FCC SAR TEST REPORT

Application No.:	KSCR2209001652AT
Applicant:	Vivax-Metrotech (Shanghai) Ltd.
Address of Applicant:	3/F No.90, Lane 1122 Qinzhou Rd.(N), Shanghai, China
Manufacturer:	Vivax-Metrotech (Shanghai) Ltd.
Address of Manufacturer:	3/F No.90, Lane 1122 Qinzhou Rd.(N), Shanghai, China
Factory:	Vivax-Metrotech (Shanghai) Ltd.
Address of Factory:	3/F No.90, Lane 1122 Qinzhou Rd.(N), Shanghai, China
Product Name:	Pipe and Cable Locator
Model No.(EUT):	vLoc3 RTK-Pro
FCC ID:	2A826RTK-EG25G
Standard(s) :	FCC 47CFR §2.1093
Date of Receipt:	2022-09-30
Date of Test:	2022-10-12 to 2022-10-20
Date of Issue:	2022-12-05
Test Result:	**Pass***

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

Eric Lin
EMC Laboratory Manager

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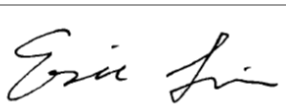
REVISION HISTORY

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2022-12-05	/

Authorized for issue by:				
				
		Richard.Kong/ Project Engineer		
				
		Eric.Lin/Reviewer		

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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)
	Extremity
GSM850	3.52
GSM1900	2.09
WCDMA Band II	3.41
WCDMA Band V	1.64
WCDMA Band IV	3.57
LTE Band 2	3.16
LTE Band 4	3.80
LTE Band 5	1.44
LTE Band 7	2.56
LTE Band 12	1.47
LTE Band 13	1.52
LTE Band 25	3.13
LTE Band 26	1.62
LTE Band 38	3.11
LTE Band 41	2.84
Max. Sum	3.80
SAR Limited(W/kg)	4.0

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1 General Information

1.1 General Description of EUT

Product Phase:	Production unit		
Device Type:	Portable device		
Exposure Category:	Uncontrolled environment / general population		
SN:	22601181026		
Hardware Version:	VM2029-4 Rev 1		
Software Version:	1.41 Release		
Antenna Gain:	GSM 850: 0.4dBi GSM 1900: 2.3dBi WCDMA Band II: 2.3dBi WCDMA Band IV: 2.3dBi WCDMA Band V: 0.4dBi LTE Band 2: 2.3dBi LTE Band 4: 2.3dBi LTE Band 5: 0.4dBi LTE Band 7: 3.3dBi LTE Band 12: 0.4dBi LTE Band 13: 0.4dBi LTE Band 25: 2.3dBi LTE Band 26: 0.4dBi LTE Band 38: 3.3dBi LTE Band 41: 3.3dBi BLE: 3.0dBi (Provided by the manufacturer)		
Antenna Type:	FPC Antenna		
Device Operating Configurations:			
Modulation Mode:	GSM: GMSK, 8PSK WCDMA: QPSK, BPSK LTE: QPSK,16QAM, 64QAM BLE: GFSK		
Power Class:	4,tested with power level 5(GSM850)		
	1,tested with power level 0(GSM1900)		
	3,tested with power control “all 1”(WCDMA Band II/IV/V)		
	3, tested with power control Max Power (LTE Band 2/4/5/7/12/13/25/26/38/41/)		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824-849	869-894
	GSM1900	1850-1910	1930-1990
	WCDMA Band II	1850-1910	1930-1990
	WCDMA Band IV	1710-1755	2110- 2155

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	WCDMA Band V	824-849	869-894
	LTE Band 2	1850-1910	1930-1990
	LTE Band 4	1710-1755	2110- 2155
	LTE Band 5	824-849	869-894
	LTE Band 7	2500-2570	2620- 2690
	LTE Band 12	699-716	729-746
	LTE Band 13	777-787	746-756
	LTE Band 25	1850-1915	1930-1995
	LTE Band 26	814-849	859-894
	LTE Band 38	2570-2620	2570-2620
	LTE Band 41	2535-2655	2535-2655
	BLE	2402-2480	2402-2480
Battery Information:	Model:	JE 18650-7.2V-2S2P	
	Normal Voltage:	7.2V	
	Rated capacity:	6700mAh	
	Battery Type:	Rechargeable Li-ion Battery	
	Manufacturer:	ShangHai JiEn Battery Pack CO.,Ltd	

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1.1.1 DUT Antenna Locations

Please see the Appendix D

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1.2 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radio frequency Radiation Exposure Evaluation: Portable Devices
IEEE Std C95.1 – 1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz
IEEE 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
KDB 447498 D04v01	Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies
KDB 865664 D01 v01r04	SAR Measurement Requirements for 100 MHz to 6 GHz
KDB 865664 D02 v01r02	RF Exposure Compliance Reporting and Documentation Considerations
KDB 648474 D04 v01r03	SAR EVALUATION CONSIDERATIONS FOR WIRELESS HANDSETS
KDB 941225 D01 v03r01	3G SAR Measurement Procedures
KDB 941225 D05 v02r05	SAR EVALUATION CONSIDERATIONS FOR LTE DEVICES
KDB 941225 D06 v02r01	SAR EVALUATION PROCEDURES FOR PORTABLE DEVICES WITH WIRELESS ROUTER CAPABILITIES
KDB 941225 D07 v01r02	SAR EVALUATION PROCEDURES FOR UMPC MINI-TABLET DEVICES

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1.3 RF exposure limits

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR* (Brain*Trunk)	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

Notes:

* The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time

** The Spatial Average value of the SAR averaged over the whole body.

*** The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation.)

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1.4 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

1.SGS is not responsible for wrong test results due to incorrect information (e.g. max. clock frequen cy, highest internal frequency, antenna gain, cable loss, etc) is provided by the applicant. (if applic able).
2.SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on re sults of the data provided by applicant. (if applicable).

1.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• A2LA

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• FCC

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory.

Designation Number: CN1172.

• ISED

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

Company Number: 2324E

• VCCI

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

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2 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

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3 SAR Measurements System Configuration

3.1 The SAR Measurement System

This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the tissue-Simulate.

The DASY5 system for performing compliance tests consists of the following items:

A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software .An arm extension for accommodation the data acquisition electronics (DAE).

A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

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 between optical and electrical of the signals for the digital communication to DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.

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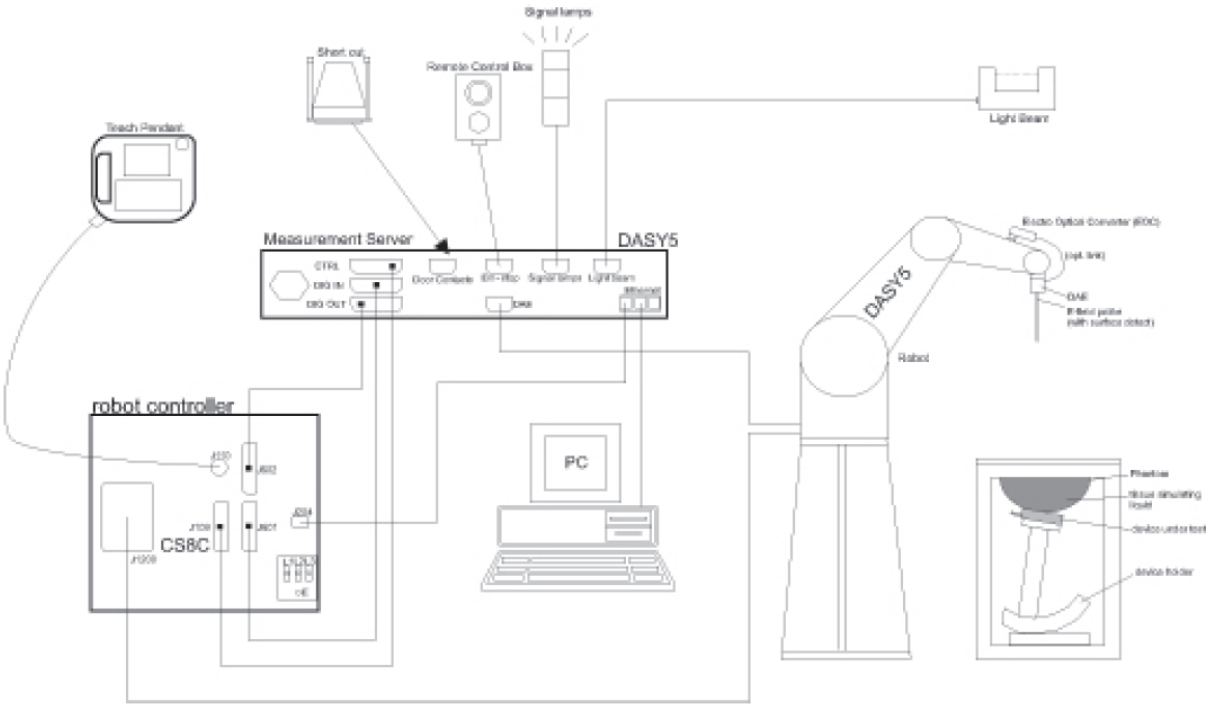

F-1. SAR Measurement System Configuration

- 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.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 7.
- DASY5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand, right-hand and Body Worn usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validat the proper functioning of the system.

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3.2 Isotropic E-field Probe EX3DV4

	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
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 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/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 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

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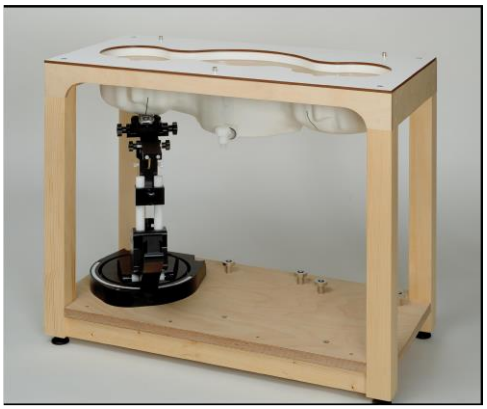
3.3 Data Acquisition Electronics (DAE)

Model	DAE4
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for 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	< 5µV (with auto zero)
Input Bias Current	< 50 f A
Dimensions	60 x 60 x 68 mm

3.4 SAM Twin Phantom

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 (6 ± 0.2 mm at ear point)
Dimensions **(incl. Wooden Support)**	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx. 25 liters
Wooden Support	SPEAG standard phantom table



The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. 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 teaching three points with the robot.

Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.

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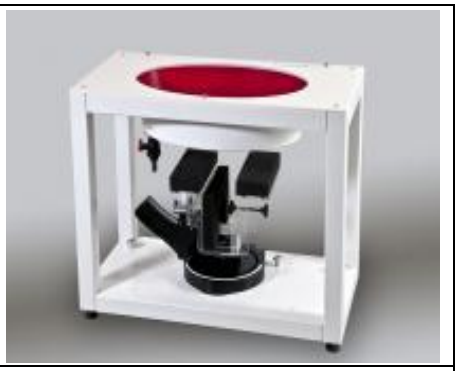
3.5 ELI Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)	
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)	
Shell Thickness	2.0 ± 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	

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.

ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4, but has reinforced top structure.

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3.6 Device Holder for Transmitters

F-2. **Device Holder for Transmitters**

- 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 centres for both scales are 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 ε=3 and loss tangent δ=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.

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3.7 Measurement procedure

3.7.1 Scanning procedure

Step 1: Power reference measurement

The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure.

Step 2: *Area scan*

The SAR distribution at the exposed side of the head was measured at a distance of 4mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 15mm*15mm or 12mm*12mm or 10mm*10mm.Based on the area scan data, the area of the maximum absorption was determined by spline interpolation.

Step 3: *Zoom scan*

Around this point, a volume of 30mm*30mm*30mm (fine resolution volume scan, zoom scan) was assessed by measuring 5x5x7 points (≤2GHz) and 7x7x7 points (≥2GHz). On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

The data at the surface was extrapolated, since the centre of the dipoles is 2.0mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2mm. (This can be variable. Refer to the probe specification).The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The volume was integrated with the trapezoidal algorithm. One thousand points were interpolated to calculate the average. All neighbouring volumes were evaluated until no neighboring volume with a higher average value was found.

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std. 1528-2013.

