

Test Laboratory: JYTSZ

Date: 06.16.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 836.5$  MHz;  $\sigma = 0.925$  S/m;  $\epsilon_r = 41.532$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71) @ 836.5 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 5 1RB(10MHz) Right Cheek/Middle Channel/Area Scan (51x61x1):**

Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.319 W/kg

**LTE Band 5 1RB(10MHz) Right Cheek/Middle Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0 V/m; Power Drift = 0.00 dB

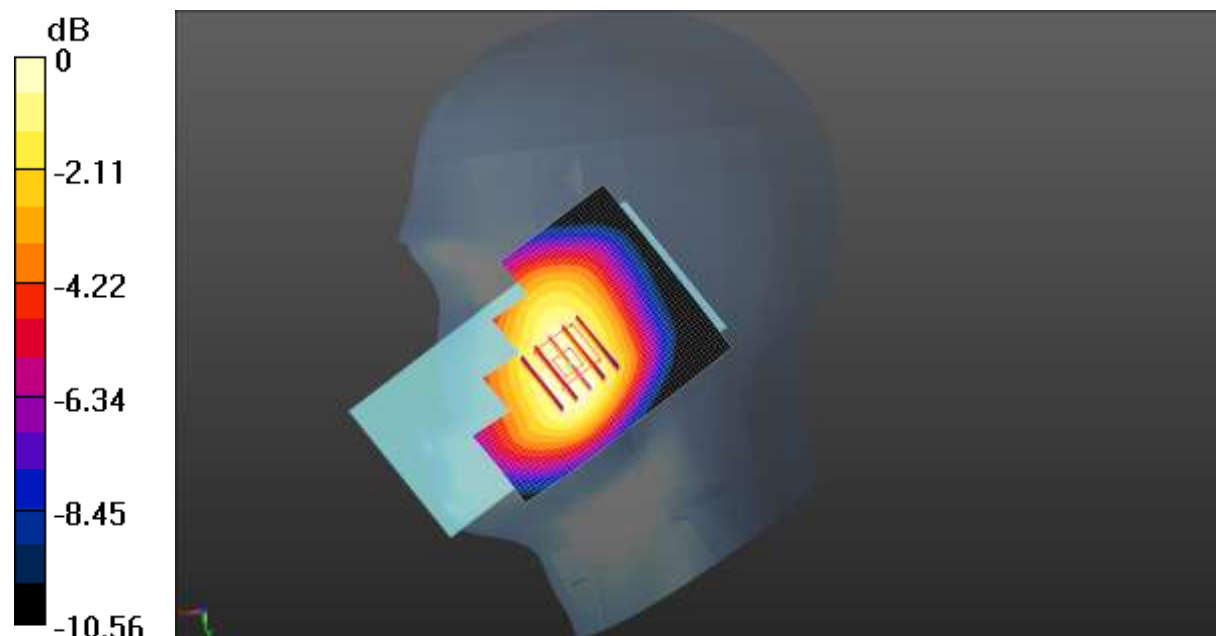
Peak SAR (extrapolated) = 0.363 W/kg

**SAR(1 g) = 0.265 W/kg; SAR(10 g) = 0.197 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 73.9%

Maximum value of SAR (measured) = 0.329 W/kg



0 dB = 0.329 W/kg = -4.83 dBW/kg

Test Laboratory: JYTSZ

Date: 06.16.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 707.5$  MHz;  $\sigma = 0.849$  S/m;  $\epsilon_r = 42.283$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(10.11, 10.11, 10.11) @ 707.5 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 12 1RB(10MHz) Right Cheek/Middle Channel/Area Scan**

**(51x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.271 W/kg

**LTE Band 12 1RB(10MHz) Right Cheek/Middle Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.622 V/m; Power Drift = -0.03 dB

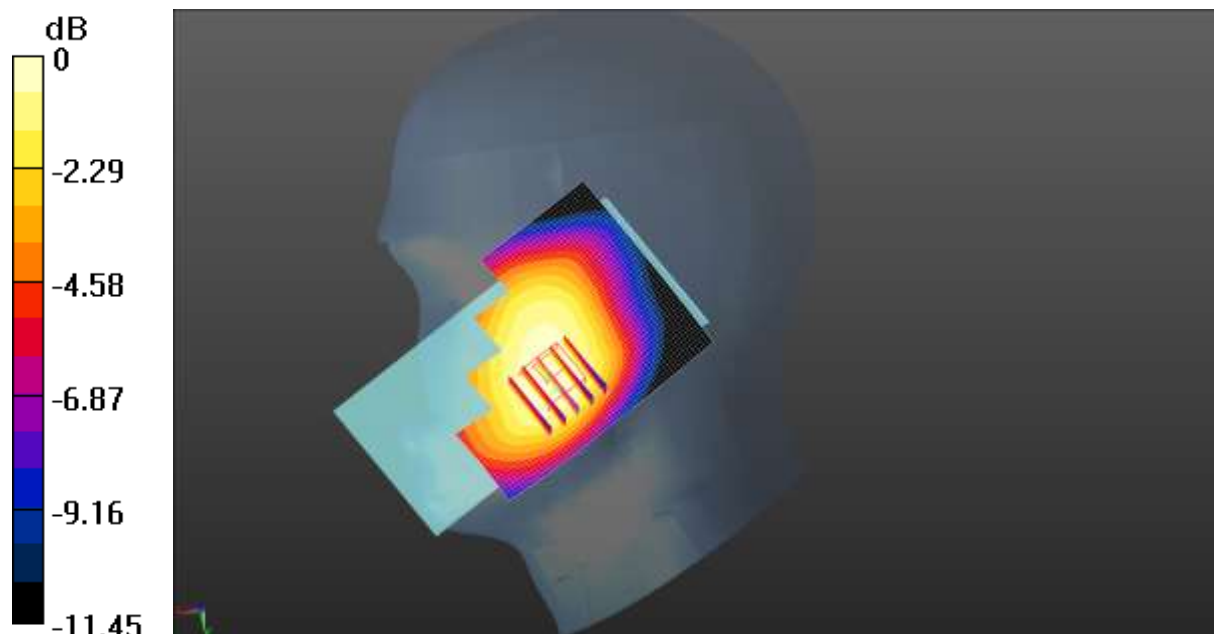
Peak SAR (extrapolated) = 0.301 W/kg

**SAR(1 g) = 0.225 W/kg; SAR(10 g) = 0.165 W/kg**

Smallest distance from peaks to all points 3 dB below = 25.4 mm

Ratio of SAR at M2 to SAR at M1 = 74.7%

Maximum value of SAR (measured) = 0.274 W/kg



0 dB = 0.274 W/kg = -5.62 dBW/kg

Test Laboratory: JYTSZ

Date: 06.26.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1860 MHz;Duty Cycle: 1:1

Medium parameters used:  $f = 1860 \text{ MHz}$ ;  $\sigma = 1.405 \text{ S/m}$ ;  $\epsilon_r = 40.164$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14) @ 1860 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 2 50%RB(20MHz) Right Cheek/Low Channel/Area Scan (51x61x1):**

Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.103 W/kg

**LTE Band 2 50%RB(20MHz) Right Cheek/Low Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 0 V/m; Power Drift = 0.00 dB

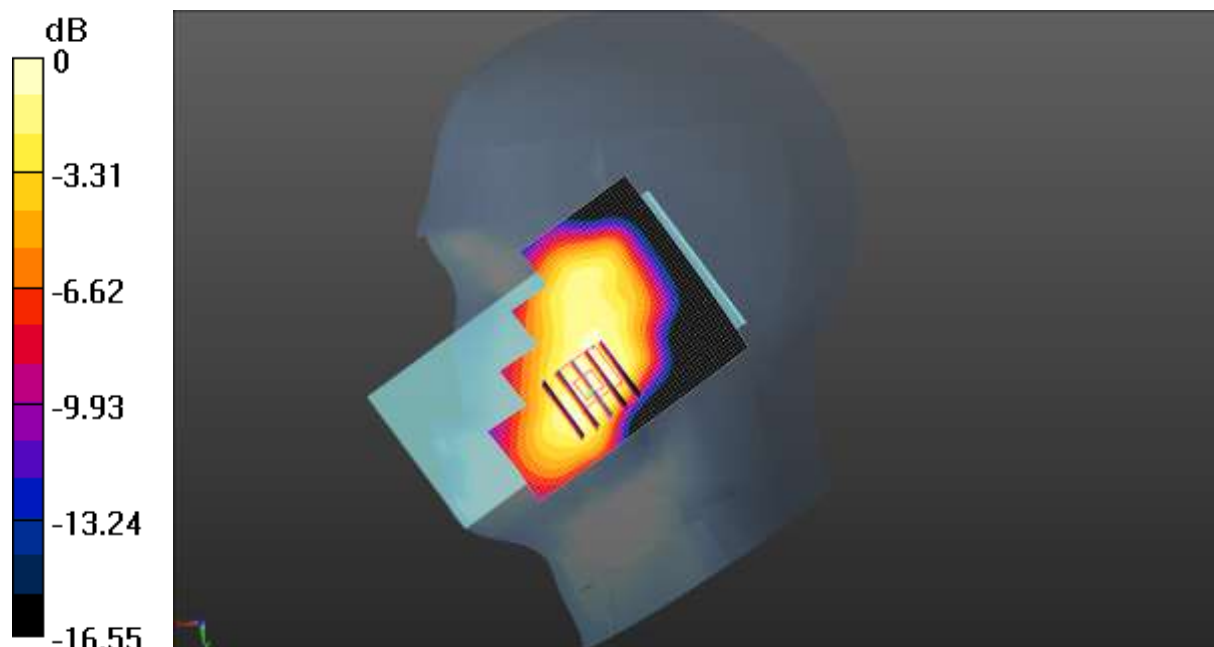
Peak SAR (extrapolated) = 0.092 W/kg

**SAR(1 g) = 0.059 W/kg; SAR(10 g) = 0.038 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 60.5%

Maximum value of SAR (measured) = 0.0910 W/kg



0 dB = 0.0910 W/kg = -10.41 dBW/kg

Test Laboratory: JYTSZ

Date: 06.26.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1745 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1745 \text{ MHz}$ ;  $\sigma = 1.379 \text{ S/m}$ ;  $\epsilon_r = 40.626$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43) @ 1745 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 4 50%RB(20MHz) Right Cheek/High Channel/Area Scan**

**(51x61x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$ .

Maximum value of SAR (interpolated) = 0.0527 W/kg

**LTE Band 4 50%RB(20MHz) Right Cheek/High Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 0.5640 V/m; Power Drift = 0.00 dB

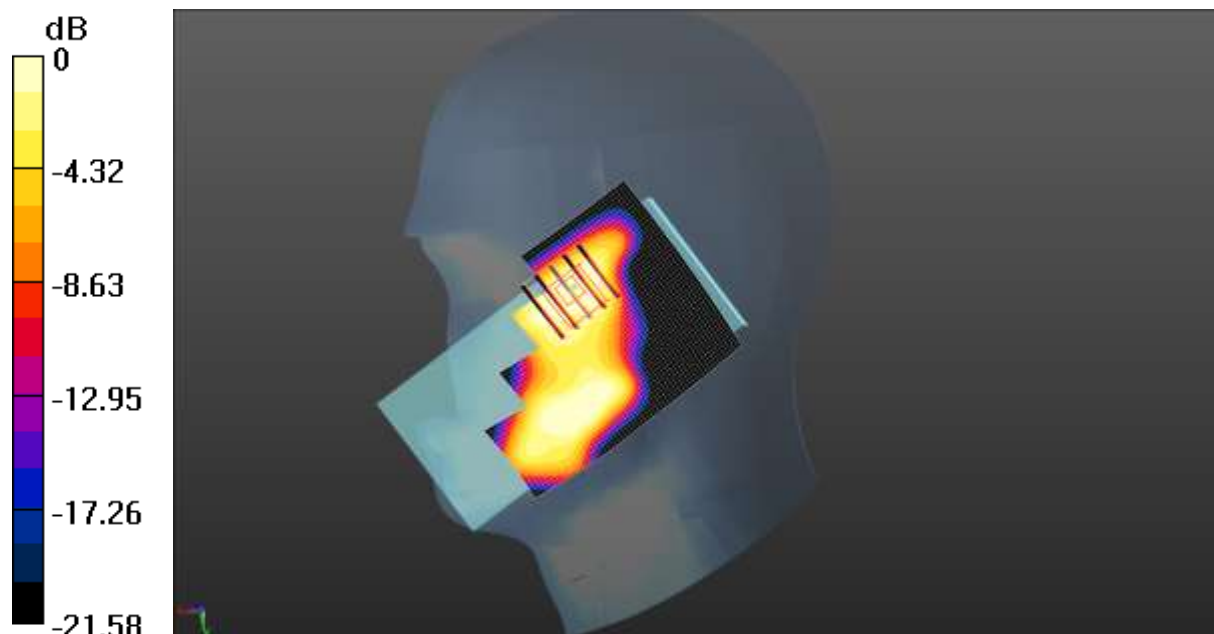
Peak SAR (extrapolated) = 0.0360 W/kg

**SAR(1 g) = 0.020 W/kg; SAR(10 g) = 0.012 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 55.7%

Maximum value of SAR (measured) = 0.0295 W/kg



0 dB = 0.0295 W/kg = -15.30 dBW/kg

Test Laboratory: JYTSZ

Date: 06.29.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 2510 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2510 \text{ MHz}$ ;  $\sigma = 1.921 \text{ S/m}$ ;  $\epsilon_r = 38.465$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.58, 7.58, 7.58) @ 2510 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 7 50%RB(20MHz) Right Cheek/Low Channel/Area Scan (51x61x1):**

Interpolated grid:  $dx=1.200 \text{ mm}$ ,  $dy=1.200 \text{ mm}$

Maximum value of SAR (interpolated) = 0.216 W/kg

**LTE Band 7 50%RB(20MHz) Right Cheek/Low Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 1.118 V/m; Power Drift = 0.16 dB

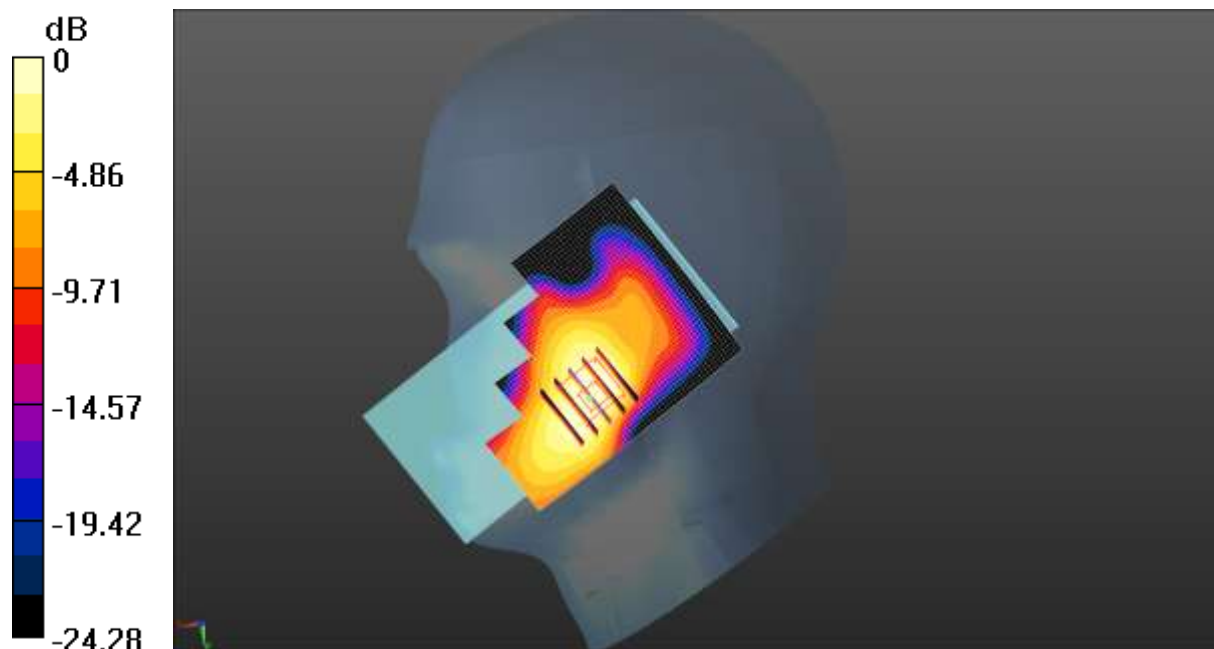
Peak SAR (extrapolated) = 0.228 W/kg

**SAR(1 g) = 0.125 W/kg; SAR(10 g) = 0.067 W/kg**

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

Ratio of SAR at M2 to SAR at M1 = 56.6%

Maximum value of SAR (measured) = 0.184 W/kg



0 dB = 0.184 W/kg = -7.35 dBW/kg

Test Laboratory: JYTSZ

Date: 06.16.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD (USA) 10MHz 50%RB QPSK (0); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 836.5 \text{ MHz}$ ;  $\sigma = 0.925 \text{ S/m}$ ;  $\epsilon_r = 41.532$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71) @ 836.5 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 5 50%RB(10MHz) Right Cheek/Middle Channel/Area Scan**

**(51x61x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.250 W/kg

**LTE Band 5 50%RB(10MHz) Right Cheek/Middle Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 4.271 V/m; Power Drift = -0.07 dB

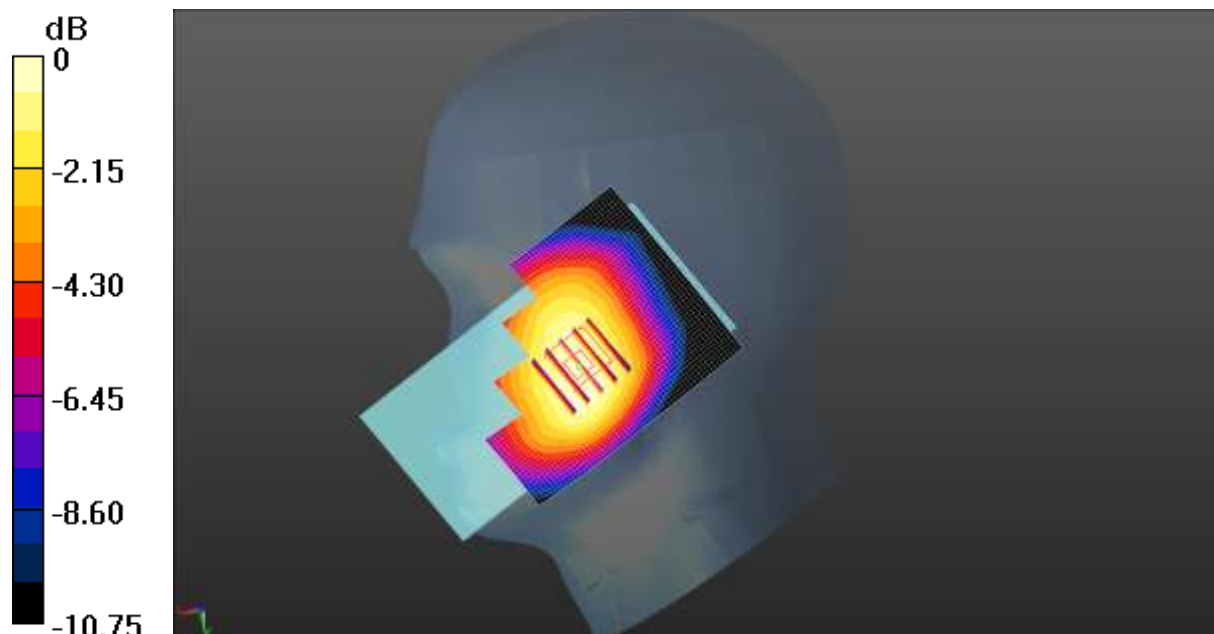
Peak SAR (extrapolated) = 0.290 W/kg

**SAR(1 g) = 0.211 W/kg; SAR(10 g) = 0.157 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 73.7%

Maximum value of SAR (measured) = 0.263 W/kg



0 dB = 0.263 W/kg = -5.80 dBW/kg

Test Laboratory: JYTSZ

Date: 06.16.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 707.5$  MHz;  $\sigma = 0.849$  S/m;  $\epsilon_r = 42.283$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(10.11, 10.11, 10.11) @ 707.5 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 12 50%RB(10MHz) Right Cheek/Middle Channel/Area Scan**

**(51x61x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.204 W/kg

**LTE Band 12 50%RB(10MHz) Right Cheek/Middle Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.477 V/m; Power Drift = 0.11 dB

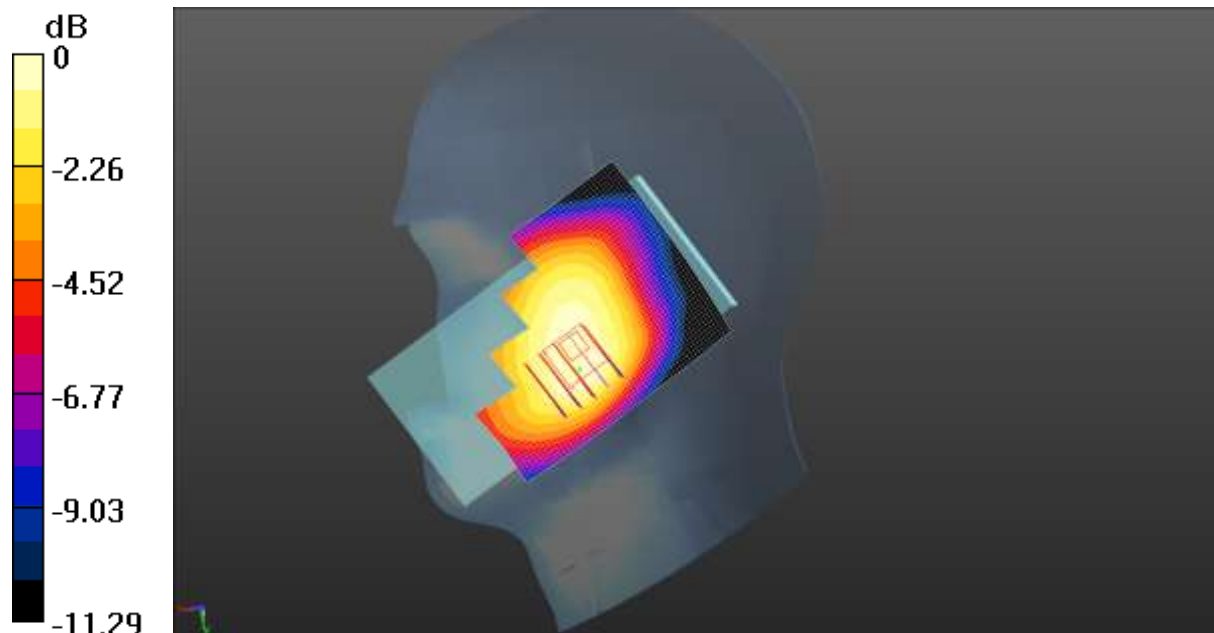
Peak SAR (extrapolated) = 0.228 W/kg

**SAR(1 g) = 0.172 W/kg; SAR(10 g) = 0.125 W/kg**

Smallest distance from peaks to all points 3 dB below = 30.2 mm

Ratio of SAR at M2 to SAR at M1 = 76.2%

Maximum value of SAR (measured) = 0.207 W/kg



0 dB = 0.207 W/kg = -6.84 dBW/kg

Test Laboratory: JYTSZ

Date: 06.28.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps) (0);  
 Frequency: 2462 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 2462 \text{ MHz}$ ;  $\sigma = 1.854 \text{ S/m}$ ;  $\epsilon_r = 38.758$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.58, 7.58, 7.58) @ 2462 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**WIFI Left Cheek/High Channel/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  
 $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 14.01 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 2.23 W/kg

**SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.475 W/kg**

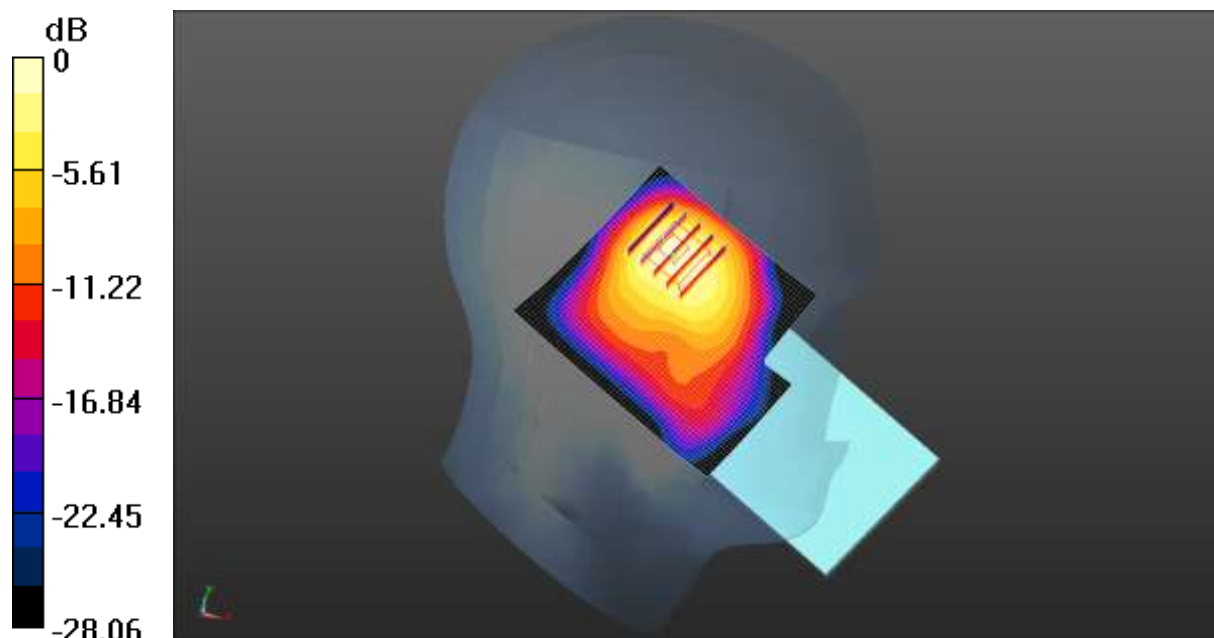
Smallest distance from peaks to all points 3 dB below = 8.6 mm

Ratio of SAR at M2 to SAR at M1 = 42.9%

Maximum value of SAR (measured) = 1.65 W/kg

**WIFI Left Cheek/High Channel/Area Scan (51x61x1):** Interpolated grid:  $dx=1.200 \text{ mm}$ ,  $dy=1.200 \text{ mm}$

Maximum value of SAR (interpolated) = 1.45 W/kg



0 dB = 1.45 W/kg = 1.61 dBW/kg



Test Laboratory: JYTSZ

Date: 06.24.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, IEEE 802.11a WiFi 5GHz (0); Frequency: 5180 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 5180 \text{ MHz}$ ;  $\sigma = 4.581 \text{ S/m}$ ;  $\epsilon_r = 36.605$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(5.42, 5.42, 5.42) @ 5200 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**5.2GWIFI Left Cheek/Low Channel/Zoom Scan (7x7x7)/Cube 0: Measurement**

grid:  $dx=4\text{mm}$ ,  $dy=4\text{mm}$ ,  $dz=2\text{mm}$

Reference Value = 2.130 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.933 W/kg

**SAR(1 g) = 0.363 W/kg; SAR(10 g) = 0.101 W/kg**

Smallest distance from peaks to all points 3 dB below = 5.8 mm

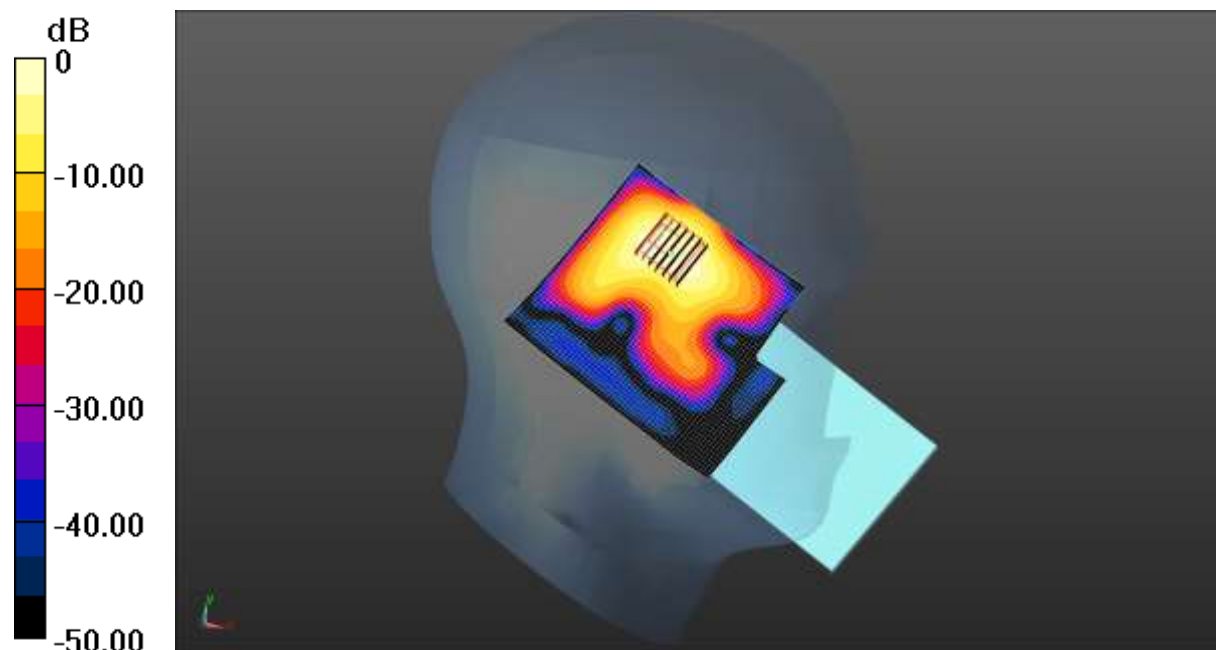
Ratio of SAR at M2 to SAR at M1 = 19.9%

Maximum value of SAR (measured) = 0.871 W/kg

**5.2GWIFI Left Cheek/Low Channel/Area Scan (51x61x1): Interpolated grid:**

$dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 0.729 W/kg



0 dB = 0.729 W/kg = -1.37 dBW/kg

Test Laboratory: JYTSZ

Date: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, IEEE 802.11a WiFi 5GHz (0); Frequency: 5825 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 5825 \text{ MHz}$ ;  $\sigma = 5.397 \text{ S/m}$ ;  $\epsilon_r = 34.849$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(4.96, 4.96, 4.96) @ 5825 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**5.8GWIFI Left Cheek/High Channel/Area Scan (51x61x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 0.739 W/kg

