

Test report No:
NIE: 75303RAN.001

Test report

IEEE Std 1528™-2013

(*) Identification of item tested	mPERS, Umbrella
(*) Trademark	Essence SmartCare LTD
(*) Model and /or type reference tested	ES902MPRS
(*) Other identification of the product	FCC ID: 2ARFP-ES902MPRS IC: 24417-ES902MPRS
(*) Features	LTE, BLE, WiFi, bands B2, B4, B12, B13
Manufacturer	Essence SmartCare LTD 12 Abba Eban Avenue Herzliya, Israel 4672530
Test method requested, standard	1. IEEE Std 1528™-2013. 2. FCC 47 CFR Part 2.1093.
Summary	Considering the results of the performed test, the item under test is IN COMPLIANCE with FCC 47CFR Part 2.1093 exposure limits. The maximum 1g volume averaged SAR found during this test have been 1.351 W/kg, for LTE CAT M Band 2 mode.
Approved by (name / position & signature)	Miguel Lacave Antennas Lab Manager
Date of issue	2023-10-02
Report template No	FAN44_00 (*) "Data provided by the client"



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Competences and guarantees

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4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the following documents:

1. DEKRA Testing and Certification S.A.U. internal document PODT000.
2. FCC OET KDB 865664 D01 - SAR Measurement Requirements for 100 MHz to 6 GHz v01r04 (August 2015).

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested", "Other identification of the product", "Features" and "Test sample description").
2. Maximum output power, maximum antenna gains and normal use testing distance information.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: the client

Samples are composed of the following elements:

Sample	Control N°	Description	Model	Serial N°	Date of reception
S/01	75303B_26.1	Health Monitoring Device	ES902MPRS	--	2023-06-22
S/01	75303B_38.1	Health Monitoring Device	ES902MPRS	--	2023-07-28
S/02	75303B_27.1	Health Monitoring Device	ES902MPRS	--	2023-06-22
S/02	75303B_29.1	Health Monitoring Device	ES902MPRS	--	2023-06-22

1. Sample S/01 has undergone the test(s) specified in subclause "Test method requested": Conducted average output power.
2. Sample S/02 has undergone the test(s) specified in subclause "Test method requested": SAR evaluation for LTE and Wi-Fi modes.

Test sample description

Description of product	mPERS, Umbrella		
Software version.....			
Hardware version			
Mounting position	☐	Table top equipment	
	☐	Wall/Ceiling mounted equipment	
	☐	Equipment used next to the ear	
	☐	Hand-held equipment	
	☒	Other: Body-worn device	
Accessories (not part of the test item).....	Description	Type	Manufacturer
	Charging adapter	---	
	USB cable	---	

Identification of the client

Essence SmartCare LTD

12 Abba Eban Avenue Herzliya, Israel 4672530

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2023-07-06
Date (finish)	2023-08-31

Document history

Report number	Date	Description
75303RAN.001	2023-10-02	First release

Environmental conditions

Date	Max. Temp. °C	Min. Temp. °C	Max. Hum. %	Min. Hum. %	Limit
From 2023-06-26 to 2023-08-31	24.99	21.33	67.85	40.96	18-25 °C, 30-70%

Remarks and comments

1. Zoom scan is not required according to FCC OET KDB 447498 D01 General RF Exposure Guidance 06, paragraph "4.4.2. Area scan based 1-g estimation".
2. Testing other LTE channels is not required due to the SAR test procedures mentioned in FCC OET KDB 941225 D05 – SAR for LTE Devices v02r05.
3. Testing 2.4 GHz 802.11g and 802.11n is not required due to the testing reductions mentioned in FCC OET KDB 248227 D01 802.11 Wi-Fi SAR v02r02, paragraph "5.2.2 2.4GHz 802.11g/n OFDM SAR Test Exclusion Requirements".
4. Only the plots of the highest SAR for each test position and mode/band are included in appendix C.
5. The tests have been performed by the technical personnel: Francisco J. Sánchez and Ismael Gamarro.

6. The instrumentation utilized to perform the tests covered in this test report is listed in the following table:

DEKRA Control Number	Equipment	S/N
2402	20 dB Attenuator, WEINSCHTEL model 75A-20-11	902
4859	DAK software, SPEAG model DAK V1.10.325.10	-
3430	Data acquisition device, SPEAG model DAE4	669
8876	Data acquisition device, SPEAG model DAE4	1690
9448	Dielectric probe kit, SPEAG model DAK-3.5	1329
4170	Digital thermometer, LKM Electronics model DTM3000-SpezialL	2989
3427	Dipole validation kit 1800 MHz, SPEAG model D1800V2	2D099
3429	Dipole validation kit 2450 MHz, SPEAG model D2450V2	756
3919	Dipole validation kit 750 MHz, SPEAG model D750V3	1036
3426	Dipole validation kit 900 MHz, SPEAG model D900V2	1D007
6125	Dosimetric E-field Probe, SPEAG model EX3DV4	7461
9513	Dosimetric E-field Probe, SPEAG model EX3DV4	7766
4393	Dual Power meter, Agilent model E4419B	MY45103349
1084	Dual directional coupler, HP model 778D	15821
3630	Dual directional coupler, NARDA model 4227-16	02953
8902	Electro-optical converter, SPEAG model EOCip-60	1154
9449	Head Tissue Equivalent Liquid for 0.6-10 GHz, SPEAG model HBBL600-10000V6	-
4173	Head Tissue Equivalent Liquid for 1900-3800 MHz band, SPEAG model HBBL1900-3800V3	-
8895	Measurement server, SPEAG model DASY6 SE UMS 028 CA	1602
3424	Mounting Device for Hand-held devices, SPEAG model SD000 HD1 HA	-
9168	Oval flat phantom, SPEAG model ELI4 V8.0	2158
2216	Power Divider, PICOSECOND PULSE LABS model 5333-104	236310 1504
4164	Power Sensor 50 MHz-18GHz, R&S model NRP-Z81	100527
3485	Power amplifier, MITEQ model AMF-4D-00400600-50-30P	1456425
4392	Power sensor, Agilent model E9300A	SG41491189
4391	Power sensor, Agilent model E9300A	SG41491203
8894	Robot controller, Stäubli model CS8C	F15/5Z0NB1/C/01
8867	Robot, Stäubli model TX60L	F15/5Z0NB1/A
8898	SAR measurement software, SPEAG model cDASY6	-
3346	Signal RF Generator, R&S model SMU200A	102234
3453	Temperature and humidity probe, Pico Technology model HUMIDIPROBE	UAL02/077
4482	Vector Network Analyzer, Agilent Technologies model N9923A FieldFox	US49470126
8849	Wideband Radio Communication Tester, R&S model CMW500	164058

7. References

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093 and the following FCC Published RF exposure KDB procedures:

- FCC OET KDB 447498 D01 General RF Exposure Guidance v06 (October 2015).
- FCC OET KDB 865664 D01 - SAR Measurement Requirements for 100 MHz to 6 GHz v01r04 (August 2015).
- FCC OET KDB 865664 D02 RF Exposure Reporting v01r02 (October 2015).
- FCC OET KDB 941225 D05 SAR for LTE Devices v02r05 (October 2015).
- FCC OET KDB 248227 D01 802.11 Wi-Fi SAR v02r02 (October 2015).

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

FCC 47CFR Part 2.1093	VERDICT			
	N/A	P	F	N/M
LTE CAT M Band 2		P		
LTE CAT M Band 4		P		
LTE CAT M Band 5		P		
LTE CAT M Band 12		P		
LTE CAT M Band 13		P		
802.11b/g/n		P		
Bluetooth Low Energy		P		

Appendix A: Test configuration

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1. GENERAL INTRODUCTION

1.1. Application Standard

The Federal Communications Commission (FCC) sets the limits for General Population/Uncontrolled exposure to radio frequency electromagnetic fields for transmitting devices designed to be used within 20 centimetres of the body of the user under FCC 47 CFR Part 2.1093 - "Radiofrequency radiation exposure evaluation: portable devices", paragraph (d)(2).

1.2. General requirements

The SAR measurement has been performed continuing the following considerations and environment conditions:

The ambient temperature shall be in the range of 18°C to 25°C and the variation shall not exceed $\pm 2^\circ\text{C}$ during the test.

The ambient humidity shall be in the range of and 30% - 70%.

The device battery shall be fully charged before each measurement.

1.3. Measurement system requirements

The measurement system used for SAR tests fulfills the procedural and technical requirements described at the reference standards used.

1.4. Phantom requirements

The phantom model for head measurements is a simplified representation of the human anatomy and comprised of material with electrical properties similar to the corresponding tissues in human body. The human model has the following proportions:

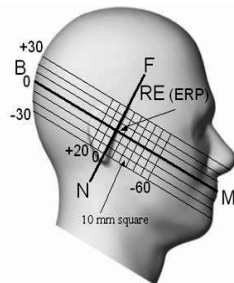


Figure 1: Proportions of Phantom

The shell model is a shaped container and it has the representation shown in the following figure:

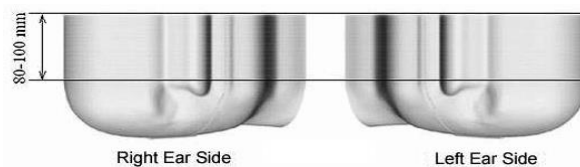


Figure 2: Proportions and shape of Phantom shell

The phantom model for body measurements is an elliptical open-top container with a flat bottom, with the following shape and dimensions:

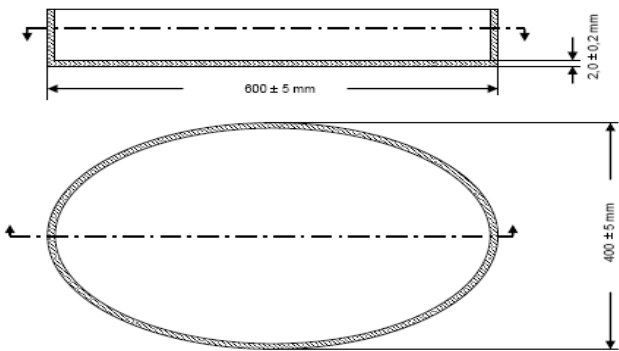


Figure 3: Proportions and shape of Phantom shell

1.5. Measurement Liquids requirements

The liquids used to simulate the human tissues, must fulfill the requirements of the dielectric properties required. These target dielectric properties are indicated into FCC OET KDB 865664 D01 Appendix A.

Frequency (MHz)	Head		Body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

Table 1: Liquid material requirements

To minimize the effect of reflections on peak spatial-average SAR values, from the upper surface of the tissue equivalent liquid, the depth of the liquid should be at least 15 cm.

Dielectric porperties values of the Tissue Simulant Liquids used for SAR measurements are included in Appendix B, Section 3, of this document.

2. MEASUREMENT SYSTEM

2.1. Measurement System

The DASY6 system for performing compliance tests consists of the following items:

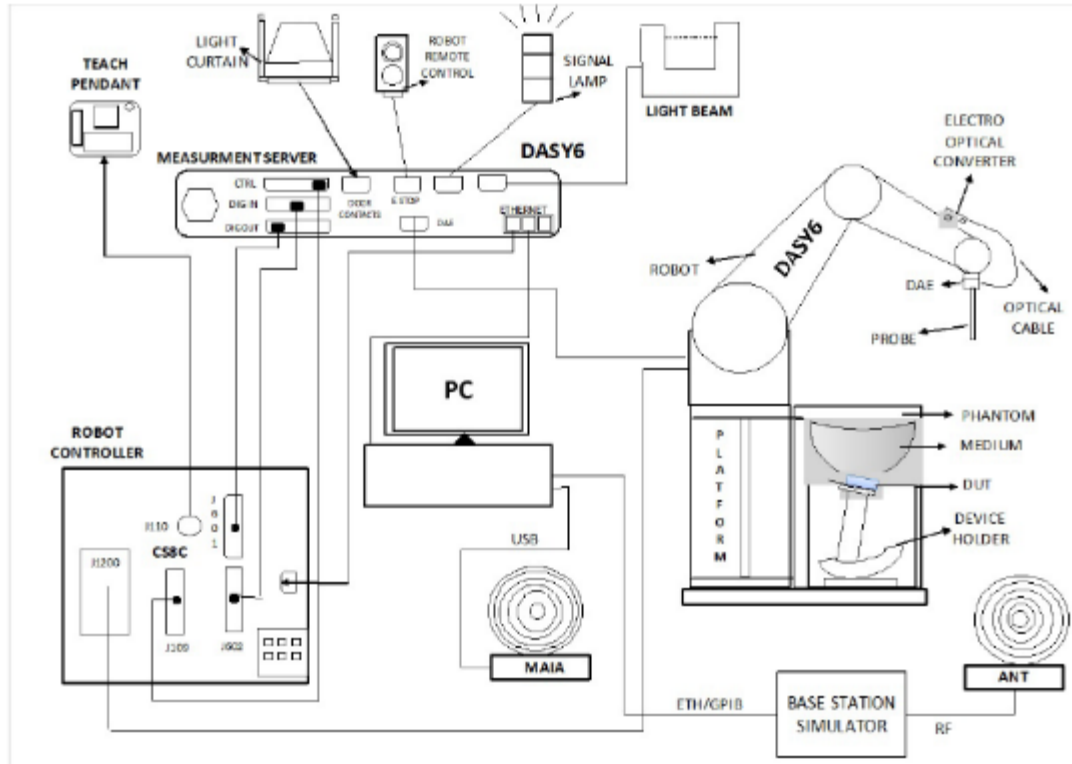


Figure 4: SAR Measurement system

- A standard high precision 6-axis robot (Stäubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running the DASY software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

	Model	EX3DV4
	Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).
	Frequency	10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz)
	Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
	Dynamic Range	10 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
	Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1.0 mm

	Model	DAE4
	Construction	Signal amplifier, multiplexer, A/D converter, and control logic. Serial optical link communication with DASY4/5 embedded system (fully remote controlled). Two-step probe touch detector for mechanical surface detection and emergency robot stop.
	Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)
	Input Offset Voltage	< 5 μ V (with auto zero)
	Input Resistance	200 MOhm
	Input Bias Current	< 50 fA

	Model	ELI
	Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.
	Material	Vinylester, glass fiber reinforced (VE-GF)
	Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
	Shell Thickness	2 ± 0.2 mm (bottom plate)
	Dimensions	Major axis: 600 mm, Minor axis: 400 mm
	Filling Volume	Approx. 30 liters
	Wooden Support	SPEAG standard phantom table

	Model	Mounting Device for Hand-Held Transmitters
	Construction	In combination with the Twin SAM V5.0/V5.0c or ELI Phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).
	Material	Polyoxymethylene (POM)

	Model	System Validations Kits 450 MHz – 6 GHz		
	Construction	Symmetrical dipole with I/4 balun. Enables measurement of feedpoint impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.		
	Frequency	450 MHz to 5800 MHz		
	Return Loss	20 dB at specified validation position		
	Dimensions (length and overall height in mm)	Product	Dipole length	Overall height
		D450V3	290.0	330.0
		D750V3	179.0	330.0
		D900V2	148.5	340.0
		D1800V2	72.5	300.0
		D2000V2	65.0	300.0
		D2300V2	56.3	290.0
		D2450V2	52.0	290.0
		D2600V2	49.2	290.0
		D3300V2	38.0	285.0
		D3500V2	37.0	285.0
		D3700V2	34.7	285.0
		D3900V2	32.0	280.0
		D4200V2	30.1	280.0
		D4600V2	27.0	280.0
		D4900V2	25.0	280.0
		D5GHzV2	20.6	300.0

2.2. Device Holder

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source in 5mm distance, a positioning uncertainty of $\pm 0.5\text{mm}$ would produce a SAR uncertainty of $\pm 20\%$. An accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions, in which the devices must be measured, are defined by the standards.

