-22 | Power sensor NRP-Z91 | SN: 103244 | 09-Apr-21 (No. 217-03291) | Apr-22 | Power sensor NRP-Z91 | SN: 103245 | 09-Apr-21 (No. 217-03292) | Apr-22 | Reference 20 dB Attenuator | SN: BH9384 (20k) | 09-Apr-21 (No. 217-03343) | Apr-22 | Type-N mismatch combination | SN: 310982 / 06327 | 09-Apr-21 (No. 217-03344) | Apr-22 | Reference Probe EX3DV4 | SN: 3503 | 30-Dec-20 (No. EX3-3503_Dec20) | Dec-21 | DAE4 | SN: 601 | 02-Nov-20 (No. DAE4-601_Nov20) | Nov-21 | Secondary Standards | ID # | Check Date (in house) | Scheduled Check | Power meter E4419B | SN: G838512475 | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 | Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 | Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 | RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 | Network Analyzer Agilent E8358A | SN: US41080477 | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |
| Primary Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ID #                                                                              | Cal Date (Certificate No.)        | Scheduled Calibration           |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power meter NRP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SN: 104778                                                                        | 09-Apr-21 (No. 217-03291/03292)   | Apr-22                          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power sensor NRP-Z91                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN: 103244                                                                        | 09-Apr-21 (No. 217-03291)         | Apr-22                          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power sensor NRP-Z91                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN: 103245                                                                        | 09-Apr-21 (No. 217-03292)         | Apr-22                          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Reference 20 dB Attenuator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SN: BH9384 (20k)                                                                  | 09-Apr-21 (No. 217-03343)         | Apr-22                          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Type-N mismatch combination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SN: 310982 / 06327                                                                | 09-Apr-21 (No. 217-03344)         | Apr-22                          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Reference Probe EX3DV4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SN: 3503                                                                          | 30-Dec-20 (No. EX3-3503_Dec20)    | Dec-21                          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| DAE4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN: 601                                                                           | 02-Nov-20 (No. DAE4-601_Nov20)    | Nov-21                          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Secondary Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ID #                                                                              | Check Date (in house)             | Scheduled Check                 |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power meter E4419B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SN: G838512475                                                                    | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power sensor HP 8481A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SN: US37292783                                                                    | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Power sensor HP 8481A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SN: MY41092317                                                                    | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| RF generator R&S SMT-06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SN: 100972                                                                        | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Network Analyzer Agilent E8358A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SN: US41080477                                                                    | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21          |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Calibrated by:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Name: Jeton Kastrati                                                              |                                   | Function: Laboratory Technician |                        | Signature: |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| Approved by:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Name: Katja Pokovic                                                               |                                   | Function: Technical Manager     |                        | Signature: |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |
| <p>Issued: June 10, 2021</p> <p>This calibration certificate shall not be reproduced except in full without written approval of the laboratory.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                   |                                   |                                 |                        |            |                   |      |                            |                       |                 |            |                                 |        |                      |            |                           |        |                      |            |                           |        |                            |                  |                           |        |                             |                    |                           |        |                        |          |                                |        |      |         |                                |        |                     |      |                       |                 |                    |                |                                   |                        |                       |                |                                   |                        |                       |                |                                   |                        |                         |            |                                   |                        |                                 |                |                                   |                        |

Certificate No: D3900V2-1019\_Jun21

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**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**S** Service suisse d'étalonnage  
**C** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

**Glossary:**

TSL tissue simulating liquid  
ConvF sensitivity in TSL / NORM x,y,z  
N/A not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.



### Measurement Conditions

DASY system configuration, as far as not given on page 1.

|                              |                              |                                  |
|------------------------------|------------------------------|----------------------------------|
| DASY Version                 | DASY5                        | V52.10.4                         |
| Extrapolation                | Advanced Extrapolation       |                                  |
| Phantom                      | Modular Flat Phantom V5.0    |                                  |
| Distance Dipole Center - TSL | 10 mm                        | with Spacer                      |
| Zoom Scan Resolution         | dx, dy = 4.0 mm, dz = 1.4 mm | Graded Ratio = 1.4 (Z direction) |
| Frequency                    | 3900 MHz $\pm$ 1 MHz         |                                  |

### Head TSL parameters at 3900 MHz

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 37,5           | 3.32 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 36.5 $\pm$ 6 % | 3.29 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ---            | ----                 |

### SAR result with Head TSL at 3900 MHz

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition:         |                              |
| SAR measured                                            | 100 mW input power | 7.07 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 70.4 W/kg $\pm$ 19.9 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 100 mW input power | 2.44 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 24,3 W/kg $\pm$ 19,5 % (k=2) |



#### Appendix (Additional assessments outside the scope of SCS 0108)

##### Antenna Parameters with Head TSL at 3900 MHz

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 48.3 $\Omega$ - 6.8 j $\Omega$ |
| Return Loss                          | - 22.9 dB                      |

##### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.103 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

##### Additional EUT Data

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|

## DASY5 Validation Report for Head TSL

Date: 09.06.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 3900 MHz; Type: D3900V2; Serial: D3900V2 - SN:1019**

Communication System: UID 0 - CW; Frequency: 3900 MHz

Medium parameters used:  $f = 3900$  MHz;  $\sigma = 3.29$  S/m;  $\epsilon_r = 36.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration;

- Probe: EX3DV4 - SN3503; ConvF(7.39, 7.39, 7.39) @ 3900 MHz; Calibrated: 30.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

**Dipole Calibration for Head Tissue/Pin=100 mW, d=10mm, f=3900MHz/Zoom Scan,**

**dist=1.4mm (8x8x8)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 72.33 V/m; Power Drift = 0.05 dB

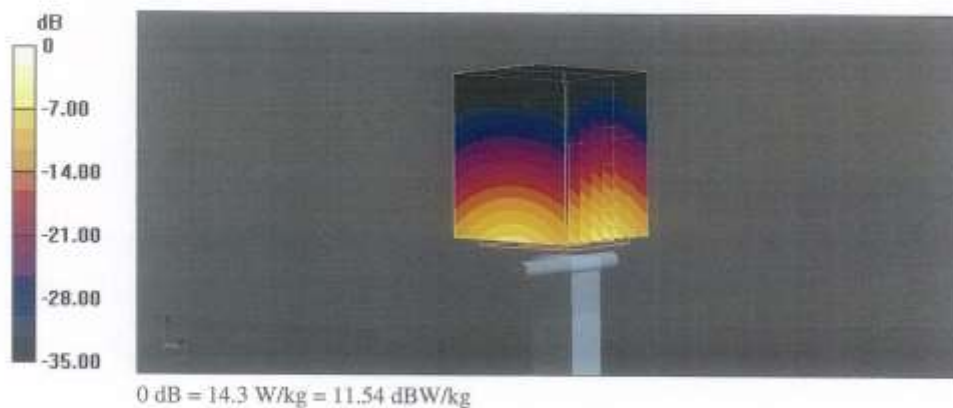
Peak SAR (extrapolated) = 20.6 W/kg

SAR(1 g) = 7.07 W/kg; SAR(10 g) = 2.44 W/kg

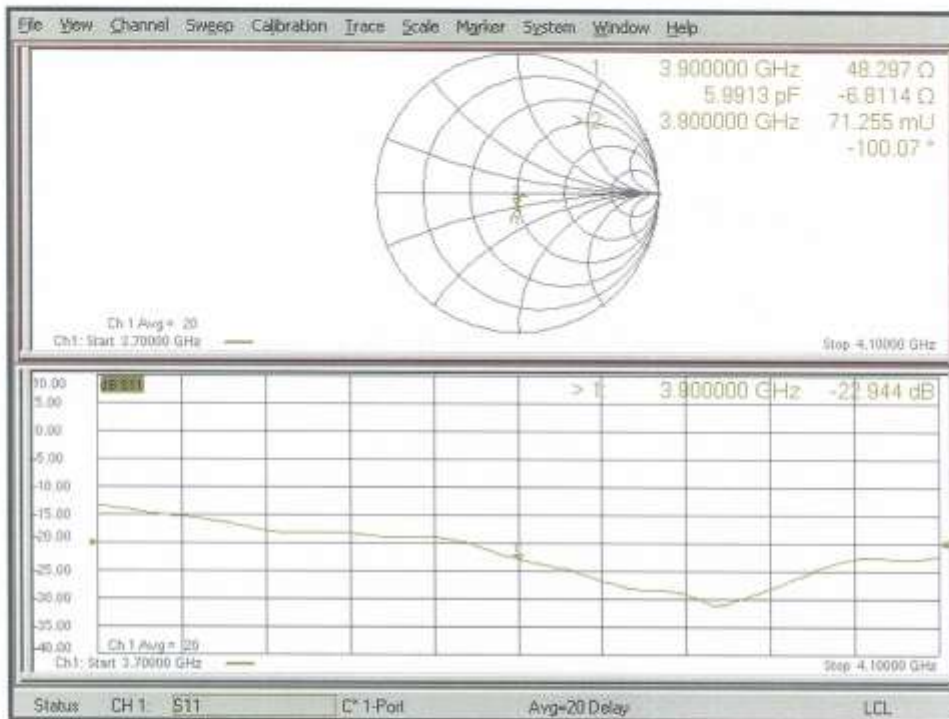
Smallest distance from peaks to all points 3 dB below = 7.4 mm

Ratio of SAR at M2 to SAR at M1 = 72.9%

Maximum value of SAR (measured) = 14.3 W/kg



Impedance Measurement Plot for Head TSL



**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**S** Service suisse d'étalonnage  
**C** Servizio svizzero di taratura  
**S** Swiss Calibration Service

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The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **D5GHzV2-1107\_Jul21**

## CALIBRATION CERTIFICATE

Object **D5GHzV2 - SN:1107**

Calibration procedure(s) **QA CAL-22.v6  
Calibration Procedure for SAR Validation Sources between 3-10 GHz**

Calibration date: **July 22, 2021**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature ( $22 \pm 3$ )°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards               | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|---------------------------------|--------------------|-----------------------------------|------------------------|
| Power meter NRP                 | SN: 104778         | 09-Apr-21 (No. 217-03291/03292)   | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103244         | 09-Apr-21 (No. 217-03291)         | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103245         | 09-Apr-21 (No. 217-03292)         | Apr-22                 |
| Reference 20 dB Attenuator      | SN: BH9994 (20k)   | 09-Apr-21 (No. 217-03343)         | Apr-22                 |
| Type-N mismatch combination     | SN: 310992 / 06327 | 09-Apr-21 (No. 217-03344)         | Apr-22                 |
| Reference Probe EX3DV4          | SN: 3503           | 30-Dec-20 (No. EX3-3503_Dec20)    | Dec-21                 |
| DAE4                            | SN: 601            | 02-Nov-20 (No. DAE4-601_Nov20)    | Nov-21                 |
| Secondary Standards             | ID #               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B              | SN: GB39512475     | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: US37292783     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: MY41092317     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| RF generator R&S SMT-06         | SN: 100972         | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |
| Network Analyzer Agilent E8358A | SN: US41080477     | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |

Calibrated by: **Claudio Leubler** (Name) **Laboratory Technician** (Function)  (Signature)

Approved by: **Katja Pokovic** (Name) **Technical Manager** (Function)  (Signature)

Issued: July 23, 2021

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D5GHzV2-1107\_Jul21

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|   |                      |                      |
|---|----------------------|----------------------|
| 결 | 담당자                  | 확인자                  |
| 재 | 01 박지은<br>2021.08.11 | 17 허정섭<br>2021.08.11 |

**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
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**S** Swiss Calibration Service

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Accreditation No.: **SCS 0108**

**Glossary:**

|       |                                 |
|-------|---------------------------------|
| TSL   | tissue simulating liquid        |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A   | not applicable or not measured  |

**Calibration is Performed According to the Following Standards:**

- IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss:** This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.



### Measurement Conditions

DASY system configuration, as far as not given on page 1.

|                              |                                                                      |                                  |
|------------------------------|----------------------------------------------------------------------|----------------------------------|
| DASY Version                 | DASY52                                                               | V52.10.4                         |
| Extrapolation                | Advanced Extrapolation                                               |                                  |
| Phantom                      | Modular Flat Phantom VS.0                                            |                                  |
| Distance Dipole Center - TSL | 10 mm                                                                | with Spacer                      |
| Zoom Scan Resolution         | dx, dy = 4.0 mm, dz = 1.4 mm                                         | Graded Ratio = 1.4 (Z direction) |
| Frequency                    | 5250 MHz $\pm$ 1 MHz<br>5600 MHz $\pm$ 1 MHz<br>5750 MHz $\pm$ 1 MHz |                                  |

### Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 35.9           | 4.71 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 35.6 $\pm$ 6 % | 4.60 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ----           | ----                 |

### SAR result with Head TSL at 5250 MHz

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition          |                              |
| SAR measured                                            | 100 mW input power | 8.08 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 80.6 W/kg $\pm$ 19.9 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 100 mW input power | 2.33 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 23.2 W/kg $\pm$ 19.5 % (k=2) |

### Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 35.5           | 5.07 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 35.1 $\pm$ 6 % | 4.95 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ----           | ----                 |

### SAR result with Head TSL at 5600 MHz

|                                                         |                    |                              |
|---------------------------------------------------------|--------------------|------------------------------|
| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition          |                              |
| SAR measured                                            | 100 mW input power | 8.44 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 84.2 W/kg $\pm$ 19.9 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                              |
| SAR measured                                            | 100 mW input power | 2.43 W/kg                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 24.2 W/kg $\pm$ 19.5 % (k=2) |

#### Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Head TSL parameters             | 22.0 °C         | 35.4         | 5.22 mho/m       |
| Measured Head TSL parameters            | (22.0 ± 0.2) °C | 34.8 ± 6 %   | 5.11 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C        | ----         | ----             |

#### SAR result with Head TSL at 5750 MHz

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                                 |
|-------------------------------------------------------|--------------------|---------------------------------|
| SAR measured                                          | 100 mW input power | 8.13 W/kg                       |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | <b>80.9 W/kg ± 19.9 % (k=2)</b> |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                                 |
|---------------------------------------------------------|--------------------|---------------------------------|
| SAR measured                                            | 100 mW input power | 2.34 W/kg                       |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | <b>23.3 W/kg ± 19.5 % (k=2)</b> |

#### Appendix (Additional assessments outside the scope of SCS 0108)

##### Antenna Parameters with Head TSL at 5250 MHz

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 48.4 $\Omega$ - 6.5 j $\Omega$ |
| Return Loss                          | - 23.4 dB                      |

##### Antenna Parameters with Head TSL at 5600 MHz

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 54.2 $\Omega$ - 2.6 j $\Omega$ |
| Return Loss                          | - 26.5 dB                      |

##### Antenna Parameters with Head TSL at 5750 MHz

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 56.5 $\Omega$ - 2.9 j $\Omega$ |
| Return Loss                          | - 23.5 dB                      |

#### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.199 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### Additional EUT Data

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|

**DASY5 Validation Report for Head TSL**

Date: 22.07.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1107**

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz

Medium parameters used:  $f = 5250$  MHz;  $\sigma = 4.6$  S/m;  $\epsilon_r = 35.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>;Medium parameters used:  $f = 5600$  MHz;  $\sigma = 4.95$  S/m;  $\epsilon_r = 35.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>;Medium parameters used:  $f = 5750$  MHz;  $\sigma = 5.11$  S/m;  $\epsilon_r = 34.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.5, 5.5, 5.5) @ 5250 MHz, ConvF(5.1, 5.1, 5.1) @ 5600 MHz, ConvF(5.08, 5.08, 5.08) @ 5750 MHz; Calibrated: 30.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan,****dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 77.05 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 27.4 W/kg

**SAR(1 g) = 8.08 W/kg; SAR(10 g) = 2.33 W/kg**

Smallest distance from peaks to all points 3 dB below = 7.5 mm

Ratio of SAR at M2 to SAR at M1 = 71.4%

Maximum value of SAR (measured) = 18.3 W/kg

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan,****dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 76.80 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 31.0 W/kg

**SAR(1 g) = 8.44 W/kg; SAR(10 g) = 2.43 W/kg**

Smallest distance from peaks to all points 3 dB below = 7.5 mm

Ratio of SAR at M2 to SAR at M1 = 68.7%

Maximum value of SAR (measured) = 19.7 W/kg

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan,****dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

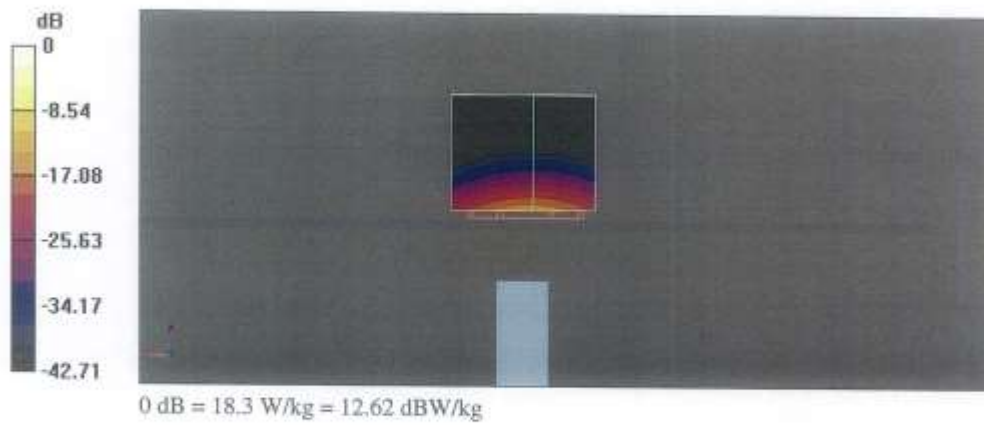
Reference Value = 74.42 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 31.4 W/kg

**SAR(1 g) = 8.13 W/kg; SAR(10 g) = 2.34 W/kg**

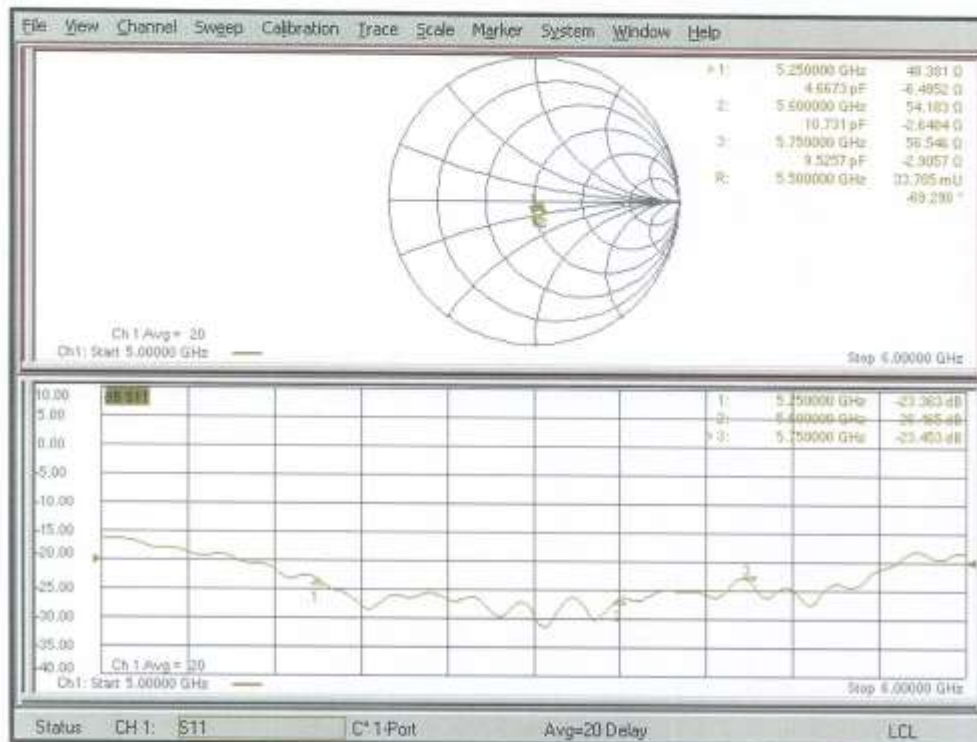
Smallest distance from peaks to all points 3 dB below = 7.6 mm

Ratio of SAR at M2 to SAR at M1 = 66.9%  
Maximum value of SAR (measured) = 19.3 W/kg





Impedance Measurement Plot for Head TSL



## Appendix H. – Power reduction verification

Per the May 2017 TCBC Workshop notes, demonstration of proper functioning of the power reduction mechanism is required to support the corresponding SAR Configurations.

The verification process was divided into two parts:

- 1) Evaluation of output power levels for individual triggering mechanism
- 2) Evaluation of the triggering distances for proximity-based sensors.

### 1. Power Reduction Verification for Main Ant#1, #2, Sub Ant #2, #3

The Power verification was performed according to the following procedure:

1. A base station simulator was used to establish a conducted RF connection and output power was monitored. The Power measurements were conformed to be within expected tolerances for all states before and after a power reduction mechanism was triggered.
2. Step 1 was repeated for all relevant modes and frequency bands for the mechanism being investigated.
3. Step 1 and 2 were repeated for all individual power reduction mechanism and combinations thereof. For the combination cases, one mechanism was switched to a “triggered” state at a time; powers were conformed to be within tolerance after each additional mechanism was activated.

### Main Antenna Verification Summary

| Mechanism(s)          | Mode/Band              | Power reduction Mechanism   |                              |                              |
|-----------------------|------------------------|-----------------------------|------------------------------|------------------------------|
|                       |                        | Un-triggered<br>(Max Power) | Triggered<br>(Reduced Power) | Triggered<br>(Reduced Power) |
| Grip                  | GSM 1900 GPRS 1Tx      | 30.40                       |                              | 27.12                        |
| Grip                  | GSM 1900 GPRS 2Tx      | 27.82                       |                              | 24.71                        |
| Grip                  | GSM 1900 GPRS 3Tx      | 26.06                       |                              | 22.96                        |
| Grip                  | GSM 1900 GPRS 4Tx      | 25.13                       |                              | 21.63                        |
| Grip                  | WCDMA B2               | 24.36                       |                              | 21.27                        |
| Grip                  | WCDMA B4               | 23.90                       |                              | 20.79                        |
| Grip                  | LTE Band 2             | 23.67                       |                              | 19.62                        |
| Grip                  | LTE Band 4             | 23.03                       |                              | 17.74                        |
| Grip                  | LTE Band 7             | 23.81                       |                              | 20.88                        |
| Grip                  | LTE Band 25            | 23.34                       |                              | 19.39                        |
| Grip                  | LTE Band 30            | 22.65                       |                              | 16.41                        |
| Grip                  | LTE Band 38            | 23.73                       |                              | 20.36                        |
| Grip                  | LTE Band 41(PC3)       | 23.43                       |                              | 20.65                        |
| Grip                  | LTE Band 41(PC2)       | 26.12                       |                              | 20.98                        |
| Grip                  | LTE Band 66            | 23.49                       |                              | 19.47                        |
| Grip                  | NR Band n2             | 22.83                       |                              | 20.34                        |
| Grip                  | NR Band n25            | 23.11                       |                              | 20.24                        |
| Grip                  | NR Band n30            | 22.81                       |                              | 16.45                        |
| Grip                  | NR Band n41(PC3) Lower | 24.53                       |                              | 20.40                        |
| Grip                  | NR Band n41(PC2) Lower | 25.57                       |                              | 20.41                        |
| Grip                  | NR Band n66            | 23.27                       |                              | 19.85                        |
| Hotspot On            | GSM 1900 GPRS 1Tx      | 30.40                       | 27.03                        |                              |
| Hotspot On            | GSM 1900 GPRS 2Tx      | 27.82                       | 24.50                        |                              |
| Hotspot On            | GSM 1900 GPRS 3Tx      | 26.06                       | 22.58                        |                              |
| Hotspot On            | GSM 1900 GPRS 4Tx      | 25.13                       | 21.70                        |                              |
| Hotspot On            | WCDMA B2               | 24.36                       | 21.24                        |                              |
| Hotspot On            | WCDMA B4               | 23.90                       | 20.78                        |                              |
| Hotspot On            | LTE Band 2             | 23.67                       | 19.60                        |                              |
| Hotspot On            | LTE Band 4             | 23.03                       | 17.69                        |                              |
| Hotspot On            | LTE Band 7             | 23.81                       | 20.74                        |                              |
| Hotspot On            | LTE Band 25            | 23.34                       | 19.14                        |                              |
| Hotspot On            | LTE Band 30            | 22.65                       | 16.33                        |                              |
| Hotspot On            | LTE Band 38            | 23.73                       | 20.29                        |                              |
| Hotspot On            | LTE Band 41(PC3)       | 23.43                       | 20.64                        |                              |
| Hotspot On            | LTE Band 41(PC2)       | 26.12                       | 20.87                        |                              |
| Hotspot On            | LTE Band 48            | 21.68                       | 19.15                        |                              |
| Hotspot On            | LTE Band 66            | 23.49                       | 19.52                        |                              |
| Hotspot On            | NR Band n2             | 22.83                       | 20.33                        |                              |
| Hotspot On            | NR Band n25            | 23.11                       | 20.20                        |                              |
| Hotspot On            | NR Band n30            | 22.81                       | 16.44                        |                              |
| Hotspot On            | NR Band n41(PC3) Upper | 24.67                       | 20.41                        |                              |
| Hotspot On            | NR Band n41(PC3) Lower | 24.53                       | 20.38                        |                              |
| Hotspot On            | NR Band n41(PC2) Lower | 25.57                       | 20.45                        |                              |
| Hotspot On            | NR Band n66            | 23.27                       | 19.85                        |                              |
| Hotspot On            | NR Band n77 PC2        | 26.39                       | 17.99                        |                              |
| Hotspot On            | NR Band n77 DoD PC2    | 26.26                       | 17.93                        |                              |
| Hotspot On            | NR Band n77 PC3        | 24.98                       | 17.97                        |                              |
| Hotspot On            | NR Band n77 DoD PC3    | 24.82                       | 17.88                        |                              |
| Hotspot On, Then Grip | GSM 1900 GPRS 1Tx      | 30.40                       | 27.03                        | 27.03                        |

|                       |                        |       |       |       |
|-----------------------|------------------------|-------|-------|-------|
| Hotspot On, Then Grip | GSM 1900 GPRS 2Tx      | 27.82 | 24.50 | 24.50 |
| Hotspot On, Then Grip | GSM 1900 GPRS 3Tx      | 26.06 | 22.58 | 22.58 |
| Hotspot On, Then Grip | GSM 1900 GPRS 4Tx      | 25.13 | 21.70 | 21.70 |
| Hotspot On, Then Grip | WCDMA B2               | 24.36 | 21.24 | 21.24 |
| Hotspot On, Then Grip | WCDMA B4               | 23.90 | 20.78 | 20.78 |
| Hotspot On, Then Grip | LTE Band 2             | 23.67 | 19.60 | 19.60 |
| Hotspot On, Then Grip | LTE Band 4             | 23.03 | 17.69 | 17.69 |
| Hotspot On, Then Grip | LTE Band 7             | 23.81 | 20.74 | 20.99 |
| Hotspot On, Then Grip | LTE Band 25            | 23.34 | 19.14 | 19.14 |
| Hotspot On, Then Grip | LTE Band 30            | 22.65 | 16.33 | 16.33 |
| Hotspot On, Then Grip | LTE Band 38            | 23.73 | 20.29 | 20.29 |
| Hotspot On, Then Grip | LTE Band 41(PC3)       | 23.43 | 20.64 | 20.64 |
| Hotspot On, Then Grip | LTE Band 41(PC2)       | 26.12 | 20.87 | 20.87 |
| Hotspot On, Then Grip | LTE Band 48            | 21.68 | 19.15 | 19.15 |
| Hotspot On, Then Grip | LTE Band 66            | 23.49 | 19.52 | 19.52 |
| Hotspot On, Then Grip | NR Band n2             | 22.83 | 20.33 | 20.33 |
| Hotspot On, Then Grip | NR Band n25            | 23.11 | 20.20 | 20.20 |
| Hotspot On, Then Grip | NR Band n30            | 22.81 | 16.44 | 16.44 |
| Hotspot On, Then Grip | NR Band n41(PC3) Upper | 24.67 | 20.41 | 20.41 |
| Hotspot On, Then Grip | NR Band n41(PC3) Lower | 24.53 | 20.38 | 20.36 |
| Hotspot On, Then Grip | NR Band n41(PC2) Lower | 25.57 | 20.45 | 20.45 |
| Hotspot On, Then Grip | NR Band n66            | 23.27 | 19.85 | 19.85 |
| Hotspot On, Then Grip | NR Band n77 PC2        | 26.39 | 17.99 | 17.99 |
| Hotspot On, Then Grip | NR Band n77 DoD PC2    | 26.26 | 17.93 | 17.93 |
| Hotspot On, Then Grip | NR Band n77 PC3        | 24.98 | 17.97 | 17.97 |
| Hotspot On, Then Grip | NR Band n77 DoD PC3    | 24.82 | 17.88 | 17.88 |

| Mechanism(s)          | Mode/Band              | Power reduction Mechanism   |                              |                              |
|-----------------------|------------------------|-----------------------------|------------------------------|------------------------------|
|                       |                        | Un-triggered<br>(Max Power) | Triggered<br>(Reduced Power) | Triggered<br>(Reduced Power) |
| Grip, then Hotspot On | GSM 1900 GPRS 1Tx      | 30.40                       | 27.12                        | 27.03                        |
| Grip, then Hotspot On | GSM 1900 GPRS 2Tx      | 27.82                       | 24.71                        | 24.50                        |
| Grip, then Hotspot On | GSM 1900 GPRS 3Tx      | 26.06                       | 22.96                        | 22.58                        |
| Grip, then Hotspot On | GSM 1900 GPRS 4Tx      | 25.13                       | 21.63                        | 21.70                        |
| Grip, then Hotspot On | WCDMA B2               | 24.36                       | 21.27                        | 21.24                        |
| Grip, then Hotspot On | WCDMA B4               | 23.90                       | 20.79                        | 20.78                        |
| Grip, then Hotspot On | LTE Band 2             | 23.67                       | 19.62                        | 19.60                        |
| Grip, then Hotspot On | LTE Band 4             | 23.03                       | 17.74                        | 17.69                        |
| Grip, then Hotspot On | LTE Band 7             | 23.81                       | 20.99                        | 20.99                        |
| Grip, then Hotspot On | LTE Band 25            | 23.34                       | 19.39                        | 19.14                        |
| Grip, then Hotspot On | LTE Band 30            | 22.65                       | 16.41                        | 16.33                        |
| Grip, then Hotspot On | LTE Band 38            | 23.73                       | 20.36                        | 20.29                        |
| Grip, then Hotspot On | LTE Band 41(PC3)       | 23.43                       | 20.65                        | 20.64                        |
| Grip, then Hotspot On | LTE Band 41(PC2)       | 26.12                       | 20.98                        | 20.87                        |
| Grip, then Hotspot On | LTE Band 48            | 21.68                       | 21.68                        | 19.15                        |
| Grip, then Hotspot On | LTE Band 66            | 23.49                       | 19.47                        | 19.52                        |
| Grip, then Hotspot On | NR Band n2             | 22.83                       | 20.34                        | 20.33                        |
| Grip, then Hotspot On | NR Band n25            | 23.11                       | 20.24                        | 20.20                        |
| Grip, then Hotspot On | NR Band n30            | 22.81                       | 16.45                        | 16.44                        |
| Grip, then Hotspot On | NR Band n41(PC3) Upper | 24.67                       | 24.67                        | 20.49                        |
| Grip, then Hotspot On | NR Band n41(PC3) Lower | 24.53                       | 20.40                        | 20.36                        |
| Grip, then Hotspot On | NR Band n41(PC2) Lower | 25.57                       | 20.41                        | 20.45                        |
| Grip, then Hotspot On | NR Band n66            | 23.27                       | 19.85                        | 19.85                        |
| Grip, then Hotspot On | NR Band n77 PC2        | 26.39                       | 26.39                        | 17.99                        |
| Grip, then Hotspot On | NR Band n77 DoD PC2    | 26.26                       | 26.26                        | 17.93                        |
| Grip, then Hotspot On | NR Band n77 PC3        | 24.98                       | 24.98                        | 17.97                        |
| Grip, then Hotspot On | NR Band n77 DoD PC3    | 24.82                       | 24.82                        | 17.88                        |



## 1.1. Distance Verification Procedure

Procedures for determining proximity sensor triggering distances

(KDB 616217D04v01r02§6.2)

The distance verification procedure was performed according to the following procedure:

1. A base station simulator was used to establish an RF connection and to monitor the power levels. The device being tested was placed below the relevant section of the phantom with the relevant side or edge of the device facing toward the phantom.
2. The device was moved toward and away from the phantom to determine the distance at which the mechanism triggers and the output power is reduced per KDB Publication 616217 D04v01r02 .Each applicable test position was evaluated. The distance were conformed to be the same or larger (more conservative) than the minimum distances provided by the manufacturer.
3. Step 1 and 2 were repeated for the relevant modes, as appropriate
4. Steps1 through 3 were repeated for all distance-based power reduction mechanisms.