**5.8GWIFI Left Cheek/High Channel/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=4\text{mm}$ ,  $dy=4\text{mm}$ ,  $dz=2\text{mm}$

Reference Value = 0 V/m; Power Drift = 0.00 dB

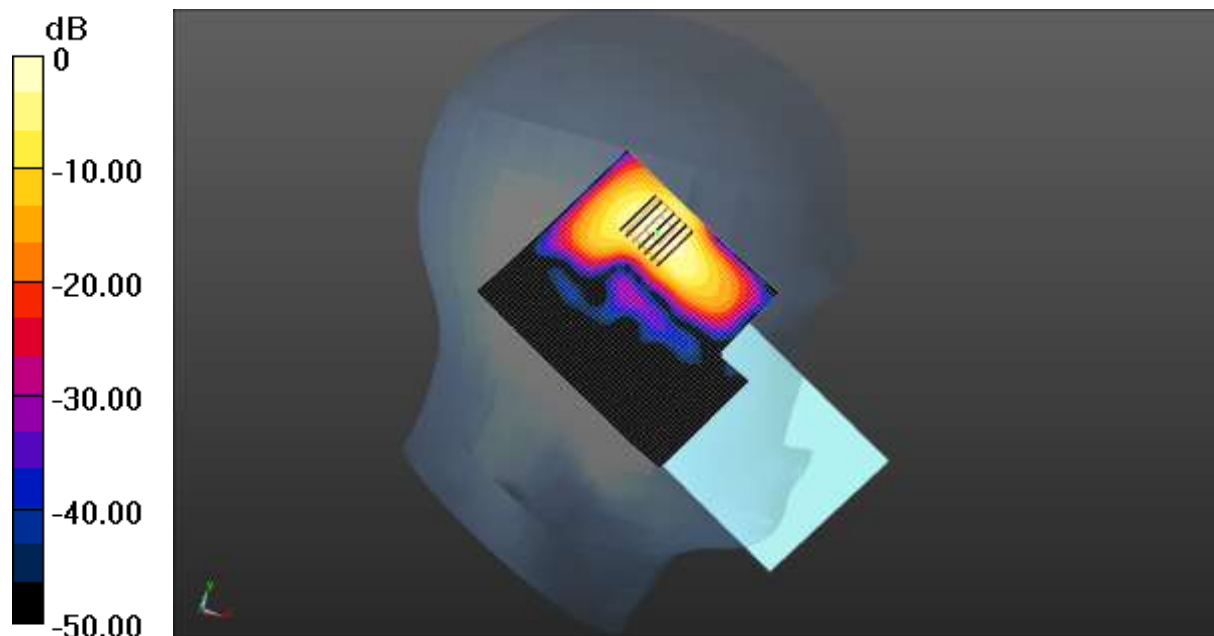
Peak SAR (extrapolated) = 2.56 W/kg

**SAR(1 g) = 0.304 W/kg; SAR(10 g) = 0.097 W/kg**

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 12.3%

Maximum value of SAR (measured) = 0.758 W/kg



0 dB = 0.758 W/kg = -1.20 dBW/kg

Test Laboratory: JYTSZ

Date: 06.15.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

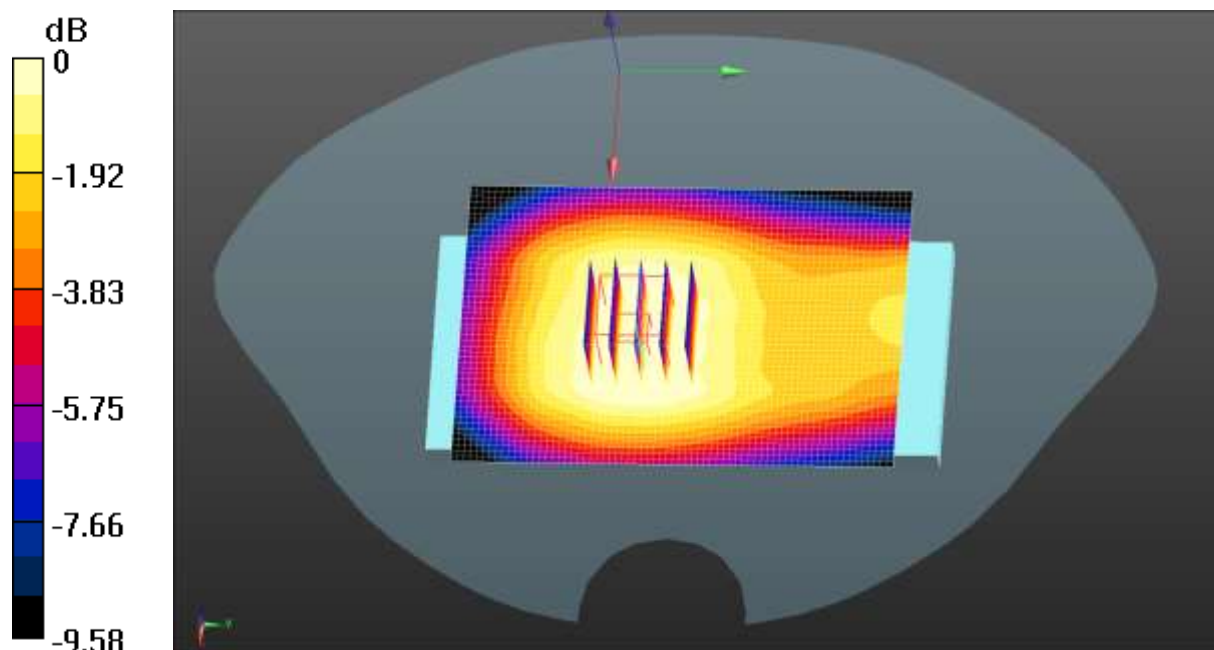
Communication System: UID 0, GSM (0); Frequency: 836.6 MHz; Duty Cycle: 1:8.30042  
 Medium parameters used (interpolated):  $f = 836.6 \text{ MHz}$ ;  $\sigma = 0.925 \text{ S/m}$ ;  $\epsilon_r = 41.532$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71) @ 836.6 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**GSM 850 Body Front/Middle Channel/Area Scan (51x71x1):** Interpolated grid:  
 $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$   
 Maximum value of SAR (interpolated) = 0.514 W/kg

**GSM 850 Body Front/Middle Channel/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$   
 Reference Value = 23.24 V/m; Power Drift = 0.00 dB  
 Peak SAR (extrapolated) = 0.584 W/kg  
**SAR(1 g) = 0.401 W/kg; SAR(10 g) = 0.294 W/kg**  
 Smallest distance from peaks to all points 3 dB below: Larger than measurement grid  
 Ratio of SAR at M2 to SAR at M1 = 66.7%  
 Maximum value of SAR (measured) = 0.510 W/kg



0 dB = 0.510 W/kg = -2.92 dBW/kg

Test Laboratory: JYTSZ

Date: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, GSM (0); Frequency: 1850.2 MHz; Duty Cycle: 1:8.30042  
 Medium parameters used:  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.402 \text{ S/m}$ ;  $\epsilon_r = 40.189$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14) @ 1850.2 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**GSM 1900 Body Back/Low Channel/Zoom Scan (5x5x7)/Cube 0: Measurement**

grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 4.869 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.566 W/kg

**SAR(1 g) = 0.291 W/kg; SAR(10 g) = 0.144 W/kg**

Smallest distance from peaks to all points 3 dB below = 9.3 mm

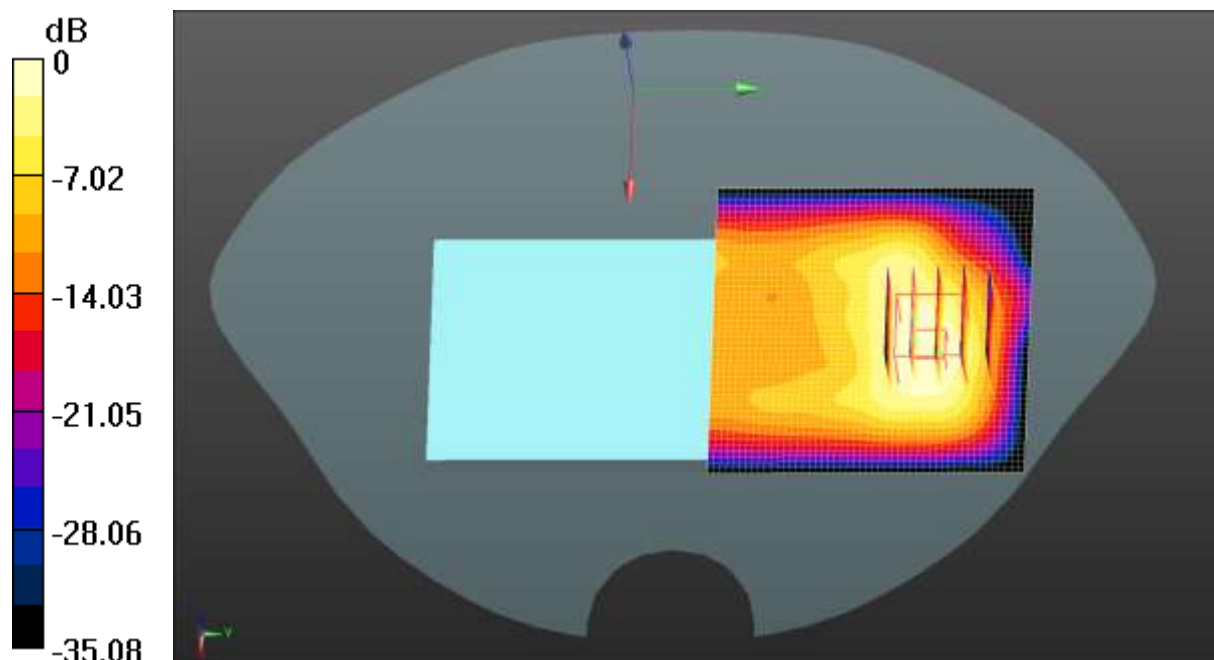
Ratio of SAR at M2 to SAR at M1 = 51%

Maximum value of SAR (measured) = 0.428 W/kg

**GSM 1900 Body Back/Low Channel/Area Scan (51x51x1): Interpolated grid:**

$dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.415 W/kg



0 dB = 0.415 W/kg = -3.82 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 06.15.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, UMTS-FDD(WCDMA) (0); Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 826.4 \text{ MHz}$ ;  $\sigma = 0.911 \text{ S/m}$ ;  $\epsilon_r = 41.563$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71) @ 826.4 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**WCDMA 850 Body Back/Low Channel/Area Scan (51x71x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.271 W/kg

**WCDMA 850 Body Back/Low Channel/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 16.72 V/m; Power Drift = -0.07 dB

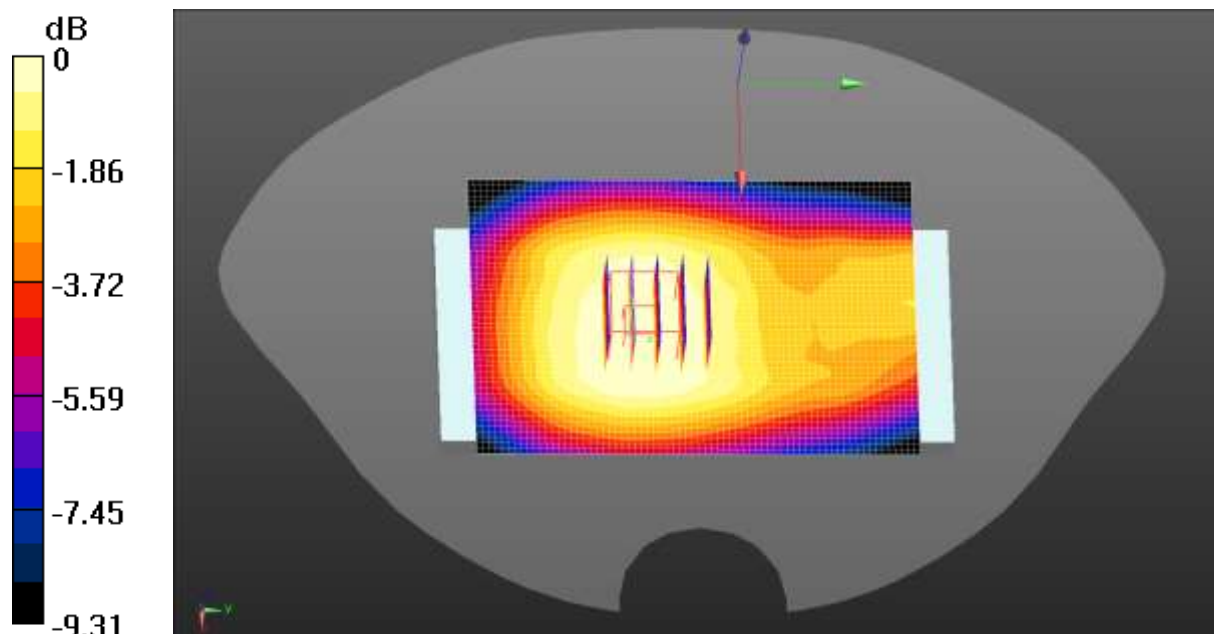
Peak SAR (extrapolated) = 0.309 W/kg

**SAR(1 g) = 0.215 W/kg; SAR(10 g) = 0.159 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 70%

Maximum value of SAR (measured) = 0.271 W/kg



0 dB = 0.271 W/kg = -5.67 dBW/kg

Test Laboratory: JYTSZ

Date: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, UMTS-FDD(WCDMA) (0); Frequency: 1712.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1712.4$  MHz;  $\sigma = 1.365$  S/m;  $\epsilon_r = 40.703$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43) @ 1712.4 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**WCDMA 1700 Body Back/Low Channel/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.343 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 1.11 W/kg

**SAR(1 g) = 0.600 W/kg; SAR(10 g) = 0.319 W/kg**

Smallest distance from peaks to all points 3 dB below = 9.7 mm

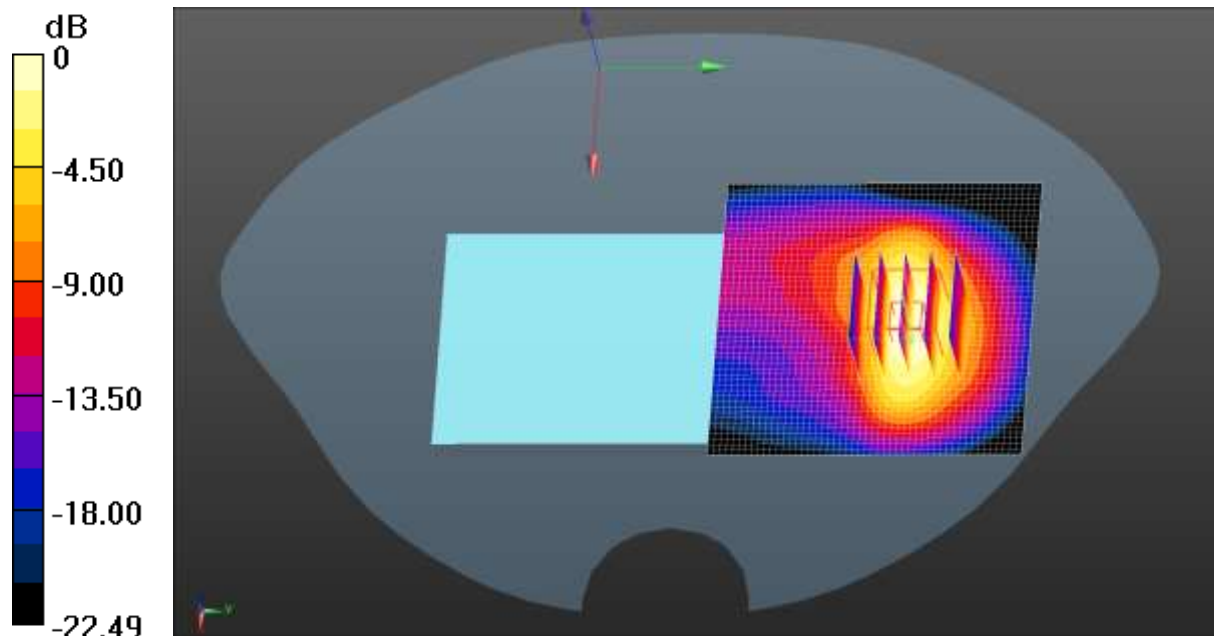
Ratio of SAR at M2 to SAR at M1 = 55.8%

Maximum value of SAR (measured) = 0.874 W/kg

**WCDMA 1700 Body Back/Low Channel/Area Scan (51x51x1):** Interpolated grid:

dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.907 W/kg



0 dB = 0.907 W/kg = -0.42 dBW/kg

Test Laboratory: JYTSZ

Date: 06.21.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, UMTS-FDD(WCDMA) (0); Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1907.6 \text{ MHz}$ ;  $\sigma = 1.423 \text{ S/m}$ ;  $\epsilon_r = 39.933$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14) @ 1907.6 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**WCDMA 1900 Body Back/High Channel/Area Scan (51x51x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.401 W/kg

**WCDMA 1900 Body Back/High Channel/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 8.095 V/m; Power Drift = -0.09 dB

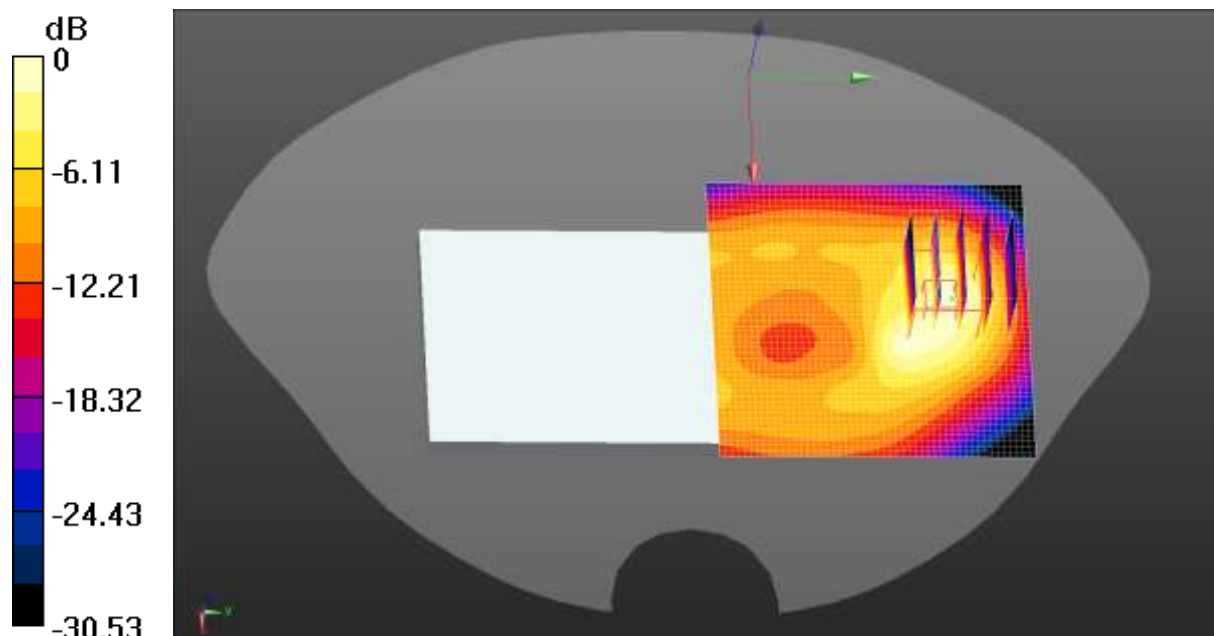
Peak SAR (extrapolated) = 0.535 W/kg

**SAR(1 g) = 0.284 W/kg; SAR(10 g) = 0.146 W/kg**

Smallest distance from peaks to all points 3 dB below = 10.7 mm

Ratio of SAR at M2 to SAR at M1 = 53.2%

Maximum value of SAR (measured) = 0.431 W/kg



0 dB = 0.431 W/kg = -3.66 dBW/kg

Test Laboratory: JYTSZ

Date: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1860 MHz;Duty Cycle: 1:1

Medium parameters used:  $f = 1860 \text{ MHz}$ ;  $\sigma = 1.405 \text{ S/m}$ ;  $\epsilon_r = 40.164$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14) @ 1860 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 2 1RB(20MHz) Body Back/Low Channel/Area Scan (51x51x1):**

Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.636 W/kg

**LTE Band 2 1RB(20MHz) Body Back/Low Channel/Zoom Scan (5x5x7)/Cube**

**0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 7.367 V/m; Power Drift = -0.03 dB

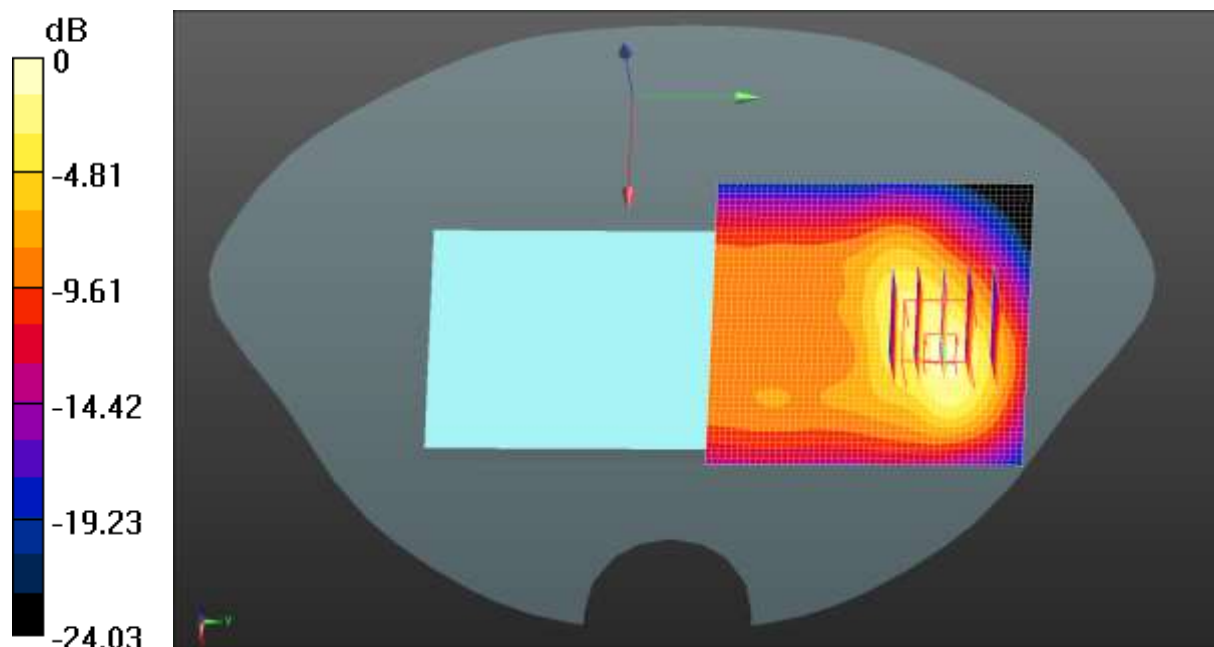
Peak SAR (extrapolated) = 0.954 W/kg

**SAR(1 g) = 0.511 W/kg; SAR(10 g) = 0.260 W/kg**

Smallest distance from peaks to all points 3 dB below = 10.7 mm

Ratio of SAR at M2 to SAR at M1 = 54.7%

Maximum value of SAR (measured) = 0.760 W/kg



0 dB = 0.760 W/kg = -1.19 dBW/kg



Test Laboratory: JYTSZ

Date: 06.26.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1732.5$  MHz;  $\sigma = 1.374$  S/m;  $\epsilon_r = 40.667$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

DASY5 Configuration:

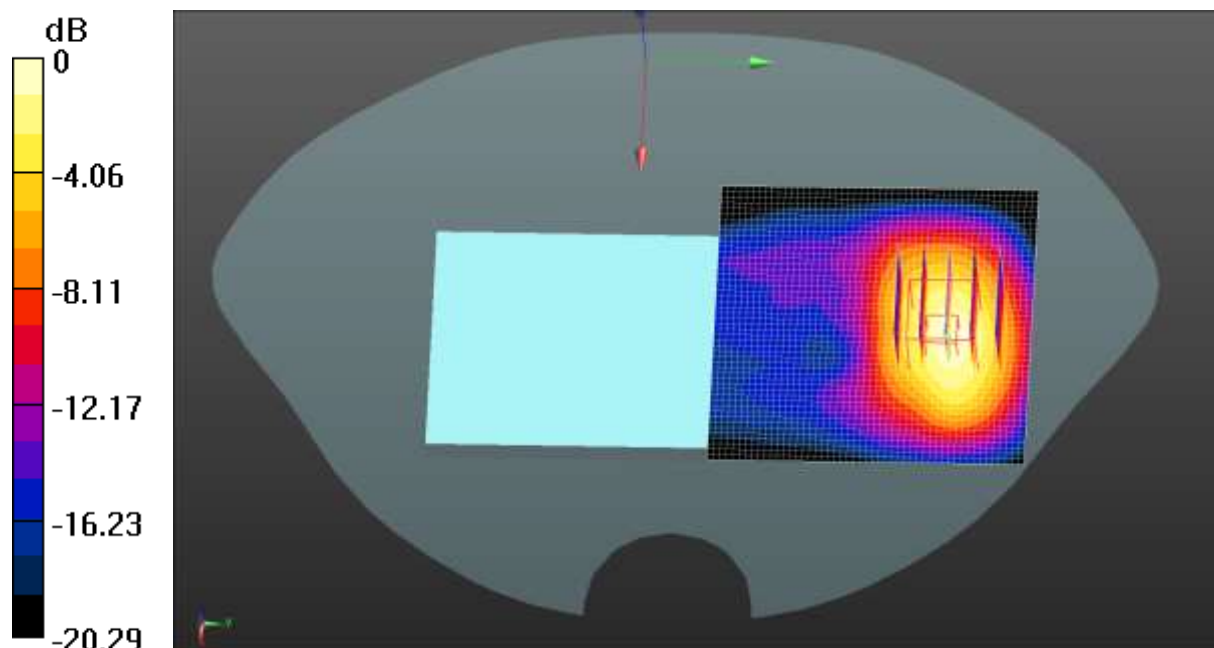
- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43) @ 1745 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 4 1RB(20MHz) Body Back/Middle Channel/Area Scan (51x51x1):**

Interpolated grid: dx=1.500 mm, dy=1.500 mm  
Maximum value of SAR (interpolated) = 0.716 W/kg

**LTE Band 4 1RB(20MHz) Body Back/Middle Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 3.163 V/m; Power Drift = -0.03 dB  
Peak SAR (extrapolated) = 1.02 W/kg  
**SAR(1 g) = 0.557 W/kg; SAR(10 g) = 0.296 W/kg**  
Smallest distance from peaks to all points 3 dB below = 9.6 mm  
Ratio of SAR at M2 to SAR at M1 = 56.4%  
Maximum value of SAR (measured) = 0.790 W/kg



0 dB = 0.790 W/kg = -1.02 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 06.28.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 2510 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 2510$  MHz;  $\sigma = 1.921$  S/m;  $\epsilon_r = 38.465$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.58, 7.58, 7.58) @ 2510 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 7 1RB(20MHz) Body Back/Low Channel/Zoom Scan (5x5x7)/Cube**

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

Reference Value = 7.247 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.06 W/kg