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			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 4: Power reference measurement (drift)

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The indicated drift is mainly the variation of the DUT's output power and should vary max. ± 5 %

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3.7.2 Data Storage

The DASY software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DAE3". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated. The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [m W/g], [m W/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

3.7.3 Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	Normi, ai0, ai1, ai2
	- Conversion factor	ConvFi
	- Diode compression point	Dcpi
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	ε
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf / dcp_i$$

With Vi = compensated signal of channel i (i = x, y, z)

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Ui = input signal of channel i (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcp i = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes:

$$E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$$

H-field probes:

$$H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1} f + a_{i2} f^2) / f$$

With Vi = compensated signal of channel i (i = x, y, z)
Normi = sensor sensitivity of channel I (i = x, y, z)
[mV/(V/m)2] for E-field Probes
ConvF = sensitivity enhancement in solution
aij = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
Ei = electric field strength of channel i in V/m
Hi = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_x^2 + E_Y^2 + E_z^2)^{1/2}$$

The primary field data are used to calculate the derived field units.

$$SAR = (Etot^2 \cdot \sigma) / (\varepsilon \cdot 1000)$$

With SAR = local specific absorption rate in mW/g
Etot = total field strength in V/m
σ= conductivity in [mho/m] or [Siemens/m]
ε= equivalent tissue density in g/cm3

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid. The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = E_{tot}{}^2{}_2 / 3770 \quad \text{or} \quad P_{pwe} = H_{tot}^2 \cdot 37.7$$

with Ppwe = equivalent power density of a plane wave in mW/cm2
Etot = total electric field strength in V/m
Htot = total magnetic field strength in A/m

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4 SAR measurement variability and uncertainty

4.1 SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz v01r04, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) 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 ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

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4.2 SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

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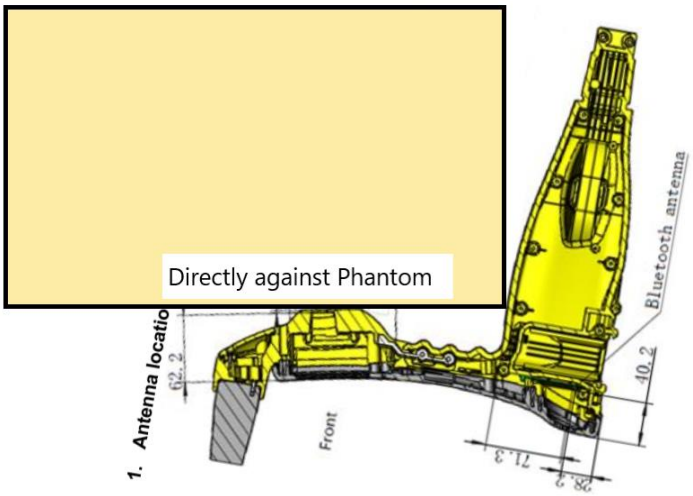
5 Description of Test Position

5.1 Extremity exposure conditions

SAR tests generally need to represent designed intended and reasonably expected normal operating configurations. Filing must include explanation of exposure condition being represented by each selected SAR test position. Firstly any SAR test exclusions should be investigated and documented for all identified and described device designed and intended and expected use conditions; if any do not qualify for exclusion then SAR test positions can be selected.

The device should be tested for 10-g Extremity SAR at 0 mm test separation distance (touching) from the flat phantom filled with simulating liquid.



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6 SAR System Verification Procedure

6.1 Tissue Simulate Liquid

6.1.1 Recipes for Tissue Simulate Liquid

The bellowing tables give the recipes for tissue simulating liquids to be used in different frequency bands：

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

HSL5GHz is composed of the following ingredients：

Water：50-65%

Mineral oil：10-30%

Emulsifiers：8-25%

Sodium salt：0-1.5%

MSL5GHz is composed of the following ingredients：

Water：64-78%

Mineral oil：11-18%

Emulsifiers：9-15%

Sodium salt：2-3%

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6.1.2 Test Liquids Confirmation

Simulated tissue liquid parameter confirmation

The dielectric parameters were checked prior to assessment using the SPEAG DAK3.5 dielectric probe kit. The dielectric parameters measured are reported in each correspondent section.

IEEE SCC-34/SC-2 P1528 recommended tissue dielectric parameters

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in P1528

Target Frequency (MHz)	Head		Body	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
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

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

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6.1.3 Measurement for Tissue Simulate Liquid

The dielectric properties for this Tissue Simulate Liquids were measured by using the SPEAG DAK3.5 dielectric probe kit in conjunction with Agilent E5071B Network Analyzer (300 KHz-8500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was 22±2°C.

Tissue Type	Measured Frequency (MHz)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Liquid Temp. (℃)	Date
750 Head	750	0.89	40.96	0.89	41.90	-0.22	-2.25	±5	22	2022/10/12
835 Head	835	0.92	39.82	0.90	41.50	1.78	-4.05	±5	22.1	2022/10/14
1800 Head	1800	1.37	38.24	1.40	40.00	-1.93	-4.39	±5	22	2022/10/16
1900 Head	1900	1.37	38.85	1.40	40.00	-2.50	-2.88	±5	22	2022/10/18
2600 Head	2600	2.03	37.44	1.96	39.00	3.42	-3.99	±5	22.1	2022/10/20

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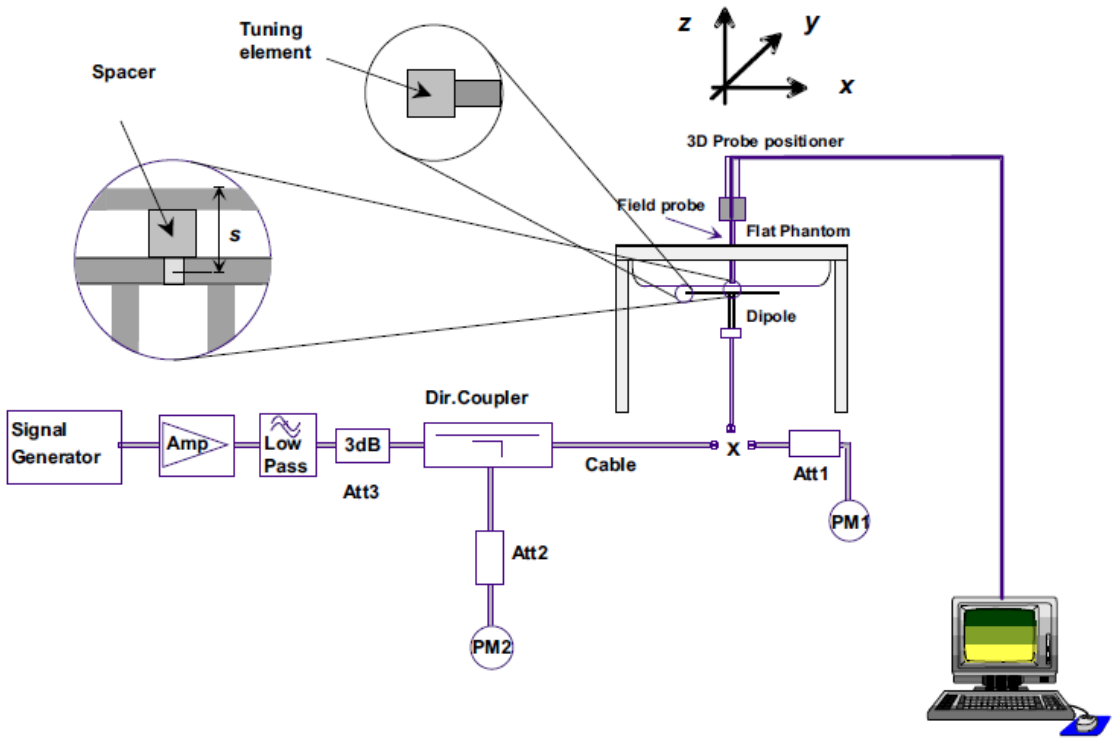
6.2 SAR System Check

The microwave circuit arrangement for system check is sketched in bellow figure. 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 +/- 10% from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table. During the tests, the ambient temperature of the laboratory was in the range 22±2°C, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 cm 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.



F-3. the microwave circuit arrangement used for SAR system verification

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6.2.1 Justification for Extended SAR Dipole Calibrations

1) Referring to KDB865664 D01 requirements for dipole calibration, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

a) There is no physical damage on the dipole;

b) System check with specific dipole is within 10% of calibrated value;

c) Return-loss is within 10% of calibrated measurement;

d) Impedance is within 5Ω from the previous measurement.

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

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6.2.2 Summary System Check Result(s)

Validation Kit		Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1w)	Measured SAR (normalized to 1w)	Target SAR (normalized to 1w) (±10%)	Target SAR (normalized to 1w) (±10%)	Liquid Temp. (℃)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D750V2	Head	2.01	1.33	8.04	5.32	8.27 (7.44~9.10)	5.48 (4.93~6.03)	22	2022/10/12
D835V2	Head	2.22	1.41	8.88	5.64	9.40 (8.46~10.34)	6.12 (5.51~6.73)	22.1	2022/10/14
D1800V2	Head	9.34	4.99	37.36	19.96	38.9 (35.01~42.79)	20.4 (18.36~22.44)	22	2022/10/16
D1900V2	Head	9.69	5.11	38.76	20.44	40.0 (36.00~44.00)	20.3 (18.72~22.88)	22	2022/10/18
D2600V2	Head	13.5	6.11	54	24.44	54.8 (49.32~60.28)	24.5 (22.05~26.95)	22.1	2022/10/20

6.2.3 Detailed System Check Results

Please see the Appendix A

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7 Test Configuration

7.1 3G SAR Test Reduction Procedure

According to KDB 941225D01, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

7.2 Operation Configurations

7.2.1 GSM Test Configuration

SAR tests for GSM850 and GSM1900, a communication link is set up with a base station by air link. Using CMW500 the power lever is set to “5”and “0” in SAR of GSM850 and GSM1900. The tests in the band of GSM850 and GSM1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5. The EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink, and at most 4 timeslots in downlink, the maximum total timeslot is 5.

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power, the higher number time-slot configuration should be tested.

When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode.

7.2.2 WCDMA Test Configuration

1）. Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures described in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1’s” for WCDMA/HSDPA or by applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HSDPA, HSPA) are required in the SAR report. All configurations

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that are not supported by the handset or cannot be measured due to technical or equipment limitations must be clearly identified.

2）. Head SAR

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure

3）. Body SAR

SAR for body configurations is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreaing code or DPDCHn, for the highest reported body-worn accessory exposure SAR configuration in 12.2 kbps RMC. When more than 2 DPDCHn are supported by the handset, it may be necessary to configure additional DPDCHn using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC.

4）. HSDPA / HSUPA / DC-HSDPA

According to KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

a) HSDPA

HSDPA is configured according to the applicable UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms and a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors(βc, βd), and HS-DPCCH power offset parameters (ΔACK, ΔNACK, ΔCQI) are set according to values indicated in the following table The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

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Sub-test	βc	Bd	βd(SF)	βc/βd	βhs	CM(dB)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note1: △ACK, △NACK and △CQI= 8 Ahs = βhs/βc=30/15 βhs=30/15*βc

Note2:For the HS-DPCCH power mask requirement test in clause 5.2C,5.7A,and the Error Vector Magnitude(EVM) with HS-DPCCH test in clause 5.13.1.A,and HSDPA EVM with phase discontinuity in clause 5.13.1AA, △ACK and △NACK= 8 (Ahs=30/15) with βhs=30/15*βc,and △CQI= 7 (Ahs=24/15) with βhs=24/15*βc.

Note3: CM=1 forβc/βd =12/15, βhs/βc=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

The measurements were performed with a Fixed Reference Channel (FRC) and H-Set 1 QPSK.

Parameter	Value
Nominal average inf. bit rate	534 kbit/s
Inter-TTI Distance	3 TTI"s
Number of HARQ Processes	2 Processes
Information Bit Payload	3202 Bits
MAC-d PDU size	336 Bits
Number Code Blocks	1 Block
Binary Channel Bits Per TTI	4800 Bits
Total Available SMLs in UE	19200 SMLs
Number of SMLs per HARQ Process	9600 SMLs
Coding Rate	0.67
Number of Physical Channel Codes	5

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HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	MaximumH S-DSCH Transport BlockBits/HS-DSCH TTI	Total Soft Channel Bits
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

b) HSUPA

Due to inner loop power control requirements in HSUPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSUPA should be configured according to the values indicated below as well as other applicable procedures described in the „WCDMA Handset" and „Release 5 HSUPA Data Device" sections of 3G device.

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Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ec} (SF)	β_{ed} (code)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3 : For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4 : For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$.

Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Speading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF4	11484	5.76
	4	4	2		20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF4	22996	?
	4	4	10		20000	?

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4.UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM.(TS25.306-7.3.0).

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7.2.3 LTE Test Configuration

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 was used for LTE output power measurements and SAR testing. Max power control was used so the UE transmits with maximum output power during SAR testing. SAR must be measured with the maximum TTI (transmit time interval) supported by the device in each LTE configuration.

A) Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

B) MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 V13.5.0 (201609) Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

Modulation	Channel bandwidth / Transmission bandwidth (N_{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

C) A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

D) Largest channel bandwidth standalone SAR test requirements

1) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

2) QPSK with 50% RB allocation

The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.

3) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be

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tested.

4) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

E) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

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7.2.4 BluetoothTest Configuration

For the Bluetooth SAR tests, a communication link is set up with the test mode software for BT mode test. Bluetooth USES frequency hopping technology to divide the transmitted data into packets and transmit the packets respectively through 79 designated Bluetooth channels, 1MHz Bandwidth, frequency hops at 1600 hops/second per the Bluetooth standard. The Radio Frequency Channel Number (RFCN) is allocated to 0, 39 and 78 respectively in the case of 2402~2480 MHz during the test at each test frequency channel, the EUT is operated at the RF continuous emission mode.