For detailed measurement conducted power results, please refer to the Section .11



Proximity Sensor Trigger Distance Assessment KDB 616217 D04§6.2

### LEGEND

- Direction of DUT travel for determination of power reduction triggering point
- Direction of DUT travel for determination of full power resumption triggering point

Main Ant#1

| Tissue simulating liquid | Triggering Distance        |                               |                            |                               |                            |                               |
|--------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|
|                          | Rear                       |                               | Front                      |                               | Bottom                     |                               |
|                          | Moving toward phantom [mm] | Moving away from phantom [mm] | Moving toward phantom [mm] | Moving away from phantom [mm] | Moving toward phantom [mm] | Moving away from phantom [mm] |
| 1800MHz Tissue           | 12                         | 13                            | 8                          | 9                             | 14                         | 15                            |
| 1900MHz Tissue           | 12                         | 13                            | 8                          | 9                             | 14                         | 15                            |

Distance Measurement verification for Proximity sensor

Rear side (Main Ant#1) – EUT Moving toward (trigger) to the Phantom

| Mode              | Distance to DUT Output power (dBm) |        |        |        |        |        |        |        |       |       |
|-------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
|                   | 17[mm]                             | 16[mm] | 15[mm] | 14[mm] | 13[mm] | 12[mm] | 11[mm] | 10[mm] | 9[mm] | 8[mm] |
| GSM 1900 GPRS 1Tx | 30.46                              | 30.44  | 30.44  | 30.44  | 30.36  | 27.08  | 27.07  | 27.14  | 27.15 | 27.06 |
| GSM 1900 GPRS 2Tx | 27.84                              | 27.79  | 27.81  | 27.83  | 27.73  | 24.73  | 24.73  | 24.66  | 24.65 | 24.62 |
| GSM 1900 GPRS 3Tx | 26.08                              | 25.96  | 25.99  | 26.1   | 25.99  | 22.99  | 23.02  | 22.86  | 22.99 | 23.03 |
| GSM 1900 GPRS 4Tx | 25.15                              | 25.11  | 25.17  | 25.2   | 25.14  | 21.55  | 21.69  | 21.54  | 21.6  | 21.64 |
| WCDMA B2          | 24.36                              | 24.38  | 24.31  | 24.29  | 24.39  | 21.23  | 21.3   | 21.32  | 21.2  | 21.18 |
| WCDMA B4          | 23.8                               | 23.99  | 23.88  | 23.83  | 24     | 20.78  | 20.81  | 20.89  | 20.75 | 20.81 |
| LTE Band 2        | 23.61                              | 23.61  | 23.6   | 23.65  | 23.64  | 19.7   | 19.58  | 19.53  | 19.67 | 19.7  |
| LTE Band 4        | 23.06                              | 23.08  | 23.08  | 22.96  | 23.02  | 17.76  | 17.75  | 17.79  | 17.71 | 17.73 |
| LTE Band 25       | 23.24                              | 23.28  | 23.43  | 23.3   | 23.31  | 19.26  | 19.21  | 19.1   | 19.25 | 19.17 |
| LTE Band 66       | 23.55                              | 23.44  | 23.45  | 23.59  | 23.52  | 19.48  | 19.45  | 19.54  | 19.57 | 19.55 |
| NR Band n2        | 22.76                              | 22.85  | 22.75  | 22.72  | 22.75  | 20.31  | 20.35  | 20.27  | 20.36 | 20.27 |
| NR Band n25       | 23.06                              | 23.06  | 23.2   | 23.19  | 23.11  | 20.26  | 20.26  | 20.33  | 20.32 | 20.31 |
| NR Band n66       | 23.32                              | 23.19  | 23.18  | 23.36  | 23.17  | 19.74  | 19.78  | 19.76  | 19.78 | 19.74 |

### Rear side (Main Ant#1) – EUT Moving away (Release) from the Phantom

| Mode              | Distance to DUT Output power (dBm) |        |        |        |        |        |        |        |        |        |
|-------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                   | 9[mm]                              | 10[mm] | 11[mm] | 12[mm] | 13[mm] | 14[mm] | 15[mm] | 16[mm] | 17[mm] | 18[mm] |
| GSM 1900 GPRS 1Tx | 27.2                               | 27.08  | 27.05  | 27.12  | 27.1   | 30.45  | 30.37  | 30.35  | 30.42  | 30.4   |
| GSM 1900 GPRS 2Tx | 24.63                              | 24.65  | 24.69  | 24.74  | 24.7   | 27.72  | 27.91  | 27.86  | 27.79  | 27.83  |
| GSM 1900 GPRS 3Tx | 23.06                              | 23.03  | 23.03  | 22.86  | 22.99  | 26.01  | 26.13  | 26.04  | 26.11  | 26.08  |
| GSM 1900 GPRS 4Tx | 21.63                              | 21.58  | 21.73  | 21.54  | 21.6   | 25.11  | 25.22  | 25.11  | 25.14  | 25.23  |
| WCDMA B2          | 21.2                               | 21.28  | 21.34  | 21.19  | 21.26  | 24.38  | 24.39  | 24.45  | 24.46  | 24.42  |
| WCDMA B4          | 20.69                              | 20.77  | 20.76  | 20.77  | 20.86  | 23.85  | 23.84  | 23.87  | 23.97  | 24     |
| LTE Band 2        | 19.52                              | 19.66  | 19.54  | 19.63  | 19.71  | 23.58  | 23.63  | 23.66  | 23.64  | 23.75  |
| LTE Band 4        | 17.64                              | 17.84  | 17.73  | 17.79  | 17.83  | 22.96  | 22.95  | 23     | 22.93  | 22.93  |
| LTE Band 25       | 19.1                               | 19.11  | 19.27  | 19.19  | 19.09  | 23.29  | 23.33  | 23.38  | 23.44  | 23.35  |
| LTE Band 66       | 19.46                              | 19.5   | 19.46  | 19.55  | 19.45  | 23.54  | 23.44  | 23.58  | 23.5   | 23.49  |
| NR Band n2        | 20.34                              | 20.33  | 20.25  | 20.32  | 20.28  | 22.81  | 22.73  | 22.73  | 22.8   | 22.74  |
| NR Band n25       | 20.24                              | 20.16  | 20.21  | 20.18  | 20.29  | 23.03  | 23.2   | 23.09  | 23.06  | 23.03  |
| NR Band n66       | 19.74                              | 19.78  | 19.77  | 19.75  | 19.72  | 23.35  | 23.22  | 23.22  | 23.36  | 23.3   |

Based on the most conservative measured triggering distance of 12mm, additional Phablet SAR measurements were required at 11mm from rear side for the above modes.

### Front side (Main Ant#1) – EUT Moving toward (trigger) to the Phantom

| Mode              | Distance to DUT Output power (dBm) |        |        |        |       |       |       |       |       |       |
|-------------------|------------------------------------|--------|--------|--------|-------|-------|-------|-------|-------|-------|
|                   | 13[mm]                             | 12[mm] | 11[mm] | 10[mm] | 9[mm] | 8[mm] | 7[mm] | 6[mm] | 5[mm] | 4[mm] |
| GSM 1900 GPRS 1Tx | 30.39                              | 30.42  | 30.31  | 30.38  | 30.32 | 27.03 | 27.15 | 27.21 | 27.06 | 27.11 |
| GSM 1900 GPRS 2Tx | 27.86                              | 27.79  | 27.81  | 27.87  | 27.88 | 24.73 | 24.66 | 24.76 | 24.72 | 24.68 |
| GSM 1900 GPRS 3Tx | 26.14                              | 26.02  | 26.16  | 26.02  | 26.12 | 22.91 | 22.89 | 22.93 | 22.96 | 22.95 |
| GSM 1900 GPRS 4Tx | 25.04                              | 25.03  | 25.09  | 25.14  | 25.17 | 21.67 | 21.64 | 21.63 | 21.66 | 21.68 |
| WCDMA B2          | 24.42                              | 24.3   | 24.4   | 24.42  | 24.28 | 21.26 | 21.26 | 21.21 | 21.33 | 21.27 |
| WCDMA B4          | 23.96                              | 23.94  | 23.95  | 23.98  | 23.88 | 20.84 | 20.76 | 20.87 | 20.69 | 20.82 |
| LTE Band 2        | 23.58                              | 23.62  | 23.75  | 23.74  | 23.75 | 19.71 | 19.53 | 19.62 | 19.53 | 19.69 |
| LTE Band 4        | 22.94                              | 23.05  | 23.1   | 23.01  | 23.04 | 17.83 | 17.66 | 17.7  | 17.74 | 17.68 |
| LTE Band 25       | 23.3                               | 23.36  | 23.26  | 23.25  | 23.24 | 19.26 | 19.14 | 19.2  | 19.25 | 19.13 |
| LTE Band 66       | 23.56                              | 23.53  | 23.43  | 23.49  | 23.42 | 19.5  | 19.38 | 19.52 | 19.55 | 19.41 |
| NR Band n2        | 22.84                              | 22.92  | 22.81  | 22.72  | 22.91 | 20.37 | 20.44 | 20.27 | 20.37 | 20.43 |
| NR Band n25       | 23.08                              | 23.12  | 23.04  | 23.2   | 23.16 | 20.19 | 20.33 | 20.21 | 20.28 | 20.16 |
| NR Band n66       | 23.27                              | 23.35  | 23.19  | 23.23  | 23.2  | 19.74 | 19.78 | 19.79 | 19.79 | 19.78 |

### Front side (Main Ant#1) – EUT Moving away (Release) from the Phantom

| Mode              | Distance to DUT Output power (dBm) |       |       |       |       |        |        |        |        |        |
|-------------------|------------------------------------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
|                   | 5[mm]                              | 6[mm] | 7[mm] | 8[mm] | 9[mm] | 10[mm] | 11[mm] | 12[mm] | 13[mm] | 14[mm] |
| GSM 1900 GPRS 1Tx | 27.02                              | 27.1  | 27.02 | 27.12 | 27.16 | 30.48  | 30.38  | 30.41  | 30.44  | 30.47  |
| GSM 1900 GPRS 2Tx | 24.7                               | 24.79 | 24.8  | 24.81 | 24.62 | 27.92  | 27.85  | 27.83  | 27.8   | 27.75  |
| GSM 1900 GPRS 3Tx | 22.97                              | 23.02 | 22.97 | 22.86 | 22.99 | 26.09  | 26.08  | 26.1   | 26.15  | 26.06  |
| GSM 1900 GPRS 4Tx | 21.56                              | 21.72 | 21.68 | 21.64 | 21.6  | 25.13  | 25.09  | 25.05  | 25.22  | 25.23  |
| WCDMA B2          | 21.18                              | 21.19 | 21.35 | 21.36 | 21.23 | 24.32  | 24.37  | 24.32  | 24.43  | 24.37  |
| WCDMA B4          | 20.88                              | 20.75 | 20.88 | 20.69 | 20.7  | 23.88  | 23.86  | 23.96  | 23.91  | 23.96  |
| LTE Band 2        | 19.56                              | 19.7  | 19.62 | 19.6  | 19.72 | 23.67  | 23.58  | 23.65  | 23.58  | 23.61  |
| LTE Band 4        | 17.69                              | 17.69 | 17.8  | 17.79 | 17.78 | 22.95  | 23.09  | 23.12  | 22.96  | 23.12  |
| LTE Band 25       | 19.24                              | 19.15 | 19.17 | 19.21 | 19.26 | 23.29  | 23.37  | 23.3   | 23.43  | 23.33  |
| LTE Band 66       | 19.42                              | 19.39 | 19.42 | 19.57 | 19.43 | 23.41  | 23.55  | 23.51  | 23.55  | 23.4   |
| NR Band n2        | 20.3                               | 20.42 | 20.43 | 20.43 | 20.35 | 22.88  | 22.75  | 22.85  | 22.76  | 22.82  |
| NR Band n25       | 20.17                              | 20.28 | 20.28 | 20.27 | 20.2  | 23.03  | 23.12  | 23.18  | 23.04  | 23.02  |
| NR Band n66       | 19.76                              | 19.73 | 19.73 | 19.75 | 19.75 | 23.28  | 23.18  | 23.26  | 23.26  | 23.17  |

Based on the most conservative measured triggering distance of 8mm, additional Phablet SAR measurements were required at 7mm from front side for the above modes



### Bottom side (Main Ant#1) – EUT Moving toward (Release) from the Phantom

| Mode              | Distance to DUT Output power (dBm) |        |        |        |        |        |        |        |        |        |
|-------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                   | 19[mm]                             | 18[mm] | 17[mm] | 16[mm] | 15[mm] | 14[mm] | 13[mm] | 12[mm] | 11[mm] | 10[mm] |
| GSM 1900 GPRS 1Tx | 30.46                              | 30.37  | 30.38  | 30.4   | 30.32  | 27.19  | 27.1   | 27.09  | 27.1   | 27.08  |
| GSM 1900 GPRS 2Tx | 27.89                              | 27.8   | 27.88  | 27.79  | 27.79  | 24.77  | 24.8   | 24.74  | 24.73  | 24.69  |
| GSM 1900 GPRS 3Tx | 26.05                              | 26.14  | 25.99  | 26.12  | 26.12  | 23.06  | 22.96  | 22.99  | 22.95  | 23.02  |
| GSM 1900 GPRS 4Tx | 25.1                               | 25.14  | 25.18  | 25.06  | 25.13  | 21.6   | 21.63  | 21.6   | 21.6   | 21.65  |
| WCDMA B2          | 24.27                              | 24.37  | 24.46  | 24.37  | 24.3   | 21.33  | 21.24  | 21.29  | 21.22  | 21.17  |
| WCDMA B4          | 23.8                               | 23.88  | 23.88  | 23.84  | 23.82  | 20.72  | 20.77  | 20.75  | 20.83  | 20.88  |
| LTE Band 2        | 23.61                              | 23.65  | 23.75  | 23.61  | 23.59  | 19.7   | 19.54  | 19.64  | 19.62  | 19.53  |
| LTE Band 4        | 23.07                              | 22.96  | 23.05  | 23.06  | 23.08  | 17.68  | 17.71  | 17.83  | 17.73  | 17.67  |
| LTE Band 25       | 23.29                              | 23.34  | 23.41  | 23.27  | 23.37  | 19.16  | 19.22  | 19.25  | 19.27  | 19.19  |
| LTE Band 66       | 23.59                              | 23.41  | 23.55  | 23.56  | 23.52  | 19.55  | 19.5   | 19.37  | 19.52  | 19.41  |
| NR Band n2        | 22.83                              | 22.8   | 22.88  | 22.89  | 22.72  | 20.44  | 20.39  | 20.38  | 20.26  | 20.34  |
| NR Band n25       | 23.2                               | 23.13  | 23.21  | 23.05  | 23.05  | 20.21  | 20.15  | 20.28  | 20.2   | 20.17  |
| NR Band n66       | 23.36                              | 23.26  | 23.26  | 23.35  | 23.28  | 19.73  | 19.79  | 19.73  | 19.75  | 19.75  |

### Bottom side (Main Ant#1) – EUT Moving away (trigger) to the Phantom

| Mode              | Distance to DUT Output power (dBm) |        |        |        |        |        |        |        |        |        |
|-------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                   | 11[mm]                             | 12[mm] | 13[mm] | 14[mm] | 15[mm] | 16[mm] | 17[mm] | 18[mm] | 19[mm] | 20[mm] |
| GSM 1900 GPRS 1Tx | 27.19                              | 27.11  | 27.17  | 27.21  | 27.15  | 30.42  | 30.34  | 30.37  | 30.5   | 30.42  |
| GSM 1900 GPRS 2Tx | 24.8                               | 24.66  | 24.77  | 24.76  | 24.68  | 27.79  | 27.9   | 27.9   | 27.75  | 27.72  |
| GSM 1900 GPRS 3Tx | 22.86                              | 23.05  | 22.91  | 22.93  | 23.02  | 26.09  | 26.06  | 26.15  | 25.96  | 26.1   |
| GSM 1900 GPRS 4Tx | 21.54                              | 21.72  | 21.65  | 21.72  | 21.57  | 25.03  | 25.05  | 25.08  | 25.16  | 25.12  |
| WCDMA B2          | 21.33                              | 21.37  | 21.22  | 21.24  | 21.17  | 24.36  | 24.39  | 24.28  | 24.35  | 24.39  |
| WCDMA B4          | 20.84                              | 20.81  | 20.76  | 20.85  | 20.83  | 23.82  | 23.96  | 23.81  | 23.94  | 23.9   |
| LTE Band 2        | 19.68                              | 19.67  | 19.61  | 19.56  | 19.62  | 23.61  | 23.72  | 23.72  | 23.71  | 23.75  |
| LTE Band 4        | 17.68                              | 17.83  | 17.69  | 17.84  | 17.75  | 23     | 23.1   | 23.12  | 23.08  | 23.06  |
| LTE Band 25       | 19.09                              | 19.27  | 19.17  | 19.19  | 19.22  | 23.25  | 23.39  | 23.28  | 23.44  | 23.39  |
| LTE Band 66       | 19.57                              | 19.39  | 19.56  | 19.47  | 19.37  | 23.47  | 23.58  | 23.44  | 23.41  | 23.57  |
| NR Band n2        | 20.44                              | 20.36  | 20.26  | 20.33  | 20.32  | 22.86  | 22.88  | 22.73  | 22.8   | 22.75  |
| NR Band n25       | 20.31                              | 20.33  | 20.34  | 20.29  | 20.24  | 23.18  | 23.03  | 23.11  | 23.06  | 23.16  |
| NR Band n66       | 19.78                              | 19.73  | 19.75  | 19.77  | 19.73  | 23.25  | 23.31  | 23.17  | 23.27  | 23.29  |

Based on the most conservative measured triggering distance of 14mm, additional Phablet SAR measurements were required at 13mm from bottom side for the above modes

Main Ant#2

| Tissue simulating liquid | Triggering Distance        |                               |                            |                               |                            |                               |
|--------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|
|                          | Rear                       |                               | Left                       |                               | Bottom                     |                               |
|                          | Moving toward phantom [mm] | Moving away from phantom [mm] | Moving toward phantom [mm] | Moving away from phantom [mm] | Moving toward phantom [mm] | Moving away from phantom [mm] |
| 2300 MHz Tissue          | 12                         | 13                            | 8                          | 9                             | 14                         | 15                            |
| 2600 MHz Tissue          | 12                         | 13                            | 8                          | 9                             | 14                         | 15                            |

Rear side (Main Ant#2) – EUT Moving toward (trigger) to the Phantom

| Mode             | Distance to DUT Output power (dBm) |        |        |        |        |        |        |        |       |       |
|------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
|                  | 17[mm]                             | 16[mm] | 15[mm] | 14[mm] | 13[mm] | 12[mm] | 11[mm] | 10[mm] | 9[mm] | 8[mm] |
| LTE Band 7       | 23.77                              | 23.84  | 23.73  | 23.89  | 23.84  | 20.97  | 20.92  | 21.04  | 20.89 | 20.9  |
| LTE Band 30      | 22.57                              | 22.73  | 22.64  | 22.67  | 22.75  | 16.4   | 16.5   | 16.43  | 16.47 | 16.34 |
| LTE Band 38      | 23.79                              | 23.65  | 23.67  | 23.72  | 23.67  | 20.43  | 20.43  | 20.3   | 20.33 | 20.36 |
| LTE Band 41(PC3) | 23.33                              | 23.49  | 23.47  | 23.41  | 23.47  | 20.61  | 20.66  | 20.72  | 20.6  | 20.63 |
| LTE Band 41(PC2) | 26.03                              | 26.08  | 26.19  | 26.14  | 26.16  | 20.99  | 21.05  | 21.07  | 20.93 | 20.93 |
| NR Band n30      | 22.86                              | 22.87  | 22.82  | 22.88  | 22.75  | 16.39  | 16.46  | 16.48  | 16.39 | 16.52 |
| NR Band n41(PC3) | 24.54                              | 24.43  | 24.63  | 24.43  | 24.43  | 20.36  | 20.39  | 20.31  | 20.43 | 20.42 |
| NR Band n41(PC2) | 25.29                              | 25.34  | 25.26  | 25.4   | 25.26  | 20.4   | 20.39  | 20.44  | 20.33 | 20.39 |

Rear side (Main Ant#2) – EUT Moving away (Release) from the Phantom

| Mode             | Distance to DUT Output power (dBm) |        |        |        |        |        |        |        |        |        |
|------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  | 9[mm]                              | 10[mm] | 11[mm] | 12[mm] | 13[mm] | 14[mm] | 15[mm] | 16[mm] | 17[mm] | 18[mm] |
| LTE Band 7       | 21.07                              | 20.99  | 20.9   | 21.04  | 21.01  | 23.89  | 23.79  | 23.88  | 23.76  | 23.79  |
| LTE Band 30      | 16.33                              | 16.38  | 16.43  | 16.36  | 16.42  | 22.61  | 22.62  | 22.6   | 22.74  | 22.64  |
| LTE Band 38      | 20.3                               | 20.33  | 20.28  | 20.43  | 20.45  | 23.79  | 23.64  | 23.75  | 23.65  | 23.83  |
| LTE Band 41(PC3) | 20.54                              | 20.55  | 20.52  | 20.56  | 20.56  | 23.5   | 23.38  | 23.51  | 23.37  | 23.51  |
| LTE Band 41(PC2) | 21.06                              | 21.07  | 20.91  | 21     | 20.91  | 26.08  | 26.11  | 26.16  | 26.06  | 26.16  |
| NR Band n30      | 16.5                               | 16.55  | 16.46  | 16.49  | 16.43  | 22.87  | 22.8   | 22.76  | 22.89  | 22.83  |
| NR Band n41(PC3) | 20.32                              | 20.33  | 20.44  | 20.35  | 20.43  | 24.57  | 24.49  | 24.58  | 24.5   | 24.49  |
| NR Band n41(PC2) | 20.42                              | 20.41  | 20.36  | 20.34  | 20.36  | 25.44  | 25.26  | 25.41  | 25.43  | 25.28  |

Based on the most conservative measured triggering distance of 12mm, additional Phablet SAR measurements were required at 11mm from rear side for the above modes.

Front side (Main Ant#2) – EUT Moving toward (trigger) to the Phantom

| Mode             | Distance to DUT Output power (dBm) |        |        |        |       |       |       |       |       |       |
|------------------|------------------------------------|--------|--------|--------|-------|-------|-------|-------|-------|-------|
|                  | 13[mm]                             | 12[mm] | 11[mm] | 10[mm] | 9[mm] | 8[mm] | 7[mm] | 6[mm] | 5[mm] | 4[mm] |
| LTE Band 7       | 23.9                               | 23.75  | 23.87  | 23.9   | 23.72 | 20.96 | 20.93 | 20.91 | 20.92 | 21.08 |
| LTE Band 30      | 22.59                              | 22.63  | 22.71  | 22.59  | 22.71 | 16.32 | 16.34 | 16.43 | 16.47 | 16.32 |
| LTE Band 38      | 23.8                               | 23.66  | 23.69  | 23.67  | 23.68 | 20.27 | 20.28 | 20.44 | 20.35 | 20.46 |
| LTE Band 41(PC3) | 23.44                              | 23.33  | 23.49  | 23.53  | 23.44 | 20.65 | 20.65 | 20.61 | 20.52 | 20.69 |
| LTE Band 41(PC2) | 26.19                              | 26.05  | 26.08  | 26.11  | 26.15 | 20.96 | 20.88 | 20.97 | 21.06 | 20.91 |
| NR Band n30      | 22.91                              | 22.74  | 22.8   | 22.88  | 22.91 | 16.54 | 16.51 | 16.44 | 16.48 | 16.37 |
| NR Band n41(PC3) | 24.43                              | 24.48  | 24.62  | 24.55  | 24.54 | 20.44 | 20.37 | 20.3  | 20.43 | 20.45 |
| NR Band n41(PC2) | 25.4                               | 25.27  | 25.44  | 25.38  | 25.26 | 20.43 | 20.32 | 20.41 | 20.34 | 20.38 |

Front side (Main Ant#2) – EUT Moving away (Release) from the Phantom

| Mode             | Distance to DUT Output power (dBm) |       |       |       |       |        |        |        |        |        |
|------------------|------------------------------------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
|                  | 5[mm]                              | 6[mm] | 7[mm] | 8[mm] | 9[mm] | 10[mm] | 11[mm] | 12[mm] | 13[mm] | 14[mm] |
| LTE Band 7       | 20.92                              | 21.04 | 20.95 | 21.06 | 20.97 | 23.8   | 23.73  | 23.84  | 23.81  | 23.84  |
| LTE Band 30      | 16.4                               | 16.4  | 16.43 | 16.44 | 16.37 | 22.69  | 22.75  | 22.59  | 22.75  | 22.75  |
| LTE Band 38      | 20.32                              | 20.45 | 20.26 | 20.44 | 20.45 | 23.82  | 23.75  | 23.76  | 23.75  | 23.72  |
| LTE Band 41(PC3) | 20.58                              | 20.53 | 20.53 | 20.57 | 20.69 | 23.39  | 23.48  | 23.5   | 23.49  | 23.41  |
| LTE Band 41(PC2) | 20.92                              | 20.95 | 20.88 | 21    | 21    | 26.16  | 26.15  | 26.15  | 26.11  | 26.12  |
| NR Band n30      | 16.46                              | 16.45 | 16.36 | 16.39 | 16.47 | 22.79  | 22.88  | 22.81  | 22.91  | 22.77  |
| NR Band n41(PC3) | 20.37                              | 20.5  | 20.39 | 20.37 | 20.31 | 24.59  | 24.63  | 24.47  | 24.5   | 24.58  |
| NR Band n41(PC2) | 20.37                              | 20.45 | 20.43 | 20.31 | 20.37 | 25.26  | 25.41  | 25.39  | 25.27  | 25.42  |

Based on the most conservative measured triggering distance of 8mm, additional Phablet SAR measurements were required at 7mm from front side for the above modes

### Bottom side (Main Ant#2) – EUT Moving toward (Release) from the Phantom

| Mode             | Distance to DUT Output power (dBm) |        |        |        |        |        |        |        |        |        |
|------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  | 19[mm]                             | 18[mm] | 17[mm] | 16[mm] | 15[mm] | 14[mm] | 13[mm] | 12[mm] | 11[mm] | 10[mm] |
| LTE Band 7       | 23.73                              | 23.75  | 23.78  | 23.89  | 23.79  | 21.02  | 20.98  | 21.08  | 20.95  | 21.08  |
| LTE Band 30      | 22.62                              | 22.7   | 22.59  | 22.75  | 22.55  | 16.34  | 16.36  | 16.38  | 16.46  | 16.43  |
| LTE Band 38      | 23.81                              | 23.63  | 23.7   | 23.69  | 23.79  | 20.37  | 20.37  | 20.37  | 20.41  | 20.31  |
| LTE Band 41(PC3) | 23.36                              | 23.38  | 23.37  | 23.41  | 23.34  | 20.55  | 20.71  | 20.65  | 20.68  | 20.58  |
| LTE Band 41(PC2) | 26.05                              | 26.06  | 26.05  | 26.06  | 26.22  | 20.94  | 21.03  | 21.01  | 20.95  | 21.08  |
| NR Band n30      | 22.71                              | 22.9   | 22.75  | 22.71  | 22.84  | 16.53  | 16.46  | 16.36  | 16.37  | 16.48  |
| NR Band n41(PC3) | 24.61                              | 24.5   | 24.55  | 24.59  | 24.58  | 20.42  | 20.47  | 20.44  | 20.46  | 20.47  |
| NR Band n41(PC2) | 25.29                              | 25.44  | 25.42  | 25.46  | 25.3   | 20.34  | 20.45  | 20.44  | 20.31  | 20.35  |

### Bottom side (Main Ant#2) – EUT Moving away (trigger) to the Phantom

| Mode             | Distance to DUT Output power (dBm) |        |        |        |        |        |        |        |        |        |
|------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  | 11[mm]                             | 12[mm] | 13[mm] | 14[mm] | 15[mm] | 16[mm] | 17[mm] | 18[mm] | 19[mm] | 20[mm] |
| LTE Band 7       | 20.92                              | 20.9   | 21.06  | 21.06  | 20.92  | 23.78  | 23.75  | 23.8   | 23.9   | 23.79  |
| LTE Band 30      | 16.35                              | 16.31  | 16.48  | 16.35  | 16.46  | 22.74  | 22.72  | 22.59  | 22.57  | 22.7   |
| LTE Band 38      | 20.45                              | 20.27  | 20.4   | 20.45  | 20.43  | 23.68  | 23.79  | 23.65  | 23.79  | 23.76  |
| LTE Band 41(PC3) | 20.72                              | 20.7   | 20.56  | 20.62  | 20.62  | 23.46  | 23.38  | 23.4   | 23.39  | 23.4   |
| LTE Band 41(PC2) | 20.91                              | 21.05  | 20.93  | 20.96  | 20.88  | 26.09  | 26.17  | 26.07  | 26.03  | 26.13  |
| NR Band n30      | 16.47                              | 16.41  | 16.46  | 16.49  | 16.36  | 22.71  | 22.9   | 22.71  | 22.79  | 22.79  |
| NR Band n41(PC3) | 20.32                              | 20.4   | 20.41  | 20.39  | 20.3   | 24.54  | 24.55  | 24.5   | 24.57  | 24.43  |
| NR Band n41(PC2) | 20.42                              | 20.45  | 20.46  | 20.32  | 20.37  | 25.42  | 25.31  | 25.43  | 25.45  | 25.33  |

Based on the most conservative measured triggering distance of 14mm, additional Phablet SAR measurements were required at 13mm from bottom side for the above modes.



## 1.2 Proximity Sensor Coverage for SAR measurements

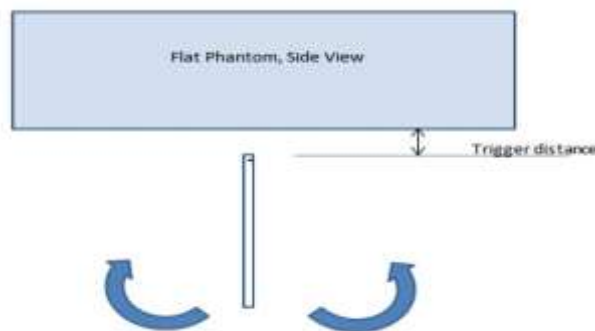
(KDB 616217 D04v01r02 §6.3)

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

## 1.3 Proximity Sensor Tilt Angle Assessment

(KDB 616217 D04v01r02 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom side parallel to the base of the flat phantom for each band. The EUT was rotated about Bottom side for angles up to  $\pm 45^\circ$ . If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up to  $\pm 45^\circ$ .



Proximity sensor tilt angle assessment (Bottom For MainAnt#1, #2) KDB 616217 §6.4

### Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Bottom side for Main Ant#1)

| Tissue          | Minimum distance<br>At which power<br>reduction was<br>maintained over-<br>45° | Power reduction status |      |      |      |      |    |     |     |     |     |     |
|-----------------|--------------------------------------------------------------------------------|------------------------|------|------|------|------|----|-----|-----|-----|-----|-----|
|                 |                                                                                | -45°                   | -40° | -30° | -20° | -10° | 0° | 10° | 20° | 30° | 40° | 45° |
| 1800 MHz Tissue | 14mm                                                                           | On                     | On   | On   | On   | On   | On | On  | On  | On  | On  | On  |
| 1900 MHz Tissue | 14mm                                                                           | On                     | On   | On   | On   | On   | On | On  | On  | On  | On  | On  |

### Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Bottom side for Main Ant#2)

| Tissue          | Minimum distance<br>At which power<br>reduction was<br>maintained over-<br>45° | Power reduction status |      |      |      |      |    |     |     |     |     |     |
|-----------------|--------------------------------------------------------------------------------|------------------------|------|------|------|------|----|-----|-----|-----|-----|-----|
|                 |                                                                                | -45°                   | -40° | -30° | -20° | -10° | 0° | 10° | 20° | 30° | 40° | 45° |
| 2300 MHz Tissue | 14mm                                                                           | On                     | On   | On   | On   | On   | On | On  | On  | On  | On  | On  |
| 2600 MHz Tissue | 14mm                                                                           | On                     | On   | On   | On   | On   | On | On  | On  | On  | On  | On  |

#### 1.4 Resulting test positions for Phablet SAR measurements

| Wireless technologies                                                                                                        | Position | §6.2<br>Triggering<br>Distance<br>[mm] | §6.3<br>Coverage | §6.4<br>Tilt Angle | Worst case<br>distance for<br>Phablet SAR<br>[mm] |
|------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------|------------------|--------------------|---------------------------------------------------|
| WWAN<br>(GSM1900/WCDMA B2/B4/<br>LTE B2/B4/B7/B25/B30/B38/<br>B41(PC3)/B41(PC2)/B66/<br>NR n2/n25/n30/n41(PC3)/n41(PC2)/n66) | Rear     | 12                                     | N/A              | N/A                | 11                                                |
|                                                                                                                              | Front    | 8                                      | N/A              | N/A                | 7                                                 |
|                                                                                                                              | Bottom   | 14                                     | N/A              | N/A                | 13                                                |

Note:FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in phablet use conditions

## 2. Power reduction Verification for RCV-ON

This device uses a power reduction mechanism for SAR compliance for operations during voice held to ear scenarios.

When a user makes or receives a voice call for Sub Ant#2, #3 the audio of the call is sent through the Receiver at the top of the device will trigger the Power reduction for Sub Ant#2, #3 (i.e. reducing output power for Head SAR compliance)

Detailed descriptions of the power reduction mechanism are included in the Main operational description document

Sub Ant#2

| Condition For Power reduction | Wireless Technologies | Power reduction Mechanism |                           |
|-------------------------------|-----------------------|---------------------------|---------------------------|
|                               |                       | Un-Triggered (Max Power)  | Triggered (Reduced Power) |
| RCV-on                        | NR n41                | 24.63                     | 20.29                     |

Sub Ant#3

| Condition For Power reduction | Wireless Technologies | Power reduction Mechanism |                           |
|-------------------------------|-----------------------|---------------------------|---------------------------|
|                               |                       | Un-Triggered (Max Power)  | Triggered (Reduced Power) |
| RCV-on                        | LTE 48                | 21.68                     | 19.29                     |
| RCV-on                        | NR n77 PC2            | 26.39                     | 17.97                     |
| RCV-on                        | NR n77 DoD PC2        | 26.26                     | 17.86                     |
| RCV-on                        | NR n77 PC3            | 24.98                     | 17.94                     |
| RCV-on                        | NR n77 DoD PC3        | 24.82                     | 17.90                     |

### 3. Power reduction Verification for WLAN/Bluetooth Ant

This device uses a power reduction mechanism for SAR compliance for WLAN operations during voice or VoIP held to ear scenarios.

