

RF Exposure report



The following samples were submitted and identified on behalf of the client as:

Equipment Under Test Mobile Phone
Brand Name POCO
Model No. 21121210G
Company Name Xiaomi Communications Co., Ltd.
Company Address #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Standards IEEE/ANSI C95.1-1992, IEEE 1528-2013
FCC ID 2AFZZ1210G
Date of Receipt Dec. 23, 2021
Date of Test(s) Jan. 06, 2022 ~ Jan. 10, 2022
Date of Issue Jan. 21, 2022

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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Signed on behalf of SGS

Clerk / Ruby Ou	PM / Bond Tsai	Approved By / John Yeh

Date: Jan. 21, 2022

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
EN/2021/C0047	Rev.00	Initial creation of document	Jan. 21, 2022	Ruby Ou	

Note:

1. The mark " * " is the revised version of the report due to comments submitted by the certification.

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0. Guidance applied

- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- IEC/IEEE 62209-1528:2020
- SPEAG DASY6 System Handbook
- SPEAG DASY6 Application Note
(Interim Procedure for Device Operation at 6GHz-10GHz)
- IEC TR 63170:2018
- IEC 62479:2010
- FCC KDB 865664 D01 v01r04
- FCC KDB 865664 D02 v01r02
- FCC KDB 447498 D01 v06
- FCC KDB 648474 D04 v01r03
- FCC KDB 248227 D01 v02r02

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1. General Information

1.1 Testing Laboratory

SGS Taiwan Ltd. Central RF Lab	
1F, No. 8, Alley 15, Lane 120, Sec. 1, NeiHu Road, Neihu District, Taipei City, 11493, Taiwan.	
FCC Designation Number	TW0029
Tel	+886-2-2299-3279
Fax	+886-2-2298-0488
Internet	http://www.tw.sgs.com/

1.2 Details of Applicant

Company Name	Xiaomi Communications Co., Ltd.
Company Address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

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1.3 Description of EUT

EUT Name	Mobile Phone	
Brand Name	POCO	
Model No.	21121210G	
FCC ID	2AFZZ1210G	
Mode of Operation	☒ WLAN802.11	
Duty Cycle	WLAN802.11	96.3%
TX Frequency Range (MHz)	WLAN U-NII 5	6345
	WLAN U-NII 6	6505
	WLAN U-NII 7	6665 — 6825
	WLAN U-NII 8	6985

Brand & Mode	Tx Frequency	SAR	APD	PD
	MHz	1g Head (W/kg)	Head (mW/cm ²)	psPD (mW/cm ²)
WiFi 6E	5925-7125	1.05	0.66	-

Brand & Mode	Tx Frequency	SAR	APD	PD
	MHz	1g Body (W/kg)	Body (mW/cm ²)	psPD (mW/cm ²)
WiFi 6E	5925-7125	0.30	0.23	-

Brand & Mode	Tx Frequency	SAR	APD	PD
	MHz	10g Phablet SAR (W/kg)	Phablet (mW/cm ²)	psPD (mW/cm ²)
WiFi 6E	5925-7125	0.79	1.70	0.77

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WLAN conducted power table:

ANT16+19_chain0+1						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
U-NII-5 6.2GHz	802.11a	1	5955	6Mbps	10.00	8.17
		45	6175		10.00	8.04
		93	6415		10.00	8.03
	802.11ax20-HE0	1	5955	MCS0	10.50	8.58
		45	6175		10.50	8.56
		93	6415		10.50	8.63
	802.11ax40-HE0	3	5985	MCS0	14.00	12.16
		43	6165		14.00	12.07
		91	6405		14.00	12.07
	802.11ax80-HE0	7	5985	MCS0	16.00	14.17
		39	6145		16.00	14.10
		87	6385		16.00	14.06
	802.11ax160-HE0	15	6025	MCS0	16.00	15.52
		47	6185		16.00	15.59
		79	6345		16.00	15.52
U-NII-6 6.5GHz	802.11a	97	6435	6Mbps	10.00	8.11
		105	6475		10.00	8.01
		113	6515		10.00	8.18
	802.11ax20-HE0	97	6435	MCS0	11.00	9.07
		105	6475		11.00	9.02
		113	6515		11.00	9.01
	802.11ax40-HE0	99	6445	MCS0	14.50	12.63
		107	6485		14.50	12.68
	802.11ax80-HE0	103	6465	MCS0	16.00	14.04
		119	6545		16.00	14.20
U-NII-7 6.7GHz	802.11a	117	6535	6Mbps	10.50	8.52
		149	6695		10.50	8.59
		181	6855		10.50	8.54
	802.11ax20-HE0	117	6535	MCS0	11.00	9.16
		149	6695		11.00	9.17
		181	6855		11.00	9.09
	802.11ax40-HE0	115	6525	MCS0	14.50	12.58
		147	6685		14.50	12.52
		179	6845		14.50	12.61
	802.11ax80-HE0	135	6625	MCS0	16.00	14.04
		151	6705		16.00	14.02
		167	6785		16.00	14.07
	802.11ax160-HE0	143	6665	MCS0	16.00	15.69
		175	6825		16.50	16.20
U-NII-8 7.0GHz	802.11a	185	6875	6Mbps	10.50	8.68
		209	6995		10.50	8.53
		233	7115		10.50	8.62
	802.11ax20-HE0	185	6875	MCS0	0.00	-0.11
		209	6995		0.00	-0.10
		233	7115		0.00	-0.13
	802.11ax40-HE0	187	6885	MCS0	14.50	12.60
		227	7085		14.50	12.68
	802.11ax80-HE0	183	6865	MCS0	16.00	14.15
		199	6945		16.00	14.03
		215	7025		16.00	14.12
	802.11ax160-HE0	207	6985	MCS0	16.00	15.74

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6G ax duty
(2.09/2.17=0.963) Scaling Factor=1.038



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1.4 Test Environment

Ambient Temperature: $22\pm 2^{\circ}\text{C}$

Tissue Simulating Liquid: $22\pm 2^{\circ}\text{C}$

1.5 Operation Description

1. An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band.
2. SAR is measured using the highest measured maximum output power channel. When the reported SAR of the initial test configuration is $> 0.8\text{ W/kg}$, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the reported SAR is $\leq 1.2\text{ W/kg}$ or all required channels are tested.
3. Since the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is $\leq 1.2\text{ W/kg}$, SAR is not required for subsequent test configuration.
4. Per 201904 TCBC workshops, general principles of FCC KDB Publication 248227 D01 can be applied to determine the SAR Initial Test Configurations and test reduction for 802.11ax SAR testing.
5. In applying the test guidance, the IEEE 802.11 mode with the maximum output power (out of all modes) should be considered for testing. For modes with the same maximum output power, the guidance from section 5.3.2 a) of FCC KDB Publication 248227 D01 should be applied, with 802.11ax being considered as the highest 802.11 mode for the appropriate frequency bands
6. According to KDB865664 D01, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is $\geq 0.8\text{ W/kg}$, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is $\geq 1.45\text{ W/kg}$ ($\sim 10\%$ from the 1-g SAR limit)
7. WIFI 6E of the device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools.
8. Per October 2020 & April 2021 TCB Workshop Interim procedures and FCC guidance, start instead with a minimum of 5 test channels across the full band, then adapt and apply conducted power and SAR test reduction procedures of KDB Pub. 248227 v02r02.
9. WIFI 6E SAR is measured by using 6-7GHz parameters per IEC/IEEE62209-1528:2020 and report also estimated absorbed PD (for reference purposes only, not specifically for compliance).

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10. For the highest SAR test configurations also measure incident PD (total) using mmW near-field probe and total-field/power-density reconstruction method.
11. The PD test was performed with a 2 mm separation between probe sensor and EUT surface.
12. According to October 2020 TCB Workshop Interim procedures, power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 2.67 dB (85%) was used to determine the psPD measurement scaling factor.
13. MIMO SAR is measured with all applicable antennas transmitting simultaneously at maximum output power in a single SAR measurement.
14. MIMO incident PD is measured with all applicable antennas transmitting simultaneously at maximum output power in a single incident PD measurement.

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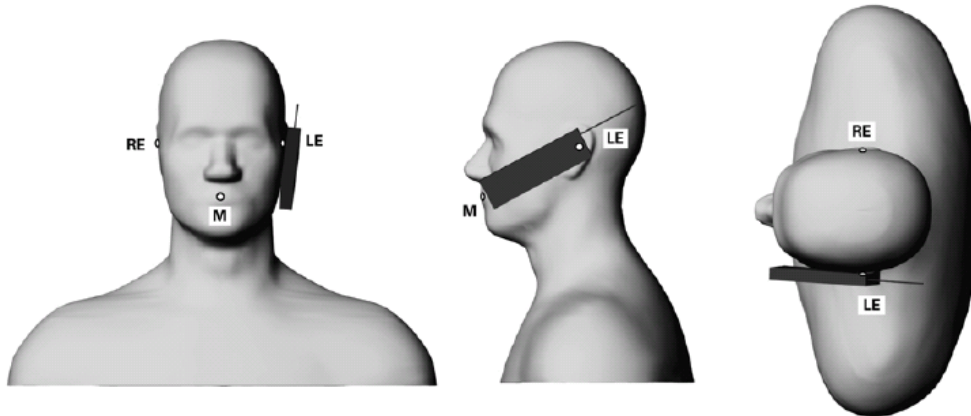
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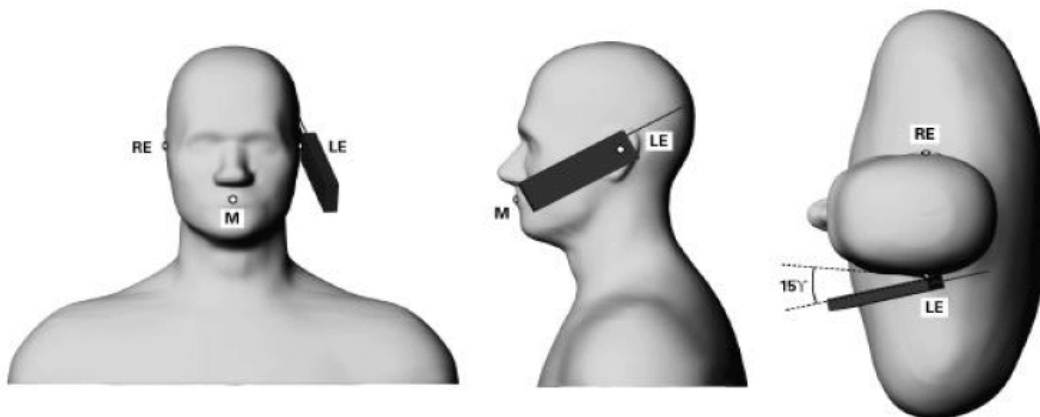
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1.6 Positioning Procedure

Head SAR measurement statement



Phone position 1, “cheek” or “touch” position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.



Phone position 2, “tilted position.” The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.

Cheek/Touch Position:

The handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.

Ear/Tilt Position:

With the phone aligned in the Cheek/Touch position, the handset was tilted away from the mouth with respect to the test device reference point by 15 degrees.

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1.7 Evaluation Procedures

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1. The extraction of the measured data (grid and values) from the Zoom Scan.
2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).
3. The generation of a high-resolution mesh within the measured volume.
4. The interpolation of all measured values from the measurement grid to the high-resolution grid.
5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface.
6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within -2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans.

The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30x30x30mm contains about 30g of tissue. The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is

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the moved around until the highest averaged SAR is found.

If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

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1.8 Probe Calibration Procedures

For the calibration of E-field probes in lossy liquids, an electric field with an accurately known field strength must be produced within the measured liquid. For standardization purposes it would be desirable if all measurements which are necessary to assess the correct field strength would be traceable to standardized measurement procedures. In the following two different calibration techniques are summarized:

1.8.1 Transfer Calibration with Temperature Probes

In lossy liquids the specific absorption rate (SAR) is related both to the electric field (E) and the temperature gradient ($\delta T / \delta t$) in the liquid.

$$SAR = C \frac{\delta T}{\delta t},$$

Whereby σ is the conductivity, ρ the density and c the heat capacity of the liquid.

Hence, the electric field in lossy liquid can be measured indirectly by measuring the temperature gradient in the liquid. Non-disturbing temperature probes (optical probes or thermistor probes with resistive lines) with high spatial resolution (<1-2 mm) and fast reaction time (<1 s) are available and can be easily calibrated with high precision [1]. The setup and the exciting source have no influence on the calibration; only the relative positioning uncertainties of the standard temperature probe and the E-field probe to be calibrated must be considered. However, several problems limit the available accuracy of probe calibrations with temperature probes:

1. The temperature gradient is not directly measurable but must be evaluated from temperature measurements at different time steps. Special precaution is necessary to avoid measurement errors caused by temperature gradients due to energy equalizing effects or convection currents in the liquid. Such effects cannot be completely avoided, as the measured field itself destroys the thermal equilibrium in the liquid. With a careful setup these errors can be kept

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small.