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8 Test Result

8.1 Measurement of RF Conducted Power

8.1.1 Conducted Power Of GSM

GSM 850										
Burst Output Power(dBm)					Tune up	Division Factors	Frame-Average Output Power(dBm)			Tune up
Channel		128	190	251			128	190	251	
GPRS/EGPRS (GMSK)	1 TX Slot	31.61	31.67	31.8	33.00	-9.03	22.58	22.64	22.77	23.97
	2 TX Slots	29.62	30.78	31.79	32.00	-6.02	23.6	24.76	25.77	25.98
	3 TX Slots	28.53	29.67	29.5	30.00	-4.26	24.27	25.41	25.24	25.74
	4 TX Slots	27.5	27.02	28.97	29.00	-3.01	24.49	24.01	25.96	**25.99**
EGPRS(8PSK)	1 TX Slot	25.47	25.43	25.56	24.00	-9.03	16.44	16.4	16.53	14.97
	2 TX Slots	25.66	25.51	25.44	23.00	-6.02	19.64	19.49	19.42	16.98
	3 TX Slots	25.17	24.99	24.96	21.00	-4.26	20.91	20.73	20.7	16.74
	4 TX Slots	24.9	24.91	24.86	20.00	-3.01	21.89	21.9	21.85	16.99
GSM 1900										
Burst Output Power(dBm)					Tune up	Division Factors	Frame-Average Output Power(dBm)			Tune up
Channel		512	661	810			512	661	810	
GPRS/EGPRS (GMSK)	1 TX Slot	28.48	28.44	28.52	28.00	-9.03	19.45	19.41	19.49	18.97
	2 TX Slots	26.43	26.4	26.49	27.00	-6.02	20.41	20.38	20.47	**20.98**
	3 TX Slots	24.8	24.35	24.34	25.00	-4.26	20.54	20.09	20.08	20.74
	4 TX Slots	22.81	22.29	22.32	23.00	-3.01	19.8	19.28	19.31	19.99
EGPRS(8PSK)	1 TX Slot	24.6	24.32	24.47	25.00	-9.03	15.57	15.29	15.44	15.97
	2 TX Slots	22.52	22.43	22.42	23.00	-6.02	16.5	16.41	16.4	16.98
	3 TX Slots	20.61	20.41	20.15	21.00	-4.26	16.35	16.15	15.89	16.74
	4 TX Slots	18.55	18.3	18.08	19.00	-3.01	15.54	15.29	15.07	15.99

Note：

1) For SAR the time based average power is relevant. The difference in between depends on the duty cycle of the TDMA signal:

No. of timeslots	1	2	3	4
Duty Cycle	1:8.3	1:4.15	1:2.77	1:2.075
Time based avg. power compared to slotted avg. power	-9.03	-6.02	-4.26	-3.01

2) The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots.

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8.1.2 Conducted Power Of WCDMA

WCDMA Band II					
Average Conducted Power(dBm)					
Channel		9262	9400	9538	Tune up
WCDMA	12.2kbps RMC	22.6	22.86	22.89	24.00
HSDPA	Subtest 1	20.8	21.1	21.04	22.00
	Subtest 2	20.84	21	21.02	22.00
	Subtest 3	20.77	20.93	20.96	22.00
	Subtest 4	20.88	21	21.03	22.00
HSUPA	Subtest 1	19.96	20.1	20.1	21.00
	Subtest 2	20	18.75	20.3	20.50
	Subtest 3	20.18	20.22	20.4	21.00
	Subtest 4	19.98	19.13	19.14	20.00
	Subtest 5	20.01	20.21	20.21	21.00

WCDMA Band IV					
Average Conducted Power(dBm)					
Channel		1312	1413	1513	Tune up
WCDMA	12.2kbps RMC	22.91	22.98	22.88	23.00
HSDPA	Subtest 1	21.1	21.15	20.97	22.00
	Subtest 2	21.1	21.1	21.01	22.00
	Subtest 3	21.05	20.94	20.95	22.00
	Subtest 4	21.11	21.16	20.96	22.00
HSUPA	Subtest 1	20.12	20.2	19.81	21.00
	Subtest 2	20.15	20.44	20.28	21.00
	Subtest 3	18.94	19.14	19.21	20.00
	Subtest 4	20.1	20.43	20.3	21.00
	Subtest 5	20.12	19.27	19.23	21.00

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WCDMA Band V					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	22.44	22.43	22.59	24.00
HSDPA	Subtest 1	20.55	20.61	20.81	22.00
	Subtest 2	20.56	20.54	20.86	22.00
	Subtest 3	20.62	20.57	20.88	22.00
	Subtest 4	20.64	20.62	20.92	22.00
HSUPA	Subtest 1	19.02	19.06	19.22	20.00
	Subtest 2	19.08	19.16	19.61	20.00
	Subtest 3	18.9	19.18	19.6	20.00
	Subtest 4	19.1	19.35	19.6	20.00
	Subtest 5	18.96	19.35	19.6	20.00

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8.1.3 Conducted Power Of LTE

LTE Band 2				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 18607	Channel 18900	Channel 19193	Tune up
1.4MHz	QPSK	1	0	21.93	22.21	22.7	23.50
		1	2	21.96	22.35	22.81	23.50
		1	5	21.81	22.41	22.87	23.50
		3	0	21.75	22.35	22.74	23.50
		3	2	21.9	22.46	22.95	23.50
		3	3	21.86	22.44	22.79	23.50
		6	0	20.89	21.44	21.76	22.50
	16QAM	1	0	20.54	21.9	21.56	22.50
		1	2	21.35	22.08	21.96	22.50
		1	5	21.54	22.11	21.97	22.50
		3	0	20.94	21.48	21.63	22.50
		3	2	21.12	21.78	21.72	22.50
		3	3	20.99	21.78	21.73	22.50
		6	0	19.81	20.8	20.79	21.50
	64QAM	1	0	21.77	21.38	22.09	22.50
		1	2	21.85	21.65	22.21	22.50
		1	5	22.15	21.51	22.05	22.50
		3	0	21.52	21.16	21.55	22.50
		3	2	21.64	21.16	21.61	22.50
		3	3	21.37	21.35	21.59	22.50
		6	0	20.37	20.21	20.65	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 18615	Channel 18900	Channel 19185	Tune up
3MHz	QPSK	1	0	21.87	22.4	22.48	23.50
		1	7	22.02	22.62	22.62	23.50
		1	14	21.98	22.45	22.64	23.50
		8	0	20.96	21.53	21.63	22.50
		8	4	21.04	21.57	21.65	22.50
		8	7	21.27	21.59	21.65	22.50
		15	0	21.18	21.47	21.66	22.50
	16QAM	1	0	21.49	21.52	21.32	22.50
		1	7	21.49	22.15	21.44	22.50
		1	14	21.72	22.21	21.79	22.50
		8	0	20.48	20.57	20.51	21.50
		8	4	20.44	20.36	20.74	21.50
		8	7	20.43	20.42	20.9	21.50

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		15	0	20.3	20.32	20.63	21.50
	64QAM	1	0	21.07	21.67	21.8	22.50
		1	7	21.12	22	21.81	22.50
		1	14	20.69	22.09	21.96	22.50
		8	0	20.06	20.39	20.61	21.50
		8	4	20.16	20.67	20.57	21.50
		8	7	20.07	20.58	20.75	21.50
		15	0	20.06	20.48	20.39	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18625	18900	19175	
5MHz	QPSK	1	0	22.25	22.15	22.35	23.50
		1	13	22.24	22.43	22.76	23.50
		1	24	22.05	22.4	22.71	23.50
		12	0	21.13	21.44	21.65	22.50
		12	6	20.83	21.55	21.8	22.50
		12	13	20.8	21.48	21.77	22.50
		25	0	20.64	21.38	21.63	22.50
	16QAM	1	0	20.39	21.56	21.46	22.00
		1	13	20.48	21.94	21.63	22.00
		1	24	20.31	21.72	21.65	22.00
		12	0	19.63	20.1	20.45	21.50
		12	6	19.63	20.42	20.6	21.50
		12	13	19.69	20.55	20.55	21.50
		25	0	19.6	20.49	20.52	21.50
	64QAM	1	0	20.86	21.46	21.35	22.50
		1	13	21.02	21.82	21.79	22.50
		1	24	20.68	21.67	21.86	22.50
		12	0	19.65	20.17	20.29	21.50
		12	6	20.11	20.21	20.53	21.50
		12	13	20	20.42	20.87	21.50
		25	0	20.03	20.38	20.75	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18650	18900	19150	
10MHz	QPSK	1	0	22.3	22.41	22.45	23.50
		1	25	22.41	22.93	22.91	23.50
		1	49	22.19	22.35	22.62	23.50
		25	0	21.34	21.47	21.52	22.50
		25	13	21.3	21.61	21.7	22.50
		25	25	21.21	21.5	21.65	22.50
		50	0	21.19	21.51	21.57	22.50
	16QAM	1	0	21.84	22.01	21.22	22.50

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		1	25	21.93	22.13	22.15	22.50
		1	49	21.15	21.94	21.58	22.50
		25	0	20.31	20.44	20.68	21.50
		25	13	20.31	20.73	20.89	21.50
		25	25	20.33	20.7	20.84	21.50
		50	0	20.27	20.53	20.52	21.50
	64QAM	1	0	20.88	21.52	21.5	22.50
		1	25	21.84	21.91	22.01	22.50
		1	49	20.86	21.63	21.77	22.50
		25	0	20.35	20.29	20.52	21.50
		25	13	20.19	20.59	20.83	21.50
		25	25	20.07	20.61	20.81	21.50
		50	0	19.94	20.5	20.58	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18675	18900	19125	
15MHz	QPSK	1	0	22.5	22.43	22.23	23.50
		1	38	22.38	22.67	22.39	23.50
		1	74	22.11	22.28	22.43	23.50
		36	0	21.32	21.48	21.45	23.00
		36	18	21.31	21.66	21.61	23.00
		36	39	21.24	21.58	21.56	23.00
		75	0	21.28	21.44	21.51	23.00
	16QAM	1	0	21.69	21.99	21.42	23.00
		1	38	21.76	22.71	21.6	23.00
		1	74	21.41	21.92	21.57	23.00
		36	0	20.3	20.35	20.23	21.50
		36	18	20.32	20.56	20.54	21.50
		36	39	20.22	20.49	20.53	21.50
		75	0	20.21	20.55	20.56	21.50
	64QAM	1	0	21.26	21.26	21.81	22.50
		1	38	21.84	21.86	21.98	22.50
		1	74	21.06	21.53	22.29	22.50
		36	0	20.05	20.32	20.28	21.50
		36	18	20.01	20.56	20.65	21.50
		36	39	19.95	20.45	20.77	21.50
		75	0	19.98	20.33	20.47	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18700	18900	19100	
20MHz	QPSK	1	0	22.11	22.49	22.22	23.50
		1	50	22.54	**22.8**	22.61	**23.50**
		1	99	22.15	22.42	22.42	23.50
		50	0	21.29	21.47	**21.6**	**23.00**

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		50	25	21.11	21.59	21.56	23.00
		50	50	21.25	21.57	21.55	23.00
		100	0	20.92	21.49	21.58	23.00
	16QAM	1	0	21.11	21.49	22.13	23.00
		1	50	21.94	21.61	22.2	23.00
		1	99	21.1	20.87	22.33	23.00
		50	0	20.46	20.38	20.55	21.50
		50	25	20.01	20.61	20.5	21.50
		50	50	20.17	20.54	20.67	21.50
		100	0	20.22	20.41	20.58	21.50
	64QAM	1	0	21.47	20.99	20.97	22.50
		1	50	21.49	21.52	21.19	22.50
		1	99	21.03	21.15	21.15	22.50
		50	0	20.11	20.21	20.5	21.50
		50	25	20.14	20.48	20.62	21.50
		50	50	19.97	20.52	20.62	21.50
		100	0	20.49	20.64	20.47	21.50

LTE Band 4				**Conducted Power(dBm)**			
Bandwidth	Modulation	RB size	RB offset	Channel 19957	Channel 20175	Channel 20393	Tune up
1.4MHz	QPSK	1	0	22.91	22.53	22.83	23.50
		1	2	22.92	22.74	22.76	23.50
		1	5	22.75	22.74	22.74	23.50
		3	0	22.88	22.82	22.75	24.00
		3	2	22.79	22.93	22.81	24.00
		3	3	22.79	22.86	22.67	24.00
		6	0	21.96	21.87	21.72	23.00
	16QAM	1	0	22.45	21.58	21.72	23.00
		1	2	22.54	21.43	22.01	23.00
		1	5	22.33	21.41	22.00	23.00
		3	0	21.97	21.79	21.88	23.00
		3	2	22.02	21.96	21.92	23.00
		3	3	21.99	22.02	21.99	23.00
		6	0	20.82	20.78	20.82	22.00
	64QAM	1	0	22.18	21.79	22.08	23.00
		1	2	22.29	22.04	22.27	23.00
		1	5	22.05	22.44	21.76	23.00
		3	0	21.88	22	21.78	23.00
		3	2	21.86	21.55	21.87	23.00

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		3	3	21.82	21.55	21.65	23.00
		6	0	21.21	20.95	21.04	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 19965	Channel 20175	Channel 20385	Tune up
3MHz	QPSK	1	0	22.90	22.75	22.64	23.50
		1	7	23.01	22.99	22.77	23.50
		1	14	22.86	22.85	22.61	23.50
		8	0	22.10	21.88	21.76	23.00
		8	4	22.02	21.89	21.81	23.00
		8	7	21.93	21.87	21.89	23.00
		15	0	21.99	21.85	21.77	23.00
	16QAM	1	0	22.36	21.41	21.63	23.00
		1	7	22.21	22.41	21.79	23.00
		1	14	22.10	22.42	21.70	23.00
		8	0	21.24	21.04	20.93	22.00
		8	4	21.17	20.63	21.08	22.00
		8	7	21.20	20.52	21.15	22.00
		15	0	20.95	20.69	20.94	22.00
	64QAM	1	0	22.25	22.17	21.84	23.00
		1	7	22.55	22.22	22.17	23.00
		1	14	22.22	22.33	22.11	23.00
		8	0	21.25	20.89	20.99	22.00
		8	4	21.18	20.9	21.04	22.00
		8	7	21.09	21.12	21.02	22.00
		15	0	21.15	20.95	20.8	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 19975	Channel 20175	Channel 20375	Tune up
5MHz	QPSK	1	0	22.81	22.59	22.61	23.50
		1	13	22.80	22.80	22.95	23.50
		1	24	22.74	22.55	22.93	23.50
		12	0	22.09	21.81	21.98	23.00
		12	6	21.97	21.89	22.03	23.00
		12	13	21.93	21.89	21.99	23.00
		25	0	22.06	21.85	21.99	23.00
	16QAM	1	0	21.43	21.96	21.64	23.00
		1	13	21.35	22.26	21.83	23.00
		1	24	21.38	22.10	21.81	23.00
		12	0	21.06	20.69	21.00	22.00
		12	6	21.00	20.75	21.14	22.00
		12	13	20.95	20.74	21.10	22.00
		25	0	21.02	20.78	21.04	22.00

