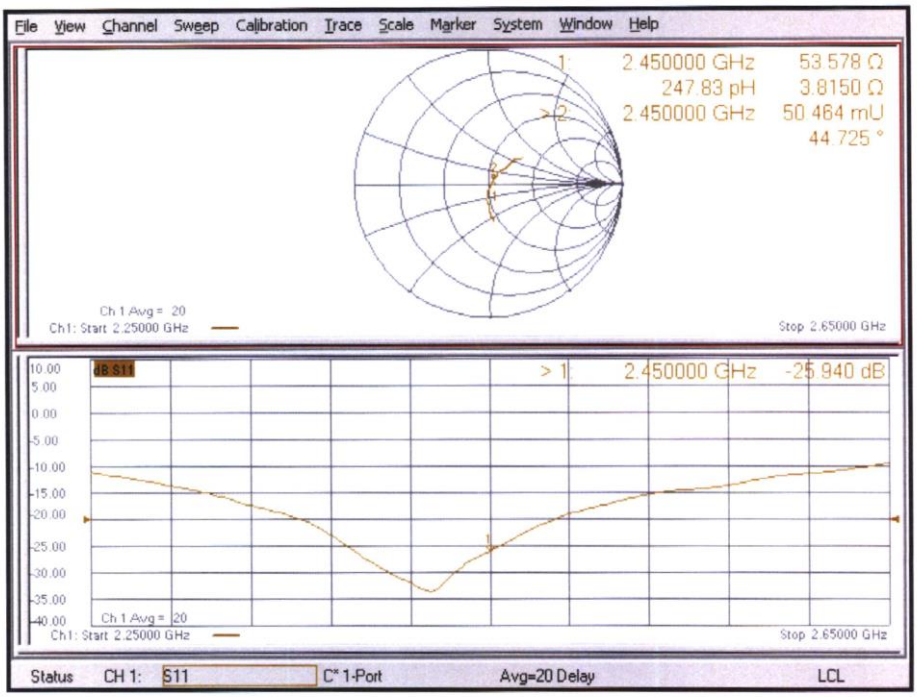
Impedance Measurement Plot for Head TSL



5G Dipole Calibration Certificate

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 CTTL (Auden) **Certificate No: D5GHzV2-1262_Jan22**

CALIBRATION CERTIFICATE

Object: D5GHzV2 - SN:1262

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

Calibration date: January 27, 2022

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	09-Apr-21 (No. 217-03291/03292)	Apr-22
Power sensor NRP-Z91	SN: 103244	09-Apr-21 (No. 217-03291)	Apr-22
Power sensor NRP-Z91	SN: 103245	09-Apr-21 (No. 217-03292)	Apr-22
Reference 20 dB Attenuator	SN: BH9394 (20k)	09-Apr-21 (No. 217-03343)	Apr-22
Type-N mismatch combination	SN: 310982 / 06327	09-Apr-21 (No. 217-03344)	Apr-22
Reference Probe EX3DV4	SN: 3503	31-Dec-21 (No. EX3-3503_Dec21)	Dec-22
DAE4	SN: 601	01-Nov-21 (No. DAE4-601_Nov21)	Nov-22

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Oct-20)	In house check: Oct-22
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-20)	In house check: Oct-22
Power sensor HP 8481A	SN: MY41093315	07-Oct-15 (in house check Oct-20)	In house check: Oct-22
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-20)	In house check: Oct-22
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-20)	In house check: Oct-22

	Name	Function	Signature
Calibrated by:	Aldonia Georgiadou	Laboratory Technician	
Approved by:	Sven Kühn	Deputy Manager	

Issued: January 27, 2022

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

Certificate No: D5GHzV2-1262_Jan22 Page 1 of 8

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

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

c) DASY System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz ± 1 MHz 5600 MHz ± 1 MHz 5750 MHz ± 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.9 ± 6 %	4.52 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm³ (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	**80.9 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.1 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	34.4 ± 6 %	4.87 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.51 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**84.4 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.41 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.9 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.2 ± 6 %	5.02 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.19 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**81.2 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.31 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.8 W/kg ± 19.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	49.9 Ω - 4.0 jΩ
Return Loss	- 27.8 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	51.5 Ω + 1.0 jΩ
Return Loss	- 34.9 dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	53.3 Ω + 1.4 jΩ
Return Loss	- 29.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.193 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 27.01.2022

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1262

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz
Medium parameters used: f = 5250 MHz; σ = 4.52 S/m; ε_r = 34.9; ρ = 1000 kg/m^3,
Medium parameters used: f = 5600 MHz; σ = 4.87 S/m; ε_r = 34.4; ρ = 1000 kg/m^3,
Medium parameters used: f = 5750 MHz; σ = 5.02 S/m; ε_r = 34.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

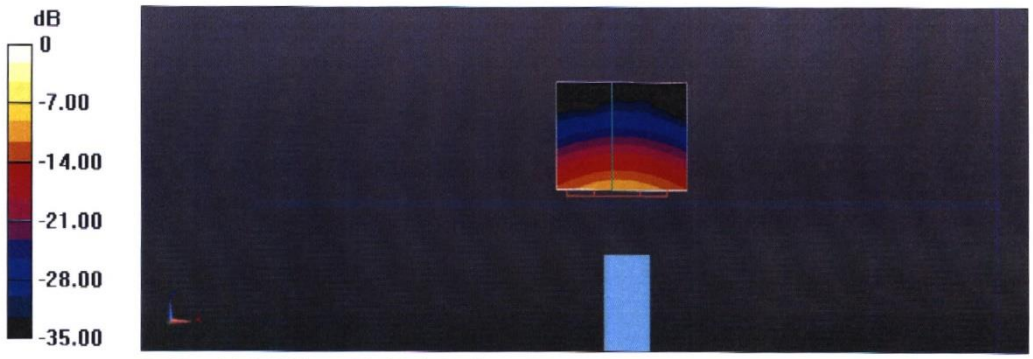
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.5, 5.5, 5.5) @ 5250 MHz, ConvF(5.1, 5.1, 5.1) @ 5600 MHz, ConvF(5.08, 5.08, 5.08) @ 5750 MHz; Calibrated: 31.12.2021
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 01.11.2021
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 79.04 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 28.0 W/kg
SAR(1 g) = 8.15 W/kg; SAR(10 g) = 2.33 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 69.9%
Maximum value of SAR (measured) = 18.9 W/kg

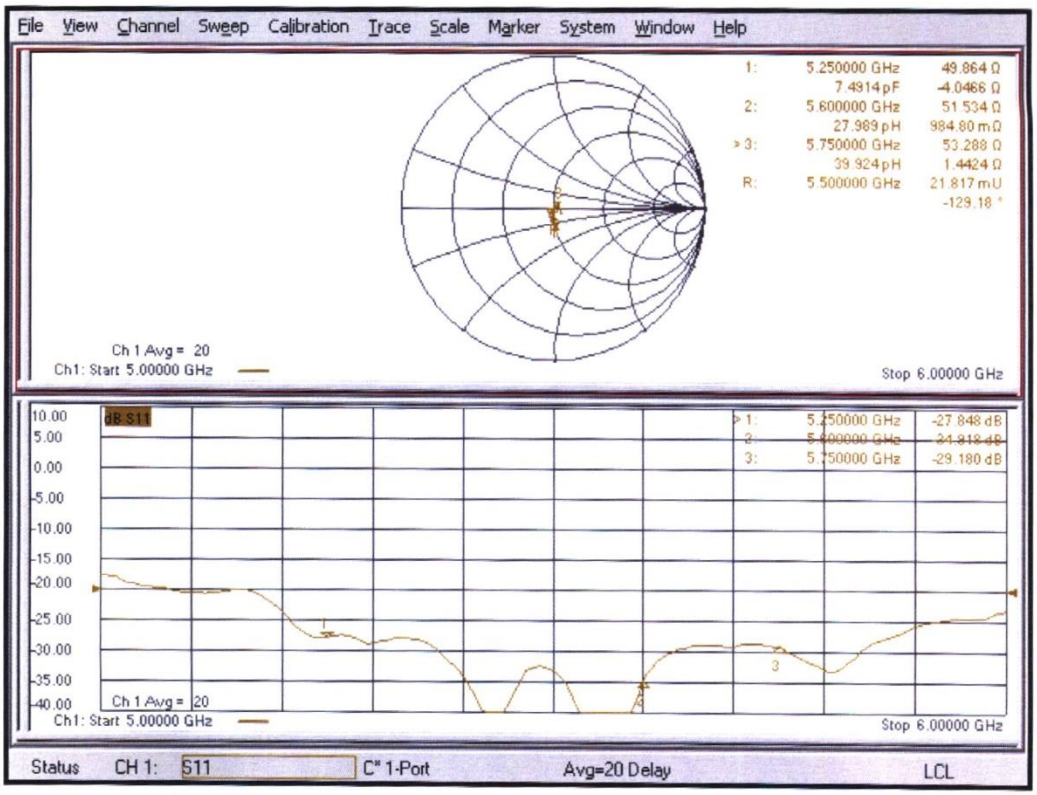
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 78.74 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 31.4 W/kg
SAR(1 g) = 8.51 W/kg; SAR(10 g) = 2.41 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 67.6%
Maximum value of SAR (measured) = 20.3 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 75.87 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 31.9 W/kg
SAR(1 g) = 8.19 W/kg; SAR(10 g) = 2.31 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 65.8%
Maximum value of SAR (measured) = 19.9 W/kg