When a user makes or receives a WLAN voice or WLAN VOIP call for WLAN Ant the audio of the call is sent through the Receiver at the top of the device will trigger the Power reduction for WLAN Ant (i.e. reducing output power for Head SAR compliance)

Detailed descriptions of the power reduction mechanism are included in the Main operational description document

#### Power Measurement Verification for WLAN/Bluetooth Ant

| Condition<br>For Power reduction | Wireless<br>Technologies | Conducted Power[dBm]        |                              |
|----------------------------------|--------------------------|-----------------------------|------------------------------|
|                                  |                          | Un-Triggered<br>(Max Power) | Triggered<br>(Reduced Power) |
| RCV-on                           | 2.4GHz 802.11b           | 20.90                       | 12.88                        |
| RCV-on                           | 2.4GHz 802.11g           | 18.92                       | 11.46                        |
| RCV-on                           | 2.4GHz 802.11n           | 19.40                       | 11.68                        |
| RCV-on                           | 5GHz 802.11a             | 18.86                       | 10.98                        |
| RCV-on                           | 5GHz 802.11n 20MHz       | 17.36                       | 10.78                        |
| RCV-on                           | 5GHz 802.11n 40MHz       | 16.26                       | 9.95                         |
| RCV-on                           | 5GHz 802.11ac 20MHz      | 16.00                       | 10.97                        |
| RCV-on                           | 5GHz 802.11ac 40MHz      | 16.61                       | 10.60                        |
| RCV-on                           | 5GHz 802.11ac 80MHz      | 11.94                       | 10.96                        |
| RCV-on                           | Bluetooth(BDR)           | 16.35                       | 8.12                         |
| RCV-on                           | Bluetooth LE             | 13.17                       | 5.2                          |

## **Appendix I. – DL CA Power Measurement/ 5G NR Call Box Setup**



## 1. LTE Down-link Carrier Aggregation Conducted Powers

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number component carriers (CCs) supported by test product implementation. For those configurations required by April 2018 TCBC Workshop notes, conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only.

### Downlink Carrier aggregation:

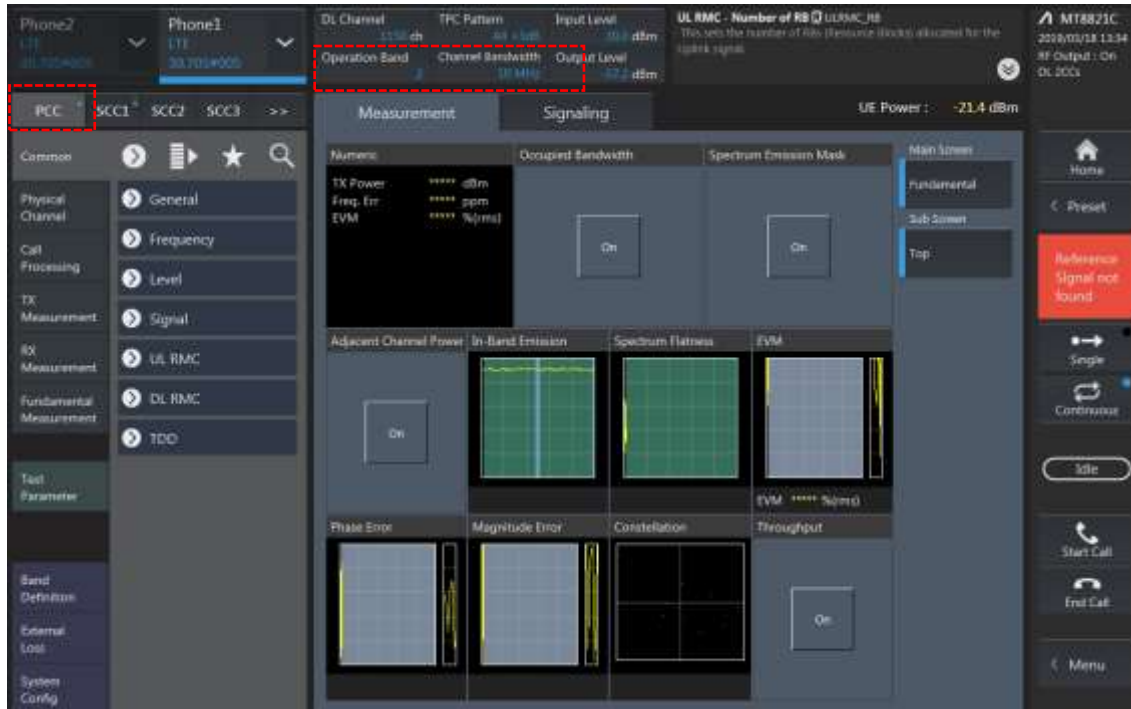
1. This device only supports downlink carrier aggregation. For every supported combination of downlink carrier aggregation, power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.
2. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
3. Per FCC KDB publication 941225 D05A v01r02, Section C(3)b)ii), PCC uplink channel was selected at downlink carrier aggregation combinations. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
4. For continuous intra-band carrier aggregation, the downlink channel spacing between the component carriers was set to multiple of 300kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521.
5. For non-continuous intra-band carrier aggregation, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
6. All selected downlink channels remained fully within the downlink transmission band of the respective component carrier.



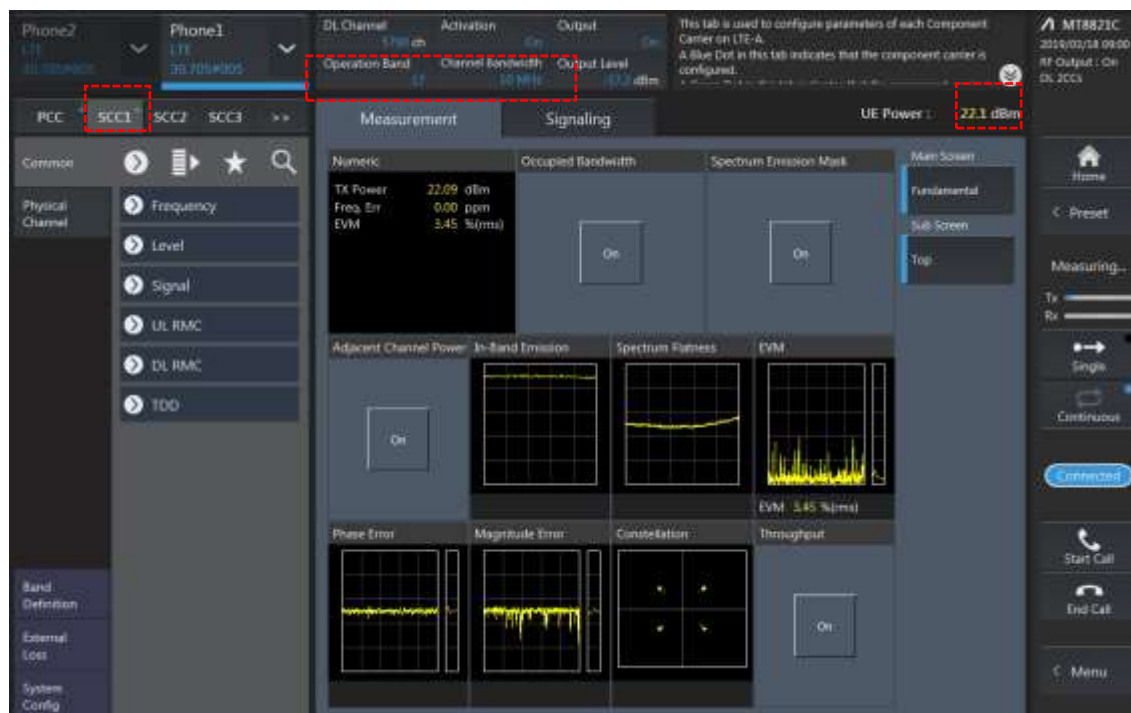
Power Measurement setup

## LTE Down Link 2CA Call Setup

PCC Setting : Channel/ RB/ BW/ Modulation



SCC Setting : Channel/ RB/ BW/ Modulation and call Connection

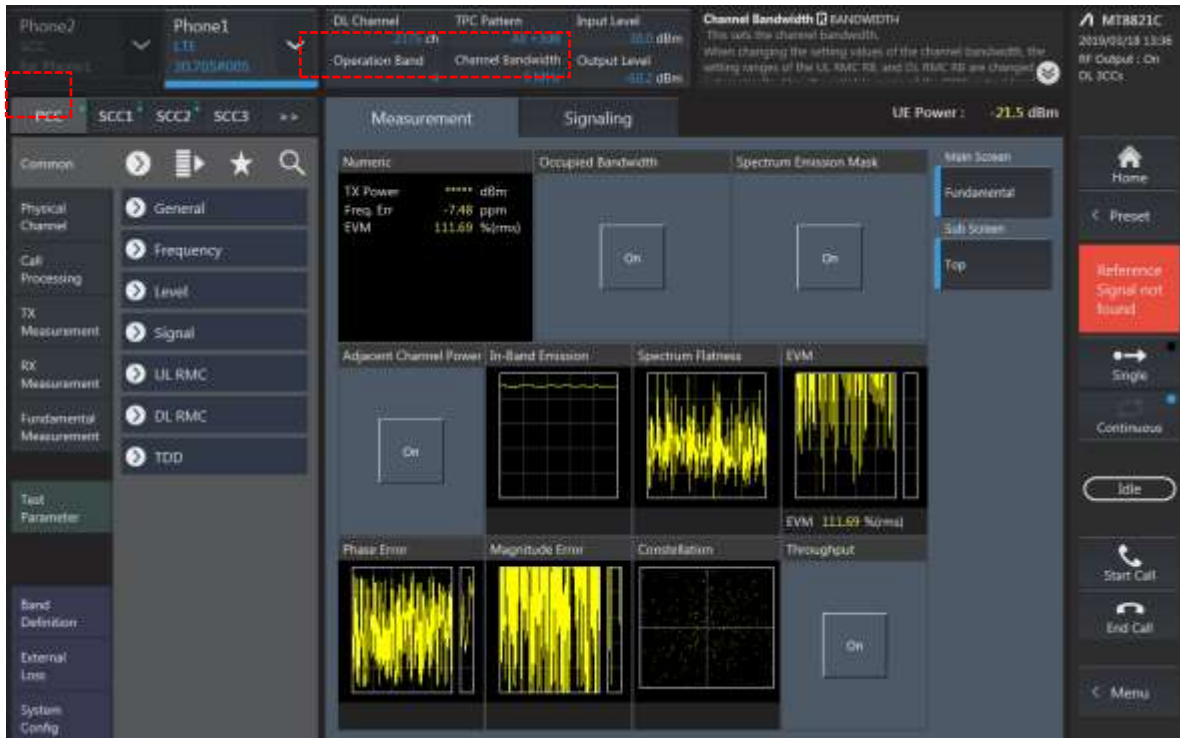


## 2CA Downlink Carrier aggregation Maximum conducted Powers

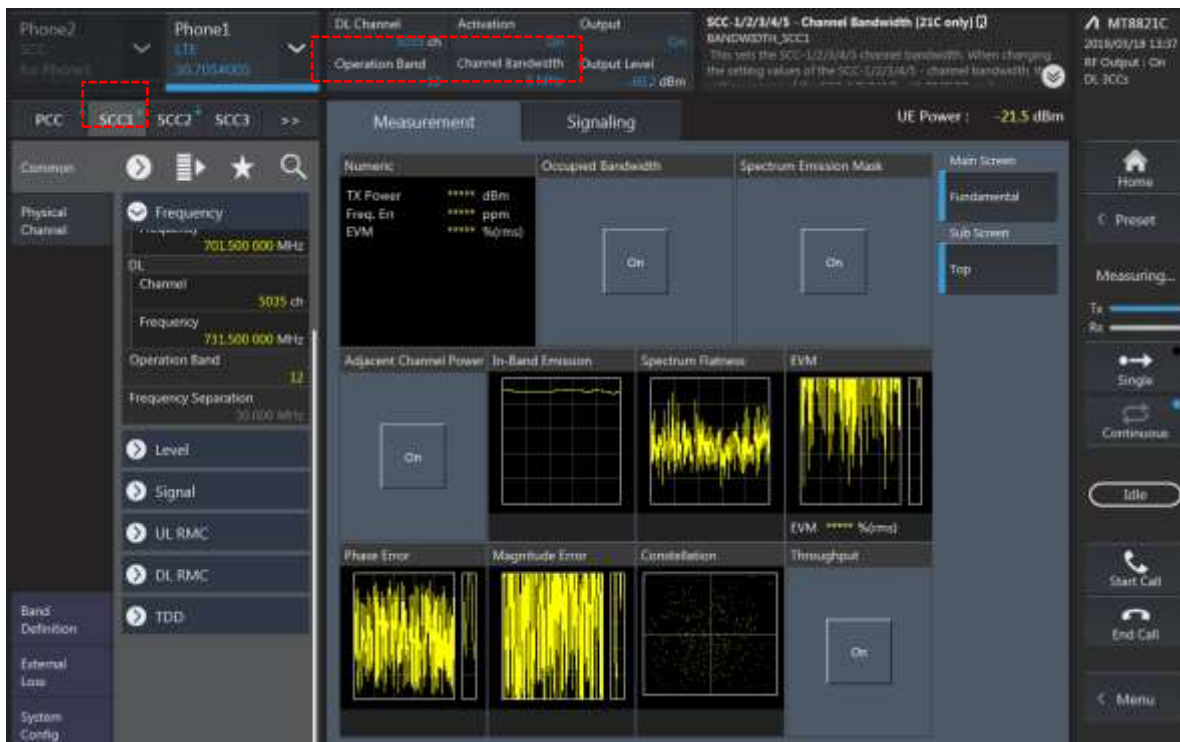
| Combination | PCC  |    |                   |                     |                   |                     |            |    |        | SCC  |    |                   |                     | Tx Power                                       |                                                  | Deviaion<br>(2)-(1) |
|-------------|------|----|-------------------|---------------------|-------------------|---------------------|------------|----|--------|------|----|-------------------|---------------------|------------------------------------------------|--------------------------------------------------|---------------------|
|             | Band | BW | PCC UL<br>Channel | PCC UL<br>Frequency | PCC DL<br>Channel | PCC DL<br>Frequency | Modulation | RB | offset | Band | BW | SCC DL<br>Channel | SCC DL<br>Frequency | LTE Single<br>Carrier Tx<br>Power (dBm)<br>(1) | LTE TxPower<br>with DL CA<br>Enabled(dBm)<br>(2) |                     |
| 4A-13A(0,1) | 4    | 10 | 20350             | 1750                | 2350              | 2150                | QPSK       | 1  | 0      | 13   | 10 | 5230              | 751                 | 23.08                                          | 23.00                                            | -0.08               |
| 4A-13A(0)   | 13   | 10 | 23230             | 782                 | 5230              | 751                 | QPSK       | 1  | 0      | 4    | 20 | 2175              | 2132.5              | 23.78                                          | 23.75                                            | -0.03               |
| 4A-13A(1)   | 13   | 10 | 23230             | 782                 | 5230              | 751                 | QPSK       | 1  | 0      | 4    | 10 | 2175              | 2132.5              | 23.78                                          | 23.69                                            | -0.09               |
| 5A-25A      | 5    | 5  | 20425             | 826.5               | 2425              | 871.5               | QPSK       | 1  | 0      | 25   | 20 | 8365              | 1962.5              | 23.89                                          | 23.79                                            | -0.1                |
| 5A-25A      | 25   | 15 | 26615             | 1907.5              | 8615              | 1987.5              | QPSK       | 1  | 36     | 5    | 10 | 2525              | 881.5               | 23.4                                           | 23.25                                            | -0.15               |
| 12A-25A     | 12   | 10 | 23095             | 707.5               | 5095              | 737.5               | QPSK       | 1  | 0      | 25   | 20 | 8365              | 1962.5              | 23.94                                          | 23.80                                            | -0.14               |
| 12A-25A     | 25   | 15 | 26615             | 1907.5              | 8615              | 1987.5              | QPSK       | 1  | 36     | 12   | 10 | 5095              | 737.5               | 23.4                                           | 23.32                                            | -0.08               |
| 13A-46A     | 13   | 10 | 23230             | 782                 | 5230              | 751                 | QPSK       | 1  | 0      | 46   | 20 | 50665             | 5537.5              | 23.78                                          | 23.68                                            | -0.1                |
| 13A-48A     | 13   | 10 | 23230             | 782                 | 5230              | 751                 | QPSK       | 1  | 0      | 48   | 20 | 55990             | 3625                | 23.78                                          | 23.84                                            | 0.06                |
| 38C         | 38   | 20 | 37850             | 2580                | 37850             | 2580                | QPSK       | 1  | 0      | 48   | 20 | 38048             | 2599.8              | 23.73                                          | 23.67                                            | -0.06               |
| 41A-41A PC3 | 41   | 20 | 40620             | 2593                | 40620             | 2593                | QPSK       | 1  | 0      | 41   | 20 | 41490             | 2680                | 23.43                                          | 23.47                                            | 0.04                |
| 41A-41A PC2 | 41   | 15 | 40620             | 2593                | 40620             | 2593                | QPSK       | 1  | 0      | 41   | 20 | 41490             | 2680                | 26.17                                          | 26.25                                            | 0.08                |

## LTE Down Link 3CA Call Setup

### 1) PCC Setting: Channel /RB/BW/Modulation



### 2) SCC1 Setting : Channel /RB/BW/Modulation



### 3) SCC2 Setting (Channel /RB/BW/Modulation )and call Connection



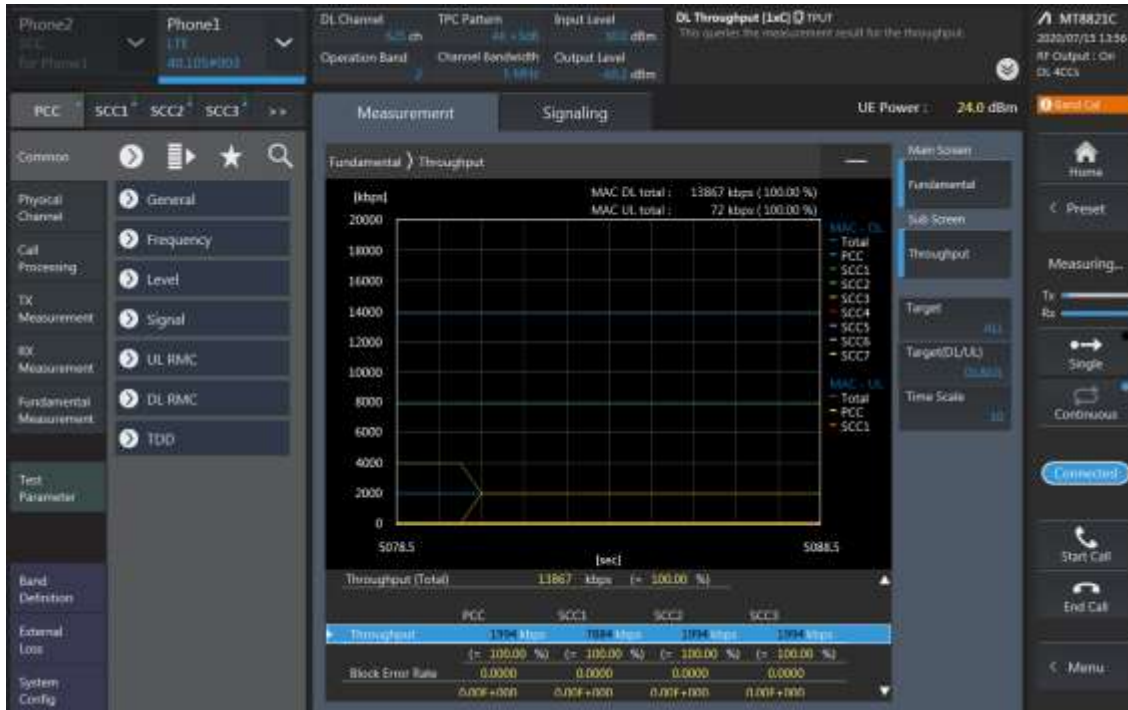


### 3CA Downlink Carrier aggregation Maximum conducted Powers

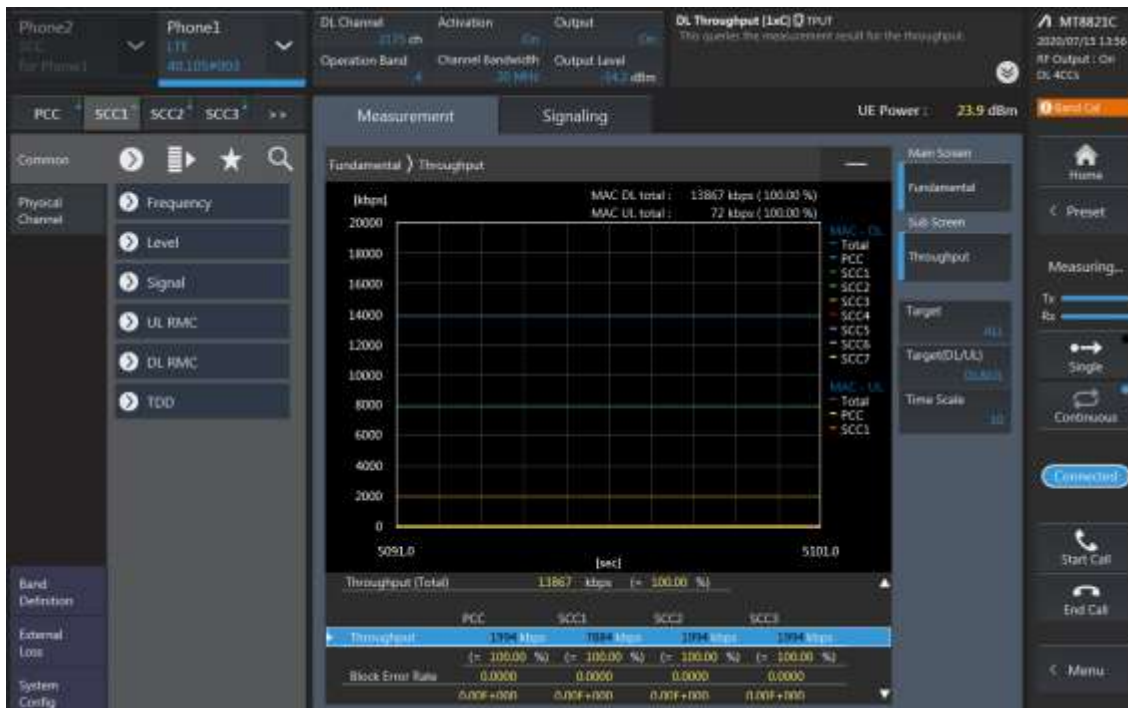
| Combination | PCC  |    |                |                  |                |                  |            |    |        | SCC  |    |                |                  | SCC  |    |                |                  | Tx Power                              |                                         |                   |
|-------------|------|----|----------------|------------------|----------------|------------------|------------|----|--------|------|----|----------------|------------------|------|----|----------------|------------------|---------------------------------------|-----------------------------------------|-------------------|
|             | Band | BW | PCC UL Channel | PCC UL Frequency | PCC DL Channel | PCC DL Frequency | Modulation | RB | offset | Band | BW | SCC DL Channel | SCC DL Frequency | Band | BW | SCC DL Channel | SCC DL Frequency | LTE Single Carrier Tx Power (dBm) (1) | LTE TxPower with DL CA Enabled(dBm) (2) | Deviation (2)-(1) |
| 2A-4A-71A   | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 4    | 20 | 2175           | 2132.5           | 71   | 20 | 68761          | 634.5            | 23.79                                 | 23.79                                   | 0                 |
| 2A-4A-71A   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 71   | 20 | 68761          | 634.5            | 23.08                                 | 23.01                                   | -0.07             |
| 2A-4A-71A   | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 2    | 20 | 900            | 1960             | 4    | 20 | 2175           | 2132.5           | 24.47                                 | 24.32                                   | -0.15             |
| 2A-5A-7A    | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 5    | 10 | 2525           | 881.5            | 7    | 20 | 3100           | 2655             | 23.79                                 | 23.69                                   | -0.1              |
| 2A-5A-7A    | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 7    | 20 | 3100           | 2655             | 23.89                                 | 23.79                                   | -0.1              |
| 2A-5A-7A    | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 5    | 10 | 2525           | 881.5            | 23.85                                 | 23.91                                   | 0.06              |
| 2A-13A-66A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 13   | 10 | 5230           | 751              | 66   | 20 | 66786          | 2145             | 23.79                                 | 23.87                                   | 0.08              |
| 2A-13A-66A  | 13   | 10 | 23230          | 782              | 5230           | 751              | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 66   | 20 | 66786          | 2145             | 23.78                                 | 23.8                                    | 0.02              |
| 2A-13A-66A  | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 2    | 20 | 900            | 1960             | 13   | 10 | 5230           | 751              | 23.75                                 | 23.64                                   | -0.11             |
| 4A-4A-7A(0) | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 10 | 2000           | 2115             | 7    | 20 | 3100           | 2655             | 23.08                                 | 23.11                                   | 0.03              |
| 4A-4A-7A(1) | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 7    | 20 | 3100           | 2655             | 23.08                                 | 23.02                                   | -0.06             |
| 4A-4A-7A(0) | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 4    | 10 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.85                                 | 23.85                                   | 0                 |
| 4A-4A-7A(1) | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.85                                 | 23.78                                   | -0.07             |
| 4A-4A-29A   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 29   | 10 | 9715           | 722.5            | 23.08                                 | 22.96                                   | -0.12             |
| 4A-4A-71A   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 71   | 20 | 68761          | 634.5            | 23.08                                 | 23.09                                   | 0.01              |
| 4A-4A-71A   | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 24.47                                 | 24.32                                   | -0.15             |
| 4A-46A-46A  | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 46   | 20 | 50665          | 5537.5           | 46   | 20 | 47090          | 5180             | 23.08                                 | 23.02                                   | -0.06             |
| 5A-7A-7A    | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 7    | 20 | 3100           | 2655             | 7    | 20 | 3350           | 2680             | 23.89                                 | 23.88                                   | -0.01             |
| 5A-7A-7A    | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 7    | 20 | 2850           | 2630             | 5    | 10 | 2525           | 881.5            | 23.85                                 | 23.93                                   | 0.08              |
| 5A-7C       | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 7    | 20 | 3100           | 2655             | 7    | 20 | 3298           | 2674.8           | 23.89                                 | 23.93                                   | 0.04              |
| 5A-7C       | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 7    | 20 | 3256           | 2670.6           | 5    | 10 | 2525           | 881.5            | 23.85                                 | 23.87                                   | 0.02              |
| 13A-66A-66A | 13   | 10 | 23230          | 782              | 5230           | 751              | QPSK       | 1  | 0      | 66   | 20 | 66786          | 2145             | 66   | 20 | 67236          | 2190             | 23.78                                 | 23.69                                   | -0.09             |
| 13A-66A-66A | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 20 | 67236          | 2190             | 13   | 10 | 5230           | 751              | 23.75                                 | 23.63                                   | -0.12             |
| 25A-25A-26A | 25   | 15 | 26615          | 1907.5           | 8615           | 1987.5           | QPSK       | 1  | 36     | 25   | 20 | 8140           | 1940             | 26   | 5  | 8865           | 876.5            | 23.4                                  | 23.41                                   | 0.01              |
| 25A-25A-26A | 26   | 5  | 26715          | 816.5            | 8715           | 861.5            | QPSK       | 1  | 24     | 25   | 20 | 8365           | 1962.5           | 25   | 20 | 8590           | 1985             | 24.19                                 | 24.13                                   | -0.06             |
| 26A-41C     | 26   | 5  | 26715          | 816.5            | 8715           | 861.5            | QPSK       | 1  | 24     | 41   | 20 | 40620          | 2593             | 41   | 20 | 40818          | 2612.8           | 24.19                                 | 24.11                                   | -0.08             |
| 46A-66A-66A | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 20 | 67236          | 2190             | 46   | 20 | 50665          | 5537.5           | 23.75                                 | 23.68                                   | -0.07             |
| 48A-48A-71A | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 48   | 20 | 55990          | 3625             | 48   | 20 | 56640          | 3690             | 24.47                                 | 24.4                                    | -0.07             |
| 48C-71A     | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 48   | 20 | 55990          | 3625             | 48   | 20 | 56188          | 3644.8           | 24.47                                 | 24.35                                   | -0.12             |
| 66A-66A-66A | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 20 | 66786          | 2145             | 66   | 20 | 67236          | 2190             | 23.75                                 | 23.62                                   | -0.13             |
| 66A-66C     | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 20 | 67038          | 2170.2           | 66   | 20 | 67236          | 2190             | 23.75                                 | 23.81                                   | 0.06              |
| 66A-66C     | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 20 | 66630          | 2129.4           | 66   | 20 | 67236          | 2190             | 23.75                                 | 23.77                                   | 0.02              |
| 66C-71A     | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 20 | 66630          | 2129.4           | 71   | 20 | 68761          | 634.5            | 23.75                                 | 23.66                                   | -0.09             |
| 66C-71A     | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 66   | 20 | 66786          | 2145             | 66   | 20 | 66984          | 2164.8           | 24.47                                 | 24.53                                   | 0.06              |

## LTE Down Link 4CA Call Setup

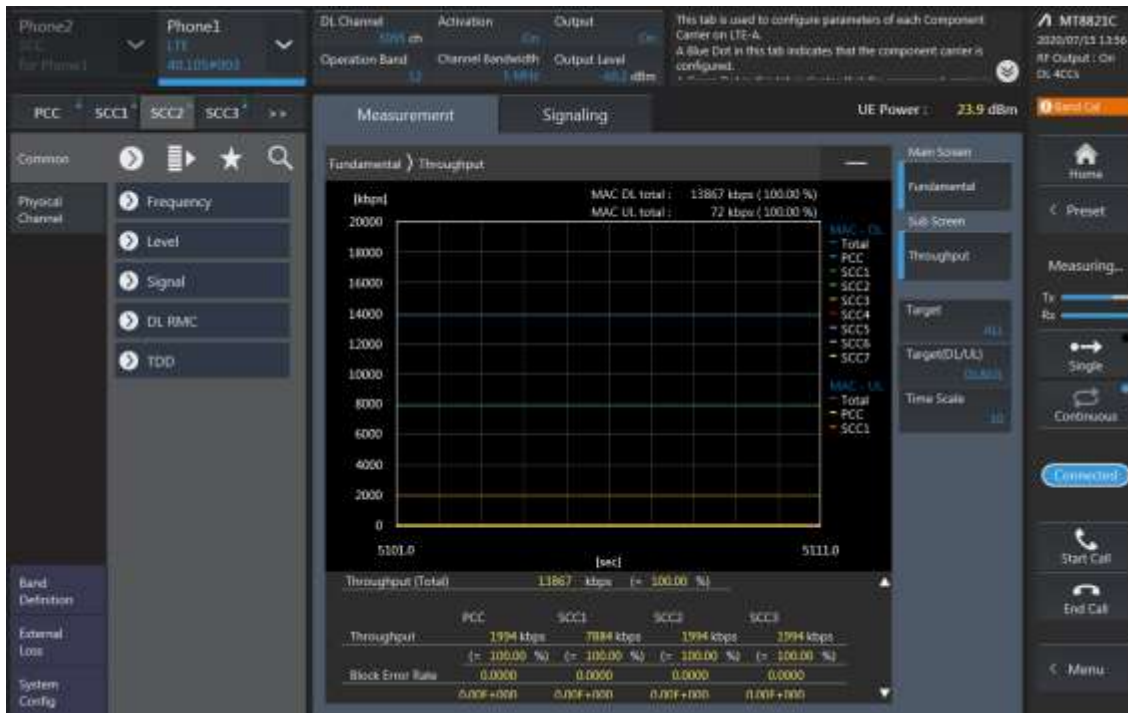
PCC Setting: Channel /RB/BW/Modulation



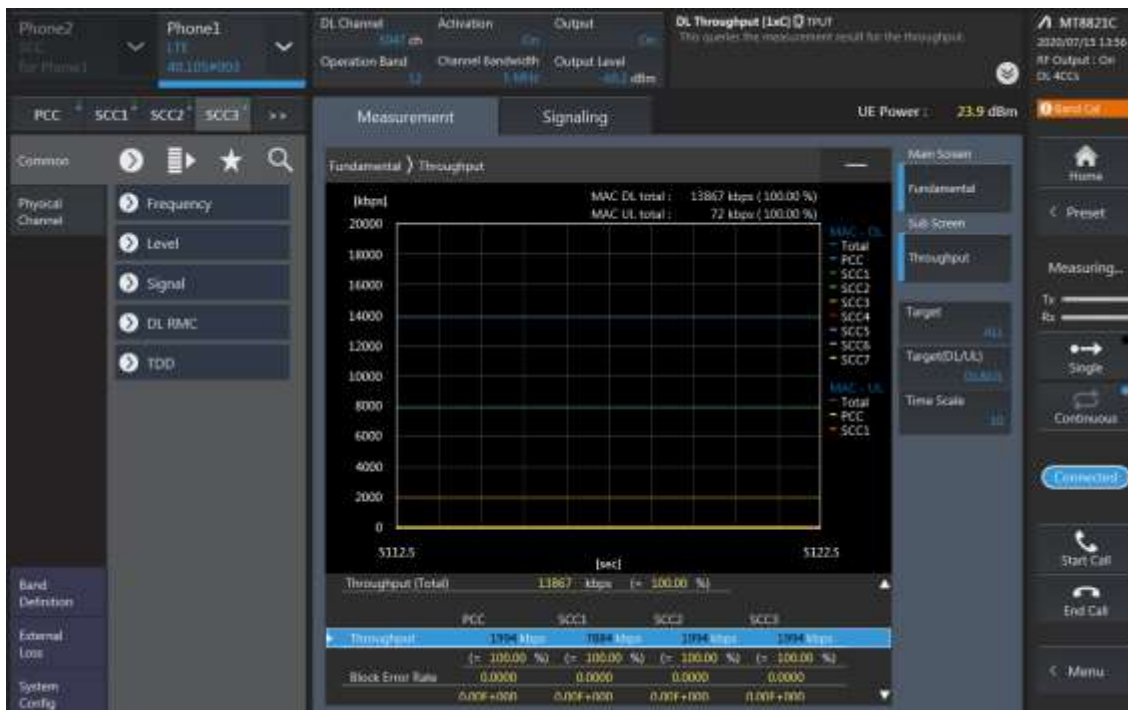
## SCC1 Setting (Channel /RB/BW/Modulation)and call Connection