**SAR(1 g) = 0.547 W/kg; SAR(10 g) = 0.283 W/kg**

Smallest distance from peaks to all points 3 dB below = 12.2 mm

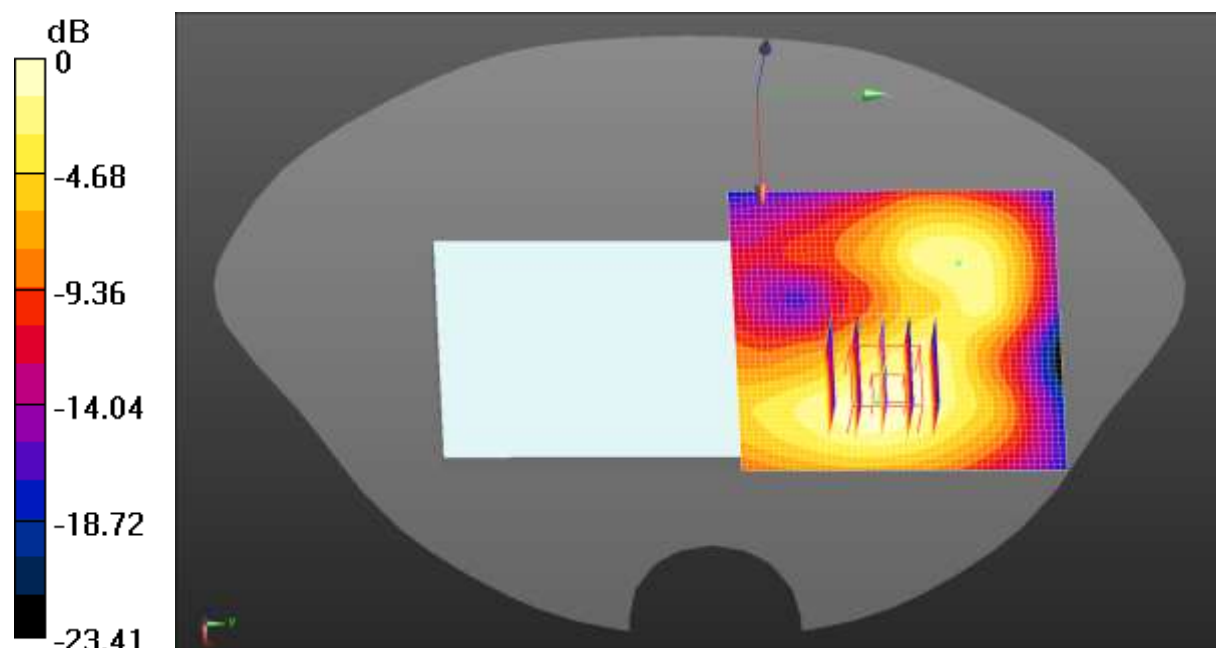
Ratio of SAR at M2 to SAR at M1 = 53.1%

Maximum value of SAR (measured) = 0.826 W/kg

**LTE Band 7 1RB(20MHz) Body Back/Low Channel/Area Scan (51x51x1):**

Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.784 W/kg



0 dB = 0.784 W/kg = -1.06 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 06.15.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 836.5$  MHz;  $\sigma = 0.925$  S/m;  $\epsilon_r = 41.532$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71) @ 836.5 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 5 1RB(10MHz) Body Front/Middle Channel/Zoom Scan**

(5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.30 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.362 W/kg

**SAR(1 g) = 0.255 W/kg; SAR(10 g) = 0.187 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

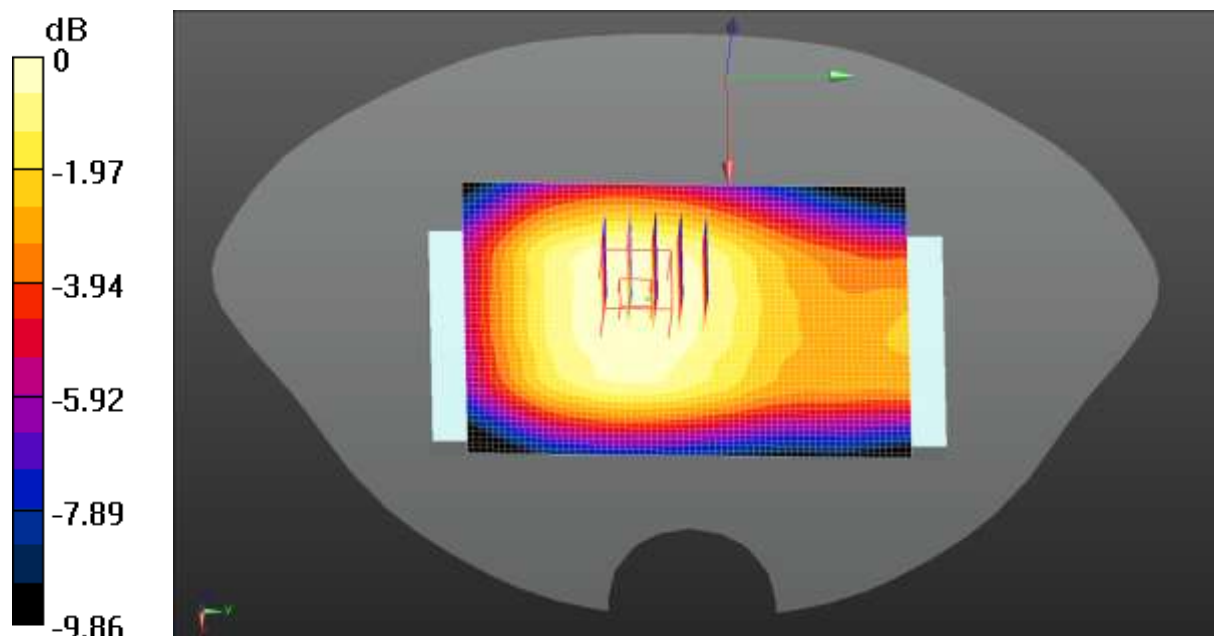
Ratio of SAR at M2 to SAR at M1 = 70%

Maximum value of SAR (measured) = 0.320 W/kg

**LTE Band 5 1RB(10MHz) Body Front/Middle Channel/Area Scan (51x71x1):**

Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.321 W/kg



0 dB = 0.321 W/kg = -4.93 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 06.16.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 707.5$  MHz;  $\sigma = 0.849$  S/m;  $\epsilon_r = 42.283$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(10.11, 10.11, 10.11) @ 707.5 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 12 1RB(10MHz) Body Front/Middle Channel/Zoom Scan**

(5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.05 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.444 W/kg

**SAR(1 g) = 0.312 W/kg; SAR(10 g) = 0.232 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

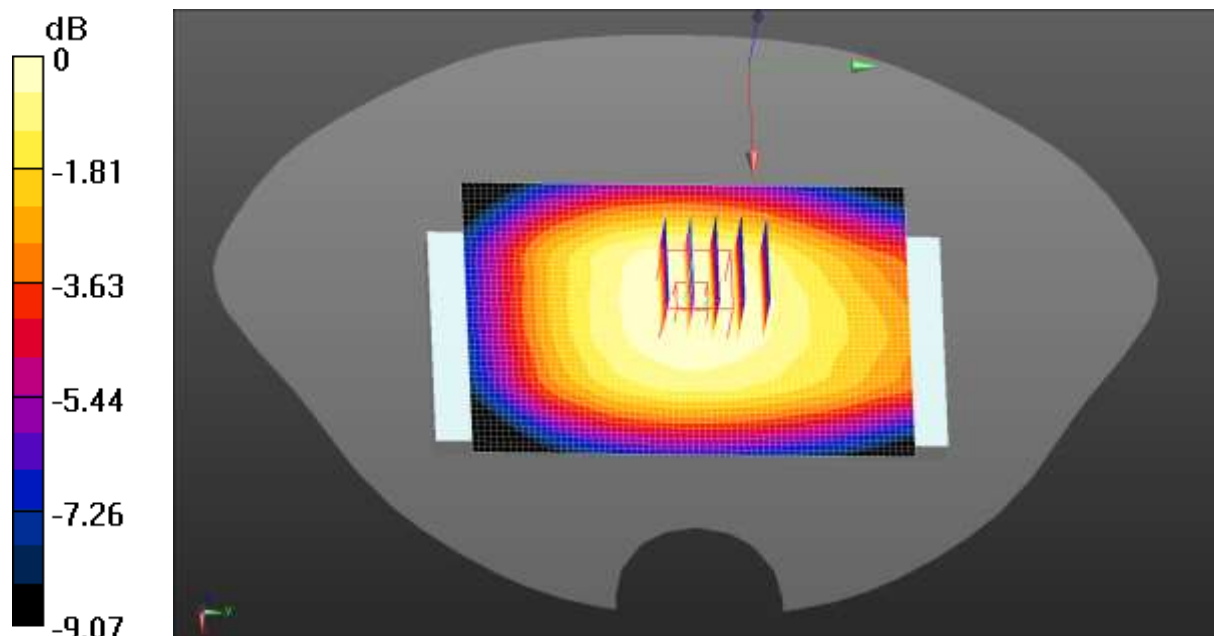
Ratio of SAR at M2 to SAR at M1 = 70.4%

Maximum value of SAR (measured) = 0.393 W/kg

**LTE Band 12 1RB(10MHz) Body Front/Middle Channel/Area Scan (51x71x1):**

Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.389 W/kg



0 dB = 0.389 W/kg = -4.10 dBW/kg

Test Laboratory: JYTSZ

Date: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1860 \text{ MHz}$ ;  $\sigma = 1.405 \text{ S/m}$ ;  $\epsilon_r = 40.164$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14) @ 1860 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 2 50%RB(20MHz) Body Back/Low Channel/Area Scan (51x51x1):**

Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.520 W/kg

**LTE Band 2 50%RB(20MHz) Body Back/Low Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 7.973 V/m; Power Drift = -0.01 dB

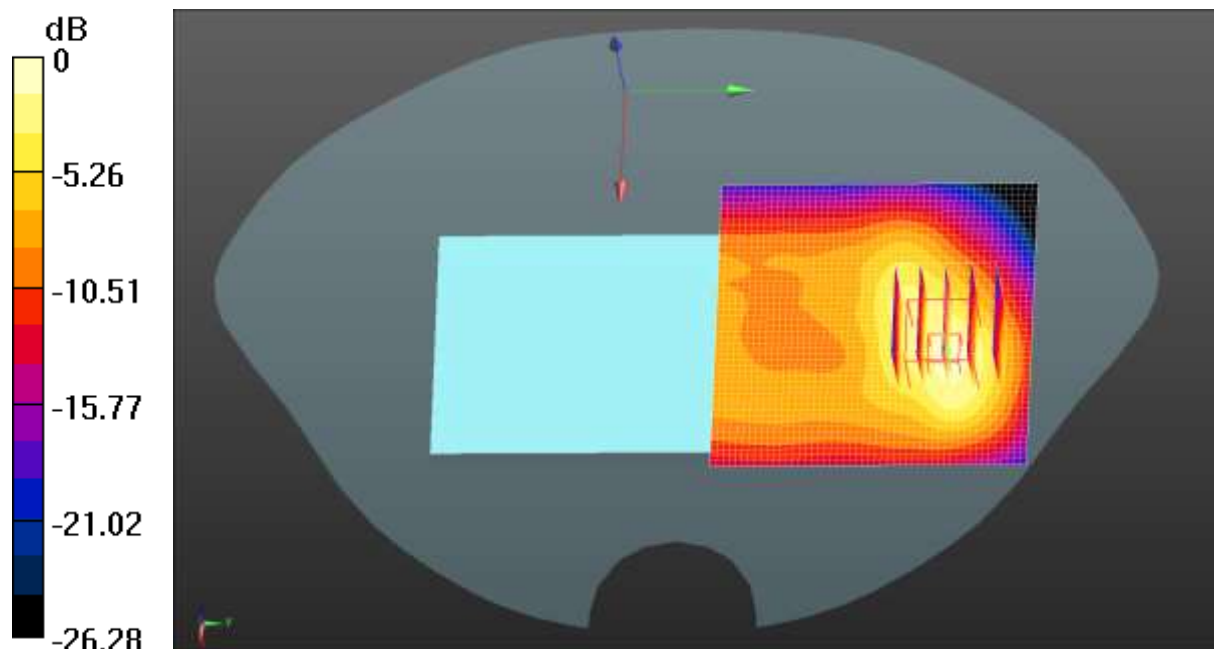
Peak SAR (extrapolated) = 0.777 W/kg

**SAR(1 g) = 0.417 W/kg; SAR(10 g) = 0.212 W/kg**

Smallest distance from peaks to all points 3 dB below = 10.7 mm

Ratio of SAR at M2 to SAR at M1 = 54.9%

Maximum value of SAR (measured) = 0.621 W/kg



0 dB = 0.621 W/kg = -2.07 dBW/kg

Test Laboratory: JYTSZ

Date: 06.26.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1745 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1745 \text{ MHz}$ ;  $\sigma = 1.379 \text{ S/m}$ ;  $\epsilon_r = 40.626$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43) @ 1745 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 4 50%RB(20MHz) Body Back/High Channel/Area Scan (51x51x1):**

Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.564 W/kg

**LTE Band 4 50%RB(20MHz) Body Back/High Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 2.986 V/m; Power Drift = -0.03 dB

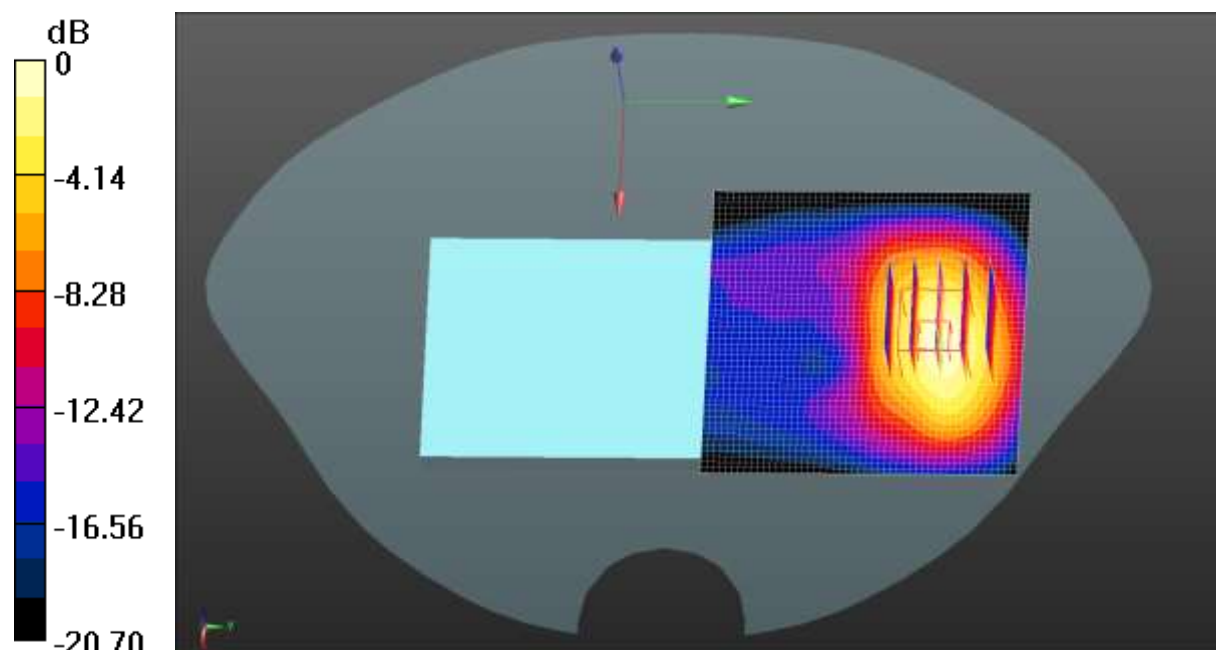
Peak SAR (extrapolated) = 0.802 W/kg

**SAR(1 g) = 0.437 W/kg; SAR(10 g) = 0.232 W/kg**

Smallest distance from peaks to all points 3 dB below = 9.6 mm

Ratio of SAR at M2 to SAR at M1 = 56.3%

Maximum value of SAR (measured) = 0.619 W/kg



0 dB = 0.619 W/kg = -2.08 dBW/kg

Test Laboratory: JYTSZ

Date: 06.29.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 2510 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2510 \text{ MHz}$ ;  $\sigma = 1.921 \text{ S/m}$ ;  $\epsilon_r = 38.465$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.58, 7.58, 7.58) @ 2510 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 7 50%RB(20MHz) Body Back/Low Channel/Area Scan (51x51x1):**

Interpolated grid:  $dx=1.200 \text{ mm}$ ,  $dy=1.200 \text{ mm}$

Maximum value of SAR (interpolated) = 0.540 W/kg

**LTE Band 7 50%RB(20MHz) Body Back/Low Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.264 V/m; Power Drift = 0.14 dB

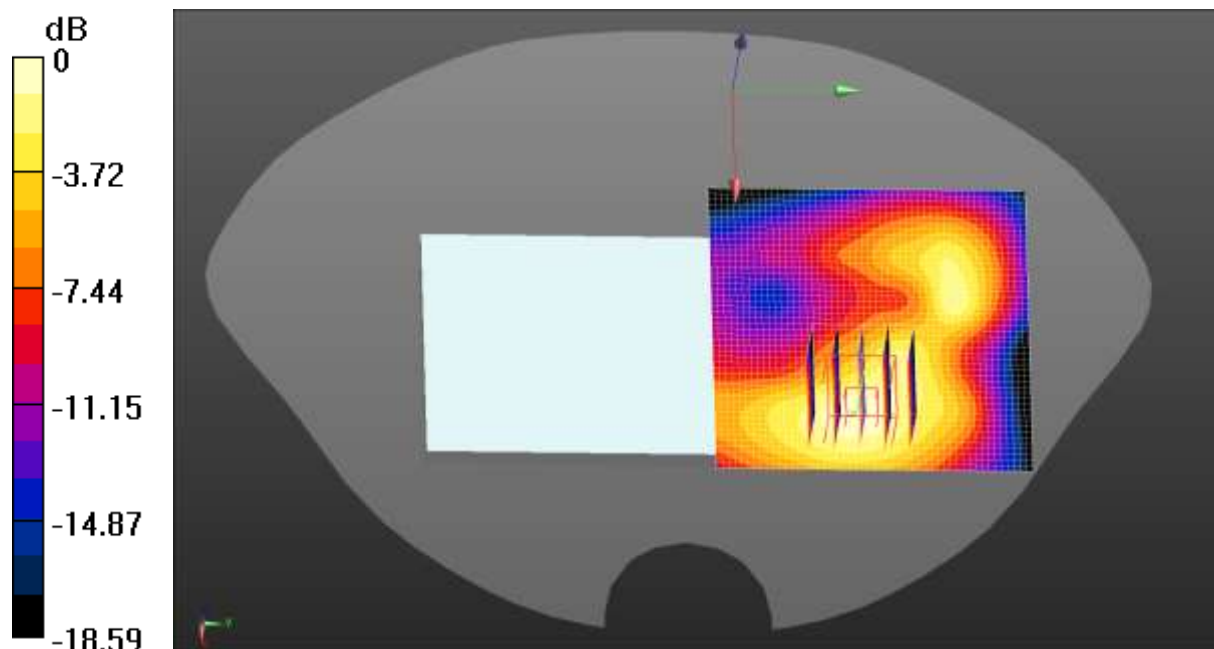
Peak SAR (extrapolated) = 0.711 W/kg

**SAR(1 g) = 0.373 W/kg; SAR(10 g) = 0.195 W/kg**

Smallest distance from peaks to all points 3 dB below = 15.8 mm

Ratio of SAR at M2 to SAR at M1 = 52.3%

Maximum value of SAR (measured) = 0.575 W/kg



0 dB = 0.575 W/kg = -2.40 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 06.16.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD (USA) 10MHz 50%RB QPSK (0); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 836.5 \text{ MHz}$ ;  $\sigma = 0.925 \text{ S/m}$ ;  $\epsilon_r = 41.532$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71) @ 836.5 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 5 50%RB(10MHz) Body Front/Middle Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.09 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.294 W/kg

**SAR(1 g) = 0.206 W/kg; SAR(10 g) = 0.151 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

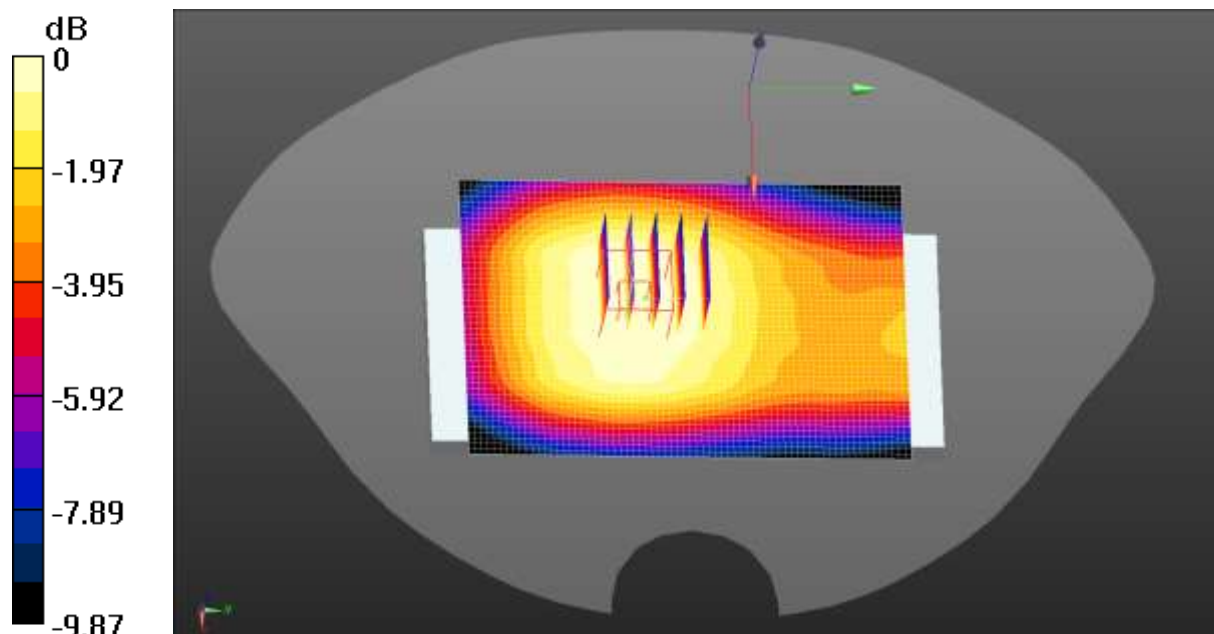
Ratio of SAR at M2 to SAR at M1 = 70%

Maximum value of SAR (measured) = 0.260 W/kg

**LTE Band 5 50%RB(10MHz) Body Front/Middle Channel/Area Scan**

**(51x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.260 W/kg



0 dB = 0.260 W/kg = -5.85 dBW/kg



Test Laboratory: JYTSZ

Date/Time: 06.16.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD (USA) 10MHz 50%RB QPSK (0); Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 707.5 \text{ MHz}$ ;  $\sigma = 0.849 \text{ S/m}$ ;  $\epsilon_r = 42.283$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(10.11, 10.11, 10.11) @ 707.5 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 12 50%RB(10MHz) Body Front/Middle Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.05 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.437 W/kg

**SAR(1 g) = 0.307 W/kg; SAR(10 g) = 0.228 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

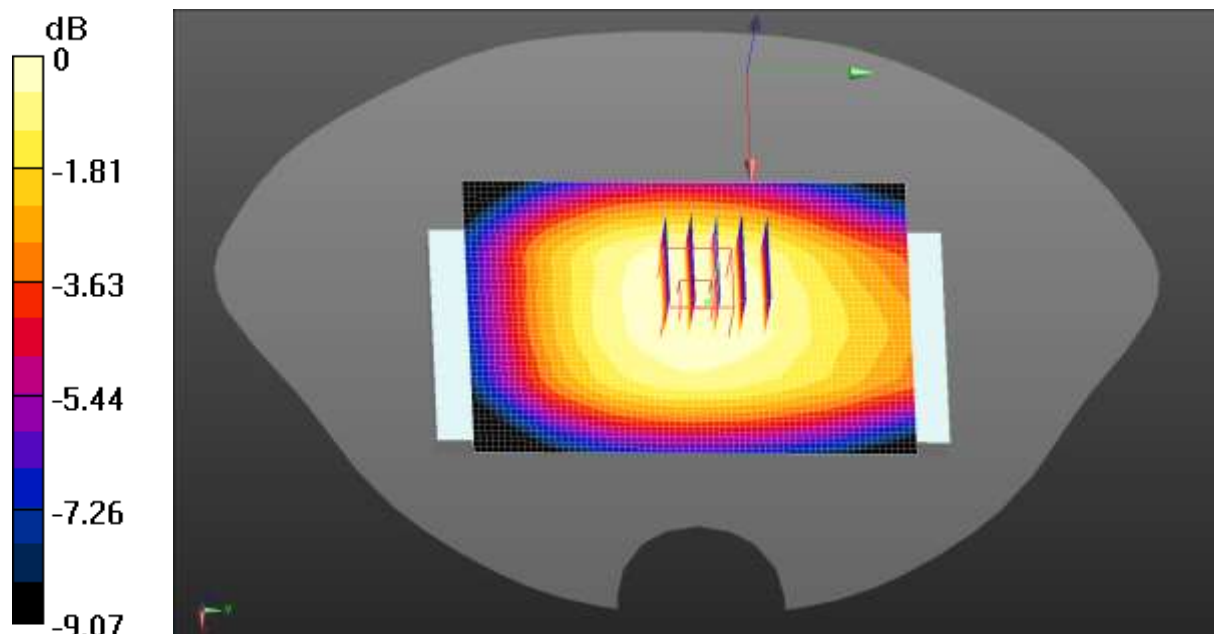
Ratio of SAR at M2 to SAR at M1 = 70%

Maximum value of SAR (measured) = 0.386 W/kg

**LTE Band 12 50%RB(10MHz) Body Front/Middle Channel/Area Scan**

**(51x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.384 W/kg



0 dB = 0.384 W/kg = -4.16 dBW/kg

Test Laboratory: JYTSZ

Date: 06.28.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

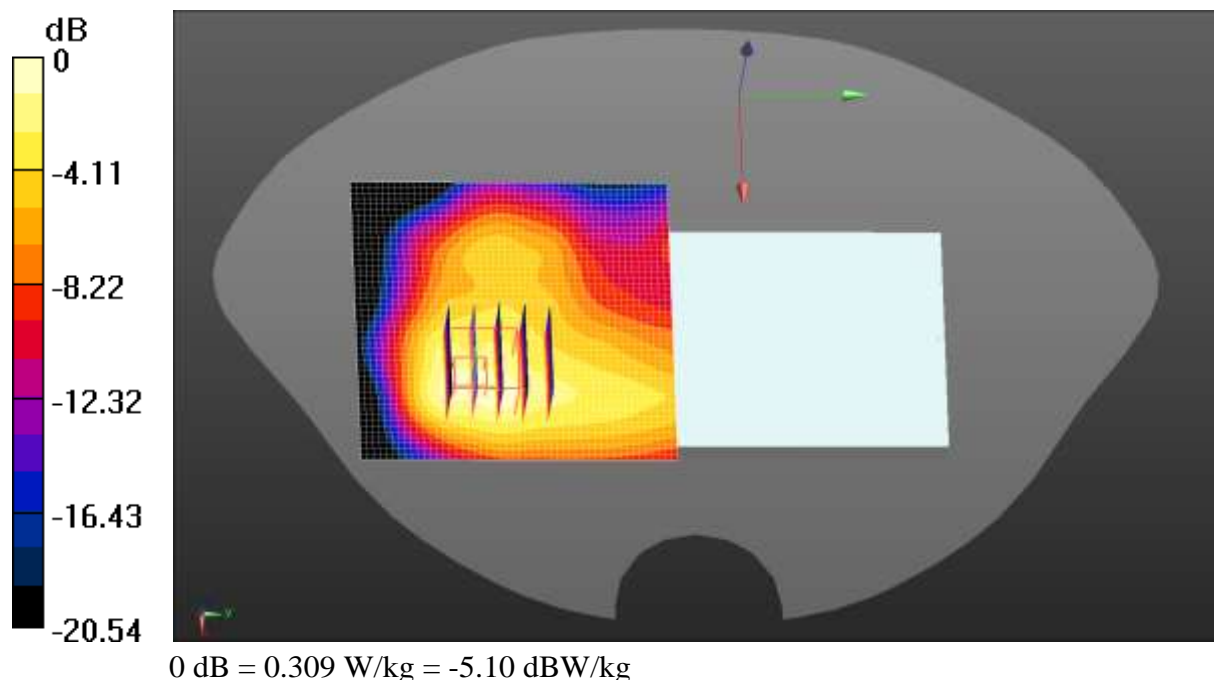
Communication System: UID 0, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps) (0);  
 Frequency: 2437 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 2437$  MHz;  $\sigma = 1.81$  S/m;  $\epsilon_r = 38.913$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.58, 7.58, 7.58) @ 2437 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**WIFI Body Back/Middle Channel/Area Scan (51x51x1):** Interpolated grid:  
 dx=1.200 mm, dy=1.200 mm  
 Maximum value of SAR (interpolated) = 0.282 W/kg

**WIFI Body Back/Middle Channel/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  
 dx=5mm, dy=5mm, dz=5mm  
 Reference Value = 4.967 V/m; Power Drift = -0.12 dB  
 Peak SAR (extrapolated) = 0.391 W/kg  
**SAR(1 g) = 0.181 W/kg; SAR(10 g) = 0.090 W/kg**  
 Smallest distance from peaks to all points 3 dB below = 12.9 mm  
 Ratio of SAR at M2 to SAR at M1 = 44.5%  
 Maximum value of SAR (measured) = 0.309 W/kg



Test Laboratory: JYTSZ

Date: 06.24.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, IEEE 802.11a WiFi 5GHz (0); Frequency: 5180 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 5180 \text{ MHz}$ ;  $\sigma = 4.581 \text{ S/m}$ ;  $\epsilon_r = 36.605$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(5.42, 5.42, 5.42) @ 5180 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**5.2GWIFI Body Back/Low Channel/Area Scan (51x51x1):** Interpolated grid:

$dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 0.284 W/kg

**5.2GWIFI Body Back/Low Channel/Zoom Scan (7x7x7)/Cube 0:** Measurement

grid:  $dx=4\text{mm}$ ,  $dy=4\text{mm}$ ,  $dz=2\text{mm}$

Reference Value = 0 V/m; Power Drift = 0.00 dB

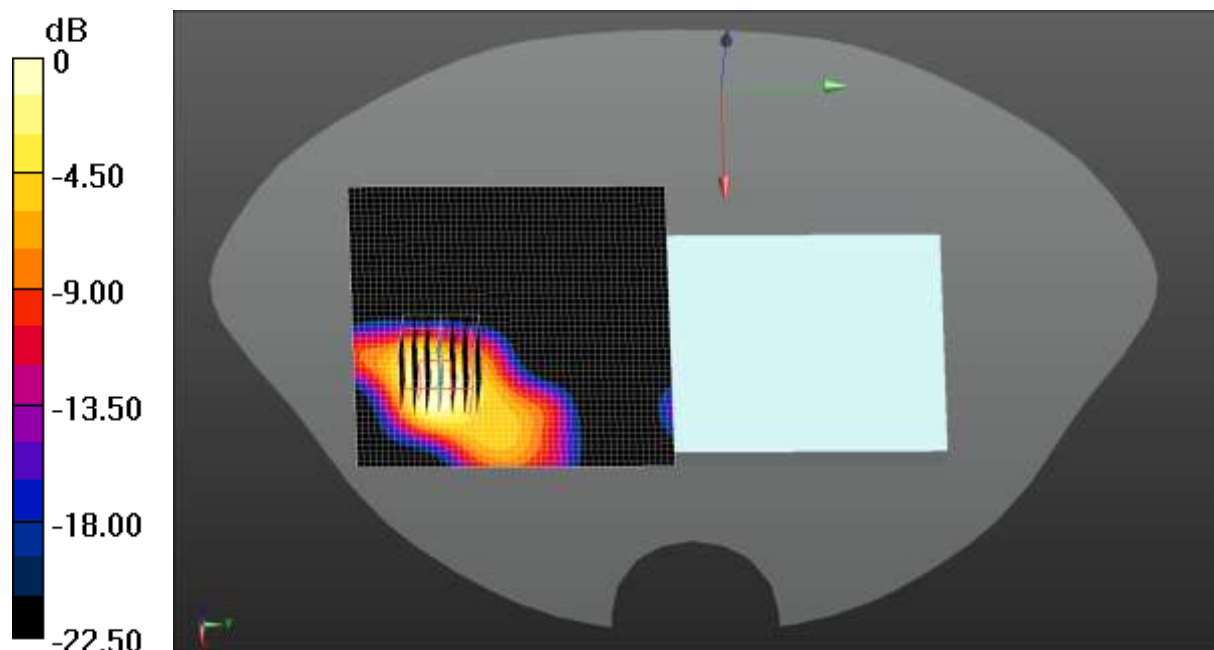
Peak SAR (extrapolated) = 0.414 W/kg

**SAR(1 g) = 0.101 W/kg; SAR(10 g) = 0.030 W/kg**

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

Ratio of SAR at M2 to SAR at M1 = 16.5%

Maximum value of SAR (measured) = 0.256 W/kg



0 dB = 0.256 W/kg = -5.92 dBW/kg

Test Laboratory: JYTSZ

Date: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, IEEE 802.11a WiFi 5GHz (0); Frequency: 5825 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 5825 \text{ MHz}$ ;  $\sigma = 5.397 \text{ S/m}$ ;  $\epsilon_r = 34.849$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(4.96, 4.96, 4.96) @ 5825 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**5.8GWIFI Body Back/High Channel/Area Scan (51x51x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 0.518 W/kg

**5.8GWIFI Body Back/High Channel/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=4\text{mm}$ ,  $dy=4\text{mm}$ ,  $dz=2\text{mm}$

Reference Value = 0 V/m; Power Drift = 0.04 dB

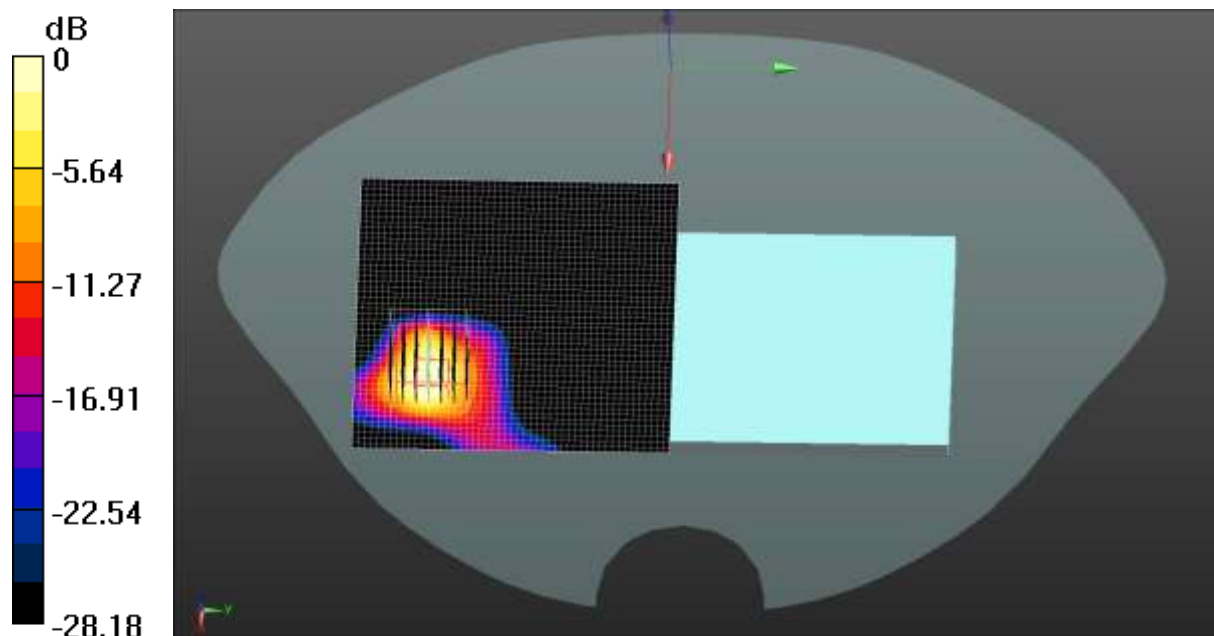
Peak SAR (extrapolated) = 1.88 W/kg

**SAR(1 g) = 0.190 W/kg; SAR(10 g) = 0.066 W/kg**

Smallest distance from peaks to all points 3 dB below = 10.4 mm

Ratio of SAR at M2 to SAR at M1 = 15.1%

Maximum value of SAR (measured) = 0.477 W/kg



0 dB = 0.477 W/kg = -3.21 dBW/kg

Test Laboratory: JYTSZ

Date: 06.15.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, GPRS(2 Slots) (0); Frequency: 836.6 MHz; Duty Cycle: 1:4.10015

Medium parameters used (interpolated):  $f = 836.6 \text{ MHz}$ ;  $\sigma = 0.925 \text{ S/m}$ ;  $\epsilon_r = 41.532$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(9.71, 9.71, 9.71) @ 836.6 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**GPRS 850 2Slots Body Front/Middle Channel/Area Scan (51x71x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.793 W/kg

**GPRS 850 2Slots Body Front/Middle Channel/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 29.42 V/m; Power Drift = -0.07 dB

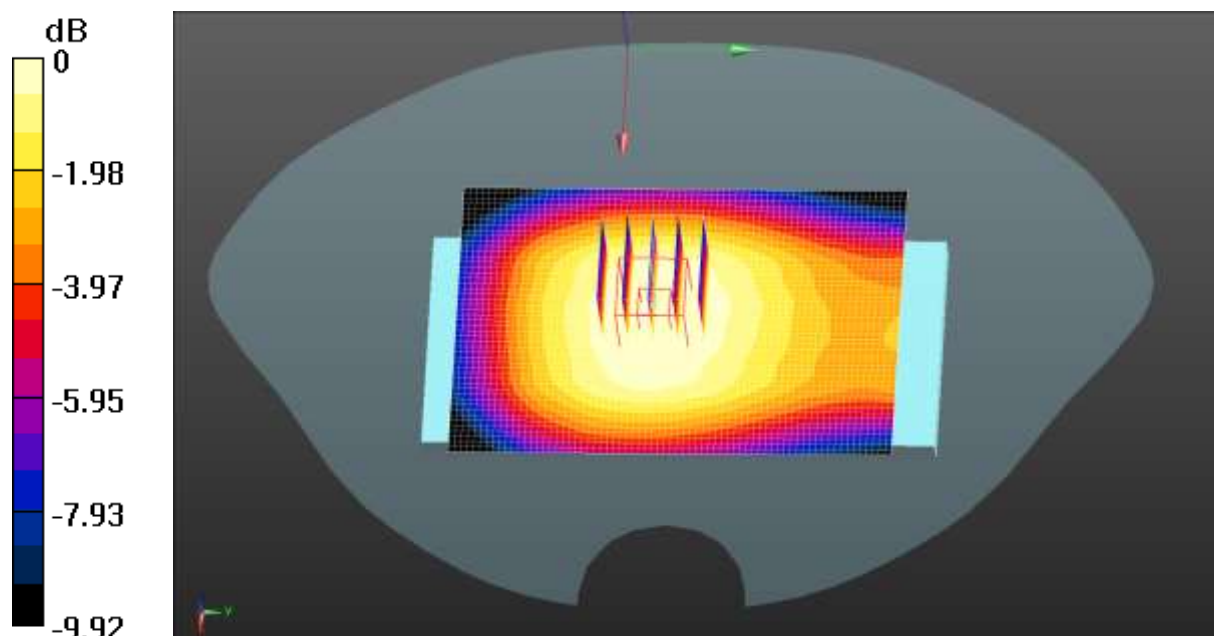
Peak SAR (extrapolated) = 0.883 W/kg

**SAR(1 g) = 0.613 W/kg; SAR(10 g) = 0.447 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 69.3%

Maximum value of SAR (measured) = 0.777 W/kg



0 dB = 0.777 W/kg = -1.10 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, GPRS(2 Slots) (0); Frequency: 1850.2 MHz; Duty Cycle: 1:4.10015

Medium parameters used (interpolated):  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.402 \text{ S/m}$ ;  $\epsilon_r = 40.189$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14) @ 1850.2 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**GPRS 1900 2Slot Body Bottom/Low Channel/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 28.79 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.75 W/kg

**SAR(1 g) = 0.889 W/kg; SAR(10 g) = 0.439 W/kg**

Smallest distance from peaks to all points 3 dB below = 9.3 mm

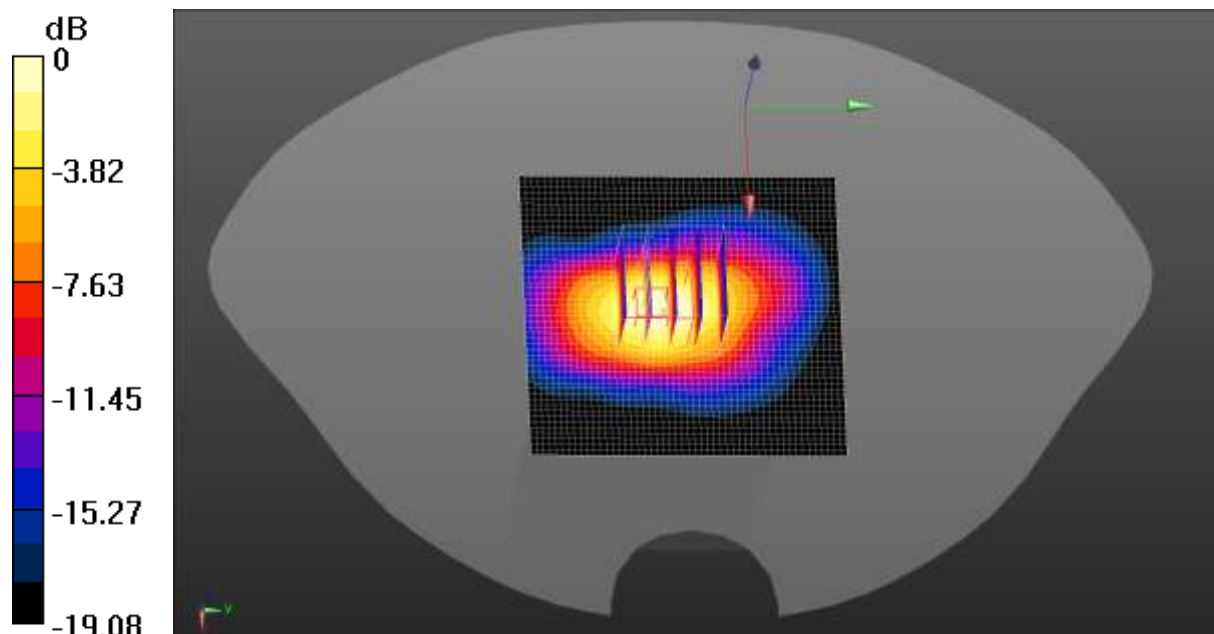
Ratio of SAR at M2 to SAR at M1 = 52.9%

Maximum value of SAR (measured) = 1.36 W/kg

**GPRS 1900 2Slot Body Bottom/Low Channel/Area Scan (51x51x1):** Interpolated

grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 1.09 W/kg



0 dB = 1.09 W/kg = 0.37 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, UMTS-FDD(WCDMA) (0); Frequency: 1712.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1712.4$  MHz;  $\sigma = 1.365$  S/m;  $\epsilon_r = 40.703$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43) @ 1712.4 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**WCDMA 1700 Body Bottom/Low Channel/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 35.36 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 2.03 W/kg

**SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.547 W/kg**

Smallest distance from peaks to all points 3 dB below = 9.6 mm

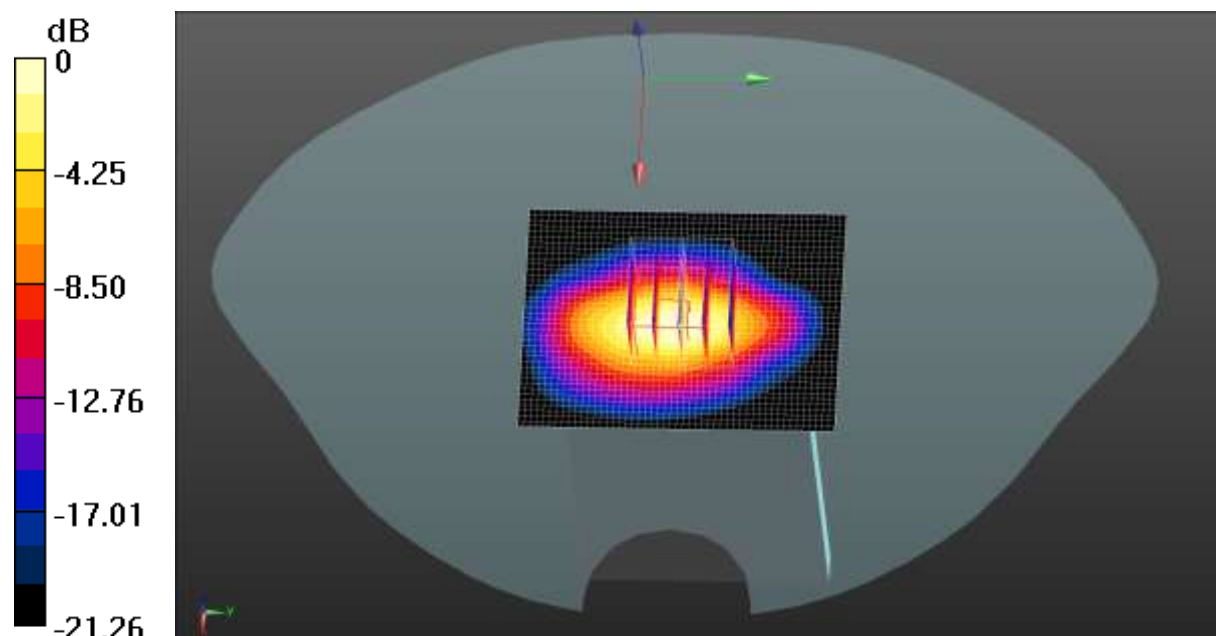
Ratio of SAR at M2 to SAR at M1 = 52.7%

Maximum value of SAR (measured) = 1.62 W/kg

**WCDMA 1700 Body Bottom/Low Channel/Area Scan (41x51x1): Interpolated**

grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.87 W/kg



0 dB = 1.87 W/kg = 2.72 dBW/kg

Test Laboratory: JYTSZ

Date/Time: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, UMTS-FDD(WCDMA) (0); Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1907.6 \text{ MHz}$ ;  $\sigma = 1.423 \text{ S/m}$ ;  $\epsilon_r = 39.933$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14) @ 1907.6 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**WCDMA 1900 Body Bottom/High Channel/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 20.79 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 0.859 W/kg

**SAR(1 g) = 0.426 W/kg; SAR(10 g) = 0.202 W/kg**

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

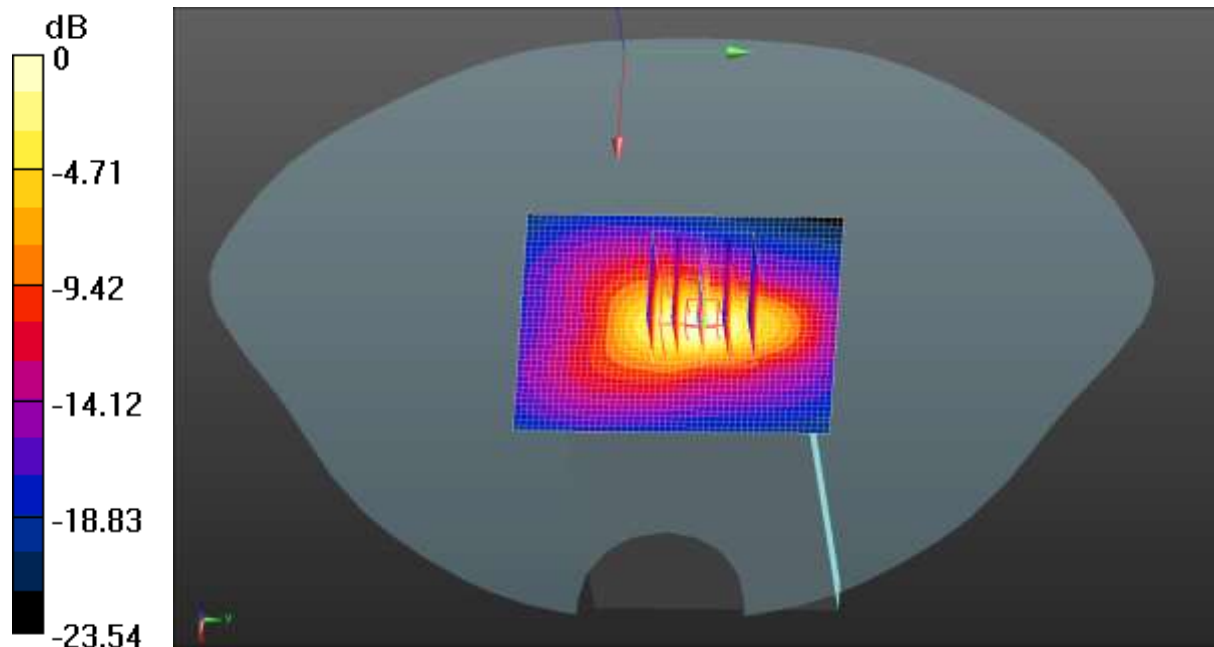
Ratio of SAR at M2 to SAR at M1 = 51.7%

Maximum value of SAR (measured) = 0.685 W/kg

**WCDMA 1900 Body Bottom/High Channel/Area Scan (41x51x1):** Interpolated

grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.705 W/kg



0 dB = 0.705 W/kg = -1.52 dBW/kg



Test Laboratory: JYTSZ

Date/Time: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1860 \text{ MHz}$ ;  $\sigma = 1.405 \text{ S/m}$ ;  $\epsilon_r = 40.164$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14) @ 1860 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1373; Calibrated: 07.27.2020
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 2 1RB(20MHz) Body Bottom/Low Channel/Area Scan (41x51x1):**

Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 1.34 W/kg

**LTE Band 2 1RB(20MHz) Body Bottom/Low Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 30.49 V/m; Power Drift = 0.14 dB

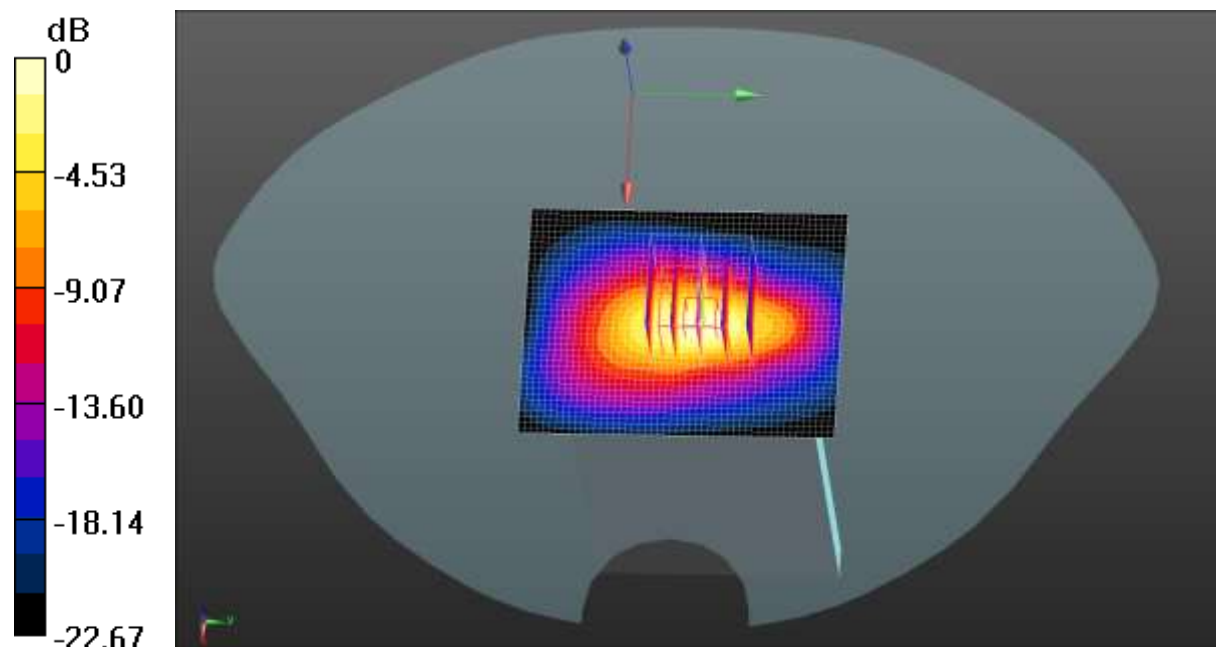
Peak SAR (extrapolated) = 1.71 W/kg

**SAR(1 g) = 0.862 W/kg; SAR(10 g) = 0.419 W/kg**

Smallest distance from peaks to all points 3 dB below = 9.3 mm

Ratio of SAR at M2 to SAR at M1 = 52.1%

Maximum value of SAR (measured) = 1.37 W/kg



0 dB = 1.37 W/kg = 1.37 dBW/kg

Test Laboratory: JYTSZ

Date: 06.26.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 1732.5$  MHz;  $\sigma = 1.374$  S/m;  $\epsilon_r = 40.667$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

DASY5 Configuration:

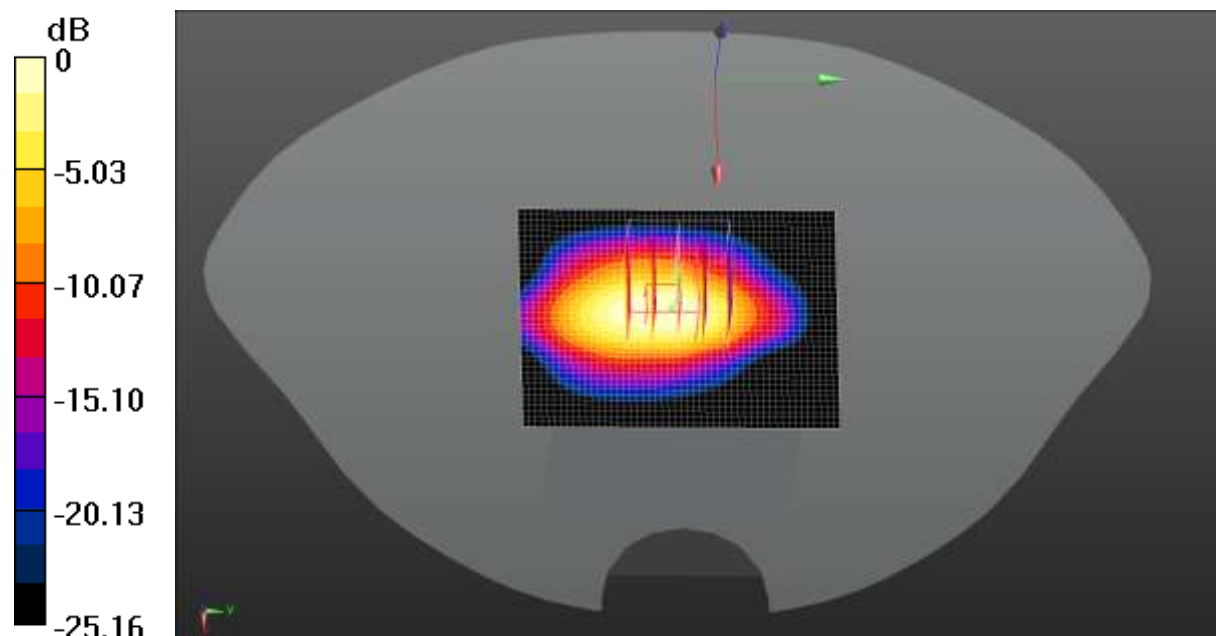
- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43) @ 1732.5 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 4 1RB(20MHz) Body Bottom/Middle Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 32.69 V/m; Power Drift = 0.18 dB  
 Peak SAR (extrapolated) = 1.90 W/kg  
**SAR(1 g) = 0.976 W/kg; SAR(10 g) = 0.494 W/kg**  
 Smallest distance from peaks to all points 3 dB below = 9.6 mm  
 Ratio of SAR at M2 to SAR at M1 = 51.9%  
 Maximum value of SAR (measured) = 1.50 W/kg

**LTE Band 4 1RB(20MHz) Body Bottom/Middle Channel/Area Scan (41x51x1):**

Interpolated grid: dx=1.500 mm, dy=1.500 mm  
 Maximum value of SAR (interpolated) = 1.63 W/kg



0 dB = 1.63 W/kg = 2.12 dBW/kg

Test Laboratory: JYTSZ

Date: 06.29.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 2510 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2510 \text{ MHz}$ ;  $\sigma = 1.921 \text{ S/m}$ ;  $\epsilon_r = 38.465$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.58, 7.58, 7.58) @ 2510 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 7 1RB(20MHz) Body Bottom/Low Channel/Area Scan (41x51x1):**

Interpolated grid:  $dx=1.200 \text{ mm}$ ,  $dy=1.200 \text{ mm}$

Maximum value of SAR (interpolated) = 1.04 W/kg

**LTE Band 7 1RB(20MHz) Body Bottom /Low Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.988 V/m; Power Drift = 0.06 dB

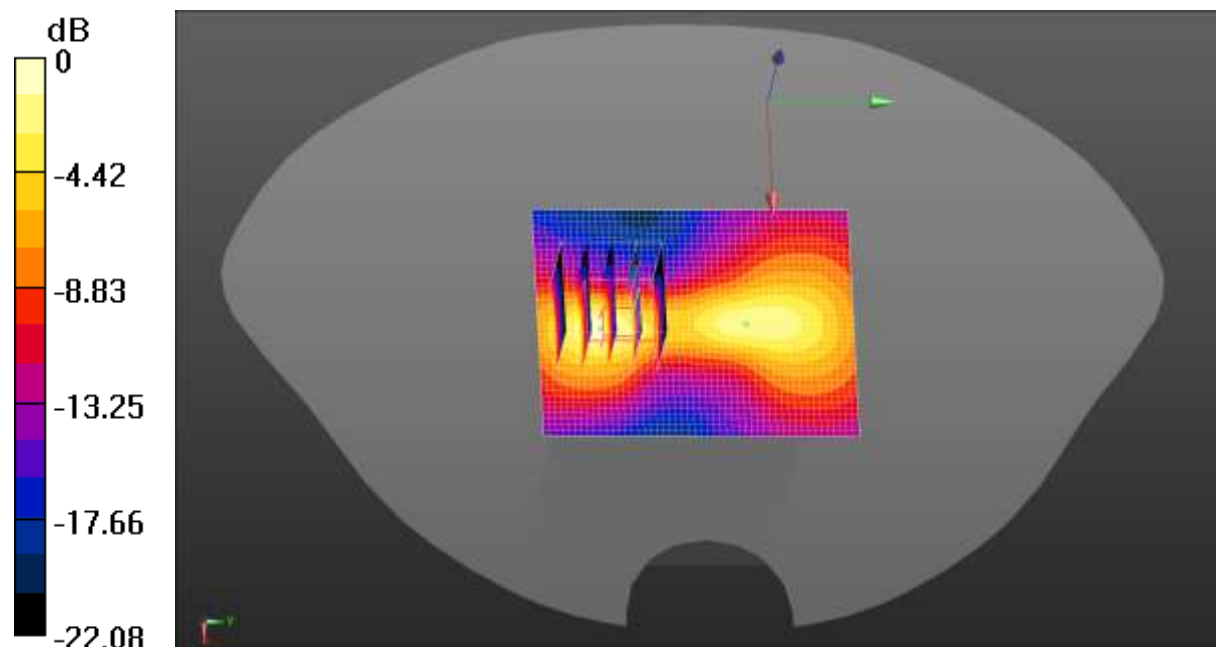
Peak SAR (extrapolated) = 1.65 W/kg

**SAR(1 g) = 0.753 W/kg; SAR(10 g) = 0.316 W/kg**

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

Ratio of SAR at M2 to SAR at M1 = 48.1%

Maximum value of SAR (measured) = 1.15 W/kg



0 dB = 1.15 W/kg = 0.61 dBW/kg

Test Laboratory: JYTSZ

Date: 06.25.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1860 MHz;Duty Cycle: 1:1