2. The measured volume around the temperature probe is not well defined. It is difficult to calculate the energy transfer from a surrounding gradient temperature field into the probe. These effects must be considered, since temperature probes are calibrated in liquid with homogeneous temperatures. There is no traceable standard for temperature rise measurements.
3. The calibration depends on the assessment of the specific density, the heat capacity and the conductivity of the medium. While the specific density and heat capacity can be measured accurately with standardized procedures ($\sim 2\%$ for c ; much better for ρ), there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed $\pm 5\%$.
4. Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

Considering these problems, the possible accuracy of the calibration of E-field probes with temperature gradient measurements in a carefully designed setup is about $\pm 10\%$ (RSS) [2]. Recently, a setup which is a combination of the waveguide techniques and the thermal measurements was presented in [3]. The estimated uncertainty of the setup is $\pm 5\%$ (RSS) when the same liquid is used for the calibration and for actual measurements and $\pm 7-9\%$ (RSS) when not, which is in good agreement with the estimates given in [2].

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1.8.2 Calibration with Analytical Fields

In this method a technical setup is used in which the field can be calculated analytically from measurements of other physical magnitudes (e.g., input power). This corresponds to the standard field method for probe calibration in air; however, there is no standard defined for fields in lossy liquids.

When using calculated fields in lossy liquids for probe calibration, several points must be considered in the assessment of the uncertainty:

1. The setup must enable accurate determination of the incident power.
2. The accuracy of the calculated field strength will depend on the assessment of the dielectric parameters of the liquid.
3. Due to the small wavelength in liquids with high permittivity, even small setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

References

- (1) N. Kuster, Q. Balzano, and J.C. Lin, Eds., *Mobile Communications Safety*, Chapman & Hall, London, 1997.
- (2) K. Meier, M. Burkhardt, T. Schmid, and N. Kuster, "Broadband calibration of E-field probes in lossy media", *IEEE Transactions on Microwave Theory and Techniques*, vol. 44, no. 10, pp. 1954-1962, Oct. 1996.
- (3) K. Jokela, P. Hyysalo, and L. Puranen, "Calibration of specific absorption rate (SAR) probes in waveguide at 900 MHz", *IEEE Transactions on Instrumentation and Measurements*, vol. 47, no. 2, pp. 432-438, Apr. 1998.

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1.9 SAR System Description and Setup

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

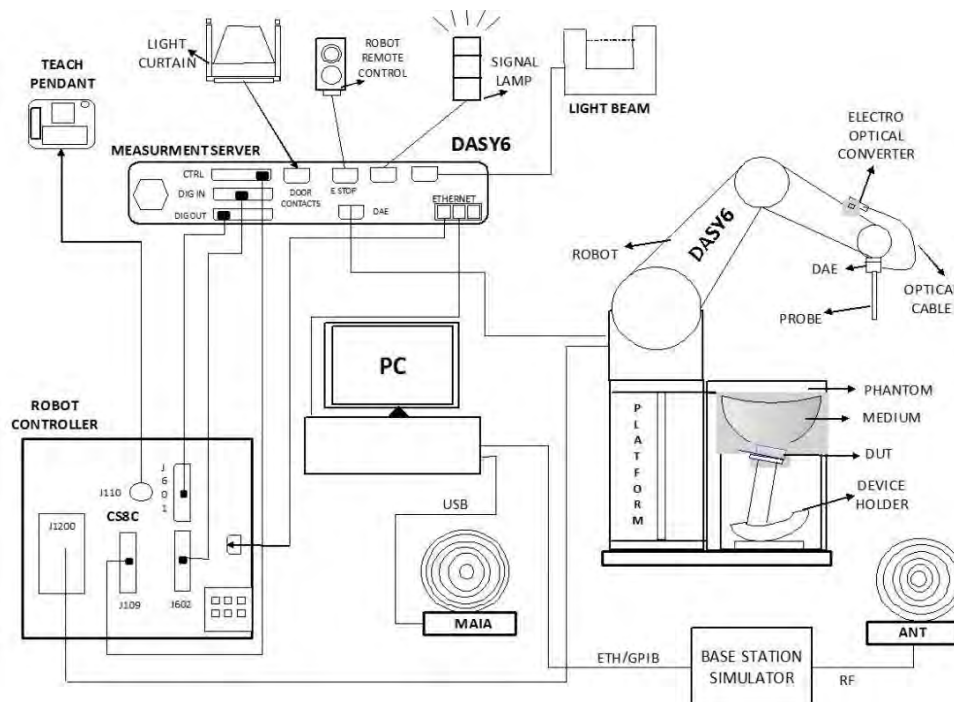


Fig. a A block diagram of the SAR measurement system

- A standard high precision 6-axis robot 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

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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 Windows 10 and the DASY6 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.

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1.9.1 Power density measurement system

DASY6 system

Power density measurements for mmWave frequencies were performed using SPEAG DASY6 with cDASY6 5G module. The DASY6 included a high precision robotics system (Staubli), robot controller, desktop computer, near-field probe, probe alignment sensor, and the 5G phantom cover.

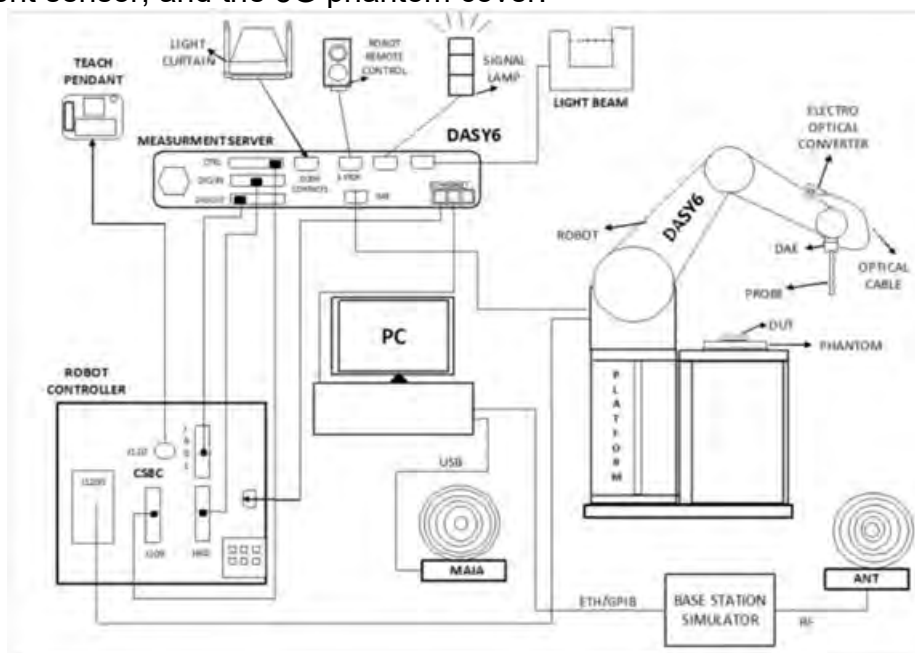


Fig-2.1 SPEAG DASY6 system

EUmmWVx probe

The EUmmWVx probe is based on the pseudo-vector probe design, which not only measures the field magnitude but also derives its polarization ellipse. The design entails two small 0.8mm dipole sensors mechanically protected by high-density foam, printed on both sides of a 0.9mm wide and 0.12mm thick glass substrate. The body of the probe is specifically constructed to minimize distortion by the scattered fields. The probe consist of two sensors with different angles (1 and 2) arranged in the same plane in the probe axis. Three or more measurements of the two sensors are taken for different probe rotational angles to derive the amplitude and polarization information. The probe design allows measurements at distances as small as 2mm from the sensors to the surface of the device under test (DUT). The typical sensor to probe tip distance is 1.5 mm. The exact distance is calibrated.

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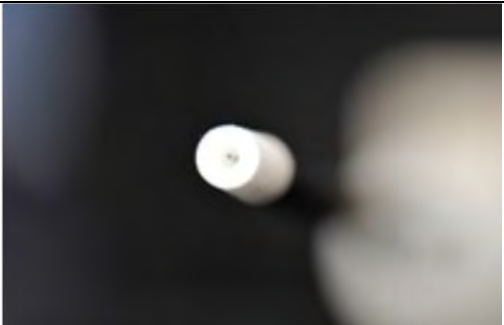
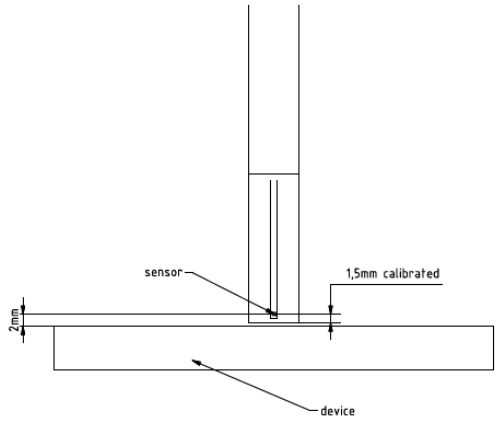
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	Two dipoles optimally arranged to obtain pseudo-vector information. Minimum 3 measurements/ point, 120° rotated around probe axis. Sensors (0.8mm length) printed on glass substrate protected by high density foam. Low perturbation of the measured field. Requires positioner which can do accurate probe rotation.
Frequency Range	750 MHz – 110 GHz
Dynamic Range	< 20 V/m – 10,000 V/m with PRE-10 (min < 50 V/m - 3000 V/m)
Position Precision	< 0.2 mm (DASY6)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: encapsulation 8 mm (internal sensor < 1mm) Distance from probe tip to dipole centers: < 2 mm. Sensor displacement to probe's calibration point: < 0.3 mm
Applications 	E-field measurements of 5G devices and other mm-wave transmitters operating above 10GHz in < 2 mm distance from device (free-space). Power density, H-field and far-field analysis using total field reconstruction (cDASY6 5G module required)
Compatibility	cDASY6 + 5G-Module SW1.0 and higher

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1.9.2 SAR System Performance Check Results

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within $\pm 10\%$ (according to KDB865664D01) from the target SAR values.

These tests were done at 6500/7000 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1. During the tests, the liquid depth above the ear reference points was above 15 cm ($\leq 3G$) or 10 cm ($> 3G$) in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

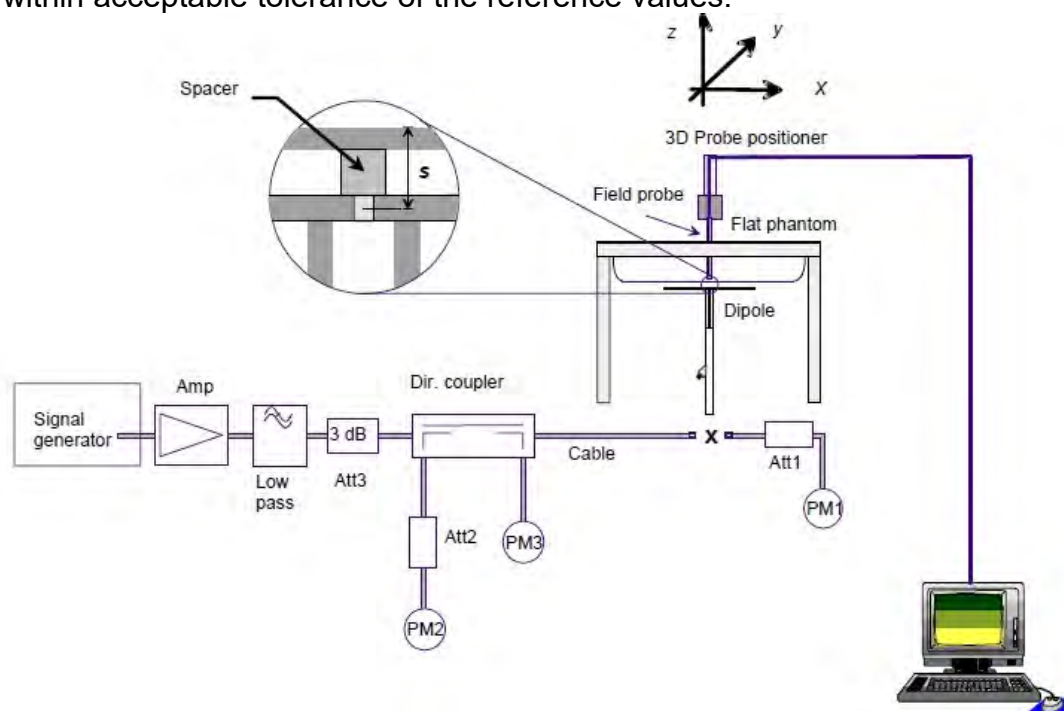


Fig. b The block diagram of system verification

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Validation Kit	S/N	Frequency (MHz)		1W Target SAR-1g (mW/g)	Pin=100mW Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D6.5GHzV2	1006	6500	Head	291	29.50	295	1.37%	Jan. 08, 2022
D7GHzV2	1007	7000	Head	275	27.60	276	0.36%	Jan. 09, 2022