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centre for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon=3$ and loss tangent $\delta=0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

2.3. Test Positions of device relative to body

The device under test consists of a mobile personal emergency device based on LTE Cat-M cellular communications, with built-in fall detection, which could be used close to the body of the user.

All device faces and edges have been tested facing the flat phantom at 5 mm test.

2.4. Test to be performed

Test shall be performed for each test position previously described, using the channel producing the highest rated output power.

Additionally, the other applicable test frequency channels must be measured for the test configuration providing the highest SAR for each applicable transmitting band.

2.5. Description of interpolation/extrapolation scheme

The local SAR inside the Phantom is measured using small dipole sensing elements inside a probe element. The probe tip must not be in contact with the Phantom's surface in order to minimise measurement errors, but the highest local SAR is obtained from measurements at a certain distance from the shell through extrapolation. The accurate assessment of the maximum SAR averaged over 10 gr. requires a very fine resolution in the three dimensional scanned data array. Since the measurements have to be performed over a limited time, the measured data have to be interpolated to provide an array of sufficient resolution.

The interpolation of 2D area scan is used after the initial area scan, at a fixed distance from the Phantom shell wall. The initial scan data is collected with approx. 15 mm spatial resolution and this interpolation is used to find the location of the local maximum for positioning the subsequent 3D scanning within a 1mm resolution.

For the 3D scan, data is collected on a spatially regular 3D grid having 5 mm steps in both directions. After the data collection by the SAR probe, the data are extrapolated in the depth direction to assign values to points in the 3D array closer to the shell wall. A notional extrapolation value is also assigned to the first point outside the shell wall so that subsequent interpolation schemes will be applicable right up to the shell wall boundary.

2.6. Determination of the largest peak spatial-average SAR

To determine the maximum value of the peak spatial-average SAR of a DUT, all device positions, configurations and operational modes should be tested for each frequency band.

The averaging volume shall be chosen as 1gr. of contiguous tissue. The cubic volumes, over which the SAR measurements are averaged after extrapolation and interpolation, are chosen in order to include the highest values of local SAR.

The maximum SAR level for the DUT will be the maximum level obtained of the performed measurements indicated in the previous points.

2.7. System Check

Prior to the SAR measurements, system verification is done to verify the system accuracy. As IEEE 1528-2013, Annex paragraph 8.2.1 "System Check - Purpose" specifies, a complete SAR evaluation is done using a half-wavelength dipole as source with the frequency of the mid-band channel of the operating band, or within 10% of this channel, whichever is greater.

The measured 1 gr. and 10 gr. SAR should be within 10% of the expected target values specified in the calibration certificate of the dipole, for the specific tissue and frequency used.

3. UNCERTAINTY

According to FCC OET KDB 865664 D01, if the highest measured 1-g SAR is < 1.5 W/kg, SAR measurement uncertainty analysis is not required to be included into SAR report, but it has been included for ISO 17025 accreditation.

Uncertainty for 300 MHz – 3 GHz

ERROR SOURCES (source of uncertainty)	Uncertainty value (%)	Prob. Dist.	Div.	<i>c_i</i> (1g)	<i>c_i</i> (10g)	Standard uncertainty (1g) (%)	Standard uncertainty (10g) (%)
Measurement Equipment							
Probe Calibration	13.30%	N	2	1	1	6.65%	6.65%
Probe calibration drift	1.70%	R	√3	1	1	0.98%	0.98%
Axial Isotropy	4.70%	R	√3	0.7	0.7	1.90%	1.90%
Hemispherical Isotropy	9.60%	R	√3	0.7	0.7	3.88%	3.88%
Boundary effect	1.00%	R	√3	1	1	0.58%	0.58%
Linearity	4.70%	R	√3	1	1	2.71%	2.71%
System Detection limits	0.25%	R	√3	1	1	0.14%	0.14%
Probe modulation response	4.80%	N	1	1	1	4.80%	4.80%
Readout electronics	0.30%	N	1	1	1	0.30%	0.30%
Response time	1.01%	R	√3	1	1	0.58%	0.58%
Integration time	2.60%	R	√3	1	1	1.50%	1.50%
RF Ambient noise	3.00%	R	√3	1	1	1.73%	1.73%
RF Ambient reflections	3.00%	R	√3	1	1	1.73%	1.73%
Probe positioner mech. restrictions	0.40%	R	√3	1	1	0.23%	0.23%
Probe positioning with respect to phantom shell	2.90%	R	√3	1	1	1.67%	1.67%
Max. SAR Eval.	2.00%	R	√3	1	1	1.15%	1.15%
Test Sample Related							
Device holder uncertainty	3.60%	N	1	1	1	3.60%	3.60%
Test sample positioning	2.90%	N	1	1	1	2.90%	2.90%
Drift of output power	2.50%	N	1	1	1	2.50%	2.50%
System Validation source (dipole)							
Deviation of experimental dipole from numerical dipole	0.00%	N	1	0	0	0.00%	0.00%
Input power and SAR drift measurement	2.00%	R	√3	1	1	1.15%	1.15%
Dipole axis to liquid distance	3.40%	R	√3	1	1	1.96%	1.96%
Phantom and Setup							
Phantom uncertainty (shape and thickness tolerances)	6.10%	R	√3	1	1	3.52%	3.52%
Algorithm for correcting SAR for deviations in permittivity and conductivity	1.90%	N	1	1	0.84	1.90%	1.60%
Liquid conductivity (meas.)	3.57%	N	1	0.78	0.71	2.79%	2.54%
Liquid permittivity (meas.)	3.57%	N	1	0.26	0.26	0.93%	0.93%
Liquid conductivity – temperature uncertainty	2.30%	R	√3	0.78	0.71	1.04%	0.94%
Liquid permittivity – temperature uncertainty	0.36%	R	√3	0.23	0.26	0.05%	0.05%
Combined standard uncertainty (Validation antenna)	$u_c = \sqrt{\sum_{i=1}^m c_i^2 \cdot u_i^2}$					9.88%	9.75%
Expanded uncertainty (confidence interval of 95%)	$u_e = 2.00 u_c$					19.77%	19.51%
Combined standard uncertainty (DUT)	$u_c = \sqrt{\sum_{i=1}^m c_i^2 \cdot u_i^2}$					12.68%	12.58%
Expanded uncertainty (confidence interval of 95%)	$u_e = 2.00 u_c$					25.36%	25.16%

Table 2: Uncertainty Assessment for 300 MHz - 3 GHz.

4. SAR LIMIT

Having a worst-case measurement, the SAR limit is valid for general population/uncontrolled exposure.

The SAR values have to be averaged over a mass of 1 gr. (SAR 1 gr.) with the shape of a cube and averaged over a mass of 10 gr (Extremity SAR 10 gr). These levels could not exceed the values indicated in the application Standard:

Standard	Exposure	SAR	SAR Limit (W/kg)
FCC 47 CFR Part 1.1310, Paragraph (c)	General population/Uncontrolled	SAR 1-g.	1.6
FCC 47 CFR Part 1.1310, Paragraph (c)	General population/Uncontrolled Extremity	SAR 10-g.	4.0

Table 3: SAR limit

5. DEVICE UNDER TEST

5.1. Dimensions

Dimensions	Millimetres
Length x Width x Height	66.0 x 45.0 x 20.0
Overall Diagonal:	70.0

Table 4: DUT dimensions

5.2. Wireless Technology

Wireless Technology	Frequency Bands	Modes	Duty Cycle used for SAR testing
LTE CAT-M1	2/4/5/12/13	- QPSK and 16-QAM	- FDD: 30%
Wi-Fi	2.4 GHz	- 802.11b/g/n (20 MHz) - 802.11n (40 MHz)	- 802.11a/n/ac/ax (20 MHz): 100 % - 802.11n/ac/ax (40 MHz): 100 %
Bluetooth	2.4 GHz	- Bluetooth Low Energy	- 100 %

Table 5: Supported modes

5.3. Simultaneous Transmission

The DUT does not support simultaneous transmission.

Appendix B: Test results

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1. TEST CONDITIONS

1.1. Power supply (V):

$V_n = 3.7$ V rechargeable battery

Type of power supply = DC Voltage from rechargeable 3.7 V battery.

1.2. Temperature (°C):

$T_n = +20.00$ to $+25.00$

The subscript n indicates normal test conditions.

1.3. DUT information and test-site configurations

For body testing, the separation distance between each face of the DUT and flat phantom surface was 5 mm, declared by the manufacturer as the separation distance for body-worn intended use.

1.4. Test signal, Output Power and Frequencies

The sample (S/02) was put into operation by using an R&S CMW 500 as base station simulator for LTE Cat M transmitting technology. The output power of the device was set to Power Control Level (PCL) maximum for all tests.

For the 802.11b/g/n and Bluetooth Low Energy modes, the device was put into operation by using a proprietary test mode supplied by the manufacturer, setting the maximum output power for each mode. The duty cycle was set to maximum (aprox. 100%).

In all operating bands and test positions, the measurements were performed using the channel producing the highest rated output power.

In each band, for those positions where the maximum averaged SAR was found, measurements were performed on the other applicable test frequency channels except those with applicable test reductions.

The actual SAR sample does not have accessible antenna connectors for conducted measurements, so the conducted average output power was measured using others identical samples (S/01) provided by the manufacturer with auxiliary external connectors that make the measurements representative and applicable for all the tested samples. See 'usage of samples' paragraph of this report.

The maximum conducted time-averaged power of the device for each mode was measured with a power sensor R&S NRP-Z81.

The target power alignments, including tune-up tolerance, for RF components declared by the manufacturer for each supported technology are:

- Cellular:

Output Power (dBm)	CAT M1 Transmission Mode				
	LTE B2	LTE B4	LTE B5	LTE B12	LTE B13
Maximum Burst	22.7	22.7	22.7	22.7	22.7
Maximum Averaged	17.50	17.50	17.50	17.50	17.50

- WI-FI/BT:

Band	Output Power (dBm)	Mode				
		802.11b	802.11g	802.11n20	802.11n40	Bluetooth LE
2.4 GHz	Maximum	21.0	20.5	19.5	19.5	20.0

2. CONDUCTED AVERAGE POWER MEASUREMENTS

2.1. LTE

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD2	20.00	QPSK	0.0	1	0	18700.0	1860.00	15.70
			0.0	1	2	18700.0	1860.00	15.54
			0.0	1	5	18700.0	1860.00	15.54
			0.0	3	0	18700.0	1860.00	15.68
			0.0	3	1	18700.0	1860.00	15.59
			0.0	3	2	18700.0	1860.00	15.59
			0.0	6	0	18700.0	1860.00	15.70
		16QAM	0.0	1	0	18700.0	1860.00	15.97
			0.0	1	2	18700.0	1860.00	15.78
			0.0	1	5	18700.0	1860.00	15.78
			0.0	3	0	18700.0	1860.00	16.16
			0.0	3	1	18700.0	1860.00	15.97
			0.0	3	2	18700.0	1860.00	15.59
			0.0	6	0	18700.0	1860.00	15.49
		QPSK	0.0	1	0	18900.0	1880.00	15.83
			0.0	1	2	18900.0	1880.00	15.60
			0.0	1	5	18900.0	1880.00	15.58
			0.0	3	0	18900.0	1880.00	15.50
			0.0	3	1	18900.0	1880.00	15.55
			0.0	3	2	18900.0	1880.00	15.56
			0.0	6	0	18900.0	1880.00	15.63
		16QAM	0.0	1	0	18900.0	1880.00	15.65
			0.0	1	2	18900.0	1880.00	15.43
			0.0	1	5	18900.0	1880.00	15.50
			0.0	3	0	18900.0	1880.00	15.76
			0.0	3	1	18900.0	1880.00	15.64
			0.0	3	2	18900.0	1880.00	15.64
			0.0	6	0	18900.0	1880.00	15.41
		QPSK	0.0	1	0	19100.0	1900.00	15.76
			0.0	1	2	19100.0	1900.00	15.75
			0.0	1	5	19100.0	1900.00	15.86
			0.0	3	0	19100.0	1900.00	15.90
			0.0	3	1	19100.0	1900.00	15.79
			0.0	3	2	19100.0	1900.00	15.79
			0.0	6	0	19100.0	1900.00	15.70
		16QAM	0.0	1	0	19100.0	1900.00	16.22
			0.0	1	2	19100.0	1900.00	16.24
			0.0	1	5	19100.0	1900.00	16.24
			0.0	3	0	19100.0	1900.00	16.28
			0.0	3	1	19100.0	1900.00	15.79
			0.0	3	2	19100.0	1900.00	16.13
			0.0	6	0	19100.0	1900.00	15.55