### SCC2 Setting (Channel /RB/BW/Modulation )and call Connection



### SCC3 Setting (Channel /RB/BW/Modulation )and call Connection



## 4CA Downlink Carrier aggregation Maximum conducted Powers

| Combination   | PCC  |    |                |                  |                |                  |            |    | SCC    |      |    |                | SCC              |      |    |                | SCC              |      |    |                | Tx Power         |                                       | Deviation (2)-(1) |                                           |
|---------------|------|----|----------------|------------------|----------------|------------------|------------|----|--------|------|----|----------------|------------------|------|----|----------------|------------------|------|----|----------------|------------------|---------------------------------------|-------------------|-------------------------------------------|
|               | Band | BW | PCC UL Channel | PCC UL Frequency | PCC DL Channel | PCC DL Frequency | Modulation | RB | offset | Band | BW | SCC DL Channel | SCC DL Frequency | Band | BW | SCC DL Channel | SCC DL Frequency | Band | BW | SCC DL Channel | SCC DL Frequency | LTE Single Carrier Tx Power (dBm) (1) |                   | LTE Tx Power with DL CA Enabled (dBm) (2) |
| 2A-2A-4A-4A   | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.79                                 | 23.74             | -0.05                                     |
| 2A-2A-4A-4A   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 23.08                                 | 23.02             | -0.06                                     |
| 2A-2A-4A-5A   | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 5    | 10 | 2525           | 881.5            | 23.79                                 | 23.83             | 0.04                                      |
| 2A-2A-4A-5A   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 5    | 10 | 2525           | 881.5            | 23.08                                 | 22.99             | -0.09                                     |
| 2A-2A-4A-5A   | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 23.89                                 | 23.84             | -0.05                                     |
| 2A-2A-4A-12A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 12   | 10 | 5095           | 737.5            | 23.79                                 | 23.69             | -0.1                                      |
| 2A-2A-4A-12A  | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 12   | 10 | 5095           | 737.5            | 23.08                                 | 23.11             | 0.03                                      |
| 2A-2A-4A-12A  | 12   | 10 | 23095          | 707.5            | 5095           | 737.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 23.94                                 | 23.94             | 0                                         |
| 2A-2A-4A-71A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 71   | 20 | 68761          | 634.5            | 23.79                                 | 23.75             | -0.04                                     |
| 2A-2A-4A-71A  | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 71   | 20 | 68761          | 634.5            | 23.08                                 | 23                | -0.08                                     |
| 2A-2A-4A-71A  | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 24.47                                 | 24.48             | 0.01                                      |
| 2A-2A-5B      | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 5    | 10 | 2525           | 881.5            | 5    | 5  | 2453           | 874.3            | 23.79                                 | 23.82             | 0.03                                      |
| 2A-2A-5B      | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 5    | 10 | 2497           | 878.7            | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 23.89                                 | 23.9              | 0.01                                      |
| 2A-2A-5A-30A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 5    | 10 | 2525           | 881.5            | 30   | 10 | 9820           | 2355             | 23.79                                 | 23.85             | 0.06                                      |
| 2A-2A-5A-30A  | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 30   | 10 | 9820           | 2355             | 23.89                                 | 23.88             | -0.01                                     |
| 2A-2A-5A-30A  | 30   | 10 | 27710          | 2310             | 9820           | 2355             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 5    | 10 | 2525           | 881.5            | 22.65                                 | 22.7              | 0.05                                      |
| 2A-2A-5A-66A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 5    | 10 | 2525           | 881.5            | 66   | 20 | 66786          | 2145             | 23.79                                 | 23.78             | -0.01                                     |
| 2A-2A-5A-66A  | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 66   | 20 | 66786          | 2145             | 23.89                                 | 23.88             | -0.01                                     |
| 2A-2A-5A-66A  | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 5    | 10 | 2525           | 881.5            | 23.75                                 | 23.7              | -0.05                                     |
| 2A-2A-7A-12A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 7    | 20 | 3100           | 2655             | 12   | 10 | 5095           | 737.5            | 23.79                                 | 23.74             | -0.05                                     |
| 2A-2A-7A-12A  | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 12   | 10 | 5095           | 737.5            | 23.85                                 | 23.89             | 0.04                                      |
| 2A-2A-7A-12A  | 12   | 10 | 23095          | 707.5            | 5095           | 737.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 7    | 20 | 3100           | 2655             | 23.94                                 | 23.88             | -0.06                                     |
| 2A-2A-7A-66A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 7    | 20 | 3100           | 2655             | 66   | 20 | 66786          | 2145             | 23.79                                 | 23.81             | 0.02                                      |
| 2A-2A-7A-66A  | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 66   | 20 | 66786          | 2145             | 23.85                                 | 23.82             | -0.03                                     |
| 2A-2A-7A-66A  | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 7    | 20 | 3100           | 2655             | 23.75                                 | 23.69             | -0.06                                     |
| 2A-2A-12B     | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 12   | 5  | 5095           | 737.5            | 12   | 5  | 5047           | 732.7            | 23.79                                 | 23.85             | 0.06                                      |
| 2A-2A-12B     | 12   | 10 | 23095          | 707.5            | 5095           | 737.5            | QPSK       | 1  | 0      | 12   | 5  | 5023           | 730.3            | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 23.94                                 | 23.99             | 0.05                                      |
| 2A-2A-12A-30A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 12   | 10 | 5095           | 737.5            | 30   | 10 | 9820           | 2355             | 23.79                                 | 23.8              | 0.01                                      |
| 2A-2A-12A-30A | 12   | 10 | 23095          | 707.5            | 5095           | 737.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 30   | 10 | 9820           | 2355             | 23.94                                 | 23.96             | 0.02                                      |
| 2A-2A-12A-30A | 30   | 10 | 27710          | 2310             | 9820           | 2355             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 12   | 10 | 5095           | 737.5            | 22.65                                 | 22.6              | -0.05                                     |
| 2A-2A-12A-66A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 12   | 10 | 5095           | 737.5            | 66   | 20 | 66786          | 2145             | 23.79                                 | 23.77             | -0.02                                     |
| 2A-2A-12A-66A | 12   | 10 | 23095          | 707.5            | 5095           | 737.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 66   | 20 | 66786          | 2145             | 23.94                                 | 24                | 0.06                                      |
| 2A-2A-12A-66A | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 12   | 10 | 5095           | 737.5            | 23.75                                 | 23.78             | 0.03                                      |
| 2A-2A-14A-30A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 14   | 10 | 5330           | 763              | 30   | 10 | 9820           | 2355             | 23.79                                 | 23.79             | 0                                         |
| 2A-2A-14A-30A | 14   | 10 | 23330          | 793              | 5330           | 763              | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 30   | 10 | 9820           | 2355             | 23.63                                 | 23.63             | 0                                         |
| 2A-2A-14A-30A | 30   | 10 | 27710          | 2310             | 9820           | 2355             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 14   | 10 | 5330           | 763              | 22.65                                 | 22.61             | -0.04                                     |
| 2A-2A-14A-66A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 14   | 10 | 5330           | 763              | 66   | 20 | 66786          | 2145             | 23.79                                 | 23.71             | -0.08                                     |
| 2A-2A-14A-66A | 14   | 10 | 23330          | 793              | 5330           | 763              | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 66   | 20 | 66786          | 2145             | 23.63                                 | 23.56             | -0.07                                     |
| 2A-2A-14A-66A | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 14   | 10 | 5330           | 763              | 23.75                                 | 23.74             | -0.01                                     |
| 2A-2A-29A-30A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 29   | 10 | 9715           | 722.5            | 30   | 10 | 9820           | 2355             | 23.79                                 | 23.83             | 0.04                                      |
| 2A-2A-29A-30A | 30   | 10 | 27710          | 2310             | 9820           | 2355             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 29   | 10 | 9715           | 722.5            | 22.65                                 | 22.64             | -0.01                                     |
| 2A-2A-30A-66A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 30   | 10 | 9820           | 2355             | 66   | 20 | 66786          | 2145             | 23.79                                 | 23.82             | 0.03                                      |
| 2A-2A-30A-66A | 30   | 10 | 27710          | 2310             | 9820           | 2355             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 66   | 20 | 66786          | 2145             | 22.65                                 | 22.7              | 0.05                                      |
| 2A-2A-30A-66A | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 30   | 10 | 9820           | 2355             | 23.75                                 | 23.66             | -0.09                                     |
| 2A-2A-46C     | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 46   | 20 | 50665          | 5537.5           | 46   | 20 | 50467          | 5517.7           | 23.79                                 | 23.83             | 0.04                                      |
| 2A-2A-66A-66A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 66   | 20 | 66786          | 2145             | 66   | 20 | 67236          | 2190             | 23.79                                 | 23.82             | 0.03                                      |
| 2A-2A-66A-66A | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 20 | 67236          | 2190             | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 23.75                                 | 23.7              | -0.05                                     |
| 2A-2A-66B     | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 66   | 15 | 66786          | 2145             | 66   | 5  | 66879          | 2154.3           | 23.79                                 | 23.84             | 0.05                                      |
| 2A-2A-66B     | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 10 | 66585          | 2124.            |      |    |                |                  |      |    |                |                  |                                       |                   |                                           |

|               |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|---------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| 2A-4A-4A-5A   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 23.89 | 23.94 | 0.05  |
| 2A-4A-4A-12A  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 12 | 10 | 5095  | 737.5  | 23.79 | 23.7  | -0.09 |
| 2A-4A-4A-12A  | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.08 | 23.04 | -0.04 |
| 2A-4A-4A-12A  | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 23.94 | 23.95 | 0.01  |
| 2A-4A-5A-30A  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 5  | 10 | 2525  | 881.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.74 | -0.05 |
| 2A-4A-5A-30A  | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5  | 30 | 10 | 9820  | 2355   | 23.08 | 23.02 | -0.06 |
| 2A-4A-5A-30A  | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 20 | 2175  | 2132.5 | 30 | 10 | 9820  | 2355   | 23.89 | 23.81 | -0.08 |
| 2A-4A-5A-30A  | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 20 | 2175  | 2132.5 | 5  | 10 | 2525  | 881.5  | 22.65 | 22.72 | 0.07  |
| 2A-4A-7A-7A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.79 | 23.7  | -0.09 |
| 2A-4A-7A-7A   | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.08 | 22.98 | -0.1  |
| 2A-4A-7A-7A   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850  | 2630   | 2  | 20 | 900   | 16960  | 4  | 20 | 2175  | 2132.5 | 23.85 | 23.91 | 0.06  |
| 2A-4A-7C      | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 26748  | 23.79 | 23.74 | -0.05 |
| 2A-4A-7C      | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 26748  | 23.08 | 23.04 | -0.04 |
| 2A-4A-7C      | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256  | 2670.6 | 2  | 20 | 900   | 16960  | 4  | 20 | 2175  | 2132.5 | 23.85 | 23.87 | 0.02  |
| 2A-4A-7A-12A  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 7  | 20 | 3100  | 2655   | 12 | 10 | 5095  | 737.5  | 23.79 | 23.78 | -0.01 |
| 2A-4A-7A-12A  | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 12 | 10 | 5095  | 737.5  | 23.08 | 23.01 | -0.07 |
| 2A-4A-7A-12A  | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 16960  | 4  | 20 | 2175  | 2132.5 | 12 | 10 | 5095  | 737.5  | 23.85 | 23.87 | 0.02  |
| 2A-4A-7A-12A  | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 16960  | 4  | 20 | 2175  | 2132.5 | 7  | 20 | 3100  | 2655   | 23.94 | 23.94 | 0     |
| 2A-4A-12B     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.79 | 23.7  | -0.09 |
| 2A-4A-12B     | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.08 | 22.98 | -0.1  |
| 2A-4A-12B     | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 2  | 20 | 900   | 1960   | 4  | 20 | 2175  | 2132.5 | 23.94 | 23.87 | -0.07 |
| 2A-4A-12A-30A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.8  | 0.01  |
| 2A-4A-12A-30A | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.08 | 23.11 | 0.03  |
| 2A-4A-12A-30A | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 16960  | 4  | 20 | 2175  | 2132.5 | 30 | 10 | 9820  | 2355   | 23.94 | 23.9  | -0.04 |
| 2A-4A-12A-30A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 16960  | 4  | 20 | 2175  | 2132.5 | 12 | 10 | 5095  | 737.5  | 22.65 | 22.71 | 0.06  |
| 2A-4A-29A-30A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.71 | -0.08 |
| 2A-4A-29A-30A | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.08 | 23.08 | 0     |
| 2A-4A-29A-30A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 16960  | 4  | 20 | 2175  | 2132.5 | 29 | 10 | 9715  | 722.5  | 22.65 | 22.71 | 0.06  |
| 2A-5B-30A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 30 | 10 | 9820  | 2355   | 23.79 | 23.76 | -0.03 |
| 2A-5B-30A     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5  | 10 | 2497  | 878.7  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 23.89 | 23.89 | 0     |
| 2A-5B-30A     | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 22.65 | 22.64 | -0.01 |
| 2A-5B-66A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 66 | 20 | 66786 | 2145   | 23.79 | 23.86 | 0.07  |
| 2A-5B-66A     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5  | 10 | 2497  | 878.7  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.89 | 23.94 | 0.05  |
| 2A-5B-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 23.75 | 23.82 | 0.07  |
| 2A-5A-30A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.85 | 0.06  |
| 2A-5A-30A-66A | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.89 | 23.88 | -0.01 |
| 2A-5A-30A-66A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.61 | -0.04 |
| 2A-5A-30A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.81 | 0.06  |
| 2A-5A-46C     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.79 | 23.72 | -0.07 |
| 2A-5A-46C     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.89 | 23.8  | -0.09 |
| 2A-5A-48A-48A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.79 | 23.8  | 0.01  |
| 2A-5A-48A-48A | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.89 | 23.89 | 0     |
| 2A-5A-48C     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.79 | 23.84 | 0.05  |
| 2A-5A-48C     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.89 | 23.87 | -0.02 |
| 2A-5A-48A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 66 | 20 | 66786 | 2145   | 23.79 | 23.72 | -0.07 |
| 2A-5A-48A-66A | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 66 | 20 | 66786 | 2145   | 23.89 | 23.94 | 0.05  |
| 2A-5A-48A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 23.75 | 23.79 | 0.04  |
| 2A-5A-66A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.84 | 0.05  |
| 2A-5A-66A-66A | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.89 | 23.81 | -0.08 |
| 2A-5A-66A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66786 | 2145   | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5  | 23.75 | 23.78 | 0.03  |
| 2A-5A-66B     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 15 | 66786 | 2145   | 66 | 5  | 66879 | 2154.3 | 23.79 | 23.76 | -0.03 |
| 2A-5A-66B     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 15 | 66786 | 2145   | 66 | 5  | 66879 | 2154.3 | 23.89 | 23.96 | 0.07  |
| 2A-5A-66B     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5  | 23.75 | 23.7  | -0.05 |
| 2A-5A-66C     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.79 | 23.71 | -0.08 |
| 2A-5A-66C     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.89 | 23.86 | -0.03 |
| 2A-5A-66C     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5  | 23.75 | 23.65 | -0.1  |



|                |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|----------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| 2A-7A-7A-66A   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850  | 2630   | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.85 | 23.81 | -0.04 |
| 2A-7A-7A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.75 | 23.82 | 0.07  |
| 2A-7C-66A      | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 2674.8 | 66 | 20 | 66786 | 2145   | 23.79 | 23.7  | -0.09 |
| 2A-7C-66A      | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256  | 2670.6 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.85 | 23.89 | 0.04  |
| 2A-7C-66A      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 2674.8 | 23.75 | 23.72 | -0.03 |
| 2A-7A-12B      | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100  | 2655   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.79 | 23.81 | 0.02  |
| 2A-7A-12B      | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.85 | 23.84 | -0.01 |
| 2A-7A-12B      | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 23.94 | 23.89 | -0.05 |
| 2A-7A-12A-66A  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100  | 2655   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 23.79 | 23.81 | 0.02  |
| 2A-7A-12A-66A  | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.76 | -0.09 |
| 2A-7A-12A-66A  | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 23.94 | 23.93 | -0.01 |
| 2A-7A-12A-66A  | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.73 | -0.02 |
| 2A-7A-29A-66A  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100  | 2655   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.79 | 23.8  | 0.01  |
| 2A-7A-29A-66A  | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.9  | 0.05  |
| 2A-7A-29A-66A  | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 29 | 10 | 9715  | 722.5  | 23.75 | 23.65 | -0.1  |
| 2A-7A-46C      | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100  | 2655   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.79 | 23.81 | 0.02  |
| 2A-7A-46C      | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.85 | 23.79 | -0.06 |
| 2A-7A-66A-66A  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.69 | -0.1  |
| 2A-7A-66A-66A  | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.83 | -0.02 |
| 2A-7A-66A-66A  | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 23.75 | 23.76 | 0.01  |
| 2A-12B-66A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 66 | 20 | 66786 | 2145   | 23.79 | 23.69 | -0.1  |
| 2A-12B-66A     | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.94 | 23.93 | -0.01 |
| 2A-12B-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.75 | 23.8  | 0.05  |
| 2A-12A-30A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.75 | -0.04 |
| 2A-12A-30A-66A | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.94 | 23.89 | -0.05 |
| 2A-12A-30A-66A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.6  | -0.05 |
| 2A-12A-30A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.78 | 0.03  |
| 2A-12A-66A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.76 | -0.03 |
| 2A-12A-66A-66A | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.89 | -0.05 |
| 2A-12A-66A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.73 | -0.02 |
| 2A-12A-66C     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.79 | 23.77 | -0.02 |
| 2A-12A-66C     | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.94 | 23.98 | 0.04  |
| 2A-12A-66C     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.73 | -0.02 |
| 2A-14A-30A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 14 | 10 | 5330  | 763    | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.74 | -0.05 |
| 2A-14A-30A-66A | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.63 | 23.67 | 0.04  |
| 2A-14A-30A-66A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 22.65 | 22.6  | -0.05 |
| 2A-14A-66A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 30 | 10 | 9820  | 2355   | 23.75 | 23.74 | -0.01 |
| 2A-14A-66A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.84 | 0.05  |
| 2A-14A-66A-66A | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.63 | 23.53 | -0.1  |
| 2A-14A-66A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 23.75 | 23.66 | -0.09 |
| 2A-29A-30A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.78 | -0.01 |
| 2A-29A-30A-66A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.59 | -0.06 |
| 2A-29A-30A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.66 | -0.09 |
| 2A-30A-66A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.84 | 0.05  |
| 2A-30A-66A-66A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.61 | -0.04 |
| 2A-30A-66A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 23.75 | 23.8  | 0.05  |
| 2A-46A-46C     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 53540 | 5825   | 23.79 | 23.8  | 0.01  |
| 2A-46D         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.79 | 23.81 | 0.02  |
| 2A-46C-48A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 48 | 20 | 55990 | 3625   | 23.79 | 23.7  | -0.09 |
| 2A-46A-46A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 47090 | 5180   | 66 | 20 | 66786 | 2145   | 23.79 | 23.85 | 0.06  |
| 2A-46A-46A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 47090 | 5180   | 23.75 | 23.81 | 0.06  |
| 2A-46C-66A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 66 | 20 | 66786 | 2145   | 23.79 | 23.84 | 0.05  |
| 2A-46C-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.75 | 23.74 | -0.01 |
| 2A-46A-48C     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.79 | 23.7  | -0.09 |
| 2A-46A-48A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 66 | 20 | 66786 | 2145   | 23.79 | 23.7  | -0.09 |
| 2A-46A-48A-66A | 66 | 10 | 132022 | 1715   | 66486 |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |

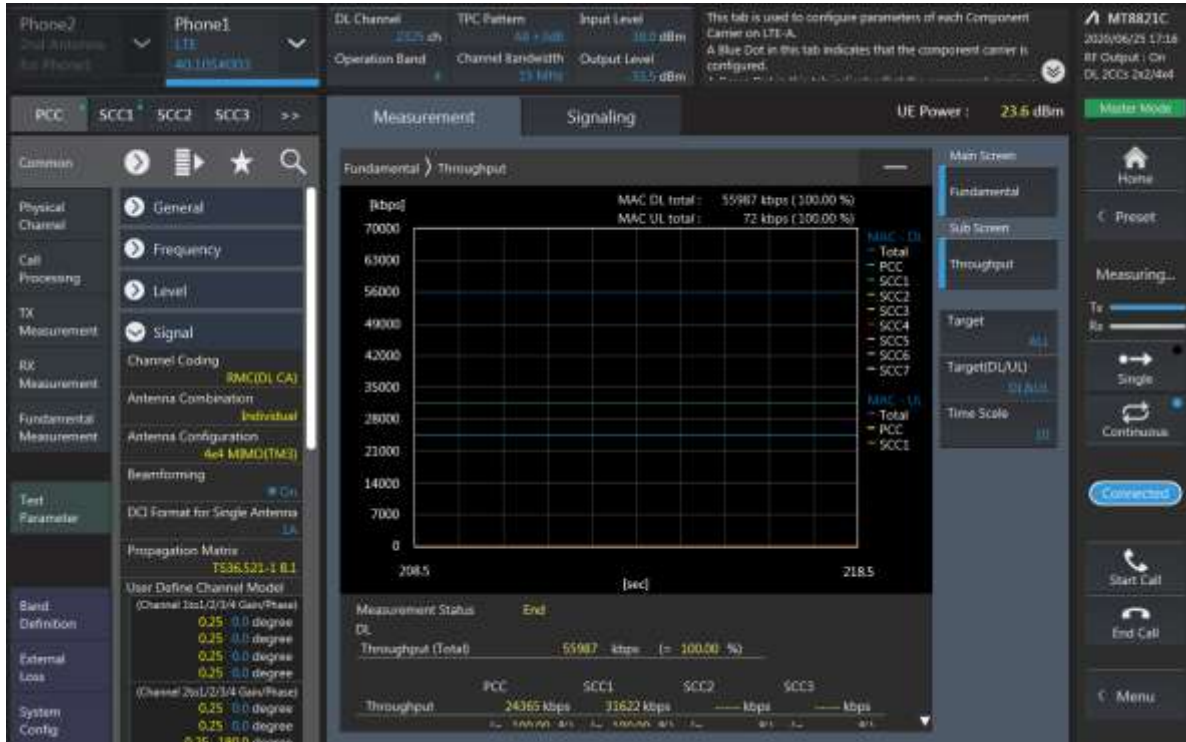


|                 |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|-----------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| 2A-48C-66A      | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 66 | 20 | 66786 | 2145   | 23.79 | 23.74 | -0.05 |
| 2A-48C-66A      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.66 | -0.09 |
| 2A-66A-66A-71A  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 71 | 20 | 68761 | 6345   | 23.79 | 23.8  | 0.01  |
| 2A-66A-66A-71A  | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 71 | 20 | 68761 | 6345   | 23.75 | 23.65 | -0.1  |
| 2A-66A-66A-71A  | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 24.47 | 24.44 | -0.03 |
| 2A-66A-66B      | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 5  | 67168 | 2183.2 | 66 | 15 | 67261 | 2192.5 | 23.79 | 23.71 | -0.08 |
| 2A-66A-66B      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 66 | 5  | 67168 | 2183.2 | 66 | 15 | 67261 | 2192.5 | 23.75 | 23.71 | -0.04 |
| 2A-66A-66B      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960   | 66 | 20 | 67236 | 2190   | 23.75 | 23.7  | -0.05 |
| 2A-66C-71A      | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 71 | 20 | 68761 | 6345   | 23.79 | 23.85 | 0.06  |
| 2A-66C-71A      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960   | 71 | 20 | 68761 | 6345   | 23.75 | 23.81 | 0.06  |
| 2A-66C-71A      | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 24.47 | 24.43 | -0.04 |
| 4A-4A-12B       | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.08 | 23.15 | 0.07  |
| 4A-4A-12B       | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 23.94 | 24.01 | 0.07  |
| 4A-46A-46C      | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 53540 | 5825   | 23.08 | 23.11 | 0.03  |
| 4A-46D          | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.08 | 23.11 | 0.03  |
| 4A-48D          | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 48 | 20 | 56386 | 3664.6 | 23.08 | 23.05 | -0.03 |
| 5B-30A-66A      | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5  | 10 | 2497  | 878.7  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.89 | 23.91 | 0.02  |
| 5B-30A-66A      | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 66 | 20 | 66786 | 2145   | 22.65 | 22.68 | 0.03  |
| 5B-30A-66A      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 30 | 10 | 9820  | 2355   | 23.75 | 23.75 | 0     |
| 5A-46D          | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.89 | 23.95 | 0.06  |
| 5A-46C-66A      | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 66 | 20 | 66786 | 2145   | 23.89 | 23.91 | 0.02  |
| 5A-46C-66A      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.75 | 23.65 | -0.1  |
| 5B-66A-66A      | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5  | 10 | 2497  | 878.7  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.89 | 23.89 | 0     |
| 5B-66A-66A      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 23.75 | 23.71 | -0.04 |
| 5A-30A-66A-66A  | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.89 | 23.9  | 0.01  |
| 5A-30A-66A-66A  | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.62 | -0.03 |
| 5A-30A-66A-66A  | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 5  | 10 | 2525  | 881.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.68 | -0.07 |
| 5A-48A-48C      | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.89 | 23.92 | 0.03  |
| 5A-48D          | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 48 | 20 | 56386 | 3664.6 | 23.89 | 23.83 | -0.06 |
| 5A-48A-48A-66A  | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.89 | 23.95 | 0.06  |
| 5A-48A-48A-66A  | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.67 | -0.08 |
| 5A-48C-66A      | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 66 | 20 | 66786 | 2145   | 23.89 | 23.87 | -0.02 |
| 5A-48C-66A      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.73 | -0.02 |
| 7A-7A-29A-66A   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850  | 2630   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.84 | -0.01 |
| 7A-7A-29A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 29 | 10 | 9715  | 722.5  | 23.75 | 23.69 | -0.06 |
| 7C-29A-66A      | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256  | 2670.6 | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.88 | 0.03  |
| 7C-29A-66A      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 2674.8 | 29 | 10 | 9715  | 722.5  | 23.75 | 23.7  | -0.05 |
| 7A-7A-46C       | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850  | 2630   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.85 | 23.81 | -0.04 |
| 7C-46C          | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256  | 2670.6 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.85 | 23.85 | 0     |
| 7A-7A-66A-66A   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850  | 2630   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.84 | -0.01 |
| 7A-7A-66A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.75 | 23.74 | -0.01 |
| 7C-66A-66A      | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256  | 2670.6 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.84 | -0.01 |
| 7C-66A-66A      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 2674.8 | 23.75 | 23.65 | -0.1  |
| 7A-12B-66A      | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 66 | 20 | 66786 | 2145   | 23.85 | 23.81 | -0.04 |
| 7A-12B-66A      | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 23.94 | 24.01 | 0.07  |
| 7A-12B-66A      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 7  | 20 | 3100  | 2655   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.75 | 23.81 | 0.06  |
| 7A-46D          | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.85 | 23.82 | -0.03 |
| 12B-66A-66A     | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.92 | -0.02 |
| 12B-66A-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.75 | 23.8  | 0.05  |
| 12A-30A-66A-66A | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.92 | -0.02 |
| 12A-30A-66A-66A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.65 | 0     |
| 12A-30A-66A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.79 | 0.04  |
| 12A-46D         | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.94 | 23.85 | -0.09 |
| 14A-30A-66A-66A | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.63 | 23.54 | -0.09 |
| 14A-30A-66A-66A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.56 | -0.09 |
| 14A-30A-66A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |

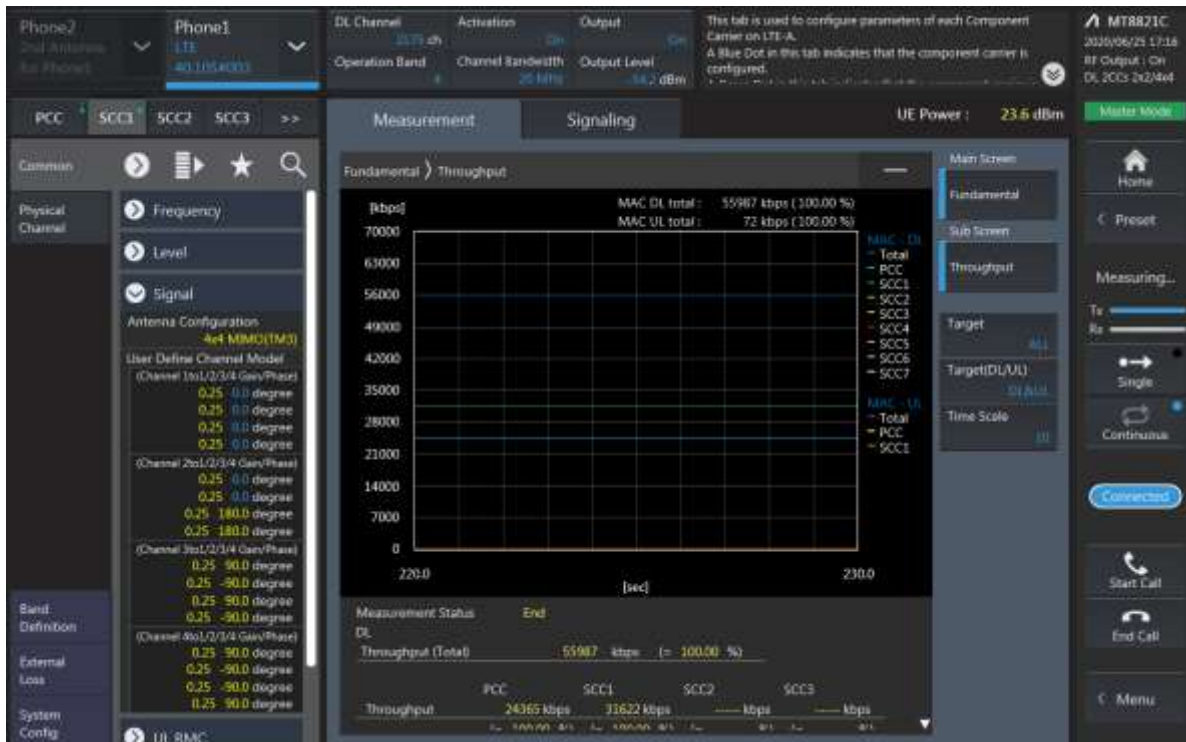
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|-----------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| 25A-46D         | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.4  | 23.45 | 0.05  |
| 29A-30A-66A-66A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.62 | -0.03 |
| 29A-30A-66A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.69 | -0.06 |
| 41A-41D PC3     | 41 | 20 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 41094 | 2640.4 | 41 | 20 | 41292 | 2660.2 | 41 | 20 | 41490 | 2680   | 23.43 | 23.35 | -0.08 |
| 41A-41D PC3     | 41 | 20 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40818 | 2612.8 | 41 | 20 | 41016 | 2632.6 | 41 | 20 | 39750 | 2506   | 23.43 | 23.45 | 0.02  |
| 41A-41D PC2     | 41 | 15 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 41094 | 2640.4 | 41 | 20 | 41292 | 2660.2 | 41 | 20 | 41490 | 2680   | 26.17 | 26.13 | -0.04 |
| 41A-41D PC2     | 41 | 15 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40791 | 2610.1 | 41 | 20 | 40989 | 2629.9 | 41 | 20 | 39750 | 2506   | 26.17 | 26.15 | -0.02 |
| 41C-41C PC3     | 41 | 20 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40818 | 2612.8 | 41 | 20 | 39948 | 2525.8 | 41 | 20 | 39750 | 2506   | 23.43 | 23.49 | 0.06  |
| 41C-41C PC2     | 41 | 15 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40791 | 2610.1 | 41 | 20 | 39948 | 2525.8 | 41 | 20 | 39750 | 2506   | 26.17 | 26.11 | -0.06 |
| 41E PC3         | 41 | 20 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40818 | 2612.8 | 41 | 20 | 41016 | 2632.6 | 41 | 20 | 41214 | 2652.4 | 23.43 | 23.46 | 0.03  |
| 41E PC2         | 41 | 15 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40791 | 2610.1 | 41 | 20 | 40989 | 2629.9 | 41 | 20 | 41187 | 2649.7 | 26.17 | 26.2  | 0.03  |
| 46A-46C-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 53540 | 5825   | 23.75 | 23.79 | 0.04  |
| 46A-46C-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.8  | 0.05  |
| 46D-66A         | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.75 | 23.66 | -0.09 |
| 46C-48A-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 48 | 20 | 55990 | 3625   | 23.75 | 23.7  | -0.05 |
| 46C-66A-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.75 | 23.82 | 0.07  |
| 48A-48A-66A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.71 | -0.04 |
| 48A-48C-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.75 | 23.79 | 0.04  |
| 48A-48D         | 48 | 5  | 56715  | 3697.5 | 56715 | 3697.5 | QPSK | 1 | 12 | 48 | 20 | 55736 | 3599.6 | 48 | 20 | 55538 | 3579.8 | 48 | 20 | 55340 | 3560   | 21.77 | 21.71 | -0.06 |
| 48A-48D         | 48 | 5  | 56715  | 3697.5 | 56715 | 3697.5 | QPSK | 1 | 12 | 48 | 20 | 56598 | 3685.8 | 48 | 20 | 56400 | 3666   | 48 | 20 | 55340 | 3560   | 21.77 | 21.75 | -0.02 |
| 48C-48C         | 48 | 5  | 56715  | 3697.5 | 56715 | 3697.5 | QPSK | 1 | 12 | 48 | 20 | 56598 | 3685.8 | 48 | 20 | 55538 | 3579.8 | 48 | 20 | 55340 | 3560   | 21.77 | 21.82 | 0.05  |
| 48C-66A-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.69 | -0.06 |
| 48D-66A         | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 48 | 20 | 56386 | 3664.6 | 23.75 | 23.66 | -0.09 |
| 48E             | 48 | 5  | 56715  | 3697.5 | 56715 | 3697.5 | QPSK | 1 | 12 | 48 | 20 | 56598 | 3685.8 | 48 | 20 | 56400 | 3666   | 48 | 20 | 56202 | 3646.2 | 21.77 | 21.84 | 0.07  |