Medium parameters used (extrapolated):  $f = 1860 \text{ MHz}$ ;  $\sigma = 1.405 \text{ S/m}$ ;  $\epsilon_r = 40.164$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14) @ 1860 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 2 50%RB(20MHz) Body Bottom/Low Channel/Area Scan**

**(41x51x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 1.07 W/kg

**LTE Band 2 50%RB(20MHz) Body Bottom/Low Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.184 V/m; Power Drift = 0.12 dB

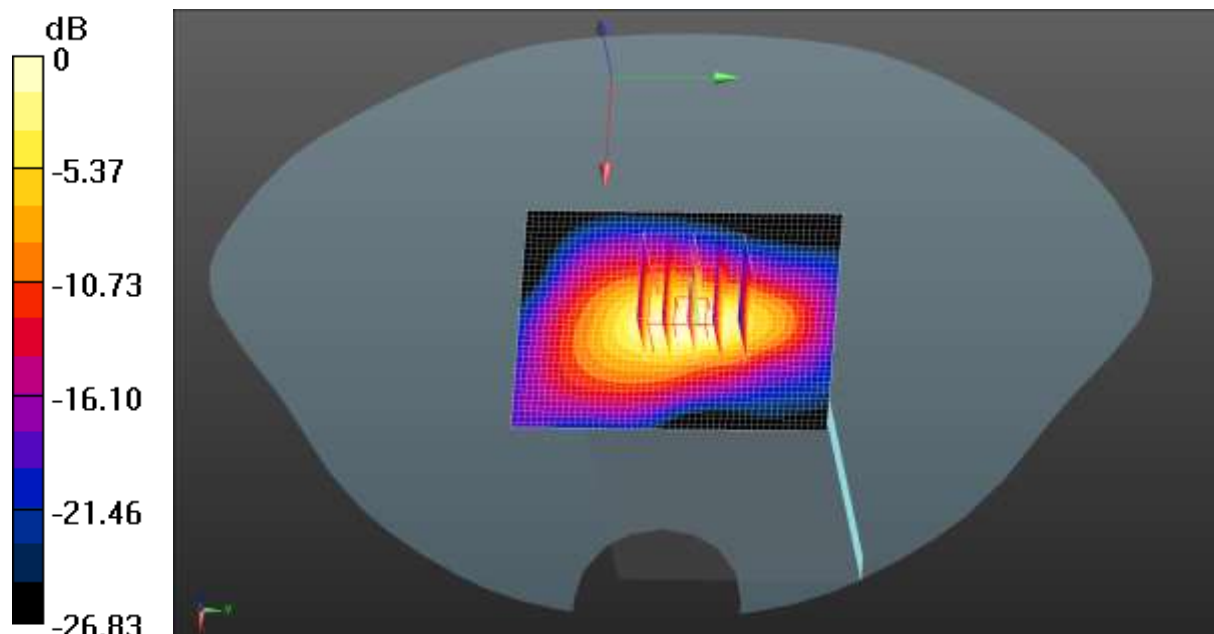
Peak SAR (extrapolated) = 1.31 W/kg

**SAR(1 g) = 0.660 W/kg; SAR(10 g) = 0.319 W/kg**

Smallest distance from peaks to all points 3 dB below = 9.3 mm

Ratio of SAR at M2 to SAR at M1 = 52.2%

Maximum value of SAR (measured) = 1.03 W/kg



0 dB = 1.03 W/kg = 0.13 dBW/kg

Test Laboratory: JYTSZ

Date: 06.26.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD(USA) 20MHz 50%RB QPSK (0); Frequency: 1745 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1745 \text{ MHz}$ ;  $\sigma = 1.379 \text{ S/m}$ ;  $\epsilon_r = 40.626$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43) @ 1745 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 4 50%RB(20MHz) Body Bottom/High Channel/Area Scan**

**(41x51x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 1.36 W/kg

**LTE Band 4 50%RB(20MHz) Body Bottom/High Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 30.06 V/m; Power Drift = -0.14 dB

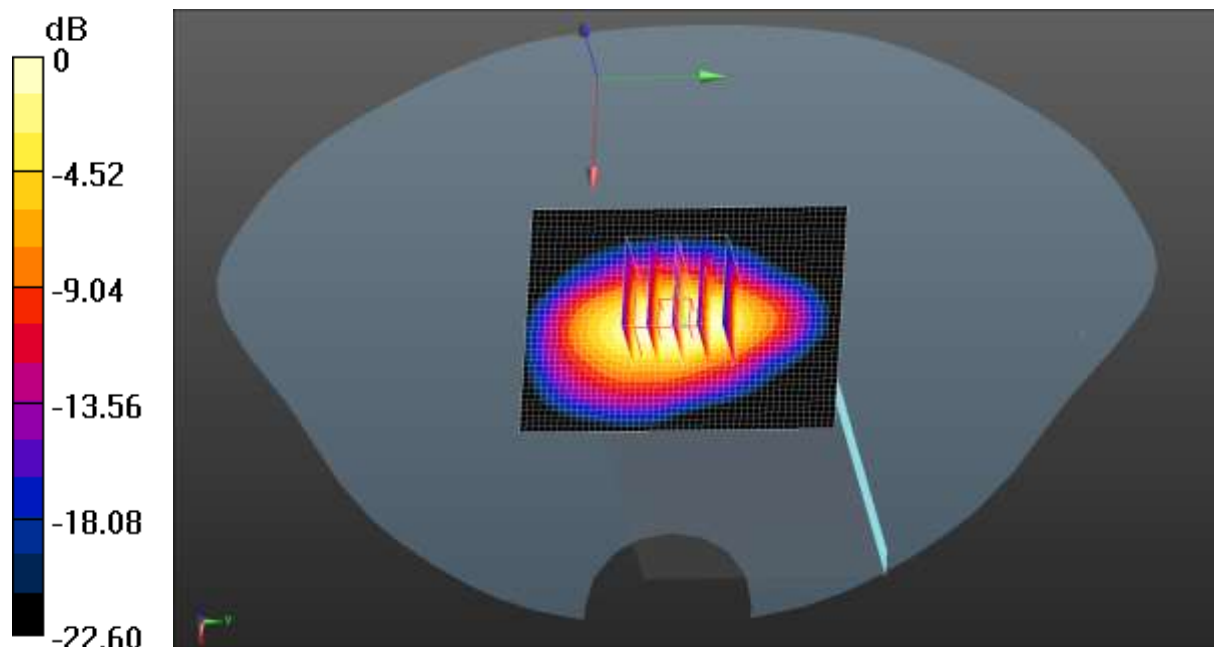
Peak SAR (extrapolated) = 1.44 W/kg

**SAR(1 g) = 0.754 W/kg; SAR(10 g) = 0.387 W/kg**

Smallest distance from peaks to all points 3 dB below = 9.6 mm

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

Maximum value of SAR (measured) = 1.18 W/kg



0 dB = 1.18 W/kg = 0.72 dBW/kg

Test Laboratory: JYTSZ

Date: 06.29.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 2535 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2510 \text{ MHz}$ ;  $\sigma = 1.921 \text{ S/m}$ ;  $\epsilon_r = 38.465$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(7.58, 7.58, 7.58) @ 2535 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 7 50%RB(20MHz) Body Bottom/Low Channel/Area Scan**

**(41x51x1):** Interpolated grid:  $dx=1.200 \text{ mm}$ ,  $dy=1.200 \text{ mm}$

Maximum value of SAR (interpolated) = 0.961 W/kg

**LTE Band 7 50%RB(20MHz) Body Bottom/Low Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 5.614 V/m; Power Drift = -0.12 dB

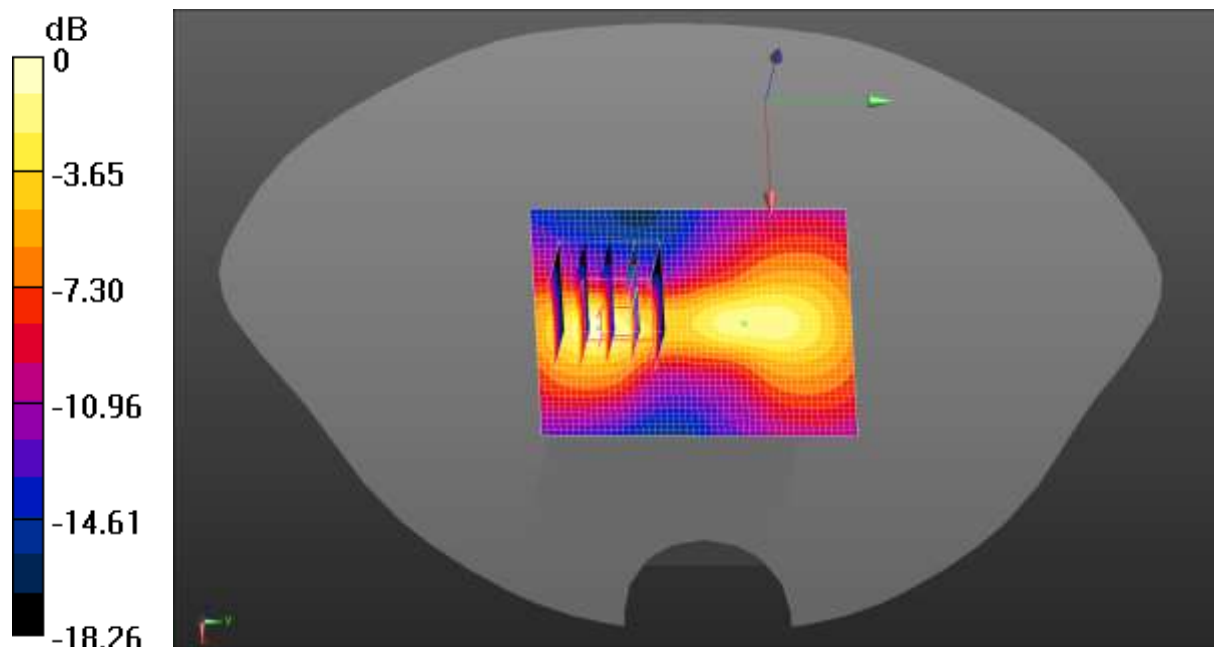
Peak SAR (extrapolated) = 1.31 W/kg

**SAR(1 g) = 0.681 W/kg; SAR(10 g) = 0.291 W/kg**

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

Ratio of SAR at M2 to SAR at M1 = 35.2%

Maximum value of SAR (measured) = 1.01 W/kg



0 dB = 1.01 W/kg = 0.04 dBW/kg

Test Laboratory: JYTSZ

Date: 06.26.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-Fdd(USA) 1RB QPSK (0); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.418 \text{ S/m}$ ;  $\epsilon_r = 39.981$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.14, 8.14, 8.14) @ 1900 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 2 100%RB(20MHz) Body Bottom/High Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 27.65 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.92 W/kg

**SAR(1 g) = 0.949 W/kg; SAR(10 g) = 0.448 W/kg**

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

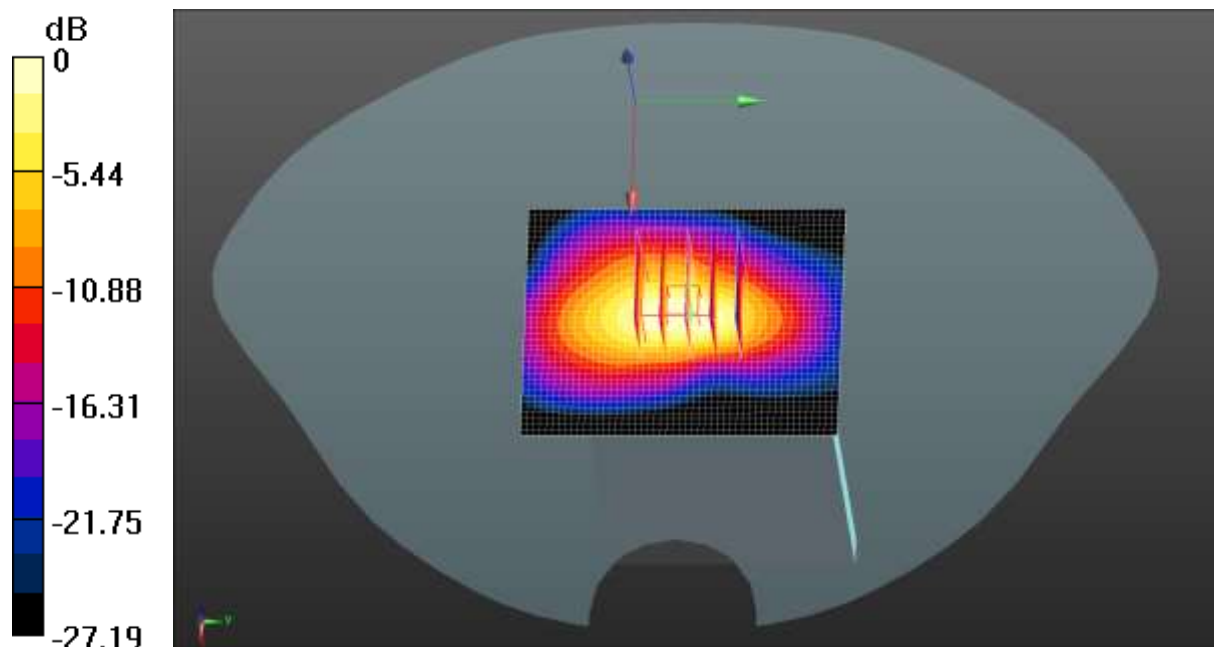
Ratio of SAR at M2 to SAR at M1 = 50.7%

Maximum value of SAR (measured) = 1.53 W/kg

**LTE Band 2 100%RB(20MHz) Body Bottom/High Channel/Area Scan**

**(41x51x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 1.35 W/kg



0 dB = 1.35 W/kg = 1.30 dBW/kg

Test Laboratory: JYTSZ

Date: 06.26.2021

**DUT: Smart Phone; Type: C21 Pro; Serial: 1#**

Communication System: UID 0, LTE-FDD (USA) 20MHz 100%RB QPSK (0); Frequency: 1745 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1745 \text{ MHz}$ ;  $\sigma = 1.379 \text{ S/m}$ ;  $\epsilon_r = 40.626$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3924; ConvF(8.43, 8.43, 8.43) @ 1745 MHz; Calibrated: 09.23.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1452; Calibrated: 05.26.2021
- Phantom: SAM 5.0; Type: QD000P40CD; Serial: TP:1765
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**LTE Band 4 100%RB(20MHz) Body Bottom/High Channel/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 30.94 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 1.66 W/kg

**SAR(1 g) = 0.843 W/kg; SAR(10 g) = 0.424 W/kg**

Smallest distance from peaks to all points 3 dB below = 9.6 mm

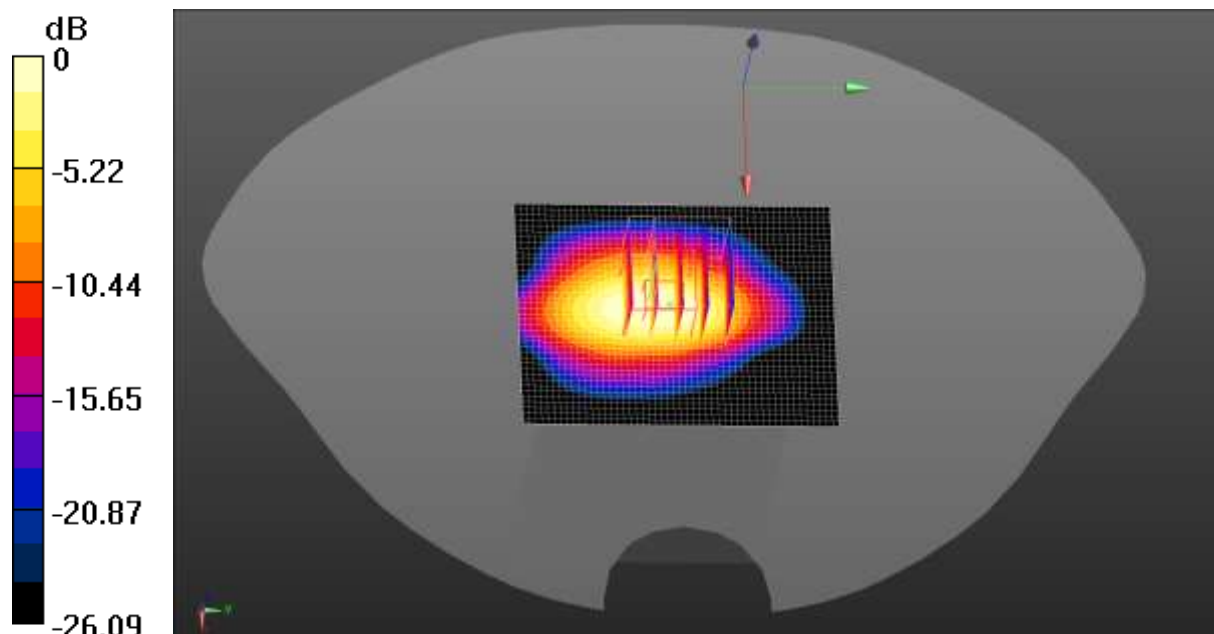
Ratio of SAR at M2 to SAR at M1 = 52.5%

Maximum value of SAR (measured) = 1.30 W/kg

**LTE Band 4 100%RB(20MHz) Body Bottom/High Channel/Area Scan**

**(41x51x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 1.37 W/kg



0 dB = 1.37 W/kg = 1.37 dBW/kg



## **Appendix C: System Calibration Certificate**

Calibration information for E-field probes



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 国际互认  
 校准  
 CALIBRATION  
 CNAS L0570

Client **CCIS**

Certificate No: **Z20-60314**

**CALIBRATION CERTIFICATE**

Object: EX3DV4 - SN : 3924

Calibration Procedure(s): FF-Z11-004-02  
 Calibration Procedures for Dosimetric E-field Probes

Calibration date: September 23, 2020

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(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	16-Jun-20(CTTL, No.J20X04344)	Jun-21
Power sensor NRP-Z91	101547	16-Jun-20(CTTL, No.J20X04344)	Jun-21
Power sensor NRP-Z91	101548	16-Jun-20(CTTL, No.J20X04344)	Jun-21
Reference 10dBAttenuator	18N50W-10dB	10-Feb-20(CTTL, No.J20X00525)	Feb-22
Reference 20dBAttenuator	18N50W-20dB	10-Feb-20(CTTL, No.J20X00526)	Feb-22
Reference Probe EX3DV4	SN 7307	29-May-20(SPEAG, No.EX3-7307_May20)	May-21
DAE4	SN 1556	4-Feb-20(SPEAG, No.DAE4-1556_Feb20)	Feb-21
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGenerator MG3700A	6201052605	23-Jun-20(CTTL, No.J20X04343)	Jun-21
Network Analyzer E5071C	MY46110673	10-Feb-20(CTTL, No.J20X00515)	Feb-21

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: September 25, 2020

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



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**Glossary:**

TSL	tissue simulating liquid
NORM <sub>x,y,z</sub>	sensitivity in free space
ConvF	sensitivity in TSL / NORM <sub>x,y,z</sub>
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization $\Phi$	$\Phi$ rotation around probe axis
Polarization $\theta$	$\theta$ rotation around an axis that is in the plane normal to probe axis (at measurement center), $i$ $\theta=0$ is normal to probe axis

Connector Angle information used in DASY system to align probe sensor X to the robot coordinate system

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

- a) 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
- b) 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
- c) 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
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Methods Applied and Interpretation of Parameters:**

- **NORM<sub>x,y,z</sub>:** Assessed for E-field polarization  $\theta=0$  ( $f \leq 900$ MHz in TEM-cell;  $f > 1800$ MHz: waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not effect the  $E^2$ -field uncertainty inside TSL (see below ConvF).
- **NORM(f)<sub>x,y,z</sub> = NORM<sub>x,y,z</sub> \* frequency\_response** (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- **DCP<sub>x,y,z</sub>:** DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- **PAR:** PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- **A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; VR<sub>x,y,z</sub>; A,B,C** are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- **ConvF and Boundary Effect Parameters:** Assessed in flat phantom using E-field (or Temperature Transfer Standard for  $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for  $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>x,y,z</sub> \* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from  $\pm 50$ MHz to  $\pm 100$ MHz.
- **Spherical isotropy (3D deviation from isotropy):** in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- **Sensor Offset:** The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- **Connector Angle:** The angle is assessed using the information gained by determining the NORM<sub>x</sub> (no uncertainty required).



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## DASY/EASY – Parameters of Probe: EX3DV4 – SN:3924

### Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm( $\mu V/(V/m)^2$ ) <sup>A</sup>	0.50	0.42	0.67	$\pm 10.0\%$
DCP(mV) <sup>B</sup>	101.3	100.1	99.8	

### Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\mu V$	C	D dB	VR mV	Unc <sup>E</sup> (k=2)
0	CW	X	0.0	0.0	1.0	0.00	172.6	$\pm 1.9\%$
		Y	0.0	0.0	1.0		149.2	
		Z	0.0	0.0	1.0		200.0	

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%.

<sup>A</sup> The uncertainties of Norm X, Y, Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Page 4 and Page 5).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.



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## DASY/EASY – Parameters of Probe: EX3DV4 – SN:3924

### Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz] <sup>C</sup>	Relative Permittivity <sup>F</sup>	Conductivity (S/m) <sup>F</sup>	ConvF X	ConvF Y	ConvF Z	Alpha <sup>G</sup>	Depth <sup>G</sup> (mm)	Unct. (k=2)
750	41.9	0.89	10.11	10.11	10.11	0.40	0.75	±12.1%
835	41.5	0.90	9.71	9.71	9.71	0.18	1.20	±12.1%
900	41.5	0.97	9.67	9.67	9.67	0.21	1.15	±12.1%
1750	40.1	1.37	8.43	8.43	8.43	0.20	1.11	±12.1%
1900	40.0	1.40	8.14	8.14	8.14	0.22	1.14	±12.1%
2300	39.5	1.67	7.83	7.83	7.83	0.48	0.72	±12.1%
2450	39.2	1.80	7.58	7.58	7.58	0.50	0.75	±12.1%
2600	39.0	1.96	7.35	7.35	7.35	0.60	0.69	±12.1%
5250	35.9	4.71	5.42	5.42	5.42	0.45	1.32	±13.3%
5600	35.5	5.07	4.85	4.85	4.85	0.50	1.20	±13.3%
5750	35.4	5.22	4.96	4.96	4.96	0.55	1.20	±13.3%

<sup>C</sup> Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequency below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.



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## DASY/EASY – Parameters of Probe: EX3DV4 – SN:3924

### Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz] <sup>C</sup>	Relative Permittivity <sup>F</sup>	Conductivity (S/m) <sup>F</sup>	ConvF X	ConvF Y	ConvF Z	Alpha <sup>G</sup>	Depth <sup>G</sup> (mm)	Unct. (k=2)
750	55.5	0.96	10.06	10.06	10.06	0.40	0.82	±12.1%
835	55.2	0.97	9.70	9.70	9.70	0.18	1.36	±12.1%
900	55.0	1.05	9.72	9.72	9.72	0.28	1.04	±12.1%
1750	53.4	1.49	8.16	8.16	8.16	0.20	1.28	±12.1%
1900	53.3	1.52	7.78	7.78	7.78	0.21	1.34	±12.1%
2300	52.9	1.81	7.65	7.65	7.65	0.47	0.85	±12.1%
2450	52.7	1.95	7.50	7.50	7.50	0.55	0.78	±12.1%
2600	52.5	2.16	7.29	7.29	7.29	0.66	0.69	±12.1%
5250	48.9	5.36	4.86	4.86	4.86	0.50	1.40	±13.3%
5600	48.5	5.77	4.24	4.24	4.24	0.60	1.30	±13.3%
5750	48.3	5.94	4.35	4.35	4.35	0.55	1.45	±13.3%

<sup>C</sup> Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

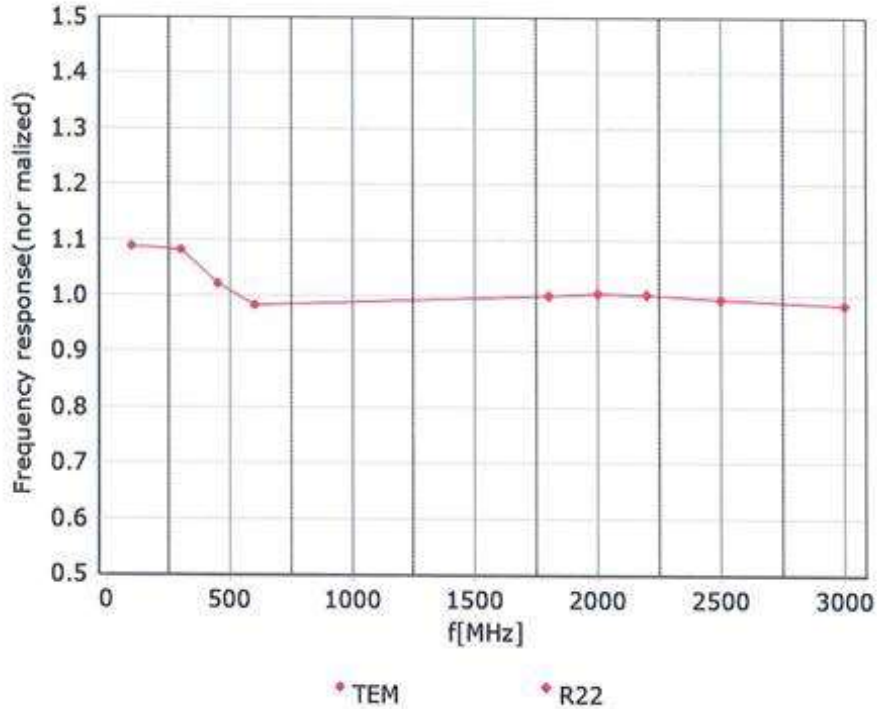
<sup>F</sup> At frequency below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.