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	64QAM	1	0	22.06	22.15	21.93	23.00
		1	13	21.93	22.24	22.18	23.00
		1	24	22.18	22.08	22.18	23.00
		12	0	21.08	20.76	20.86	22.00
		12	6	21.01	20.85	20.92	22.00
		12	13	21.07	20.83	20.87	22.00
		25	0	21.19	20.83	21.08	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20000	20175	20350	
10MHz	QPSK	1	0	22.91	22.96	22.72	23.50
		1	25	23.10	23.28	23.25	23.50
		1	49	22.71	22.49	22.73	23.50
		25	0	22.07	21.84	21.87	23.00
		25	13	21.97	21.91	21.97	23.00
		25	25	21.77	21.79	21.94	23.00
		50	0	21.96	21.81	21.88	23.00
	16QAM	1	0	22.40	22.29	21.84	23.00
		1	25	22.70	22.94	21.86	23.00
		1	49	22.05	22.23	21.48	23.00
		25	0	21.16	20.97	20.99	22.00
		25	13	20.99	21.03	21.16	22.00
		25	25	20.83	20.72	21.23	22.00
		50	0	20.95	20.81	20.82	22.00
	64QAM	1	0	22.39	22.16	21.81	23.00
		1	25	22.87	22.45	22.21	23.00
		1	49	22.35	21.68	22.12	23.00
		25	0	21.31	21.10	21.11	22.00
		25	13	21.29	20.97	21.22	22.00
		25	25	21.09	20.89	21.19	22.00
		50	0	21.02	20.96	20.92	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20025	20175	20325	
15MHz	QPSK	1	0	23.00	22.81	22.67	23.50
		1	38	23.08	22.99	22.73	23.50
		1	74	22.81	22.48	22.60	23.50
		36	0	22.02	21.90	21.89	23.00
		36	18	21.99	21.98	21.88	23.00
		36	39	21.86	21.69	21.89	23.00
		75	0	21.91	21.77	21.85	23.00
	16QAM	1	0	22.49	22.35	22.00	23.00
		1	38	22.29	23.08	21.94	23.50

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		1	74	22.04	22.10	21.35	23.00
		36	0	20.94	21.08	20.83	22.00
		36	18	20.92	20.93	20.80	22.00
		36	39	20.78	20.60	20.75	22.00
		75	0	20.81	20.72	20.81	22.00
	64QAM	1	0	21.82	21.68	21.84	23.00
		1	38	22.64	22.37	22.62	23.00
		1	74	22.19	21.89	22.39	23.00
		36	0	21.04	21.15	21.05	22.00
		36	18	21.08	21.06	21.01	22.00
		36	39	20.98	20.77	21.01	22.00
		75	0	21.04	20.89	21.06	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20050	20175	20300	
20MHz	QPSK	1	0	22.85	23.14	22.73	23.50
		1	50	23.07	**23.42**	22.92	23.50
		1	99	22.68	22.70	22.72	23.50
		50	0	21.96	21.94	**22.09**	23.00
		50	25	22.05	22.02	22.04	23.00
		50	50	21.97	21.86	21.88	23.00
		100	0	22.03	21.90	22.00	23.00
	16QAM	1	0	22.43	21.98	22.68	23.00
		1	50	22.57	22.16	22.83	23.00
		1	99	22.32	21.26	22.63	23.00
		50	0	20.99	20.90	21.04	22.00
		50	25	21.02	21.03	20.95	22.00
		50	50	21.01	20.88	20.90	22.00
		100	0	21.09	20.97	21.01	22.00
	64QAM	1	0	22.01	21.76	21.46	23.00
		1	50	22.53	22.08	22.11	23.00
		1	99	21.89	21.62	21.07	23.00
		50	0	21.10	20.93	21.18	22.00
		50	25	21.09	20.89	21.08	22.00
		50	50	21.09	20.71	20.92	22.00
		100	0	20.77	20.64	20.71	22.00

LTE Band 5				**Conducted Power(dBm)**			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20407	20525	20643	
1.4MHz	QPSK	1	0	22.51	22.50	23.02	24.00

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		1	2	22.53	22.84	23.03	24.00
		1	5	22.76	22.59	22.64	24.00
		3	0	22.63	22.72	22.73	24.00
		3	2	22.66	22.69	22.92	24.00
		3	3	22.69	22.70	22.89	24.00
		6	0	21.63	21.69	21.75	23.00
	16QAM	1	0	22.16	21.35	21.94	23.00
		1	2	22.31	21.38	22.08	23.00
		1	5	22.15	21.41	21.97	23.00
		3	0	21.65	21.67	21.78	23.00
		3	2	21.49	21.70	21.79	23.00
		3	3	21.82	21.87	21.83	23.00
		6	0	20.78	20.69	20.80	22.00
	64QAM	1	0	21.87	21.71	21.92	22.00
		1	2	21.89	21.9	22.2	22.00
		1	5	22.49	21.69	21.96	23.00
		3	0	21.65	21.74	21.85	23.00
		3	2	22.12	21.41	21.92	23.00
		3	3	22.13	21.41	21.95	23.00
		6	0	20.81	20.83	20.22	22.00

Bandwidth	Modulation	RB size	RB offset	Channel 20415	Channel 20525	Channel 20635	Tune up
3MHz	QPSK	1	0	22.41	22.57	22.78	24.00
		1	7	22.98	22.78	22.76	24.00
		1	14	22.68	22.59	22.85	24.00
		8	0	21.70	21.71	21.81	23.00
		8	4	21.87	21.73	21.83	23.00
		8	7	21.84	21.65	21.80	23.00
		15	0	21.77	21.59	21.83	23.00
	16QAM	1	0	22.05	22.20	21.58	23.00
		1	7	22.08	22.32	21.79	23.00
		1	14	21.96	22.31	21.57	23.00
		8	0	20.85	20.51	20.69	22.00
		8	4	20.90	20.69	20.79	22.00
		8	7	20.82	20.69	20.91	22.00
		15	0	20.75	20.61	20.75	22.00
	64QAM	1	0	21.58	21.4	21.59	22.00
		1	7	22.34	21.57	21.49	23.00
		1	14	22.02	21.84	21.34	23.00
		8	0	20.55	20.44	20.66	22.00
		8	4	20.61	20.42	20.73	22.00

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		8	7	20.53	20.44	20.47	22.00
		15	0	20.56	20.43	20.53	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 20425	Channel 20525	Channel 20625	Tune up
5MHz	QPSK	1	0	22.33	22.22	22.39	24.00
		1	13	22.72	22.59	22.89	24.00
		1	24	22.64	22.39	22.81	24.00
		12	0	21.67	21.58	21.66	23.00
		12	6	21.79	21.67	21.78	23.00
		12	13	21.72	21.67	21.68	23.00
		25	0	21.80	21.58	21.81	23.00
	16QAM	1	0	20.79	21.61	21.46	22.00
		1	13	21.34	22.14	21.55	23.00
		1	24	21.02	21.78	21.38	23.00
		12	0	20.65	20.54	20.41	22.00
		12	6	20.72	20.65	20.70	22.00
		12	13	20.66	20.54	20.59	22.00
		25	0	20.76	20.53	20.80	22.00
	64QAM	1	0	21.34	21.53	21.28	22.00
		1	13	21.67	21.65	21.81	22.00
		1	24	21.29	21.41	21.55	22.00
		12	0	20.33	20.02	20.49	22.00
		12	6	20.61	20.16	20.56	22.00
		12	13	20.49	20.08	20.3	22.00
		25	0	20.63	20.29	20.46	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 20450	Channel 20525	Channel 20600	Tune up
10MHz	QPSK	1	0	22.57	22.49	22.56	24.00
		1	25	22.97	22.98	**23.06**	24.00
		1	49	22.38	22.60	22.55	24.00
		25	0	**21.84**	21.54	21.76	23.00
		25	13	21.79	21.70	21.79	23.00
		25	25	21.66	21.58	21.76	23.00
		50	0	21.76	21.56	21.73	23.00
	16QAM	1	0	22.07	21.03	21.56	23.00
		1	25	22.82	22.14	21.65	23.00
		1	49	21.66	22.24	21.23	23.00
		25	0	20.90	20.73	20.74	22.00
		25	13	20.87	20.83	20.84	22.00
		25	25	20.63	20.63	20.80	22.00
		50	0	20.70	20.56	20.57	22.00

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		1	0	21.76	21.37	21.46	22.00
		1	25	22.03	21.96	21.97	22.50
		1	49	21.52	21.62	21.68	22.00
	64QAM	25	0	20.78	20.48	20.65	22.00
		25	13	20.73	20.53	20.70	22.00
		25	25	20.54	20.42	20.65	22.00
		50	0	20.60	20.43	20.55	22.00

LTE Band 7				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20775	21100	21425	
5MHz	QPSK	1	0	22.60	22.91	23.11	24.00
		1	13	22.68	23.21	23.49	24.00
		1	24	22.59	22.92	23.48	24.00
		12	0	21.88	22.29	22.50	23.00
		12	6	21.81	22.35	22.47	23.00
		12	13	21.72	22.25	22.55	23.00
		25	0	21.80	22.27	22.50	23.00
	16QAM	1	0	21.11	22.24	22.10	23.00
		1	13	21.69	22.57	22.02	23.00
		1	24	21.39	22.41	22.28	23.00
		12	0	20.88	21.29	21.29	22.00
		12	6	20.80	21.34	21.53	22.00
		12	13	20.69	21.35	21.49	22.00
		25	0	20.89	21.32	21.52	22.00
	64QAM	1	0	21.08	21.81	21.48	22.00
		1	13	21.13	22.04	22.08	23.00
		1	24	20.88	21.76	21.64	22.00
		12	0	20.19	20.69	20.92	22.00
		12	6	20.31	20.67	21.02	22.00
		12	13	20.31	20.65	21.01	22.00
		25	0	20.33	20.68	20.97	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20800	21100	21400	
10MHz	QPSK	1	0	22.89	23.24	23.15	24.00
		1	25	23.00	23.78	23.88	24.00
		1	49	22.74	23.06	23.55	24.00
		25	0	21.96	22.36	22.44	23.00
		25	13	21.97	22.34	22.60	23.00
		25	25	21.85	22.19	22.51	23.00

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		50	0	21.93	22.28	22.40	23.00
	16QAM	1	0	22.28	22.81	22.17	23.00
		1	25	22.68	22.89	22.51	23.00
		1	49	21.98	22.76	22.40	23.00
		25	0	21.05	21.43	21.50	22.00
		25	13	21.08	21.52	21.81	22.00
		25	25	20.88	21.17	21.77	22.00
		50	0	20.91	21.34	21.36	22.00
	64QAM	1	0	21.48	21.49	21.89	22.00
		1	25	22.23	22.23	22.36	23.00
		1	49	21.47	21.23	22.16	23.00
		25	0	20.59	20.90	21.01	22.00
		25	13	20.57	20.79	20.96	22.00
		25	25	20.42	20.67	21.12	22.00
		50	0	20.39	20.86	20.90	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20825	21100	21375	
15MHz	QPSK	1	0	22.79	23.09	23.18	24.00
		1	38	22.93	23.36	23.38	24.00
		1	74	22.80	22.99	23.38	24.00
		36	0	21.97	22.43	22.56	23.00
		36	18	21.96	22.34	22.49	23.00
		36	39	21.84	22.21	22.52	23.00
		75	0	21.94	22.37	22.51	23.00
	16QAM	1	0	22.33	22.85	22.31	23.00
		1	38	22.29	23.44	22.39	23.50
		1	74	22.05	22.61	22.20	23.00
		36	0	20.99	21.59	21.35	22.00
		36	18	20.91	21.41	21.46	22.00
		36	39	20.85	21.11	21.38	22.00
		75	0	21.02	21.37	21.59	22.00
	64QAM	1	0	21.43	21.43	21.48	22.00
		1	38	22.00	21.99	22.59	23.00
		1	74	21.48	21.35	22.43	23.00
		36	0	20.46	20.80	20.94	22.00
		36	18	20.51	20.79	20.92	22.00
		36	39	20.29	20.53	20.89	22.00
		75	0	20.32	20.82	21.01	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20850	21100	21350	
20MHz	QPSK	1	0	22.53	22.71	22.41	24.00

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		1	50	**23.12**	23.04	22.85	**24.00**
		1	99	22.67	22.44	22.62	24.00
		50	0	21.96	21.83	21.69	23.00
		50	25	**21.98**	21.82	21.88	**23.00**
		50	50	21.89	21.58	21.77	23.00
		100	0	21.98	21.71	21.67	23.00
	16QAM	1	0	22.09	21.60	22.28	23.00
		1	50	22.56	21.85	22.95	23.00
		1	99	22.24	20.96	22.26	22.50
		50	0	21.05	20.88	20.71	22.50
		50	25	21.03	20.88	20.92	22.50
		50	50	20.33	20.67	20.82	22.00
		100	0	20.25	20.76	20.83	22.00
	64QAM	1	0	21.19	21.51	21.09	22.50
		1	50	22.11	22.16	22.18	22.50
		1	99	21.45	21.44	21.55	22.50
		50	0	20.55	21.01	20.79	22.50
		50	25	20.57	20.83	21.06	22.50
		50	50	20.61	20.74	21.06	22.00
		100	0	20.20	20.65	20.84	22.00