## LTE Down Link 2CA 4x4 MIMO Call Setup

PCC Setting : Channel/ RB/ BW/ Modulation



SCC Setting : Channel/ RB/ BW/ Modulation and call Connection

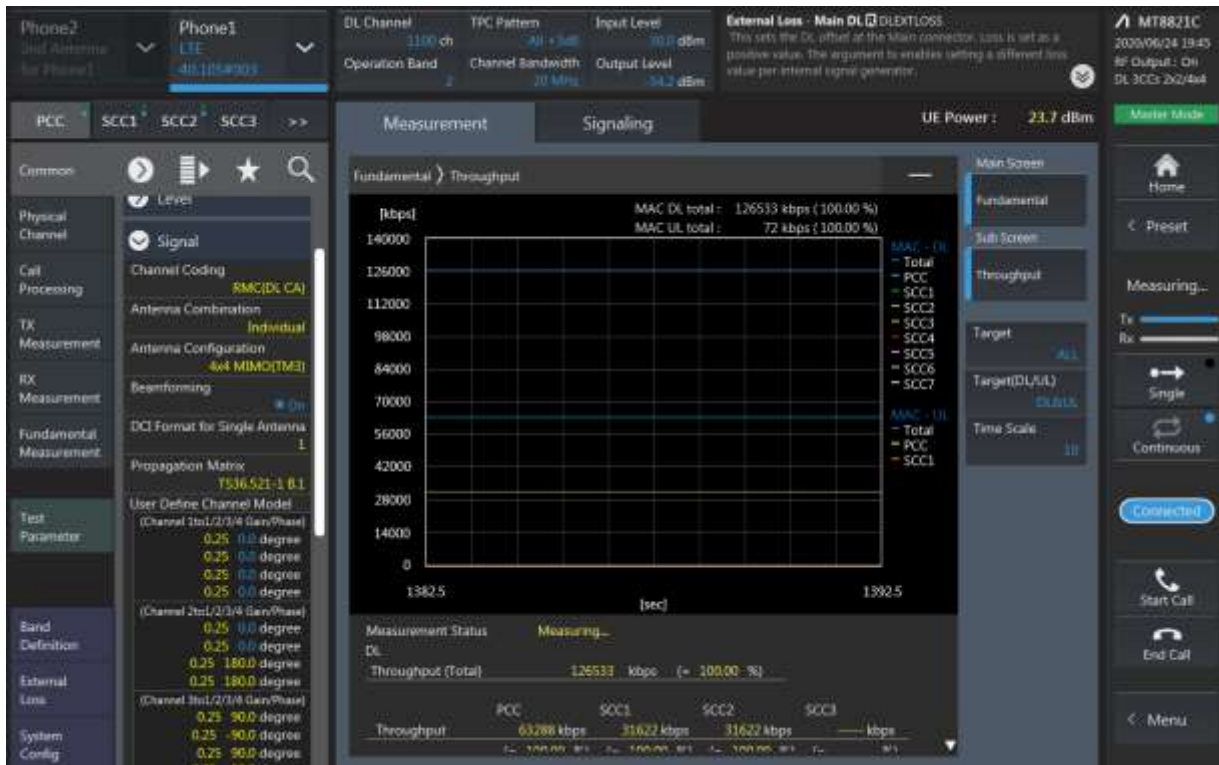


## LTE Downlink 2CA 4X4 MIMO Maximum Conducted Power

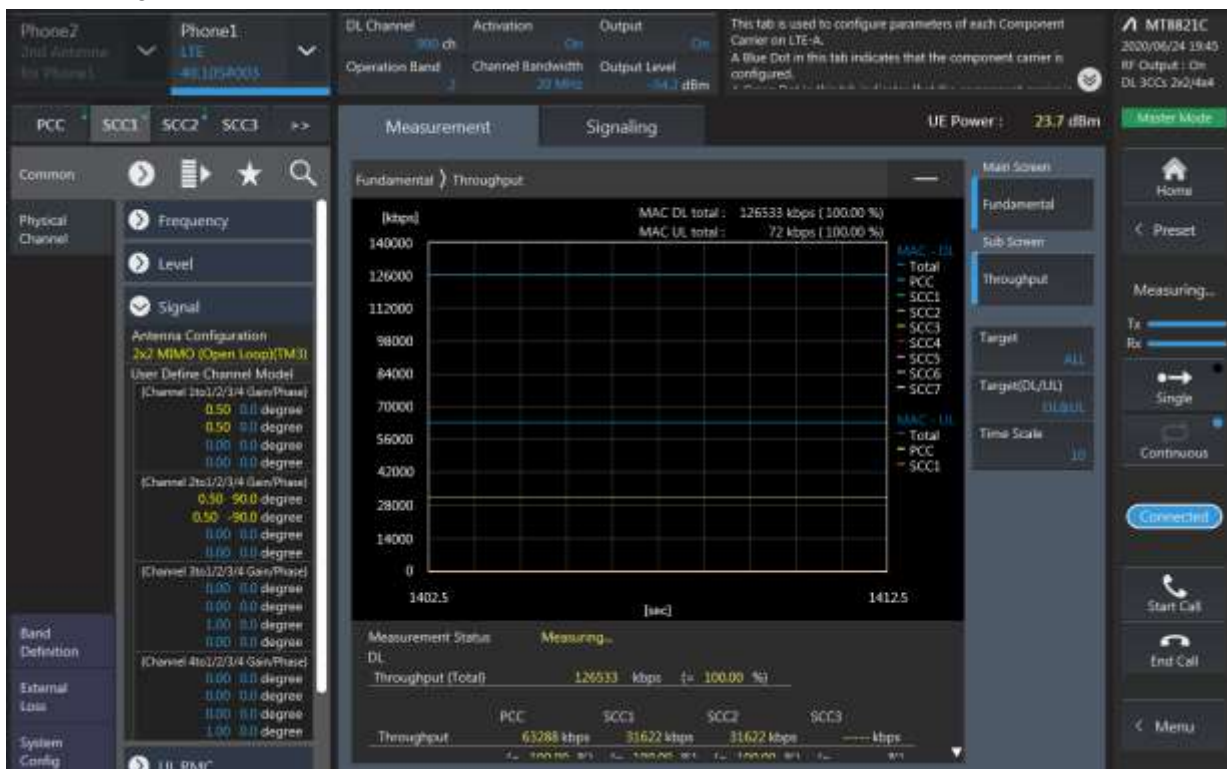
| Combination     | PCC  |    |                   |                     |                   |                     |            |    |        | SCC  |    |                   |                     | Tx Power                                       |                                                   | Deviaion<br>(2)- (1) |
|-----------------|------|----|-------------------|---------------------|-------------------|---------------------|------------|----|--------|------|----|-------------------|---------------------|------------------------------------------------|---------------------------------------------------|----------------------|
|                 | Band | BW | PCC UL<br>Channel | PCC UL<br>Frequency | PCC DL<br>Channel | PCC DL<br>Frequency | Modulation | RB | offset | Band | BW | SCC DL<br>Channel | SCC DL<br>Frequency | LTE Single<br>Carrier Tx<br>Power (dBm)<br>(1) | LTE Tx Power<br>with DL CA<br>Enabled(dBm)<br>(2) |                      |
| [4A]-13A(0,1)   | 4    | 10 | 20350             | 1750                | 2350              | 2150                | QPSK       | 1  | 0      | 13   | 10 | 5230              | 751                 | 23.08                                          | 22.99                                             | -0.09                |
| [4A]-13A(0)     | 13   | 10 | 23230             | 782                 | 5230              | 751                 | QPSK       | 1  | 0      | 4    | 20 | 2175              | 2132.5              | 23.78                                          | 23.75                                             | -0.03                |
| [4A]-13A(1)     | 13   | 10 | 23230             | 782                 | 5230              | 751                 | QPSK       | 1  | 0      | 4    | 10 | 2175              | 2132.5              | 23.78                                          | 23.78                                             | 0                    |
| 5A-[25A]        | 5    | 5  | 20425             | 826.5               | 2425              | 871.5               | QPSK       | 1  | 0      | 25   | 20 | 8365              | 1962.5              | 23.89                                          | 23.94                                             | 0.05                 |
| 5A-[25A]        | 25   | 15 | 26615             | 1907.5              | 8615              | 1987.5              | QPSK       | 1  | 36     | 5    | 10 | 2525              | 881.5               | 23.4                                           | 23.45                                             | 0.05                 |
| 13A-[48A]       | 13   | 10 | 23230             | 782                 | 5230              | 751                 | QPSK       | 1  | 0      | 48   | 20 | 55990             | 3625                | 23.78                                          | 23.83                                             | 0.05                 |
| 41A-[41A] PC3   | 41   | 20 | 40620             | 2593                | 40620             | 2593                | QPSK       | 1  | 0      | 41   | 20 | 41490             | 2680                | 23.43                                          | 23.34                                             | -0.09                |
| [41A]-41A PC3   | 41   | 20 | 40620             | 2593                | 40620             | 2593                | QPSK       | 1  | 0      | 41   | 20 | 41490             | 2680                | 23.43                                          | 23.5                                              | 0.07                 |
| [41A]-[41A] PC3 | 41   | 20 | 40620             | 2593                | 40620             | 2593                | QPSK       | 1  | 0      | 41   | 20 | 41490             | 2680                | 23.43                                          | 23.35                                             | -0.08                |
| 41A-[41A] PC2   | 41   | 15 | 40620             | 2593                | 40620             | 2593                | QPSK       | 1  | 0      | 41   | 20 | 41490             | 2680                | 26.17                                          | 26.22                                             | 0.05                 |
| [41A]-41A PC2   | 41   | 15 | 40620             | 2593                | 40620             | 2593                | QPSK       | 1  | 0      | 41   | 20 | 41490             | 2680                | 26.17                                          | 26.16                                             | -0.01                |
| [41A]-[41A] PC2 | 41   | 15 | 40620             | 2593                | 40620             | 2593                | QPSK       | 1  | 0      | 41   | 20 | 41490             | 2680                | 26.17                                          | 26.11                                             | -0.06                |

## LTE Down Link 3CA 4x4 MIMO Call Setup

PCC Setting: Channel /RB/BW/Modulation

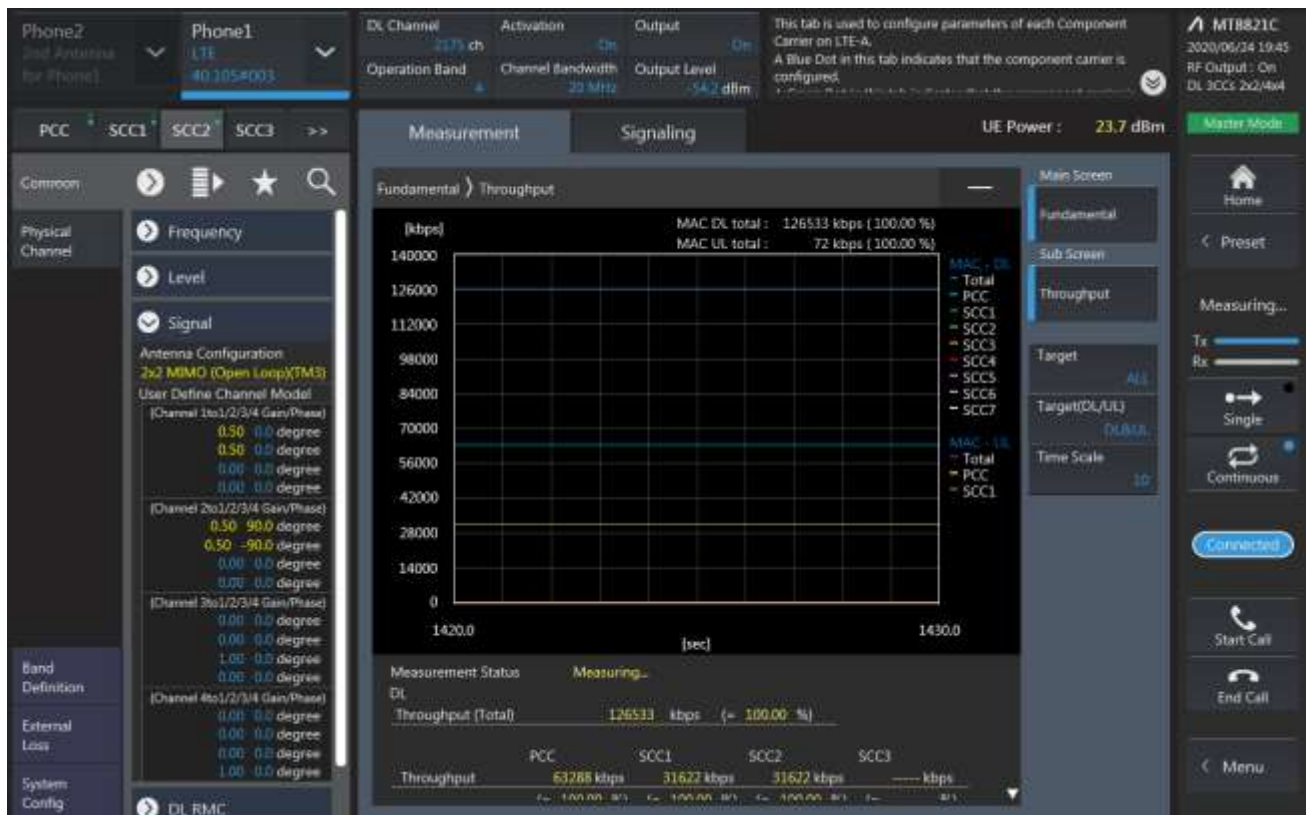


CC1 Setting : Channel /RB/BW/Modulation





## SCC2 Setting (Channel /RB/BW/Modulation )and call Connection



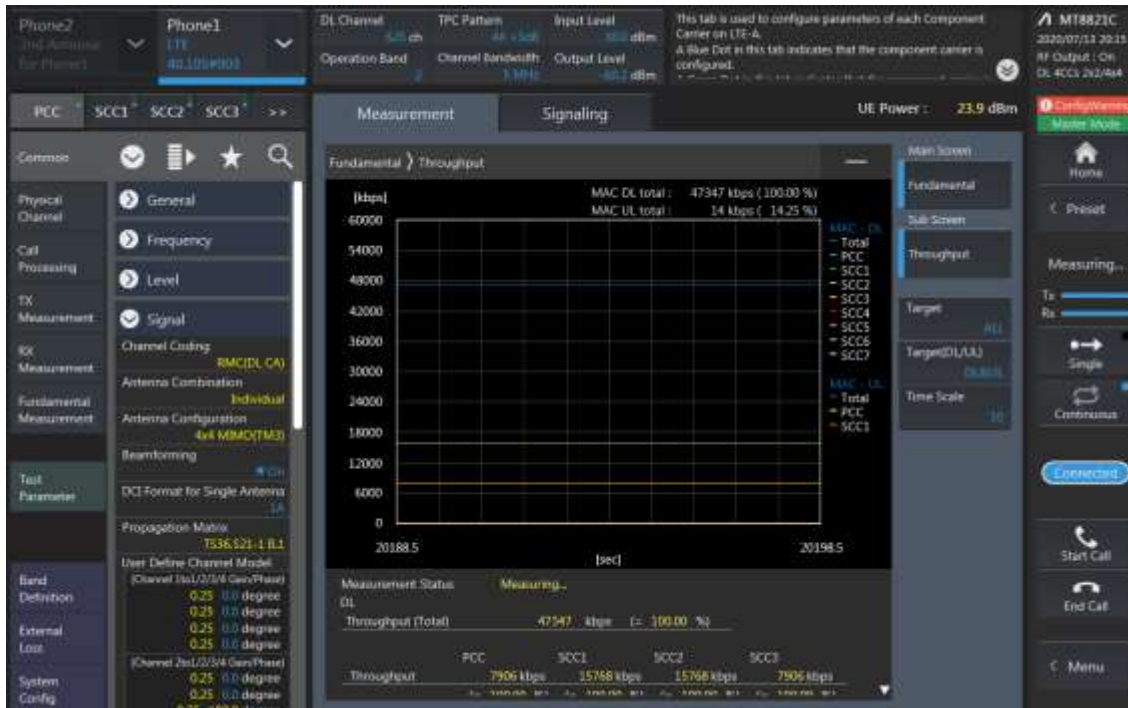
## LTE Downlink 3CA 4X4 MIMO Maximum Conducted Power

| Combination       | PCC  |    |                |                  |                |                  |            |    |        | SCC  |    |                |                  | SCC  |    |                |                  | Tx Power                              |                                           |                   |
|-------------------|------|----|----------------|------------------|----------------|------------------|------------|----|--------|------|----|----------------|------------------|------|----|----------------|------------------|---------------------------------------|-------------------------------------------|-------------------|
|                   | Band | BW | PCC UL Channel | PCC UL Frequency | PCC DL Channel | PCC DL Frequency | Modulation | RB | offset | Band | BW | SCC DL Channel | SCC DL Frequency | Band | BW | SCC DL Channel | SCC DL Frequency | LTE Single Carrier Tx Power (dBm) (1) | LTE Tx Power with DL CA Enabled (dBm) (2) | Deviation (2)-(1) |
| [2A]-4A-71A       | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 4    | 20 | 2175           | 2132.5           | 71   | 20 | 68761          | 634.5            | 23.79                                 | 23.85                                     | 0.06              |
| 2A-[4A]-71A       | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 4    | 20 | 2175           | 2132.5           | 71   | 20 | 68761          | 634.5            | 23.79                                 | 23.69                                     | -0.1              |
| [2A]-[4A]-71A     | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 4    | 20 | 2175           | 2132.5           | 71   | 20 | 68761          | 634.5            | 23.79                                 | 23.75                                     | -0.04             |
| [2A]-4A-71A       | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 71   | 20 | 68761          | 634.5            | 23.08                                 | 23.06                                     | -0.02             |
| 2A-[4A]-71A       | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 71   | 20 | 68761          | 634.5            | 23.08                                 | 23.1                                      | 0.02              |
| [2A]-[4A]-71A     | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 71   | 20 | 68761          | 634.5            | 23.08                                 | 23.08                                     | 0                 |
| [2A]-4A-71A       | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 2    | 20 | 900            | 1960             | 4    | 20 | 2175           | 2132.5           | 24.47                                 | 24.49                                     | 0.02              |
| 2A-[4A]-71A       | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 2    | 20 | 900            | 1960             | 4    | 20 | 2175           | 2132.5           | 24.47                                 | 24.4                                      | -0.07             |
| [2A]-[4A]-71A     | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 2    | 20 | 900            | 1960             | 4    | 20 | 2175           | 2132.5           | 24.47                                 | 24.52                                     | 0.05              |
| [2A]-5A-7A        | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 5    | 10 | 2525           | 881.5            | 7    | 20 | 3100           | 2655             | 23.79                                 | 23.83                                     | 0.04              |
| [2A]-5A-7A        | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 7    | 20 | 3100           | 2655             | 23.89                                 | 23.96                                     | 0.07              |
| [2A]-5A-7A        | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 5    | 10 | 2525           | 881.5            | 23.85                                 | 23.86                                     | 0.01              |
| 2A-[3A]-66A       | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 13   | 10 | 5230           | 751              | 66   | 20 | 66786          | 2145             | 23.79                                 | 23.84                                     | 0.05              |
| [2A]-[3A]-66A     | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 13   | 10 | 5230           | 751              | 66   | 20 | 66786          | 2145             | 23.79                                 | 23.78                                     | -0.01             |
| [2A]-[3A]-66A     | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 13   | 10 | 5230           | 751              | 66   | 20 | 66786          | 2145             | 23.79                                 | 23.77                                     | -0.02             |
| 2A-[3A]-66A       | 13   | 10 | 23230          | 782              | 5230           | 751              | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 66   | 20 | 66786          | 2145             | 23.78                                 | 23.81                                     | 0.03              |
| [2A]-[3A]-66A     | 13   | 10 | 23230          | 782              | 5230           | 751              | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 66   | 20 | 66786          | 2145             | 23.78                                 | 23.68                                     | -0.1              |
| [2A]-[3A]-66A     | 13   | 10 | 23230          | 782              | 5230           | 751              | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 66   | 20 | 66786          | 2145             | 23.78                                 | 23.76                                     | -0.02             |
| 2A-[3A]-66A       | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 2    | 20 | 900            | 1960             | 13   | 10 | 5230           | 751              | 23.75                                 | 23.7                                      | -0.05             |
| [2A]-[3A]-66A     | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 2    | 20 | 900            | 1960             | 13   | 10 | 5230           | 751              | 23.75                                 | 23.79                                     | 0.04              |
| [2A]-[3A]-66A     | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 2    | 20 | 900            | 1960             | 13   | 10 | 5230           | 751              | 23.75                                 | 23.82                                     | 0.07              |
| [4A]-4A-7A(0)     | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 10 | 2000           | 2115             | 7    | 20 | 3100           | 2655             | 23.08                                 | 23.12                                     | 0.04              |
| 4A-[4A]-7A(0)     | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 10 | 2000           | 2115             | 7    | 20 | 3100           | 2655             | 23.08                                 | 23.11                                     | 0.03              |
| [4A]-[4A]-7A(0)   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 10 | 2000           | 2115             | 7    | 20 | 3100           | 2655             | 23.08                                 | 23.12                                     | 0.04              |
| [4A]-4A-7A(1)     | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 7    | 20 | 3100           | 2655             | 23.08                                 | 23.11                                     | 0.03              |
| 4A-[4A]-7A(1)     | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 7    | 20 | 3100           | 2655             | 23.08                                 | 23.15                                     | 0.07              |
| [4A]-[4A]-7A(1)   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 7    | 20 | 3100           | 2655             | 23.08                                 | 23.04                                     | -0.04             |
| [4A]-4A-7A(0)     | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 4    | 10 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.85                                 | 23.87                                     | 0.02              |
| 4A-[4A]-7A(0)     | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 4    | 10 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.85                                 | 23.88                                     | 0.03              |
| [4A]-[4A]-7A(0)   | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 4    | 10 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.85                                 | 23.88                                     | 0.03              |
| [4A]-4A-7A(1)     | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.85                                 | 23.89                                     | 0.04              |
| 4A-[4A]-7A(1)     | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.85                                 | 23.85                                     | 0                 |
| [4A]-[4A]-7A(1)   | 7    | 10 | 21400          | 2565             | 3400           | 2685             | QPSK       | 1  | 0      | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.85                                 | 23.86                                     | 0.01              |
| [4A]-4A-29A       | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 29   | 10 | 9715           | 722.5            | 23.08                                 | 23.03                                     | -0.05             |
| [4A]-4A-71A       | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 71   | 20 | 68761          | 634.5            | 23.08                                 | 23.11                                     | 0.03              |
| 4A-[4A]-71A       | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 71   | 20 | 68761          | 634.5            | 23.08                                 | 22.98                                     | -0.1              |
| [4A]-[4A]-71A     | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 71   | 20 | 68761          | 634.5            | 23.08                                 | 23.02                                     | -0.06             |
| [4A]-4A-71A       | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 24.47                                 | 24.39                                     | -0.08             |
| 4A-[4A]-71A       | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 24.47                                 | 24.5                                      | 0.03              |
| [4A]-[4A]-71A     | 71   | 5  | 133442         | 695              | 68906          | 649              | QPSK       | 1  | 24     | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 24.47                                 | 24.47                                     | 0                 |
| [4A]-46A-46A      | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 46   | 20 | 50665          | 5537.5           | 46   | 20 | 47090          | 5180             | 23.08                                 | 23                                        | -0.08             |
| 13A-66A-[66A]     | 13   | 10 | 23230          | 782              | 5230           | 751              | QPSK       | 1  | 0      | 66   | 20 | 66786          | 2145             | 66   | 20 | 67236          | 2190             | 23.78                                 | 23.73                                     | -0.05             |
| 13A-[66A]-66A     | 13   | 10 | 23230          | 782              | 5230           | 751              | QPSK       | 1  | 0      | 66   | 20 | 66786          | 2145             | 66   | 20 | 67236          | 2190             | 23.78                                 | 23.8                                      | 0.02              |
| [13A]-[66A]-[66A] | 13   | 10 | 23230          | 782              | 5230           | 751              | QPSK       | 1  | 0      | 66   | 20 | 66786          | 2145             | 66   | 20 | 67236          | 2190             | 23.78                                 | 23.84                                     | 0.06              |
| 13A-66A-[66A]     | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 20 | 67236          | 2190             | 13   | 10 | 5230           | 751              | 23.75                                 | 23.7                                      | -0.05             |
| 13A-[66A]-66A     | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 20 | 67236          | 2190             | 13   | 10 | 5230           | 751              | 23.75                                 | 23.69                                     | -0.06             |
| [13A]-[66A]-[66A] | 66   | 10 | 132022         | 1715             | 66486          | 2115             | QPSK       | 1  | 49     | 66   | 20 | 67236          | 2190             | 13   | 10 | 5230           | 751              | 23.75                                 | 23.73                                     | -0.02             |
| [25A]-25A-26A     | 25   | 15 | 26615          | 1907.5           | 8615           | 1987.5           | QPSK       | 1  | 36     | 25   | 20 | 8140           | 1940             | 26   | 5  | 8865           | 876.5            | 23.4                                  | 23.41                                     | 0.01              |

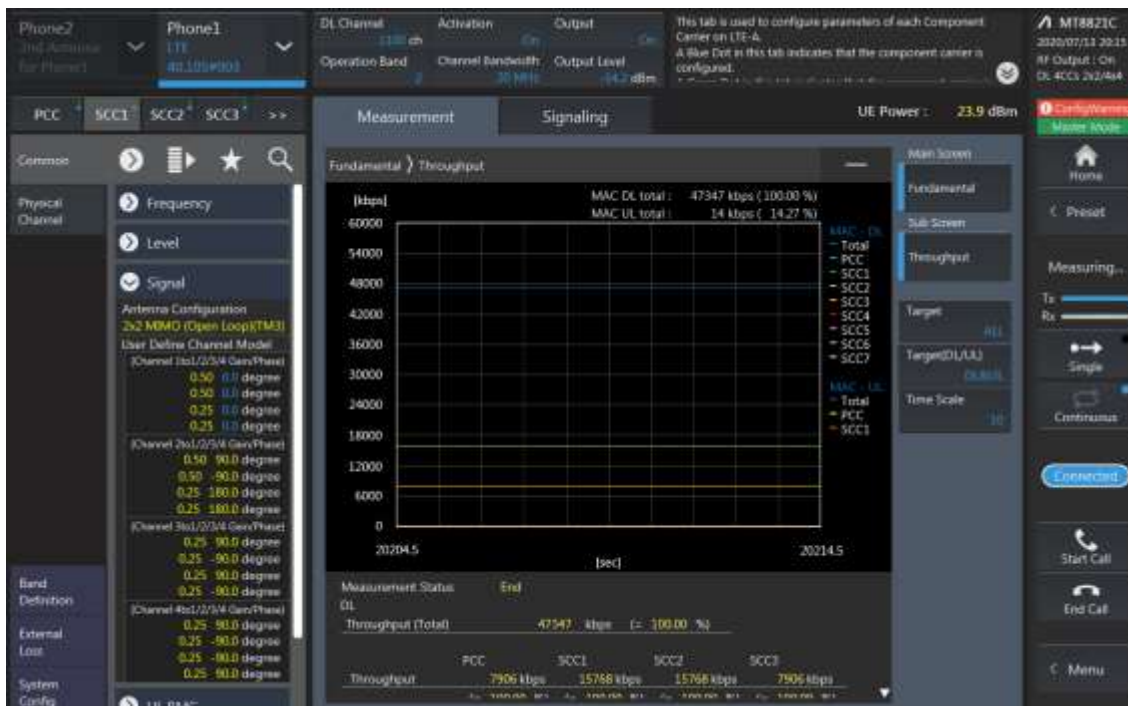
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|-----------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| 25A-[25A]-26A   | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 25 | 20 | 8140  | 1940   | 26 | 5  | 8865  | 876.5  | 23.4  | 23.42 | 0.02  |
| [25A]-[25A]-26A | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 25 | 20 | 8140  | 1940   | 26 | 5  | 8865  | 876.5  | 23.4  | 23.46 | 0.06  |
| [25A]-25A-26A   | 26 | 5  | 26715  | 816.5  | 8715  | 861.5  | QPSK | 1 | 24 | 25 | 20 | 8365  | 1962.5 | 25 | 20 | 8590  | 1985   | 24.19 | 24.21 | 0.02  |
| 25A-[25A]-26A   | 26 | 5  | 26715  | 816.5  | 8715  | 861.5  | QPSK | 1 | 24 | 25 | 20 | 8365  | 1962.5 | 25 | 20 | 8590  | 1985   | 24.19 | 24.22 | 0.03  |
| [25A]-[25A]-26A | 26 | 5  | 26715  | 816.5  | 8715  | 861.5  | QPSK | 1 | 24 | 25 | 20 | 8365  | 1962.5 | 25 | 20 | 8590  | 1985   | 24.19 | 24.12 | -0.07 |
| 26A-[41C]       | 26 | 5  | 26715  | 816.5  | 8715  | 861.5  | QPSK | 1 | 24 | 41 | 20 | 40620 | 2593   | 41 | 20 | 40818 | 2612.8 | 24.19 | 24.25 | 0.06  |
| 46A-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 46 | 20 | 50665 | 5537.5 | 23.75 | 23.8  | 0.05  |
| 46A-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 46 | 20 | 50665 | 5537.5 | 23.75 | 23.72 | -0.03 |
| 46A-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 46 | 20 | 50665 | 5537.5 | 23.75 | 23.69 | -0.06 |
| [48A]-48A-71A   | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 24.47 | 24.5  | 0.03  |
| [48A]-[48A]-71A | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 24.47 | 24.54 | 0.07  |
| [48C]-71A       | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 24.47 | 24.4  | -0.07 |
| [66A]-66C       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67038 | 2170.2 | 66 | 20 | 67236 | 2190   | 23.75 | 23.77 | 0.02  |
| 66A-[66C]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67038 | 2170.2 | 66 | 20 | 67236 | 2190   | 23.75 | 23.65 | -0.1  |
| [66A]-[66C]     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67038 | 2170.2 | 66 | 20 | 67236 | 2190   | 23.75 | 23.81 | 0.06  |
| [66A]-66C       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 66 | 20 | 67236 | 2190   | 23.75 | 23.79 | 0.04  |
| 66A-[66C]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 66 | 20 | 67236 | 2190   | 23.75 | 23.73 | -0.02 |
| [66A]-[66C]     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 66 | 20 | 67236 | 2190   | 23.75 | 23.77 | 0.02  |
| [66C]-71A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 71 | 20 | 68761 | 634.5  | 23.75 | 23.78 | 0.03  |
| [66C]-71A       | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 24.47 | 24.51 | 0.04  |

## LTE Down Link 4CA 4x4 MIMO Call Setup

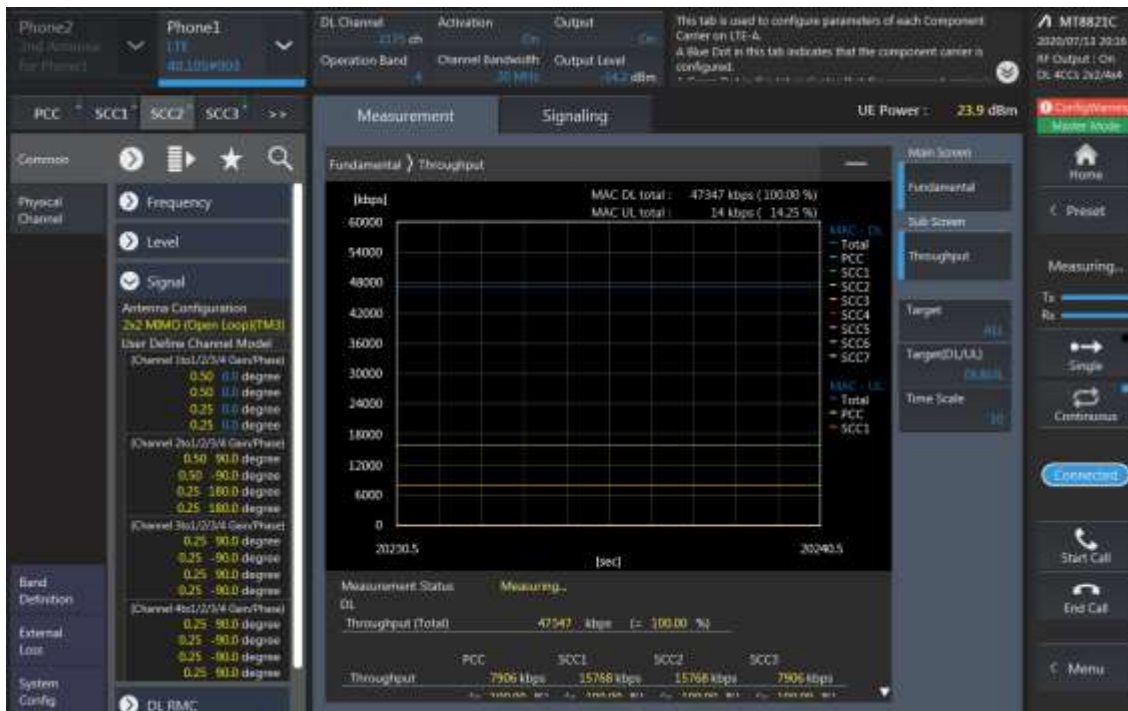
PCC Setting: Channel /RB/BW/Modulation



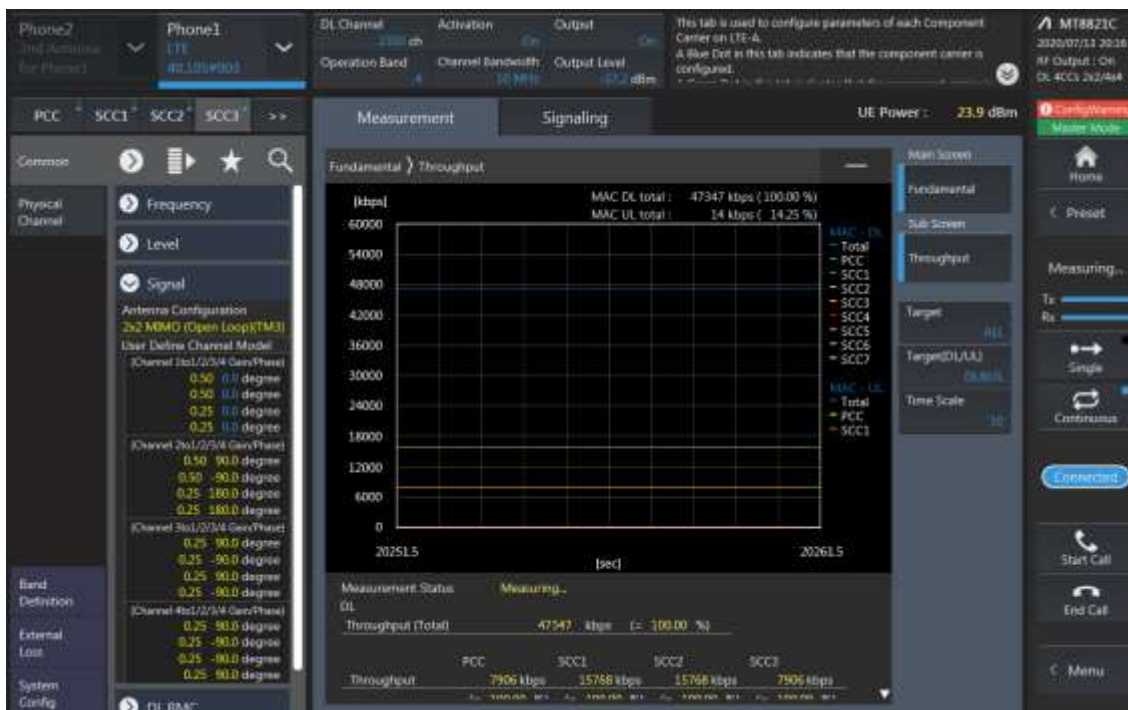
SCC1 Setting : Channel /RB/BW/Modulation