Validation Kit	S/N	Frequency (MHz)		1W Target SAR-10g (mW/g)	Pin=100mW Measured SAR-10g (mW/g)	Measured SAR-10g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D6.5GHzV2	1006	6500	Head	53.5	5.48	55	2.43%	Jan. 08, 2022
D7GHzV2	1007	7000	Head	47.4	4.80	48	1.27%	Jan. 09, 2022

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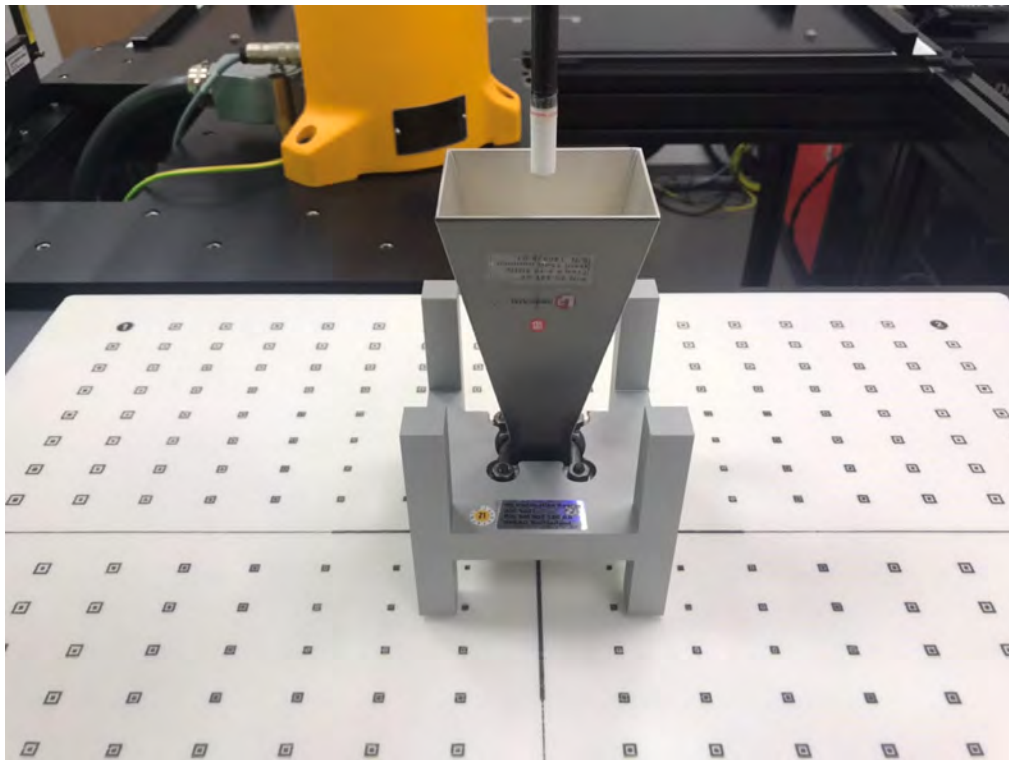
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Power Density Test System Verification

The system was verified to be within ± 0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check.

The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.



System Verification Setup Photo

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PD System Verification Results

The system was verified to be within ± 0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check. The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.

Frequency (GHz)	PD Verification Source	Probe S/N	DAE S/N	Distance (mm)	Prad (mW)	Measured 4cm ² (W/m ²)	Target 4cm ² (W/m ²)	Deviation (dB)	Date
10G	10G	9579	1665	10	74	42	42.3	-0.03	Jan. 10, 2022

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1.9.3 SAR Tissue Verification

The dielectric properties for this Head-simulant fluid were measured by using the SPEAG Dielectric Assessment Kit (DAKS-3.5)

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The measured conductivity and permittivity are all within $\pm 5\%$ of the target values.

The depth of the tissue simulant in the flat section of the phantom was $\geq 15 \text{ cm} \pm 5 \text{ mm}$ (Frequency $\leq 3\text{G}$) or $\geq 10 \text{ cm} \pm 5 \text{ mm}$ (Frequency $> 3\text{G}$) during all tests. (Fig. 2)

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, ϵ_r	Target Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ_r	Measured Conductivity, σ (S/m)	% dev ϵ_r	% dev σ
Head	2022.1.8	6025	35.038	5.504	34.755	5.378	-0.81%	-2.30%
		6185	34.851	5.692	34.559	5.568	-0.84%	-2.18%
		6345	34.664	5.880	34.383	5.751	-0.81%	-2.20%
		6500	34.483	6.063	34.201	5.929	-0.82%	-2.20%
		6505	34.478	6.068	34.193	5.937	-0.83%	-2.16%
		6665	34.291	6.256	34.015	6.120	-0.80%	-2.18%
		6825	34.104	6.444	33.821	6.304	-0.83%	-2.18%
	2022.1.9	6985	33.918	6.632	33.632	6.486	-0.84%	-2.21%
		7000	33.900	6.650	33.614	6.502	-0.84%	-2.23%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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1.10 System Components

EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)		
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 6500/7000 MHz Additional CF for other liquids and frequencies upon request		
Frequency	10 MHz to > 6 GHz, Linearity: ± 0.6 dB		
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (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	Tip diameter: 2.5 mm		
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.		

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PHANTOM

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.	
Shell Thickness	2 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Height: 850 mm; Length: 1000 mm; Width: 500 mm	

DEVICE HOLDER

Construction	In combination with the Twin SAM Phantom V4.0/V4.0C or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).	 Device Holder
--------------	--	--

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1.11 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate ("SAR") in Section 4.2 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1, By the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter.

Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

1. Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over a 10 grams of tissue (defined as a tissue volume in the shape of a cube).

Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

2. Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube).

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Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube).

General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure.

Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.(Table .6)

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR (Brain)	1.60 W/kg	8.00 W/kg
Spatial Average SAR (Whole Body)	0.08 W/kg	0.40 W/kg
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 W/kg	20.00 W/kg

RF Exposure limit for above 6GHz

According to ANSI/IEEE C95.1-1992, the criteria listed in the following Table shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm² per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

Table. RF exposure limits

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Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

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2. Summary of Results

2.1 Decision rules

Reported measurement data comply with IEEE 1528-2013 and IEC/IEEE 62209-1528:2020:

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.2 Summary of SAR Results

Head

ANT16+ANT19												
Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		Estimated APD mw/cm² (4cm²)	Plot page
									Measured	Reported		
U-NII-56.2GHz802.11ax(160M)	Right Touch	0	47	6185	16.00	15.59	1.04	109.78%	0.198	0.226	0.112	-
	Right Tilt	0	47	6185	16.00	15.59	1.04	109.78%	0.130	0.148	0.066	-
	Left Touch	0	47	6185	16.00	15.59	1.04	109.78%	0.249	0.284	0.178	-
	Left Tilt	0	47	6185	16.00	15.59	1.04	109.78%	0.276	0.314	0.204	35
	Left Tilt	0	79	6345	16.00	15.52	1.04	111.54%	0.342	0.396	0.247	36
U-NII-66.5GHz802.11ax(160M)	Right Touch	0	111	6505	16.00	15.78	1.04	105.17%	0.302	0.330	0.215	-
	Right Tilt	0	111	6505	16.00	15.78	1.04	105.17%	0.256	0.279	0.183	-
	Left Touch	0	111	6505	16.00	15.78	1.04	105.17%	0.379	0.414	0.289	-
	Left Tilt	0	111	6505	16.00	15.78	1.04	105.17%	0.475	0.519	0.358	37
	Right Touch	0	175	6825	16.50	16.20	1.04	107.13%	0.768	0.854	0.483	-
U-NII-76.7GHz802.11ax(160M)	Right Tilt	0	175	6825	16.50	16.20	1.04	107.13%	0.721	0.802	0.436	-
	Left Touch	0	175	6825	16.50	16.20	1.04	107.13%	0.852	0.947	0.578	-
	Left Tilt	0	175	6825	16.50	16.20	1.04	107.13%	0.946	1.052	0.664	38
	Right Touch	0	207	6985	16.00	15.74	1.04	106.07%	0.713	0.785	0.428	-
	Right Tilt	0	207	6985	16.00	15.74	1.04	106.07%	0.647	0.712	0.374	-
U-NII-87.0GHz802.11ax(160M)	Left Touch	0	207	6985	16.00	15.74	1.04	106.07%	0.783	0.862	0.512	-
	Left Tilt	0	207	6985	16.00	15.74	1.04	106.07%	0.894	0.984	0.584	39

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Body-worn

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Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		Estimated APD mW/cm ² (4cm ²)	Plot page
									Measured	Reported		
U-NII-56.2GHz802.11ax(160M)	Front Surface	15	47	6185	16.00	15.59	1.04	109.78%	0.078	0.089	0.057	-
	Back Surface	15	47	6185	16.00	15.59	1.04	109.78%	0.126	0.144	0.105	40
	Back Surface	15	79	6345	16.00	15.52	1.04	111.57%	0.122	0.141	0.097	41
U-NII-66.5GHz802.11ax(160M)	Front Surface	15	111	6505	16.00	15.78	1.04	105.17%	0.103	0.112	0.074	-
	Back Surface	15	111	6505	16.00	15.78	1.04	105.17%	0.133	0.145	0.111	42
	Back Surface	15	175	6825	16.50	16.20	1.04	107.13%	0.163	0.181	0.143	-
U-NII-76.7GHz802.11ax(160M)	Front Surface	15	175	6825	16.50	16.20	1.04	107.13%	0.267	0.297	0.232	43
	Back Surface	15	207	6985	16.00	15.74	1.04	106.07%	0.147	0.162	0.126	-
	Back Surface	15	207	6985	16.00	15.74	1.04	106.07%	0.209	0.230	0.181	44

Product specific 10-g SAR (Phablet SAR)

ANT16+ANT19

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 10g (W/kg)		Estimated APD mW/cm ² (4cm ²)	Plot page
									Measured	Reported		
U-NII-56.2GHz802.11ax(160M)	Right Edge	0	47	6185	16.00	15.59	1.04	109.78%	0.486	0.554	1.140	45
	Right Edge	0	79	6345	16.00	15.52	1.04	111.57%	0.409	0.474	0.962	46
U-NII-66.5GHz802.11ax(160M)	Right Edge	0	111	6505	16.00	15.78	1.04	105.17%	0.471	0.514	1.110	47
	Top Edge	0	175	6825	16.50	16.20	1.04	107.13%	0.708	0.787	1.700	48
U-NII-87.0GHz802.11ax(160M)	Top Edge	0	207	6985	16.00	15.74	1.04	106.07%	0.668	0.735	1.600	49

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2.3 Summary of PD Results

ANT 16+ANT 19														
Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Measurement uncertainty	PD result(4cm)				Plot page
										Measured Total psPD (mW/cm ²)	Reported Total psPD (mW/cm ²)	Measured Normal psPD (mW/cm ²)	Measured Reported psPD (mW/cm ²)	
U-Ni8-56.2GHz2802.11ax(160M)	Right Edge	2	47	6185	16.00	15.59	1.04	109.78%	1.550	0.383	0.676	0.294	0.519	50
U-Ni8-56.2GHz2802.11ax(160M)	Right Edge	2	79	6345	16.00	15.52	1.04	111.57%	1.550	0.403	0.723	0.329	0.591	51
U-Ni8-66.5GHz2802.11ax(160M)	Right Edge	2	111	6505	16.00	15.78	1.04	125.17%	1.550	0.415	0.702	0.325	0.550	52
U-Ni8-76.7GHz2802.11ax(160M)	Top Edge	2	175	6825	16.50	16.20	1.04	107.13%	1.550	0.376	0.648	0.318	0.548	53
U-Ni8-87.0GHz2802.11ax(160M)	Top Edge	2	207	6985	16.00	15.74	1.04	106.07%	1.550	0.451	0.770	0.374	0.638	54

Note:

$$\text{Scaling} = \frac{\text{reported SAR}}{\text{measured SAR}} = \frac{P_2(\text{mW})}{P_1(\text{mW})} = 10^{\left(\frac{P_2 - P_1}{10}\right)} (\text{dBm})$$

Reported SAR = measured SAR * (scaling)

Where P2 is maximum specified power, P1 is measured conducted power

2.4 Reporting statements of conformity

The conformity statement in this report is based solely on the test results, measurement uncertainty is excluded.