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD2	15.00	QPSK	0.0	1	0	18675.0	1857.50	15.71
			0.0	1	2	18675.0	1857.50	15.50
			0.0	1	5	18675.0	1857.50	15.50
			0.0	3	0	18675.0	1857.50	15.72
			0.0	3	1	18675.0	1857.50	15.57
			0.0	3	2	18675.0	1857.50	15.57
			0.0	6	0	18675.0	1857.50	15.70
		16QAM	0.0	1	0	18675.0	1857.50	15.96
			0.0	1	2	18675.0	1857.50	15.81
			0.0	1	5	18675.0	1857.50	15.81
			0.0	3	0	18675.0	1857.50	16.17
			0.0	3	1	18675.0	1857.50	16.02
			0.0	3	2	18675.0	1857.50	15.99
			0.0	6	0	18675.0	1857.50	15.68
		QPSK	0.0	1	0	18900.0	1880.00	16.05
			0.0	1	2	18900.0	1880.00	15.84
			0.0	1	5	18900.0	1880.00	15.84
			0.0	3	0	18900.0	1880.00	16.01
			0.0	3	1	18900.0	1880.00	15.87
			0.0	3	2	18900.0	1880.00	15.87
			0.0	6	0	18900.0	1880.00	15.98
		16QAM	0.0	1	0	18900.0	1880.00	15.56
			0.0	1	2	18900.0	1880.00	15.28
			0.0	1	5	18900.0	1880.00	15.27
			0.0	3	0	18900.0	1880.00	15.62
			0.0	3	1	18900.0	1880.00	15.62
			0.0	3	2	18900.0	1880.00	15.47
			0.0	6	0	18900.0	1880.00	15.34
		QPSK	0.0	1	0	19125.0	1902.50	15.98
			0.0	1	2	19125.0	1902.50	15.78
			0.0	1	5	19125.0	1902.50	15.78
			0.0	3	0	19125.0	1902.50	15.88
			0.0	3	1	19125.0	1902.50	15.74
			0.0	3	2	19125.0	1902.50	15.73
			0.0	6	0	19125.0	1902.50	15.85
		16QAM	0.0	1	0	19125.0	1902.50	16.20
			0.0	1	2	19125.0	1902.50	15.95
			0.0	1	5	19125.0	1902.50	15.95
			0.0	3	0	19125.0	1902.50	16.20
			0.0	3	1	19125.0	1902.50	16.20
			0.0	3	2	19125.0	1902.50	15.99
			0.0	6	0	19125.0	1902.50	15.41

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD2	10.00	QPSK	0.0	1	0	18650.0	1855.00	15.78
			0.0	1	2	18650.0	1855.00	15.58
			0.0	1	5	18650.0	1855.00	15.58
			0.0	3	0	18650.0	1855.00	15.91
			0.0	3	1	18650.0	1855.00	15.81
			0.0	3	2	18650.0	1855.00	15.81
			1.0	6	0	18650.0	1855.00	14.81
		16QAM	0.0	1	0	18650.0	1855.00	16.01
			0.0	1	2	18650.0	1855.00	15.88
			0.0	1	5	18650.0	1855.00	15.87
			0.0	3	0	18650.0	1855.00	16.20
			0.0	3	1	18650.0	1855.00	16.09
			0.0	3	2	18650.0	1855.00	15.61
			1.0	6	0	18650.0	1855.00	14.50
		QPSK	0.0	1	0	18900.0	1880.00	15.78
			0.0	1	2	18900.0	1880.00	15.77
			0.0	1	5	18900.0	1880.00	15.76
			0.0	3	0	18900.0	1880.00	15.89
			0.0	3	1	18900.0	1880.00	15.79
			0.0	3	2	18900.0	1880.00	15.78
			1.0	6	0	18900.0	1880.00	14.77
		16QAM	0.0	1	0	18900.0	1880.00	15.93
			0.0	1	2	18900.0	1880.00	15.79
			0.0	1	5	18900.0	1880.00	15.79
			0.0	3	0	18900.0	1880.00	15.72
			0.0	3	1	18900.0	1880.00	15.61
			0.0	3	2	18900.0	1880.00	15.60
			1.0	6	0	18900.0	1880.00	14.47
		QPSK	0.0	1	0	19150.0	1905.00	16.07
			0.0	1	2	19150.0	1905.00	15.85
			0.0	1	5	19150.0	1905.00	15.85
			0.0	3	0	19150.0	1905.00	16.01
			0.0	3	1	19150.0	1905.00	15.90
			0.0	3	2	19150.0	1905.00	15.89
			1.0	6	0	19150.0	1905.00	15.02
		16QAM	0.0	1	0	19150.0	1905.00	16.23
			0.0	1	2	19150.0	1905.00	15.73
			0.0	1	5	19150.0	1905.00	15.73
			0.0	3	0	19150.0	1905.00	16.09
			0.0	3	1	19150.0	1905.00	15.88
			0.0	3	2	19150.0	1905.00	15.88
			1.0	6	0	19150.0	1905.00	14.76

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD2	5.00	QPSK	0.0	1	0	18625.0	1852.50	15.74
			0.0	1	2	18625.0	1852.50	15.55
			0.0	1	5	18625.0	1852.50	15.55
			0.0	3	0	18625.0	1852.50	15.91
			0.0	3	1	18625.0	1852.50	15.80
			0.0	3	2	18625.0	1852.50	15.80
			1.0	6	0	18625.0	1852.50	14.81
		16QAM	0.0	1	0	18625.0	1852.50	16.00
			0.0	1	2	18625.0	1852.50	15.79
			0.0	1	5	18625.0	1852.50	15.79
			0.0	3	0	18625.0	1852.50	16.01
			0.0	3	1	18625.0	1852.50	15.91
			0.0	3	2	18625.0	1852.50	15.91
			1.0	6	0	18625.0	1852.50	14.50
		QPSK	0.0	1	0	18900.0	1880.00	15.72
			0.0	1	2	18900.0	1880.00	15.53
			0.0	1	5	18900.0	1880.00	15.53
			0.0	3	0	18900.0	1880.00	15.69
			0.0	3	1	18900.0	1880.00	15.57
			0.0	3	2	18900.0	1880.00	15.57
			1.0	6	0	18900.0	1880.00	14.79
		16QAM	0.0	1	0	18900.0	1880.00	16.02
			0.0	1	2	18900.0	1880.00	15.80
			0.0	1	5	18900.0	1880.00	15.80
			0.0	3	0	18900.0	1880.00	16.00
			0.0	3	1	18900.0	1880.00	15.89
			0.0	3	2	18900.0	1880.00	15.98
			1.0	6	0	18900.0	1880.00	14.75
		QPSK	0.0	1	0	19175.0	1907.50	15.98
			0.0	1	2	19175.0	1907.50	15.87
			0.0	1	5	19175.0	1907.50	15.86
			0.0	3	0	19175.0	1907.50	16.03
			0.0	3	1	19175.0	1907.50	15.92
			0.0	3	2	19175.0	1907.50	15.92
			1.0	6	0	19175.0	1907.50	15.05
		16QAM	0.0	1	0	19175.0	1907.50	16.25
			0.0	1	2	19175.0	1907.50	16.03
			0.0	1	5	19175.0	1907.50	16.03
			0.0	3	0	19175.0	1907.50	16.43
			0.0	3	1	19175.0	1907.50	16.07
			0.0	3	2	19175.0	1907.50	16.07
			1.0	6	0	19175.0	1907.50	14.92

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD2	3.00	QPSK	0.0	1	0	18615.0	1851.50	15.73
			0.0	1	2	18615.0	1851.50	15.53
			0.0	1	5	18615.0	1851.50	15.51
			1.0	3	0	18615.0	1851.50	14.74
			1.0	3	1	18615.0	1851.50	14.59
			1.0	3	2	18615.0	1851.50	14.59
			2.0	6	0	18615.0	1851.50	13.81
		16QAM	0.0	1	0	18615.0	1851.50	14.81
			0.0	1	2	18615.0	1851.50	14.59
			0.0	1	5	18615.0	1851.50	14.57
			1.0	3	0	18615.0	1851.50	13.89
			1.0	3	1	18615.0	1851.50	13.65
			1.0	3	2	18615.0	1851.50	13.62
			1.0	6	0	18615.0	1851.50	13.66
		QPSK	0.0	1	0	18900.0	1880.00	15.81
			0.0	1	2	18900.0	1880.00	15.90
			0.0	1	5	18900.0	1880.00	15.90
			1.0	3	0	18900.0	1880.00	14.91
			1.0	3	1	18900.0	1880.00	14.69
			1.0	3	2	18900.0	1880.00	14.71
			2.0	6	0	18900.0	1880.00	13.74
		16QAM	0.0	1	0	18900.0	1880.00	15.07
			0.0	1	2	18900.0	1880.00	14.84
			0.0	1	5	18900.0	1880.00	14.83
			1.0	3	0	18900.0	1880.00	14.04
			1.0	3	1	18900.0	1880.00	13.89
			1.0	3	2	18900.0	1880.00	13.79
			1.0	6	0	18900.0	1880.00	13.59
		QPSK	0.0	1	0	19185.0	1908.50	16.06
			0.0	1	2	19185.0	1908.50	16.01
			0.0	1	5	19185.0	1908.50	16.01
			1.0	3	0	19185.0	1908.50	15.07
			1.0	3	1	19185.0	1908.50	14.95
			1.0	3	2	19185.0	1908.50	14.94
			2.0	6	0	19185.0	1908.50	13.92
		16QAM	0.0	1	0	19185.0	1908.50	15.29
			0.0	1	2	19185.0	1908.50	15.04
			0.0	1	5	19185.0	1908.50	15.04
			1.0	3	0	19185.0	1908.50	14.42
			1.0	3	1	19185.0	1908.50	14.25
			1.0	3	2	19185.0	1908.50	14.24
			1.0	6	0	19185.0	1908.50	14.01

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD2	1.40	QPSK	0.0	1	0	18607.0	1850.70	15.78
			0.0	1	2	18607.0	1850.70	15.57
			0.0	1	5	18607.0	1850.70	15.56
			1.0	3	0	18607.0	1850.70	14.77
			1.0	3	1	18607.0	1850.70	14.63
			1.0	3	2	18607.0	1850.70	14.63
			2.0	6	0	18607.0	1850.70	13.75
		16QAM	0.0	1	0	18607.0	1850.70	14.77
			0.0	1	2	18607.0	1850.70	14.54
			0.0	1	5	18607.0	1850.70	14.54
			1.0	3	0	18607.0	1850.70	13.92
			1.0	3	1	18607.0	1850.70	13.79
			1.0	3	2	18607.0	1850.70	13.79
			1.0	6	0	18607.0	1850.70	13.85
		QPSK	0.0	1	0	18900.0	1880.00	15.82
			0.0	1	2	18900.0	1880.00	15.58
			0.0	1	5	18900.0	1880.00	15.90
			1.0	3	0	18900.0	1880.00	14.93
			1.0	3	1	18900.0	1880.00	14.79
			1.0	3	2	18900.0	1880.00	14.79
			2.0	6	0	18900.0	1880.00	13.85
		16QAM	0.0	1	0	18900.0	1880.00	15.10
			0.0	1	2	18900.0	1880.00	14.87
			0.0	1	5	18900.0	1880.00	14.87
			1.0	3	0	18900.0	1880.00	14.16
			1.0	3	1	18900.0	1880.00	14.01
			1.0	3	2	18900.0	1880.00	14.01
			1.0	6	0	18900.0	1880.00	13.72
		QPSK	0.0	1	0	19193.0	1909.30	16.17
			0.0	1	2	19193.0	1909.30	15.91
			0.0	1	5	19193.0	1909.30	15.90
			1.0	3	0	19193.0	1909.30	14.97
			1.0	3	1	19193.0	1909.30	14.96
			1.0	3	2	19193.0	1909.30	14.95
			2.0	6	0	19193.0	1909.30	14.01
		16QAM	0.0	1	0	19193.0	1909.30	15.18
			0.0	1	2	19193.0	1909.30	14.93
			0.0	1	5	19193.0	1909.30	14.92
			1.0	3	0	19193.0	1909.30	14.14
			1.0	3	1	19193.0	1909.30	14.00
			1.0	3	2	19193.0	1909.30	14.00
			1.0	6	0	19193.0	1909.30	13.98

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD4	20.00	QPSK	0.0	1	0	20175.0	1732.50	15.36
			0.0	1	2	20175.0	1732.50	15.18
			0.0	1	5	20175.0	1732.50	15.18
			0.0	3	0	20175.0	1732.50	15.44
			0.0	3	1	20175.0	1732.50	15.34
			0.0	3	2	20175.0	1732.50	15.34
			0.0	6	0	20175.0	1732.50	15.46
		16QAM	0.0	1	0	20175.0	1732.50	15.65
			0.0	1	2	20175.0	1732.50	15.39
			0.0	1	5	20175.0	1732.50	15.41
			0.0	3	0	20175.0	1732.50	15.21
			0.0	3	1	20175.0	1732.50	15.09
			0.0	3	2	20175.0	1732.50	15.10
			0.0	6	0	20175.0	1732.50	14.95
	15.00	QPSK	0.0	1	0	20025.0	1717.50	15.64
			0.0	1	2	20025.0	1717.50	15.43
			0.0	1	5	20025.0	1717.50	15.47
			0.0	3	0	20025.0	1717.50	15.70
			0.0	3	1	20025.0	1717.50	15.55
			0.0	3	2	20025.0	1717.50	15.55
			0.0	6	0	20025.0	1717.50	15.61
		16QAM	0.0	1	0	20025.0	1717.50	15.75
			0.0	1	2	20025.0	1717.50	14.74
			0.0	1	5	20025.0	1717.50	14.73
			0.0	3	0	20025.0	1717.50	15.14
			0.0	3	1	20025.0	1717.50	15.13
			0.0	3	2	20025.0	1717.50	15.10
			0.0	6	0	20025.0	1717.50	15.16
		QPSK	0.0	1	0	19575.0	1732.50	15.43
			0.0	1	2	19575.0	1732.50	15.42
			0.0	1	5	19575.0	1732.50	15.41
			0.0	3	0	19575.0	1732.50	15.41
			0.0	3	1	19575.0	1732.50	15.26
			0.0	3	2	19575.0	1732.50	15.26
			0.0	6	0	20175.0	1732.50	15.62
		16QAM	0.0	1	0	19575.0	1732.50	15.76
			0.0	1	2	19575.0	1732.50	15.20
			0.0	1	5	19575.0	1732.50	15.22
			0.0	3	0	19575.0	1732.50	15.89
			0.0	3	1	19575.0	1732.50	15.66
			0.0	3	2	19575.0	1732.50	15.70
			0.0	6	0	19575.0	1732.50	15.37
		QPSK	0.0	1	0	20325.0	1747.50	15.85
			0.0	1	2	20325.0	1747.50	15.65
			0.0	1	5	20325.0	1747.50	15.63
			0.0	3	0	20325.0	1747.50	15.73
			0.0	3	1	20325.0	1747.50	15.59
			0.0	3	2	20325.0	1747.50	15.18
			0.0	6	0	20325.0	1747.50	15.30
		16QAM	0.0	1	0	20325.0	1747.50	15.74
			0.0	1	2	20325.0	1747.50	15.48
			0.0	1	5	20325.0	1747.50	15.48
			0.0	3	0	20325.0	1747.50	15.73
			0.0	3	1	20325.0	1747.50	15.73
			0.0	3	2	20325.0	1747.50	15.53
			0.0	6	0	20325.0	1747.50	15.28