### SCC2 Setting (Channel /RB/BW/Modulation ) and call Connection



### SCC3 Setting (Channel /RB/BW/Modulation ) and call Connection





### LTE Downlink 4CA 4X4 MIMO Maximum Conducted Power

| Combination      | PCC  |    |                |                  |                |                  |            |    |        | SCC  |    |                |                  | SCC  |    |                |                  | SCC  |    |                |                  | Tx Power                              |                                           |                   |
|------------------|------|----|----------------|------------------|----------------|------------------|------------|----|--------|------|----|----------------|------------------|------|----|----------------|------------------|------|----|----------------|------------------|---------------------------------------|-------------------------------------------|-------------------|
|                  | Band | BW | PCC UL Channel | PCC UL Frequency | PCC DL Channel | PCC DL Frequency | Modulation | RB | offset | Band | BW | SCC DL Channel | SCC DL Frequency | Band | BW | SCC DL Channel | SCC DL Frequency | Band | BW | SCC DL Channel | SCC DL Frequency | LTE Single Carrier Tx Power (dBm) (1) | LTE Tx Power with DL CA Enabled (dBm) (2) | Deviation (2)-(1) |
| 2A-2A-4A-4A      | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.79                                 | 23.78                                     | -0.01             |
| [2A]-2A-4A-4A    | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.79                                 | 23.83                                     | 0.04              |
| 2A-2A-[4A]-4A    | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.79                                 | 23.74                                     | -0.05             |
| [2A]-2A-[4A]-4A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.79                                 | 23.69                                     | -0.1              |
| [2A]-[2A]-4A-4A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 4    | 10 | 2350           | 2150             | 23.79                                 | 23.78                                     | -0.01             |
| 2A-2A-[4A]-4A    | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 23.08                                 | 23.06                                     | -0.02             |
| [2A]-2A-4A-4A    | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 23.08                                 | 23                                        | -0.08             |
| 2A-2A-[4A]-[4A]  | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 23.08                                 | 23.08                                     | 0                 |
| [2A]-2A-[4A]-4A  | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 23.08                                 | 23.1                                      | 0.02              |
| [2A]-[2A]-4A-4A  | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 4    | 20 | 2050           | 2120             | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 23.08                                 | 23.03                                     | -0.05             |
| 2A-2A-[4A]-5A    | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 5    | 10 | 2525           | 881.5            | 23.79                                 | 23.84                                     | 0.05              |
| [2A]-2A-4A-5A    | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 5    | 10 | 2525           | 881.5            | 23.79                                 | 23.73                                     | -0.06             |
| [2A]-2A-[4A]-5A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 5    | 10 | 2525           | 881.5            | 23.79                                 | 23.79                                     | 0                 |
| [2A]-[2A]-4A-5A  | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 5    | 10 | 2525           | 881.5            | 23.79                                 | 23.7                                      | -0.09             |
| 2A-2A-[4A]-5A    | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 5    | 10 | 2525           | 881.5            | 23.08                                 | 23.13                                     | 0.05              |
| [2A]-2A-4A-5A    | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 5    | 10 | 2525           | 881.5            | 23.08                                 | 23.06                                     | -0.02             |
| [2A]-2A-[4A]-5A  | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 5    | 10 | 2525           | 881.5            | 23.08                                 | 23.02                                     | -0.06             |
| [2A]-[2A]-4A-5A  | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 5    | 10 | 2525           | 881.5            | 23.08                                 | 23.14                                     | 0.06              |
| 2A-2A-[4A]-5A    | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 23.89                                 | 23.87                                     | -0.02             |
| [2A]-2A-4A-5A    | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 23.89                                 | 23.92                                     | 0.03              |
| [2A]-2A-[4A]-5A  | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 23.89                                 | 23.94                                     | 0.05              |
| [2A]-[2A]-4A-5A  | 5    | 5  | 20425          | 826.5            | 2425           | 871.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 23.89                                 | 23.85                                     | -0.04             |
| 2A-2A-[4A]-12A   | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 12   | 10 | 5095           | 737.5            | 23.79                                 | 23.86                                     | 0.07              |
| [2A]-2A-4A-12A   | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 12   | 10 | 5095           | 737.5            | 23.79                                 | 23.76                                     | -0.03             |
| [2A]-2A-[4A]-12A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 12   | 10 | 5095           | 737.5            | 23.79                                 | 23.85                                     | 0.06              |
| [2A]-[2A]-4A-12A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 12   | 10 | 5095           | 737.5            | 23.79                                 | 23.69                                     | -0.1              |
| 2A-2A-[4A]-12A   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 12   | 10 | 5095           | 737.5            | 23.08                                 | 23.08                                     | 0                 |
| [2A]-2A-4A-12A   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 12   | 10 | 5095           | 737.5            | 23.08                                 | 23.11                                     | 0.03              |
| [2A]-2A-[4A]-12A | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 12   | 10 | 5095           | 737.5            | 23.08                                 | 23.02                                     | -0.06             |
| [2A]-[2A]-4A-12A | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 12   | 10 | 5095           | 737.5            | 23.08                                 | 23.12                                     | 0.04              |
| 2A-2A-[4A]-12A   | 12   | 10 | 23095          | 707.5            | 5095           | 737.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 23.94                                 | 23.92                                     | -0.02             |
| [2A]-2A-4A-12A   | 12   | 10 | 23095          | 707.5            | 5095           | 737.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 23.94                                 | 23.9                                      | -0.04             |
| [2A]-2A-[4A]-12A | 12   | 10 | 23095          | 707.5            | 5095           | 737.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 23.94                                 | 23.97                                     | 0.03              |
| [2A]-[2A]-4A-12A | 12   | 10 | 23095          | 707.5            | 5095           | 737.5            | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 4    | 20 | 2175           | 2132.5           | 23.94                                 | 24.01                                     | 0.07              |
| 2A-2A-[4A]-71A   | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 71   | 20 | 68761          | 6345             | 23.79                                 | 23.81                                     | 0.02              |
| [2A]-2A-4A-71A   | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 71   | 20 | 68761          | 6345             | 23.79                                 | 23.78                                     | -0.01             |
| [2A]-2A-[4A]-71A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 71   | 20 | 68761          | 6345             | 23.79                                 | 23.8                                      | 0.01              |
| [2A]-[2A]-4A-71A | 2    | 5  | 19175          | 1907.5           | 1175           | 1987.5           | QPSK       | 1  | 12     | 2    | 20 | 700            | 1940             | 4    | 20 | 2175           | 2132.5           | 71   | 20 | 68761          | 6345             | 23.79                                 | 23.85                                     | 0.06              |
| 2A-2A-[4A]-71A   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 71   | 20 | 68761          | 6345             | 23.08                                 | 23.03                                     | -0.05             |
| [2A]-2A-4A-71A   | 4    | 10 | 20350          | 1750             | 2350           | 2150             | QPSK       | 1  | 0      | 2    | 20 | 900            | 1960             | 2    | 20 | 1100           | 1980             | 71   | 20 | 68761          | 6345             | 23.08                                 | 22.98                                     | -0.1              |

|                  |    |    |        |        |       |        |      |   |    |   |    |      |       |   |    |      |       |    |    |       |        |       |       |       |
|------------------|----|----|--------|--------|-------|--------|------|---|----|---|----|------|-------|---|----|------|-------|----|----|-------|--------|-------|-------|-------|
| [2A]-2A-[4A]-71A | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 71 | 20 | 68761 | 6345   | 23.08 | 23.12 | 0.04  |
| [2A]-[2A]-4A-71A | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 71 | 20 | 68761 | 6345   | 23.08 | 23    | -0.08 |
| 2A-2A-[4A]-71A   | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 4  | 20 | 2175  | 2132.5 | 24.47 | 24.51 | 0.04  |
| [2A]-2A-4A-71A   | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 4  | 20 | 2175  | 2132.5 | 24.47 | 24.5  | 0.03  |
| [2A]-2A-[4A]-71A | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 4  | 20 | 2175  | 2132.5 | 24.47 | 24.51 | 0.04  |
| [2A]-[2A]-4A-71A | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 4  | 20 | 2175  | 2132.5 | 24.47 | 24.43 | -0.04 |
| [2A]-2A-58       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 5 | 10 | 2525 | 881.5 | 5  | 5  | 2453  | 874.3  | 23.79 | 23.84 | 0.05  |
| [2A]-[2A]-58     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 5 | 10 | 2525 | 881.5 | 5  | 5  | 2453  | 874.3  | 23.79 | 23.83 | 0.04  |
| [2A]-2A-58       | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5 | 10 | 2497 | 878.7 | 2 | 20 | 900  | 1960  | 2  | 20 | 1100  | 1980   | 23.89 | 23.84 | -0.05 |
| [2A]-[2A]-58     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5 | 10 | 2497 | 878.7 | 2 | 20 | 900  | 1960  | 2  | 20 | 1100  | 1980   | 23.89 | 23.9  | 0.01  |
| [2A]-2A-5A-30A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 5 | 10 | 2525 | 881.5 | 30 | 10 | 9820  | 2355   | 23.79 | 23.73 | -0.06 |
| [2A]-[2A]-5A-30A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 5 | 10 | 2525 | 881.5 | 30 | 10 | 9820  | 2355   | 23.79 | 23.85 | 0.06  |
| [2A]-2A-5A-30A   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 30 | 10 | 9820  | 2355   | 23.89 | 23.87 | -0.02 |
| [2A]-[2A]-5A-30A | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 30 | 10 | 9820  | 2355   | 23.89 | 23.8  | -0.09 |
| [2A]-2A-5A-30A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 5  | 10 | 2525  | 881.5  | 22.65 | 22.64 | -0.01 |
| [2A]-[2A]-5A-30A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 5  | 10 | 2525  | 881.5  | 22.65 | 22.68 | 0.03  |
| 2A-2A-5A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 5 | 10 | 2525 | 881.5 | 66 | 20 | 66786 | 2145   | 23.79 | 23.78 | -0.01 |
| [2A]-2A-5A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 5 | 10 | 2525 | 881.5 | 66 | 20 | 66786 | 2145   | 23.79 | 23.77 | -0.02 |
| [2A]-2A-5A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 5 | 10 | 2525 | 881.5 | 66 | 20 | 66786 | 2145   | 23.79 | 23.77 | -0.02 |
| [2A]-[2A]-5A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 5 | 10 | 2525 | 881.5 | 66 | 20 | 66786 | 2145   | 23.79 | 23.73 | -0.06 |
| 2A-2A-5A-66A     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145   | 23.89 | 23.79 | -0.1  |
| [2A]-2A-5A-66A   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145   | 23.89 | 23.91 | 0.02  |
| [2A]-2A-5A-[66A] | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145   | 23.89 | 23.91 | 0.02  |
| [2A]-[2A]-5A-66A | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145   | 23.89 | 23.8  | -0.09 |
| 2A-2A-5A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.71 | -0.04 |
| [2A]-2A-5A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.74 | -0.01 |
| [2A]-2A-5A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.77 | 0.02  |
| [2A]-[2A]-5A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.68 | -0.07 |
| 2A-[2A]-7A-12A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 7 | 20 | 3100 | 2655  | 12 | 10 | 5095  | 737.5  | 23.79 | 23.77 | -0.02 |
| [2A]-2A-7A-12A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 7 | 20 | 3100 | 2655  | 12 | 10 | 5095  | 737.5  | 23.79 | 23.74 | -0.05 |
| [2A]-[2A]-7A-12A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 7 | 20 | 3100 | 2655  | 12 | 10 | 5095  | 737.5  | 23.79 | 23.71 | -0.08 |
| 2A-[2A]-7A-12A   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 12 | 10 | 5095  | 737.5  | 23.85 | 23.84 | -0.01 |
| [2A]-2A-7A-12A   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 12 | 10 | 5095  | 737.5  | 23.85 | 23.77 | -0.08 |
| [2A]-[2A]-7A-12A | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 12 | 10 | 5095  | 737.5  | 23.85 | 23.82 | -0.03 |
| 2A-[2A]-7A-12A   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 7  | 20 | 3100  | 2655   | 23.94 | 23.84 | -0.1  |
| [2A]-2A-7A-12A   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 7  | 20 | 3100  | 2655   | 23.94 | 23.88 | -0.06 |
| [2A]-[2A]-7A-12A | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 7  | 20 | 3100  | 2655   | 23.94 | 23.86 | -0.08 |
| 2A-2A-7A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 7 | 20 | 3100 | 2655  | 66 | 20 | 66786 | 2145   | 23.79 | 23.8  | 0.01  |
| [2A]-2A-7A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 7 | 20 | 3100 | 2655  | 66 | 20 | 66786 | 2145   | 23.79 | 23.79 | 0     |
| [2A]-2A-7A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 7 | 20 | 3100 | 2655  | 66 | 20 | 66786 | 2145   | 23.79 | 23.76 | -0.03 |
| [2A]-2A-7A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2 | 20 | 700  | 1940  | 7 | 20 | 3100 | 2655  | 66 | 20 | 66786 | 2145   | 23.79 | 23.76 | -0.03 |
| 2A-2A-7A-[66A]   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145   | 23.85 | 23.78 | -0.07 |
| 2A-[2A]-7A-66A   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145   | 23.85 | 23.84 | -0.01 |
| [2A]-2A-7A-66A   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145   | 23.85 | 23.85 | 0     |
| 2A-[2A]-7A-[66A] | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145   | 23.85 | 23.81 | -0.04 |
| [2A]-2A-7A-[66A] | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145   | 23.85 | 23.86 | 0.01  |
| 2A-2A-7A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 7  | 20 | 3100  | 2655   | 23.75 | 23.8  | 0.05  |
| 2A-[2A]-7A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 7  | 20 | 3100  | 2655   | 23.75 | 23.74 | -0.01 |
| [2A]-2A-7A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 7  | 20 | 3100  | 2655   | 23.75 | 23.66 | -0.09 |
| 2A-[2A]-7A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2 | 20 | 900  | 1960  | 2 | 20 | 1100 | 1980  | 7  | 20 | 3100  | 2655   | 23.75 | 23.8  | 0.05  |

|                   |    |    |        |        |       |        |      |   |    |    |    |      |       |    |    |      |       |    |    |       |       |       |       |       |
|-------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|------|-------|----|----|------|-------|----|----|-------|-------|-------|-------|-------|
| [2A]-2A-7A-[66A]  | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 7  | 20 | 3100  | 2655  | 23.75 | 23.8  | 0.05  |
| [2A]-2A-12B       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 12 | 5  | 5095 | 737.5 | 12 | 5  | 5047  | 732.7 | 23.79 | 23.69 | -0.1  |
| [2A]-[2A]-12B     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 12 | 5  | 5095 | 737.5 | 12 | 5  | 5047  | 732.7 | 23.79 | 23.8  | 0.01  |
| [2A]-2A-12B       | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023 | 730.3 | 2  | 20 | 900  | 1960  | 2  | 20 | 1100  | 1980  | 23.94 | 23.91 | -0.03 |
| [2A]-[2A]-12B     | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023 | 730.3 | 2  | 20 | 900  | 1960  | 2  | 20 | 1100  | 1980  | 23.94 | 23.98 | 0.04  |
| [2A]-2A-12A-30A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 12 | 10 | 5095 | 737.5 | 30 | 10 | 9820  | 2355  | 23.79 | 23.75 | -0.04 |
| [2A]-[2A]-12A-30A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 12 | 10 | 5095 | 737.5 | 30 | 10 | 9820  | 2355  | 23.79 | 23.78 | -0.01 |
| [2A]-2A-12A-30A   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 30 | 10 | 9820  | 2355  | 23.94 | 23.98 | 0.04  |
| [2A]-[2A]-12A-30A | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 30 | 10 | 9820  | 2355  | 23.94 | 23.98 | 0.04  |
| [2A]-2A-12A-30A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 12 | 10 | 5095  | 737.5 | 22.65 | 22.62 | -0.03 |
| [2A]-[2A]-12A-30A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 12 | 10 | 5095  | 737.5 | 22.65 | 22.65 | 0     |
| 2A-2A-12A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 12 | 10 | 5095 | 737.5 | 66 | 20 | 66786 | 2145  | 23.79 | 23.78 | -0.01 |
| [2A]-2A-12A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 12 | 10 | 5095 | 737.5 | 66 | 20 | 66786 | 2145  | 23.79 | 23.86 | 0.07  |
| [2A]-2A-12A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 12 | 10 | 5095 | 737.5 | 66 | 20 | 66786 | 2145  | 23.79 | 23.82 | 0.03  |
| [2A]-[2A]-12A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 12 | 10 | 5095 | 737.5 | 66 | 20 | 66786 | 2145  | 23.79 | 23.71 | -0.08 |
| 2A-2A-12A-[66A]   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145  | 23.94 | 23.96 | 0.02  |
| [2A]-2A-12A-66A   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145  | 23.94 | 23.86 | -0.08 |
| [2A]-2A-12A-[66A] | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145  | 23.94 | 23.91 | -0.03 |
| [2A]-[2A]-12A-66A | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145  | 23.94 | 23.87 | -0.07 |
| 2A-2A-12A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 12 | 10 | 5095  | 737.5 | 23.75 | 23.67 | -0.08 |
| [2A]-2A-12A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 12 | 10 | 5095  | 737.5 | 23.75 | 23.7  | -0.05 |
| [2A]-2A-12A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 12 | 10 | 5095  | 737.5 | 23.75 | 23.69 | -0.06 |
| [2A]-[2A]-12A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 12 | 10 | 5095  | 737.5 | 23.75 | 23.75 | 0     |
| [2A]-2A-14A-30A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 14 | 10 | 5330 | 763   | 30 | 10 | 9820  | 2355  | 23.79 | 23.71 | -0.08 |
| [2A]-[2A]-14A-30A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 14 | 10 | 5330 | 763   | 30 | 10 | 9820  | 2355  | 23.79 | 23.72 | -0.07 |
| [2A]-2A-14A-30A   | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 30 | 10 | 9820  | 2355  | 23.63 | 23.59 | -0.04 |
| [2A]-[2A]-14A-30A | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 30 | 10 | 9820  | 2355  | 23.63 | 23.61 | -0.02 |
| [2A]-2A-14A-30A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 14 | 10 | 5330  | 763   | 22.65 | 22.56 | -0.09 |
| [2A]-[2A]-14A-30A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 14 | 10 | 5330  | 763   | 22.65 | 22.55 | -0.1  |
| 2A-2A-14A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 14 | 10 | 5330 | 763   | 66 | 20 | 66786 | 2145  | 23.79 | 23.76 | -0.03 |
| [2A]-2A-14A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 14 | 10 | 5330 | 763   | 66 | 20 | 66786 | 2145  | 23.79 | 23.82 | 0.03  |
| [2A]-[2A]-14A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 14 | 10 | 5330 | 763   | 66 | 20 | 66786 | 2145  | 23.79 | 23.84 | 0.05  |
| [2A]-2A-14A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700  | 1940  | 14 | 10 | 5330 | 763   | 66 | 20 | 66786 | 2145  | 23.79 | 23.76 | -0.03 |
| 2A-2A-14A-[66A]   | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145  | 23.63 | 23.55 | -0.08 |
| [2A]-2A-14A-66A   | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145  | 23.63 | 23.55 | -0.08 |
| [2A]-[2A]-14A-66A | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145  | 23.63 | 23.6  | -0.03 |
| [2A]-2A-14A-[66A] | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 66 | 20 | 66786 | 2145  | 23.63 | 23.63 | 0     |
| 2A-2A-14A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 14 | 10 | 5330  | 763   | 23.75 | 23.73 | -0.02 |
| [2A]-2A-14A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960  | 2  | 20 | 1100 | 1980  | 14 | 10 | 5330  | 763   | 23.75 | 23.81 | 0.06  |

|                     |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|---------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| [2A]-[2A]-14A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 14 | 10 | 5330  | 763    | 23.75 | 23.81 | 0.06  |
| [2A]-[2A]-14A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 14 | 10 | 5330  | 763    | 23.75 | 23.81 | 0.06  |
| [2A]-[2A]-29A-[30A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.73 | -0.06 |
| [2A]-[2A]-29A-[30A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.7  | -0.09 |
| [2A]-[2A]-29A-[30A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 29 | 10 | 9715  | 722.5  | 22.65 | 22.72 | 0.07  |
| [2A]-[2A]-29A-[30A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 29 | 10 | 9715  | 722.5  | 22.65 | 22.66 | 0.01  |
| 2A-2A-[30A]-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.72 | -0.07 |
| [2A]-2A-[30A]-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.86 | 0.07  |
| [2A]-2A-[30A]-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.83 | 0.04  |
| [2A]-[2A]-30A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.71 | -0.08 |
| 2A-2A-[30A]-[66A]   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 66 | 20 | 66786 | 2145   | 22.65 | 22.55 | -0.1  |
| [2A]-2A-[30A]-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 66 | 20 | 66786 | 2145   | 22.65 | 22.62 | -0.03 |
| [2A]-2A-[30A]-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 66 | 20 | 66786 | 2145   | 22.65 | 22.55 | -0.1  |
| [2A]-[2A]-30A-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 66 | 20 | 66786 | 2145   | 22.65 | 22.62 | -0.03 |
| 2A-2A-[30A]-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 30 | 10 | 9820  | 2355   | 23.75 | 23.75 | 0     |
| [2A]-2A-[30A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 30 | 10 | 9820  | 2355   | 23.75 | 23.79 | 0.04  |
| [2A]-2A-[30A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 30 | 10 | 9820  | 2355   | 23.75 | 23.72 | -0.03 |
| [2A]-[2A]-30A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 30 | 10 | 9820  | 2355   | 23.75 | 23.78 | 0.03  |
| 2A-[2A]-46C         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.79 | 23.72 | -0.07 |
| [2A]-2A-[46C]       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.79 | 23.81 | 0.02  |
| [2A]-[2A]-46C       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.79 | 23.69 | -0.1  |
| 2A-2A-[66A]-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.78 | -0.01 |
| 2A-2A-[66A]-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.84 | 0.05  |
| 2A-[2A]-66A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.71 | -0.08 |
| [2A]-2A-[66A]-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.71 | -0.08 |
| 2A-2A-[66A]-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.74 | -0.05 |
| 2A-[2A]-66A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.77 | -0.02 |
| [2A]-2A-[66A]-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.79 | 0     |
| 2A-[2A]-[66A]-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.83 | 0.04  |
| [2A]-2A-[66A]-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.83 | 0.04  |
| [2A]-[2A]-66A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.75 | -0.04 |
| 2A-2A-[66A]-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.76 | 0.01  |
| 2A-2A-[66A]-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.79 | 0.04  |
| [2A]-2A-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.79 | 0     |
| [2A]-2A-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.81 | 0.06  |
| 2A-2A-[66A]-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.79 | 0.04  |
| [2A]-[2A]-66A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.79 | 0.03  |
| 2A-[2A]-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.74 | -0.01 |
| [2A]-2A-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.8  | 0.05  |
| [2A]-[2A]-66A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.75 | 0     |
| 2A-2A-[66B]         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 15 | 66786 | 2145   | 66 | 5  | 66879 | 2154.3 | 23.79 | 23.81 | 0.02  |
| [2A]-2A-[66B]       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 15 | 66786 | 2145   | 66 | 5  | 66879 | 2154.3 | 23.79 | 23.77 | -0.02 |
| [2A]-[2A]-66B       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 15 | 66786 | 2145   | 66 | 5  | 66879 | 2154.3 | 23.79 | 23.79 | 0     |
| 2A-2A-[66B]         | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.75 | 0     |
| [2A]-2A-[66B]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.68 | -0.07 |
| [2A]-[2A]-66B       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.66 | -0.09 |
| 2A-2A-[66C]         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.79 | 23.77 | -0.02 |
| [2A]-2A-[66C]       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.79 | 23.79 | 0     |

|                     |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|---------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| [2A]-[2A]-66C       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.79 | 23.78 | -0.01 |
| 2A-2A-[66C]         | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.75 | 0     |
| [2A]-[2A]-66C       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.75 | 0     |
| [2A]-[2A]-66C       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 23.75 | 23.68 | -0.07 |
| 2C-[66A]-66A        | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 1058  | 1975.8 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.72 | -0.07 |
| [2C]-66A-66A        | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 1058  | 1975.8 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.86 | 0.07  |
| 2C-[66A]-[66A]      | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 1058  | 1975.8 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.69 | -0.1  |
| 2C-[66A]-66A        | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1098  | 1979.8 | 23.75 | 23.65 | -0.1  |
| [2C]-66A-66A        | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1098  | 1979.8 | 23.75 | 23.68 | -0.07 |
| 2C-[66A]-[66A]      | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 2  | 20 | 1098  | 1979.8 | 23.75 | 23.68 | -0.07 |
| 2A-2A-[66A]-71A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.71 | -0.08 |
| 2A-[2A]-66A-71A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.79 | 0     |
| [2A]-2A-66A-71A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.72 | -0.07 |
| 2A-[2A]-[66A]-71A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.84 | 0.05  |
| [2A]-2A-[66A]-71A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.84 | 0.05  |
| [2A]-[2A]-66A-71A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 2  | 20 | 700   | 1940   | 66 | 20 | 66786 | 2145   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.78 | -0.01 |
| 2A-2A-[66A]-71A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.65 | -0.1  |
| 2A-[2A]-66A-71A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.66 | -0.09 |
| [2A]-2A-66A-71A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.76 | 0.01  |
| 2A-[2A]-[66A]-71A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.68 | -0.07 |
| [2A]-[2A]-[66A]-71A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.67 | -0.08 |
| [2A]-[2A]-66A-71A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.77 | 0.02  |
| 2A-2A-[66A]-71A     | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 66 | 20 | 66786 | 2145   | 24.47 | 24.45 | -0.02 |
| 2A-[2A]-66A-71A     | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 66 | 20 | 66786 | 2145   | 24.47 | 24.43 | -0.04 |
| [2A]-2A-66A-71A     | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 66 | 20 | 66786 | 2145   | 24.47 | 24.52 | 0.05  |
| 2A-[2A]-[66A]-71A   | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 66 | 20 | 66786 | 2145   | 24.47 | 24.4  | -0.07 |
| [2A]-2A-[66A]-71A   | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 66 | 20 | 66786 | 2145   | 24.47 | 24.48 | 0.01  |
| [2A]-[2A]-66A-71A   | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 2  | 20 | 1100  | 1980   | 66 | 20 | 66786 | 2145   | 24.47 | 24.52 | 0.05  |
| 2A-[4A]-4A-5A       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 5  | 10 | 5095  | 737.5  | 23.79 | 23.69 | -0.1  |
| [2A]-4A-4A-5A       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 5  | 10 | 5095  | 737.5  | 23.79 | 23.85 | 0.06  |
| 2A-[4A]-[4A]-5A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 5  | 10 | 5095  | 737.5  | 23.79 | 23.84 | 0.05  |
| [2A]-[4A]-4A-5A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 5  | 10 | 5095  | 737.5  | 23.79 | 23.69 | -0.1  |
| 2A-[4A]-4A-5A       | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 2  | 20 | 900   | 1960   | 5  | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| [2A]-4A-4A-5A       | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 2  | 20 | 900   | 1960   | 5  | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| 2A-[4A]-[4A]-5A     | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 2  | 20 | 900   | 1960   | 5  | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| [2A]-[4A]-4A-5A     | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 2  | 20 | 900   | 1960   | 5  | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| 2A-[4A]-4A-5A       | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 10 | 2175  | 2132.5 | 4  | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| [2A]-4A-4A-5A       | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 10 | 2175  | 2132.5 | 4  | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| 2A-[4A]-[4A]-5A     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 10 | 2175  | 2132.5 | 4  | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| [2A]-[4A]-4A-5A     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 10 | 2175  | 2132.5 | 4  | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| 2A-[4A]-4A-12A      | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 12 | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| [2A]-4A-4A-12A      | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 12 | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| 2A-[4A]-[4A]-12A    | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 12 | 10 | 5095  | 737.5  | 23.79 | 23.73 | -0.06 |
| [2A]-[4A]-4A-12A    | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 12 | 10 | 5095  | 737.5  | 23.79 | 23.86 | 0.07  |
| 2A-[4A]-4A-12A      | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.08 | 23.09 | 0.01  |
| [2A]-4A-4A-12A      | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.08 | 23.12 | 0.04  |
| 2A-[4A]-[4A]-12A    | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.08 | 23.06 | -0.02 |
| [2A]-[4A]-4A-12A    | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.08 | 22.98 | -0.1  |
| 2A-[4A]-4A-12A      | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 10 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 23.94 | 23.99 | 0.05  |
| [2A]-4A-4A-12A      | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 10 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 23.94 | 23.87 | -0.07 |
| 2A-[4A]-[4A]-12A    | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 4  | 10 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 23.94 | 23.88 | -0.06 |



|                  |    |    |       |        |      |        |      |   |    |    |    |      |        |    |    |      |        |    |    |      |        |       |       |       |
|------------------|----|----|-------|--------|------|--------|------|---|----|----|----|------|--------|----|----|------|--------|----|----|------|--------|-------|-------|-------|
| [2A]-[4A]-4A-12A | 12 | 10 | 23095 | 707.5  | 5095 | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 4  | 20 | 2175 | 2132.5 | 4  | 10 | 2350 | 2150   | 23.94 | 23.88 | -0.06 |
| 2A-[4A]-5A-30A   | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 5  | 10 | 2525 | 881.5  | 30 | 10 | 9820 | 2355   | 23.79 | 23.79 | 0     |
| [2A]-[4A]-5A-30A | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 5  | 10 | 2525 | 881.5  | 30 | 10 | 9820 | 2355   | 23.79 | 23.79 | 0     |
| [2A]-[4A]-5A-30A | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 5  | 10 | 2525 | 881.5  | 30 | 10 | 9820 | 2355   | 23.79 | 23.78 | -0.01 |
| 2A-[4A]-5A-30A   | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 5  | 10 | 2525 | 881.5  | 30 | 10 | 9820 | 2355   | 23.08 | 23.11 | 0.03  |
| [2A]-4A-5A-30A   | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 5  | 10 | 2525 | 881.5  | 30 | 10 | 9820 | 2355   | 23.08 | 23.05 | -0.03 |
| [2A]-[4A]-5A-30A | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 5  | 10 | 2525 | 881.5  | 30 | 10 | 9820 | 2355   | 23.08 | 23.08 | 0     |
| 2A-[4A]-5A-30A   | 5  | 5  | 20425 | 826.5  | 2425 | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 4  | 20 | 2175 | 2132.5 | 30 | 10 | 9820 | 2355   | 23.89 | 23.88 | -0.01 |
| [2A]-4A-5A-30A   | 5  | 5  | 20425 | 826.5  | 2425 | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 4  | 20 | 2175 | 2132.5 | 30 | 10 | 9820 | 2355   | 23.89 | 23.95 | 0.06  |
| [2A]-[4A]-5A-30A | 5  | 5  | 20425 | 826.5  | 2425 | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 4  | 20 | 2175 | 2132.5 | 30 | 10 | 9820 | 2355   | 23.89 | 23.92 | 0.03  |
| 2A-[4A]-5A-30A   | 30 | 10 | 27710 | 2310   | 9820 | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 4  | 20 | 2175 | 2132.5 | 5  | 10 | 2525 | 881.5  | 22.65 | 22.68 | 0.03  |
| [2A]-4A-5A-30A   | 30 | 10 | 27710 | 2310   | 9820 | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 4  | 20 | 2175 | 2132.5 | 5  | 10 | 2525 | 881.5  | 22.65 | 22.61 | -0.04 |
| [2A]-[4A]-5A-30A | 30 | 10 | 27710 | 2310   | 9820 | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 4  | 20 | 2175 | 2132.5 | 5  | 10 | 2525 | 881.5  | 22.65 | 22.72 | 0.07  |
| 2A-[4A]-7A-7A    | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3350 | 2680   | 23.79 | 23.74 | -0.05 |
| [2A]-4A-7A-7A    | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3350 | 2680   | 23.79 | 23.74 | -0.05 |
| [2A]-[4A]-7A-7A  | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3350 | 2680   | 23.79 | 23.82 | 0.03  |
| 2A-[4A]-7A-7A    | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100 | 2655   | 7  | 20 | 3350 | 2680   | 23.08 | 23.1  | 0.02  |
| [2A]-4A-7A-7A    | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100 | 2655   | 7  | 20 | 3350 | 2680   | 23.08 | 23.02 | -0.06 |
| [2A]-[4A]-7A-7A  | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100 | 2655   | 7  | 20 | 3350 | 2680   | 23.08 | 23.08 | 0     |
| 2A-[4A]-7A-7A    | 7  | 10 | 21400 | 2565   | 3400 | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850 | 2630   | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 23.85 | 23.8  | -0.05 |
| [2A]-4A-7A-7A    | 7  | 10 | 21400 | 2565   | 3400 | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850 | 2630   | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 23.85 | 23.84 | -0.01 |
| [2A]-[4A]-7A-7A  | 7  | 10 | 21400 | 2565   | 3400 | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850 | 2630   | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 23.85 | 23.9  | 0.05  |
| 2A-[4A]-7C       | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3298 | 2674.8 | 23.79 | 23.78 | -0.01 |
| [2A]-4A-7C       | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3298 | 2674.8 | 23.79 | 23.76 | -0.03 |
| [2A]-[4A]-7C     | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3298 | 2674.8 | 23.79 | 23.79 | 0     |
| 2A-[4A]-7C       | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100 | 2655   | 7  | 20 | 3298 | 2674.8 | 23.08 | 23.01 | -0.07 |
| [2A]-4A-7C       | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100 | 2655   | 7  | 20 | 3298 | 2674.8 | 23.08 | 23.14 | 0.06  |
| [2A]-[4A]-7C     | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100 | 2655   | 7  | 20 | 3298 | 2674.8 | 23.08 | 23.07 | -0.01 |
| 2A-[4A]-7C       | 7  | 10 | 21400 | 2565   | 3400 | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256 | 2670.6 | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 23.85 | 23.79 | -0.06 |
| [2A]-4A-7C       | 7  | 10 | 21400 | 2565   | 3400 | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256 | 2670.6 | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 23.85 | 23.84 | -0.01 |
| [2A]-[4A]-7C     | 7  | 10 | 21400 | 2565   | 3400 | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256 | 2670.6 | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 23.85 | 23.81 | -0.04 |
| 2A-[4A]-7A-12A   | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 12 | 10 | 5095 | 737.5  | 23.79 | 23.86 | 0.07  |
| [2A]-4A-7A-12A   | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 12 | 10 | 5095 | 737.5  | 23.79 | 23.71 | -0.08 |
| [2A]-[4A]-7A-12A | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 12 | 10 | 5095 | 737.5  | 23.79 | 23.78 | -0.01 |
| 2A-[4A]-7A-12A   | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100 | 2655   | 12 | 10 | 5095 | 737.5  | 23.08 | 22.99 | -0.09 |
| [2A]-4A-7A-12A   | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100 | 2655   | 12 | 10 | 5095 | 737.5  | 23.08 | 23.03 | -0.05 |
| [2A]-[4A]-7A-12A | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100 | 2655   | 12 | 10 | 5095 | 737.5  | 23.08 | 23.03 | -0.05 |
| 2A-[4A]-7A-12A   | 7  | 10 | 21400 | 2565   | 3400 | 2685   | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 12 | 10 | 5095 | 737.5  | 23.85 | 23.86 | 0.01  |
| [2A]-4A-7A-12A   | 7  | 10 | 21400 | 2565   | 3400 | 2685   | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 12 | 10 | 5095 | 737.5  | 23.85 | 23.87 | 0.02  |
| [2A]-[4A]-7A-12A | 7  | 10 | 21400 | 2565   | 3400 | 2685   | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 12 | 10 | 5095 | 737.5  | 23.85 | 23.78 | -0.07 |
| 2A-[4A]-7A-12A   | 12 | 10 | 23095 | 707.5  | 5095 | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 23.94 | 23.92 | -0.02 |
| [2A]-4A-7A-12A   | 12 | 10 | 23095 | 707.5  | 5095 | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 23.94 | 23.85 | -0.09 |
| [2A]-[4A]-7A-12A | 12 | 10 | 23095 | 707.5  | 5095 | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175 | 2132.5 | 7  | 20 | 3100 | 2655   | 23.94 | 23.87 | -0.07 |
| 2A-[4A]-12B      | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 12 | 5  | 5095 | 737.5  | 12 | 5  | 5047 | 732.7  | 23.79 | 23.78 | -0.01 |
| [2A]-4A-12B      | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 12 | 5  | 5095 | 737.5  | 12 | 5  | 5047 | 732.7  | 23.79 | 23.75 | -0.04 |
| [2A]-[4A]-12B    | 2  | 5  | 19175 | 1907.5 | 1175 | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 12 | 5  | 5095 | 737.5  | 12 | 5  | 5047 | 732.7  | 23.79 | 23.72 | -0.07 |
| 2A-[4A]-12B      | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 12 | 5  | 5095 | 737.5  | 12 | 5  | 5047 | 732.7  | 23.08 | 23    | -0.08 |
| [2A]-4A-12B      | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 12 | 5  | 5095 | 737.5  | 12 | 5  | 5047 | 732.7  | 23.08 | 23.07 | -0.01 |
| [2A]-[4A]-12B    | 4  | 10 | 20350 | 1750   | 2350 | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 12 | 5  | 5095 | 737.5  | 12 | 5  | 5047 | 732.7  | 23.08 | 23.03 | -0.05 |
| 2A-[4A]-12B      | 12 | 10 | 23095 | 707.5  | 5095 | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023 | 730.3  | 2  | 20 | 900  | 1960   | 4  | 20 | 2175 | 2132.5 | 23.94 | 23.9  | -0.04 |
| [2A]-4A-12B      | 12 | 10 | 23095 | 707.5  | 5095 | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023 | 730.3  | 2  | 20 | 900  | 1960   | 4  | 20 | 2175 | 2132.5 | 23.94 | 23.92 | -0.02 |