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3. Instruments List

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
SPEAG	Dosimetric E-Field Probe	EX3DV4	7375	Dec.20,2021	Dec.19,2022
		EUmmWV4	9579	Oct.06,2021	Oct.05,2022
SPEAG	System Validation Dipole	D6.5GHzV2	1006	Aug.26,2021	Aug.25,2022
		D7GHzV2	1007	Aug.26,2021	Aug.25,2022
		5G-Veri10	1021	Jan.18,2021	Jan.17,2022
SPEAG	Data acquisition Electronics	DAE4	1665	Mar.01,2021	Feb.28,2022
SPEAG	Software	DASY 52 V52.10.4	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	SAM	N/A	Calibration not required	Calibration not required
		mmWave			
SPEAG	Dielectric Assessment Kit	DAKS-3.5	1053	Feb.17,2021	Feb.16,2022
Agilent	Dual-directional coupler	772D	MY46151242	Aug.16,2021	Aug.15,2022
		778D	MY48220468	Aug.16,2021	Aug.15,2022
Agilent	Signal Generator	N5181A	MY50141235	May.30,2021	May.29,2022
Agilent	Power Meter	E4417A	MY51410006	Mar.23,2021	Mar.22,2022
Agilent	Power Sensor	E9301H	MY51470001	Mar.23,2021	Mar.22,2022
			MY51470002	Mar.23,2021	Mar.22,2022
TECPEL	Digital thermometer	DTM-303A	TP130074	Apr.26,2021	Apr.25,2022
R&S	Power Sensor	NRP18S	101974	Oct.12,2021	Oct.11,2022

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4. Measurements

Report No. :EN/2021/C0047
Measurement Report for XM L10, TILT, U-NII-5, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 47 (6185.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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
Left/Head, HSL	TILT, 0.00	U-NII-5	WLAN, 10743-AAC	6185.0, 47	5.5	5.568	34.559

Hardware Setup

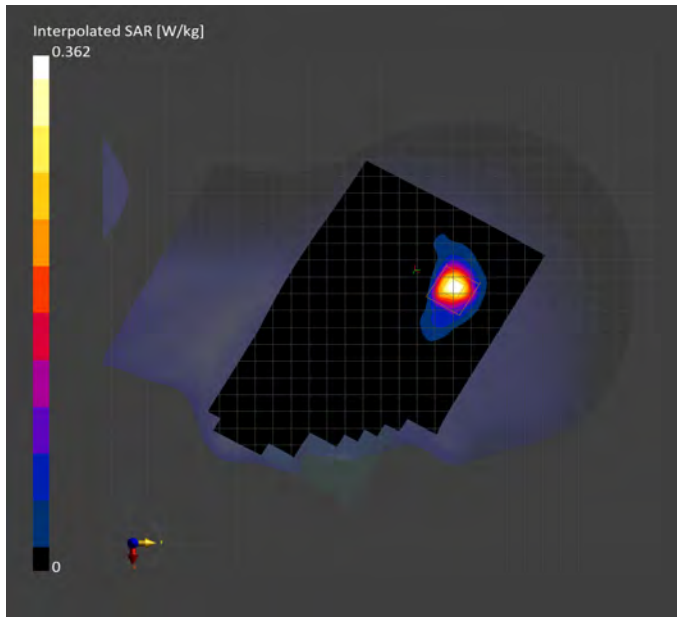
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HGBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1865, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	119.0 x 221.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAUA	N/A	N/A
Surface Detection	VMS + Sp	VMS + Sp
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 01:07	2022-01-08, 01:18
psSAR1g [W/Kg]	0.256	0.276
psSAR10g [W/Kg]	0.081	0.088
Power Drift [dB]	0.05	-0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
MD/M1 [%]		51.7
Dist 3dB Peak [mm]		6.7



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Report No. : EN/2021/C0047
Measurement Report for XM L10, TILT, U-NII-5, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 79 (6345.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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
Left/Head, HSL	TILT, 0.00	U-NII-5	WLAN, 10743-AAC	6345.0, 79	5.5	5.751	34.383

Hardware Setup

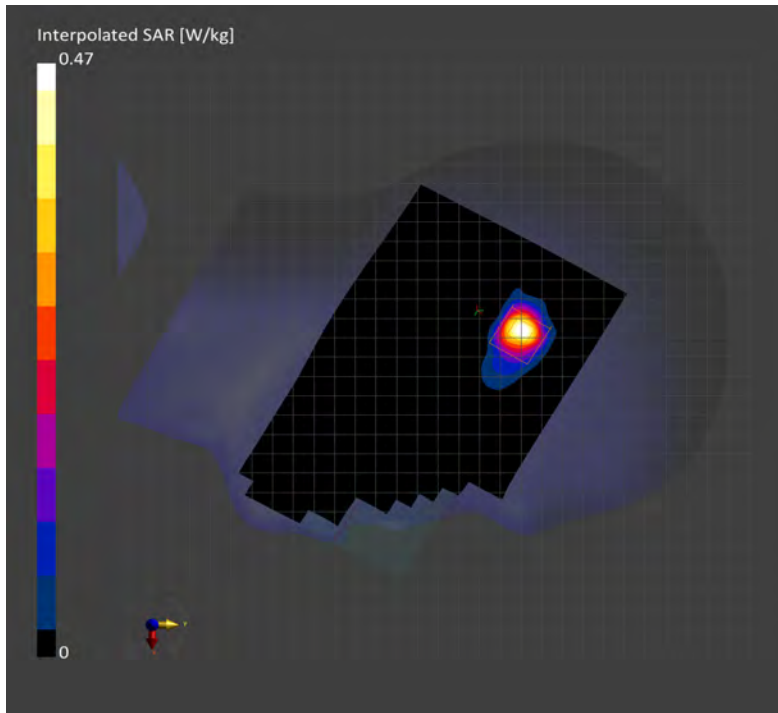
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBSL-800-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1865, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	119.0 x 221.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAAA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 01:42	2022-01-08, 01:53
psSAR1g [W/kg]	0.333	0.342
psSAR10g [W/kg]	0.103	0.107
Power Drift [dB]	-0.08	-0.08
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
MQM1 [%]		51.4
Dist 3dB Peak [mm]		6.4



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Report No. : EN/2021/C0047
Measurement Report for XM L10, TILT, U-NII-6, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 111 (6595.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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
LeftHead, HSL	TILT, 0.00	U-NII-6	WLAN, 10743-AAC	6505.0, 111	5.5	5.937	34.193

Hardware Setup

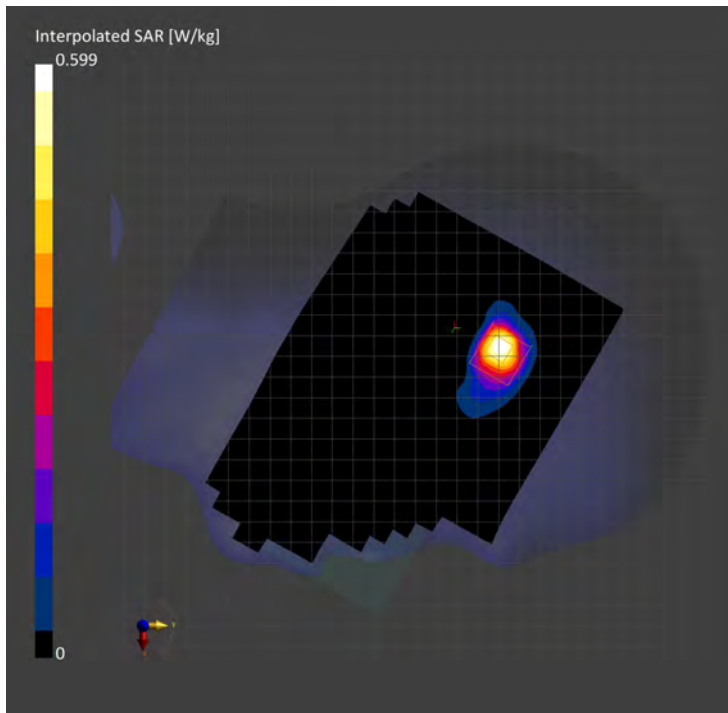
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-400-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	136.0 x 221.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MMA	N/A	N/A
Surface Detection	VMS + Sp	VMS + Sp
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 02:24	2022-01-08, 02:35
psSAR1g [W/kg]	0.448	0.479
psSAR10g [W/kg]	0.148	0.196
Power Drift [dB]	-0.05	0.04
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
MG/M1 [%]		57.3
Dist 3dB Peak [mm]		6.4



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Report No. : EN/2021/C0047
Measurement Report for XM L10, TILT, U-NII-7, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 175 (6825.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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
LeftHead, HSL	TILT, 0.00	U-NII-7	WLAN, 10743-AAC	6825.0, 175	5.5	6.304	33.821

Hardware Setup

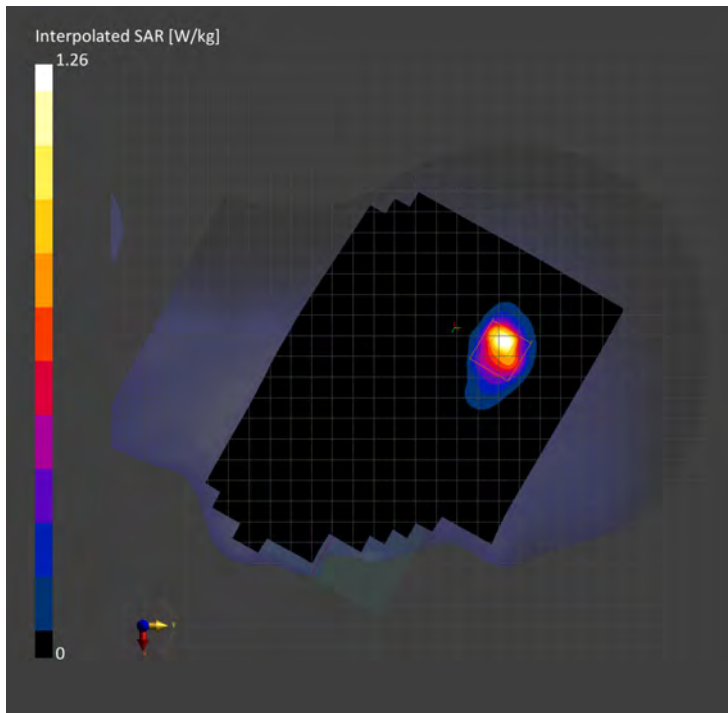
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-400-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	136.0 x 221.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MMA	N/A	N/A
Surface Detection	VMS + Sp	VMS + Sp
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 02:59	2022-01-08, 03:10
psSAR1g [W/kg]	0.902	0.946
psSAR10g [W/kg]	0.283	0.287
Power Drift [dB]	0.08	-0.11
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
MG/M1 [%]		51.4
Dist 3dB Peak [mm]		5.4



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Report No. :EN/2021/C0047

Measurement Report for XM L10, TILT, U-NII-8, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 207 (6985.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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
LeftHead, HSL	TILT, 0.00	U-NII-8	WLAN, 10743-AAC	6985.0, 207	5.45	6.486	33.632

Hardware Setup

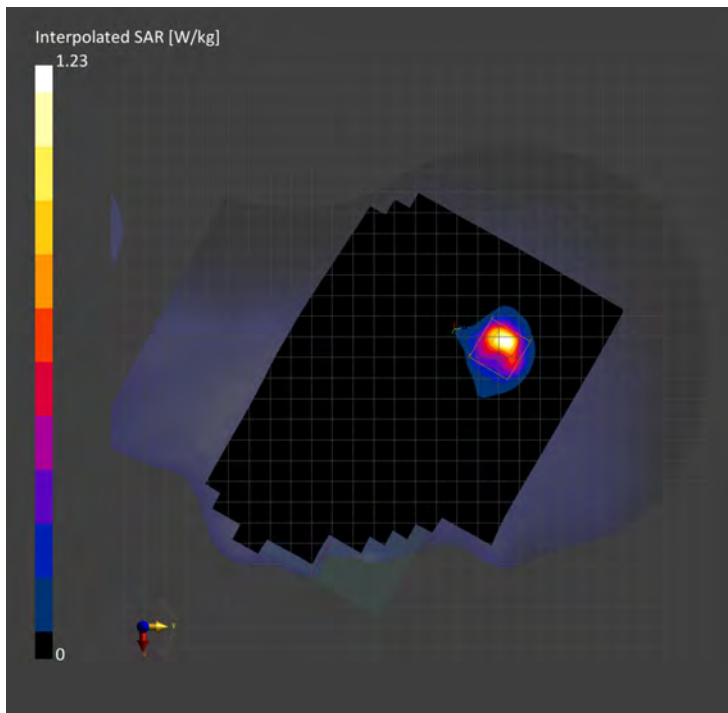
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	136.0 x 221.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAUA	N/A	N/A
Surface Detection	VMS + Sp	VMS + Sp
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-09, 01:17	2022-01-09, 01:29
psSAR1g [W/kg]	0.851	0.894
psSAR10g [W/kg]	0.250	0.250
Power Drift [dB]	0.11	0.09
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
MG/M1 [%]		53.0
Dist 3dB Peak [mm]		4.1