LTE FDD Band 12				**Conducted Power(dBm)**			
Bandwidth	Modulation	RB size	RB offset	Channel 23017	Channel 23095	Channel 23173	Tune up
1.4MHz	QPSK	1	0	22.20	22.30	22.38	23.00
		1	2	22.13	22.49	22.49	23.00
		1	5	22.29	22.46	22.54	23.00
		3	0	22.02	22.41	22.32	23.00
		3	2	22.13	22.45	22.51	23.00
		3	3	22.25	22.55	22.38	23.00
		6	0	21.19	21.52	21.39	22.00
	16QAM	1	0	21.21	21.47	20.94	22.00
		1	2	21.71	21.58	21.55	22.00
		1	5	21.77	21.69	21.58	22.00
		3	0	21.21	21.62	21.13	22.00
		3	2	21.21	21.62	21.36	22.00
		3	3	21.38	21.63	21.32	22.00
		6	0	20.25	20.52	20.43	21.00
	64QAM	1	0	21.12	21.55	21.5	22.00
		1	2	21.52	21.81	21.72	22.00

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		1	5	21.15	21.34	21.89	22.00
		3	0	21.03	21.36	21.57	22.00
		3	2	21.57	21.31	21.43	22.00
		3	3	21.62	21.16	21.44	22.00
		6	0	20.21	20.3	20.53	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23025	23095	23165	
3MHz	QPSK	1	0	22.04	22.32	22.37	23.00
		1	7	22.08	22.53	22.42	23.00
		1	14	22.16	22.41	22.43	23.00
		8	0	21.17	21.47	21.40	23.00
		8	4	21.20	21.52	21.38	23.00
		8	7	21.25	21.54	21.40	23.00
		15	0	21.15	21.47	21.41	22.00
	16QAM	1	0	21.44	21.69	21.19	22.00
		1	7	21.67	21.70	21.37	22.00
		1	14	21.44	21.47	21.36	22.00
		8	0	20.33	20.28	20.39	22.00
		8	4	20.50	20.32	20.36	22.00
		8	7	20.44	20.32	20.48	22.00
		15	0	20.13	20.50	20.56	22.00
	64QAM	1	0	21.39	21.43	21.55	22.00
		1	7	21.88	21.75	21.77	22.00
		1	14	21.99	21.63	21.6	22.00
		8	0	20.2	20.45	20.57	22.00
		8	4	20.31	20.4	20.57	22.00
		8	7	20.28	20.53	20.53	22.00
		15	0	20.15	20.31	20.48	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23035	23095	23155	
5MHz	QPSK	1	0	21.96	22.00	22.09	23.00
		1	13	22.21	22.38	22.53	23.00
		1	24	22.51	21.99	22.53	23.00
		12	0	21.15	21.29	21.40	23.00
		12	6	21.27	21.49	21.47	23.00
		12	13	21.12	21.35	21.41	23.00
		25	0	21.15	21.39	21.42	22.00
	16QAM	1	0	20.49	21.46	20.86	22.00
		1	13	20.74	21.63	21.40	22.00
		1	24	20.55	21.36	21.28	22.00
		12	0	19.99	20.26	20.00	21.00

程智电子科技（昆山）有限公司 检验检测专用章 Inspection & Testing Services Compliance Certification Services (Kunshan) Inc. EMC Laboratory

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		12	6	20.11	20.15	20.48	21.00
		12	13	20.15	20.31	20.26	21.00
		25	0	20.22	20.39	20.45	21.00
	64QAM	1	0	20.95	21.26	21.22	22.00
		1	13	21.12	21.52	21.56	22.00
		1	24	20.80	21.13	21.63	22.00
		12	0	19.83	20.06	20.51	21.00
		12	6	20.12	20.25	20.53	21.00
		12	13	20.27	20.17	20.54	21.00
		25	0	20.23	20.36	20.47	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23060	23095	23130	
10MHz	QPSK	1	0	22.10	21.85	22.30	23.00
		1	25	22.36	**22.90**	22.66	23.00
		1	49	22.13	22.03	22.12	23.00
		25	0	21.07	21.39	**21.57**	23.00
		25	13	21.26	21.45	21.49	23.00
		25	25	21.35	21.28	21.38	23.00
		50	0	21.18	21.31	21.50	22.00
	16QAM	1	0	21.34	21.40	21.08	22.00
		1	25	22.24	22.60	21.56	23.00
		1	49	21.63	21.77	20.95	22.00
		25	0	20.20	20.44	20.53	21.00
		25	13	20.32	20.51	20.58	21.00
		25	25	20.36	20.21	20.57	21.00
		50	0	20.09	20.33	20.45	21.00
	64QAM	1	0	20.89	20.55	21.36	22.50
		1	25	22.15	22.11	21.94	22.50
		1	49	21.65	21.58	21.56	22.50
		25	0	20.21	20.37	20.70	21.00
		25	13	20.45	20.39	20.50	21.00
		25	25	20.56	20.28	20.35	21.00
		50	0	20.21	20.43	20.37	21.00

LTE FDD Band 13				**Conducted Power(dBm)**			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23205	23230	23255	
5MHz	QPSK	1	0	22.46	22.55	22.46	24.00
		1	13	22.54	22.92	22.98	24.00
		1	24	22.49	22.81	22.82	24.00

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		12	0	21.72	21.70	21.71	23.00
		12	6	21.79	21.76	21.85	23.00
		12	13	21.66	21.75	21.79	23.00
		25	0	21.74	21.78	21.64	23.00
	16QAM	1	0	20.94	21.37	21.51	22.00
		1	13	21.02	22.33	21.93	22.50
		1	24	20.83	21.98	21.73	22.00
		12	0	20.58	20.57	20.70	22.00
		12	6	20.63	20.72	20.74	22.00
		12	13	20.49	20.69	20.79	22.00
		25	0	20.71	20.67	20.67	22.00
	64QAM	1	0	21.55	21.93	21.64	22.00
		1	13	21.40	22.37	22.14	22.50
		1	24	21.42	21.98	22.02	22.50
		12	0	20.40	20.57	20.49	22.00
		12	6	20.71	20.66	20.72	22.00
		12	13	20.74	20.58	20.77	22.00
		25	0	20.74	20.78	20.65	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				NA	23230	NA	
10MHz	QPSK	1	0	/	22.59	/	24.00
		1	25	/	**22.86**	/	24.00
		1	49	/	22.6	/	24.00
		25	0	/	21.63	/	23.00
		25	13	/	**21.74**	/	23.00
		25	25	/	21.59	/	23.00
		50	0	/	21.62	/	23.00
	16QAM	1	0	/	21.94	/	22.00
		1	25	/	22.6	/	23.00
		1	49	/	22.04	/	23.00
		25	0	/	20.7	/	22.00
		25	13	/	20.71	/	22.00
		25	25	/	20.65	/	22.00
		50	0	/	20.54	/	22.00
	64QAM	1	0	/	21.85	/	22.00
		1	25	/	22.06	/	22.50
		1	49	/	22	/	22.50
		25	0	/	20.89	/	22.00
		25	13	/	20.8	/	22.00
		25	25	/	21.02	/	22.00
		50	0	/	20.73	/	22.00

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LTE Band 25				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 26047	Channel 26365	Channel 26683	Tune up
1.4MHz	QPSK	1	0	22.73	22.84	22.93	24.00
		1	2	22.96	23.12	22.95	24.00
		1	5	22.67	22.98	22.44	24.00
		3	0	22.73	22.87	23.16	24.00
		3	2	22.78	23.09	22.83	24.00
		3	3	22.82	23	22.58	24.00
		6	0	21.96	21.99	22.59	23.00
	16QAM	1	0	22.18	21.89	22.23	23.00
		1	2	22.41	22.27	22.2	23.00
		1	5	22.45	21.81	21.73	23.00
		3	0	21.94	21.99	22.19	23.00
		3	2	22.05	22.01	21.97	23.00
		3	3	21.61	22.37	21.98	23.00
		6	0	21.04	21.08	21.14	23.00
	64QAM	1	0	21.47	22.58	22.5	23.00
		1	2	21.57	22.8	22.07	23.00
		1	5	21.19	22.36	21.7	23.00
		3	0	21.2	22.18	22.15	23.00
		3	2	21.09	21.88	21.51	22.00
		3	3	21.33	21.68	21.29	22.00
		6	0	20.08	20.82	21.05	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 26055	Channel 26365	Channel 26675	Tune up
3MHz	QPSK	1	0	22.74	22.68	22.96	24.00
		1	7	22.92	23.09	23.02	24.00
		1	14	22.93	23.11	22.37	24.00
		8	0	21.9	22	22.27	24.00
		8	4	21.96	21.98	22.03	24.00
		8	7	21.86	21.98	22.14	24.00
		15	0	21.94	22.05	22.33	23.00
	16QAM	1	0	22.23	22.31	21.91	23.00
		1	7	22.17	22.58	21.89	23.00
		1	14	22.3	22.35	21.62	23.00
		8	0	21.05	21.28	21.46	23.00
		8	4	21.01	20.9	20.94	22.00
		8	7	21	20.79	20.92	22.00
		15	0	20.9	20.87	21.21	22.00

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	64QAM	1	0	21.58	22.04	22.38	22.50
		1	7	21.54	22.51	22.06	23.00
		1	14	21.43	22.35	20.71	22.50
		8	0	20.45	21.07	21.99	22.00
		8	4	20.76	21.08	21.01	22.00
		8	7	20.75	21.14	21.03	22.00
		15	0	20.48	21	21.29	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26065	26365	26665	
5MHz	QPSK	1	0	22.7	22.65	22.81	24.00
		1	13	22.73	22.94	23.02	24.00
		1	24	22.72	23.09	22.37	24.00
		12	0	21.94	21.94	22.25	23.00
		12	6	21.91	22	22.06	23.00
		12	13	21.87	22.12	22.03	23.00
		25	0	21.86	22	22.18	23.00
	16QAM	1	0	21.19	22.01	21.98	23.00
		1	13	21.42	22.41	21.64	23.00
		1	24	21.38	22.52	21.61	23.00
		12	0	20.77	20.83	21.3	22.00
		12	6	20.84	20.88	21.12	22.00
		12	13	20.96	21	20.93	22.00
		25	0	21.01	20.91	21.07	22.00
	64QAM	1	0	21.4	22	22.33	23.00
		1	13	21.38	22.25	21.96	23.00
		1	24	21.19	22.33	21.17	23.00
		12	0	20.18	20.78	21.6	22.00
		12	6	20.25	20.88	20.98	22.00
		12	13	20.26	21.02	20.88	22.00
		25	0	20.47	20.9	21.23	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26090	26365	26640	
10MHz	QPSK	1	0	22.9	22.97	23.08	24.00
		1	25	23.06	23.35	23.49	24.00
		1	49	22.72	23.17	21.78	23.50
		25	0	22.04	21.96	22.41	23.50
		25	13	22.02	22.13	22.27	23.50
		25	25	21.94	22.17	22.02	23.50
		50	0	21.96	22.04	22.2	23.50
	16QAM	1	0	22.29	22.67	22.16	23.50
		1	25	22.57	22.74	22.17	23.50

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		1	49	22.08	22.76	21.78	23.50
		25	0	20.99	20.95	21.36	22.00
		25	13	21	21.12	21.48	22.00
		25	25	20.99	21.19	21.12	22.00
		50	0	20.96	21.08	21.27	22.00
	64QAM	1	0	21.64	22.09	21.91	23.00
		1	25	22.13	22.49	22.79	23.00
		1	49	21.67	22.36	21.83	23.00
		25	0	20.66	20.79	21.71	22.00
		25	13	20.69	21.07	21.32	22.00
		25	25	20.65	21.19	21.06	22.00
		50	0	20.48	20.98	21.15	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26115	26365	26615	
15MHz	QPSK	1	0	22.99	22.96	23.02	24.00
		1	38	22.94	23.19	23.28	24.00
		1	74	22.93	23.04	21.76	23.50
		36	0	22.11	21.99	22.24	23.50
		36	18	22.03	22.18	22.37	23.50
		36	39	22.03	22.25	22.18	23.50
		75	0	22.09	22.08	22.14	23.50
	16QAM	1	0	22.59	22.68	22.46	23.50
		1	38	22.56	22.74	22.33	23.50
		1	74	22.23	22.59	21.27	23.00
		36	0	21.13	20.92	20.98	22.00
		36	18	20.97	21.14	21.3	22.00
		36	39	20.98	21.17	21.12	22.00
		75	0	21.12	21.16	21.2	22.00
	64QAM	1	0	21.43	21.69	22.35	23.00
		1	38	22.04	22.38	23.08	23.50
		1	74	21.73	22.26	20.94	22.50
		36	0	20.53	20.87	21.46	22.00
		36	18	20.61	21.05	21.34	22.00
		36	39	20.59	21.16	21.13	22.00
		75	0	20.66	21.06	21.28	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26140	26365	26590	
20MHz	QPSK	1	0	22.78	23.18	22.95	24.00
		1	50	23.12	**23.56**	23.35	24.00
		1	99	22.8	23.09	21.7	23.50
		50	0	22.14	22.04	**22.38**	23.50

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		50	25	22.14	22.24	22.33	23.50
		50	50	22.07	22.19	22.33	23.50
		100	0	22.24	22.2	22.22	23.50
	16QAM	1	0	22.26	22.15	22.81	23.50
		1	50	22.75	22.24	23.42	23.50
		1	99	22.29	22.01	21.43	23.00
		50	0	21.17	21.09	21.29	22.00
		50	25	21.15	21.12	21.24	22.00
		50	50	21.01	21.2	21.23	22.00
		100	0	20.99	21.1	21.14	22.00
	64QAM	1	0	21.76	21.62	21.63	23.00
		1	50	22.28	22.13	22.49	23.00
		1	99	21.67	21.95	20.47	22.00
		50	0	20.68	20.79	21.52	22.00
		50	25	20.79	21.09	21.35	22.00
		50	50	20.64	21.01	21.4	22.00
		100	0	20.76	20.9	21.01	22.00