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD4	10.00	QPSK	0.0	1	0	20000.0	1715.00	15.33
			0.0	1	2	20000.0	1715.00	15.40
			0.0	1	5	20000.0	1715.00	15.66
			0.0	3	0	20000.0	1715.00	15.81
			0.0	3	1	20000.0	1715.00	15.63
			0.0	3	2	20000.0	1715.00	15.62
			1.0	6	0	20000.0	1715.00	14.58
		16QAM	0.0	1	0	20000.0	1715.00	15.81
			0.0	1	2	20000.0	1715.00	15.67
			0.0	1	5	20000.0	1715.00	15.66
			0.0	3	0	20000.0	1715.00	16.00
			0.0	3	1	20000.0	1715.00	15.14
			0.0	3	2	20000.0	1715.00	15.15
			1.0	6	0	20000.0	1715.00	14.05
		QPSK	0.0	1	0	20175.0	1732.50	15.28
			0.0	1	2	20175.0	1732.50	15.21
			0.0	1	5	20175.0	1732.50	14.98
			0.0	3	0	20175.0	1732.50	15.05
			0.0	3	1	20175.0	1732.50	15.05
			0.0	3	2	20175.0	1732.50	15.10
			1.0	6	0	20175.0	1732.50	14.16
		16QAM	0.0	1	0	20175.0	1732.50	15.66
			0.0	1	2	20175.0	1732.50	15.14
			0.0	1	5	20175.0	1732.50	14.99
			0.0	3	0	20175.0	1732.50	14.98
			0.0	3	1	20175.0	1732.50	15.53
			0.0	3	2	20175.0	1732.50	15.53
			1.0	6	0	20175.0	1732.50	14.05
		QPSK	0.0	1	0	20350.0	1750.00	15.42
			0.0	1	2	20350.0	1750.00	15.34
			0.0	1	5	20350.0	1750.00	15.19
			0.0	3	0	20350.0	1750.00	15.14
			0.0	3	1	20350.0	1750.00	15.32
			0.0	3	2	20350.0	1750.00	15.30
			1.0	6	0	20350.0	1750.00	14.18
		16QAM	0.0	1	0	20350.0	1750.00	15.68
			0.0	1	2	20350.0	1750.00	15.67
			0.0	1	5	20350.0	1750.00	15.66
			0.0	3	0	20350.0	1750.00	15.33
			0.0	3	1	20350.0	1750.00	15.56
			0.0	3	2	20350.0	1750.00	15.55
			1.0	6	0	20350.0	1750.00	14.25

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD4	5.00	QPSK	0.0	1	0	19975.0	1712.50	15.46
			0.0	1	2	19975.0	1712.50	15.28
			0.0	1	5	19975.0	1712.50	15.28
			0.0	3	0	19975.0	1712.50	15.44
			0.0	3	1	19975.0	1712.50	15.33
			0.0	3	2	19975.0	1712.50	15.33
			1.0	6	0	19975.0	1712.50	14.43
		16QAM	0.0	1	0	19975.0	1712.50	15.66
			0.0	1	2	19975.0	1712.50	15.44
			0.0	1	5	19975.0	1712.50	15.44
			0.0	3	0	19975.0	1712.50	15.83
			0.0	3	1	19975.0	1712.50	15.73
			0.0	3	2	19975.0	1712.50	15.64
			1.0	6	0	19975.0	1712.50	14.29
		QPSK	0.0	1	0	20175.0	1732.50	15.49
			0.0	1	2	20175.0	1732.50	15.40
			0.0	1	5	20175.0	1732.50	15.39
			0.0	3	0	20175.0	1732.50	15.45
			0.0	3	1	20175.0	1732.50	15.33
			0.0	3	2	20175.0	1732.50	15.32
			1.0	6	0	20175.0	1732.50	14.13
		16QAM	0.0	1	0	20175.0	1732.50	15.69
			0.0	1	2	20175.0	1732.50	15.48
			0.0	1	5	20175.0	1732.50	15.48
			0.0	3	0	20175.0	1732.50	15.43
			0.0	3	1	20175.0	1732.50	15.34
			0.0	3	2	20175.0	1732.50	15.33
			1.0	6	0	20175.0	1732.50	14.09
		QPSK	0.0	1	0	20375.0	1752.50	15.42
			0.0	1	2	20375.0	1752.50	15.29
			0.0	1	5	20375.0	1752.50	15.43
			0.0	3	0	20375.0	1752.50	15.61
			0.0	3	1	20375.0	1752.50	15.47
			0.0	3	2	20375.0	1752.50	15.47
			1.0	6	0	20375.0	1752.50	14.39
		16QAM	0.0	1	0	20375.0	1752.50	15.82
			0.0	1	2	20375.0	1752.50	15.63
			0.0	1	5	20375.0	1752.50	15.63
			0.0	3	0	20375.0	1752.50	15.82
			0.0	3	1	20375.0	1752.50	15.61
			0.0	3	2	20375.0	1752.50	15.61
			1.0	6	0	20375.0	1752.50	14.27

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD4	3.00	QPSK	0.0	1	0	19965.0	1711.50	15.38
			0.0	1	2	19965.0	1711.50	15.20
			0.0	1	5	19965.0	1711.50	15.21
			1.0	3	0	19965.0	1711.50	14.41
			1.0	3	1	19965.0	1711.50	14.27
			1.0	3	2	19965.0	1711.50	14.26
			2.0	6	0	19965.0	1711.50	13.25
		16QAM	0.0	1	0	19965.0	1711.50	14.61
			0.0	1	2	19965.0	1711.50	14.37
			0.0	1	5	19965.0	1711.50	14.38
			1.0	3	0	19965.0	1711.50	13.69
			1.0	3	1	19965.0	1711.50	13.53
			1.0	3	2	19965.0	1711.50	13.44
			1.0	6	0	19965.0	1711.50	13.29
		QPSK	0.0	1	0	19575.0	1747.50	15.38
			0.0	1	2	19575.0	1747.50	15.32
			0.0	1	5	19575.0	1747.50	15.43
			1.0	3	0	19575.0	1747.50	14.55
			1.0	3	1	19575.0	1747.50	14.41
			1.0	3	2	19575.0	1747.50	14.41
			2.0	6	0	19575.0	1747.50	13.30
		16QAM	0.0	1	0	19575.0	1747.50	14.50
			0.0	1	2	19575.0	1747.50	14.24
			0.0	1	5	19575.0	1747.50	14.24
			1.0	3	0	19575.0	1747.50	13.67
			1.0	3	1	19575.0	1747.50	13.51
			1.0	3	2	19575.0	1747.50	13.41
			1.0	6	0	19575.0	1747.50	13.18
		QPSK	0.0	1	0	20385.0	1753.50	15.64
			0.0	1	2	20385.0	1753.50	15.49
			0.0	1	5	20385.0	1753.50	15.45
			1.0	3	0	20385.0	1753.50	14.52
			1.0	3	1	20385.0	1753.50	14.37
			1.0	3	2	20385.0	1753.50	14.37
			2.0	6	0	20385.0	1753.50	13.38
		16QAM	0.0	1	0	20385.0	1753.50	14.71
			0.0	1	2	20385.0	1753.50	14.47
			0.0	1	5	20385.0	1753.50	14.45
			1.0	3	0	20385.0	1753.50	13.72
			1.0	3	1	20385.0	1753.50	13.57
			1.0	3	2	20385.0	1753.50	13.56
			1.0	6	0	20385.0	1753.50	13.33

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD4	1.40	QPSK	0.0	1	0	19957.0	1710.70	15.18
			0.0	1	2	19957.0	1710.70	14.99
			0.0	1	5	19957.0	1710.70	14.98
			1.0	3	0	19957.0	1710.70	14.16
			1.0	3	1	19957.0	1710.70	13.99
			1.0	3	2	19957.0	1710.70	14.10
			2.0	6	0	19957.0	1710.70	13.12
		16QAM	0.0	1	0	19957.0	1710.70	14.19
			0.0	1	2	19957.0	1710.70	13.98
			0.0	1	5	19957.0	1710.70	13.97
			1.0	3	0	19957.0	1710.70	13.01
			1.0	3	1	19957.0	1710.70	12.89
			1.0	3	2	19957.0	1710.70	12.89
			1.0	6	0	19957.0	1710.70	13.01
		QPSK	0.0	1	0	20175.0	1732.50	15.23
			0.0	1	2	20175.0	1732.50	14.99
			0.0	1	5	20175.0	1732.50	14.99
			1.0	3	0	20175.0	1732.50	14.29
			1.0	3	1	20175.0	1732.50	14.16
			1.0	3	2	20175.0	1732.50	14.16
			2.0	6	0	20175.0	1732.50	13.17
		16QAM	0.0	1	0	20175.0	1732.50	14.38
			0.0	1	2	20175.0	1732.50	14.14
			0.0	1	5	20175.0	1732.50	14.13
			1.0	3	0	20175.0	1732.50	13.54
			1.0	3	1	20175.0	1732.50	13.39
			1.0	3	2	20175.0	1732.50	13.38
			1.0	6	0	20175.0	1732.50	13.15
		QPSK	0.0	1	0	20393.0	1754.30	15.24
			0.0	1	2	20393.0	1754.30	15.25
			0.0	1	5	20393.0	1754.30	15.26
			1.0	3	0	20393.0	1754.30	14.41
			1.0	3	1	20393.0	1754.30	14.26
			1.0	3	2	20393.0	1754.30	14.25
			2.0	6	0	20393.0	1754.30	13.34
		16QAM	0.0	1	0	20393.0	1754.30	14.43
			0.0	1	2	20393.0	1754.30	14.17
			0.0	1	5	20393.0	1754.30	14.25
			1.0	3	0	20393.0	1754.30	13.55
			1.0	3	1	20393.0	1754.30	13.40
			1.0	3	2	20393.0	1754.30	13.40
			1.0	6	0	20393.0	1754.30	13.39

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD5	10.00	QPSK	0.0	1	0	20525.0	836.50	15.21
			0.0	1	2	20525.0	836.50	15.19
			0.0	1	5	20525.0	836.50	15.18
			0.0	3	0	20525.0	836.50	15.30
			0.0	3	1	20525.0	836.50	15.28
			0.0	3	2	20525.0	836.50	15.27
			1.0	6	0	20525.0	836.50	14.24
		16QAM	0.0	1	0	20525.0	836.50	15.53
			0.0	1	2	20525.0	836.50	15.55
			0.0	1	5	20525.0	836.50	15.55
			0.0	3	0	20525.0	836.50	15.68
			0.0	3	1	20525.0	836.50	15.52
			0.0	3	2	20525.0	836.50	15.52
			1.0	6	0	20525.0	836.50	14.22
	5.00	QPSK	0.0	1	0	20425.0	826.50	15.28
			0.0	1	2	20425.0	826.50	15.15
			0.0	1	5	20425.0	826.50	15.14
			0.0	3	0	20425.0	826.50	15.42
			0.0	3	1	20425.0	826.50	15.24
			0.0	3	2	20425.0	826.50	15.25
			1.0	6	0	20425.0	826.50	14.36
		16QAM	0.0	1	0	20425.0	826.50	15.65
			0.0	1	2	20425.0	826.50	15.39
			0.0	1	5	20425.0	826.50	15.39
			0.0	3	0	20425.0	826.50	15.64
			0.0	3	1	20425.0	826.50	15.48
			0.0	3	2	20425.0	826.50	15.48
			1.0	6	0	20425.0	826.50	14.26
		QPSK	0.0	1	0	20525.0	836.50	15.35
			0.0	1	2	20525.0	836.50	15.24
			0.0	1	5	20525.0	836.50	15.24
			0.0	3	0	20525.0	836.50	15.37
			0.0	3	1	20525.0	836.50	15.20
			0.0	3	2	20525.0	836.50	15.32
			1.0	6	0	20525.0	836.50	14.40
		16QAM	0.0	1	0	20525.0	836.50	15.55
			0.0	1	2	20525.0	836.50	15.59
			0.0	1	5	20525.0	836.50	15.59
			0.0	3	0	20525.0	836.50	15.72
			0.0	3	1	20525.0	836.50	15.58
			0.0	3	2	20525.0	836.50	15.58
			1.0	6	0	20525.0	836.50	14.28
		QPSK	0.0	1	0	20625.0	846.50	15.20
			0.0	1	2	20625.0	846.50	15.15
			0.0	1	5	20625.0	846.50	15.15
			0.0	3	0	20625.0	846.50	15.33
			0.0	3	1	20625.0	846.50	15.14
			0.0	3	2	20625.0	846.50	15.14
			1.0	6	0	20625.0	846.50	14.21
		16QAM	0.0	1	0	20625.0	846.50	15.09
			0.0	1	2	20625.0	846.50	14.89
			0.0	1	5	20625.0	846.50	14.98
			0.0	3	0	20625.0	846.50	15.25
			0.0	3	1	20625.0	846.50	15.08
			0.0	3	2	20625.0	846.50	15.08
			1.0	6	0	20625.0	846.50	13.99

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD5	3.00	QPSK	0.0	1	0	20415.0	825.50	15.29
			0.0	1	2	20415.0	825.50	14.97
			0.0	1	5	20415.0	825.50	14.97
			1.0	3	0	20415.0	825.50	14.06
			1.0	3	1	20415.0	825.50	13.98
			1.0	3	2	20415.0	825.50	13.98
			2.0	6	0	20415.0	825.50	13.00
		16QAM	0.0	1	0	20415.0	825.50	14.42
			0.0	1	2	20415.0	825.50	14.19
			0.0	1	5	20415.0	825.50	14.30
			1.0	3	0	20415.0	825.50	13.31
			1.0	3	1	20415.0	825.50	13.11
			1.0	3	2	20415.0	825.50	13.21
			1.0	6	0	20415.0	825.50	12.89
		QPSK	0.0	1	0	20525.0	836.50	15.34
			0.0	1	2	20525.0	836.50	15.12
			0.0	1	5	20525.0	836.50	15.12
			1.0	3	0	20525.0	836.50	14.38
			1.0	3	1	20525.0	836.50	14.18
			1.0	3	2	20525.0	836.50	14.27
			2.0	6	0	20525.0	836.50	13.24
		16QAM	0.0	1	0	20525.0	836.50	14.59
			0.0	1	2	20525.0	836.50	14.38
			0.0	1	5	20525.0	836.50	14.37
			1.0	3	0	20525.0	836.50	13.80
			1.0	3	1	20525.0	836.50	13.61
			1.0	3	2	20525.0	836.50	13.61
			1.0	6	0	20525.0	836.50	13.31
		QPSK	0.0	1	0	20635.0	847.40	15.15
			0.0	1	2	20635.0	847.40	14.89
			0.0	1	5	20635.0	847.40	14.88
			1.0	3	0	20635.0	847.40	14.07
			1.0	3	1	20635.0	847.40	13.86
			1.0	3	2	20635.0	847.40	13.85
			2.0	6	0	20635.0	847.40	12.91
		16QAM	0.0	1	0	20635.0	847.40	14.27
			0.0	1	2	20635.0	847.40	14.04
			0.0	1	5	20635.0	847.40	14.22
			1.0	3	0	20635.0	847.40	13.68
			1.0	3	1	20635.0	847.40	13.19
			1.0	3	2	20635.0	847.40	13.19
			1.0	6	0	20635.0	847.40	12.99