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### Frequency Response of E-Field (TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field:  $\pm 7.4\%$  ( $k=2$ )

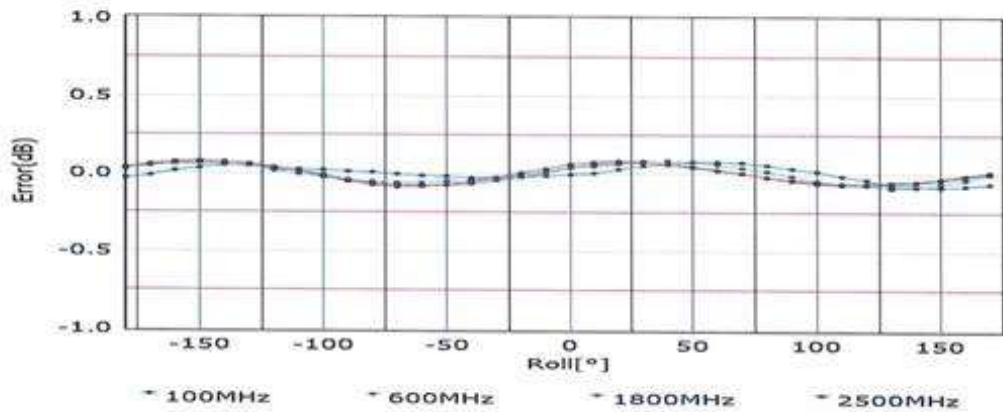
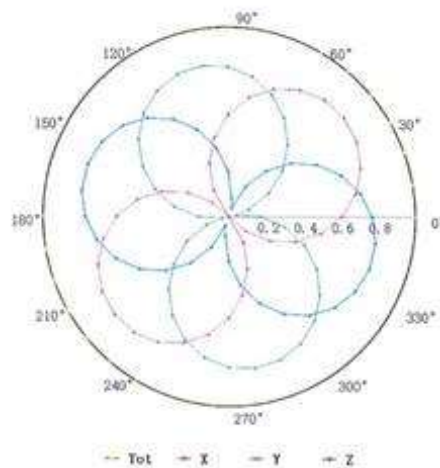
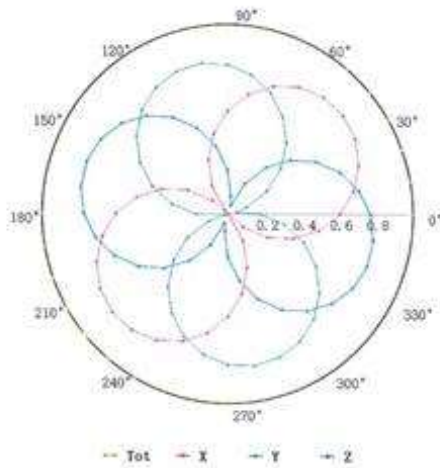


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**Receiving Pattern ( $\Phi$ ),  $\theta=0^\circ$**

**f=600 MHz, TEM**

**f=1800 MHz, R22**



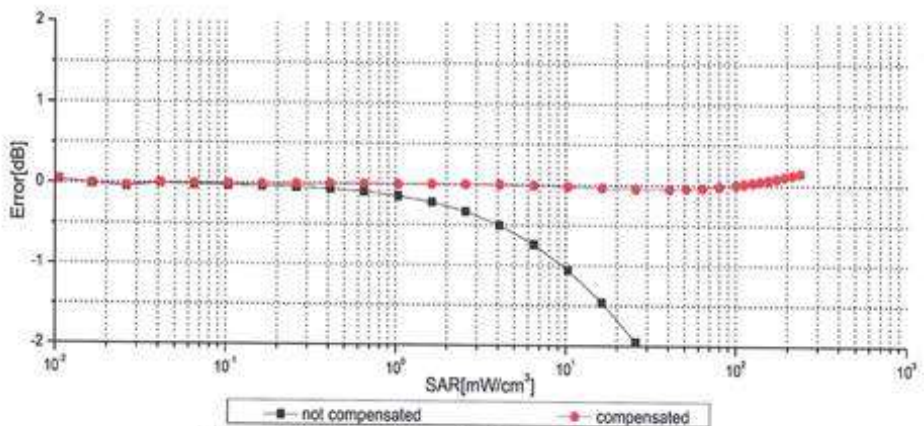
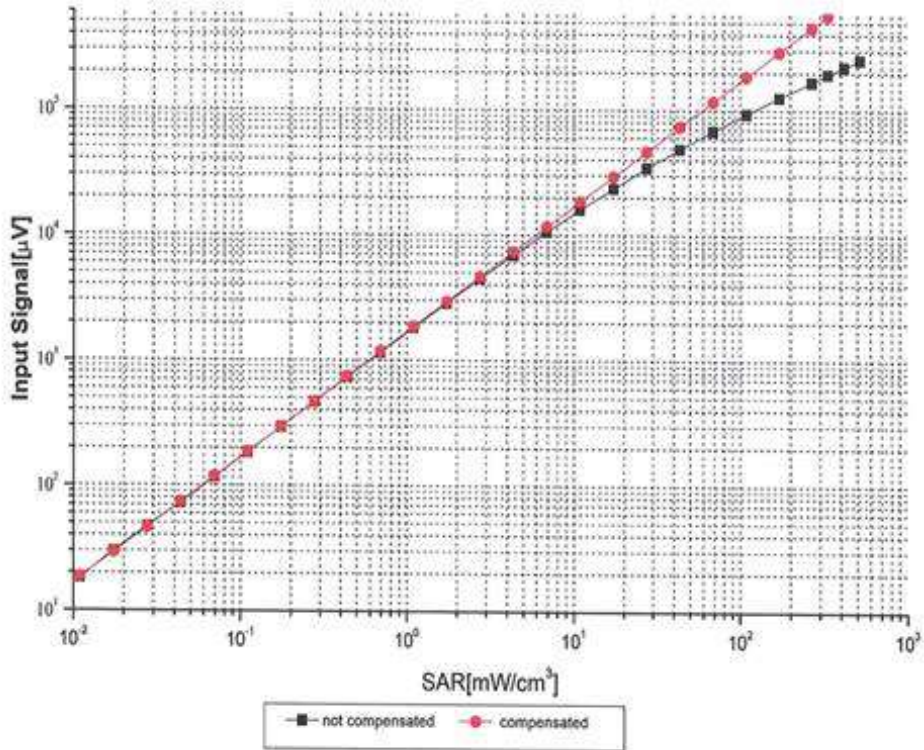
Uncertainty of Axial Isotropy Assessment:  $\pm 1.2\%$  ( $k=2$ )





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**Dynamic Range f(SAR<sub>head</sub>)  
 (TEM cell, f = 900 MHz)**



**Uncertainty of Linearity Assessment: ±0.9% (k=2)**

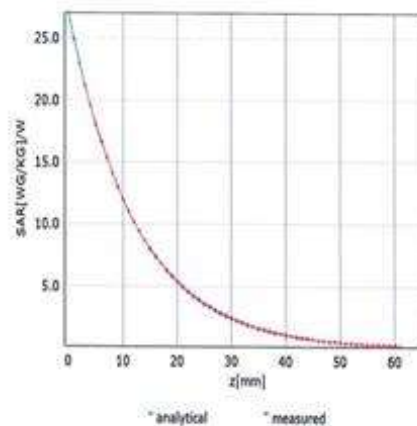
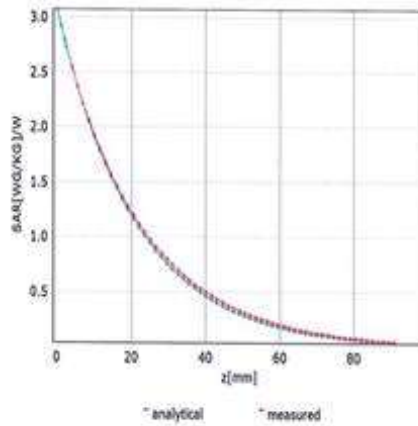


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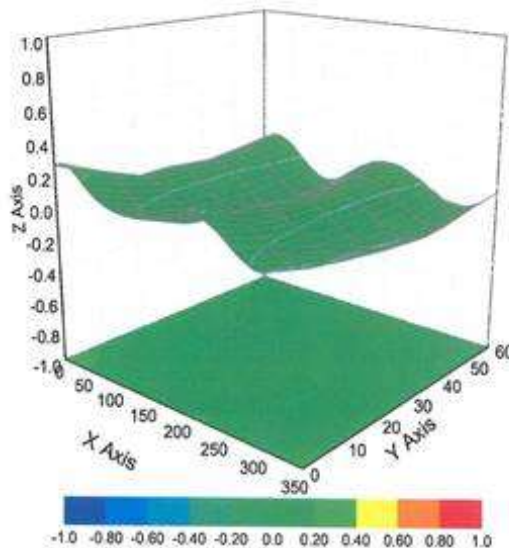
### Conversion Factor Assessment

f=750 MHz,WGLS R9(H\_convF)

f=1750 MHz,WGLS R22(H\_convF)



### Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: ±3.2% (k=2)



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**DASY/EASY – Parameters of Probe: EX3DV4 – SN:3924**

**Other Probe Parameters**

Sensor Arrangement	Triangular
Connector Angle (°)	159
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	10mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

Calibration information for Dipole



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Client

CCIS

Certificate No:

Z20-60195

CALIBRATION CERTIFICATE			
Object	D750V3 - SN: 1118		
Calibration Procedure(s)	FF-Z11-003-01 Calibration Procedures for dipole validation kits		
Calibration date:	May 28, 2020		
<p>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.</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>			
Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	04-Sep-19 (CTTL, No.J19X07825)	Sep-20
Power sensor NRP6A	104291	04-Sep-19 (CTTL, No.J19X07825)	Sep-20
Reference Probe EX3DV4 DAE4	SN 7514	27-Sep-19(CTTL-SPEAG,No.Z19-60306)	Sep-20
	SN 1555	22-Aug-19(CTTL-SPEAG,No.Z19-60295)	Aug-20
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	25-Feb-20 (CTTL, No.J20X00516)	Feb-21
NetworkAnalyzer E5071C	MY46110673	10-Feb-20 (CTTL, No.J20X00515)	Feb-21
Calibrated by:	Name Zhao Jing	Function SAR Test Engineer	Signature 
Reviewed by:	Name Lin Hao	Function SAR Test Engineer	Signature 
Approved by:	Name Qi Dianyuan	Function SAR Project Leader	Signature 
Issued: May 30, 2020			
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**Glossary:**

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

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

- a) 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
- b) IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- d) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

**Additional Documentation:**

- e) 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%.



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**Measurement Conditions**

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

**Head TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.1 ± 6 %	0.87 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °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	2.07 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.37 W/kg ± 18.8 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.53 W/kg ± 18.7 % (k=2)

**Body TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.0 ± 6 %	0.94 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	---	---

**SAR result with Body TSL**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.12 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8.61 W/kg ± 18.8 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.40 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	5.67 W/kg ± 18.7 % (k=2)



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**Appendix (Additional assessments outside the scope of CNAS L0570)**

**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	54.4Ω- 4.05jΩ
Return Loss	- 24.8dB

**Antenna Parameters with Body TSL**

Impedance, transformed to feed point	49.0Ω- 6.05jΩ
Return Loss	- 24.2dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	0.900 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
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**DASY5 Validation Report for Head TSL**

Date: 05.27.2020

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1118**

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.872 \text{ S/m}$ ;  $\epsilon_r = 41.1$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(9.7, 9.7, 9.7) @ 750 MHz; Calibrated: 2019-09-27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1555; Calibrated: 2019-08-22
- Phantom: MFP\_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.61 V/m; Power Drift = -0.04 dB

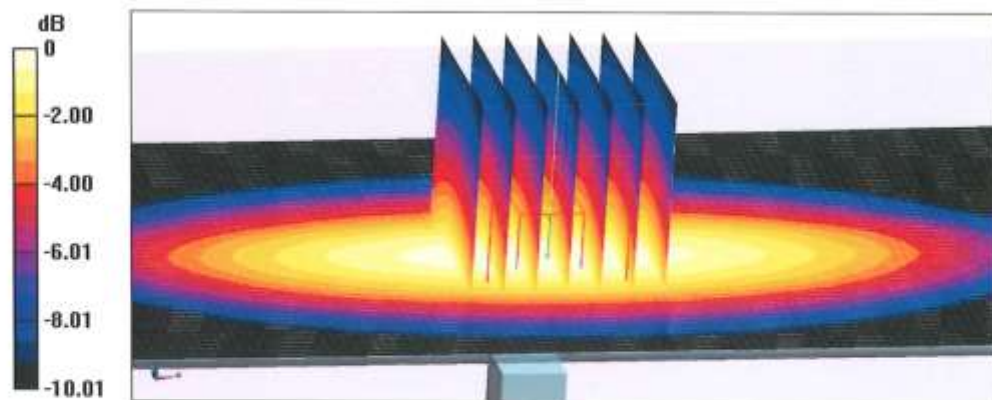
Peak SAR (extrapolated) = 3.21 W/kg

**SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.37 W/kg**

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 64.7%

Maximum value of SAR (measured) = 2.80 W/kg



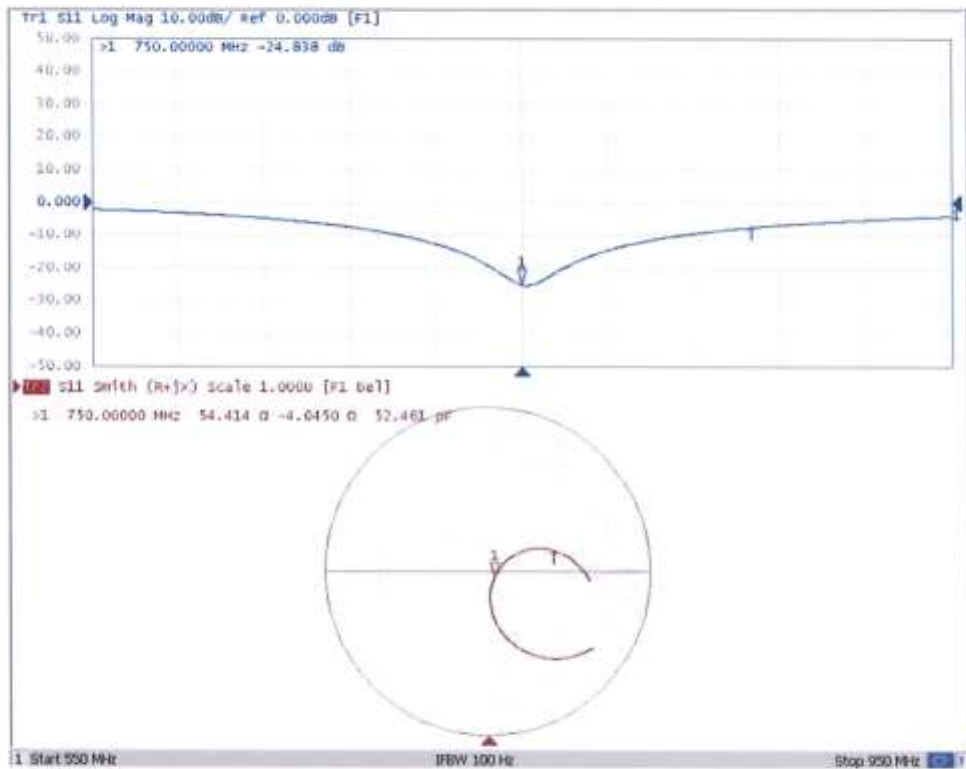
0 dB = 2.80 W/kg = 4.47 dBW/kg





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Impedance Measurement Plot for Head TSL





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**DASY5 Validation Report for Body TSL**

Date: 05.28.2020

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1118**

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 750$  MHz;  $\sigma = 0.938$  S/m;  $\epsilon_r = 55.02$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(9.87, 9.87, 9.87) @ 750 MHz; Calibrated: 2019-09-27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1555; Calibrated: 2019-08-22
- Phantom: MFP\_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.55 V/m; Power Drift = 0.01 dB

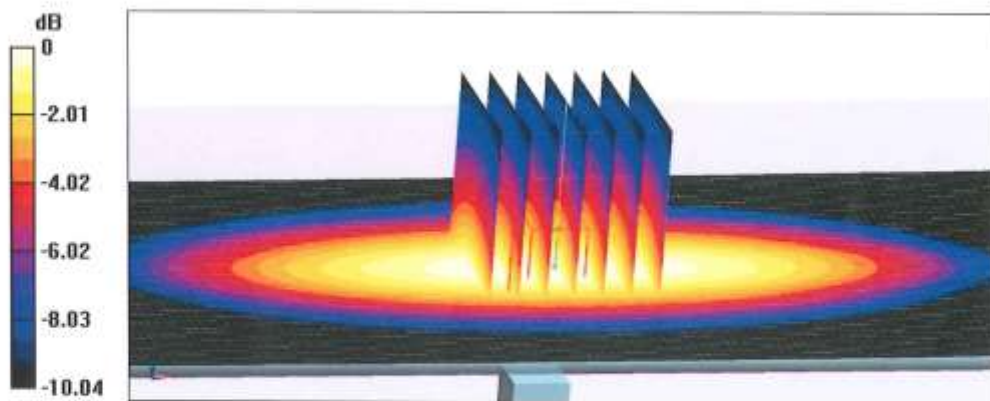
Peak SAR (extrapolated) = 3.31 W/kg

**SAR(1 g) = 2.12 W/kg; SAR(10 g) = 1.4 W/kg**

Smallest distance from peaks to all points 3 dB below = 19.2 mm

Ratio of SAR at M2 to SAR at M1 = 64.7%

Maximum value of SAR (measured) = 2.87 W/kg

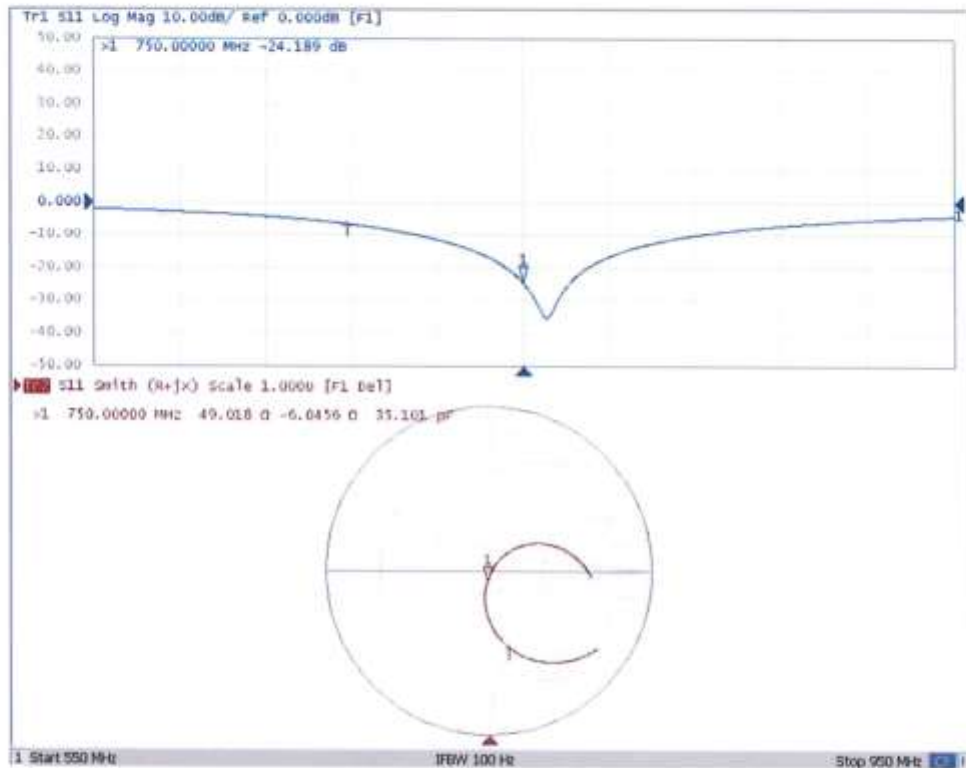


0 dB = 2.87 W/kg = 4.58 dBW/kg



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### Impedance Measurement Plot for Body TSL



## Dipole Impedance and Return Loss calibration Report

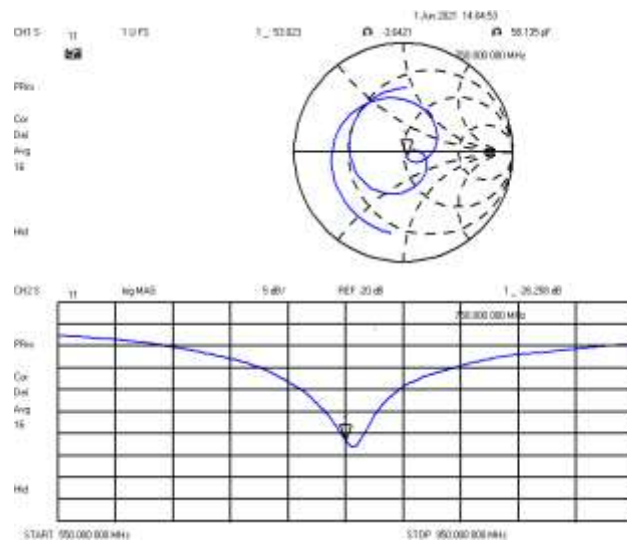
**Object:** D750V3 - SN: 1118  
**Calibration Date:** June 1, 2021  
**Calibration reference:** IEEE Std 1528:2013, IEC 62209-1:2006, FCC KDB 865664 D01  
**Calibrated By:** *Janet Wei* (Janet Wei, SAR project engineer)  
**Reviewed By:** *Winner Zhang* (Winner Zhang, Technical manager)

### Environment of Test Site

Temperature:	21 ~ 23°C
Humidity:	50~60% RH
Atmospheric Pressure:	1011 mbar

### Test Data

Measurement Plot for Head TSL In 2021



### Comparison with Original report

Items	Calibrated By CTTL	Calibrated By JYT In 2021	Deviation	Limit
Impedence for Head TSL	54.4Ω -4.05jΩ	53.02Ω -3.64jΩ	-1.38Ω +0.41jΩ	±5Ω
Return Loss for Head TSL	-24.8	-26.26	5.89%	±20%(No less than 20 dB)

### Result

Compliance



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Client

CCIS

Certificate No:

Z19-60175

### CALIBRATION CERTIFICATE

Object: D835V2 - SN: 4d154

Calibration Procedure(s): FF-Z11-003-01  
Calibration Procedures for dipole validation kits

Calibration date: June 11, 2019

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(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Power sensor NRP8S	104291	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Reference Probe EX3DV4	SN 7514	27-Aug-18(SPEAG,No.EX3-7514_Aug18)	Aug-19
DAE4	SN 1556	20-Aug-18(SPEAG,No.DAE4-1556_Aug18)	Aug-19
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-19 (CTTL, No.J19X00336)	Jan-20
NetworkAnalyzer E5071C	MY46110673	24-Jan-19 (CTTL, No.J19X00547)	Jan-20

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 14, 2019

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Certificate No: Z19-60175

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**Glossary:**

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

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

- a) 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
- b) IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- d) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

**Additional Documentation:**

- e) 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%.



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### Measurement Conditions

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

DASY Version	DASY52	52.10.2.1504
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
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	41.1 $\pm$ 6 %	0.89 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

### SAR result with Head TSL

SAR averaged over 1 $cm^3$ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.49 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 $cm^3$ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.57 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.33 W/kg $\pm$ 18.7 % (k=2)

### Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	55.0 $\pm$ 6 %	0.97 mho/m $\pm$ 6 %
Body TSL temperature change during test	<1.0 °C	----	----

### SAR result with Body TSL

SAR averaged over 1 $cm^3$ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.40 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.57 W /kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 $cm^3$ (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.58 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	6.31 W/kg $\pm$ 18.7 % (k=2)



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**Appendix (Additional assessments outside the scope of CNAS L0570)**

**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	51.9Ω- 3.09jΩ
Return Loss	- 29.0dB

**Antenna Parameters with Body TSL**

Impedance, transformed to feed point	47.3Ω- 4.87jΩ
Return Loss	- 24.9dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.277 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
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**DASY5 Validation Report for Head TSL**

Date: 06.11.2019

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d154**

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.886 \text{ S/m}$ ;  $\epsilon_r = 41.12$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(9.09, 9.09, 9.09) @ 835 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 8/20/2018
- Phantom: MFP\_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

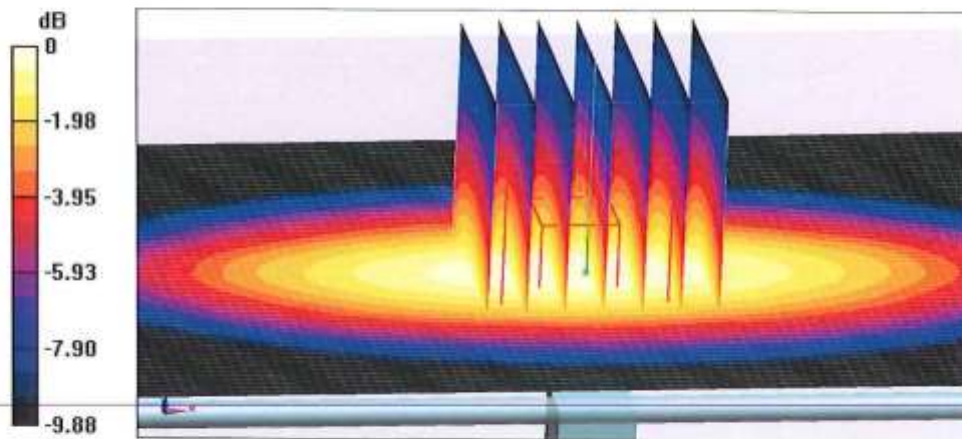
**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.27 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.45 W/kg

SAR(1 g) = 2.35 W/kg; SAR(10 g) = 1.57 W/kg

Maximum value of SAR (measured) = 3.09 W/kg



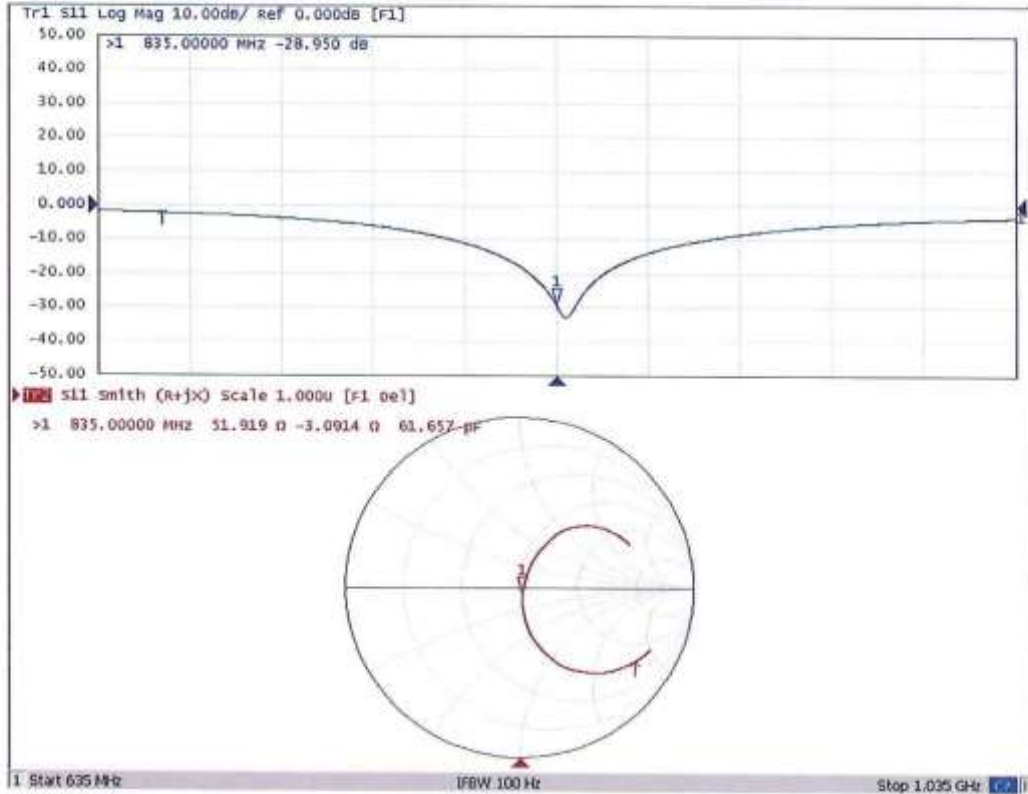
0 dB = 3.09 W/kg = 4.90 dBW/kg



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### Impedance Measurement Plot for Head TSL





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**DASY5 Validation Report for Body TSL**

Date: 06.11.2019

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d154**

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.973$  S/m;  $\epsilon_r = 55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(9.47, 9.47, 9.47) @ 835 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 8/20/2018
- Phantom: MFP\_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

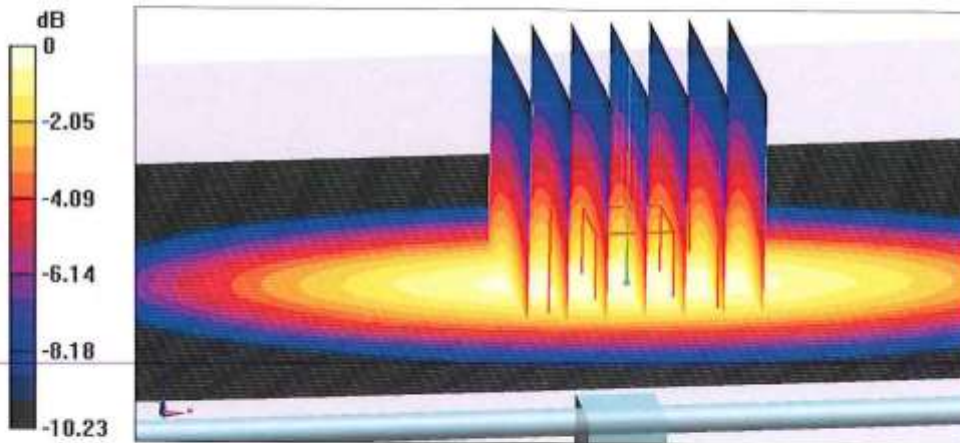
**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.93 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.67 W/kg

**SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.58 W/kg**

Maximum value of SAR (measured) = 3.23 W/kg



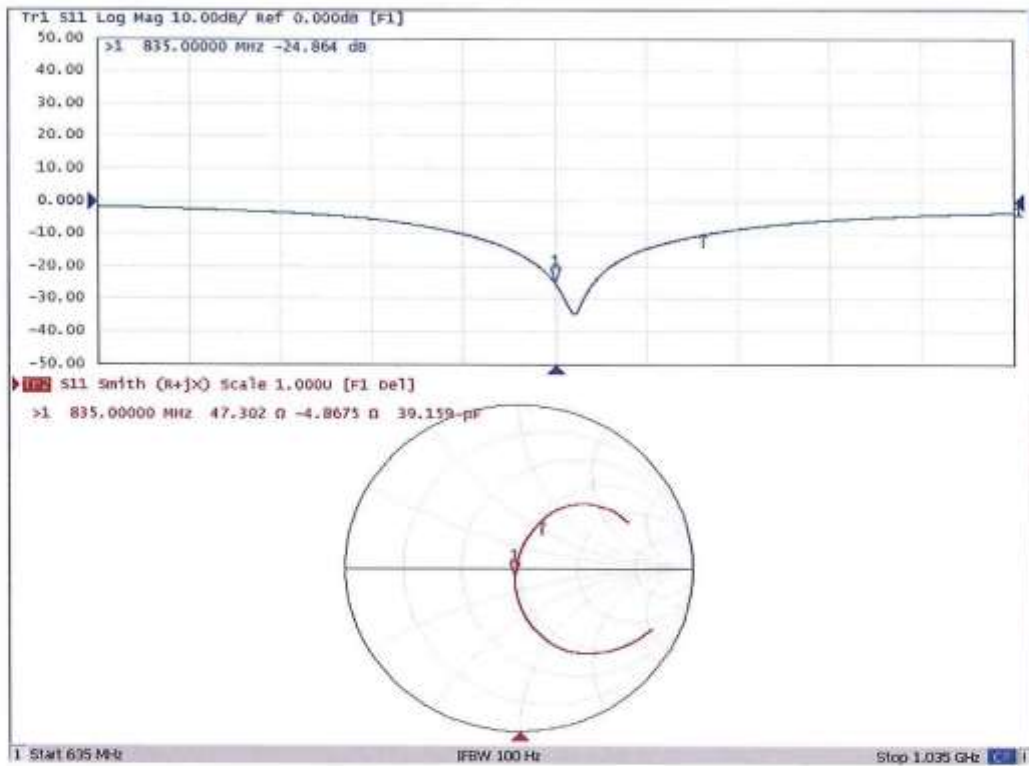
0 dB = 3.23 W/kg = 5.09 dBW/kg



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### Impedance Measurement Plot for Body TSL