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Report No. :EN/2021/C0047
Measurement Report for XM L10, BACK, U-NII-S, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 47 (5185.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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, HSL	BACK, 15.00	U-NII-S	WLAN, 10743-AAC	5185.0, 47	5.5	5.568	34.559

Hardware Setup

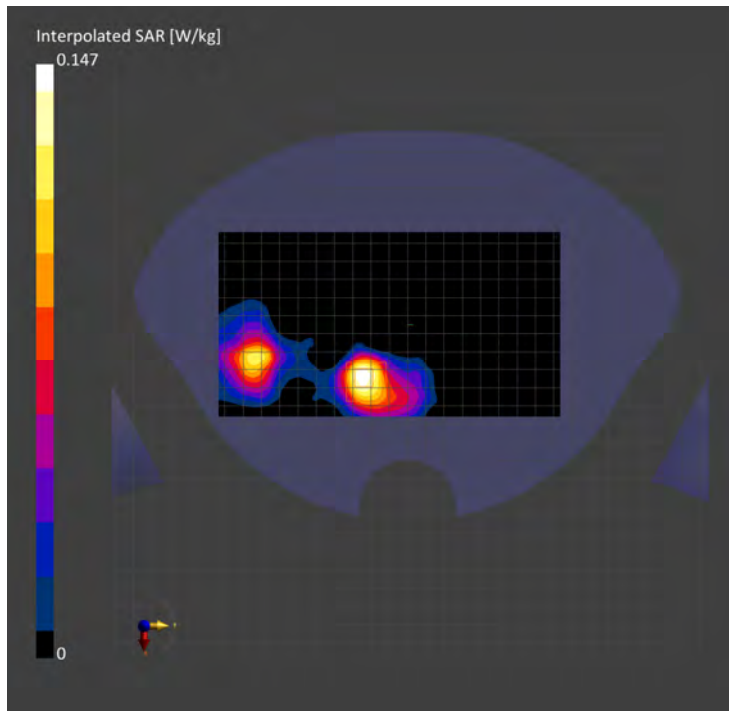
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	102.0 x 187.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 03:31	2022-01-08, 03:42
psSAR1g [W/Kg]	0.111	0.126
psSAR10g [W/Kg]	0.042	0.047
Power Drift [dB]	-0.02	-0.06
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		59.8
Dist 3dB Peak [mm]		9.7



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Report No. :EN/2021/C0047
Measurement Report for XM L10, BACK, U-NII-S, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 79 (5345.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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, HSL	BACK, 15.00	U-NII-S	WLAN, 10743-AAC	5345.0, 79	5.5	5.751	34.383

Hardware Setup

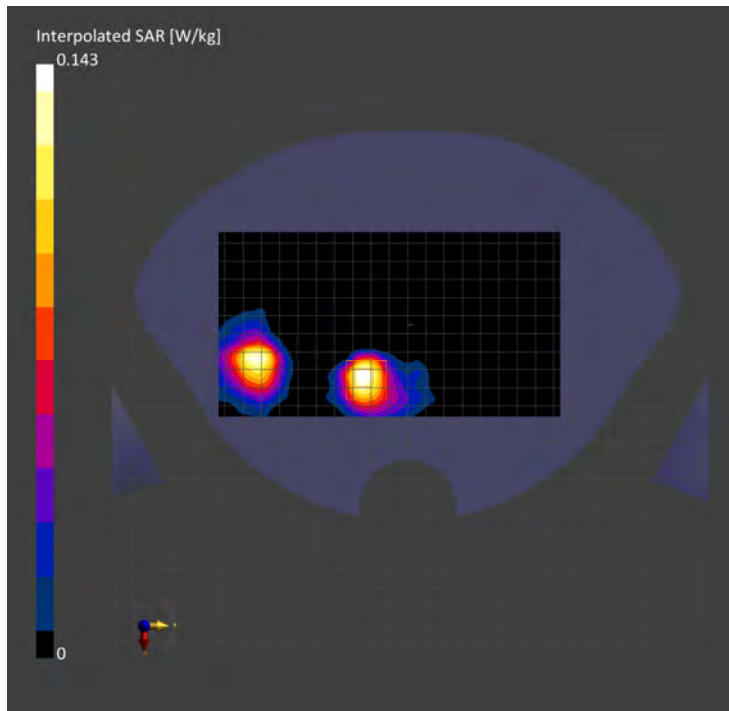
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	102.0 x 187.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 04:05	2022-01-08, 04:16
psSAR1g [W/Kg]	0.108	0.122
psSAR10g [W/Kg]	0.039	0.043
Power Drift [dB]	-0.11	-0.08
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		60.8
Dist 3dB Peak [mm]		7.8



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Report No. :EN/2021/C0047
Measurement Report for XM L10, BACK, U-NII-6, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 111 (6505.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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, HSL	BACK, 15.00	U-NII-6	WLAN, 10743-AAC	6505.0, 111	5.5	5.937	34.193

Hardware Setup

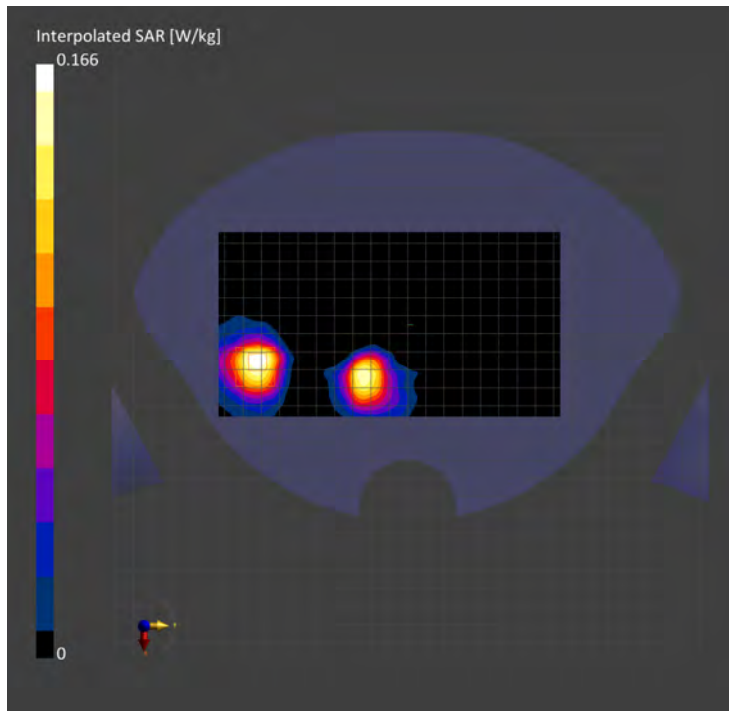
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	102.0 x 187.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 04:37	2022-01-08, 04:48
psSAR1g [W/Kg]	0.131	0.133
psSAR10g [W/Kg]	0.049	0.049
Power Drift [dB]	0.03	-0.18
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		56.8
Dist 3dB Peak [mm]		10.2



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Report No. :EN/2021/C0047
Measurement Report for XM L10, BACK, U-NII-7, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 175 (6825.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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, HSL	BACK, 15.00	U-NII-7	WLAN, 10743-AAC	6825.0, 175	5.5	6.304	33.821

Hardware Setup

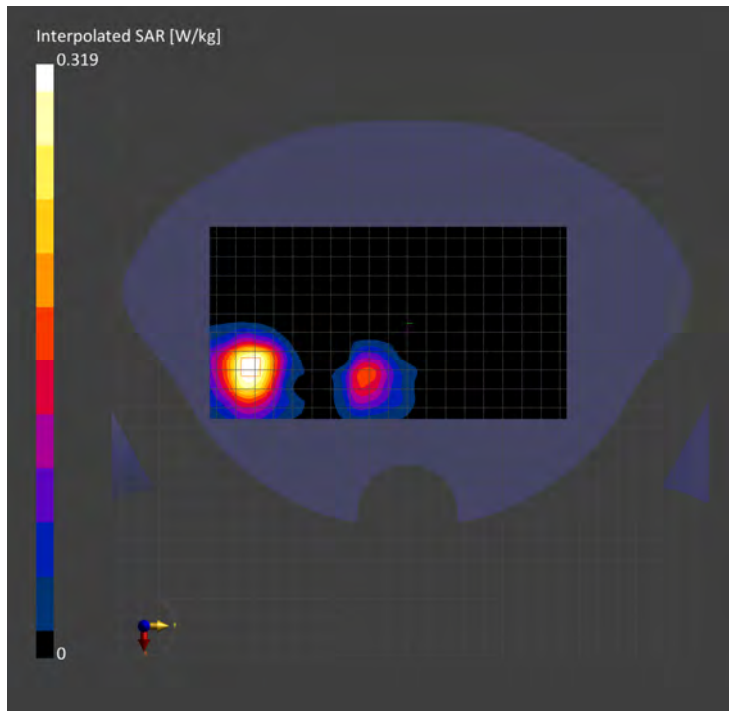
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	102.0 x 187.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 05:10	2022-01-08, 05:21
psSAR1g [W/Kg]	0.268	0.267
psSAR10g [W/Kg]	0.106	0.103
Power Drift [dB]	0.05	-0.08
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		55.0
Dist 3dB Peak [mm]		11.3



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Report No. :EN/2021/C0047
Measurement Report for XM L10, BACK, U-NII-8, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 207 (6985.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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, HSL	BACK, 15.00	U-NII-8	WLAN, 10743-AAC	6985.0, 207	5.45	6.486	33.632

Hardware Setup

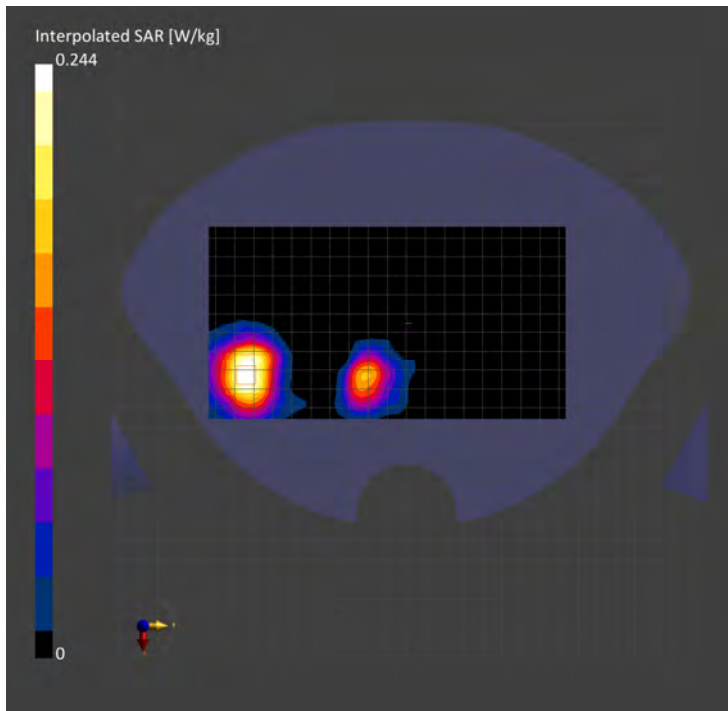
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	102.0 x 187.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-09, 01:51	2022-01-09, 02:02
psSAR1g [W/Kg]	0.209	0.209
psSAR10g [W/Kg]	0.083	0.081
Power Drift [dB]	0.06	-0.16
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		54.9
Dist 3dB Peak [mm]		12.3



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Report No. :EN/2021/C0047
Measurement Report for XM L10, EDGE RIGHT, U-NII-5, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 47 (6185.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions (mm)	IMEI	DUT Type
XM L10,	162.0 x 76.0 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, HSL	EDGE RIGHT, 0.00	U-NII-5	WLAN, 10743-AAC	6185.0, 47	5.5	5.568	34.559