LTE FDD Band 26				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 26697	Channel 26865	Channel 27033	Tune up
1.4MHz	QPSK	1	0	23.62	23.61	23.81	25.00
		1	2	23.77	23.70	23.90	25.00
		1	5	23.60	23.57	23.60	25.00
		3	0	22.54	22.75	22.71	24.00
		3	2	22.67	22.71	22.63	24.00
		3	3	22.66	22.69	22.66	24.00
		6	0	22.66	22.66	22.61	24.00
	16QAM	1	0	23.18	22.87	22.71	24.00
		1	2	23.19	22.95	22.79	24.00
		1	5	23.10	22.71	22.65	24.00
		3	0	21.81	21.62	21.68	23.00
		3	2	21.86	21.75	21.71	23.00
		3	3	21.82	21.54	21.69	23.00
		6	0	21.81	21.61	21.76	23.00
	64QAM	1	0	22.29	21.84	21.78	23.00
		1	2	22.14	22.07	21.7	23.00
		1	5	22.06	21.79	21.68	23.00
		3	0	20.73	20.64	20.75	22.00
		3	2	20.86	20.71	20.58	22.00

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		3	3	20.74	20.43	20.56	22.00
		6	0	20.92	20.59	20.81	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26705	26865	27025	
3MHz	QPSK	1	0	23.60	23.61	23.69	25.00
		1	7	23.80	23.88	23.80	25.00
		1	14	23.56	23.63	23.56	25.00
		8	0	22.71	22.68	22.62	24.00
		8	4	22.58	22.72	22.79	24.00
		8	7	22.70	22.72	22.71	24.00
		15	0	22.62	22.62	22.52	24.00
	16QAM	1	0	23.21	22.69	22.63	24.00
		1	7	23.35	22.88	22.79	24.00
		1	14	23.01	22.81	22.62	24.00
		8	0	21.84	21.65	21.65	23.00
		8	4	21.78	21.70	21.85	23.00
		8	7	21.84	21.58	21.64	23.00
		15	0	21.68	21.58	21.73	23.00
	64QAM	1	0	22.15	21.82	21.68	23.00
		1	7	22.4	21.75	21.79	23.00
		1	14	22.13	21.87	21.7	23.00
		8	0	20.98	20.77	20.73	22.00
		8	4	20.67	20.73	20.96	22.00
		8	7	20.84	20.65	20.72	22.00
		15	0	20.68	20.56	20.7	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26715	26865	27015	
5MHz	QPSK	1	0	23.70	23.63	23.81	25.00
		1	13	23.83	23.88	23.91	25.00
		1	24	23.56	23.63	23.63	25.00
		12	0	22.57	22.75	22.76	24.00
		12	6	22.65	22.65	22.60	24.00
		12	13	22.61	22.71	22.71	24.00
		25	0	22.70	22.56	22.57	24.00
	16QAM	1	0	23.10	22.76	22.62	24.00
		1	13	23.39	22.98	22.90	24.00
		1	24	23.13	22.86	22.54	24.00
		12	0	21.83	21.62	21.73	23.00
		12	6	21.92	21.65	21.80	23.00
		12	13	21.83	21.69	21.79	23.00
		25	0	21.79	21.54	21.63	23.00

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		1	0	22.04	21.80	21.54	23.00
		1	13	22.49	22.11	21.94	23.00
		1	24	22.02	21.95	21.44	23.00
	64QAM	12	0	20.76	20.58	20.87	22.00
		12	6	20.88	20.53	20.87	22.00
		12	13	20.69	20.80	20.78	22.00
		25	0	20.74	20.46	20.72	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26750	26865	26990	
		1	0	23.62	23.54	23.75	25.00
		1	25	23.83	23.72	23.91	25.00
		1	49	23.58	23.54	23.60	25.00
	QPSK	25	0	22.71	22.59	22.73	24.00
		25	13	22.72	22.61	22.61	24.00
		25	25	22.66	22.72	22.71	24.00
		50	0	22.61	22.65	22.69	24.00
		1	0	23.16	22.71	22.64	24.00
		1	25	23.35	23.04	22.89	24.00
		1	49	23.09	22.86	22.49	24.00
10MHz	16QAM	25	0	21.72	21.57	21.80	23.00
		25	13	21.84	21.80	21.71	23.00
		25	25	21.77	21.64	21.71	23.00
		50	0	21.62	21.61	21.62	23.00
		1	0	22.21	21.75	21.50	23.00
		1	25	22.39	22.12	21.78	23.00
		1	49	22.11	21.96	21.41	23.00
	64QAM	25	0	20.65	20.53	20.74	22.00
		25	13	20.74	20.76	20.77	22.00
		25	25	20.77	20.70	20.79	22.00
		50	0	20.70	20.59	20.62	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26775	26865	26965	
		1	0	23.56	23.54	23.76	25.00
		1	38	23.69	**23.80**	23.64	25.00
		1	74	23.55	23.53	23.69	25.00
	QPSK	36	0	22.62	22.74	22.64	24.00
15MHz		36	18	22.64	**22.75**	22.49	24.00
		36	39	22.70	22.68	22.71	24.00
		75	0	22.65	22.58	22.55	24.00
	16QAM	1	0	23.25	22.79	22.79	24.00
		1	38	23.39	23.00	22.73	24.00

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		1	74	23.16	22.74	22.50	24.00
		36	0	21.87	21.58	21.80	23.00
		36	18	21.91	21.69	21.83	23.00
		36	39	21.80	21.58	21.63	23.00
		75	0	21.75	21.61	21.65	23.00
	64QAM	1	0	22.37	21.72	21.80	23.00
		1	38	22.26	22.08	21.82	23.00
		1	74	22.04	21.88	21.58	23.00
		36	0	20.79	20.62	20.70	22.00
		36	18	20.79	20.76	20.87	22.00
		36	39	20.78	20.67	20.63	22.00
		75	0	20.71	20.46	20.71	22.00

LTE Band 38				**Conducted Power(dBm)**			Tune up
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	
				37775	38000	38225	
5MHz	QPSK	1	0	23.14	23.11	23.12	24.00
		1	13	23.21	23.31	23.45	24.00
		1	24	22.82	23.04	23.24	24.00
		12	0	22.33	22.23	22.3	23.00
		12	6	22.25	22.39	22.32	23.00
		12	13	22.1	22.12	22.18	23.00
		25	0	22.23	22.17	22.31	23.00
	16QAM	1	0	22	22.43	22.24	23.00
		1	13	22.23	22.55	22.3	23.00
		1	24	21.74	22.75	22.08	23.00
		12	0	21.16	21.09	21.18	22.00
		12	6	21.21	21.2	21.21	22.00
		12	13	20.97	21.2	21.11	22.00
		25	0	21.12	21.1	21.21	22.00
	64QAM	1	0	22.98	21.69	22.14	23.00
		1	13	22.64	22.02	22.3	23.00
		1	24	22.68	22.07	22.23	23.00
		12	0	21.12	20.98	21.16	22.00
		12	6	20.96	21.17	21.08	22.00
		12	13	20.84	21.23	21.15	22.00
		25	0	21.14	21.34	21.21	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				37800	38000	38200	
10MHz	QPSK	1	0	23.28	23.38	23.33	24.00

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		1	25	23.18	23.45	23.67	24.00
		1	49	22.92	23.19	23.2	24.00
		25	0	22.22	22.28	22.48	23.00
		25	13	22.23	22.31	22.58	23.00
		25	25	22.17	22.19	22.33	23.00
		50	0	22.26	22.33	22.37	23.00
	16QAM	1	0	22.06	22.76	22.59	23.00
		1	25	22.04	23.3	22.85	23.50
		1	49	21.48	22.67	22.7	23.00
		25	0	21.2	21.37	21.61	22.00
		25	13	21.11	21.45	21.6	22.00
		25	25	21.14	21.16	21.38	22.00
		50	0	21.3	21.11	21.25	22.00
	64QAM	1	0	22.84	22.15	22.73	23.00
		1	25	22.63	22.11	23.04	23.50
		1	49	22.41	21.99	23.33	23.50
		25	0	21.28	21.28	21.4	22.00
		25	13	21.25	21.25	21.31	22.00
		25	25	21.19	21.07	21.47	22.00
		50	0	21.22	21.14	21.26	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 37825	Channel 38000	Channel 38175	Tune up
15MHz	QPSK	1	0	23.13	23.22	23.53	24.00
		1	38	23.15	23.31	23.33	24.00
		1	74	23.01	23.16	23.14	24.00
		36	0	22.25	22.36	22.36	23.00
		36	18	22.27	22.41	22.49	23.00
		36	39	22.2	22.17	22.35	23.00
		75	0	22.28	22.25	22.4	23.00
	16QAM	1	0	22.01	22.7	22.71	23.00
		1	38	22.09	23.18	22.78	23.50
		1	74	21.82	22.62	22.49	23.50
		36	0	21.18	21.37	21.31	22.00
		36	18	21.21	21.47	21.48	22.00
		36	39	21.15	21.25	21.31	22.00
		75	0	21.24	21.33	21.34	22.00
	64QAM	1	0	22.54	22.17	22.64	23.50
		1	38	22.25	22.11	23.03	23.50
		1	74	22.99	22.48	22.72	23.50
		36	0	21.2	21.34	21.42	22.00
		36	18	21.18	21.3	21.42	22.00

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		36	39	21.03	21.2	21.4	22.00
		75	0	21.26	21.29	21.4	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 37850	Channel 38000	Channel 38150	Tune up
20MHz	QPSK	1	0	23.28	23.18	23.18	24.00
		1	50	23.39	23.3	**23.76**	24.00
		1	99	23	22.89	23.32	24.00
		50	0	22.27	22.32	22.41	23.00
		50	25	22.4	22.3	**22.6**	23.00
		50	50	22.26	22.15	22.39	23.00
		100	0	22.32	22.26	22.37	23.00
	16QAM	1	0	22.95	21.73	22.21	23.00
		1	50	22.83	22.13	23.17	23.50
		1	99	22.34	21.75	22.73	23.50
		50	0	21.4	21.36	21.47	22.00
		50	25	21.47	21.27	21.49	22.00
		50	50	21.23	21.03	21.46	22.00
		100	0	21.15	21.1	21.34	22.00
	64QAM	1	0	22.3	21.5	22.74	23.00
		1	50	22.17	22.46	22.59	23.00
		1	99	22.38	21.78	22.33	23.00
		50	0	21.41	21.33	21.44	22.00
		50	25	21.37	21.33	21.51	22.00
		50	50	21.34	21.31	21.42	22.00
		100	0	20.89	20.85	21.09	22.00

LTE Band 41				Conducted Power(dBm)			Tune up
Bandwidth	Modulation	RB size	RB offset	Channel 39675	Channel 40620	Channel 41565	
5MHz	QPSK	1	0	22.72	23.05	23.1	24.00
		1	13	22.96	23.11	23.18	24.00
		1	24	22.79	22.87	23	24.00
		12	0	22	22.12	22.22	23.00
		12	6	22.07	22.24	22.27	23.00
		12	13	21.95	22.12	21.95	23.00
		25	0	21.88	22.18	22.12	23.00
	16QAM	1	0	21.75	22.3	22.09	23.00
		1	13	21.64	22.77	22.23	23.00
		1	24	21.59	22.29	21.82	23.00
		12	0	20.75	21	20.98	22.00

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		12	6	20.89	20.98	21.22	22.00
		12	13	20.87	20.91	21.05	22.00
		25	0	20.9	21.07	21.16	22.00
	64QAM	1	0	21.71	22.01	22.67	23.00
		1	13	22.07	22.39	22.61	23.00
		1	24	21.8	22.36	22.73	23.00
		12	0	20.67	21.09	21.34	22.00
		12	6	21.06	21.13	21.26	22.00
		12	13	21.02	20.95	21.01	22.00
		25	0	21.02	21.21	21.2	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				39700	40620	41540	
10MHz	QPSK	1	0	22.79	23.23	23.19	24.00
		1	25	23.1	23.38	23.24	24.00
		1	49	22.91	22.86	23.02	24.00
		25	0	21.99	22.18	22.23	23.00
		25	13	22.05	22.25	22.48	23.00
		25	25	22.02	22.08	22.04	23.00
		50	0	21.99	22.13	22.22	23.00
	16QAM	1	0	21.85	22.62	22.3	23.00
		1	25	21.92	23.16	22.4	23.50
		1	49	21.56	22.36	22.64	23.00
		25	0	21.06	21.54	21.71	22.00
		25	13	21.02	21.36	21.21	22.00
		25	25	20.99	21.1	21.18	22.00
		50	0	21.01	21.34	21.37	22.00
	64QAM	1	0	21.72	21.81	22.66	23.00
		1	25	22.36	22.24	23.08	23.50
		1	49	22.2	22.13	22.85	23.00
		25	0	21.17	21.22	21.4	22.00
		25	13	21.08	21.43	21.23	22.00
		25	25	21.25	21.23	21.16	22.00
		50	0	21.19	21.34	21.4	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				39725	40620	41515	
15MHz	QPSK	1	0	22.67	23.14	23.44	24.00
		1	38	22.87	23.25	23.01	24.00
		1	74	22.68	22.98	22.97	24.00
		36	0	21.82	22.26	22.27	23.00
		36	18	22	22.29	22.5	23.00
		36	39	21.84	22.05	22.1	23.00

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		75	0	21.86	22.13	22.36	23.00
	16QAM	1	0	21.5	22.58	22.44	23.00
		1	38	21.84	23.12	22.35	23.50
		1	74	21.41	22.66	21.86	23.00
		36	0	20.81	21.37	21.43	22.00
		36	18	21.04	21.28	21.32	22.00
		36	39	20.85	21.13	21.03	22.00
		75	0	20.93	21.21	21.41	22.00
	64QAM	1	0	21.79	21.96	22.73	23.00
		1	38	22.17	21.86	22.63	23.00
		1	74	22.1	22.36	22.64	23.00
		36	0	20.95	21.24	21.39	22.00
		36	18	20.91	21.38	21.27	22.00
		36	39	20.99	21.21	21.22	22.00
		75	0	20.97	21.28	21.42	22.00

Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				39750	40620	41490	
20MHz	QPSK	1	0	22.73	23.31	23.45	24.00
		1	50	23.32	23.48	**23.63**	**24.00**
		1	99	22.76	23.28	23.06	24.00
		50	0	21.89	22.38	**22.66**	**23.00**
		50	25	22.1	22.55	22.55	23.00
		50	50	21.85	22.51	22.49	23.00
		100	0	21.97	22.39	22.61	23.00
	16QAM	1	0	22.26	22.36	22.14	23.00
		1	50	22.71	22.79	22.79	23.00
		1	99	21.88	22.62	21.89	23.00
		50	0	20.96	21.58	21.91	22.00
		50	25	21.06	21.66	21.81	22.00
		50	50	20.93	21.43	21.5	22.00
		100	0	21.31	21.47	21.39	22.00
	64QAM	1	0	21.58	21.83	21.75	22.00
		1	50	22.28	21.66	22.37	23.00
		1	99	21.99	21.84	21.72	22.00
		50	0	21	20.75	21.51	22.00
		50	25	21	21.05	21.43	22.00
		50	50	21.01	21.05	21.14	22.00
		100	0	20.61	21.26	21.32	22.00

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8.1.4 Conducted Power Of BLE

BLE_1M			Average Conducted Power(dBm)	Tune up (dBm)
Modulation	Channel	Frequency (MHz)		
GFSK	0	2402	10.52	11.0
	19	2440	10.63	11.0
	39	2480	10.58	11.0

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8.2 Stand-alone SAR test evaluation

8.2.1 941225 D07 UMPC Mini Tablet v01r02

In general, in line with the guidance from FCC KDB Publication 941225 D07 UMPC Mini Tablet v01r02, only surfaces and side edges with a transmitting antenna located at ⩽ 25 mm from that surface or edge need to be tested.

Freq.Band	Position	Separation distance (mm)	Requirement (mm)	Exclusion (Yes/No)
WWAN	Front side	62.2	≤ 25 mm	Yes
	Top side	26.9	≤ 25 mm	Yes

8.2.2 KDB 447498 D04

The following SAR test exclusion Thresholds based on KDB 447498 D04 Interim General RF Exposure Guidance v01 Appendix B B.4

For Extremity

Freq.Band	Frequency (MHz)	Position	Max Power (dBm)	Max Power (mW)	separation distance (mm)	Blank 1mW Blanket Exemption (mW)	MPE based Exemption (mm)	MPE based Exemption (mW)	SAR based Exemption (mW)	Exclusion (Yes/No)
Bluetooth	2480	Front side	11	12.6	40.2	1	19	N/A	N/A	Yes
		Left side	11	12.6	26.8	1	19	N/A	N/A	Yes
		Right side	11	12.6	26.8	1	19	N/A	N/A	Yes
		Top side	11	12.6	71.3	1	19	N/A	N/A	Yes
		Bottom side	11	12.6	28.2	1	19	N/A	N/A	Yes

Note:

1. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
2. Per KDB 447498 D04, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. Per KDB 447498 D04, standalone SAR test exclusion threshold is applied; If the distance of the antenna to the user is < 5mm, 5mm is used to determine SAR exclusion threshold
4. Per KDB 447498 D04, the 1-g and 10-g SAR test exclusion thresholds for 300 MHz to 6 GHz

Blanket 1 mW Blanket Exemption

The 1 mW Blanket Exemption of § 1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance

MPE-based Exemption

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General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table B.1 [Table 1 of § 1.1307(b)(1)(i)(C)] to support an exemption from further evaluation from 300 kHz through 100 GHz.

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

RF Source Frequency			**Minimum Distance**			**Threshold ERP**
f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	–	1.34	159 m	–	35.6 m	1,920 R^2
1.34	–	30	35.6 m	–	1.6 m	3,450 R^2/f^2
30	–	300	1.6 m	–	159 mm	3.83 R^2
300	–	1,500	159 mm	–	31.8 mm	0.0128 R^2f
1,500	–	100,000	31.8 mm	–	0.5 mm	19.2R^2
Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.						

SAR-based Exemption

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by Formula (B.2).

$$P_{\text{th}}\,(\text{mW}) = ERP_{20\,\text{cm}}\,(\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases} \quad \text{(B.1)}$$

$$P_{\text{th}}\,(\text{mW}) = \begin{cases} ERP_{20\,\text{cm}}(d/20\ \text{cm})^x & d \le 20\ \text{cm} \\ ERP_{20\,\text{cm}} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases} \quad \text{(B.2)}$$

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\,\text{cm}}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20\text{cm}}$ is per Formula (B.1).
The example values shown in Table B.2 are for illustration only.

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Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

5. when 10-g extremity SAR applies, SAR test exemption may be considered by applying a factor of 2.5 to the SAR-based exemption thresholds.

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8.3 Measurement of SAR Data

Note:

1) The maximum Scaled SAR value is marked in bold. Graph Results refer to Appendix B

2) Per FCC KDB Publication 447498 D04, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg (2.0W/kg for 10g) then testing at the other channels is not required for such test configuration(s).

3) In general, in line with the guidance from FCC KDB Publication 941225 D07 UMPC Mini Tablet v01r02, only surfaces and side edges with a transmitting antenna located at ⩽ 25 mm from that surface or edge need to be tested.

4) "*" is repeated SAR.

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8.3.1 SAR Result Of GSM 850

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	GPRS 4TS	251/848.8	1:2.075	3.17	2.09	-0.08	28.97	29	1.007	2.104	22.1	4.0
Left side	GPRS 4TS	251/848.8	1:2.075	0.050	0.038	-0.06	28.97	29	1.007	0.038	22.1	4.0
Right side	GPRS 4TS	251/848.8	1:2.075	0.295	0.210	-0.01	28.97	29	1.007	0.212	22.1	4.0
Back side	GPRS 4TS	128/824.2	1:2.075	3.23	2.12	-0.06	27.5	29	1.413	2.995	22.1	4.0
Back side	GPRS 4TS	190/836.6	1:2.075	3.59	2.23	0.06	27.02	29	1.578	**3.518**	22.1	4.0
Back side *	GPRS 4TS	190/836.6	1:2.075	3.46	2.17	0.02	27.02	29	1.578	3.423	22.1	4.0

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8.3.2 SAR Result Of PCS 1900

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift(dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	GPRS 2TS	810/1909.8	1:2.075	2.67	1.71	-0.19	26.49	27	1.125	1.923	22.3	4.0
Left side	GPRS 2TS	810/1909.8	1:2.075	0.046	0.033	0.05	26.49	27	1.125	0.037	22.3	4.0
Right side	GPRS 2TS	810/1909.8	1:2.075	0.253	0.174	0.06	26.49	27	1.125	0.196	22.3	4.0
Back side	GPRS 2TS	512/1850.2	1:2.075	2.72	1.73	-0.16	26.43	27	1.140	1.973	22.3	4.0
Back side	GPRS 2TS	661/1880	1:2.075	3.02	1.82	0.12	26.4	27	1.148	**2.090**	22.3	4.0

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8.3.3 SAR Result Of WCDMA Band II

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	RMC	9538/1907.6	1:1	4.97	2.36	-0.07	22.89	24.00	1.291	3.047	22.3	4.0
Left side	RMC	9538/1907.6	1:1	0.054	0.042	0.07	22.89	24.00	1.291	0.054	22.3	4.0
Right side	RMC	9538/1907.6	1:1	0.408	0.235	-0.16	22.89	24.00	1.291	0.303	22.3	4.0
Back side	RMC	9262/1852.4	1:1	5.07	2.43	0.03	22.6	24.00	1.380	3.354	22.3	4.0
Back side	RMC	9400/1880	1:1	5.19	2.62	0.07	22.86	24.00	1.300	**3.406**	22.3	4.0
Back side *	RMC	9400/1880	1:1	5.11	2.49	-0.04	22.86	24.00	1.300	3.237	22.3	4.0

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8.3.4 SAR Result Of WCDMA Band IV

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	RMC	1413/1732.6	1:1	6.71	3.55	0.08	22.98	23	1.005	**3.566**	22.2	4.0
Left side	RMC	1413/1732.6	1:1	0.069	0.057	-0.03	22.98	23	1.005	0.058	22.2	4.0
Right side	RMC	1413/1732.6	1:1	0.529	0.318	0.13	22.98	23	1.005	0.319	22.2	4.0
Back side	RMC	1312/1712.4	1:1	6.59	3.47	-0.18	22.91	23	1.021	3.543	22.2	4.0
Back side	RMC	1513/1752.6	1:1	6.42	3.41	0.06	22.88	23	1.028	3.506	22.2	4.0
Back side *	RMC	1413/1732.6	1:1	6.58	3.46	0.01	22.98	23	1.005	3.476	22.2	4.0

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8.3.5 SAR Result Of WCDMA Band V

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	RMC	4233/846.6	1:1	1.81	1.05	0.03	22.59	24	1.384	1.453	22.1	4.0
Left side	RMC	4233/846.6	1:1	0.020	0.019	-0.16	22.59	24	1.384	0.026	22.1	4.0
Right side	RMC	4233/846.6	1:1	0.146	0.102	0.01	22.59	24	1.384	0.141	22.1	4.0
Back side	RMC	4132/826.4	1:1	1.76	1.01	0.15	22.44	24	1.432	1.447	22.1	4.0
Back side	RMC	4182/836.4	1:1	1.84	1.14	-0.17	22.43	24	1.435	**1.636**	22.1	4.0

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8.3.6 SAR Result Of LTE Band 2

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp.	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	20M_QPSK 1RB_50	18900/1880	1:1	5.14	2.69	0.13	22.8	23.5	1.175	**3.160**	22.3	4.0
Left side	20M_QPSK 1RB_50	18900/1880	1:1	0.054	0.044	0.14	22.8	23.5	1.175	0.052	22.3	4.0
Right side	20M_QPSK 1RB_50	18900/1880	1:1	0.407	0.243	0.06	22.8	23.5	1.175	0.286	22.3	4.0
Back side	20M_QPSK 1RB_50	18700/1860	1:1	4.89	2.43	0.03	22.54	23.5	1.247	3.031	22.3	4.0
Back side	20M_QPSK 1RB_50	19100/1900	1:1	4.91	2.47	0.09	22.61	23.5	1.227	3.032	22.3	4.0
Back side	20M_QPSK 50RB_0	19100/1900	1:1	3.98	2.07	0.11	21.6	23	1.380	2.857	22.3	4.0
Left side	20M_QPSK 50RB_0	19100/1900	1:1	0.045	0.037	0.1	21.6	23	1.380	0.050	22.3	4.0
Right side	20M_QPSK 50RB_0	19100/1900	1:1	0.317	0.191	-0.04	21.6	23	1.380	0.264	22.3	4.0
Back side	20M_QPSK 50RB_0	18700/1860	1:1	3.77	1.87	0.03	21.29	23	1.483	2.772	22.3	4.0
Back side	20M_QPSK 50RB_0	18900/1880	1:1	3.78	1.90	0.14	21.47	23	1.422	2.702	22.3	4.0
Back side *	20M_QPSK 1RB_50	18900/1880	1:1	5.07	2.59	0.06	22.8	23.5	1.175	3.043	22.3	4.0

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8.3.7 SAR Result Of LTE Band 4

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp.	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	20M_QPSK 1RB_50	20175/1732.5	1:1	6.98	3.73	-0.06	23.42	23.5	1.019	**3.799**	22.2	4.0
Left side	20M_QPSK 1RB_50	20175/1732.5	1:1	0.074	0.059	0.07	23.42	23.5	1.019	0.061	22.2	4.0
Right side	20M_QPSK 1RB_50	20175/1732.5	1:1	0.549	0.337	0.02	23.42	23.5	1.019	0.343	22.2	4.0
Back side	20M_QPSK 1RB_50	20050/1720	1:1	6.35	3.39	0.09	23.07	23.5	1.104	3.743	22.2	4.0
Back side	20M_QPSK 1RB_50	20300/1745	1:1	6.23	3.29	0.13	22.92	23.5	1.143	3.760	22.2	4.0
Back side	20M_QPSK 50RB_0	20300/1745	1:1	5.33	2.85	-0.18	22.09	23	1.233	3.514	22.2	4.0
Left side	20M_QPSK 50RB_0	20300/1745	1:1	0.060	0.048	0.05	22.09	23	1.233	0.059	22.2	4.0
Right side	20M_QPSK 50RB_0	20300/1745	1:1	0.421	0.261	0.05	22.09	23	1.233	0.322	22.2	4.0
Back side	20M_QPSK 50RB_0	20050/1720	1:1	5.06	2.74	-0.04	21.96	23	1.271	3.481	22.2	4.0
Back side	20M_QPSK 50RB_0	20175/1732.5	1:1	4.94	2.64	0.16	21.94	23	1.276	3.370	22.2	4.0
Back side *	20M_QPSK 1RB_50	20175/1732.5	1:1	6.85	3.61	-0.11	23.42	23.5	1.019	3.677	22.2	4.0

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8.3.8 SAR Result Of LTE Band 5