0 dB = 20.3 W/kg = 13.07 dBW/kg

Impedance Measurement Plot for Head TSL



6.5G Dipole Calibration Certificate

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 CTTL-BJ (Auden) **Certificate No: D6.5GHzV2-1059_Dec21**

CALIBRATION CERTIFICATE

Object D6.5GHzV2 - SN:1059

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

Calibration date: December 01, 2021

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	09-Apr-21 (No. 217-03291/03292)	Apr-22
Power sensor NRP-Z91	SN: 103244	09-Apr-21 (No. 217-03291)	Apr-22
Power sensor NRP-Z91	SN: 103245	09-Apr-21 (No. 217-03292)	Apr-22
Power sensor R&S NRP33T	SN: 100967	08-Apr-21 (No. 217-03293)	Apr-22
Reference 20 dB Attenuator	SN: BH9394 (20k)	09-Apr-21 (No. 217-03343)	Apr-22
Type-N mismatch combination	SN: 310982 / 06327	09-Apr-21 (No. 217-03344)	Apr-22
Reference Probe EX3DV4	SN: 7405	30-Dec-20 (No. EX3-7405_Dec20)	Dec-21
DAE4	SN: 908	24-Jun-21 (No. DAE4-908_Jun21)	Jun-22

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator Anapico APSIN20G	SN: 669	28-Mar-17 (in house check Dec-18)	In house check: Dec-21
Network Analyzer R&S ZVL13	SN: 101093	10-May-12 (in house check Dec-18)	In house check: Dec-21

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Niels Kuster	Quality Manager	

Issued: December 1, 2021

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

Certificate No: D6.5GHzV2-1059_Dec21 Page 1 of 6

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

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

b) DASY System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The 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.
- *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 absorbed power density (APD):* The absorbed power density is evaluated according to Samaras T, Christ A, Kuster N, "*Compliance assessment of the epithelial or absorbed power density above 6 GHz using SAR measurement systems*", Bioelectromagnetics, 2021 (submitted). The additional evaluation uncertainty of 0.55 dB (rectangular distribution) is considered.

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	DASY6	V16.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	5 mm	with Spacer
Zoom Scan Resolution	dx, dy = 3.4 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	6500 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	34.5	6.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.3 ± 6 %	6.13 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	29.0 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**289 W/kg ± 24.7 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	5.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**53.3 W/kg ± 24.4 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.9 Ω - 6.2 jΩ
Return Loss	- 23.5 dB

APD (Absorbed Power Density)

APD averaged over 1 cm²	Condition	
APD measured	100 mW input power	289 W/m²
APD measured	normalized to 1W	**2890 W/m² ± 29.2 % (k=2)**

APD averaged over 4 cm²	condition	
APD measured	100 mW input power	130 W/m²
APD measured	normalized to 1W	**1300 W/m² ± 28.9 % (k=2)**

*The reported APD values have been derived using psSAR8g.

General Antenna Parameters and Design

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

DASY6 Validation Report for Head TSL

Measurement Report for D6.5GHz-1059, UID 0 -, Channel 6500 (6500.0MHz)

Device under Test Properties

Name, Manufacturer	Dimensions [mm]	IMEI	DUT Type
D6.5GHz	16.0 x 6.0 x 300.0	SN: 1059	-

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz]	Conversion Factor	TSL Cond. [S/m]	TSL Permittivity
Flat, HSL	5.00	Band	CW,	6500	5.75	6.13	34.3

Hardware Setup

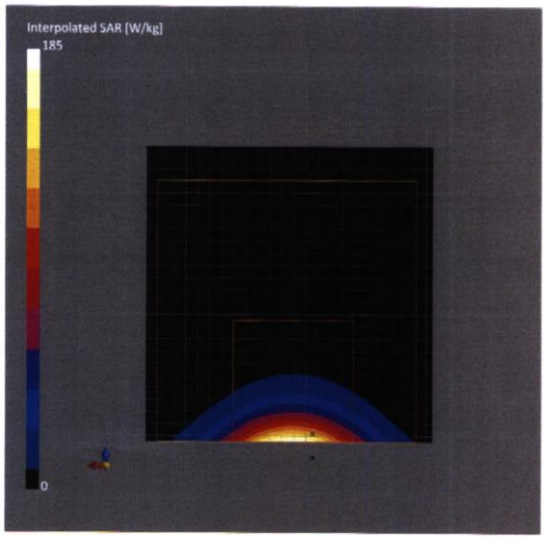
Phantom	TSL	Probe, Calibration Date	DAE, Calibration Date
MFP V8.0 Center - 1182	HBBL600-10000V6	EX3DV4 - SN7405, 2020-12-30	DAE4 Sn908, 2021-06-24

Scan Setup

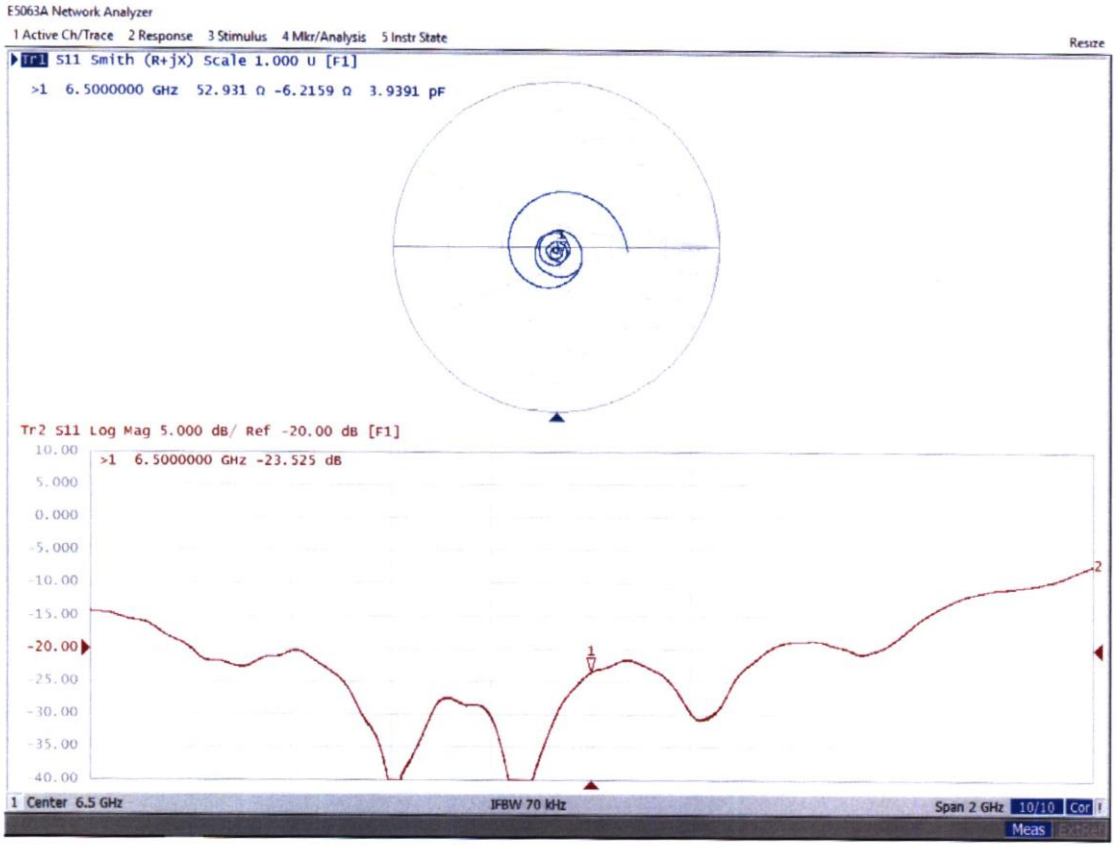
	Zoom Scan
Grid Extents [mm]	22.0 x 22.0 x 22.0
Grid Steps [mm]	3.4 x 3.4 x 1.4
Sensor Surface [mm]	1.4
Graded Grid	Yes
Grading Ratio	1.4
MAIA	N/A
Surface Detection	VMS + 6p
Scan Method	Measured

Measurement Results

	Zoom Scan
Date	2021-12-01, 13:15
psSAR1g [W/Kg]	29.0
psSAR10g [W/Kg]	5.33
Power Drift [dB]	-0.00
Power Scaling	Disabled
Scaling Factor [dB]	
TSL Correction	No correction
M2/M1 [%]	51.1
Dist 3dB Peak [mm]	4.8



Impedance Measurement Plot for Head TSL



10G Dipole Calibration Certificate

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 CTTL (Auden)

Certificate No: 5G-Veri10-1005_Jan22

CALIBRATION CERTIFICATE

Object	5G Verification Source 10 GHz - SN: 1005
Calibration procedure(s)	QA CAL-45.v3 Calibration procedure for sources in air above 6 GHz
Calibration date:	January 24, 2022

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
Reference Probe EUmmWV3	SN: 9374	2021-12-21(No. EUmmWV3-9374_Dec21)	Dec-22
DAE4ip	SN: 1602	2021-06-25 (No. DAE4ip-1602_Jun21)	Jun-22

Secondary Standards	ID #	Check Date (in house)	Scheduled Check

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Sven Kühn	Deputy Manager	

Issued: January 26, 2022

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

Measurement Conditions

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

DASY Version	cDASY6 Module mmWave	V2.4
Phantom	5G Phantom	
Distance Horn Aperture - plane	10 mm	
XY Scan Resolution	dx, dy = 7.5 mm	
Number of measured planes	2 (10mm, 10mm + λ/4)	
Frequency	10 GHz ± 10 MHz	