Hardware Setup

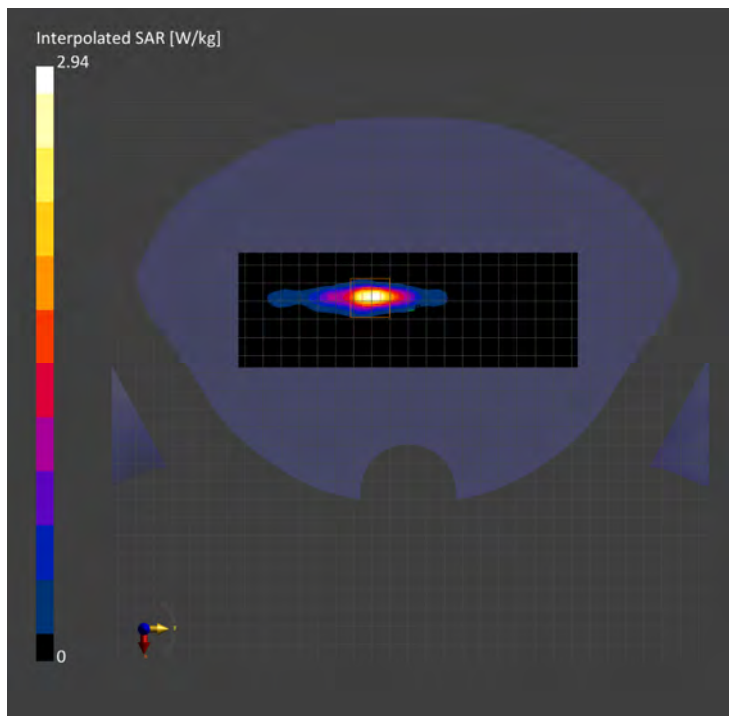
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents (mm)	64.0 x 187.0	22.0 x 22.0 x 22.0
Grid Steps (mm)	8.0 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface (mm)	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAJA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 05:54	2022-01-08, 06:05
psSAR1g (W/kg)	1.80	2.00
psSAR10g (W/kg)	0.463	0.486
Power Drift (dB)	0.02	-0.05
Power Scaling	Disabled	Disabled
Scaling Factor (dB)		
TSL Correction	No correction	No correction
M2/M1 (%)		51.6
Dist 3dB Peak (mm)		3.7



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Measurement Report for XM L10, EDGE RIGHT, U-NII-S, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 79 (6345.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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, HSL	EDGE RIGHT, 0.00	U-NII-S	WLAN, 10743-AAC	6345.0, 79	5.5	5.751	34.383

Hardware Setup

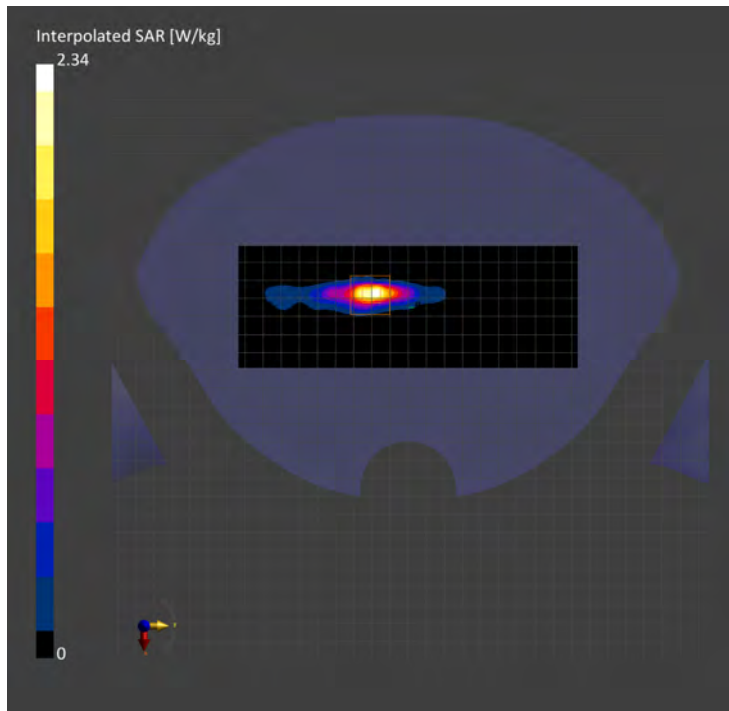
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	68.0 x 187.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 06:26	2022-01-08, 06:37
psSAR1g [W/Kg]	1.50	1.89
psSAR10g [W/Kg]	0.390	0.409
Power Drift [dB]	-0.03	-0.11
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		48.6
Dist 3dB Peak [mm]		4.1



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Report No. :EN/2021/C0047
Measurement Report for XM L10, EDGE RIGHT, U-NII-6, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 111 (6505.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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, HSL	EDGE RIGHT, 0.00	U-NII-6	WLAN, 10743-AAC	6505.0, 111	5.5	5.937	34.193

Hardware Setup

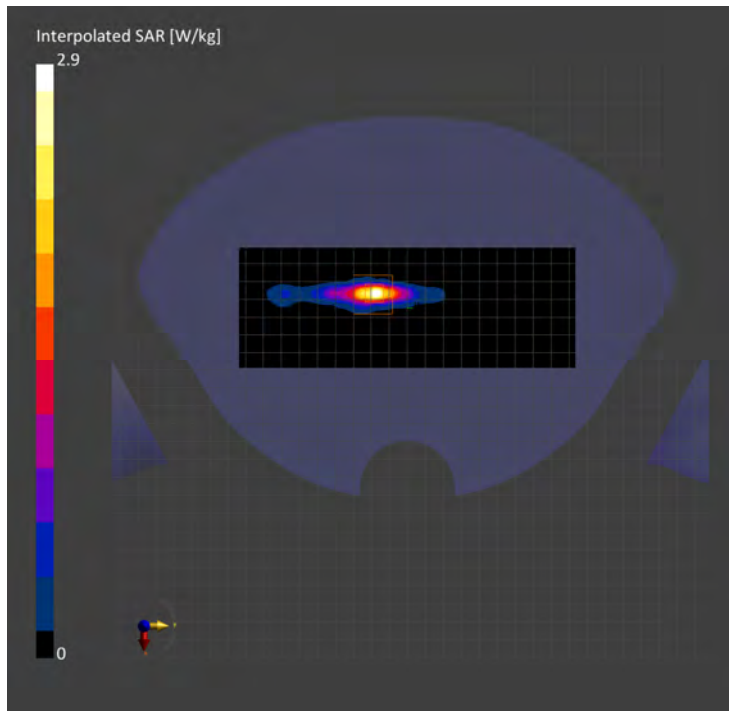
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	68.0 x 187.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.1 x 3.1 x 1.2
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.2
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 06:59	2022-01-08, 07:10
psSAR1g [W/Kg]	1.78	1.97
psSAR10g [W/Kg]	0.439	0.471
Power Drift [dB]	0.12	-0.05
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		53.3
Dist 3dB Peak [mm]		3.7



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Report No. :EN/2021/C0047
Measurement Report for XM L10, EDGE TOP, U-NII-7, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 175 (6825.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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, HSL	EDGE TOP, 0.00	U-NII-7	WLAN, 10743-AAC	6825.0, 175	5.5	6.304	33.821

Hardware Setup

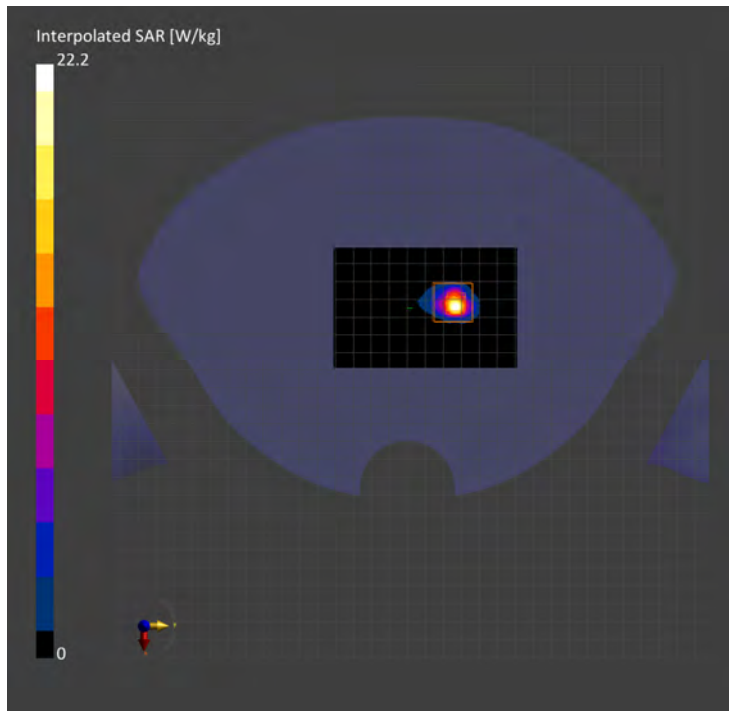
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	68.0 x 102.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 07:32	2022-01-08, 07:43
psSAR1g [W/Kg]	2.91	3.50
psSAR10g [W/Kg]	0.673	0.708
Power Drift [dB]	0.14	0.04
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		54.1
Dist 3dB Peak [mm]		3.7



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Report No. :EN/2021/C0047
Measurement Report for XM L10, EDGE TOP, U-NII-8, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 207 (6985.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 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, HSL	EDGE TOP, 0.00	U-NII-8	WLAN, 10743-AAC	6985.0, 207	5.45	6.486	33.632

Hardware Setup

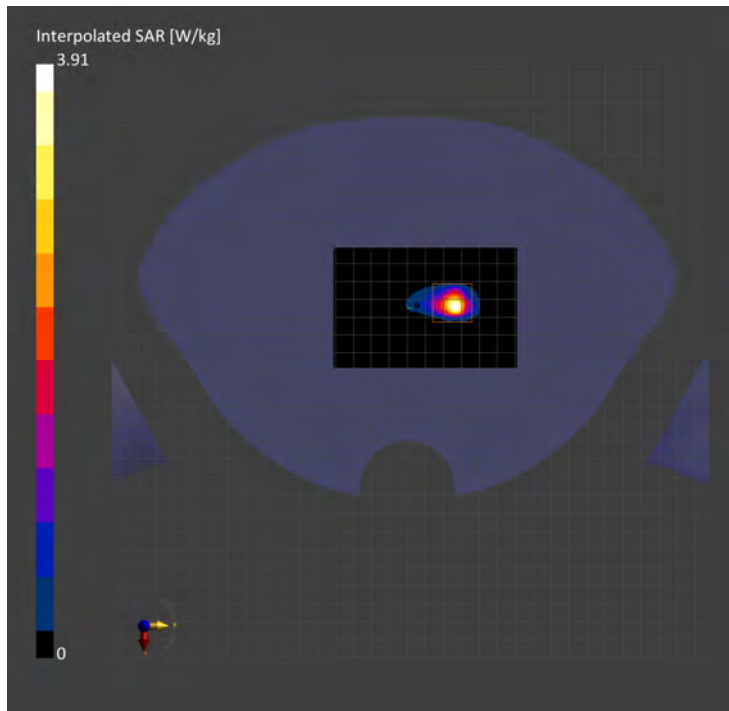
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	68.0 x 102.0	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	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-09, 02:24	2022-01-09, 02:35
psSAR1g [W/Kg]	2.61	3.26
psSAR10g [W/Kg]	0.618	0.668
Power Drift [dB]	0.02	0.07
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		53.2
Dist 3dB Peak [mm]		3.4



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Report No. :EN/2021/C0047

Measurement Report for XM L10, EDGE RIGHT, U-NII-5, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 47 (6185.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 x 6.0		Phone

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
SG	EDGE RIGHT, 2.00	U-NII-5	WLAN, 10743-AAC	6185.0, 47	1.0

Hardware Setup

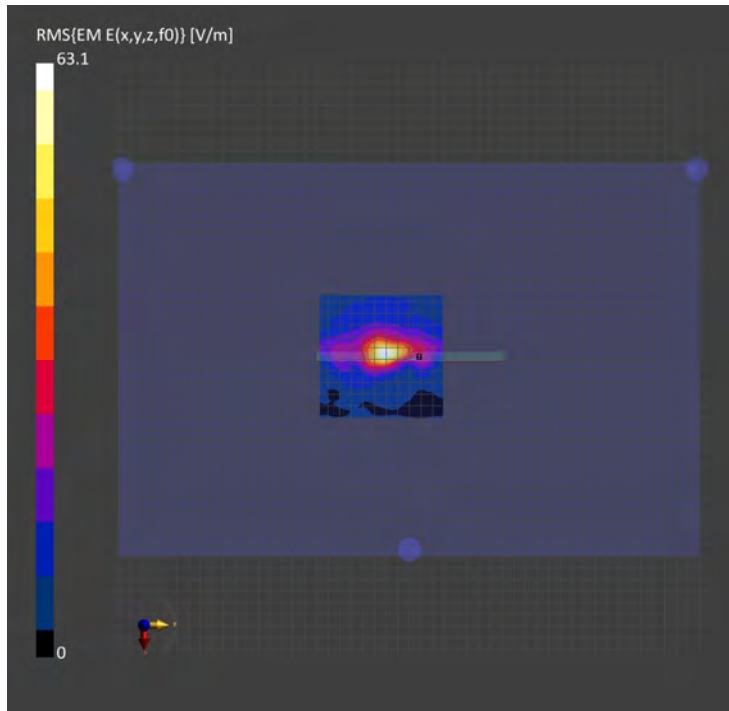
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air -	EUmmWV4 - SN0579_F1-55GHz, 2021-10-06	DAE4 Sn1665, 2021-03-01