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD5	1.40	QPSK	0.0	1	0	20407.0	824.70	15.18
			0.0	1	2	20407.0	824.70	15.00
			0.0	1	5	20407.0	824.70	14.99
			1.0	3	0	20407.0	824.70	14.14
			1.0	3	1	20407.0	824.70	14.06
			1.0	3	2	20407.0	824.70	14.06
			2.0	6	0	20407.0	824.70	13.16
		16QAM	0.0	1	0	20407.0	824.70	14.34
			0.0	1	2	20407.0	824.70	14.02
			0.0	1	5	20407.0	824.70	14.02
			1.0	3	0	20407.0	824.70	13.20
			1.0	3	1	20407.0	824.70	13.02
			1.0	3	2	20407.0	824.70	13.03
			1.0	6	0	20407.0	824.70	13.04
		QPSK	0.0	1	0	20525.0	836.50	14.99
			0.0	1	2	20525.0	836.50	14.95
			0.0	1	5	20525.0	836.50	15.07
			1.0	3	0	20525.0	836.50	14.25
			1.0	3	1	20525.0	836.50	14.07
			1.0	3	2	20525.0	836.50	14.15
			2.0	6	0	20525.0	836.50	13.27
		16QAM	0.0	1	0	20525.0	836.50	14.43
			0.0	1	2	20525.0	836.50	14.10
			0.0	1	5	20525.0	836.50	14.20
			1.0	3	0	20525.0	836.50	13.51
			1.0	3	1	20525.0	836.50	13.33
			1.0	3	2	20525.0	836.50	13.33
			1.0	6	0	20525.0	836.50	13.36
		QPSK	0.0	1	0	20643.0	848.20	14.83
			0.0	1	2	20643.0	848.20	14.72
			0.0	1	5	20643.0	848.20	14.72
			1.0	3	0	20643.0	848.20	14.06
			1.0	3	1	20643.0	848.20	13.83
			1.0	3	2	20643.0	848.20	13.83
			2.0	6	0	20643.0	848.20	12.93
		16QAM	0.0	1	0	20643.0	848.20	14.16
			0.0	1	2	20643.0	848.20	13.84
			0.0	1	5	20643.0	848.20	13.85
			1.0	3	0	20643.0	848.20	12.94
			1.0	3	1	20643.0	848.20	12.85
			1.0	3	2	20643.0	848.20	12.85
			1.0	6	0	20643.0	848.20	13.01

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD12	10.00	QPSK	0.0	1	0	23095.0	707.50	15.56
			0.0	1	2	23095.0	707.50	15.25
			0.0	1	5	23095.0	707.50	15.25
			0.0	3	0	23095.0	707.50	15.40
			0.0	3	1	23095.0	707.50	15.21
			0.0	3	2	23095.0	707.50	15.21
			1.0	6	0	23095.0	707.50	14.41
		16QAM	0.0	1	0	23095.0	707.50	15.85
			0.0	1	2	23095.0	707.50	15.43
			0.0	1	5	23095.0	707.50	15.50
			0.0	3	0	23095.0	707.50	14.97
			0.0	3	1	23095.0	707.50	14.93
			0.0	3	2	23095.0	707.50	15.00
			1.0	6	0	23095.0	707.50	14.00
	5.00	QPSK	0.0	1	0	23035.0	701.50	15.59
			0.0	1	2	23035.0	701.50	15.44
			0.0	1	5	23035.0	701.50	15.44
			0.0	3	0	23035.0	701.50	15.68
			0.0	3	1	23035.0	701.50	15.49
			0.0	3	2	23035.0	701.50	15.50
			1.0	6	0	23035.0	701.50	14.81
		16QAM	0.0	1	0	23035.0	701.50	15.95
			0.0	1	2	23035.0	701.50	15.45
			0.0	1	5	23035.0	701.50	15.45
			0.0	3	0	23035.0	701.50	16.11
			0.0	3	1	23035.0	701.50	15.74
			0.0	3	2	23035.0	701.50	15.74
			1.0	6	0	23035.0	701.50	14.80
		QPSK	0.0	1	0	23095.0	707.50	15.48
			0.0	1	2	23095.0	707.50	15.25
			0.0	1	5	23095.0	707.50	15.25
			0.0	3	0	23095.0	707.50	15.34
			0.0	3	1	23095.0	707.50	15.21
			0.0	3	2	23095.0	707.50	15.21
			1.0	6	0	23095.0	707.50	14.13
		16QAM	0.0	1	0	23095.0	707.50	15.69
			0.0	1	2	23095.0	707.50	15.47
			0.0	1	5	23095.0	707.50	15.47
			0.0	3	0	23095.0	707.50	15.56
			0.0	3	1	23095.0	707.50	15.22
			0.0	3	2	23095.0	707.50	15.22
			1.0	6	0	23095.0	707.50	14.03
		QPSK	0.0	1	0	23155.0	713.50	15.36
			0.0	1	2	23155.0	713.50	15.10
			0.0	1	5	23155.0	713.50	15.08
			0.0	3	0	23155.0	713.50	15.34
			0.0	3	1	23155.0	713.50	15.07
			0.0	3	2	23155.0	713.50	15.07
			1.0	6	0	23155.0	713.50	14.38
		16QAM	0.0	1	0	23155.0	713.50	15.30
			0.0	1	2	23155.0	713.50	15.06
			0.0	1	5	23155.0	713.50	15.06
			0.0	3	0	23155.0	713.50	15.29
			0.0	3	1	23155.0	713.50	14.87
			0.0	3	2	23155.0	713.50	14.87
			1.0	6	0	23155.0	713.50	13.96

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD12	3.00	QPSK	0.0	1	0	23025.0	700.50	15.60
			0.0	1	2	23025.0	700.50	15.28
			0.0	1	5	23025.0	700.50	15.28
			1.0	3	0	23025.0	700.50	14.62
			1.0	3	1	23025.0	700.50	14.40
			1.0	3	2	23025.0	700.50	14.40
			2.0	6	0	23025.0	700.50	13.57
		16QAM	0.0	1	0	23025.0	700.50	14.71
			0.0	1	2	23025.0	700.50	14.37
			0.0	1	5	23025.0	700.50	14.37
			1.0	3	0	23025.0	700.50	13.93
			1.0	3	1	23025.0	700.50	13.67
			1.0	3	2	23025.0	700.50	13.68
			1.0	6	0	23025.0	700.50	13.46
		QPSK	0.0	1	0	23095.0	707.50	14.78
			0.0	1	2	23095.0	707.50	14.51
			0.0	1	5	23095.0	707.50	14.51
			1.0	3	0	23095.0	707.50	14.04
			1.0	3	1	23095.0	707.50	13.21
			1.0	3	2	23095.0	707.50	13.80
			2.0	6	0	23095.0	707.50	12.85
		16QAM	0.0	1	0	23095.0	707.50	14.23
			0.0	1	2	23095.0	707.50	14.04
			0.0	1	5	23095.0	707.50	14.03
			1.0	3	0	23095.0	707.50	13.50
			1.0	3	1	23095.0	707.50	13.24
			1.0	3	2	23095.0	707.50	13.34
			1.0	6	0	23095.0	707.50	13.02
		QPSK	0.0	1	0	23165.0	714.50	15.22
			0.0	1	2	23165.0	714.50	14.95
			0.0	1	5	23165.0	714.50	14.95
			1.0	3	0	23165.0	714.50	14.01
			1.0	3	1	23165.0	714.50	13.82
			1.0	3	2	23165.0	714.50	13.82
			2.0	6	0	23165.0	714.50	12.89
		16QAM	0.0	1	0	23165.0	714.50	14.05
			0.0	1	2	23165.0	714.50	13.76
			0.0	1	5	23165.0	714.50	13.76
			1.0	3	0	23165.0	714.50	13.10
			1.0	3	1	23165.0	714.50	12.87
			1.0	3	2	23165.0	714.50	12.90
			1.0	6	0	23165.0	714.50	12.87

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD12	1.40	QPSK	0.0	1	0	23017.0	699.70	15.36
			0.0	1	2	23017.0	699.70	15.11
			0.0	1	5	23017.0	699.70	15.11
			1.0	3	0	23017.0	699.70	14.49
			1.0	3	1	23017.0	699.70	14.35
			1.0	3	2	23017.0	699.70	14.35
			2.0	6	0	23017.0	699.70	13.51
		16QAM	0.0	1	0	23017.0	699.70	14.53
			0.0	1	2	23017.0	699.70	14.11
			0.0	1	5	23017.0	699.70	14.11
			1.0	3	0	23017.0	699.70	13.60
			1.0	3	1	23017.0	699.70	13.38
			1.0	3	2	23017.0	699.70	13.38
			1.0	6	0	23017.0	699.70	13.49
		QPSK	0.0	1	0	23095.0	707.50	15.25
			0.0	1	2	23095.0	707.50	14.90
			0.0	1	5	23095.0	707.50	14.90
			1.0	3	0	23095.0	707.50	14.11
			1.0	3	1	23095.0	707.50	13.97
			1.0	3	2	23095.0	707.50	13.96
			2.0	6	0	23095.0	707.50	13.00
		16QAM	0.0	1	0	23095.0	707.50	14.24
			0.0	1	2	23095.0	707.50	13.90
			0.0	1	5	23095.0	707.50	13.90
			1.0	3	0	23095.0	707.50	13.32
			1.0	3	1	23095.0	707.50	12.89
			1.0	3	2	23095.0	707.50	12.85
			1.0	6	0	23095.0	707.50	12.81
		QPSK	0.0	1	0	23173.0	715.30	15.11
			0.0	1	2	23173.0	715.30	14.82
			0.0	1	5	23173.0	715.30	14.82
			1.0	3	0	23173.0	715.30	14.04
			1.0	3	1	23173.0	715.30	13.88
			1.0	3	2	23173.0	715.30	13.87
			2.0	6	0	23173.0	715.30	12.90
		16QAM	0.0	1	0	23173.0	715.30	14.08
			0.0	1	2	23173.0	715.30	13.79
			0.0	1	5	23173.0	715.30	13.79
			1.0	3	0	23173.0	715.30	13.14
			1.0	3	1	23173.0	715.30	12.98
			1.0	3	2	23173.0	715.30	12.97
			1.0	6	0	23173.0	715.30	12.88

Technology / Band	Bandwidth (MHz)	Modulation	MPR	UL RB Allocation	UL RB Start	Channel	Frequency (MHz)	Average Output Power (dBm)
CAT M1/FDD13	10.00	QPSK	0.0	1	0	23230.0	782.00	15.26
			0.0	1	2	23230.0	782.00	15.09
			0.0	1	5	23230.0	782.00	15.10
			0.0	3	0	23230.0	782.00	15.30
			0.0	3	1	23230.0	782.00	15.25
			0.0	3	2	23230.0	782.00	15.25
			1.0	6	0	23230.0	782.00	14.40
		16QAM	0.0	1	0	23230.0	782.00	15.20
			0.0	1	2	23230.0	782.00	15.09
			0.0	1	5	23230.0	782.00	15.09
			0.0	3	0	23230.0	782.00	15.50
			0.0	3	1	23230.0	782.00	15.35
			0.0	3	2	23230.0	782.00	15.34
			1.0	6	0	23230.0	782.00	14.19
	5.00	QPSK	0.0	1	0	23230.0	782.00	15.41
			0.0	1	2	23230.0	782.00	15.15
			0.0	1	5	23230.0	782.00	15.15
			0.0	3	0	23230.0	782.00	15.27
			0.0	3	1	23230.0	782.00	15.12
			0.0	3	2	23230.0	782.00	15.12
			1.0	6	0	23230.0	782.00	14.28
		16QAM	0.0	1	0	23230.0	782.00	15.25
			0.0	1	2	23230.0	782.00	14.99
			0.0	1	5	23230.0	782.00	14.98
			0.0	3	0	23230.0	782.00	15.09
			0.0	3	1	23230.0	782.00	15.13
			0.0	3	2	23230.0	782.00	15.13
			1.0	6	0	23230.0	782.00	13.96

LTE Notes:

1. LTE MPR is permanently implemented for the device. A-MPR was disabled for all SAR tests. The following power reductions are used for higher RB allocations and 16-QAM modulation:

Modulation	Channel bandwidth / Transmission bandwidth configuration [RB]						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

2. Measurements for not measured LTE configurations are not required due to the SAR test procedures mentioned in FCC OET KDB 941225 D05 – SAR for LTE Devices v02r05.
3. According to KDB941225 D05 SAR for LTE Devices, for LTE bands that do not support at least three non-overlapping channels in certain channel bandwidths, the middle channel of the group of overlapping channels should be selected for testing.

2.2. WLAN

Module port	TX Configuration	WLAN Mode	Band	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Duty Cycle (%)	Average Output Power (dBm)
2	SISO	802.11b	2.4 GHz	20	1.0	2412.00	1 Mbps	100	21.58
					6.0	2437.00	1 Mbps	100	20.53
					11.0	2462.00	1 Mbps	100	21.87
		802.11g		20	1.0	2412.00	1 Mbps	100	20.85
					6.0	2437.00	1 Mbps	100	19.82
					11.0	2462.00	1 Mbps	100	21.14
		802.11n		20	1.0	2412.00	HT0	100	20.10
					6.0	2437.00	HT0	100	18.96
					11.0	2462.00	HT0	100	20.45
		802.11n		40	3.0	2422.00	HT0	100	18.92
					6.0	2437.00	HT0	100	18.44
					9.0	2452.00	HT0	100	19.32

- WLAN notes

1. 2.4 GHz 802.11g/n OFDM modes

The highest reported SAR for the 802.11b mode has been 1.140 W/kg, therefore taking into account this 802.11b SAR value:

802.11b Max declared Power= 21.0 dBm → 125.89 mW

802.11g Max declared Power = 20.5 dBm → 112.20 mW

802.11n20 Max declared Power = 19.5 dBm → 89.12 mW

802.11n40 Max declared Power = 19.5 dBm → 89.12 mW

Adjusted SAR for 802.11g: $1.140 \text{ W/Kg} \times (112.20/125.89) = 1.016 \text{ W/kg}$

Adjusted SAR for 802.11n20: $1.140 \text{ W/Kg} \times (89.12/125.89) = 0.807 \text{ W/kg}$

Adjusted SAR for 802.11n40: $1.140 \text{ W/Kg} \times (89.12/125.89) = 0.807 \text{ W/kg}$

As the Adjusted SAR value for all 2.4 GHz 802.11g/n OFDM modes is $\leq 1.2 \text{ W/Kg}$, SAR measurements are not required for these 802.11 g/n OFDM modes.