Calibration Parameters, 10 GHz

Circular Averaging

Distance Horn Aperture to Measured Plane	***Prad*[1] *(mW)***	**Max E-field (V/m)**	Uncertainty (k = 2)	Avg Power Density Avg (psPDn+, psPDtot+, psPDmod+) (W/m^2)		Uncertainty (k = 2)
				1 cm^2	**4** cm^2	
10 mm	86.1	**147**	1.27 dB	**54.4**	**51.2**	1.28 dB

Square Averaging

Distance Horn Aperture to Measured Plane	***Prad*[1] *(mW)***	**Max E-field (V/m)**	Uncertainty (k = 2)	Avg Power Density Avg (psPDn+, psPDtot+, psPDmod+) (W/m^2)		Uncertainty (k = 2)
				1 cm^2	**4** cm^2	
10 mm	86.1	**147**	1.27 dB	**54.5**	**51.1**	1.28 dB

[1] Assessed ohmic and mismatch loss plus numerical offset: 0.55 dB

DASY Report

Measurement Report for 5G Verification Source 10 GHz, UID 0 -, Channel 10000 (10000.0MHz)

Device under Test Properties

Name, Manufacturer	Dimensions [mm]	IMEI	DUT Type
5G Verification Source 10 GHz	100.0 x 100.0 x 172.0	SN: 1005	-

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group,	Frequency [MHz], Channel Number	Conversion Factor
5G -	10.0 mm	Validation band	CW	10000.0, 10000	1.0

Hardware Setup

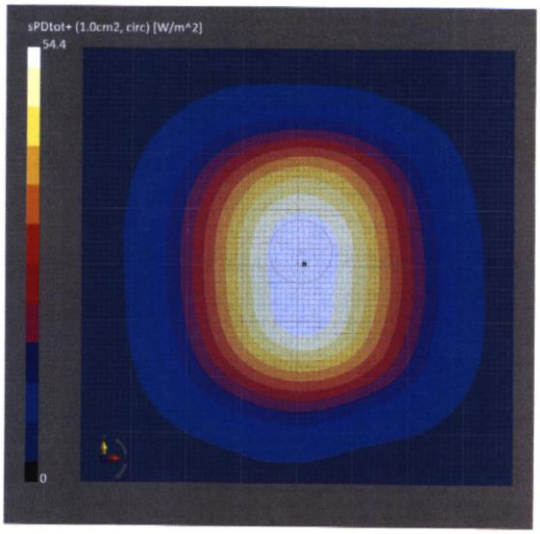
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave Phantom - 1002	Air	EUmmWV3 - SN9374_F1-55GHz, 2021-12-21	DAE4ip Sn1602, 2021-06-25

Scan Setup

	5G Scan
Grid Extents [mm]	120.0 x 120.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	10.0
MAIA	MAIA not used

Measurement Results

	5G Scan
Date	2022-01-24, 07:50
Avg. Area [cm²]	1.00
psPDn+ [W/m²]	54.2
psPDtot+ [W/m²]	54.4
psPDmod+ [W/m²]	54.6
E_{max} [V/m]	147
Power Drift [dB]	0.01



DASY Report

Measurement Report for 5G Verification Source 10 GHz, UID 0 -, Channel 10000 (10000.0MHz)

Device under Test Properties

Name, Manufacturer	Dimensions [mm]	IMEI	DUT Type
5G Verification Source 10 GHz	100.0 x 100.0 x 172.0	SN: 1005	-

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group,	Frequency [MHz], Channel Number	Conversion Factor
5G -	10.0 mm	Validation band	CW	10000.0, 10000	1.0

Hardware Setup

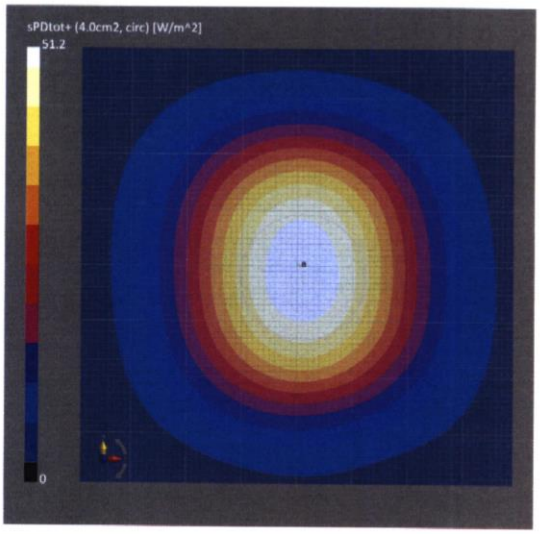
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave Phantom - 1002	Air	EUmmWV3 - SN9374_F1-55GHz, 2021-12-21	DAE4ip Sn1602, 2021-06-25

Scan Setup

	5G Scan
Grid Extents [mm]	120.0 x 120.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	10.0
MAIA	MAIA not used

Measurement Results

	5G Scan
Date	2022-01-24, 07:50
Avg. Area [cm²]	4.00
psPDn+ [W/m²]	51.0
psPDtot+ [W/m²]	51.2
psPDmod+ [W/m²]	51.4
E_{max} [V/m]	147
Power Drift [dB]	0.01



DASY Report

Measurement Report for 5G Verification Source 10 GHz, UID 0 -, Channel 10000 (10000.0MHz)

Device under Test Properties

Name, Manufacturer	Dimensions [mm]	IMEI	DUT Type
5G Verification Source 10 GHz	100.0 x 100.0 x 172.0	SN: 1005	-

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group,	Frequency [MHz], Channel Number	Conversion Factor
5G -	10.0 mm	Validation band	CW	10000.0, 10000	1.0

Hardware Setup

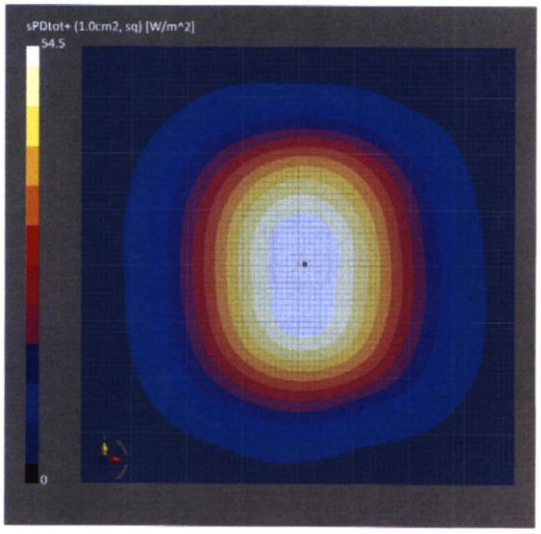
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave Phantom - 1002	Air	EUmmWV3 - SN9374_F1-55GHz, 2021-12-21	DAE4ip Sn1602, 2021-06-25

Scan Setup

	5G Scan
Grid Extents [mm]	120.0 x 120.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	10.0
MAIA	MAIA not used

Measurement Results

	5G Scan
Date	2022-01-24, 07:50
Avg. Area [cm²]	1.00
psPDn+ [W/m²]	54.3
psPDtot+ [W/m²]	54.5
psPDmod+ [W/m²]	54.6
E_{max} [V/m]	147
Power Drift [dB]	0.01



DASY Report

Measurement Report for 5G Verification Source 10 GHz, UID 0 -, Channel 10000 (10000.0MHz)

Device under Test Properties

Name, Manufacturer	Dimensions [mm]	IMEI	DUT Type
5G Verification Source 10 GHz	100.0 x 100.0 x 172.0	SN: 1005	-

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group,	Frequency [MHz], Channel Number	Conversion Factor
5G -	10.0 mm	Validation band	CW	10000.0, 10000	1.0

Hardware Setup

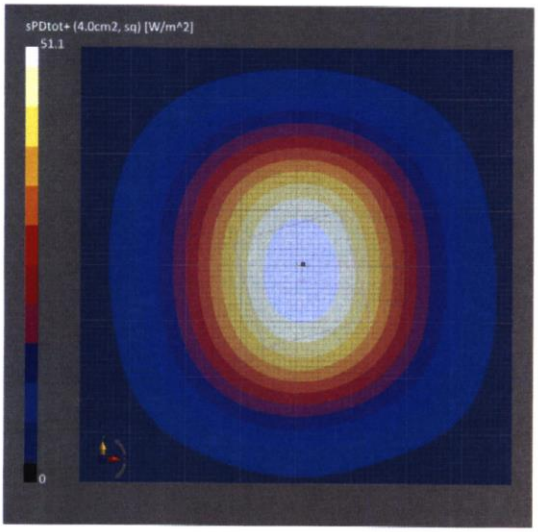
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave Phantom - 1002	Air	EUmmWV3 - SN9374_F1-55GHz, 2021-12-21	DAE4ip Sn1602, 2021-06-25

Scan Setup

	5G Scan
Grid Extents [mm]	120.0 x 120.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	10.0
MAIA	MAIA not used

Measurement Results

	5G Scan
Date	2022-01-24, 07:50
Avg. Area [cm²]	4.00
psPDn+ [W/m²]	50.9
psPDtot+ [W/m²]	51.1
psPDmod+ [W/m²]	51.2
E_{max} [V/m]	147
Power Drift [dB]	0.01



ANNEX I Sensor Triggering Data Summary

ANT4:

SAR Sensor	Rear	20(mm)
	Right	11(mm)

ANT9:

SAR Sensor	Front	18(mm)
	Rear	20(mm)
	Left	26(mm)

Front, Rear, Top, Bottom, Left and Right of the DUT was placed directly below the flat phantom. The DUT was moved toward the phantom in accordance with the steps outlined in KDB 616217 to determine the trigger distance for enabling power reduction. The DUT was moved away from the phantom to determine the trigger distance for resuming full power.