Scans Setup

Scan Type	5G Scan
Grid Extents [mm]	100.0 x 100.0
Grid Steps [lambda]	0.0625 x 0.0625
Sensor Surface [mm]	2.0
MAIA	N/A

Measurement Results

Scan Type	5G Scan
Date	2022-01-10, 05:02
Avg Area [cm²]	4.00
psPDm+ [W/m²]	2.94
psPDtot+ [W/m²]	3.83
psPDmod+ [W/m²]	4.76
E _{max} [V/m]	63.1
Power Drift [dB]	-0.07



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Report No. :EN/2021/C0047
Measurement Report for XM L10, EDGE RIGHT, U-NII-5, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 79 (6345.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 x 8.0		Phone

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	EDGE RIGHT, 2.00	U-NII-5	WLAN, 10743-AAC	6345.0, 79	1.0

Hardware Setup

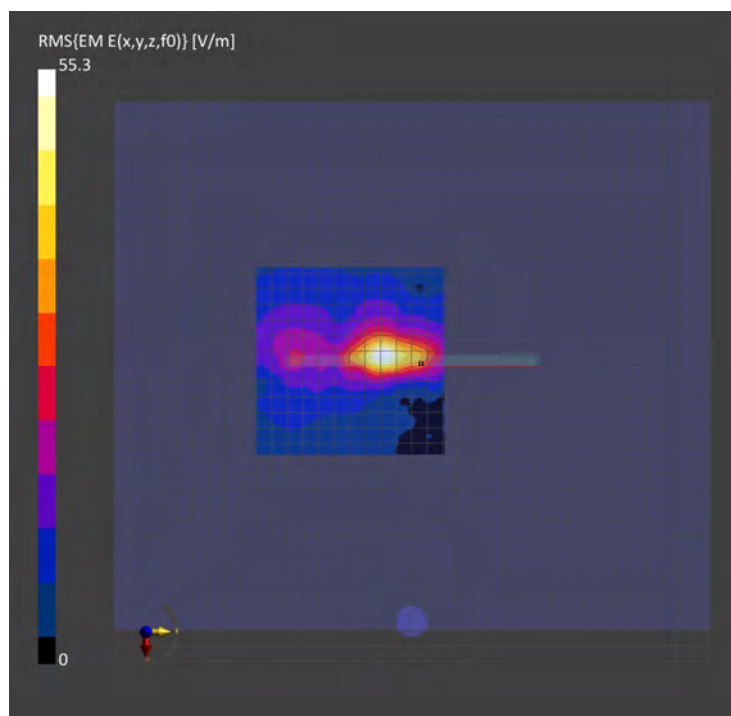
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air -	EUnmWV4 - SN9579_F1-55GHz, 2021-10-06	DAE4 Sn1665, 2021-03-01

Scans Setup

Scan Type	5G Scan
Grid Extents [mm]	120.0 x 120.0
Grid Steps [lambda]	0.0625 x 0.0625
Sensor Surface [mm]	2.0
MAIA	N/A

Measurement Results

Scan Type	5G Scan
Date	2022-01-10, 07:13
Avg. Area [cm ²]	4.00
psPD _{tot} [W/m ²]	3.29
psPD _{tot} [W/m ²]	4.09
psPD _{mod} [W/m ²]	4.44
E _{max} [V/m]	55.3
Power Drift [dB]	-0.15



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Report No. :EN/2021/C0047
Measurement Report for XM L10, EDGE RIGHT, U-NII-6, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 111 (6505.0 MHz)
Device Under Test Properties

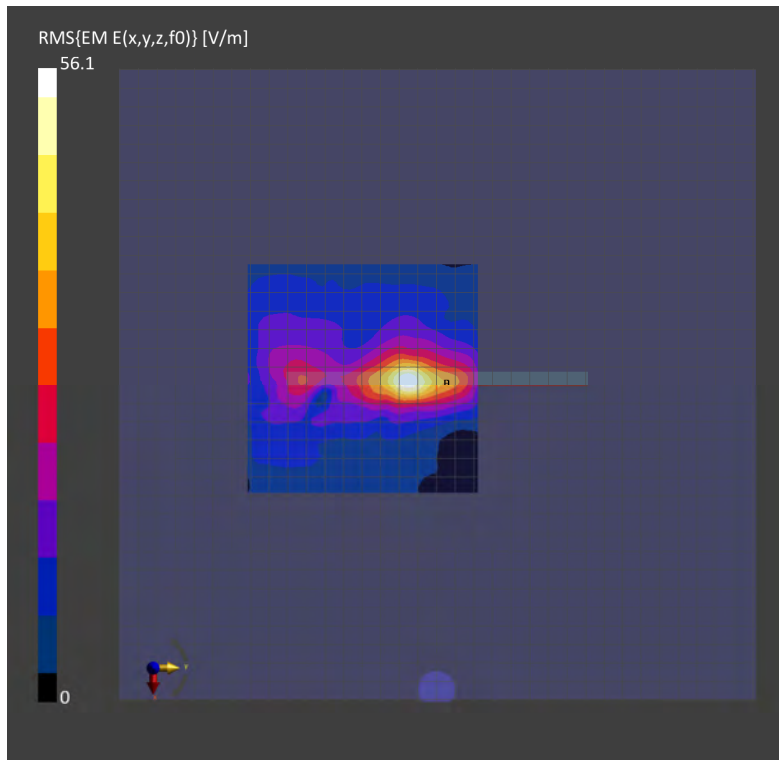
Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 x 8.0		Phone

Exposure Conditions					
Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	EDGE RIGHT, 2.00	U-NII-6	WLAN, 10743-AAC	6505.0, 111	1.0

Hardware Setup			
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air -	EUnmWV4 - SN9579_F1-55GHz, 2021-10-06	DAE4 Sn1665, 2021-03-01

Scans Setup	
Scan Type	5G Scan
Grid Extents [mm]	120.0 x 120.0
Grid Steps [lambda]	0.0625 x 0.0625
Sensor Surface [mm]	2.0
MAIA	N/A

Measurement Results	
Scan Type	5G Scan
Date	2022-01-10, 09:26
Avg. Area [cm²]	4.00
psPDm+ [W/m²]	3.25
psPDtot+ [W/m²]	4.15
psPDmod+ [W/m²]	4.65
E _{max} [V/m]	56.1
Power Drift [dB]	-0.08



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Report No. :EN/2021/C0047
Measurement Report for XM L10, EDGE TOP, U-NII-7, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 175 (6825.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 x 8.0		Phone

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
SG	EDGE TOP, 2.00	U-NII-7	WLAN, 10743-AAC	6825.0, 175	1.0

Hardware Setup

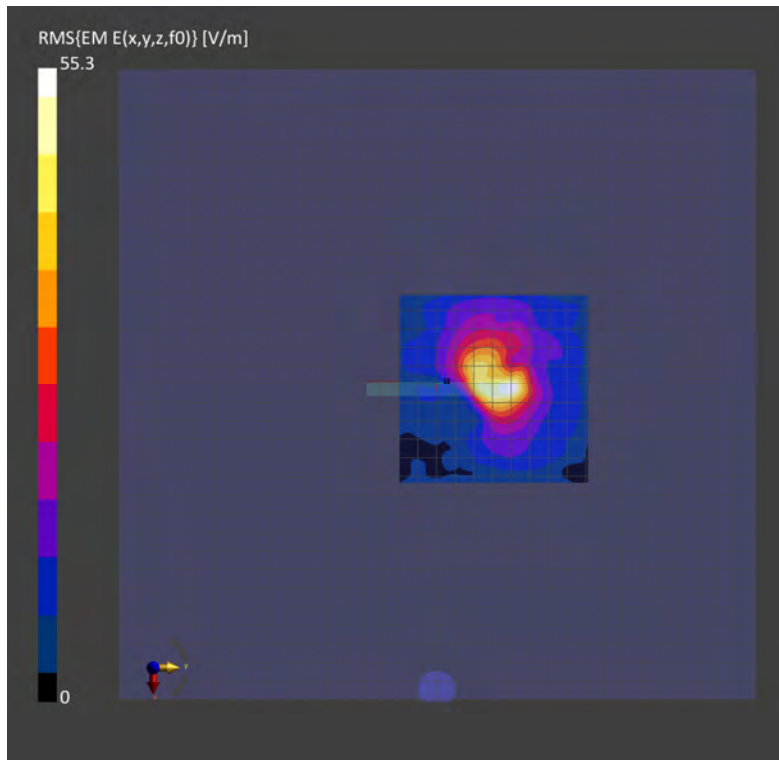
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air -	EUMMWV4 - SN9579, F1-55GHz, 2021-10-06	DAE4 Sn1665, 2021-03-01

Scans Setup

Scan Type	5G Scan
Grid Extents [mm]	100.0 x 100.0
Grid Steps [lambda]	0.0625 x 0.0625
Sensor Surface [mm]	2.0
MAIA	N/A

Measurement Results

Scan Type	5G Scan
Date	2022-01-10, 11:39
Avg. Area [cm²]	4.00
psPDn+ [W/m²]	3.18
psPDtot+ [W/m²]	3.76
psPDmod+ [W/m²]	4.58
E _{max} [V/m]	55.3
Power Drift [dB]	-0.06



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Report No. :EN/2021/C0047
Measurement Report for XM L10, EDGE TOP, U-NII-8, IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle), Channel 207 (6985.0 MHz)
Device Under Test Properties

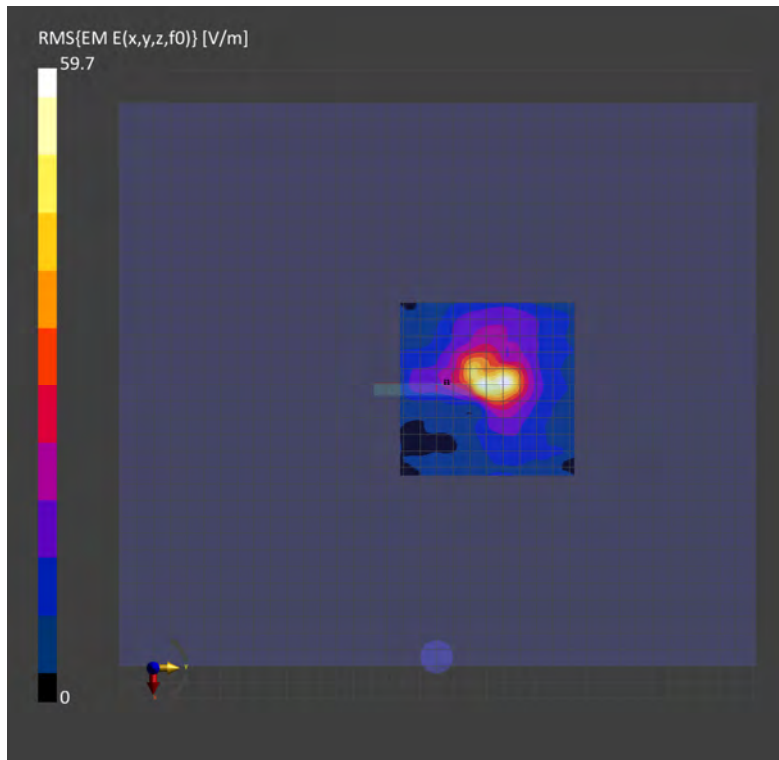
Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
XM L10,	162.0 x 76.0 x 8.0		Phone

Exposure Conditions					
Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	EDGE TOP, 2.00	U-NII-8	WLAN, 10743-AAC	6985.0, 207	1.0

Hardware Setup			
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air -	EUnmWV4 - SN9579_F1-55GHz, 2021-10-06	DAE4 Sn1665, 2021-03-01

Scans Setup	
Scan Type	5G Scan
Grid Extents [mm]	100.0 x 100.0
Grid Steps [lambda]	0.0625 x 0.0625
Sensor Surface [mm]	2.0
MAIA	N/A

Measurement Results	
Scan Type	5G Scan
Date	2022-01-10, 13:45
Avg. Area [cm²]	4.00
psPDm+ [W/m²]	3.74
psPDtot+ [W/m²]	4.51
psPDmod+ [W/m²]	5.41
E _{max} [V/m]	59.7
Power Drift [dB]	0.03



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5. SAR System Performance Verification

Report No. :EN/2021/C0047

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

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	6.0 x 16.0 x 300.0		CW

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	Validation band	CW, 0--	6500.0, 6500	5.5	5.929	34.201