|                   |    |    |        |        |       |        |      |   |    |    |    |      |        |    |    |       |        |    |    |       |        |       |       |       |
|-------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| [2A]-[4A]-12B     | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023 | 730.3  | 2  | 20 | 900   | 1960   | 4  | 20 | 2175  | 2132.5 | 23.94 | 23.85 | -0.09 |
| 2A-[4A]-12A-30A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.81 | 0.02  |
| [2A]-4A-12A-30A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.8  | 0.01  |
| [2A]-[4A]-12A-30A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.74 | -0.05 |
| 2A-[4A]-12A-30A   | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.08 | 23.13 | 0.05  |
| [2A]-4A-12A-30A   | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.08 | 23.09 | 0.01  |
| [2A]-[4A]-12A-30A | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.08 | 23.13 | 0.05  |
| 2A-[4A]-12A-30A   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175  | 2132.5 | 30 | 10 | 9820  | 2355   | 23.94 | 23.98 | 0.04  |
| [2A]-4A-12A-30A   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175  | 2132.5 | 30 | 10 | 9820  | 2355   | 23.94 | 23.96 | 0.02  |
| [2A]-[4A]-12A-30A | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175  | 2132.5 | 30 | 10 | 9820  | 2355   | 23.94 | 23.99 | 0.05  |
| 2A-[4A]-12A-30A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175  | 2132.5 | 12 | 10 | 5095  | 737.5  | 22.65 | 22.71 | 0.06  |
| [2A]-4A-12A-30A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175  | 2132.5 | 12 | 10 | 5095  | 737.5  | 22.65 | 22.69 | 0.04  |
| [2A]-[4A]-12A-30A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175  | 2132.5 | 12 | 10 | 5095  | 737.5  | 22.65 | 22.6  | -0.05 |
| 2A-[4A]-29A-30A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.83 | 0.04  |
| [2A]-4A-29A-30A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.7  | -0.09 |
| [2A]-[4A]-29A-30A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 4  | 20 | 2175 | 2132.5 | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.79 | 23.7  | -0.09 |
| 2A-[4A]-29A-30A   | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.08 | 23.1  | 0.02  |
| [2A]-4A-29A-30A   | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.08 | 23.01 | -0.07 |
| [2A]-[4A]-29A-30A | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.08 | 23.1  | 0.02  |
| 2A-[4A]-29A-30A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175  | 2132.5 | 29 | 10 | 9715  | 722.5  | 22.65 | 22.63 | -0.02 |
| [2A]-4A-29A-30A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175  | 2132.5 | 29 | 10 | 9715  | 722.5  | 22.65 | 22.6  | -0.05 |
| [2A]-[4A]-29A-30A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 16960  | 4  | 20 | 2175  | 2132.5 | 29 | 10 | 9715  | 722.5  | 22.65 | 22.58 | -0.07 |
| [2A]-5B-30A       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525 | 881.5  | 5  | 5  | 2453  | 874.3  | 30 | 10 | 9820  | 2355   | 23.79 | 23.8  | 0.01  |
| [2A]-5B-30A       | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5  | 10 | 2497 | 878.7  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 23.89 | 23.82 | -0.07 |
| [2A]-5B-30A       | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 22.65 | 22.72 | 0.07  |
| 2A-5B-[66A]       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525 | 881.5  | 5  | 5  | 2453  | 874.3  | 66 | 20 | 66786 | 2145   | 23.79 | 23.79 | 0     |
| [2A]-5B-[66A]     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525 | 881.5  | 5  | 5  | 2453  | 874.3  | 66 | 20 | 66786 | 2145   | 23.79 | 23.69 | -0.1  |
| [2A]-5B-[66A]     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525 | 881.5  | 5  | 5  | 2453  | 874.3  | 66 | 20 | 66786 | 2145   | 23.79 | 23.72 | -0.07 |
| 2A-5B-[66A]       | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5  | 10 | 2497 | 878.7  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.89 | 23.82 | -0.07 |
| [2A]-5B-[66A]     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5  | 10 | 2497 | 878.7  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.89 | 23.81 | -0.08 |
| [2A]-5B-[66A]     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5  | 10 | 2497 | 878.7  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.89 | 23.85 | -0.04 |
| 2A-5B-[66A]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 23.75 | 23.66 | -0.09 |
| [2A]-5B-[66A]     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 23.75 | 23.79 | 0.04  |
| [2A]-5B-[66A]     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 23.75 | 23.69 | -0.06 |
| 2A-5A-30A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525 | 881.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.83 | 0.04  |
| [2A]-5A-30A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525 | 881.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.73 | -0.06 |
| [2A]-5A-30A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525 | 881.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.86 | 0.07  |
| 2A-5A-30A-[66A]   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.89 | 23.95 | 0.06  |
| [2A]-5A-30A-[66A] | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.89 | 23.84 | -0.05 |
| [2A]-5A-30A-[66A] | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.89 | 23.84 | -0.05 |
| 2A-5A-30A-[66A]   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.61 | -0.04 |
| [2A]-5A-30A-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.62 | -0.03 |
| [2A]-5A-30A-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.7  | 0.05  |
| 2A-5A-30A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 5  | 10 | 2525  | 881.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.76 | 0.01  |
| [2A]-5A-30A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 5  | 10 | 2525  | 881.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.66 | -0.09 |
| [2A]-5A-30A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 5  | 10 | 2525  | 881.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.66 | -0.09 |
| [2A]-5A-46C       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525 | 881.5  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.79 | 23.79 | 0     |
| [2A]-5A-46C       | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.89 | 23.93 | 0.04  |

|                     |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |       |    |    |       |        |       |       |       |
|---------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|-------|----|----|-------|--------|-------|-------|-------|
| 2A-SA-(48A)-(48A)   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 48 | 20 | 56640 | 3690   | 23.79 | 23.81 | 0.02  |
| [2A]-SA-48A-48A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 48 | 20 | 56640 | 3690   | 23.79 | 23.74 | -0.05 |
| 2A-SA-(48A)-(48A)   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 48 | 20 | 56640 | 3690   | 23.79 | 23.77 | -0.02 |
| [2A]-SA-(48A)-(48A) | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 48 | 20 | 56640 | 3690   | 23.79 | 23.77 | -0.02 |
| 2A-SA-(48A)-(48A)   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 48 | 20 | 56640 | 3690   | 23.89 | 23.85 | -0.04 |
| [2A]-SA-48A-48A     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 48 | 20 | 56640 | 3690   | 23.89 | 23.96 | 0.07  |
| 2A-SA-(48A)-(48A)   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 48 | 20 | 56640 | 3690   | 23.89 | 23.96 | 0.07  |
| [2A]-SA-(48A)-(48A) | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 48 | 20 | 56640 | 3690   | 23.89 | 23.92 | 0.03  |
| 2A-SA-(48C)         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 48 | 20 | 56188 | 3644.8 | 23.79 | 23.73 | -0.06 |
| [2A]-SA-48C         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 48 | 20 | 56188 | 3644.8 | 23.79 | 23.73 | -0.06 |
| 2A-SA-(48C)         | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 48 | 20 | 56188 | 3644.8 | 23.89 | 23.92 | 0.03  |
| [2A]-SA-48C         | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 48 | 20 | 56188 | 3644.8 | 23.89 | 23.94 | 0.05  |
| 2A-SA-48A-[66A]     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.79 | 23.71 | -0.08 |
| 2A-SA-(48A)-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.79 | 23.76 | -0.03 |
| [2A]-SA-48A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.79 | 23.81 | 0.02  |
| 2A-SA-(48A)-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.79 | 23.85 | 0.06  |
| [2A]-SA-48A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.79 | 23.72 | -0.07 |
| [2A]-SA-(48A)-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.79 | 23.76 | -0.03 |
| 2A-SA-48A-[66A]     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.89 | 23.95 | 0.06  |
| 2A-SA-(48A)-[66A]   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.89 | 23.81 | -0.08 |
| [2A]-SA-48A-[66A]   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.89 | 23.91 | 0.02  |
| 2A-SA-(48A)-[66A]   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.89 | 23.82 | -0.07 |
| [2A]-SA-48A-[66A]   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.89 | 23.89 | 0     |
| [2A]-SA-(48A)-[66A] | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625  | 66 | 20 | 66786 | 2145   | 23.89 | 23.86 | -0.03 |
| 2A-SA-48A-[66A]     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.76 | 0.01  |
| 2A-SA-(48A)-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.78 | 0.03  |
| [2A]-SA-48A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.71 | -0.04 |
| 2A-SA-(48A)-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.7  | -0.05 |
| [2A]-SA-48A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.76 | 0.01  |
| [2A]-SA-(48A)-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 5  | 10 | 2525  | 881.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.72 | -0.03 |
| 2A-SA-[66A]-66A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145  | 66 | 20 | 67236 | 2190   | 23.79 | 23.85 | 0.06  |
| [2A]-SA-66A-66A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145  | 66 | 20 | 67236 | 2190   | 23.79 | 23.77 | -0.02 |
| 2A-SA-(66A)-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145  | 66 | 20 | 67236 | 2190   | 23.79 | 23.83 | 0.04  |
| [2A]-SA-[66A]-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145  | 66 | 20 | 67236 | 2190   | 23.79 | 23.72 | -0.07 |
| 2A-SA-[66A]-66A     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145  | 66 | 20 | 67236 | 2190   | 23.89 | 23.94 | 0.05  |
| [2A]-SA-66A-66A     | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145  | 66 | 20 | 67236 | 2190   | 23.89 | 23.9  | 0.01  |
| 2A-SA-(66A)-[66A]   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145  | 66 | 20 | 67236 | 2190   | 23.89 | 23.95 | 0.06  |
| [2A]-SA-[66A]-66A   | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145  | 66 | 20 | 67236 | 2190   | 23.89 | 23.9  | 0.01  |
| 2A-SA-[66A]-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66786 | 2145   | 2  | 20 | 900   | 1960  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.71 | -0.04 |
| [2A]-SA-66A-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66786 | 2145   | 2  | 20 | 900   | 1960  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.67 | -0.08 |
| 2A-SA-(66A)-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66786 | 2145   | 2  | 20 | 900   | 1960  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.73 | -0.02 |
| [2A]-SA-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66786 | 2145   | 2  | 20 | 900   | 1960  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.77 | 0.02  |
| 2A-SA-[66B]         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 15 | 66786 | 2145  | 66 | 5  | 66879 | 2154.3 | 23.79 | 23.72 | -0.07 |
| [2A]-SA-66B         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 15 | 66786 | 2145  | 66 | 5  | 66879 | 2154.3 | 23.79 | 23.84 | 0.05  |
| 2A-SA-[66B]         | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 15 | 66786 | 2145  | 66 | 5  | 66879 | 2154.3 | 23.89 | 23.9  | 0.01  |
| [2A]-SA-66B         | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 15 | 66786 | 2145  | 66 | 5  | 66879 | 2154.3 | 23.89 | 23.9  | 0.01  |
| 2A-SA-[66B]         | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.8  | 0.05  |
| [2A]-SA-66B         | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.75 | 0     |
| 2A-SA-[66C]         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145  | 66 | 20 | 66984 | 2164.8 | 23.79 | 23.83 | 0.04  |
| [2A]-SA-66C         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145  | 66 | 20 | 66984 | 2164.8 | 23.79 | 23.79 | 0     |
| 2A-SA-[66C]         | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145  | 66 | 20 | 66984 | 2164.8 | 23.89 | 23.8  | -0.09 |
| [2A]-SA-66C         | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145  | 66 | 20 | 66984 | 2164.8 | 23.89 | 23.94 | 0.05  |
| 2A-SA-[66C]         | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.65 | -0.1  |
| [2A]-SA-66C         | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960  | 5  | 10 | 2525  | 881.5  | 23.75 | 23.71 | -0.04 |

|                   |    |    |        |        |       |        |      |   |    |    |    |      |        |    |    |       |        |    |    |       |        |       |       |       |
|-------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| [2A]-7A-7A-13A    | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3350  | 2680   | 13 | 10 | 5230  | 751    | 23.79 | 23.86 | 0.07  |
| [2A]-7A-7A-13A    | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850 | 2630   | 2  | 20 | 900   | 1960   | 13 | 10 | 5230  | 751    | 23.85 | 23.85 | 0     |
| [2A]-7A-7A-13A    | 13 | 10 | 23230  | 782    | 5230  | 751    | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.78 | 23.73 | -0.05 |
| 2A-7A-7A-[66A]    | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3350  | 2680   | 66 | 20 | 66786 | 2145   | 23.79 | 23.78 | -0.01 |
| [2A]-7A-7A-66A    | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3350  | 2680   | 66 | 20 | 66786 | 2145   | 23.79 | 23.81 | 0.02  |
| [2A]-7A-7A-[66A]  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3350  | 2680   | 66 | 20 | 66786 | 2145   | 23.79 | 23.78 | -0.01 |
| 2A-7A-7A-[66A]    | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850 | 2630   | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.85 | 23.76 | -0.09 |
| [2A]-7A-7A-66A    | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850 | 2630   | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.85 | 23.91 | 0.06  |
| [2A]-7A-7A-[66A]  | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 2850 | 2630   | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.85 | 23.81 | -0.04 |
| 2A-7A-7A-[66A]    | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.75 | 23.81 | 0.06  |
| [2A]-7A-7A-66A    | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.75 | 23.65 | -0.1  |
| [2A]-7A-7A-[66A]  | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.75 | 23.67 | -0.08 |
| 2A-7C-[66A]       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3298  | 2674.8 | 66 | 20 | 66786 | 2145   | 23.79 | 23.84 | 0.05  |
| [2A]-7C-[66A]     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3298  | 2674.8 | 66 | 20 | 66786 | 2145   | 23.79 | 23.77 | -0.02 |
| [2A]-7C-[66A]     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 7  | 20 | 3298  | 2674.8 | 66 | 20 | 66786 | 2145   | 23.79 | 23.8  | 0.01  |
| 2A-7C-[66A]       | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256 | 2670.6 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.85 | 23.8  | -0.05 |
| [2A]-7C-[66A]     | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256 | 2670.6 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.85 | 23.85 | 0     |
| [2A]-7C-[66A]     | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 7  | 20 | 3256 | 2670.6 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.85 | 23.87 | 0.02  |
| 2A-7C-[66A]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 2674.8 | 23.75 | 23.69 | -0.06 |
| [2A]-7C-[66A]     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 2674.8 | 23.75 | 23.73 | -0.02 |
| [2A]-7C-[66A]     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 2674.8 | 23.75 | 23.81 | 0.06  |
| [2A]-7A-12B       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.79 | 23.73 | -0.06 |
| [2A]-7A-12B       | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.85 | 23.77 | -0.08 |
| [2A]-7A-12B       | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023 | 730.3  | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 23.94 | 23.99 | 0.05  |
| 2A-7A-12A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 23.79 | 23.72 | -0.07 |
| [2A]-7A-12A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 23.79 | 23.81 | 0.02  |
| [2A]-7A-12A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 23.79 | 23.85 | 0.06  |
| 2A-7A-12A-[66A]   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.8  | -0.05 |
| [2A]-7A-12A-66A   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.77 | -0.08 |
| [2A]-7A-12A-[66A] | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.76 | -0.09 |
| 2A-7A-12A-[66A]   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 23.94 | 23.9  | -0.04 |
| [2A]-7A-12A-66A   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 23.94 | 23.86 | -0.08 |
| [2A]-7A-12A-[66A] | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 23.94 | 23.84 | -0.1  |
| 2A-7A-12A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.79 | 0.04  |
| [2A]-7A-12A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.7  | -0.05 |
| [2A]-7A-12A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.69 | -0.06 |
| 2A-7A-29A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.79 | 23.86 | 0.07  |
| [2A]-7A-29A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.79 | 23.75 | -0.04 |
| [2A]-7A-29A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.79 | 23.75 | -0.04 |
| 2A-7A-29A-[66A]   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.75 | -0.1  |
| [2A]-7A-29A-66A   | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.84 | -0.01 |
| [2A]-7A-29A-[66A] | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900  | 1960   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.77 | -0.08 |
| 2A-7A-29A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 29 | 10 | 9715  | 722.5  | 23.75 | 23.78 | 0.03  |
| [2A]-7A-29A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 29 | 10 | 9715  | 722.5  | 23.75 | 23.71 | -0.04 |
| [2A]-7A-29A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900  | 1960   | 7  | 20 | 3100  | 2655   | 29 | 10 | 9715  | 722.5  | 23.75 | 23.8  | 0.05  |
| [2A]-7A-46C       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100 | 2655   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.79 | 23.81 | 0.02  |

|                    |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|--------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| [2A]-7A-46C        | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.85 | 23.87 | 0.02  |
| 2A-7A-[66A]-66A    | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.72 | -0.07 |
| [2A]-7A-[66A]-66A  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.78 | -0.01 |
| 2A-7A-[66A]-[66A]  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.84 | 0.05  |
| [2A]-7A-[66A]-66A  | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.69 | -0.1  |
| 2A-7A-[66A]-66A    | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.77 | -0.08 |
| [2A]-7A-66A-66A    | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.79 | -0.06 |
| 2A-7A-[66A]-[66A]  | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.9  | 0.05  |
| [2A]-7A-[66A]-66A  | 7  | 10 | 21400  | 2565   | 3400  | 2685   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.87 | 0.02  |
| 2A-7A-[66A]-66A    | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 23.75 | 23.79 | 0.04  |
| [2A]-7A-66A-66A    | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 23.75 | 23.73 | -0.02 |
| 2A-7A-[66A]-[66A]  | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 23.75 | 23.68 | -0.07 |
| [2A]-7A-[66A]-66A  | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 7  | 20 | 3100  | 2655   | 23.75 | 23.69 | -0.06 |
| 2A-12B-[66A]       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 66 | 20 | 66786 | 2145   | 23.79 | 23.69 | -0.1  |
| [2A]-12B-66A       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 66 | 20 | 66786 | 2145   | 23.79 | 23.81 | 0.02  |
| [2A]-12B-[66A]     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 66 | 20 | 66786 | 2145   | 23.79 | 23.75 | -0.04 |
| 2A-12B-[66A]       | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.94 | 23.97 | 0.03  |
| [2A]-12B-66A       | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.94 | 23.87 | -0.07 |
| [2A]-12B-[66A]     | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 23.94 | 23.99 | 0.05  |
| 2A-12B-[66A]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.75 | 23.76 | 0.01  |
| [2A]-12B-66A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.75 | 23.75 | 0     |
| [2A]-12B-[66A]     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.75 | 23.74 | -0.01 |
| 2A-12A-30A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.73 | -0.06 |
| [2A]-12A-30A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.69 | -0.1  |
| [2A]-12A-30A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.72 | -0.07 |
| 2A-12A-30A-[66A]   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.94 | 23.84 | -0.1  |
| [2A]-12A-30A-66A   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.94 | 23.94 | 0     |
| [2A]-12A-30A-[66A] | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.94 | 23.96 | 0.02  |
| 2A-12A-30A-[66A]   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.56 | -0.09 |
| [2A]-12A-30A-66A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.69 | 0.04  |
| [2A]-12A-30A-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.67 | 0.02  |
| 2A-12A-30A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.66 | -0.09 |
| [2A]-12A-30A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.77 | 0.02  |
| [2A]-12A-30A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.67 | -0.08 |
| 2A-12A-[66A]-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.78 | -0.01 |
| [2A]-12A-66A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.72 | -0.07 |
| 2A-12A-[66A]-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.78 | -0.01 |
| [2A]-12A-[66A]-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.83 | 0.04  |
| 2A-12A-[66A]-66A   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.96 | 0.02  |
| [2A]-12A-66A-66A   | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 24.01 | 0.07  |
| 2A-12A-[66A]-[66A] | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.98 | 0.04  |
| [2A]-12A-[66A]-66A | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.97 | 0.03  |
| 2A-12A-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.73 | -0.02 |
| [2A]-12A-66A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.72 | -0.03 |
| 2A-12A-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.73 | -0.02 |
| [2A]-12A-[66A]-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.68 | -0.07 |
| 2A-12A-[66C]       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.79 | 23.83 | 0.04  |
| [2A]-12A-66C       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.79 | 23.82 | 0.03  |
| 2A-12A-[66C]       | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.94 | 23.99 | 0.05  |
| [2A]-12A-66C       | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 23.94 | 24.01 | 0.07  |
| 2A-12A-[66C]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.68 | -0.07 |
| [2A]-12A-66C       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960   | 12 | 10 | 5095  | 737.5  | 23.75 | 23.82 | 0.07  |



|                    |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|--------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| 2A-14A-30A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 14 | 10 | 5330  | 763    | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.74 | -0.05 |
| [2A]-14A-30A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 14 | 10 | 5330  | 763    | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.83 | 0.04  |
| [2A]-14A-30A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 14 | 10 | 5330  | 763    | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.72 | -0.07 |
| 2A-14A-30A-[66A]   | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.63 | 23.56 | -0.07 |
| [2A]-14A-30A-[66A] | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.63 | 23.64 | 0.01  |
| [2A]-14A-30A-[66A] | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.63 | 23.56 | -0.07 |
| 2A-14A-30A-[66A]   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 22.65 | 22.68 | 0.03  |
| [2A]-14A-30A-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 22.65 | 22.62 | -0.03 |
| [2A]-14A-30A-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 22.65 | 22.68 | 0.03  |
| 2A-14A-30A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 30 | 10 | 9820  | 2355   | 23.75 | 23.7  | -0.05 |
| [2A]-14A-30A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 30 | 10 | 9820  | 2355   | 23.75 | 23.68 | -0.07 |
| [2A]-14A-30A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 30 | 10 | 9820  | 2355   | 23.75 | 23.74 | -0.01 |
| 2A-14A-[66A]-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.79 | 0     |
| [2A]-14A-[66A]-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.71 | -0.08 |
| 2A-14A-[66A]-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.76 | -0.03 |
| [2A]-14A-[66A]-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.76 | -0.03 |
| 2A-14A-[66A]-66A   | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.63 | 23.54 | -0.09 |
| [2A]-14A-[66A]-66A | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.63 | 23.56 | -0.07 |
| 2A-14A-[66A]-66A   | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.63 | 23.64 | 0.01  |
| [2A]-14A-[66A]-66A | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.63 | 23.64 | 0.01  |
| 2A-14A-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 23.75 | 23.81 | 0.06  |
| [2A]-14A-[66A]-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 23.75 | 23.82 | 0.07  |
| 2A-14A-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 23.75 | 23.82 | 0.07  |
| [2A]-14A-[66A]-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 14 | 10 | 5330  | 763    | 23.75 | 23.8  | 0.05  |
| 2A-29A-30A-[66A]   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.73 | -0.06 |
| [2A]-29A-30A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.69 | -0.1  |
| [2A]-29A-30A-[66A] | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.79 | 23.83 | 0.04  |
| 2A-29A-30A-[66A]   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.69 | 0.04  |
| [2A]-29A-30A-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.59 | -0.06 |
| [2A]-29A-30A-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 22.65 | 22.72 | 0.07  |
| 2A-29A-30A-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.76 | 0.01  |
| [2A]-29A-30A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.8  | 0.05  |
| [2A]-29A-30A-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.75 | 0     |
| 2A-30A-[66A]-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.71 | -0.08 |
| [2A]-30A-[66A]-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.71 | -0.08 |
| 2A-30A-[66A]-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.86 | 0.07  |
| [2A]-30A-[66A]-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.79 | 23.79 | 0     |
| 2A-30A-[66A]-66A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.56 | -0.09 |
| [2A]-30A-[66A]-66A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.58 | -0.07 |
| 2A-30A-[66A]-66A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.62 | -0.03 |
| [2A]-30A-[66A]-66A | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.72 | 0.07  |
| 2A-30A-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 23.75 | 23.75 | 0     |
| [2A]-30A-[66A]-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 23.75 | 23.79 | 0.04  |
| 2A-30A-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 23.75 | 23.77 | 0.02  |
| [2A]-30A-[66A]-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 30 | 10 | 9820  | 2355   | 23.75 | 23.7  | -0.05 |
| [2A]-46A-46C       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 53540 | 5825   | 23.79 | 23.75 | -0.04 |
| [2A]-46D           | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.79 | 23.7  | -0.09 |
| 2A-46C-[48A]       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 48 | 20 | 55990 | 3625   | 23.79 | 23.7  | -0.09 |
| [2A]-46C-[48A]     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 48 | 20 | 55990 | 3625   | 23.79 | 23.82 | 0.03  |
| [2A]-46C-[48A]     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 48 | 20 | 55990 | 3625   | 23.79 | 23.85 | 0.06  |
| 2A-46A-[66A]       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 47090 | 5180   | 66 | 20 | 66786 | 2145   | 23.79 | 23.83 | 0.04  |

|                  |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| [2A]-46A-46A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 47090 | 5180   | 66 | 20 | 66786 | 2145   | 23.79 | 23.74 | -0.05 |
| [2A]-46A-46A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 47090 | 5180   | 66 | 20 | 66786 | 2145   | 23.79 | 23.78 | -0.01 |
| 2A-46A-46A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 47090 | 5180   | 23.75 | 23.71 | -0.04 |
| [2A]-46A-46A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 47090 | 5180   | 23.75 | 23.81 | 0.06  |
| [2A]-46A-46A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 47090 | 5180   | 23.75 | 23.72 | -0.03 |
| 2A-46C-66A       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 66 | 20 | 66786 | 2145   | 23.79 | 23.7  | -0.09 |
| [2A]-46C-66A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 66 | 20 | 66786 | 2145   | 23.79 | 23.86 | 0.07  |
| [2A]-46C-66A     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 66 | 20 | 66786 | 2145   | 23.79 | 23.69 | -0.1  |
| 2A-46C-66A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.75 | 23.76 | 0.01  |
| [2A]-46C-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.75 | 23.7  | -0.05 |
| [2A]-46C-66A     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.75 | 23.75 | 0     |
| 2A-46A-48C       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.79 | 23.86 | 0.07  |
| [2A]-46A-48C     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.79 | 23.73 | -0.06 |
| 2A-46A-48A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 66 | 20 | 66786 | 2145   | 23.79 | 23.83 | 0.04  |
| 2A-46A-48A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 66 | 20 | 66786 | 2145   | 23.79 | 23.84 | 0.05  |
| [2A]-46A-48A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 66 | 20 | 66786 | 2145   | 23.79 | 23.86 | 0.07  |
| 2A-46A-48A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 66 | 20 | 66786 | 2145   | 23.79 | 23.86 | 0.07  |
| [2A]-46A-48A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 66 | 20 | 66786 | 2145   | 23.79 | 23.82 | 0.03  |
| [2A]-46A-48A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 66 | 20 | 66786 | 2145   | 23.79 | 23.73 | -0.06 |
| 2A-46A-48A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.69 | -0.06 |
| 2A-46A-48A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.67 | -0.08 |
| [2A]-46A-48A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.78 | 0.03  |
| 2A-46A-48A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.72 | -0.03 |
| [2A]-46A-48A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.79 | 0.04  |
| [2A]-46A-48A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 23.75 | 23.79 | 0.04  |
| 2A-48A-48C       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.79 | 23.77 | -0.02 |
| 2A-48A-48C       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.79 | 23.84 | 0.05  |
| [2A]-48A-48C     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.79 | 23.71 | -0.08 |
| [2A]-48A-48C     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.79 | 23.82 | 0.03  |
| [2A]-48D         | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 48 | 20 | 56386 | 3664.6 | 23.79 | 23.86 | 0.07  |
| 2A-48A-48A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.79 | 23.78 | -0.01 |
| 2A-48A-48A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.79 | 23.74 | -0.05 |
| [2A]-48A-48A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.79 | 23.83 | 0.04  |
| 2A-48A-48A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.79 | 23.8  | 0.01  |
| [2A]-48A-48A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.79 | 23.79 | 0     |
| 2A-48A-48A-66A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.79 | 23.82 | 0.03  |
| [2A]-48A-48A-66A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.79 | 23.79 | 0     |
| 2A-48A-48A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.8  | 0.05  |
| 2A-48A-48A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.73 | -0.02 |
| [2A]-48A-48A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.68 | -0.07 |
| 2A-48A-48A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.8  | 0.05  |
| [2A]-48A-48A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.65 | -0.1  |
| 2A-48A-48A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.76 | 0.01  |
| [2A]-48A-48A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.67 | -0.08 |
| 2A-48C-66A       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 66 | 20 | 66786 | 2145   | 23.79 | 23.75 | -0.04 |
| 2A-48C-66A       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 66 | 20 | 66786 | 2145   | 23.79 | 23.79 | 0     |