ANT4

Rear

Moving device toward the phantom:

The power state											
Distance [mm]	**25**	**24**	**23**	**22**	**21**	**20**	**19**	**18**	**17**	**16**	**15**
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

Right

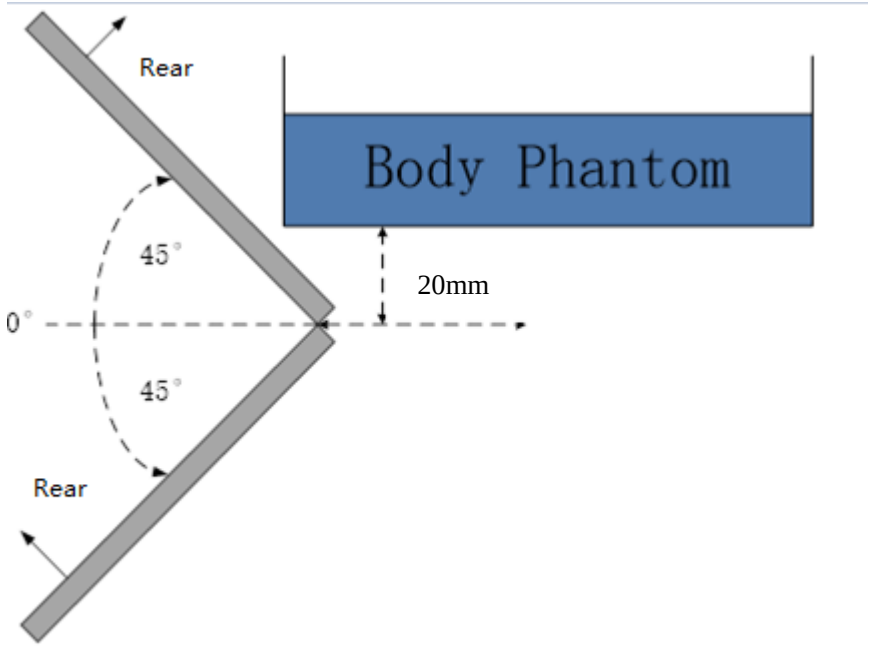
Moving device toward the phantom:

The power state											
Distance [mm]	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

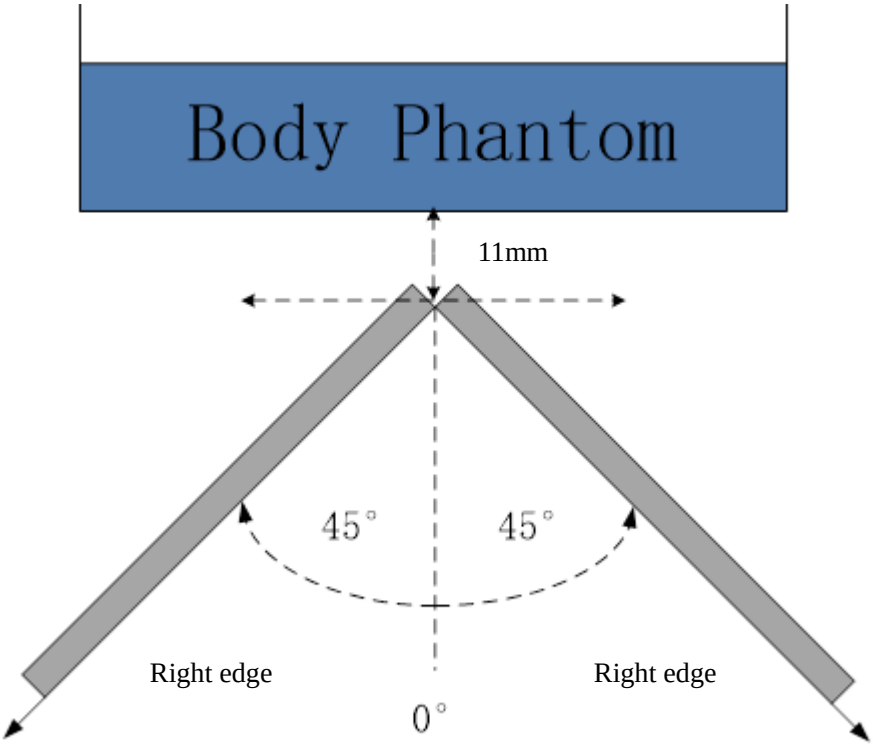
Moving device away from the phantom:

The power state											
Distance [mm]	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

The influence of table tilt angles to proximity sensor triggering is determined by positioning each edge that contains a transmitting antenna, perpendicular to the flat phantom, at the smallest sensor triggering test distance by rotating the device around the edge next to the phantom in ≤ 10° increments until the tablet is ±45° or more from the vertical position at 0°.



The Rear evaluation for ANT4



The Right edge evaluation for ANT4

ANT5

Front

Moving device toward the phantom:

The power state											
Distance [mm]	**23**	**22**	**21**	**20**	**19**	**18**	**17**	**16**	**15**	**14**	**13**
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

Rear

Moving device toward the phantom:

The power state											
Distance [mm]	**25**	**24**	**23**	**22**	**21**	**20**	**19**	**18**	**17**	**16**	**15**
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

Left

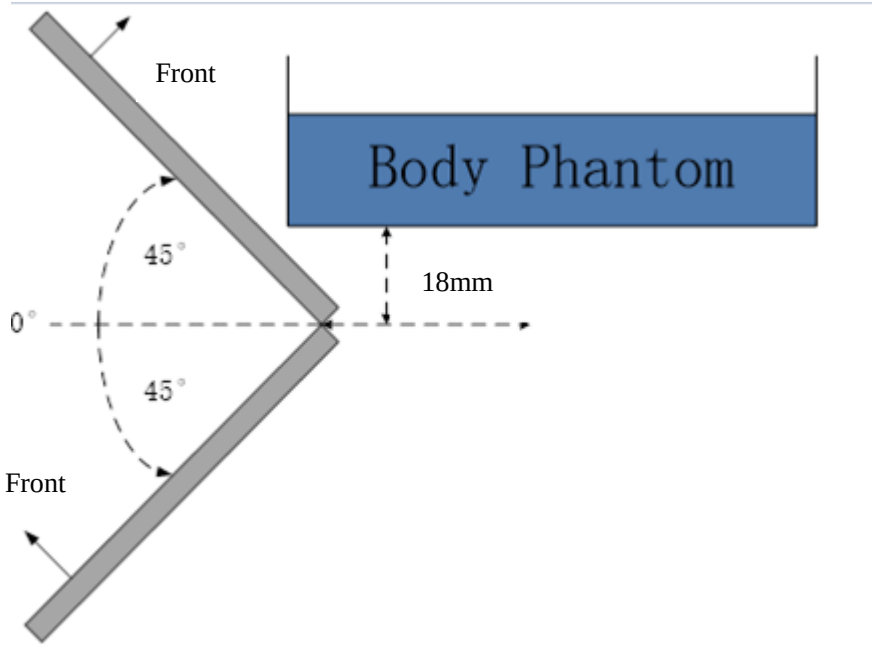
Moving device toward the phantom:

The power state											
Distance [mm]	**31**	**30**	**29**	**28**	**27**	**26**	**25**	**24**	**23**	**22**	**21**
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

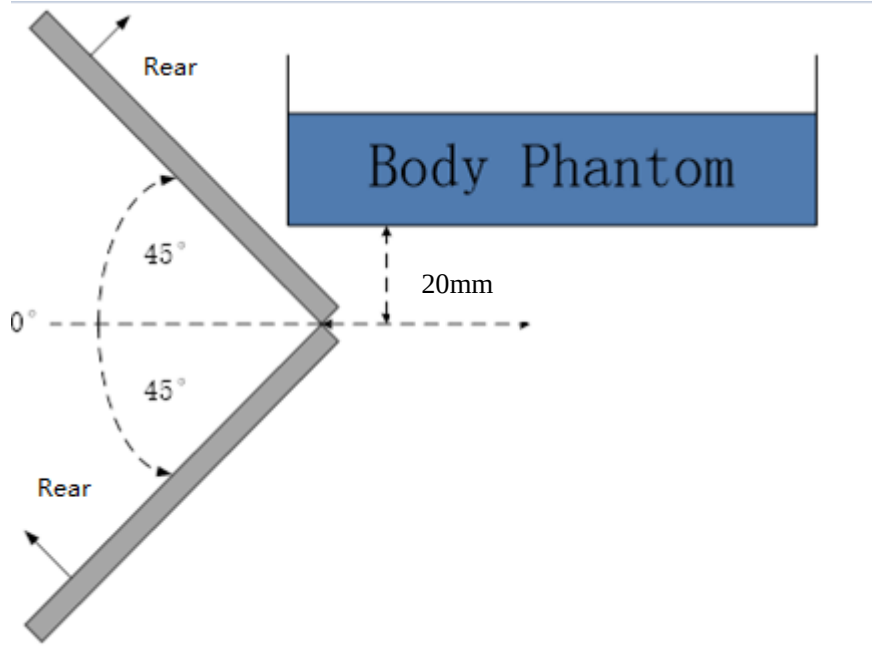
Moving device away from the phantom:

The power state											
Distance [mm]	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

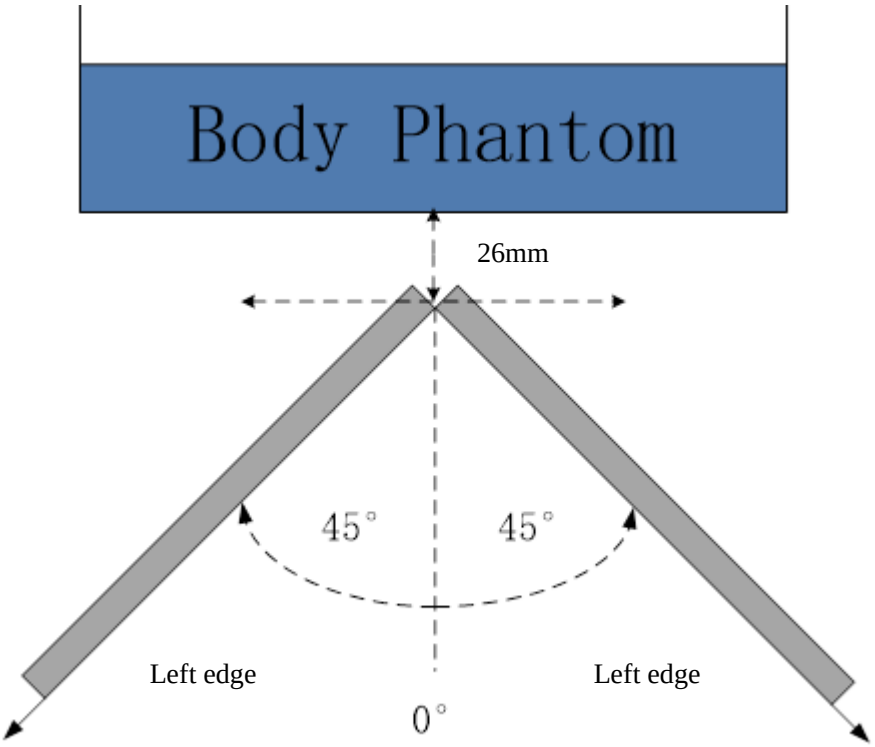
The influence of table tilt angles to proximity sensor triggering is determined by positioning each edge that contains a transmitting antenna, perpendicular to the flat phantom, at the smallest sensor triggering test distance by rotating the device around the edge next to the phantom in ≤ 10° increments until the tablet is ±45° or more from the vertical position at 0°.



The Front evaluation for ANT5



The Rear evaluation for ANT5



The Left edge evaluation for ANT5

ANNEX J SPOT CHECK

J.1 Dielectric Performance and System Validation

Table J.1-1: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2022-8-21	Head	2450 MHz	40.88	4.29	1.889	4.94
2022-8-21	Head	5600 MHz	35.71	0.51	5.115	0.89
2022-8-11	Head	6500 MHz	32.9	-4.64	6.18	1.81

Table J.1-2: System Validation of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value(W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2022-8-21	2450 MHz	24.9	52.7	24.4	52.8	-2.01%	0.19%
2022-8-21	5600 MHz	23.9	84.4	23.3	82.3	-2.51%	-2.49%
2022-8-11	6500 MHz	53.3	289.0	54.7	290.0	2.63%	0.35%

Table J.1-3: PD System Performance Check Results

Date	Frequency (GHz)	5G Verification Source	Probe S/N	Distance (mm)	Measured 4cm^2 (W/m^2)	Targeted 4cm^2 (W/m^2)	Deviation (db)
2022/8/13	10G	10GHz_1005	9492	10	49.1	51.2	0.041

J.2 SAR test result for spot check

ANT	RF Exposure Conditions	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
5	Body	WLAN2.4G	1	2412	11b	Left	5mm	FIG J.1	3.82	5.50	0.234	0.34	0.092	**0.14**	0.01
4	Body	WLAN5G	120	5600	11a	Right	10mm	FIG J.2	15.90	16.00	0.274	0.29	0.090	**0.09**	-0.12
5	Body	BT	39	2441	11b	Left	5mm	FIG J.3	6.37	8.00	0.063	0.09	0.025	**0.04**	0.12

ANT	RF Exposure Conditions	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift	APD (W/m^2)
4	Body	WLAN6G	33	6115	11a	Front	5mm	/	3.47	3.50	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	33	6115	11a	Rear	5mm	/	3.47	3.50	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	33	6115	11a	Right	5mm	/	3.47	3.50	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	33	6115	11a	Top	5mm	/	3.47	3.50	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	69	6295	11a	Front	5mm	/	3.42	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	69	6295	11a	Rear	5mm	/	3.42	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	69	6295	11a	Right	5mm	/	3.42	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	69	6295	11a	Top	5mm	/	3.42	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	101	6455	11a	Front	5mm	/	4.36	5.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	101	6455	11a	Rear	5mm	/	4.36	5.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	101	6455	11a	Right	5mm	/	4.36	5.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	101	6455	11a	Top	5mm	/	4.36	5.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	169	6795	11a	Front	5mm	/	3.35	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	169	6795	11a	Rear	5mm	/	3.35	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	169	6795	11a	Right	5mm	/	3.35	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	169	6795	11a	Top	5mm	/	3.35	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	205	6975	11a	Front	5mm	/	3.14	3.50	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	205	6975	11a	Rear	5mm	/	3.14	3.50	<0.01	**<0.01**	<0.01	**<0.01**	/	/
4	Body	WLAN6G	205	6975	11a	Right	5mm	/	3.14	3.50	<0.01	**<0.01**	<0.01	**<0.01**		
4	Body	WLAN6G	205	6975	11a	Top	5mm	/	3.14	3.50	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	53	6215	11a	Front	5mm	/	3.08	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	53	6215	11a	Rear	5mm	/	3.08	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	53	6215	11a	Left	5mm	/	3.08	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	53	6215	11a	Top	5mm	/	3.08	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	61	6255	11a	Front	5mm	/	3.14	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	61	6255	11a	Rear	5mm	/	3.14	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	61	6255	11a	Left	5mm	/	3.14	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	61	6255	11a	Top	5mm	/	3.14	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	101	6455	11a	Front	5mm	/	4.30	5.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	101	6455	11a	Rear	5mm	/	4.30	5.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	101	6455	11a	Left	5mm	/	4.30	5.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	101	6455	11a	Top	5mm	/	4.30	5.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	177	6835	11a	Front	5mm	/	3.26	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	177	6835	11a	Rear	5mm	/	3.26	4.00	<0.01	**<0.01**	<0.01	**<0.01**		
5	Body	WLAN6G	177	6835	11a	Left	5mm	/	3.26	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	177	6835	11a	Top	5mm	/	3.26	4.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	229	7095	11a	Front	5mm	/	2.50	3.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	229	7095	11a	Rear	5mm	/	2.50	3.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	229	7095	11a	Left	5mm	/	2.50	3.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/
5	Body	WLAN6G	229	7095	11a	Top	5mm	/	2.50	3.00	<0.01	**<0.01**	<0.01	**<0.01**	/	/

J.3 PD results

ANT	RF Exposure Conditions	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
4	Body	WLAN6G	33	6115	11a	Right	2mm		3.47	3.50	0.187	**0.21**	0.221	**0.25**	0.15
4	Body	WLAN6G	69	6295	11a	Right	2mm	\	3.42	4.00	0.232	**0.30**	0.325	**0.42**	0.11
4	Body	WLAN6G	101	6455	11a	Right	2mm	\	4.36	5.00	0.532	**0.69**	0.580	**0.75**	-0.08
4	Body	WLAN6G	169	6795	11a	Right	2mm	FIG A.16	3.35	4.00	0.655	**0.85**	0.836	**1.09**	0.14
4	Body	WLAN6G	205	6975	11a	Right	2mm	\	3.14	3.50	0.381	**0.46**	0.439	**0.53**	-0.06
5	Body	WLAN6G	53	6215	11a	Rear	2mm	\	3.08	4.00	0.698	**0.97**	0.781	**1.08**	0.19
5	Body	WLAN6G	61	6255	11a	Rear	2mm	\	3.14	4.00	0.622	**0.85**	0.675	**0.92**	0.16
5	Body	WLAN6G	101	6455	11a	Rear	2mm	FIG A.17	4.30	5.00	1.300	**1.71**	1.380	**1.81**	0.04
5	Body	WLAN6G	177	6835	11a	Rear	2mm	\	3.26	4.00	0.593	**0.79**	0.660	**0.88**	0.15
5	Body	WLAN6G	229	7095	11a	Rear	2mm	\	2.50	3.00	1.050	**1.32**	1.140	**1.43**	0.01

J.4 Reported SAR Comparison

Table E.3-1: Highest Reported SAR (10g)

Mode	Antenna	Highest Reported SAR (1g) original	Highest Reported SAR (1g) spot check
WLAN 2.4 GHz	ANT4	0.14	/
WLAN 5 GHz		0.35	0.29
WLAN 6 GHz		<0.01	<0.01
WLAN 2.4 GHz	ANT5	0.34	0.34
WLAN 5 GHz		0.24	/
WLAN 6 GHz		<0.01	<0.01
BT	ANT5	0.05	0.09

Note: All the spot check results are less than the original results.