2.3. BLUETOOTH

Module port	Bluetooth Mode	Channel	Frequency (MHz)	Modulation	Average Output Power (dBm)
2	Bluetooth Low Energy	0	2402	LE	19.26
		19	2440	LE	19.24
		39	2480	LE	19.25

3. TISSUE PARAMETERS MEASUREMENTS

Frequency (MHz)	Target Head Tissue		Measured Head Tissue		Deviation %		Measured Date
	Permittivity ϵ	Conductivity σ [S/m]	Permittivity ϵ	Conductivity σ [S/m]	Permittivity ϵ	Conductivity σ [S/m]	
750	41.94	0.89	39.93	0.93	-4.80	4.19	2023-07-06
835	41.55	0.91	40.30	0.95	-3.01	4.52	2023-07-07
900	41.50	0.97	40.12	0.97	-3.32	0.48	2023-07-07
1750	40.07	1.37	39.43	1.34	-1.61	-2.47	2023-07-20
1800	40.00	1.40	39.35	1.38	-1.62	-1.64	2023-07-20
1900	40.00	1.40	39.02	1.44	-2.45	3.21	2023-07-20
2450	39.20	1.80	41.35	1.91	5.48	5.97	2023-08-09
2450	39.20	1.80	38.90	1.94	-0.75	7.85	2023-08-30

Note: The dielectric properties have been measured by the contact probe method at 22° C.

DASY5 and DASY6 measurement systems have a SAR error compensation algorithm to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, so the tolerance for ϵ and σ may be relaxed to $\pm 10\%$.

- Composition / Information on ingredients

Head and Muscle Tissue Simulation Liquids HBBL1900-3800V3/MBBL1900-3800V3

Water	50 – 73 %
Non-ionic detergents	27 – 50 % polyoxyethylenesorbitan monolaurate
NaCl	0 – 2 %
Preservative	0.05 – 0.1% Preventol-D7
Safety relevant ingredients:	
CAS-No. 55965-84-9	< 0.1 % aqueous preparation, containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone
CAS-No. 9005-64-5	<50 % polyoxyethylenesorbitan monolaurate

Head Tissue Simulation Liquids HBBL600-6000V6

Aqueous solution with surfactants and inhibitors, exact percentage concentration of components is withheld as a trade secret by the manufacturer. Contains:

Ehtanediol	<5.2 %
Sodium petroleum sulfonate	<2.9 %
Hexylene Glycol / 2 – Methyl-pentane-2,4-diol	<2.9 %
Alkoxylated alcohol, > C ₁₆	<2.0 %

4. SYSTEM CHECK MEASUREMENTS

Execution Date	Frequency (MHz)	Exposure Conditions	SAR over	Fast SAR (W/Kg)	SAR (W/Kg)	1 W Target SAR (W/Kg)	1 W Nor. SAR (W/Kg)	Drift (%)
2023-07-06	750	Head	1-g	2.22	2.18	8.43	8.72	3.44
2023-07-06	750	Head	10-g	1.48	1.41	5.51	5.64	2.36
2023-07-07	900	Head	1-g	2.78	2.84	11.10	11.20	0.94
2023-07-07	900	Head	10-g	1.77	1.85	7.07	7.30	3.23
2023-07-10	1800	Head	1-g	9.66	9.59	39.30	38.54	-1.94
2023-07-10	1800	Head	10-g	5.13	4.98	20.40	20.01	-1.90
2023-08-09	2450	Head	1-g	13.20	13.00	54.10	52.00	-3.88
2023-08-09	2450	Head	10-g	6.15	6.01	25.30	24.04	-4.98
2023-08-30	2450	Head	1-g	13.00	12.70	54.10	50.80	-6.10
2023-08-30	2450	Head	10-g	6.14	5.88	25.30	23.52	-7.04

5. MEASUREMENT RESULTS FOR SAR (SPECIFIC ABSORPTION RATE)

5.1. Summary maximum results for body measurements.

Mode ¹	Side / Position	Channel (Frequency)	Reported SAR 1-g (W/kg)	Limit SAR 1-g (W/kg)
LTE CAT M Band 2	Front Face/5 mm	CH 19100 (1900.0 MHz)	1.351	1.6
LTE CAT M Band 4	Front Face/5 mm	CH 20175 (1732.5 MHz)	0.723	1.6
LTE CAT M Band 5	Front Face/5 mm	CH 20525 (836.5 MHz)	0.650	1.6
LTE CAT M Band 12	Front Face/5 mm	CH 23095 (707.5 MHz)	0.747	1.6
LTE CAT M Band 13	Front Face/5 mm	CH 23230 (782.0 MHz)	0.846	1.6
Wi-Fi 2.45 GHz	Front Face/5 mm	CH 11 (2462.0 MHz)	1.140	1.6
Bluetooth Low Energy	Front Face/5 mm	CH 0 (2402.0 MHz)	1.043	1.6

5.2. LTE CAT M

Tech./Band	Expos. Cond.	Mode	Pos.	Dist (mm)	Channel	Freq. (MHz)	Estimated SAR 1-g (W/kg)	SAR 1-g (W/kg)	Power Drift (%)	Scale factor	Reported SAR 1-g (W/kg)	Limit SAR 1-g (W/kg)	Verdict	Plot No.
LTE CAT M /FDD2	Body	1RB High	Front Face	5	19100.0	1900.00	0.856	0.891	0.000	1.458	1.299	1.600	P	
		1RB High	Back Face	5	19100.0	1900.00	0.187	N/M	0.000	1.458	N/A	1.600	P	
		1RB High	Left Edge	5	19100.0	1900.00	0.210	N/M	0.115	1.458	N/A	1.600	P	
		1RB High	Right Edge	5	19100.0	1900.00	0.283	0.295	0.231	1.458	0.430	1.600	P	
		1RB High	Top Edge	5	19100.0	1900.00	0.025	N/M	1.742	1.458	N/A	1.600	P	
		1RB High	Bottom Edge	5	19100.0	1900.00	0.015	N/M	-2.389	1.458	N/A	1.600	P	
		1RB Low	Front Face	5	18900.0	1880.00	0.815	0.874	0.346	1.469	1.284	1.600	P	
		1RB Low	Front Face	5	18700.0	1860.00	0.843	0.847	-0.574	1.513	1.282	1.600	P	
		50% RB Low	Front Face	5	19100.0	1900.00	0.868	0.935	0.925	1.445	1.351	1.600	P	1
		50% RB High	Front Face	5	18900.0	1880.00	0.803	0.858	-0.803	1.563	1.341	1.600	P	
		50% RB High	Front Face	5	18700.0	1860.00	0.787	0.851	0.000	1.552	1.321	1.600	P	
		100% RB	Front Face	5	18700.0	1860.00	0.819	0.863	-0.115	1.514	1.307	1.600	P	
		50% RB Low	Front Face - Variability	5	19100.0	1900.00	0.742	0.787	0.925	1.445	1.137	1.600	P	2
LTE CAT M /FDD4	Body	1RB Low	Front Face	5	20175.0	1732.50	0.418	0.442	-1.372	1.636	0.723	1.600	P	3
		1RB Low	Back Face	5	20175.0	1732.50	0.163	N/M	1.859	1.636	N/A	1.600	P	
		1RB Low	Left Edge	5	20175.0	1732.50	0.162	N/M	0.809	1.636	N/A	1.600	P	
		1RB Low	Right Edge	5	20175.0	1732.50	0.140	N/M	-0.230	1.636	N/A	1.600	P	
		1RB Low	Top Edge	5	20175.0	1732.50	0.018	N/M	0.809	1.636	N/A	1.600	P	
		1RB Low	Bottom Edge	5	20175.0	1732.50	0.012	N/M	2.565	1.636	N/A	1.600	P	
		50% RB Low	Front Face	5	20175.0	1732.50	0.360	0.406	0.000	1.606	0.652	1.600	P	
		100% RB	Front Face	5	20175.0	1732.50	0.358	0.401	-0.459	1.599	0.641	1.600	P	

Tech./Band	Expos. Cond.	Mode	Pos.	Dist (mm)	Channel	Freq. (MHz)	Estimated SAR 1-g (W/kg)	SAR 1-g (W/kg)	Power Drift (%)	Scale factor	Reported SAR 1-g (W/kg)	Limit SAR 1-g (W/kg)	Verdict	Plot No.
LTE CAT M /FDD5	Body	1RB Low	Front Face	5	20525.0	836.50	0.398	0.384	-1.258	1.694	0.650	1.600	P	4
		1RB Low	Back Face	5	20525.0	836.50	0.065	N/M	-3.839	1.694	N/A	1.600	P	
		1RB Low	Left Edge	5	20525.0	836.50	0.115	N/M	0.462	1.694	N/A	1.600	P	
		1RB Low	Right Edge	5	20525.0	836.50	0.092	N/M	-0.459	1.694	N/A	1.600	P	
		1RB Low	Top Edge	5	20525.0	836.50	0.154	N/M	-0.574	1.694	N/A	1.600	P	
		1RB Low	Bottom Edge	5	20525.0	836.50	0.009	N/M	-5.049	1.694	N/A	1.600	P	
		50% RB Low	Front Face	5	20525.0	836.50	0.390	0.369	1.042	1.659	0.612	1.600	P	
LTE CAT M /FDD12	Body	1RB Low	Front Face	5	23095.0	707.50	0.408	0.477	1.158	1.563	0.746	1.600	P	
		1RB Low	Back Face	5	23095.0	707.50	0.032	N/M	-3.395	1.563	N/A	1.600	P	
		1RB Low	Left Edge	5	23095.0	707.50	0.060	N/M	0.577	1.563	N/A	1.600	P	
		1RB Low	Right Edge	5	23095.0	707.50	0.265	N/M	0.231	1.563	N/A	1.600	P	
		1RB Low	Top Edge	5	23095.0	707.50	0.026	N/M	-0.230	1.563	N/A	1.600	P	
		1RB Low	Bottom Edge	5	23095.0	707.50	0.025	N/M	-1.712	1.563	N/A	1.600	P	
		50% RB Low	Front Face	5	23095.0	707.50	0.404	0.461	-1.031	1.621	0.747	1.600	P	5
LTE CAT M /FDD13	Body	1RB Low	Front Face	5	23230.0	782.00	0.428	0.504	0.115	1.674	0.844	1.600	P	
		1RB Low	Back Face	5	23230.0	782.00	0.065	N/M	0.231	1.674	N/A	1.600	P	
		1RB Low	Left Edge	5	23230.0	782.00	0.108	N/M	-0.230	1.674	N/A	1.600	P	
		1RB Low	Right Edge	5	23230.0	782.00	0.188	N/M	0.231	1.674	N/A	1.600	P	
		1RB Low	Top Edge	5	23230.0	782.00	0.106	N/M	0.231	1.674	N/A	1.600	P	
		1RB Low	Bottom Edge	5	23230.0	782.00	0.024	N/M	-0.917	1.674	N/A	1.600	P	
		50% RB Low	Front Face	5	23230.0	782.00	0.446	0.510	-1.372	1.659	0.846	1.600	P	6

N/M: Not Measured (See Remarks and comments 1.)

N/A: Not Applicable

Note: See Remarks and comments 2.

5.3. WLAN

Band	Expos. Cond.	Mode	BW (MHz)	Pos.	Dist (mm)	Ch.	Freq. (MHz)	Duty Cycle (%)	Estim. SAR 1-g (W/kg)	SAR 1-g (W/kg)	Power Drift (%)	Scale factor	Report. SAR 1-g (W/kg)	Limit SAR 1-g (W/kg)	Verdict	Plot No.
2.4 GHz	Body	802.11b	20.00	Front Face	5	11.0	2462.00	100.00	1.160	1.140	0.346	1.000	1.140	1.600	P	7
		802.11b	20.00	Back Face	5	11.0	2462.00	100.00	0.420	N/M	-0.688	1.000	N/A	1.600	P	
		802.11b	20.00	Left Edge	5	11.0	2462.00	100.00	0.060	N/M	-3.172	1.000	N/A	1.600	P	
		802.11b	20.00	Right Edge	5	11.0	2462.00	100.00	0.607	0.705	0.000	1.000	0.705	1.600	P	
		802.11b	20.00	Top Edge	5	11.0	2462.00	100.00	0.044	N/M	0.346	1.000	N/A	1.600	P	
		802.11b	20.00	Bottom Edge	5	11.0	2462.00	100.00	0.089	N/M	4.112	1.000	N/A	1.600	P	
		802.11b	20.00	Front Face	5	1.0	2412.00	100.00	0.270	0.248	-2.501	1.000	0.248	1.600	P	
		802.11b	20.00	Front Face	5	6.0	2437.00	100.00	0.416	0.402	0.577	1.114	0.448	1.600	P	

N/M: Not Measured (See Remarks and comments 1.)

N/A: Not Applicable

Note: See Remarks and comments 3.

5.4. Bluetooth Low Energy

Band	Expos. Cond.	Mode	Pos.	Dist (mm)	Ch.	Freq. (MHz)	Duty Cycle (%)	Estim. SAR 1-g (W/kg)	SAR 1-g (W/kg)	Power Drift (%)	Scale factor	Report. SAR 1-g (W/kg)	Limit SAR 1-g (W/kg)	Verdict	Plot No.
2.4 GHz	Body	LE	Front Face	5	0.0	2402.00	100.00	1.04	0.99	-0.230	1.057	1.043	1.600	P	8
			Back Face	5	0.0	2402.00	100.00	0.43	0.44	-0.574	1.057	0.465	1.600	P	
			Left Edge	5	0.0	2402.00	100.00	0.04	N/M	1.274	1.057	N/A	1.600	P	
			Right Edge	5	0.0	2402.00	100.00	0.93	0.89	-1.825	1.057	0.943	1.600	P	
			Top Edge	5	0.0	2402.00	100.00	0.06	N/M	0.809	1.057	N/A	1.600	P	
			Bottom Edge	5	0.0	2402.00	100.00	0.09	N/M	-0.230	1.057	N/A	1.600	P	
			Front Face	5	19.0	2440.00	100.00	0.91	0.90	-1.712	1.062	0.95	1.600	P	
			Front Face	5	39.0	2480.00	100.00	0.89	0.88	-1.486	1.059	0.931	1.600	P	
			Front Face - Variability	5	0.0	2402.00	100.00	0.96	0.95	-0.459	1.057	1.002	1.600	P	

N/M: Not Measured (See Remarks and comments 1.)