## Dipole Impedance and Return Loss calibration Report

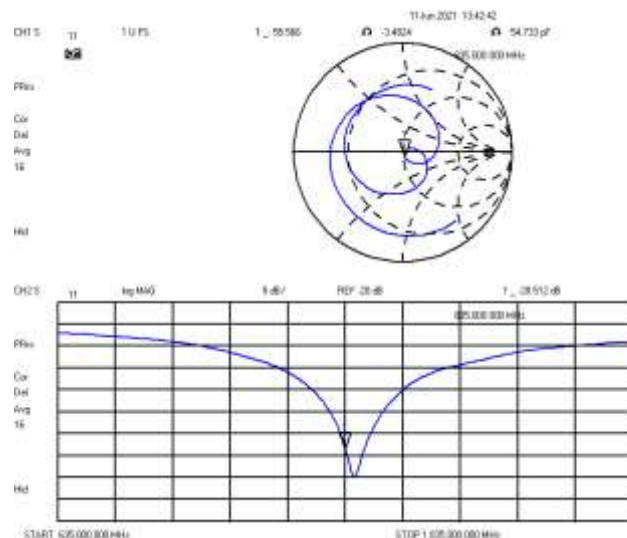
**Object:** D835V2 - SN: 4d154  
**Calibration Date:** June 11, 2021  
**Calibration reference:** IEEE Std 1528:2013, IEC 62209-1:2006, FCC KDB 865664 D01  
**Calibrated By:** *Janet Wei* (Janet Wei, SAR project engineer)  
**Reviewed By:** *Winner Zhang* (Winner Zhang, Technical manager)

### Environment of Test Site

Temperature:	21 ~ 23°C
Humidity:	50~60% RH
Atmospheric Pressure:	1011 mbar

### Test Data

Measurement Plot for Head TSL In 2021



### Comparison with Original report

Items	Calibrated By CTTL	Calibrated By JYT In 2021	Deviation	Limit
Impedence for Head TSL	51.9Ω -3.09jΩ	55.57Ω -3.48jΩ	3.67Ω -0.39jΩ	±5Ω
Return Loss for Head TSL	-29.0	-28.51	-1.69%	±20%(No less than 20 dB)

### Result

Compliance

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



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

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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **JYT (Auden)**

Certificate No: **D1750V2-1177\_Feb21**

CALIBRATION CERTIFICATE			
Object	D1750V2 - SN:1177		
Calibration procedure(s)	QA CAL-05.v11 Calibration Procedure for SAR Validation Sources between 0.7-3 GHz		
Calibration date:	February 10, 2021		
<p>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.</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>			
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: 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 EB358A	SN: US41080477	31-Mar-14 (in house check Oct-20)	In house check: Oct-21
Calibrated by:	Name Jeffrey Katzman	Function Laboratory Technician	Signature 
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature 
			Issued: February 11, 2021
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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) 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
- b) 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
- c) 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
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- e) 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	1750 MHz ± 1 MHz	

**Head TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.4 ± 6 %	1.34 mho/m ± 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	9.00 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>36.4 W/kg ± 17.0 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.73 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>19.0 W/kg ± 16.5 % (k=2)</b>



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

**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	49.5 $\Omega$ - 1.2 j $\Omega$
Return Loss	- 37.5 dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.218 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
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**DASY5 Validation Report for Head TSL**

Date: 10.02.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1177**

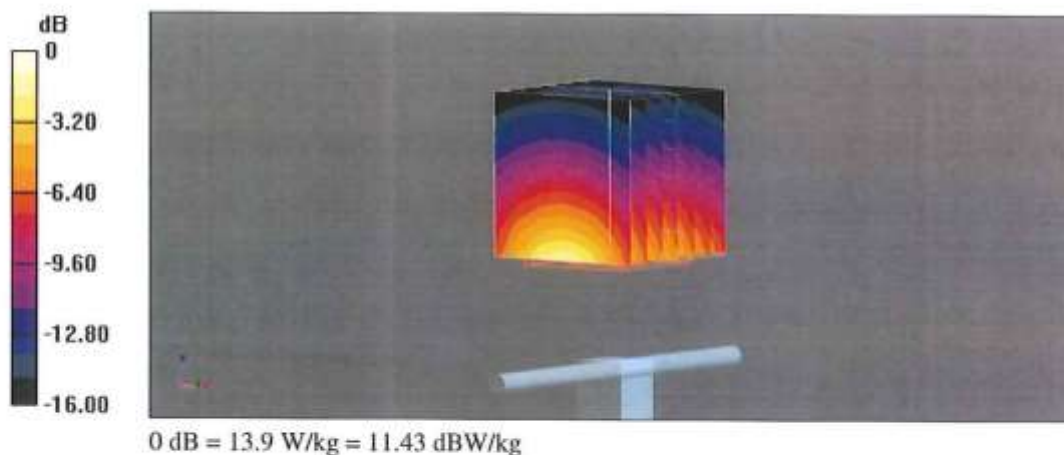
Communication System: UID 0 - CW; Frequency: 1750 MHz  
 Medium parameters used:  $f = 1750$  MHz;  $\sigma = 1.34$  S/m;  $\epsilon_r = 39.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

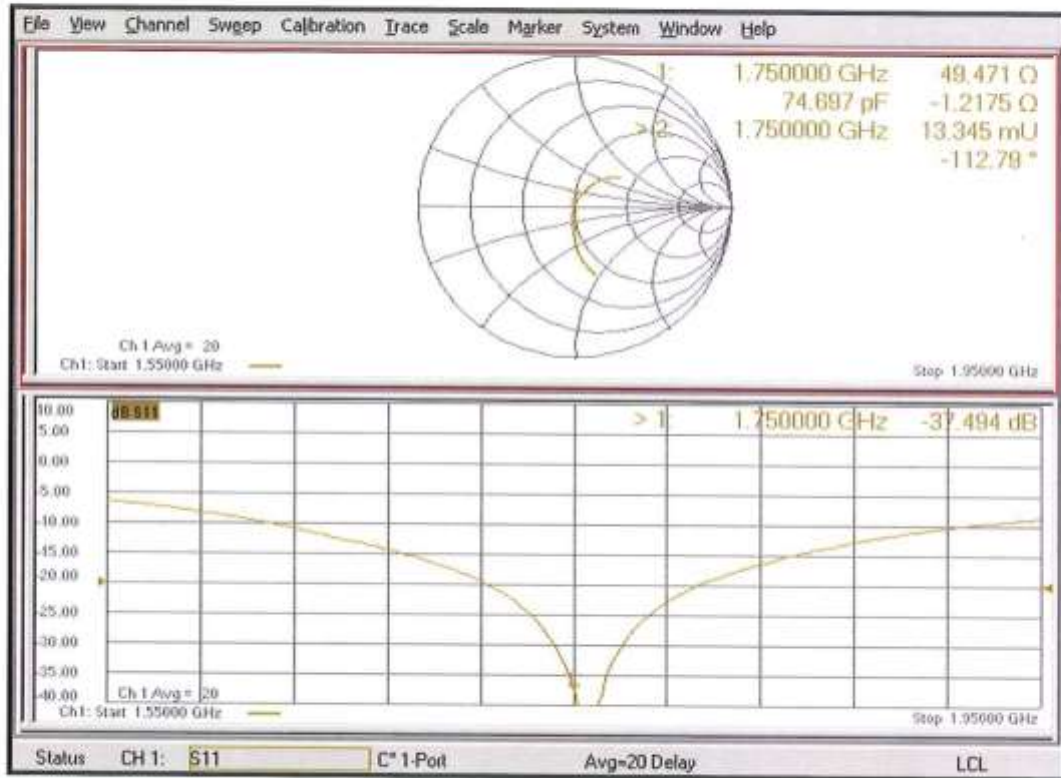
- Probe: EX3DV4 - SN7349; ConvF(8.67, 8.67, 8.67) @ 1750 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

**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 = 106.3 V/m; Power Drift = 0.02 dB  
 Peak SAR (extrapolated) = 16.7 W/kg  
**SAR(1 g) = 9 W/kg; SAR(10 g) = 4.73 W/kg**  
 Smallest distance from peaks to all points 3 dB below = 10 mm  
 Ratio of SAR at M2 to SAR at M1 = 54.2%  
 Maximum value of SAR (measured) = 13.9 W/kg



**Impedance Measurement Plot for Head TSL**





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Client

CCIS

Certificate No: Z19-60176

### CALIBRATION CERTIFICATE

Object: D1900V2 - SN: 5d175

Calibration Procedure(s): FF-Z11-003-01  
Calibration Procedures for dipole validation kits

Calibration date: June 11, 2019

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(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Power sensor NRP8S	104291	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Reference Probe EX3DV4	SN 7514	27-Aug-18(SPEAG,No.EX3-7514_Aug18)	Aug-19
DAE4	SN 1556	20-Aug-18(SPEAG,No.DAE4-1556_Aug18)	Aug-19
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-19 (CTTL, No.J19X00336)	Jan-20
NetworkAnalyzer E5071C	MY46110673	24-Jan-19 (CTTL, No.J19X00547)	Jan-20

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 14, 2019

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**lossary:**

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

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

- a) 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
- b) IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- d) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

**Additional Documentation:**

- e) 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%.



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**Measurement Conditions**

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

DASY Version	DASY52	52.10.2.1504
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 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 ± 0.2) °C	40.2 ± 6 %	1.39 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °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	9.79 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	39.4 W/kg ± 18.8 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.07 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.4 W/kg ± 18.7 % (k=2)

**Body TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.2 ± 6 %	1.50 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	----	----

**SAR result with Body TSL**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	40.5 W/kg ± 18.8 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	5.23 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.0 W/kg ± 18.7 % (k=2)



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**Appendix (Additional assessments outside the scope of CNAS L0570)**

**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	51.7Ω+ 5.93jΩ
Return Loss	- 24.3dB

**Antenna Parameters with Body TSL**

Impedance, transformed to feed point	47.8Ω+ 5.24jΩ
Return Loss	- 24.7dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.064 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
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**DASY5 Validation Report for Head TSL**

Date: 06.10.2019

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d175**

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.387$  S/m;  $\epsilon_r = 40.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(7.73, 7.73, 7.73) @ 1900 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 8/20/2018
- Phantom: MFP\_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:**

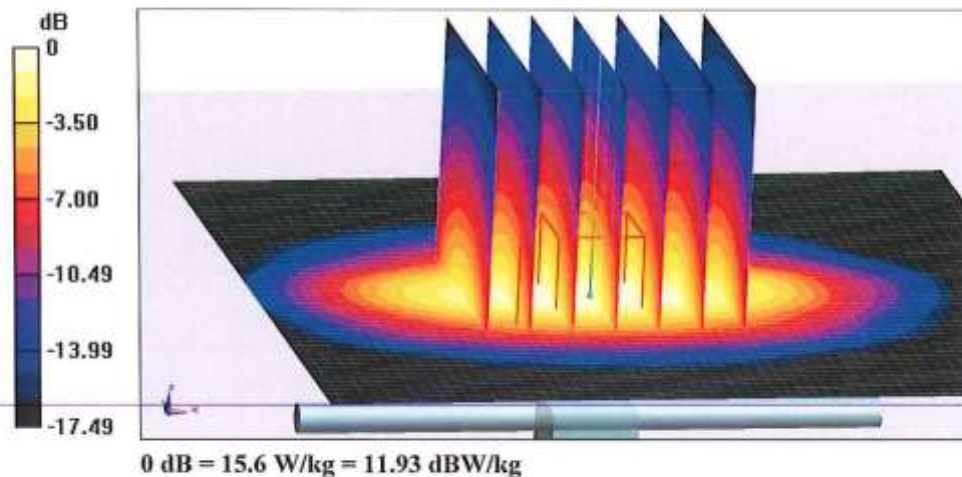
$dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 98.94 V/m; Power Drift = 0.04 dB

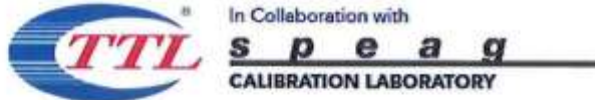
Peak SAR (extrapolated) = 18.9 W/kg

**SAR(1 g) = 9.79 W/kg; SAR(10 g) = 5.07 W/kg**

Maximum value of SAR (measured) = 15.6 W/kg



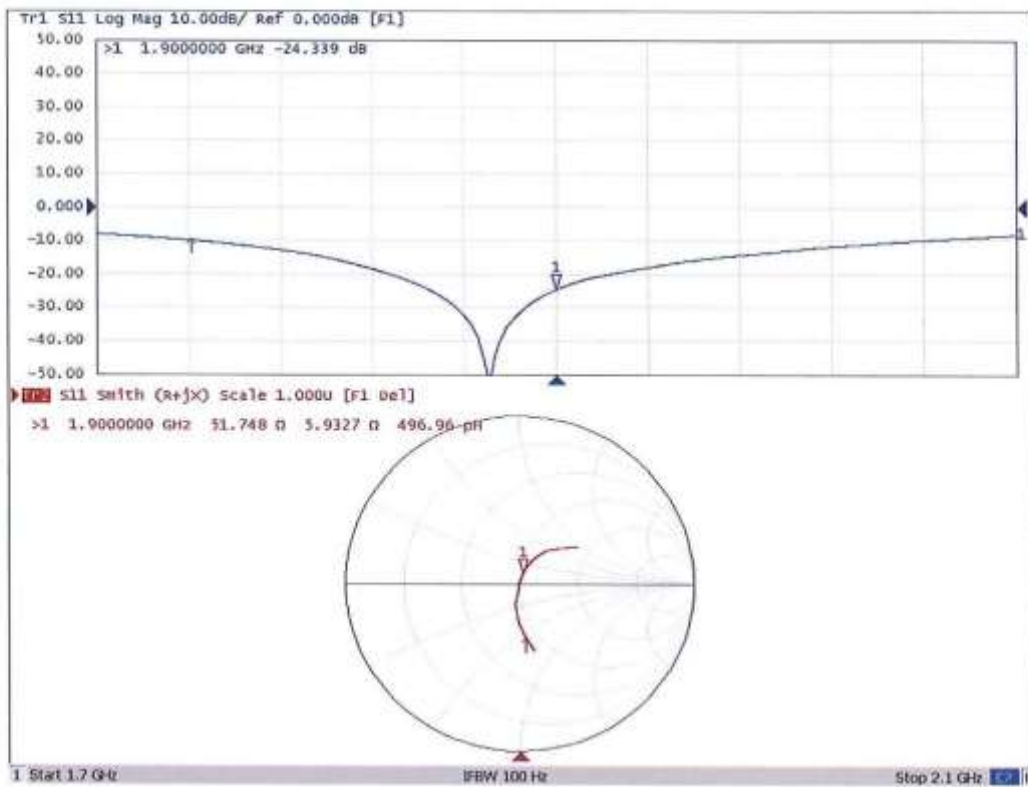




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**Impedance Measurement Plot for Head TSL**





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**DASY5 Validation Report for Body TSL**

Date: 06.11.2019

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d175**

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.499$  S/m;  $\epsilon_r = 52.18$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(7.53, 7.53, 7.53) @ 1900 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 8/20/2018
- Phantom: MFP\_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:**

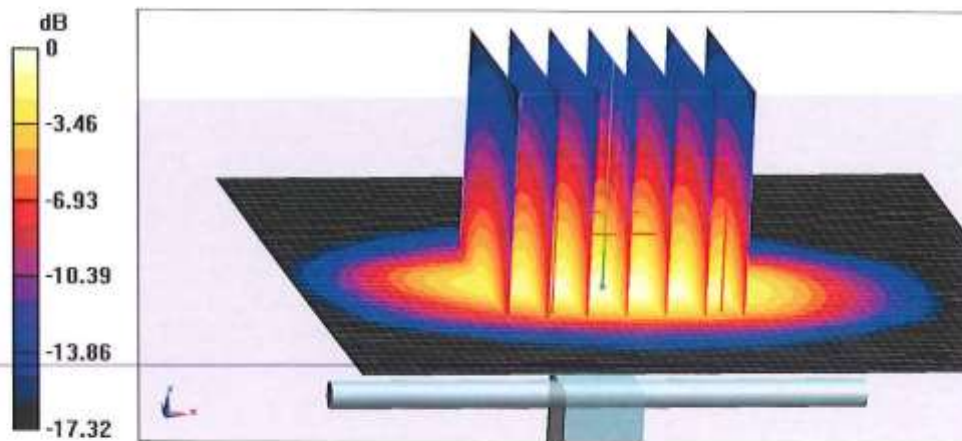
$dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 88.67 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 18.9 W/kg

**SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.23 W/kg**

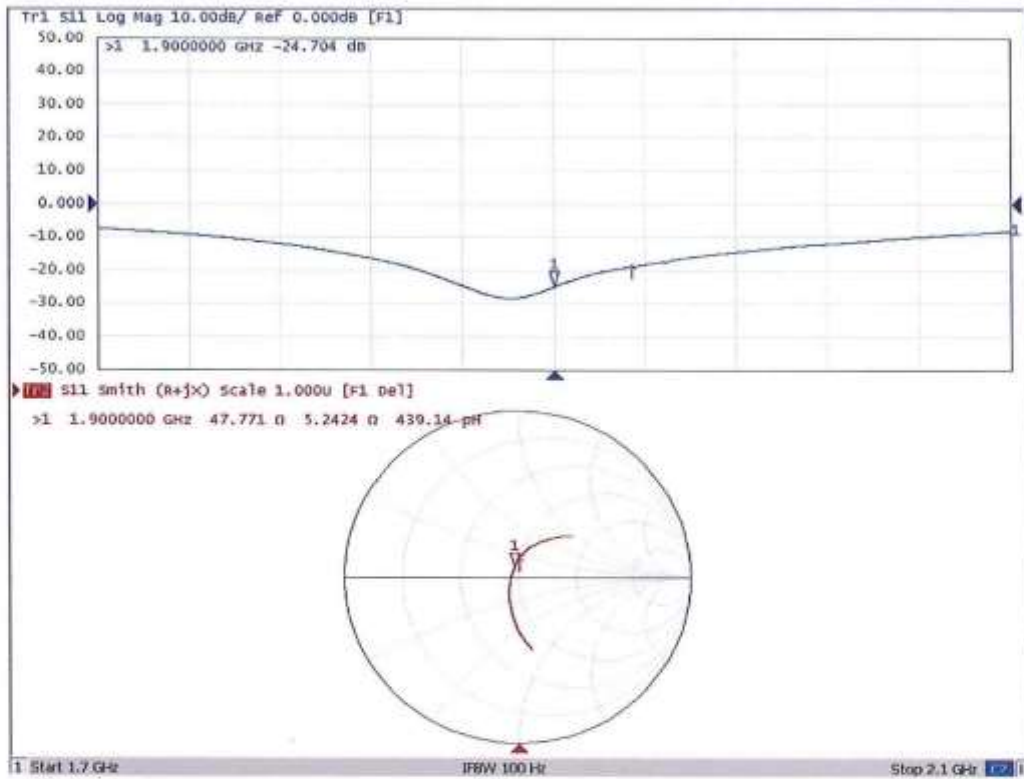
Maximum value of SAR (measured) = 15.6 W/kg





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Impedance Measurement Plot for Body TSL



## Dipole Impedance and Return Loss calibration Report

**Object:** D1900V2 - SN: 5d175

**Calibration Date:** June 11, 2021

**Calibration reference:** IEEE Std 1528:2013, IEC 62209-1:2006, FCC KDB 865664 D01

**Calibrated By:** *Janet Wei* (Janet Wei, SAR project engineer)

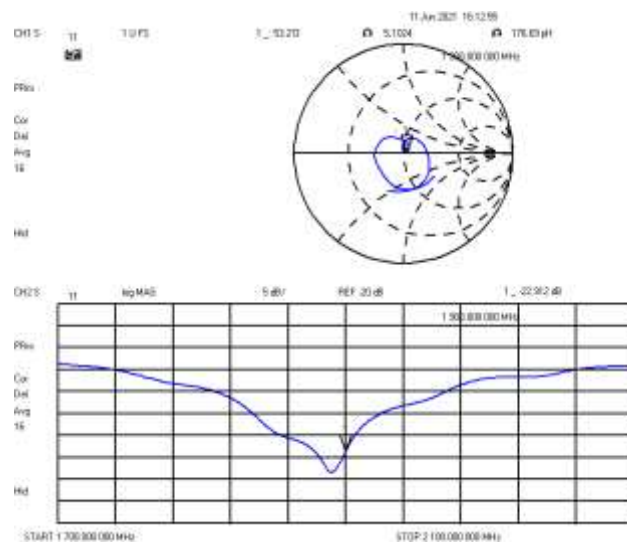
**Reviewed By:** *Winner Zhang* (Winner Zhang, Technical manager)

### Environment of Test Site

Temperature:	18 ~ 25°C
Humidity:	50~60% RH
Atmospheric Pressure:	1011 mbar

### Test Data

Measurement Plot for Head TSL In 2021



### Comparison with Original report

Items	Calibrated By CTTL	Calibrated By JYT In 2021	Deviation	Limit
Impedence for Head TSL	51.7Ω+5.93 jΩ	53.21Ω+5.10 jΩ	1.51Ω-0.83jΩ	±5Ω
Return Loss for Head TSL	-24.3dB	-22.91dB	-5.72%	±20%(No less than 20 dB)

### Result

Compliance



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Client **CCIS**

Certificate No: **Z19-60177**

**CALIBRATION CERTIFICATE**

Object: D2450V2 - SN: 910  
Calibration Procedure(s): FF-Z11-003-01  
Calibration Procedures for dipole validation kits  
Calibration date: June 10, 2019

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(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Power sensor NRP8S	104291	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Reference Probe EX3DV4	SN 7514	27-Aug-18(SPEAG,No.EX3-7514_Aug18)	Aug-19
DAE4	SN 1556	20-Aug-18(SPEAG,No.DAE4-1556_Aug18)	Aug-19
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-19 (CTTL, No.J19X00336)	Jan-20
NetworkAnalyzer E5071C	MY46110673	24-Jan-19 (CTTL, No.J19X00547)	Jan-20

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 14, 2019

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**Glossary:**

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

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

- a) 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
- b) IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- d) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

**Additional Documentation:**

- e) 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%.



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**Measurement Conditions**

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

DASY Version	DASY52	52.10.2.1495
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 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 ± 0.2) °C	39.8 ± 6 %	1.83 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °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	13.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	52.6 W/kg ± 18.8 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	6.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.4 W/kg ± 18.7 % (k=2)

**Body TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.1 ± 6 %	1.96 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	----	----

**SAR result with Body TSL**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.8 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	50.9 W/kg ± 18.8 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	5.94 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	23.7 W/kg ± 18.7 % (k=2)



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**Appendix (Additional assessments outside the scope of CNAS L0570)**

**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	54.1Ω+ 2.51 jΩ
Return Loss	- 26.8dB

**Antenna Parameters with Body TSL**

Impedance, transformed to feed point	52.3Ω+ 3.40 jΩ
Return Loss	- 27.9dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.020 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
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**DASY5 Validation Report for Head TSL**

Date: 06.10.2019

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 910**

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.825$  S/m;  $\epsilon_r = 39.75$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(6.95, 6.95, 6.95) @ 2450 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 8/20/2018
- Phantom: MFP\_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

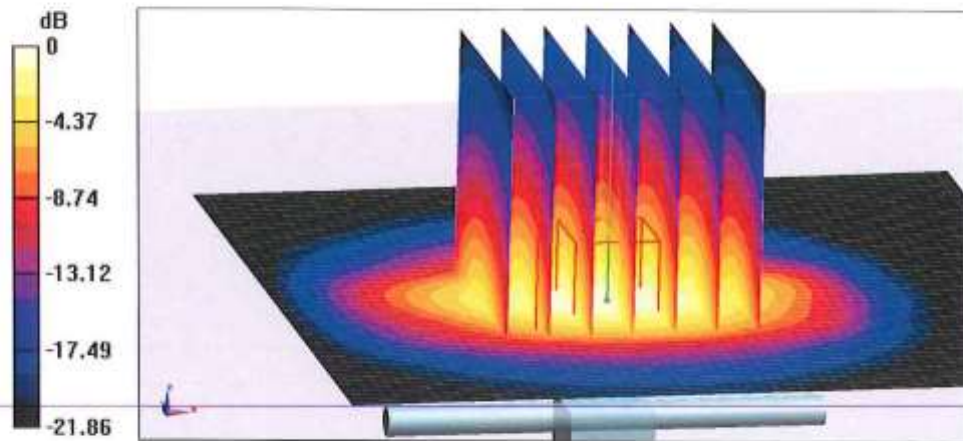
**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.66 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 27.4 W/kg

**SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.11 W/kg**

Maximum value of SAR (measured) = 22.3 W/kg



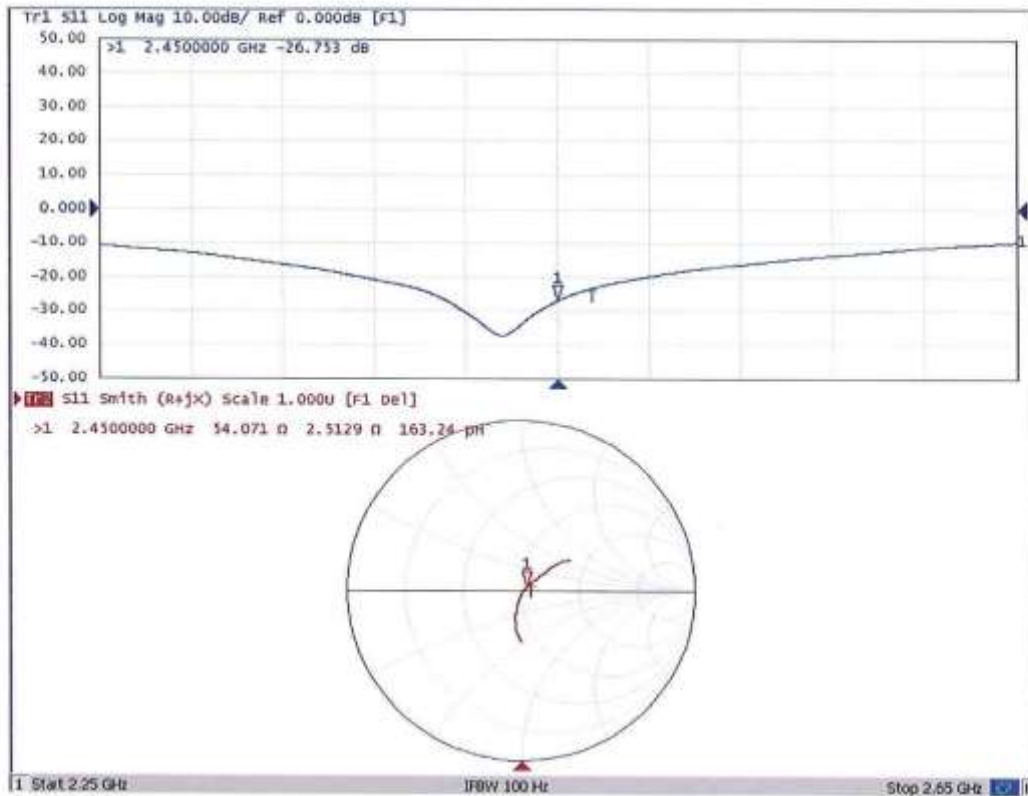
0 dB = 22.3 W/kg = 13.48 dBW/kg



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**Impedance Measurement Plot for Head TSL**





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**DASY5 Validation Report for Body TSL**

Date: 06.10.2019

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 910**

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.962$  S/m;  $\epsilon_r = 52.06$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(7.13, 7.13, 7.13) @ 2450 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 8/20/2018
- Phantom: MFP\_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

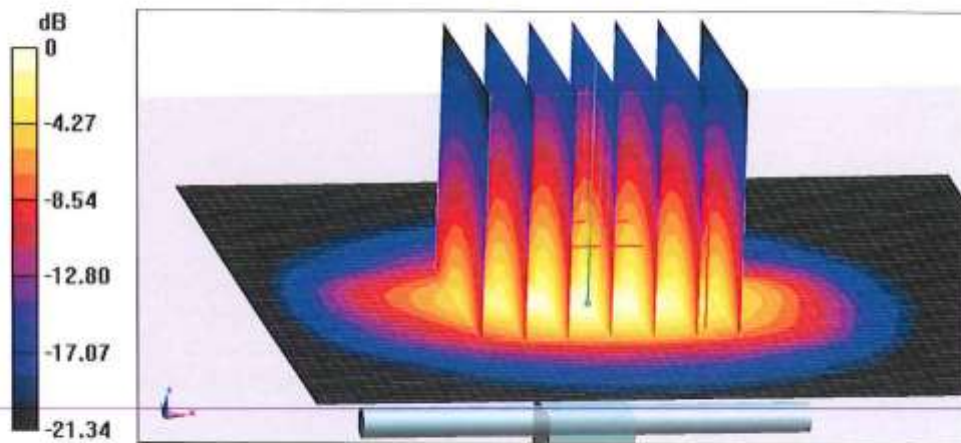
**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 89.63 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 26.4 W/kg

**SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.94 W/kg**

Maximum value of SAR (measured) = 21.3 W/kg



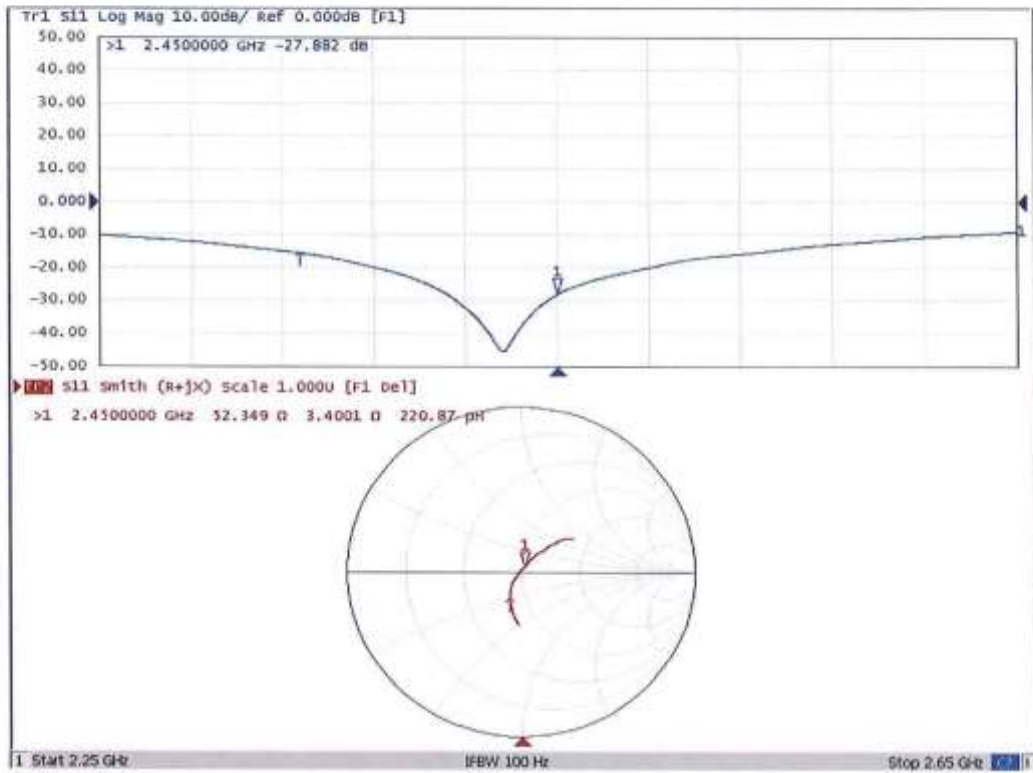
0 dB = 21.3 W/kg = 13.28 dBW/kg



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**Impedance Measurement Plot for Body TSL**



## Dipole Impedance and Return Loss calibration Report

**Object:** D2450V2 - SN: 910

**Calibration Date:** June 11, 2021

**Calibration reference:** IEEE Std 1528:2013, IEC 62209-1:2006, FCC KDB 865664 D01

**Calibrated By:** *Janet Wei* (Janet Wei, SAR project engineer)

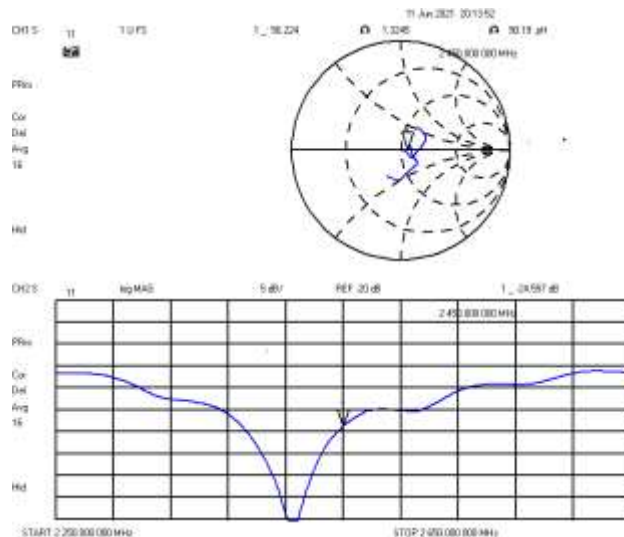
**Reviewed By:** *Winner Zhang* (Winner Zhang, Technical manager)

### Environment of Test Site

Temperature:	18 ~ 25°C
Humidity:	50~60% RH
Atmospheric Pressure:	1011 mbar

### Test Data

Measurement Plot for Head TSL In 2021



### Comparison with Original report

Items	Calibrated By CTTL	Calibrated By JYT In 2021	Deviation	Limit
Impedence for Head TSL	54.1Ω+2.51jΩ	56.22Ω+1.32jΩ	2.12Ω-1.19jΩ	±5Ω
Return Loss for Head TSL	-26.8dB	-24.56dB	-8.36%	±20%(No less than 20 dB)

### Result

Compliance



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CNAS L0570

Client

CCIS

Certificate No:

Z18-60466

**CALIBRATION CERTIFICATE**

Object D2600V2 - SN: 1114

Calibration Procedure(s) FF-Z11-003-01  
Calibration Procedures for dipole validation kits

Calibration date: November 5, 2018

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(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRVD	102196	07-Mar-18 (CTTL, No.J18X01510)	Mar-19
Power sensor NRV-Z5	100598	07-Mar-18 (CTTL, No.J18X01510)	Mar-19
Reference Probe EX3DV4	SN 7514	27-Aug-18(SPEAG,No.EX3-7514_Aug18)	Aug-19
DAE4	SN 1555	20-Aug-18(SPEAG,No.DAE4-1555_Aug18)	Aug-19
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-18 (CTTL, No.J18X00560)	Jan-19
Network Analyzer E5071C	MY46110873	24-Jan-18 (CTTL, No.J18X00561)	Jan-19

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: November 7, 2018

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**Glossary:**

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

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

- a) 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
- b) IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- d) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

**Additional Documentation:**

- e) 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%.



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**Measurement Conditions**

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

DASY Version	DASY52	52.10.2.1495
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 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 ± 0.2) °C	39.4 ± 6 %	1.94 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °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	14.0 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	56.3 mW /g ± 18.8 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	6.24 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	25.1 mW /g ± 18.7 % (k=2)

**Body TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.7 ± 6 %	2.21 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	---	---

**SAR result with Body TSL**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.4 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	53.1 mW /g ± 18.8 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	5.92 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	23.6 mW /g ± 18.7 % (k=2)





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**DASY5 Validation Report for Head TSL**

Date: 11.05.2018

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1114**

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 1.944$  S/m;  $\epsilon_r = 39.41$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(6.92, 6.92, 6.92) @ 2600 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1555; Calibrated: 8/20/2018
- Phantom: MFP\_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

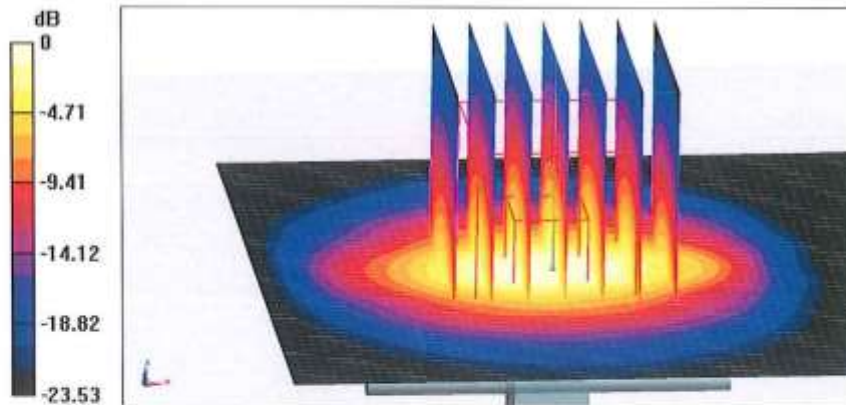
**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm**

Reference Value = 107.5 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 30.7 W/kg

**SAR(1 g) = 14 W/kg; SAR(10 g) = 6.24 W/kg**

Maximum value of SAR (measured) = 24.3 W/kg

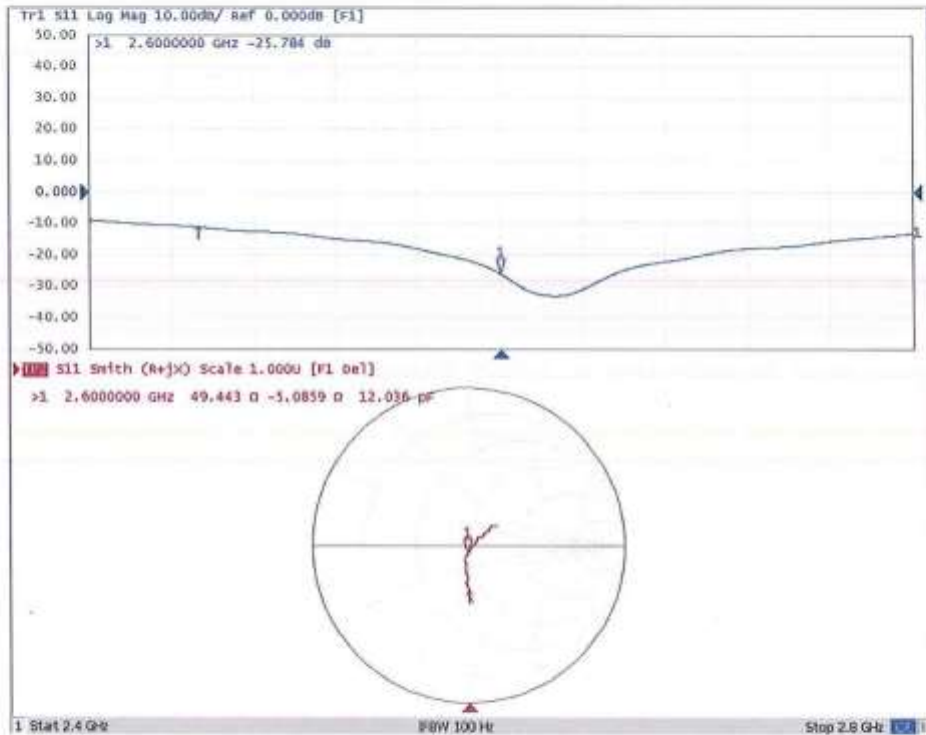




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**Impedance Measurement Plot for Head TSL**





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**DASY5 Validation Report for Body TSL**

Date: 11.01.2018

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1114**

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 2.206$  S/m;  $\epsilon_r = 52.65$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(7.06, 7.06, 7.06) @ 2600 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1555; Calibrated: 8/20/2018
- Phantom: MFP\_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

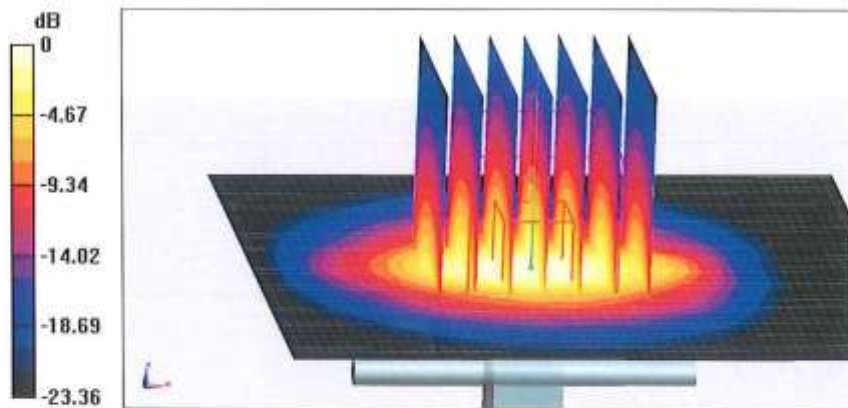
**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm**

Reference Value = 98.22 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 29.3 W/kg

**SAR(1 g) = 13.4 W/kg; SAR(10 g) = 5.92 W/kg**

Maximum value of SAR (measured) = 23.0 W/kg



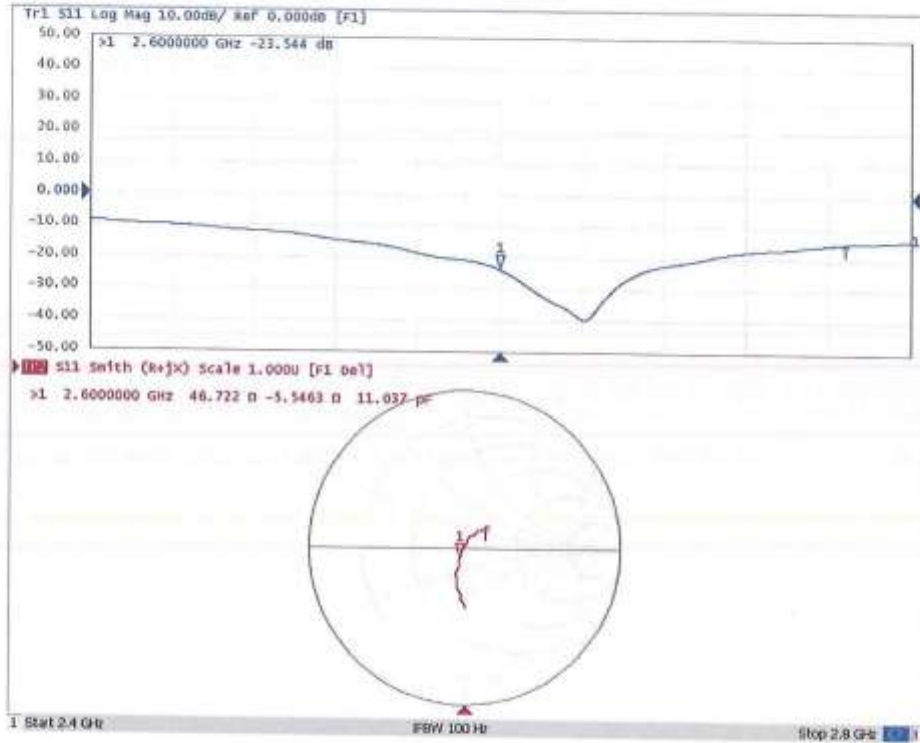
0 dB = 23.0 W/kg = 13.62 dBW/kg



In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY

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**Impedance Measurement Plot for Body TSL**



## Dipole Impedance and Return Loss calibration Report

**Object:** D2600V2 - SN: 1116

**Calibration Date:** November 09, 2020

**Calibration reference:** IEEE Std 1528:2013, IEC 62209-1:2016, FCC KDB 865664 D01

**Calibrated By:** *Janet Wei* (Janet Wei, SAR project engineer)

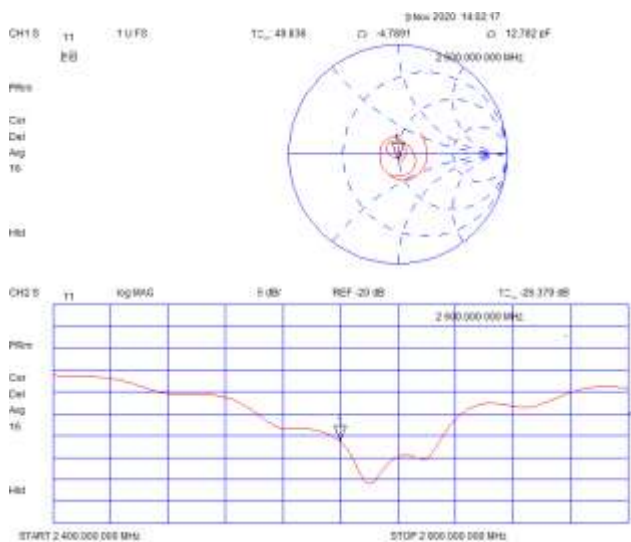
**Reviewed By:** *Winner Zhang* (Winner Zhang, Technical manager)

### Environment of Test Site

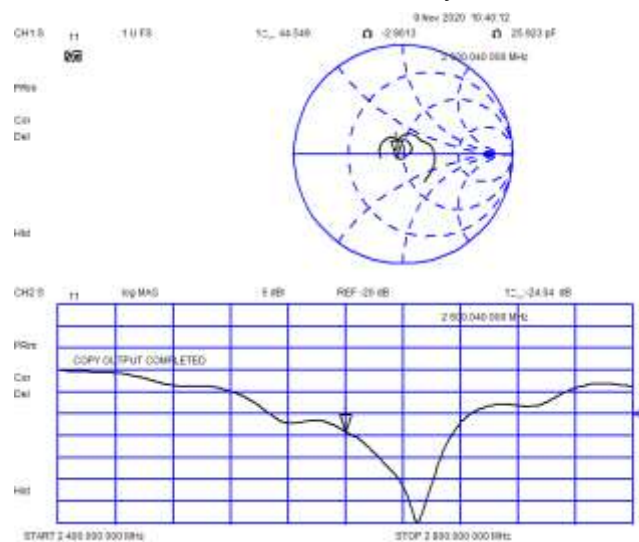
Temperature:	18 ~ 25°C
Humidity:	50~60% RH
Atmospheric Pressure:	1011 mbar

### Test Data

Measurement Plot for Head TSL In 2020



Measurement Plot for Body TSL In 2020



### Comparison with Original report

Items	Calibrated By JYT In 2019	Calibrated By JYT In 2020	Deviation	Limit
Impedence for Head TSL	49.78Ω-5.11jΩ	49.84Ω-4.79jΩ	0.06Ω+0.32 jΩ	±5Ω
Return Loss for Head TSL	-25.81dB	-26.4dB	2.3%	±20%(No less than 20 dB)
Impedence for Body TSL	45.29Ω-3.29jΩ	44.55Ω-2.96jΩ	-0.74Ω+0.33 jΩ	±5Ω
Return Loss for Body TSL	-24.14dB	-24.04dB	-0.41%	±20%(No less than 20 dB)

### Result

Compliance

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



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** 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 **JYT (Auden)**

Certificate No: **D5GHzV2-1320\_Feb21**

### CALIBRATION CERTIFICATE

Object: **D5GHzV2 - SN:1320**

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

Calibration date: **February 05, 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	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. 217-03105)	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 <b>Claudio Leubler</b>	Function <b>Laboratory Technician</b>	Signature 
Approved by:	Name <b>Katja Pokovic</b>	Function <b>Technical Manager</b>	Signature 

Issued: February 5, 2021

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

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



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

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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:**

- a) 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
- b) 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
- c) 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
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- e) 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 = 10.0 mm, dz = 10.0 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5500 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz	

**Head TSL parameters at 5200 MHz**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.8 ± 6 %	4.49 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

**SAR result with Head TSL at 5200 MHz**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.98 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.1 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.6 W/kg ± 19.5 % (k=2)



**Head TSL parameters at 5300 MHz**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.76 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.6 ± 6 %	4.59 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

**SAR result with Head TSL at 5300 MHz**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	80.8 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.34 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.2 W/kg ± 19.5 % (k=2)

**Head TSL parameters at 5500 MHz**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.3 ± 6 %	4.78 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

**SAR result with Head TSL at 5500 MHz**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.67 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	85.9 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.47 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.4 W/kg ± 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 ± 0.2) °C	34.2 ± 6 %	4.88 mho/m ± 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	8.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>83.2 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	2.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>23.7 W/kg ± 19.5 % (k=2)</b>

**Head TSL parameters at 5800 MHz**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	33.9 ± 6 %	5.09 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

**SAR result with Head TSL at 5800 MHz**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.17 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	2.32 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	<b>22.9 W/kg ± 19.5 % (k=2)</b>

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

**Antenna Parameters with Head TSL at 5200 MHz**

Impedance, transformed to feed point	50.1 $\Omega$ - 3.9 j $\Omega$
Return Loss	- 28.1 dB

**Antenna Parameters with Head TSL at 5300 MHz**

Impedance, transformed to feed point	50.6 $\Omega$ + 3.1 j $\Omega$
Return Loss	- 30.0 dB

**Antenna Parameters with Head TSL at 5500 MHz**

Impedance, transformed to feed point	47.5 $\Omega$ + 1.2 j $\Omega$
Return Loss	- 30.7 dB

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

Impedance, transformed to feed point	53.5 $\Omega$ + 2.1 j $\Omega$
Return Loss	- 28.2 dB

**Antenna Parameters with Head TSL at 5800 MHz**

Impedance, transformed to feed point	50.5 $\Omega$ + 7.6 j $\Omega$
Return Loss	- 22.4 dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.197 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
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**DASY5 Validation Report for Head TSL**

Date: 05.02.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1320**

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz

Medium parameters used:  $f = 5200$  MHz;  $\sigma = 4.49$  S/m;  $\epsilon_r = 34.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Medium parameters used:  $f = 5300$  MHz;  $\sigma = 4.59$  S/m;  $\epsilon_r = 34.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Medium parameters used:  $f = 5500$  MHz;  $\sigma = 4.78$  S/m;  $\epsilon_r = 34.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Medium parameters used:  $f = 5600$  MHz;  $\sigma = 4.88$  S/m;  $\epsilon_r = 34.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 5.09$  S/m;  $\epsilon_r = 33.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

**DASY52 Configuration:**

- Probe: EX3DV4 - SN3503; ConvF(5.8, 5.8, 5.8) @ 5200 MHz, ConvF(5.49, 5.49, 5.49) @ 5300 MHz, ConvF(5.25, 5.25, 5.25) @ 5500 MHz, ConvF(5.1, 5.1, 5.1) @ 5600 MHz, ConvF(5.01, 5.01, 5.01) @ 5800 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=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 76.70 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 27.7 W/kg

**SAR(1 g) = 7.98 W/kg; SAR(10 g) = 2.28 W/kg**

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 70.8%

Maximum value of SAR (measured) = 17.9 W/kg

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 76.91 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 28.3 W/kg

**SAR(1 g) = 8.15 W/kg; SAR(10 g) = 2.34 W/kg**

Smallest distance from peaks to all points 3 dB below = 7.2 mm

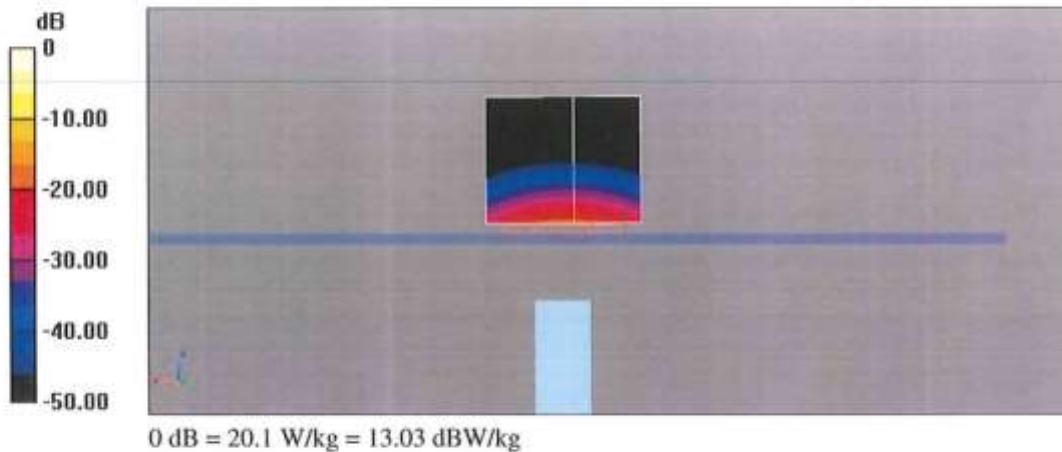
Ratio of SAR at M2 to SAR at M1 = 70.8%

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

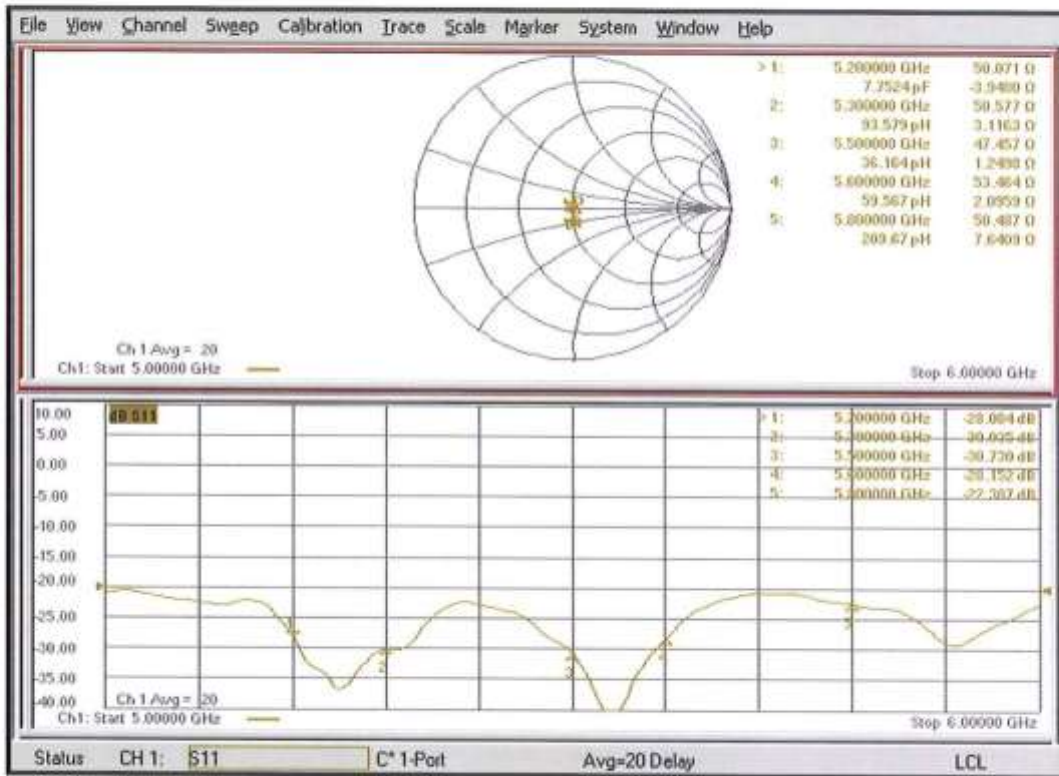
**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
 Reference Value = 76.98 V/m; Power Drift = -0.04 dB  
 Peak SAR (extrapolated) = 32.6 W/kg  
**SAR(1 g) = 8.67 W/kg; SAR(10 g) = 2.47 W/kg**  
 Smallest distance from peaks to all points 3 dB below = 7.2 mm  
 Ratio of SAR at M2 to SAR at M1 = 68.1%  
 Maximum value of SAR (measured) = 20.1 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 = 77.18 V/m; Power Drift = -0.09 dB  
 Peak SAR (extrapolated) = 30.7 W/kg  
**SAR(1 g) = 8.40 W/kg; SAR(10 g) = 2.40 W/kg**  
 Smallest distance from peaks to all points 3 dB below = 7.2 mm  
 Ratio of SAR at M2 to SAR at M1 = 68.9%  
 Maximum value of SAR (measured) = 19.2 W/kg

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
 Reference Value = 75.07 V/m; Power Drift = -0.06 dB  
 Peak SAR (extrapolated) = 31.6 W/kg  
**SAR(1 g) = 8.17 W/kg; SAR(10 g) = 2.32 W/kg**  
 Smallest distance from peaks to all points 3 dB below = 7.4 mm  
 Ratio of SAR at M2 to SAR at M1 = 67.3%  
 Maximum value of SAR (measured) = 19.0 W/kg



**Impedance Measurement Plot for Head TSL**



Calibration information for DAE



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中国认可  
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 校准  
 CALIBRATION  
 CNAS L0570

Client : **CCIS**

Certificate No: **Z20-60270**

**CALIBRATION CERTIFICATE**

Object: DAE4 - SN: 1373

Calibration Procedure(s): FF-Z11-002-01  
 Calibration Procedure for the Data Acquisition Electronics (DAEx)

Calibration date: July 27, 2020

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(Calibrated by, Certificate No.)	Scheduled Calibration
Process Calibrator 753	1971018	16-Jun-20 (CTTL, No.J20X04342)	Jun-21

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: July 29, 2020

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**Glossary:**

DAE data acquisition electronics  
Connector angle information used in DASY system to align probe sensor X to the robot coordinate system.

**Methods Applied and Interpretation of Parameters:**

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The report provide only calibration results for DAE, it does not contain other performance test results.





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 E-mail: cttl@chinattl.com Http://www.chinattl.cn

**DC Voltage Measurement**

A/D - Converter Resolution nominal  
 High Range: 1LSB = 6.1 $\mu$ V, full range = -100...+300 mV  
 Low Range: 1LSB = 61nV, full range = -1.....+3mV  
 DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	403.934 $\pm$ 0.15% (k=2)	403.899 $\pm$ 0.15% (k=2)	404.192 $\pm$ 0.15% (k=2)
Low Range	3.98735 $\pm$ 0.7% (k=2)	4.00822 $\pm$ 0.7% (k=2)	4.01196 $\pm$ 0.7% (k=2)

**Connector Angle**

Connector Angle to be used in DASY system	346.5° $\pm$ 1°
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-----End of Report-----