J.5 MAIN TEST INSTRUMENTS

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	January 4, 2022	One year
02	Power sensor	NRP110T	101139	January 13, 2022	One year
03	Power sensor	NRP110T	101159		
04	Signal Generator	E4438C	MY49071430	January 13, 2022	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	DAE	SPEAG DAE4	777	January 07, 2022	One year
07	E-field Probe	SPEAG EX3DV4	7600	December 29，2021	One year
08	Dipole Validation Kit	SPEAG D2450V2	853	July 206,2022	One year
09	Dipole Validation Kit	SPEAG D5GHzV2	1262	January 27, 2022	One year
10	Dipole Validation Kit	SPEAG D6.5GHzV2	10.59	December 01,2021	One year
11	5G Verification Source	10 GHz	1005	January 24,2022	One year
12	EummWV Probe	EummWV4	9442	May 18,2022	One year
13	E-field Probe	SPEAG EX3DV4	7464	January 26, 2022	One year
14	DAE	SPEAG DAE4	1331	September 01, 2021	One year

J.6 Graph Results

WIFI2.4G Body ANT5 SAR

Date: 8/21/2022

Electronics: DAE4 Sn777

Medium: H650-7000M

Medium parameters used (interpolated): f = 2412 MHz; σ = 1.853 S/m; εr = 40.903; ρ = 1000 kg/m3

Ambient Temperature:23.3oC Liquid Temperature: 22.5oC

Communication System: UID 0, WIFI 2450 (0) Frequency: 2412 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7600 ConvF(7.82, 7.82, 7.82)

Area Scan (91x131x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.359 W/kg

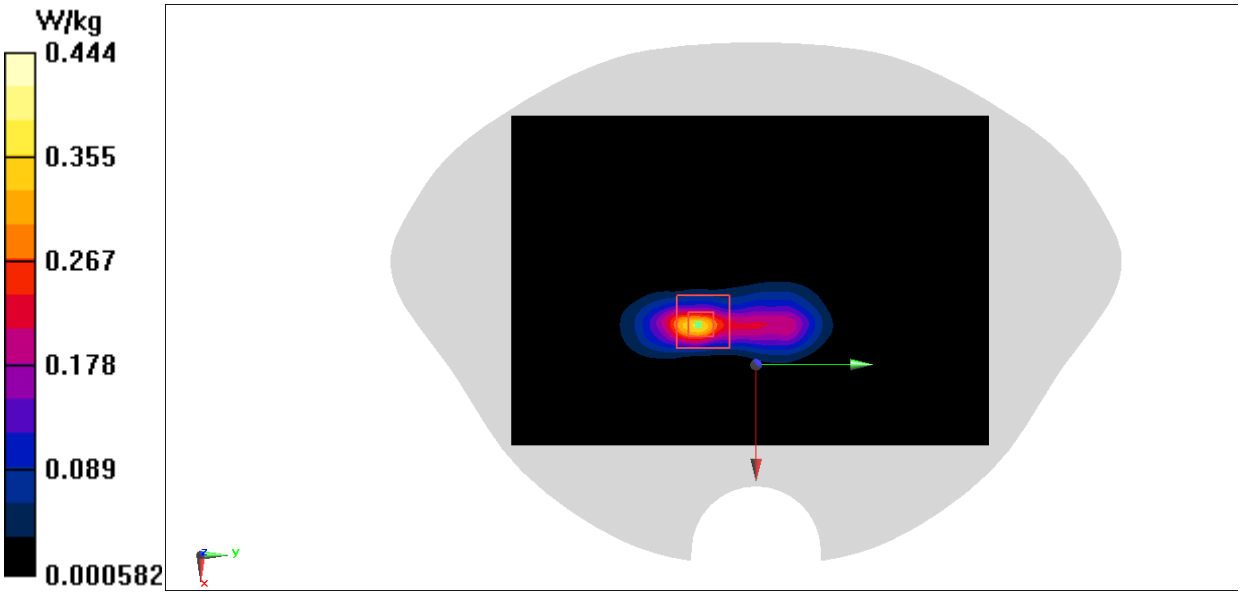
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.24 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.556 W/kg

SAR(1 g) = 0.234 W/kg; SAR(10 g) = 0.092 W/kg

Maximum value of SAR (measured) = 0.444 W/kg



WIFI5G Body ANT4 SAR

Date: 8/21/2022

Electronics: DAE4 Sn777

Medium: H650-7000M

Medium parameters used: f = 5600 MHz; σ = 5.115 S/m; εr = 35.714; ρ = 1000 kg/m3

Ambient Temperature:23.3oC Liquid Temperature: 22.5oC

Communication System: UID 0, WLAN 11a (0) Frequency: 5600 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7600 ConvF(5.13, 5.13, 5.13)

Area Scan (91x131x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.808 W/kg

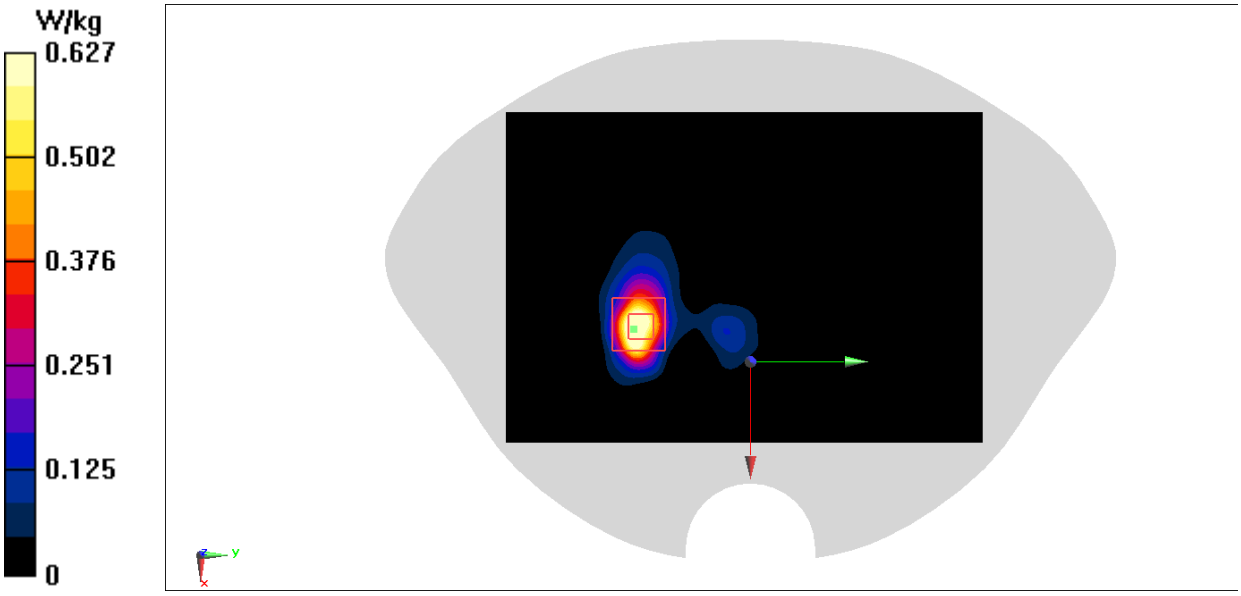
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 3.293 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.274 W/kg; SAR(10 g) = 0.090 W/kg

Maximum value of SAR (measured) = 0.627 W/kg



WIFI6G Body ANT4 PD

Measurement Report for Device, EDGE RIGHT, Custom Band, IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle), Channel 6795000 (6795.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	160.0 x 90.0 x 15.0		Phone

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	EDGE RIGHT, 2.00	Custom Band	CW, 10317-AAD	6795.0, 6795000	1.0

Hardware Setup

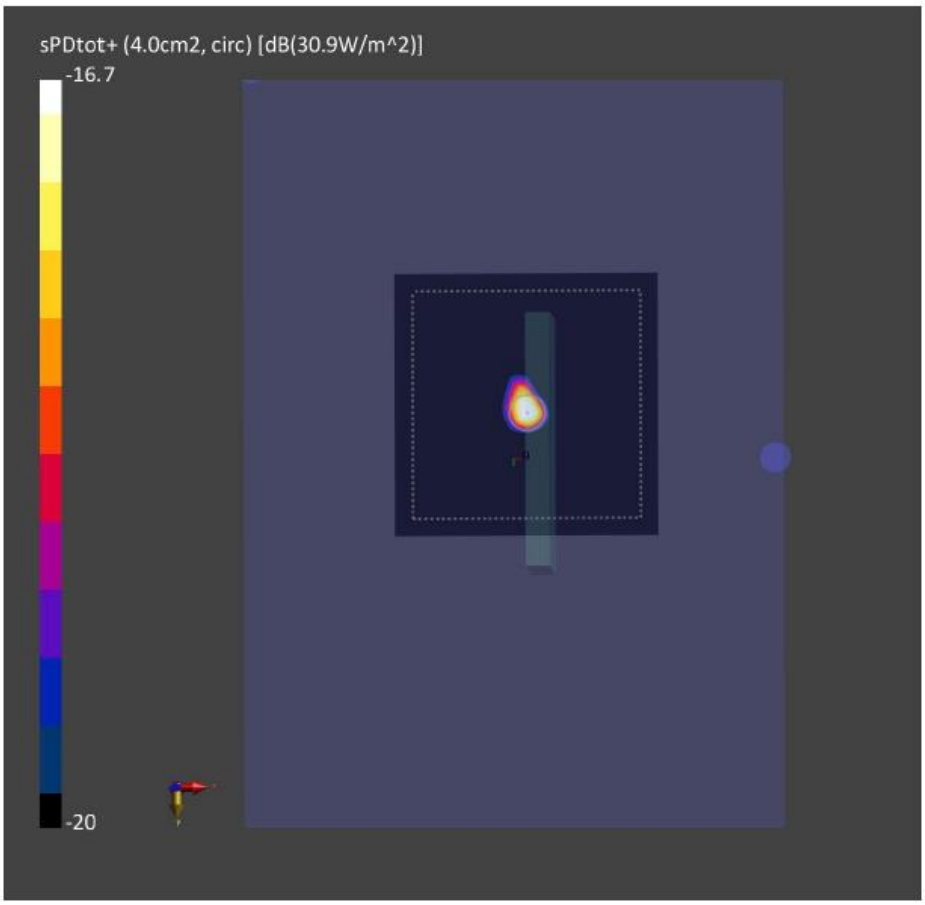
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave - xxxx	Air -	EUmmWV4 - SN9492_F1-55GHz, 2022-05-18	DAE4 Sn549, 2022-01-07