N/A: Not Applicable

Appendix C: Measurement report



Plot Nº1

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SmartCare, Essence	55.0 x 35.0 x 15.0		Phone

Exposure Conditions

Phantom	Position, Test	Band	Group,	Frequency	Conversion	TSL Conductivity	TSL Permittivity
Section, TSL	Distance [mm]		UID	[MHz],	Factor	[S/m]	
				Channel Number			
Flat,	FRONT,	Band 2, E-	LTE-FDD,	1900.0,	8.3	1.44	39.0
HSL	5.00	UTRA/FDD	10297-AAD	19100			

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2158	HBBL 600-10000V6 - 1800MHz - 2023-07-10 , --	EX3DV4 - SN7461, 2022-08-25	DAE4 Sn669, 2022-08-16

Scan Setup

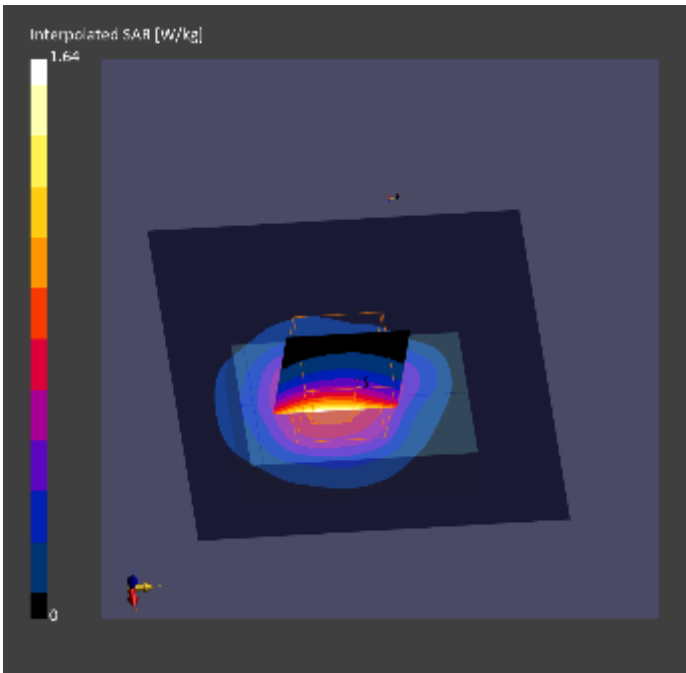
	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-07-10, 13:12	2023-07-10, 13:18
psSAR1g [W/kg]	0.868	0.935
psSAR10g [W/kg]	0.478	0.516
Power Drift [dB]	-0.01	0.00
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		81.6
Dist 3dB Peak [mm]		13.7

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Plot Nº2

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SmartCare, Essence	55.0 x 35.0 x 15.0		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, HSL	FRONT, 5.00	Band 2, E- UTRA/FDD	LTE-FDD, 10297-AAD	1900.0, 19100	8.3	1.44	39.0

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2158	HBBL 600-10000V6 - 1800MHz - 2023- 07-10 , --	EX3DV4 - SN7461, 2022-08-25	DAE4 Sn669, 2022-08-16

Scan Setup

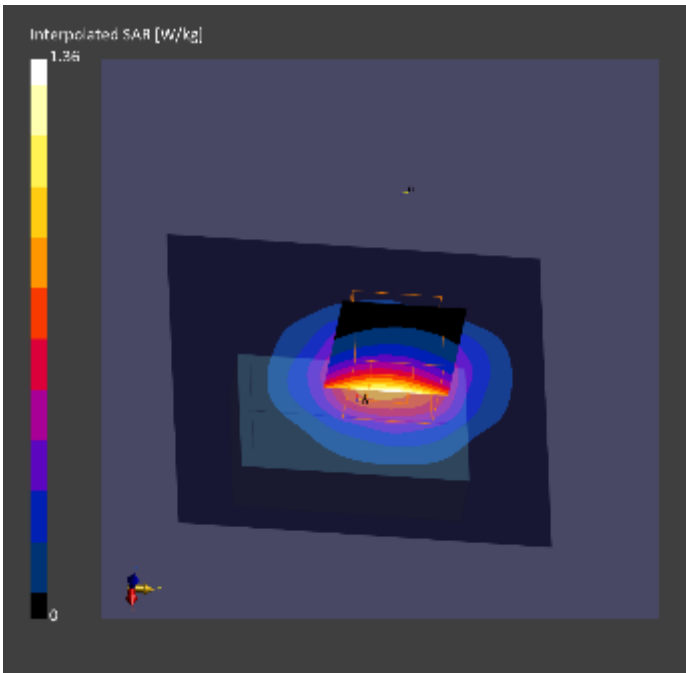
	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-07-11, 10:19	2023-07-11, 10:25
psSAR1g [W/kg]	0.742	0.787
psSAR10g [W/kg]	0.414	0.435
Power Drift [dB]	0.09	-0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		83.9
Dist 3dB Peak [mm]		13.2

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Plot Nº3

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SmartCare, Essence	55.0 x 35.0 x 15.0		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, HSL	FRONT, 5.00	Band 4, E- UTRA/FDD	LTE-FDD, 10169-CAE	1732.5, 20175	8.3	1.32	39.4

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2158	HBBL 600-10000V6 - 1800MHz - 2023- 07-10 , --	EX3DV4 - SN7461, 2022-08-25	DAE4 Sn669, 2022-08-16

Scan Setup

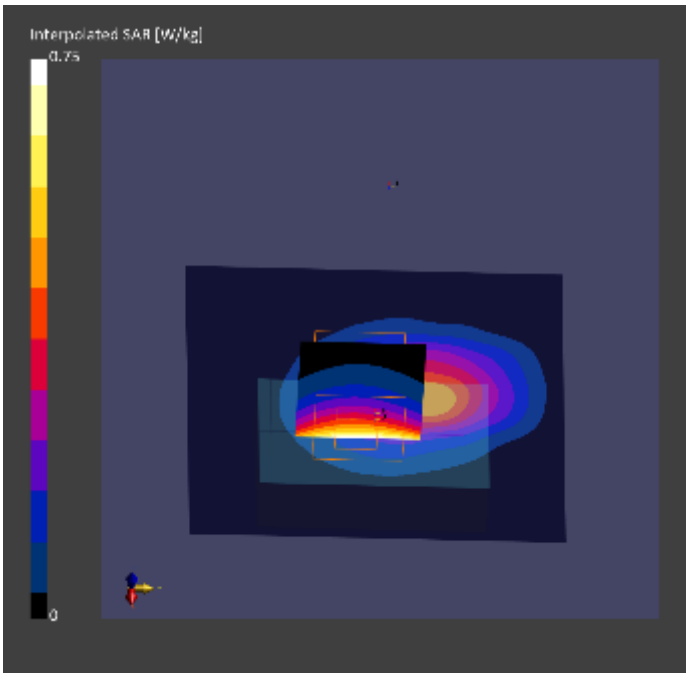
	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-07-11, 10:40	2023-07-11, 12:24
psSAR1g [W/kg]	0.418	0.442
psSAR10g [W/kg]	0.235	0.251
Power Drift [dB]	-0.12	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		82.3
Dist 3dB Peak [mm]		11.9

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Plot Nº4

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SmartCare, Essence	55.0 x 35.0 x 15.0		Phone

Exposure Conditions

Phantom	Position, Test	Band	Group,	Frequency	Conversion	TSL Conductivity	TSL Permittivity
Section, TSL	Distance [mm]		UID	[MHz],	Factor	[S/m]	
				Channel Number			
Flat,	FRONT,	Band 5, E-	LTE-FDD,	836.5,	9.61	0.950	40.3
HSL	0.00	UTRA/FDD	10175-CAG	20525			

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2158	HBBL 600-10000V6 - 900MHz - 2023-07-07 , --	EX3DV4 - SN7461, 2022-08-25	DAE4 Sn669, 2022-08-16

Scan Setup

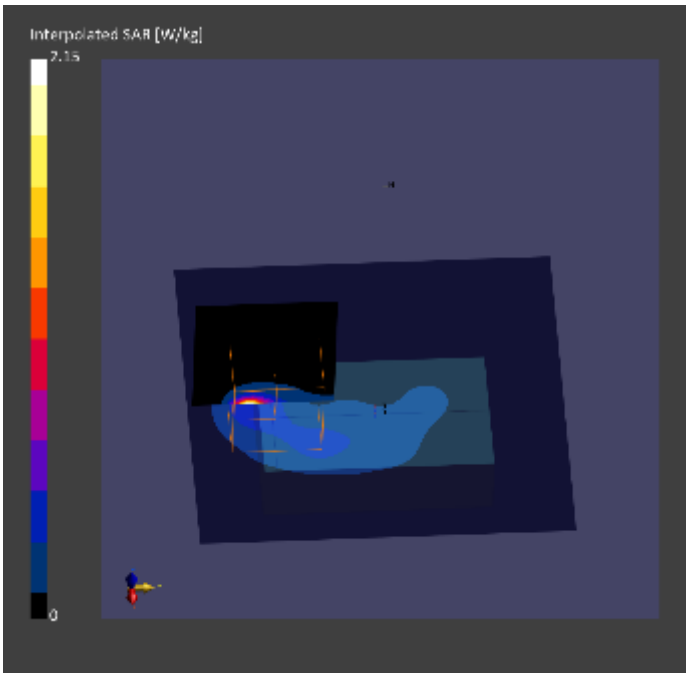
	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-07-07, 10:05	2023-07-07, 10:45
psSAR1g [W/kg]	0.398	0.384
psSAR10g [W/kg]	0.222	0.147
Power Drift [dB]	0.19	-0.13
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		48.1
Dist 3dB Peak [mm]		3.5

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Plot Nº5

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SmartCare, Essence	55.0 x 35.0 x 15.0		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, HSL	FRONT, 0.00	Band 12, E- UTRA/FDD	LTE-FDD, 10154-CAG	707.5, 23095	10.07	0.920	40.1

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2158	HBBL 600-10000V6 - 750MHz - 2023- 07-06 , --	EX3DV4 - SN7461, 2022-08-25	DAE4 Sn669, 2022-08-16

Scan Setup

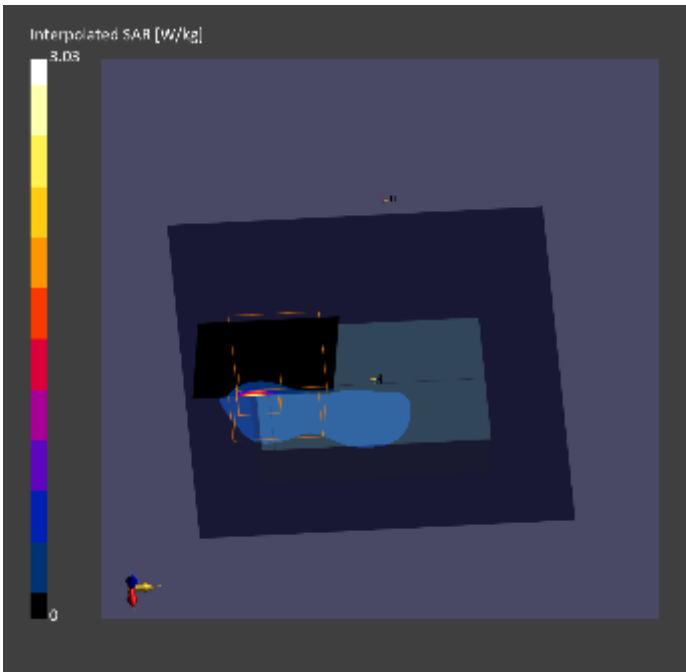
	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	2.6 x 2.6 x 1.2
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.2
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-07-06, 10:22	2023-07-06, 10:54
psSAR1g [W/kg]	0.404	0.461
psSAR10g [W/kg]	0.222	0.170
Power Drift [dB]	-0.00	-0.09
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		49.0
Dist 3dB Peak [mm]		3.7

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Plot Nº6

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SmartCare, Essence	55.0 x 35.0 x 15.0		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, HSL	FRONT, 0.00	Band 13, E- UTRA/FDD	LTE-FDD, 10154-CAG	782.0, 23230	10.07	0.940	39.8

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2158	HBBL 600-10000V6 - 750MHz - 2023- 07-06 , --	EX3DV4 - SN7461, 2022-08-25	DAE4 Sn669, 2022-08-16

Scan Setup

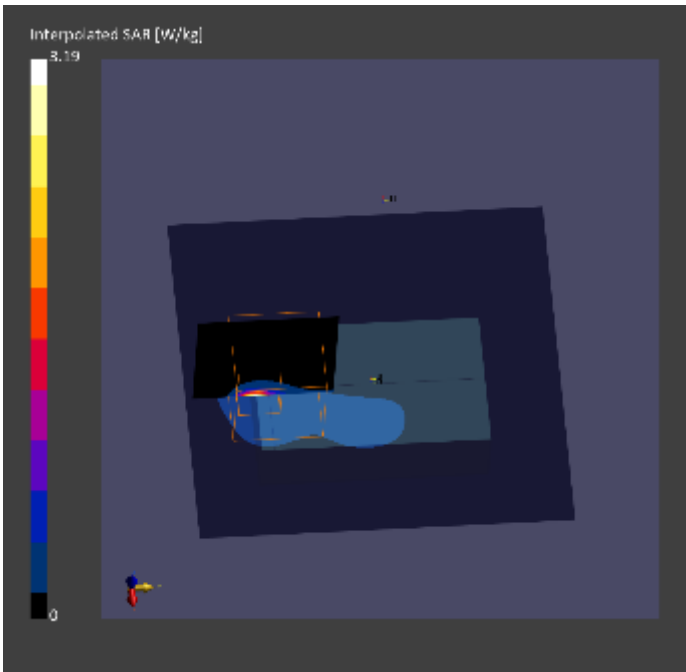
	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	2.6 x 2.6 x 1.2
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.2
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-07-06, 11:40	2023-07-06, 12:13
psSAR1g [W/kg]	0.446	0.510
psSAR10g [W/kg]	0.245	0.186
Power Drift [dB]	-0.00	-0.10
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		50.8
Dist 3dB Peak [mm]		4.2

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Plot Nº7

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Essence 75303B/027,	61.0 x 35.0 x 16.0		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, HSL	FRONT, 5.00	WLAN 2.4GHz	WLAN, 10012-CAB	2462.0, 11	7.64	1.92	41.3

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2158	HBBL1900-3800V3 - 2450MHz - 2023- 08-09 , --	EX3DV4 - SN7766, 2022-10-18	DAE4 Sn1690, 2022-10-13