|                    |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|--------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| [2A]-48C-66A       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 66 | 20 | 66786 | 2145   | 23.79 | 23.73 | -0.06 |
| 2A-48C-[66A]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.75 | 0     |
| 2A-[48C]-66A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.77 | 0.02  |
| [2A]-48C-66A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.74 | -0.01 |
| 2A-66A-[66A]-71A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.81 | 0.02  |
| 2A-[66A]-66A-71A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.83 | 0.04  |
| [2A]-66A-66A-71A   | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.86 | 0.07  |
| 2A-[66A]-[66A]-71A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.8  | 0.01  |
| [2A]-66A-[66A]-71A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.86 | 0.07  |
| [2A]-[66A]-66A-71A | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 71 | 20 | 68761 | 634.5  | 23.79 | 23.69 | -0.1  |
| 2A-66A-[66A]-71A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.69 | -0.06 |
| 2A-[66A]-66A-71A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.72 | -0.03 |
| [2A]-66A-66A-71A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.73 | -0.02 |
| 2A-[66A]-[66A]-71A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.73 | -0.02 |
| [2A]-66A-[66A]-71A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.66 | -0.09 |
| [2A]-[66A]-66A-71A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 2  | 20 | 900   | 1960   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.67 | -0.08 |
| 2A-66A-[66A]-71A   | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 24.47 | 24.46 | -0.01 |
| 2A-[66A]-66A-71A   | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 24.47 | 24.54 | 0.07  |
| [2A]-66A-66A-71A   | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 24.47 | 24.49 | 0.02  |
| 2A-[66A]-[66A]-71A | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 24.47 | 24.41 | -0.06 |
| [2A]-66A-[66A]-71A | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 24.47 | 24.5  | 0.03  |
| [2A]-[66A]-66A-71A | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 24.47 | 24.43 | -0.04 |
| [2A]-66A-66B       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 5  | 67168 | 2183.2 | 66 | 15 | 67261 | 2192.5 | 23.79 | 23.84 | 0.05  |
| 2A-[66A]-66B       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 5  | 67168 | 2183.2 | 66 | 15 | 67261 | 2192.5 | 23.79 | 23.84 | 0.05  |
| 2A-66A-[66B]       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 5  | 67168 | 2183.2 | 66 | 15 | 67261 | 2192.5 | 23.79 | 23.85 | 0.06  |
| [2A]-[66A]-66B     | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 5  | 67168 | 2183.2 | 66 | 15 | 67261 | 2192.5 | 23.79 | 23.75 | -0.04 |
| [2A]-66A-66B       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 66 | 5  | 67168 | 2183.2 | 66 | 15 | 67261 | 2192.5 | 23.75 | 23.72 | -0.03 |
| 2A-[66A]-66B       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 66 | 5  | 67168 | 2183.2 | 66 | 15 | 67261 | 2192.5 | 23.75 | 23.76 | 0.01  |
| 2A-66A-[66B]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 66 | 5  | 67168 | 2183.2 | 66 | 15 | 67261 | 2192.5 | 23.75 | 23.78 | 0.03  |
| [2A]-[66A]-66B     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 2  | 20 | 900   | 1960   | 66 | 5  | 67168 | 2183.2 | 66 | 15 | 67261 | 2192.5 | 23.75 | 23.79 | 0.04  |
| [2A]-66A-66B       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960   | 66 | 20 | 67236 | 2190   | 23.75 | 23.79 | 0.04  |
| 2A-[66A]-66B       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960   | 66 | 20 | 67236 | 2190   | 23.75 | 23.7  | -0.05 |
| 2A-66A-[66B]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960   | 66 | 20 | 67236 | 2190   | 23.75 | 23.76 | 0.01  |
| [2A]-[66A]-66B     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 10 | 66585 | 2124.9 | 2  | 20 | 900   | 1960   | 66 | 20 | 67236 | 2190   | 23.75 | 23.69 | -0.06 |
| 2A-[66C]-71A       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 71 | 20 | 68761 | 634.5  | 23.79 | 23.84 | 0.05  |
| [2A]-66C-71A       | 2  | 5  | 19175  | 1907.5 | 1175  | 1987.5 | QPSK | 1 | 12 | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 71 | 20 | 68761 | 634.5  | 23.79 | 23.76 | -0.03 |
| 2A-[66C]-71A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.72 | -0.03 |
| [2A]-66C-71A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 66630 | 2129.4 | 2  | 20 | 900   | 1960   | 71 | 20 | 68761 | 634.5  | 23.75 | 23.67 | -0.08 |
| 2A-[66C]-71A       | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 24.47 | 24.4  | -0.07 |
| [2A]-66C-71A       | 71 | 5  | 133442 | 695    | 68906 | 649    | QPSK | 1 | 24 | 2  | 20 | 900   | 1960   | 66 | 20 | 66786 | 2145   | 66 | 20 | 66984 | 2164.8 | 24.47 | 24.54 | 0.07  |
| [4A]-4A-12B        | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.08 | 23.15 | 0.07  |
| [4A]-[4A]-12B      | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 4  | 20 | 2050  | 2120   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.08 | 23    | -0.08 |
| [4A]-4A-12B        | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 23.94 | 23.97 | 0.03  |
| [4A]-[4A]-12B      | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 4  | 20 | 2175  | 2132.5 | 4  | 10 | 2350  | 2150   | 23.94 | 23.97 | 0.03  |
| [4A]-46A-46C       | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 53540 | 5825   | 23.08 | 23.14 | 0.06  |
| [4A]-46D           | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.08 | 23.07 | -0.01 |
| [4A]-48D           | 4  | 10 | 20350  | 1750   | 2350  | 2150   | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 48 | 20 | 56386 | 3664.6 | 23.08 | 22.99 | -0.09 |
| 5B-30A-[66A]       | 5  | 5  | 20425  | 826.5  | 2425  | 871.5  | QPSK | 1 | 0  | 5  | 10 | 2497  | 878.7  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 23.89 | 23.94 | 0.05  |
| 5B-30A-[66A]       | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 66 | 20 | 66786 | 2145   | 22.65 | 22.67 | 0.02  |
| 5B-30A-[66A]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 30 | 10 | 9820  | 2355   | 23.75 | 23.82 | 0.07  |

|                      |    |    |        |       |       |       |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|----------------------|----|----|--------|-------|-------|-------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| 5A-46C-[66A]         | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 66 | 20 | 66786 | 2145   | 23.89 | 23.83 | -0.06 |
| 5A-46C-[66A]         | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.75 | 23.7  | -0.05 |
| 5B-[66A]-[66A]       | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 5  | 10 | 2497  | 878.7  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.89 | 23.88 | -0.01 |
| 5B-[66A]-[66A]       | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 5  | 10 | 2497  | 878.7  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.89 | 23.94 | 0.05  |
| 5B-[66A]-[66A]       | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 23.75 | 23.68 | -0.07 |
| 5B-[66A]-[66A]       | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 5  | 10 | 2525  | 881.5  | 5  | 5  | 2453  | 874.3  | 23.75 | 23.72 | -0.03 |
| 5A-30A-[66A]-[66A]   | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.89 | 23.83 | -0.06 |
| 5A-30A-[66A]-[66A]   | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.89 | 23.96 | 0.07  |
| 5A-30A-[66A]-[66A]   | 30 | 10 | 27710  | 2310  | 9820  | 2355  | QPSK | 1 | 0  | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.63 | -0.02 |
| 5A-30A-[66A]-[66A]   | 30 | 10 | 27710  | 2310  | 9820  | 2355  | QPSK | 1 | 0  | 5  | 10 | 2525  | 881.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.55 | -0.1  |
| 5A-30A-[66A]-[66A]   | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 5  | 10 | 2525  | 881.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.72 | -0.03 |
| 5A-30A-[66A]-[66A]   | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 5  | 10 | 2525  | 881.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.67 | -0.08 |
| 5A-48A-[48C]         | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.89 | 23.88 | -0.01 |
| 5A-[48A]-[48C]       | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.89 | 23.82 | -0.07 |
| 5A-48A-[48A]-[66A]   | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.89 | 23.95 | 0.06  |
| 5A-[48A]-[48A]-[66A] | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.89 | 23.88 | -0.01 |
| 5A-[48A]-[48A]-[66A] | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.89 | 23.88 | -0.01 |
| 5A-[48A]-[48A]-[66A] | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 66 | 20 | 66786 | 2145   | 23.89 | 23.91 | 0.02  |
| 5A-48A-[48A]-[66A]   | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.78 | 0.03  |
| 5A-[48A]-[48A]-[66A] | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.74 | -0.01 |
| 5A-[48A]-[48A]-[66A] | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.74 | -0.01 |
| 5A-[48A]-[48A]-[66A] | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.71 | -0.04 |
| 5A-48C-[66A]         | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 66 | 20 | 66786 | 2145   | 23.89 | 23.8  | -0.09 |
| 5A-[48C]-[66A]       | 5  | 5  | 20425  | 8265  | 2425  | 8715  | QPSK | 1 | 0  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 66 | 20 | 66786 | 2145   | 23.89 | 23.86 | -0.03 |
| 5A-48C-[66A]         | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.75 | 0     |
| 5A-[48C]-[66A]       | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 5  | 10 | 2525  | 881.5  | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.73 | -0.02 |
| 7A-7A-29A-[66A]      | 7  | 10 | 21400  | 2565  | 3400  | 2685  | QPSK | 1 | 0  | 7  | 20 | 2850  | 2630   | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.89 | 0.04  |
| 7A-7A-29A-[66A]      | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 29 | 10 | 9715  | 722.5  | 23.75 | 23.77 | 0.02  |
| 7C-29A-[66A]         | 7  | 10 | 21400  | 2565  | 3400  | 2685  | QPSK | 1 | 0  | 7  | 20 | 3256  | 2670.6 | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 23.85 | 23.91 | 0.06  |
| 7C-29A-[66A]         | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 2674.8 | 29 | 10 | 9715  | 722.5  | 23.75 | 23.69 | -0.06 |
| 7A-7A-[66A]-[66A]    | 7  | 10 | 21400  | 2565  | 3400  | 2685  | QPSK | 1 | 0  | 7  | 20 | 2850  | 2630   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.88 | 0.03  |
| 7A-7A-[66A]-[66A]    | 7  | 10 | 21400  | 2565  | 3400  | 2685  | QPSK | 1 | 0  | 7  | 20 | 2850  | 2630   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.76 | -0.09 |
| 7A-7A-[66A]-[66A]    | 7  | 10 | 21400  | 2565  | 3400  | 2685  | QPSK | 1 | 0  | 7  | 20 | 2850  | 2630   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.81 | -0.04 |
| 7A-7A-[66A]-[66A]    | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.75 | 23.71 | -0.04 |
| 7A-7A-[66A]-[66A]    | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.75 | 23.71 | -0.04 |
| 7A-7A-[66A]-[66A]    | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3350  | 2680   | 23.75 | 23.79 | 0.04  |
| 7C-[66A]-[66A]       | 7  | 10 | 21400  | 2565  | 3400  | 2685  | QPSK | 1 | 0  | 7  | 20 | 3256  | 2670.6 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.83 | -0.02 |
| 7C-[66A]-[66A]       | 7  | 10 | 21400  | 2565  | 3400  | 2685  | QPSK | 1 | 0  | 7  | 20 | 3256  | 2670.6 | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.85 | 23.92 | 0.07  |
| 7C-[66A]-[66A]       | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 2674.8 | 23.75 | 23.71 | -0.04 |
| 7C-[66A]-[66A]       | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 7  | 20 | 3100  | 2655   | 7  | 20 | 3298  | 2674.8 | 23.75 | 23.78 | 0.03  |
| 7A-12B-[66A]         | 7  | 10 | 21400  | 2565  | 3400  | 2685  | QPSK | 1 | 0  | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 66 | 20 | 66786 | 2145   | 23.85 | 23.81 | -0.04 |
| 7A-12B-[66A]         | 12 | 10 | 23095  | 707.5 | 5095  | 737.5 | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 7  | 20 | 3100  | 2655   | 66 | 20 | 66786 | 2145   | 23.94 | 23.86 | -0.08 |
| 7A-12B-[66A]         | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 7  | 20 | 3100  | 2655   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.75 | 23.76 | 0.01  |
| 12B-[66A]-[66A]      | 12 | 10 | 23095  | 707.5 | 5095  | 737.5 | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.94 | 0     |
| 12B-[66A]-[66A]      | 12 | 10 | 23095  | 707.5 | 5095  | 737.5 | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.9  | -0.04 |
| 12B-[66A]-[66A]      | 12 | 10 | 23095  | 707.5 | 5095  | 737.5 | QPSK | 1 | 0  | 12 | 5  | 5023  | 730.3  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.9  | -0.04 |
| 12B-[66A]-[66A]      | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.75 | 23.71 | -0.04 |
| 12B-[66A]-[66A]      | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.75 | 23.82 | 0.07  |
| 12B-[66A]-[66A]      | 66 | 10 | 132022 | 1715  | 66486 | 2115  | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 12 | 5  | 5095  | 737.5  | 12 | 5  | 5047  | 732.7  | 23.75 | 23.73 | -0.02 |
| 12A-30A-[66A]-[66A]  | 12 | 10 | 23095  | 707.5 | 5095  | 737.5 | QPSK | 1 | 0  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.89 | -0.05 |

|                     |    |    |        |        |       |        |      |   |    |    |    |       |        |    |    |       |        |    |    |       |        |       |       |       |
|---------------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| 12A-30A-[66A]-[66A] | 12 | 10 | 23095  | 707.5  | 5095  | 737.5  | QPSK | 1 | 0  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.94 | 23.96 | 0.02  |
| 12A-30A-[66A]-66A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.61 | -0.04 |
| 12A-30A-[66A]-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 12 | 10 | 5095  | 737.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.66 | 0.01  |
| 12A-30A-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.68 | -0.07 |
| 12A-30A-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 12 | 10 | 5095  | 737.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.75 | 0     |
| 14A-30A-[66A]-66A   | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.63 | 23.65 | 0.02  |
| 14A-30A-[66A]-[66A] | 14 | 10 | 23330  | 793    | 5330  | 763    | QPSK | 1 | 0  | 30 | 10 | 9820  | 2355   | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 23.63 | 23.7  | 0.07  |
| 14A-30A-[66A]-66A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.63 | -0.02 |
| 14A-30A-[66A]-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 14 | 10 | 5330  | 763    | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.6  | -0.05 |
| 14A-30A-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 14 | 10 | 5330  | 763    | 30 | 10 | 9820  | 2355   | 23.75 | 23.65 | -0.1  |
| 14A-30A-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 14 | 10 | 5330  | 763    | 30 | 10 | 9820  | 2355   | 23.75 | 23.73 | -0.02 |
| 25A-25A-[41C]       | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 25 | 20 | 8140  | 1940   | 41 | 20 | 40620 | 2593   | 41 | 20 | 40818 | 2612.8 | 23.4  | 23.42 | 0.02  |
| 25A-[25A]-41C       | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 25 | 20 | 8140  | 1940   | 41 | 20 | 40620 | 2593   | 41 | 20 | 40818 | 2612.8 | 23.4  | 23.39 | -0.01 |
| [25A]-25A-41C       | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 25 | 20 | 8140  | 1940   | 41 | 20 | 40620 | 2593   | 41 | 20 | 40818 | 2612.8 | 23.4  | 23.38 | -0.02 |
| [25A]-[25A]-41C     | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 25 | 20 | 8140  | 1940   | 41 | 20 | 40620 | 2593   | 41 | 20 | 40818 | 2612.8 | 23.4  | 23.36 | -0.04 |
| 25A-26A-[41C]       | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 26 | 15 | 8865  | 876.5  | 41 | 20 | 40620 | 2593   | 41 | 20 | 40818 | 2612.8 | 23.4  | 23.43 | 0.03  |
| [25A]-26A-41C       | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 26 | 15 | 8865  | 876.5  | 41 | 20 | 40620 | 2593   | 41 | 20 | 40818 | 2612.8 | 23.4  | 23.4  | 0     |
| 25A-26A-[41C]       | 26 | 5  | 26715  | 816.5  | 8715  | 861.5  | QPSK | 1 | 24 | 25 | 20 | 8365  | 1962.5 | 41 | 20 | 40620 | 2593   | 41 | 20 | 40818 | 2612.8 | 24.19 | 24.21 | 0.02  |
| [25A]-26A-41C       | 26 | 5  | 26715  | 816.5  | 8715  | 861.5  | QPSK | 1 | 24 | 25 | 20 | 8365  | 1962.5 | 41 | 20 | 40620 | 2593   | 41 | 20 | 40818 | 2612.8 | 24.19 | 24.25 | 0.06  |
| [25A]-41D           | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 41 | 20 | 40620 | 2593   | 41 | 20 | 40818 | 2612.8 | 41 | 20 | 41016 | 2632.6 | 23.4  | 23.43 | 0.03  |
| [25A]-46D           | 25 | 15 | 26615  | 1907.5 | 8615  | 1987.5 | QPSK | 1 | 36 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.4  | 23.34 | -0.06 |
| 29A-30A-[66A]-66A   | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.61 | -0.04 |
| 29A-30A-[66A]-[66A] | 30 | 10 | 27710  | 2310   | 9820  | 2355   | QPSK | 1 | 0  | 29 | 10 | 9715  | 722.5  | 66 | 20 | 66786 | 2145   | 66 | 20 | 67236 | 2190   | 22.65 | 22.58 | -0.07 |
| 29A-30A-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.75 | 0     |
| 29A-30A-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 29 | 10 | 9715  | 722.5  | 30 | 10 | 9820  | 2355   | 23.75 | 23.74 | -0.01 |
| [41A]-41D PC3       | 41 | 20 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 41094 | 2640.4 | 41 | 20 | 41292 | 2660.2 | 41 | 20 | 41490 | 2680   | 23.43 | 23.49 | 0.06  |
| [41A]-41D PC3       | 41 | 20 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40818 | 2612.8 | 41 | 20 | 41016 | 2632.6 | 41 | 20 | 39750 | 2506   | 23.43 | 23.34 | -0.09 |
| [41A]-41D PC2       | 41 | 15 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 41094 | 2640.4 | 41 | 20 | 41292 | 2660.2 | 41 | 20 | 41490 | 2680   | 26.17 | 26.07 | -0.1  |
| [41A]-41D PC2       | 41 | 15 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40791 | 2610.1 | 41 | 20 | 40989 | 2629.9 | 41 | 20 | 39750 | 2506   | 26.17 | 26.23 | 0.06  |
| 41C-[41C] PC3       | 41 | 20 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40818 | 2612.8 | 41 | 20 | 39948 | 2525.8 | 41 | 20 | 39750 | 2506   | 23.43 | 23.42 | -0.01 |
| [41C]-41C PC3       | 41 | 20 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40818 | 2612.8 | 41 | 20 | 39948 | 2525.8 | 41 | 20 | 39750 | 2506   | 23.43 | 23.45 | 0.02  |
| 41C-[41C] PC2       | 41 | 15 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40791 | 2610.1 | 41 | 20 | 39948 | 2525.8 | 41 | 20 | 39750 | 2506   | 26.17 | 26.1  | -0.07 |
| [41C]-41C PC2       | 41 | 15 | 40620  | 2593   | 40620 | 2593   | QPSK | 1 | 0  | 41 | 20 | 40791 | 2610.1 | 41 | 20 | 39948 | 2525.8 | 41 | 20 | 39750 | 2506   | 26.17 | 26.09 | -0.08 |
| 46A-46C-[66A]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 53540 | 5825   | 23.75 | 23.76 | 0.01  |
| 46A-[48C]-66A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.77 | 0.02  |
| 46A-48C-[66A]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.67 | -0.08 |
| 46D-[66A]           | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 46 | 20 | 50863 | 5557.3 | 23.75 | 23.76 | 0.01  |
| 46C-[48A]-66A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 48 | 20 | 55990 | 3625   | 23.75 | 23.68 | -0.07 |
| 46C-48A-[66A]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 48 | 20 | 55990 | 3625   | 23.75 | 23.67 | -0.08 |
| 46C-[48A]-[66A]     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 48 | 20 | 55990 | 3625   | 23.75 | 23.74 | -0.01 |
| 46C-66A-[66A]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.75 | 23.65 | -0.1  |
| 46C-[66A]-66A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.75 | 23.65 | -0.1  |
| 46C-[66A]-[66A]     | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 46 | 20 | 50665 | 5537.5 | 46 | 20 | 50467 | 5517.7 | 23.75 | 23.66 | -0.09 |
| [48A]-48A-66A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.76 | 0.01  |
| 48A-48A-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.79 | 0.04  |
| [48A]-[48A]-66A-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.8  | 0.05  |
| [48A]-48A-[66A]-66A | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.67 | -0.08 |
| 48A-48A-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56640 | 3690   | 23.75 | 23.8  | 0.05  |
| [48A]-48C-66A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.75 | 23.74 | -0.01 |
| 48A-[48C]-66A       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.75 | 23.76 | 0.01  |



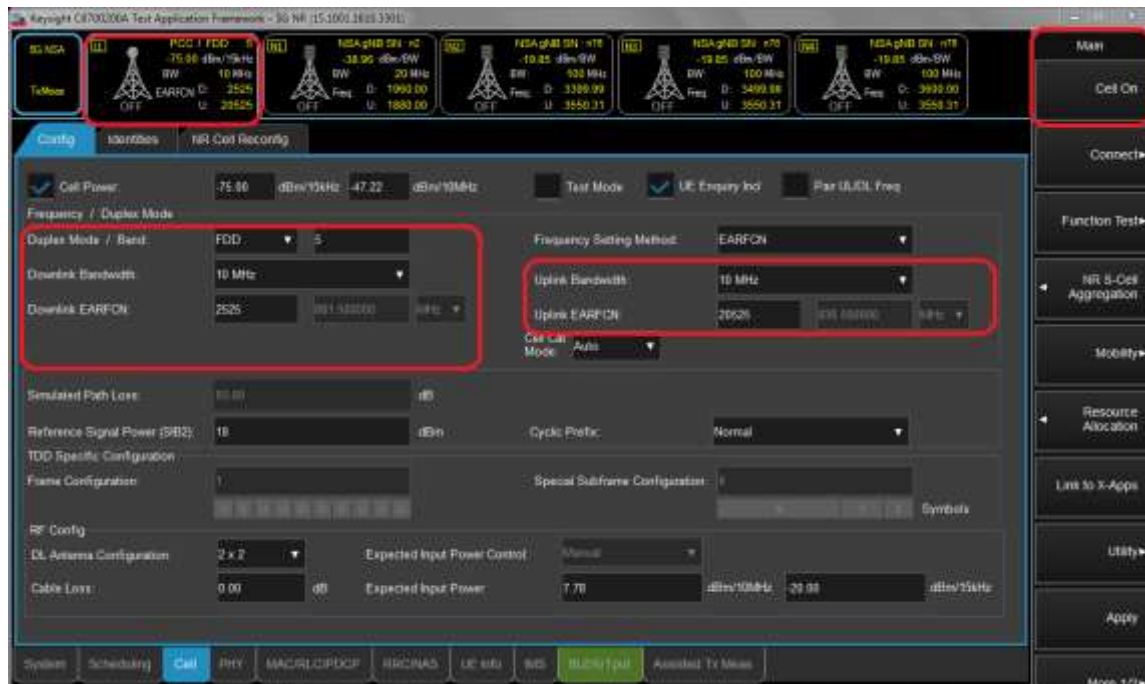
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|-----------------|----|----|--------|--------|-------|--------|------|---|----|----|----|-------|--------|----|----|-------|--------|----|----|-------|--------|-------|-------|-------|
| 48A-48C-[66A]   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.75 | 23.69 | -0.06 |
| [48A]-48C-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56442 | 3670.2 | 48 | 20 | 56640 | 3690   | 23.75 | 23.74 | -0.01 |
| [48A]-48D       | 48 | 5  | 56715  | 3697.5 | 56715 | 3697.5 | QPSK | 1 | 12 | 48 | 20 | 55736 | 3599.6 | 48 | 20 | 55538 | 3579.8 | 48 | 20 | 55340 | 3560   | 21.77 | 21.74 | -0.03 |
| [48A]-48D       | 48 | 5  | 56715  | 3697.5 | 56715 | 3697.5 | QPSK | 1 | 12 | 48 | 20 | 56598 | 3685.8 | 48 | 20 | 56400 | 3666   | 48 | 20 | 55340 | 3560   | 21.77 | 21.72 | -0.05 |
| [48C]-48C       | 48 | 5  | 56715  | 3697.5 | 56715 | 3697.5 | QPSK | 1 | 12 | 48 | 20 | 56598 | 3685.8 | 48 | 20 | 55538 | 3579.8 | 48 | 20 | 55340 | 3560   | 21.77 | 21.82 | 0.05  |
| [48C]-66A-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.76 | 0.01  |
| 48C-[66A]-66A   | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.66 | -0.09 |
| 48C-[66A]-[66A] | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 66 | 20 | 67236 | 2190   | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 23.75 | 23.7  | -0.05 |
| 48D-[66A]       | 66 | 10 | 132022 | 1715   | 66486 | 2115   | QPSK | 1 | 49 | 48 | 20 | 55990 | 3625   | 48 | 20 | 56188 | 3644.8 | 48 | 20 | 56386 | 3664.6 | 23.75 | 23.74 | -0.01 |

## 2. 5G NR Call Box Setup

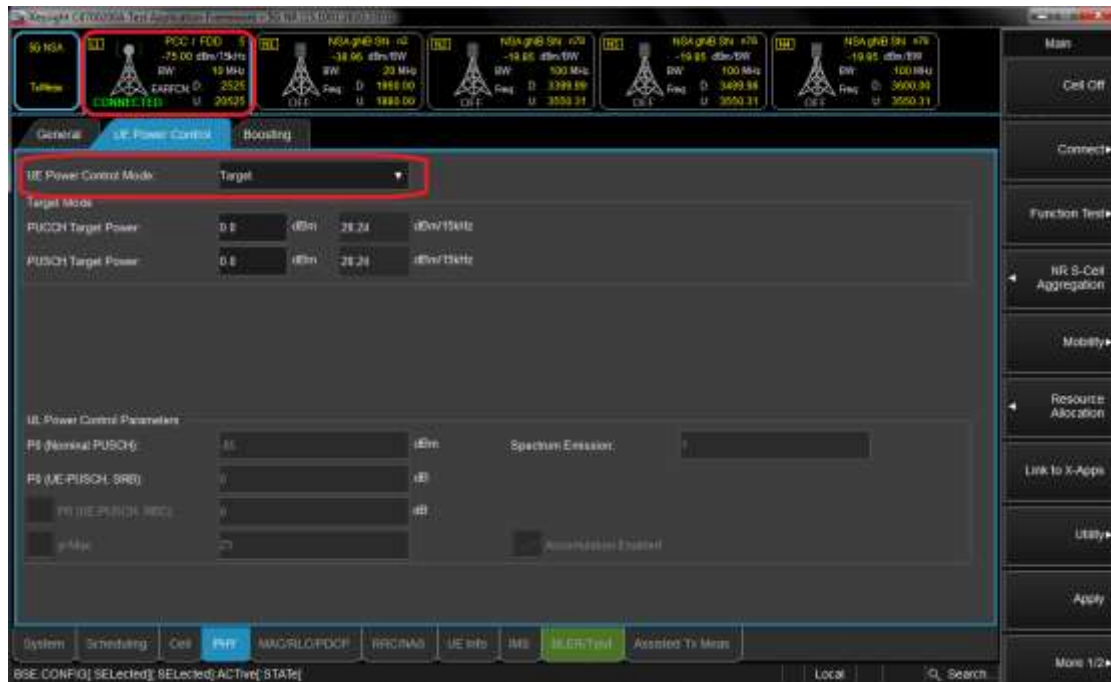
Procedure used to establish output Power measurement for NR Bands

Select operating band, BW and Channel.

- Click Cell on button in the right of Test application screen.
- Turn the LTE Cell On using "ON/OFF" Key.

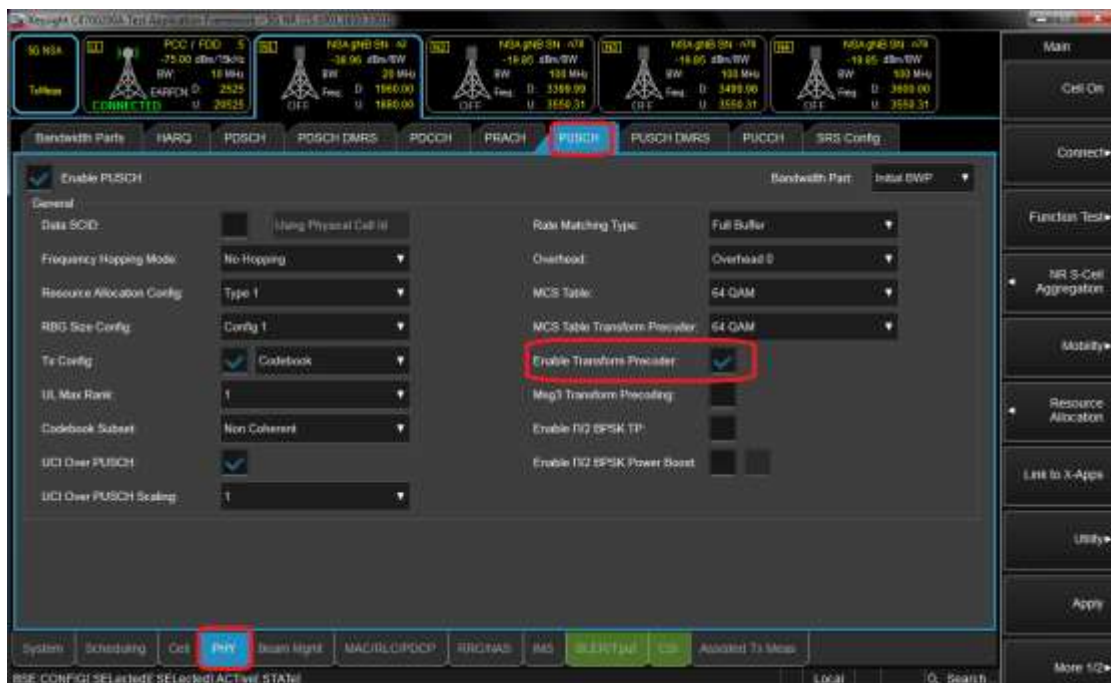


- Turn the Airplane Mode On and then turn the Airplane mode off.
- Select All down bits for UL Power control Mode in LTE.

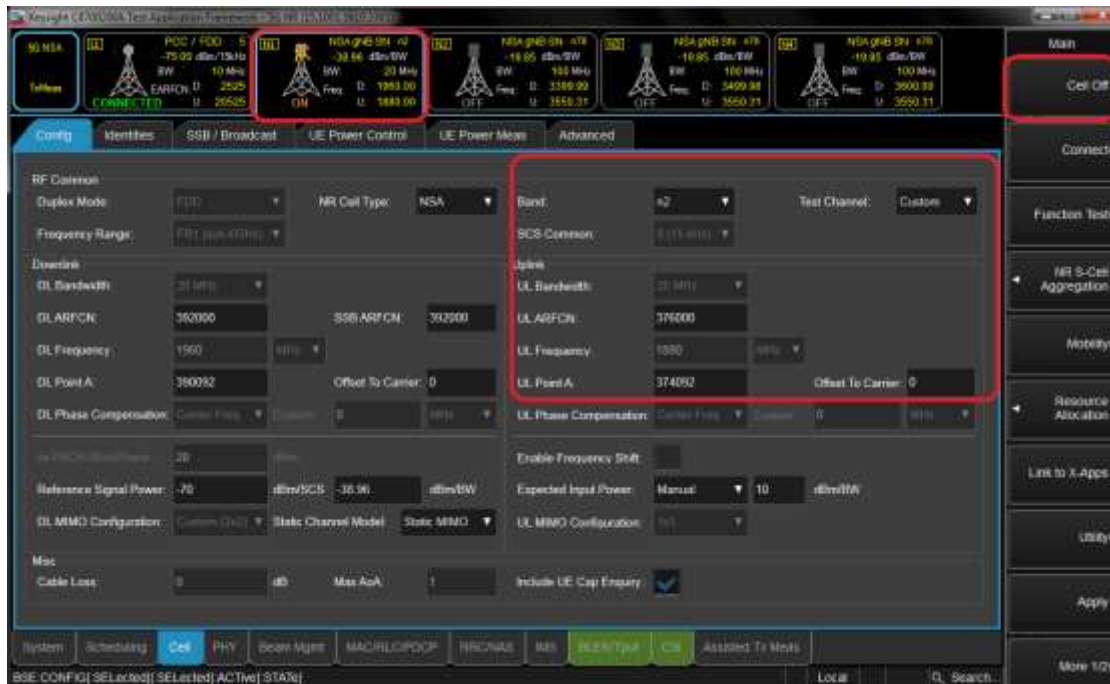


#### Setup for NR Band

- Select waveform for Setting NR Band (PHY->PUSCH->Enable Transform Precoder)
  - Enable : DFT-s-OFDM, Disable : CP-OFDM

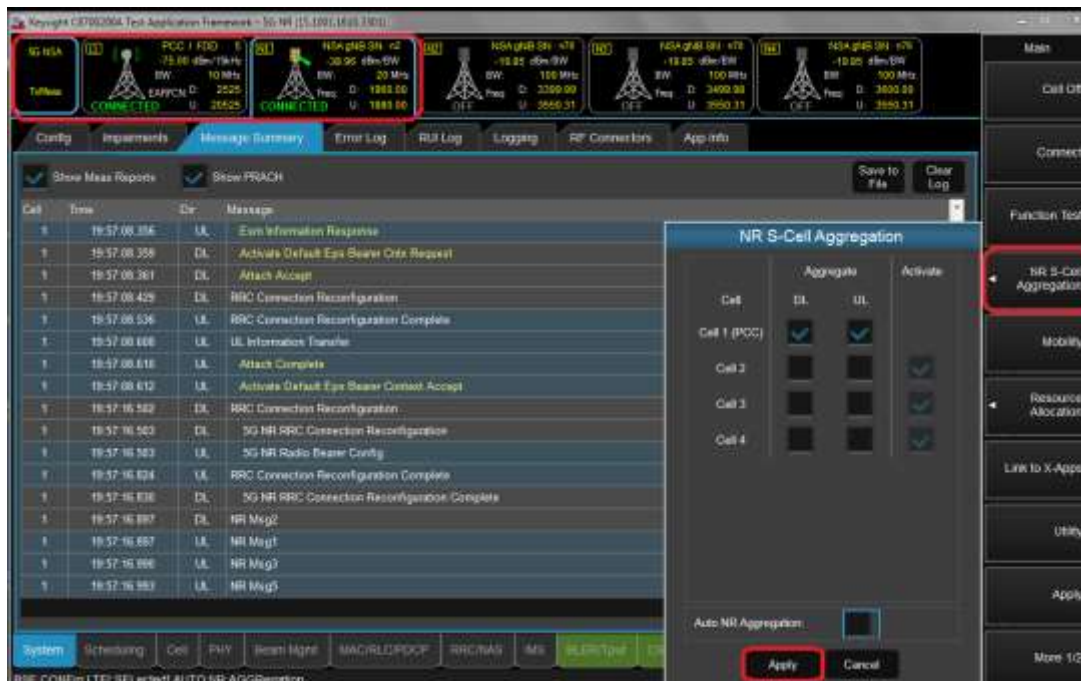


- Select operating band, BW, SCS and Channel.
- Turn the NR Cell On using "ON/OFF" Key.



#### Connect NR S-Cell Aggregation

- Click NR S-Cell Aggregation
- Check the Cell 1's DL and UL box(PCC) and then Click Apply.
- Check the message summary If message shows NR Msg 5, It is connected.



#### Max Power setting

- Click "Cell in the bottom of screen.
- Click "UE Power control" than change UE Power control mode to All Up bits.



Selecting Start RB/Count/MCS

- Select the each test configuring (Start RB, Count, MCS).



View Tx Power

- Click "Link to X-Apps." (Please refer to Figure-7)
- Select "Channel Power".