Scans Setup

Scan Type	5G Scan
Grid Extents [mm]	25.0 x 25.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	2.0
MAIA	N/A

Measurement Results

Scan Type	5G Scan
Date	2022-08-13, 14:07
Avg. Area [cm²]	4.00
psPDn+ [W/m2]	0.537
psPDtot+ [W/m2]	0.655
psPDmod+ [W/m2]	0.836
E_{max} [V/m]	30.9
Power Drift [dB]	0.14



WIFI6G Body ANT5 PD

Measurement Report for Device, BACK, Custom Band, IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle), Channel 6455000 (6455.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	158.2 x 77.9 x 8.0		Phone

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	BACK, 2.00	Custom Band	CW, 10317-AAD	6455.0, 6455000	1.0

Hardware Setup

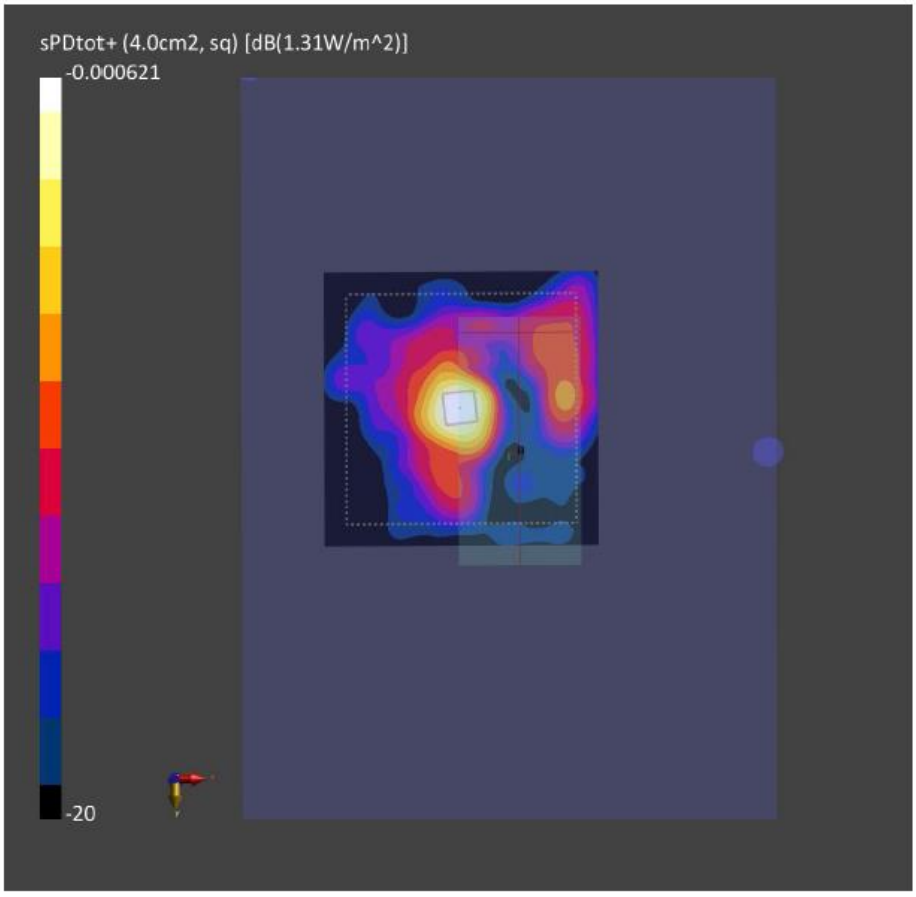
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave - xxxx	Air -	EUmmWV4 - SN9492_F1-55GHz, 2022-05-18	DAE4 Sn549, 2022-01-07

Scans Setup

Scan Type	5G Scan
Grid Extents [mm]	25.0 x 25.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	2.0
MAIA	N/A

Measurement Results

Scan Type	5G Scan
Date	2022-08-13, 12:29
Avg. Area [cm²]	4.00
psPDn+ [W/m²]	1.17
psPDtot+ [W/m²]	1.30
psPDmod+ [W/m²]	1.38
E_{max} [V/m]	31.9
Power Drift [dB]	0.04



BT

Date: 8/21/2022

Electronics: DAE4 Sn777

Medium: H650-7000M

Medium parameters used: f = 2441 MHz; σ = 1.882 S/m; εr = 40.884; ρ = 1000 kg/m3

Ambient Temperature:23.3oC Liquid Temperature: 22.5oC

Communication System: Bluetooth 2441 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7600 ConvF(7.82, 7.82, 7.82)

Area Scan (91x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.125 W/kg

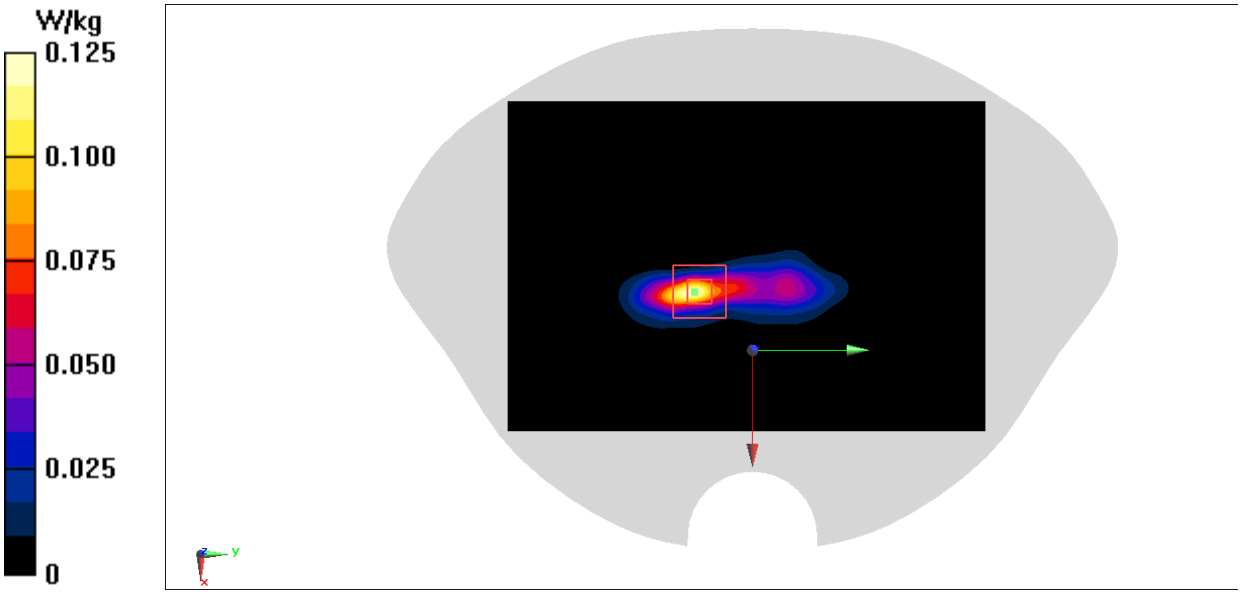
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.760 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.149 W/kg

SAR(1 g) = 0.063 W/kg; SAR(10 g) = 0.025 W/kg

Maximum value of SAR (measured) = 0.116 W/kg



J.7 System Verification Results

2450 MHz

Date: 8/21/2022

Electronics: DAE4 Sn777

Medium: H650-7000M

Medium parameters used: f = 2450 MHz; σ = 1.889 S/m; εr = 40.88; ρ = 1000 kg/m3

Ambient Temperature:23.3oC Liquid Temperature: 22.5oC

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

Probe: EX3DV4 - SN7600 ConvF(7.82, 7.82, 7.82)