Scan Setup

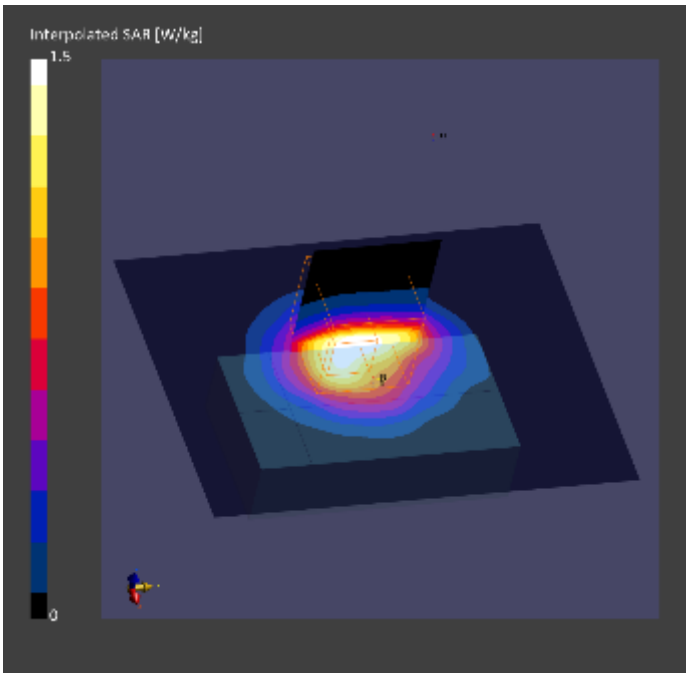
	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 100.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-08-09, 14:18	2023-08-09, 14:25
psSAR1g [W/kg]	1.16	1.14
psSAR10g [W/kg]	0.592	0.526
Power Drift [dB]	0.06	-0.04
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		71.7
Dist 3dB Peak [mm]		8.3

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Plot Nº8

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Essence 75303B/027,	61.0 x 35.0 x 16.0		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, HSL	FRONT, 5.00	ISM 2.4 GHz Band	Bluetooth, 10670-AAA	2402.0, 0	7.64	1.87	39.1

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2158	HBBL1900-3800V3 - 2450MHz - 2023- 08-30 , --	EX3DV4 - SN7766, 2022-10-18	DAE4 Sn1690, 2022-10-13

Scan Setup

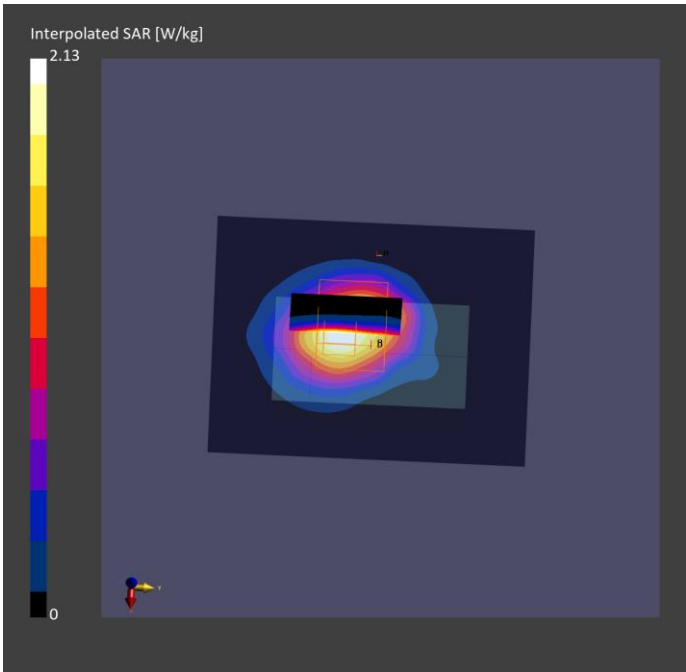
	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 100.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-08-31, 10:01	2023-08-31, 10:10
psSAR1g [W/kg]	1.04	0.987
psSAR10g [W/kg]	0.543	0.505
Power Drift [dB]	-0.02	-0.04
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		75.9
Dist 3dB Peak [mm]		12.1

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Appendix D: System Validation Report

Validation results in 750 MHz Band for Head TSL

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	n/a x n/a x n/a		Phone

Exposure Conditions

Phantom	Position, Test	Band	Group,	Frequency	Conversion	TSL Conductivity	TSL Permittivity
Section, TSL	Distance [mm]		UID	[MHz],	Factor	[S/m]	
				Channel Number			
Flat,	,		CW,	750.0,	10.07	0.930	39.9
HSL			0--	0			

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) -	HBBL 600-10000V6 - 750MHz - 2023-	EX3DV4 - SN7461, 2022-08-25	DAE4 Sn669, 2022-08-16
2158	07-06 , --		

Scan Setup

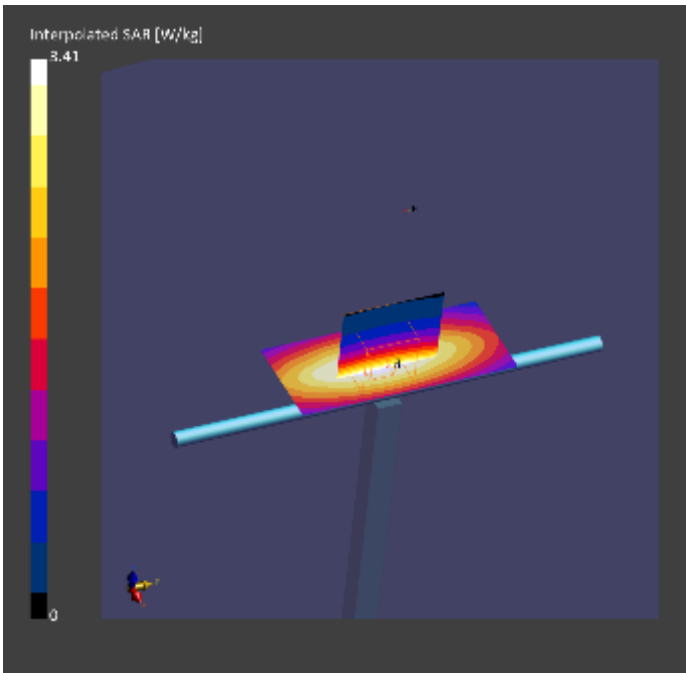
	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface	3.0	1.4
[mm]		
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-07-06, 08:49	2023-07-06, 08:58
psSAR1g [W/kg]	2.22	2.18
psSAR10g [W/kg]	1.48	1.41
Power Drift [dB]	0.00	0.00
Power Scaling	Disabled	Disabled
Scaling Factor		
[dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		86.7
Dist 3dB Peak		16.8
[mm]		

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Validation results in 900 MHz Band for Head TSL

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	n/a x n/a x n/a		Phone

Exposure Conditions

Phantom	Position, Test	Band	Group,	Frequency	Conversion	TSL Conductivity	TSL Permittivity
Section, TSL	Distance [mm]		UID	[MHz],	Factor	[S/m]	
				Channel Number			
Flat,	,		CW,	900.0,	9.61	0.970	40.1
HSL			0--	0			

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2158	HBBL 600-10000V6 - 900MHz - 2023-07-07 , --	EX3DV4 - SN7461, 2022-08-25	DAE4 Sn669, 2022-08-16

Scan Setup

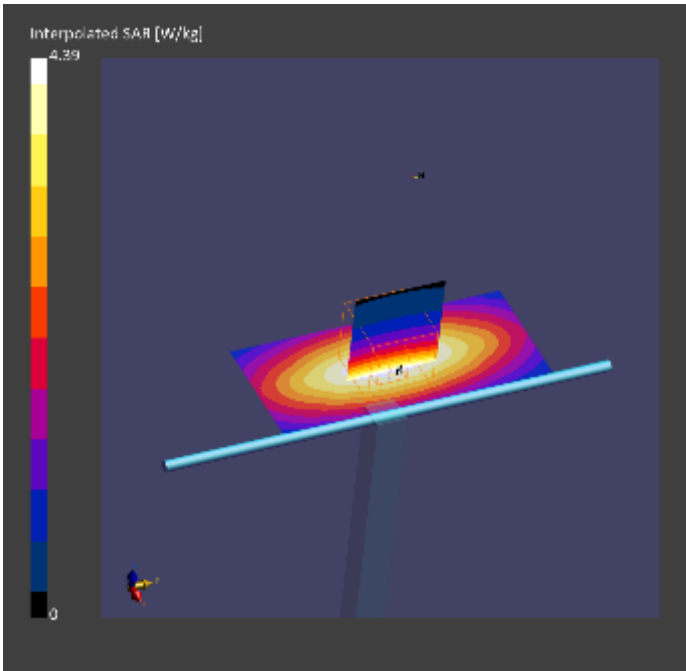
	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-07-07, 09:12	2023-07-07, 09:17
psSAR1g [W/kg]	2.84	2.78
psSAR10g [W/kg]	1.85	1.77
Power Drift [dB]	-0.00	-0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		86.4
Dist 3dB Peak [mm]		16.7

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Validation results in 1800 MHz Band for Head TSL

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	n/a x n/a x n/a		Phone

Exposure Conditions

Phantom	Position, Test	Band	Group,	Frequency	Conversion	TSL Conductivity	TSL Permittivity
Section, TSL	Distance [mm]		UID	[MHz],	Factor	[S/m]	
				Channel Number			
Flat,	,		CW,	1800.0,	8.3	1.38	39.4
HSL			0--	0			

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) -	HBBL 600-10000V6 - 1800MHz - 2023-	EX3DV4 - SN7461, 2022-08-25	DAE4 Sn669, 2022-08-16
2158	07-10 , --		

Scan Setup

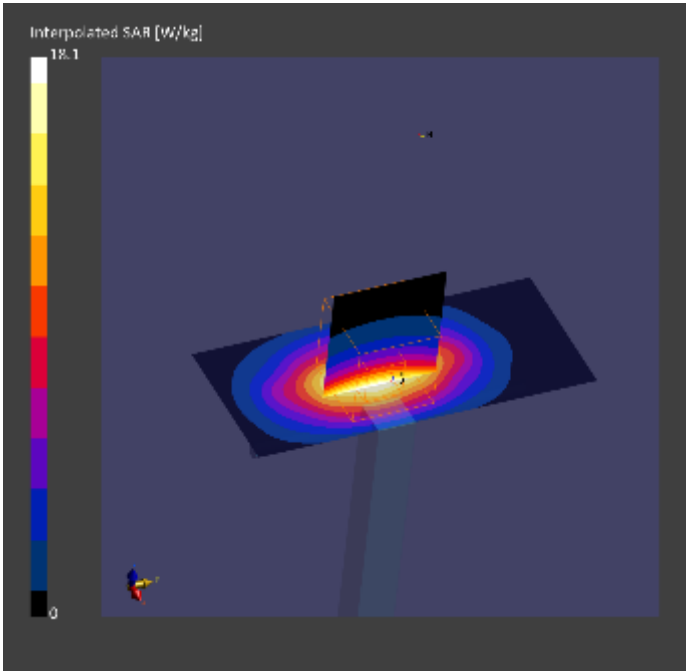
	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface	3.0	1.4
[mm]		
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-07-10, 09:03	2023-07-10, 09:08
psSAR1g [W/kg]	9.66	9.59
psSAR10g [W/kg]	5.13	4.98
Power Drift [dB]	0.01	0.01
Power Scaling	Disabled	Disabled
Scaling Factor		
[dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		81.9
Dist 3dB Peak		10.8
[mm]		

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Validation results in 2450 MHz Band for Head TSL

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	n/a x n/a x n/a		Phone

Exposure Conditions

Phantom	Position, Test	Band	Group,	Frequency	Conversion	TSL Conductivity	TSL Permittivity
Section, TSL	Distance [mm]		UID	[MHz],	Factor	[S/m]	
				Channel Number			
Flat,	,		CW,	2450.0,	7.64	1.91	41.4
HSL			0--	0			

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) -	HBBL1900-3800V3 - 2450MHz - 2023-	EX3DV4 - SN7766, 2022-10-18	DAE4 Sn1690, 2022-10-13
2158	08-09 , --		

Scan Setup

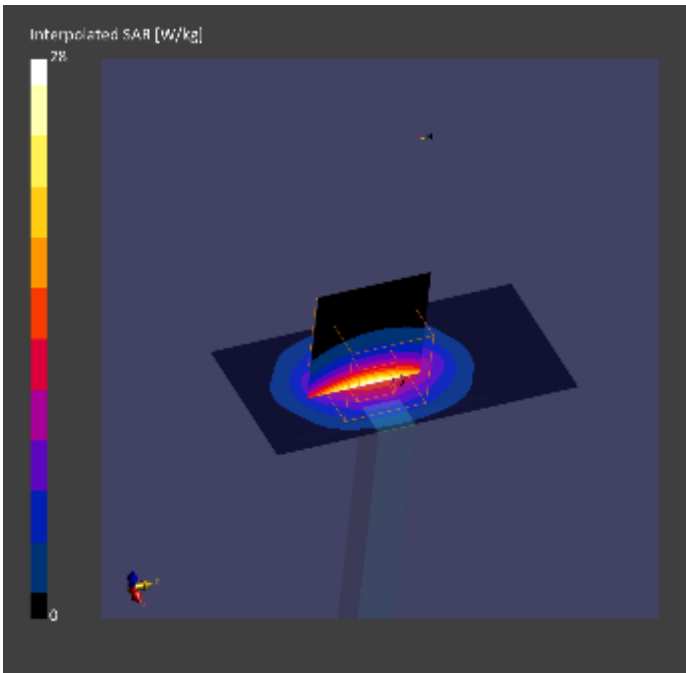
	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface	3.0	1.4
[mm]		
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-08-09, 10:52	2023-08-09, 10:59
psSAR1g [W/kg]	13.2	13.0
psSAR10g [W/kg]	6.15	6.01
Power Drift [dB]	0.01	0.00
Power Scaling	Disabled	Disabled
Scaling Factor		
[dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		78.6
Dist 3dB Peak		9.0
[mm]		

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



Validation results in 2450 MHz Band for Head TSL

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	n/a x n/a x n/a		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, HSL	,		CW, 0--	2450.0, 0	7.64	1.91	41.4

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2158	HBBL1900-3800V3 - 2450MHz - 2023- 08-09 , --	EX3DV4 - SN7766, 2022-10-18	DAE4 Sn1690, 2022-10-13

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-08-09, 10:52	2023-08-09, 10:59
psSAR1g [W/kg]	13.2	13.0
psSAR10g [W/kg]	6.15	6.01
Power Drift [dB]	0.01	0.00
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		78.6
Dist 3dB Peak [mm]		9.0

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		