Hardware Setup

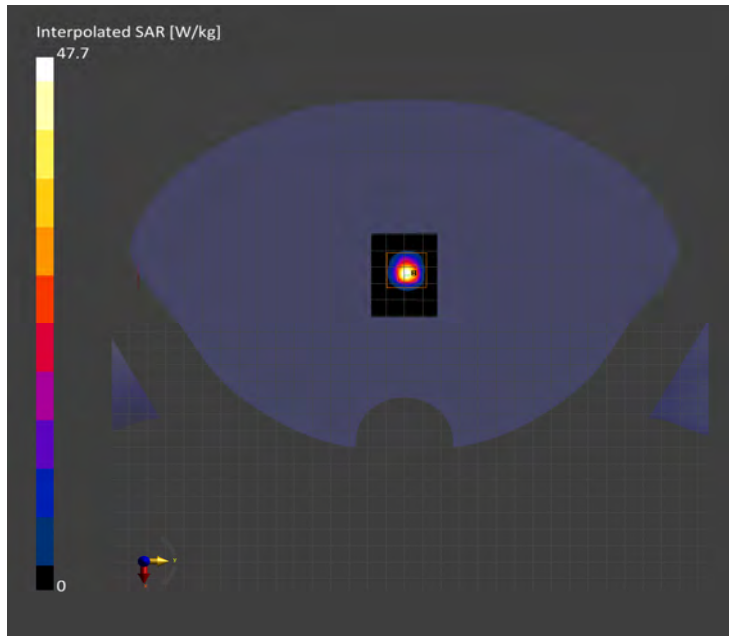
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	51.0 x 36.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 6.0	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-08, 00:15	2022-01-08, 00:26
psSAR1g [W/kg]	23.7	29.5
psSAR10g [W/kg]	4.92	5.48
Power Drift [dB]	0.04	0.11
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		52.6
Dist 3dB Peak [mm]		4.9



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Report No. : EN/2021/C0047
Measurement Report for Device, FRONT, Validation band, CW, Channel 7000 (7000.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	6.0 x 14.0 x 297.0		CW

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	Validation band	CW, 0--	7000.0, 7000	5.45	6.502	33.614

Hardware Setup

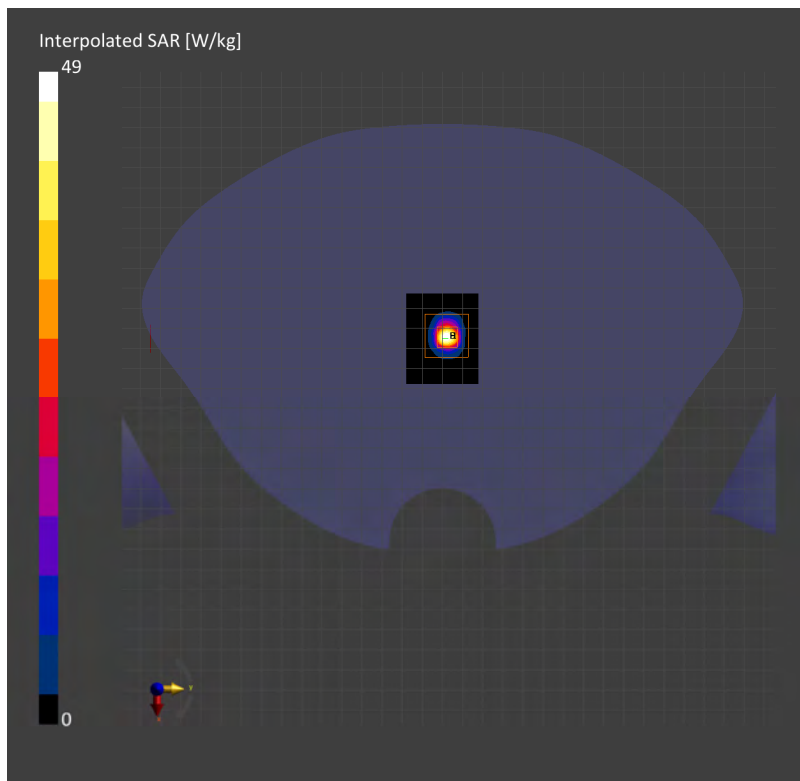
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
SAM	HBL-600-10000	EX3DV4 - SN7375, 2021-12-20	DAE4 Sn1665, 2021-03-01

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	45.0 x 36.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	7.5 x 6.0	3.0 x 3.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2022-01-09, 09:24	2022-01-09, 09:35
psSAR1g [W/kg]	23.4	27.6
psSAR10g [W/kg]	4.41	4.80
Power Drift [dB]	0.05	-0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		51.1
Dist 3dB Peak [mm]		4.7



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Report No. : EN/2021/C0047
Measurement Report for 10G Source, FRONT, Validation band, CW, Channel 10000 (10000.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
5G Verification Source 10 GHz.	100.0 x 100.0 x 172.0		CW

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	FRONT, 10.00	Validation band	CW, 0--	10000.0, 10000	1.0

Hardware Setup

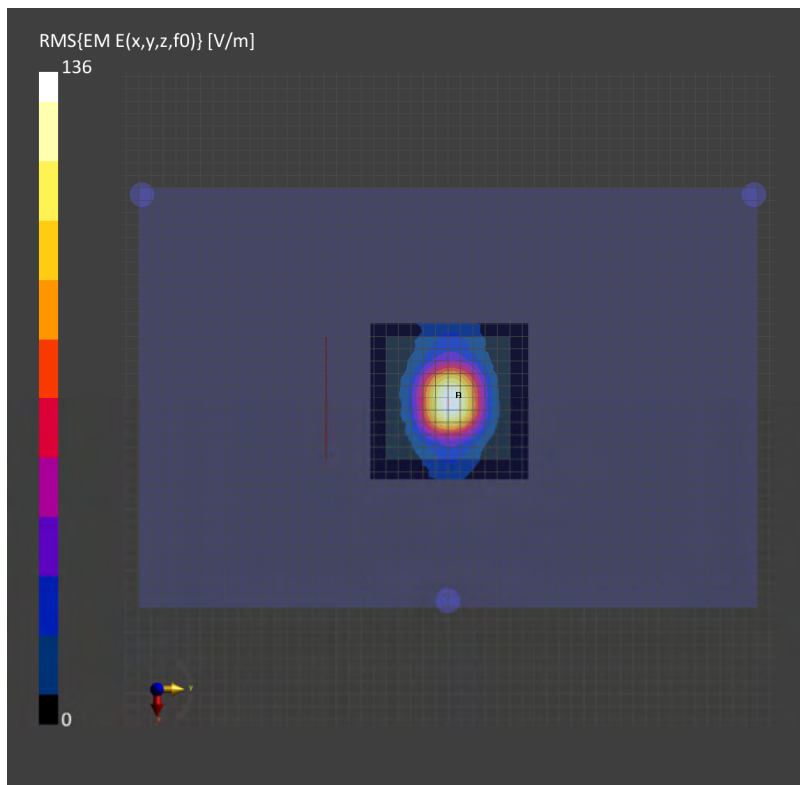
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air -	EUMmWV4 - SN9579_F1-55GHz, 2021-10-06	DAE4 Sn1665, 2021-03-01

Scans Setup

Scan Type	5G Scan
Grid Extents [mm]	120.0 x 120.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	10.0
MAIA	N/A

Measurement Results

Scan Type	5G Scan
Date	2022-01-10, 02:28
Avg. Area [cm²]	4.00
psPDn+ [W/m²]	41.8
psPDtot+ [W/m²]	42.0
psPDmod+ [W/m²]	42.1
E _{max} [V/m]	133
Power Drift [dB]	0.03



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6.Uncertainty Budget

DASY6 Uncertainty Budget According to IEC/IEEE 62209-1528 (Frequency band: 6GHz - 10GHz range)

a	b	c	d		e	e	f=b * e / d	f=b * e / d
Source of Uncertainty	Uncertainty Value (±%)	Probability Distribution	Div.	Div. Value	(ci) 1g	(ci) 10g	Std. uncertainty (1g) (±%)	Std. uncertainty (10g) (±%)
Measurement system errors								
Probe calibration	18.6	N	2	2	1	1	9.3	9.3
Probe Calibration Drift	1.7	R	√3	1.732	1	1	1.0	1.0
Probe Linearity	4.7	R	√3	1.732	1	1	2.7	2.7
Broadband Signal	2.8	R	√3	1.732	1	1	1.6	1.6
Probe Isotropy	7.6	R	√3	1.732	1	1	4.4	4.4
Data Acquisition	0.3	N	1	1	1	1	0.3	0.3
RF Ambient	1.8	N	1	1	1	1	1.8	1.8
Probe positioning	0.2	N	1	1	0.67	0.67	0.1	0.1
Data Processing	3.5	N	1	1	1	1	3.5	3.5
Phantom and device errors								
Conductivity (meas.)DAK	2.5	N	1	1	0.78	0.71	2.0	1.8
Conductivity (temp.)BB	2.4	R	√3	1.732	0.78	0.71	1.1	1.0
Phantom Permittivity	14.0	R	√3	1.732	0.5	0.5	4.0	4.0
Distance DUT - TSL	2.0	N	1	1	2	2	4.0	4.0
Device Positioning (±0.5mm)	1.0	N	1	1	1	1	1.0	1.0
Device Holder	3.6	N	1	1	1	1	3.6	3.6
DUT Modulationm	2.4	R	√3	1.732	1	1	1.4	1.4
Time-average SAR	0.0	R	√3	1.732	1	1	0.0	0.0
DUT drift	2.5	N	1	1	1	1	2.5	2.5
Val Antenna Unc.	0.0	N	1	1	1	1	0.0	0.0
Unc. Input Power	0.0	N	1	1	1	1	0.0	0.0
Correction to the SAR results								
Deviation to Target	1.90	N	1	1	1	0.84	1.9	1.6
SAR scaling		R	√3	1.732	1	1	0.0	0.0
Combined Std. uncertainty							14.0	13.9
Expanded Std. uncertainty (95% confidence interval), K=2							28.0	27.8

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cDASY6 Module mmWave Uncertainty Budget for PD

Evaluation Distances to the Antennas $\geq \lambda / 5$

In Compliance with IEC/IEEE 63195

a	b	c	d		e	f=b * e / d	g
Source of Uncertainty	Uncertainty Value (+dB)	Probability Distribution	Div.	Div. Value	ci	Std. uncertainty (+dB)	(vi) Veff
Uncertainty terms dependent on the measurement system							
Probe calibration	0.49	N	1	1	1	0.49	∞
Probe correction	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Frequency response ($BW \leq 1\text{GHz}$)	0.20	R	$\sqrt{3}$	1.732	1	0.12	∞
Sensor cross coupling	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Isotropy	0.50	R	$\sqrt{3}$	1.732	1	0.29	∞
Linearity	0.20	R	$\sqrt{3}$	1.732	1	0.12	∞
Probe scattering	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Probe positioning offset	0.30	R	$\sqrt{3}$	1.732	1	0.17	∞
Probe positioning repeatability	0.04	R	$\sqrt{3}$	1.732	1	0.02	∞
Sensor mechanical offset	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Probe spatial resolution	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Field impedance dependance	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Amplitude and phase drift	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Amplitude and phase noise	0.04	R	$\sqrt{3}$	1.732	1	0.02	∞
Measurement area truncation	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Data acquisition	0.03	N	1	1	1	0.03	∞
Sampling	0.00	R	$\sqrt{3}$	1	1	0.00	∞
Field reconstruction	2.00	R	$\sqrt{3}$	1.732	1	1.15	∞
Forward transformation	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Power density scaling	-	R	$\sqrt{3}$	1.732	1	-	∞
Spatial averaging	0.10	R	$\sqrt{3}$	1.732	1	0.06	∞
System detection limit	0.04	R	$\sqrt{3}$	1.732	1	0.02	∞
Uncertainty terms dependent on the DUT and environmental factors							
Probe coupling with DUT	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Modulation response	0.40	R	$\sqrt{3}$	1.732	1	0.23	∞
Integration time	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Response time	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Device holder influence	0.10	R	$\sqrt{3}$	1.732	1	0.06	∞
DUT alignment	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
RF ambient conditions	0.04	R	$\sqrt{3}$	1.732	1	0.02	∞
Ambient reflections	0.04	R	$\sqrt{3}$	1.732	1	0.02	∞
Immunity / secondary reception	0.00	R	$\sqrt{3}$	1.732	1	0.00	∞
Drift of the DUT	-	R	$\sqrt{3}$	1.732	1	-	∞
Combined Std. uncertainty						1.33	
Expanded Std. uncertainty (95% confidence interval), K=2						2.67	

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Appendixes

Refer to separated files for the following appendixes.

EN2021C0047 SAR_Appendix A Photographs

EN2021C0047 SAR_Appendix B DAE & Probe Cal. Certificate

EN2021C0047 SAR_Appendix C Phantom Description & Dipole Cal. Certificate

- End of report -

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