SArea Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 20.7 W/kg

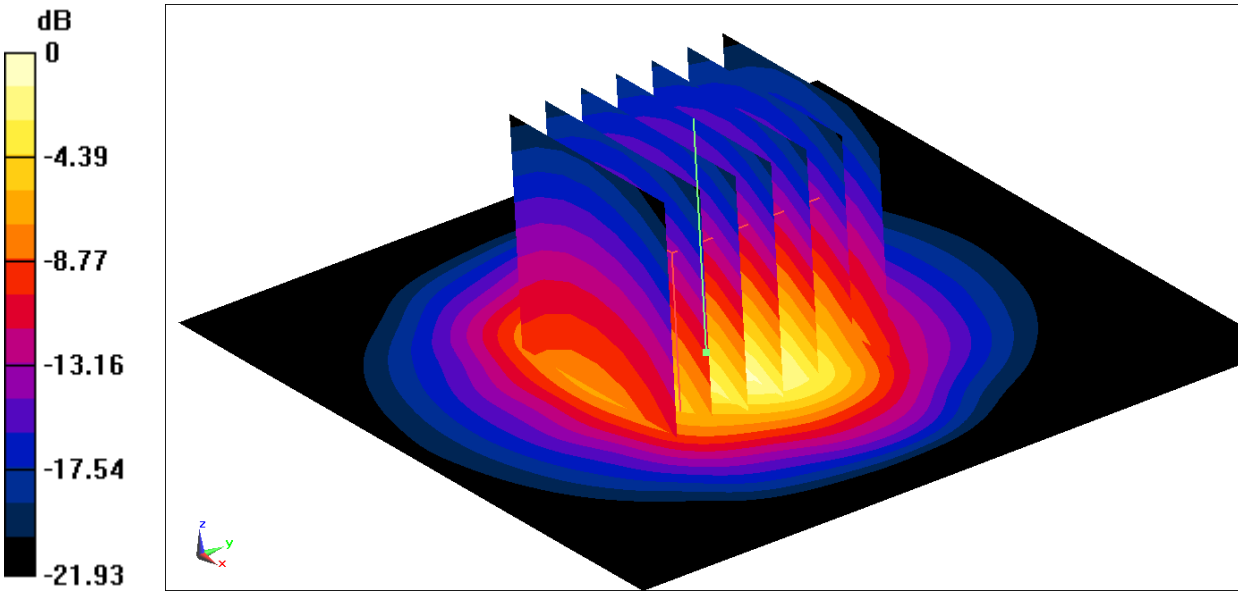
Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.76 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 27.0 W/kg

SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.1 W/kg

Maximum value of SAR (measured) = 21.9 W/kg



0 dB = 21.9 W/kg = 13.40 dBW/kg

5600 MHz

Date: 8/21/2022

Electronics: DAE4 Sn777

Medium: H650-7000M

Medium parameters used: f = 5600 MHz; σ = 5.115 S/m; εr = 35.71; ρ = 1000 kg/m3

Ambient Temperature:23.3oC Liquid Temperature: 22.5oC

Communication System: UID 0, CW (0) Frequency: 5600 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7600 ConvF(5.13, 5.13, 5.13)

Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 20.0 W/kg

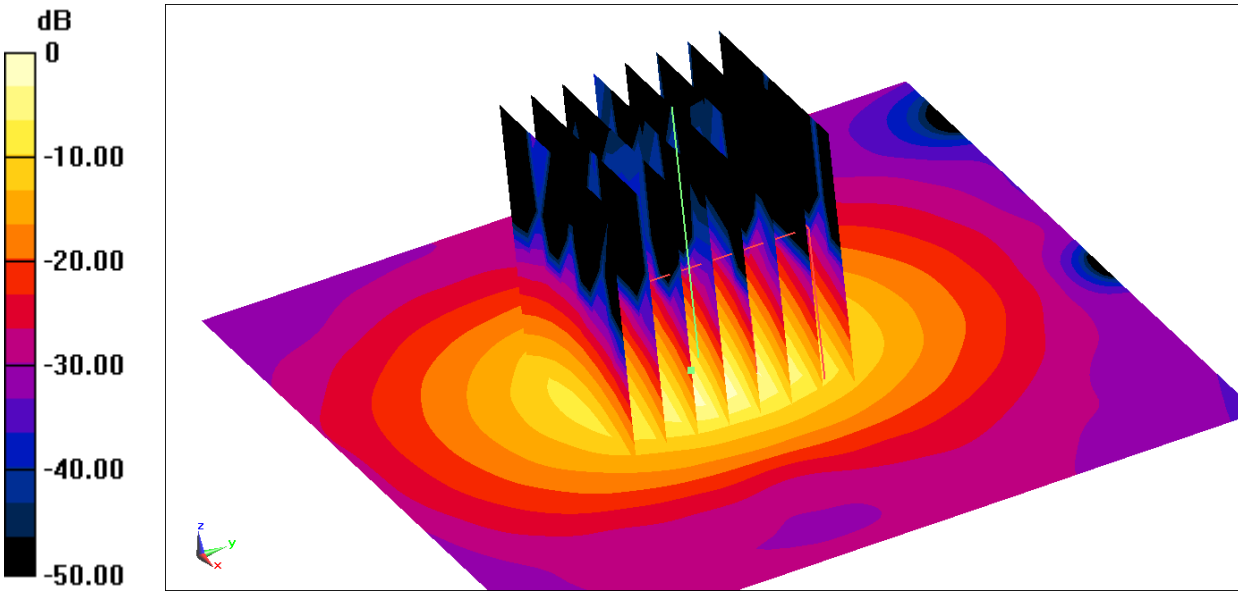
Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 64.89 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 35.4 W/kg

SAR(1 g) = 8.23 W/kg; SAR(10 g) = 2.33 W/kg

Maximum value of SAR (measured) = 20.0 W/kg



0 dB = 20.0 W/kg = 13.01 dBW/kg

6500 MHz

Measurement Report for Device, EDGE TOP, Validation band, CW, Channel 6500 (6500.0 MHz)

Device Under Test Properties

Name, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	20.0 x 20.0 x 8.0		Phone

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, -	EDGE TOP, 5.00	Validation band	CW, 0--	6500.0, 6500	5.55	6.18	32.9

Hardware Setup

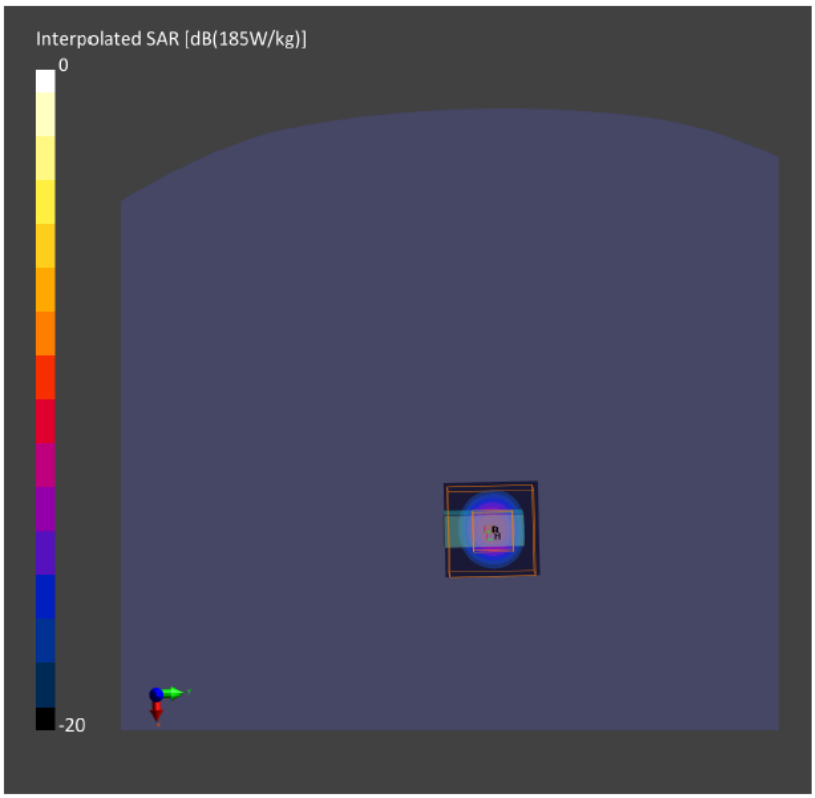
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V5.0 (30deg probe tilt) - xxxx	H650-7000M(All1)	EX3DV4 - SN7464, 2022-01-26	DAE4 Sn1331, 2021-09-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	51.0 x 51.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	No	Yes
Grading Ratio	n/a	1.4
MAIA	N/A	N/A
Surface Detection	Mother Scan	All points
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-08-11, 08:11	2022-08-11, 08:25
psSAR1g [W/Kg]	3.16	29.0
psSAR10g [W/Kg]	0.714	5.47
Power Drift [dB]	0.01	-0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction



10 GHz

Measurement Report for Device, FRONT, Validation band, CW, Channel 10000 (10000.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	100.0 x 100.0 x 100.0		Phone

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	FRONT, 2.00	Validation band	CW, 0--	10000.0, 10000	1.0

Hardware Setup

Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave - xxxx	Air -	EUmmWV4 - SN9492_F1-55GHz, 2022-05-18	DAE4 Sn549, 2022-01-07

Scans Setup

Scan Type	5G Scan
Grid Extents [mm]	60.0 x 60.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	2.0
MAIA	N/A

Measurement Results

Scan Type	5G Scan
Date	2022-08-13, 10:49
Avg. Area [cm²]	4.00
psPDn+ [W/m²]	48.9
psPDtot+ [W/m²]	49.1
psPDmod+ [W/m2]	49.3
E_{max} [V/m]	148
Power Drift [dB]	0.00