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp.	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	10M_QPSK 1RB_25	20600/844	1:1	1.79	1.07	0.02	23.06	24	1.242	1.329	22.1	4.0
Left side	10M_QPSK 1RB_25	20600/844	1:1	0.020	0.017	-0.05	23.06	24	1.242	0.021	22.1	4.0
Right side	10M_QPSK 1RB_25	20600/844	1:1	0.144	0.103	0.19	23.06	24	1.242	0.128	22.1	4.0
Back side	10M_QPSK 1RB_25	20450/829	1:1	1.82	1.11	0.12	22.97	24	1.268	1.407	22.1	4.0
Back side	10M_QPSK 1RB_25	20525/836.5	1:1	1.84	1.14	0.05	22.98	24	1.265	**1.442**	22.1	4.0
Back side	10M_QPSK 25RB_0	20450/829	1:1	1.410	0.872	0.12	21.84	23	1.306	1.139	22.1	4.0
Left side	10M_QPSK 25RB_0	20450/829	1:1	0.017	0.014	0.1	21.84	23	1.306	0.018	22.1	4.0
Right side	10M_QPSK 25RB_0	20450/829	1:1	0.113	0.083	-0.13	21.84	23	1.306	0.108	22.1	4.0
Back side	10M_QPSK 25RB_0	20525/836.5	1:1	1.410	0.872	0.12	21.54	23	1.400	1.220	22.1	4.0
Back side	10M_QPSK 25RB_0	20600/844	1:1	1.410	0.872	0.12	21.76	23	1.330	1.160	22.1	4.0

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8.3.9 SAR Result Of LTE Band 7

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp.	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	20M_QPSK 1RB_50	20850/2510	1:1	4.85	2.01	0.03	23.12	24	1.225	2.461	22.1	4.0
Left side	20M_QPSK 1RB_50	20850/2510	1:1	0.053	0.033	0.09	23.12	24	1.225	0.041	22.1	4.0
Right side	20M_QPSK 1RB_50	20850/2510	1:1	0.392	0.186	0.19	23.12	24	1.225	0.227	22.1	4.0
Back side	20M_QPSK 1RB_50	21100/2535.5	1:1	5	2.05	-0.09	23.04	24	1.247	**2.557**	22.1	4.0
Back side	20M_QPSK 1RB_50	21350/2560	1:1	4.67	1.89	0.06	22.85	24	1.303	2.463	22.1	4.0
Back side	20M_QPSK 50RB_25	20850/2510	1:1	3.710	1.520	0.01	21.98	23	1.265	1.922	22.1	4.0
Left side	20M_QPSK 50RB_25	20850/2510	1:1	0.042	0.025	0.17	21.98	23	1.265	0.032	22.1	4.0
Right side	20M_QPSK 50RB_25	20850/2510	1:1	0.295	0.141	-0.19	21.98	23	1.265	0.178	22.1	4.0
Back side	20M_QPSK 50RB_25	21100/2535.5	1:1	3.510	1.460	0.13	21.82	23	1.312	1.916	22.1	4.0
Back side	20M_QPSK 50RB_25	21350/2560	1:1	3.540	1.470	0.04	21.88	23	1.294	1.902	22.1	4.0
Back side *	20M_QPSK 1RB_50	21100/2535.5	1:1	4.93	1.996	0.07	23.12	24	1.225	2.444	22.1	4.0

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8.3.10 SAR Result Of LTE Band 12

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp.	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	10M_QPSK 1RB_25	23095/707.5	1:1	2.15	1.44	-0.16	22.9	23	1.023	**1.474**	22.1	4.0
Left side	10M_QPSK 1RB_25	23095/707.5	1:1	0.027	0.024	0.1	22.9	23	1.023	0.024	22.1	4.0
Right side	10M_QPSK 1RB_25	23095/707.5	1:1	0.169	0.130	0.11	22.9	23	1.023	0.133	22.1	4.0
Back side	10M_QPSK 25RB_0	23130/711	1:1	1.66	1.1	-0.11	21.57	22	1.104	1.214	22.1	4.0
Left side	10M_QPSK 25RB_0	23130/711	1:1	0.023	0.021	0.14	21.57	22	1.104	0.023	22.1	4.0
Right side	10M_QPSK 25RB_0	23130/711	1:1	0.132	0.106	-0.01	21.57	22	1.104	0.117	22.1	4.0

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8.3.11 SAR Result Of LTE Band 13

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp.	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	10M_QPSK 1RB_25	23230/782	1:1	1.85	1.17	0.01	22.86	24	1.300	**1.521**	22.1	4.0
Left side	10M_QPSK 1RB_25	23230/782	1:1	0.024	0.021	-0.15	22.86	24	1.300	0.028	22.1	4.0
Right side	10M_QPSK 1RB_25	23230/782	1:1	0.145	0.108	0.06	22.86	24	1.300	0.140	22.1	4.0
Back side	10M_QPSK 25RB_13	23230/782	1:1	1.44	0.918	-0.14	21.74	23	1.337	1.227	22.1	4.0
Left side	10M_QPSK 25RB_13	23230/782	1:1	0.021	0.018	-0.16	21.74	23	1.337	0.024	22.1	4.0
Right side	10M_QPSK 25RB_13	23230/782	1:1	0.118	0.086	0.05	21.74	23	1.337	0.115	22.1	4.0

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8.3.12 SAR Result Of LTE Band 25

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp.	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	20M_QPSK 1RB_50	26365/1882.5	1:1	5.39	2.83	0.15	23.56	24	1.107	**3.132**	22.3	4.0
Left side	20M_QPSK 1RB_50	26365/1882.5	1:1	0.060	0.049	-0.11	23.56	24	1.107	0.055	22.3	4.0
Right side	20M_QPSK 1RB_50	26365/1882.5	1:1	0.429	0.256	-0.1	23.56	24	1.107	0.283	22.3	4.0
Back side	20M_QPSK 1RB_50	26140/1860	1:1	5.13	2.55	-0.07	23.12	24	1.225	3.123	22.3	4.0
Back side	20M_QPSK 1RB_50	26590/1905	1:1	5.16	2.59	-0.06	23.35	24	1.161	3.008	22.3	4.0
Back side	20M_QPSK 50RB_0	26590/1905	1:1	4.25	2.23	-0.18	22.38	23.5	1.294	2.886	22.3	4.0
Left side	20M_QPSK 50RB_0	26590/1905	1:1	0.052	0.041	0.06	22.38	23.5	1.294	0.053	22.3	4.0
Right side	20M_QPSK 50RB_0	26590/1905	1:1	0.338	0.207	-0.18	22.38	23.5	1.294	0.267	22.3	4.0
Back side	20M_QPSK 50RB_0	26140/1860	1:1	4.04	2.01	0.13	22.14	24	1.535	3.085	22.3	4.0
Back side	20M_QPSK 50RB_0	26365/1882.5	1:1	3.89	1.82	0.19	22.04	24	1.570	2.858	22.3	4.0
Back side *	20M_QPSK 1RB_50	26365/1882.5	1:1	5.31	2.77	0.15	23.56	24	1.107	3.065	22.3	4.0

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8.3.13 SAR Result Of LTE Band 26

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp.	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	15M_QPSK 1RB_38	26865/831.5	1:1	1.97	1.23	-0.08	23.8	25	1.318	**1.621**	22.1	4.0
Left side	15M_QPSK 1RB_38	26865/831.5	1:1	0.024	0.023	0.1	23.8	25	1.318	0.030	22.1	4.0
Right side	15M_QPSK 1RB_38	26865/831.5	1:1	0.156	0.111	0.08	23.8	25	1.318	0.146	22.1	4.0
Back side	15M_QPSK 36RB_0	26865/831.5	1:1	1.55	0.973	0.05	22.75	24	1.334	1.298	22.1	4.0
Left side	15M_QPSK 36RB_0	26865/831.5	1:1	0.020	0.019	-0.16	22.75	24	1.334	0.025	22.1	4.0
Right side	15M_QPSK 36RB_0	26865/831.5	1:1	0.125	0.087	-0.08	22.75	24	1.334	0.116	22.1	4.0

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8.3.14 SAR Result Of LTE Band 38

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp.	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	20M_QPSK 1RB_50	38150/2610	1:1	6.13	2.57	0.02	23.76	24	1.057	2.716	22.1	4.0
Left side	20M_QPSK 1RB_50	38150/2610	1:1	0.071	0.050	0.19	23.76	24	1.057	0.053	22.1	4.0
Right side	20M_QPSK 1RB_50	38150/2610	1:1	0.505	0.244	-0.13	23.76	24	1.057	0.257	22.1	4.0
Back side	20M_QPSK 1RB_50	37850/2580	1:1	5.98	2.39	-0.05	23.39	24	1.151	2.750	22.1	4.0
Back side	20M_QPSK 1RB_50	38000/2595	1:1	6.29	2.65	0.04	23.3	24	1.175	**3.113**	22.1	4.0
Back side	20M_QPSK 50RB_25	38150/2610	1:1	4.96	2.09	0.05	22.6	23	1.096	2.292	22.1	4.0
Left side	20M_QPSK 50RB_25	38150/2610	1:1	0.057	0.041	0.02	22.6	23	1.096	0.045	22.1	4.0
Right side	20M_QPSK 50RB_25	38150/2610	1:1	0.401	0.196	-0.1	22.6	23	1.096	0.215	22.1	4.0
Back side	20M_QPSK 50RB_25	37850/2580	1:1	4.71	1.88	-0.06	22.4	23	1.148	2.159	22.1	4.0
Back side	20M_QPSK 50RB_25	38000/2595	1:1	4.73	1.92	0	22.3	23	1.175	2.256	22.1	4.0
Back side *	20M_QPSK 1RB_50	38000/2595	1:1	6.13	2.52	-0.02	23.3	24	1.175	2.961	22.1	4.0

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8.3.15 SAR Result Of LTE Band 41

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg) 10-g	Liquid Temp.	SAR limit (W/kg) 10-g
Extremity Test data(Separate 0mm)												
Back side	20M_QPSK 1RB_50	41490/2680	1:1	6.01	2.47	0.03	23.63	24	1.089	2.690	22.1	4.0
Left side	20M_QPSK 1RB_50	41490/2680	1:1	0.066	0.044	-0.02	23.63	24	1.089	0.048	22.1	4.0
Right side	20M_QPSK 1RB_50	41490/2680	1:1	0.487	0.232	0.14	23.63	24	1.089	0.252	22.1	4.0
Back side	20M_QPSK 1RB_50	39750/2506	1:1	5.76	2.28	-0.19	23.32	24	1.169	2.669	22.1	4.0
Back side	20M_QPSK 1RB_50	40620/2593	1:1	6.05	2.52	0.04	23.48	24	1.127	**2.841**	22.1	4.0
Back side	20M_QPSK 50RB_0	41490/2680	1:1	4.76	1.98	-0.1	22.66	23	1.081	2.141	22.1	4.0
Left side	20M_QPSK 50RB_0	41490/2680	1:1	0.055	0.037	0.05	22.66	23	1.081	0.040	22.1	4.0
Right side	20M_QPSK 50RB_0	41490/2680	1:1	0.387	0.184	0.04	22.66	23	1.081	0.199	22.1	4.0
Back side	20M_QPSK 50RB_0	39750/2506	1:1	4.53	1.79	-0.05	21.89	23	1.291	2.311	22.1	4.0
Back side	20M_QPSK 50RB_0	40620/2593	1:1	4.55	1.83	-0.16	22.38	23	1.153	2.111	22.1	4.0
Back side *	20M_QPSK 1RB_50	40620/2593	1:1	5.91	2.44	0.09	23.48	24	1.127	2.750	22.1	4.0

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8.3.16 Repeated measurements

Band	Test position	First measure SAR (W/kg)	Second measure SAR (W/kg)	Ratio
GSM 850	Back side	2.23	2.17	1.03
WCDMA Band II	Back side	2.62	2.49	1.05
WCDMA Band IV	Back side	3.55	3.46	1.03
LTE Band 2	Back side	2.69	2.59	1.04
LTE Band 4	Back side	3.73	3.61	1.03
LTE Band 7	Back side	2.05	1.996	1.03
LTE Band 25	Back side	2.83	2.77	1.02
LTE Band 38	Back side	2.65	2.52	1.05
LTE Band 41	Back side	2.52	2.44	1.03

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg(2.0W/kg for 10g); steps2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg(2.0W/kg for 10g), repeat that measurement once.

3) 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

≥ 1.45 W/kg(3.6W/kg for 10g) (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is

≥ 1.5 W/kg(3.75W/kg for 10g) and the ratio of largest to smallest SAR for the original, first and second repeated

measurements is > 1.20.

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8.4 Multiple Transmitter Evaluation

8.4.1 Simultaneous SAR SAR test evaluation

Simultaneous Transmission

NO.	Simultaneous Transmission Configuration	Extremity
1	WWAN + BLE	Yes

Estimated SAR

Estimated SAR is calculated as SAR_{est} =1.0 * Pant / Pth (W/kg)

Bluetooth Estimated SAR is:

Band	Frequency (MHz)	Test position	Pant (mW)	Pth (mW)	Estimated SAR (W/kg)
Bluetooth	2480	Left side	12.6	166.3	0.076
		Right side	12.6	166.3	0.076

Simultaneous Transmission SAR Summation Scenario for Extremity

WWAN Band	Exposure position	①MAX. WWAN SAR (W/kg)	②MAX. WLAN2.4G SAR (W/kg)	Summed SAR ①+②	Volume scan
GSM850	Back side	3.518	0	3.518	NO
	Left side	0.038	0.076	0.114	NO
	Right side	0.212	0.076	0.288	NO
GSM1900	Back side	2.09	0	2.090	NO
	Left side	0.037	0.076	0.113	NO
	Right side	0.196	0.076	0.272	NO
WCDMA Band II	Back side	3.406	0	3.406	NO
	Left side	0.054	0.076	0.130	NO
	Right side	0.303	0.076	0.379	NO
WCDMA Band IV	Back side	3.566	0	3.566	NO
	Left side	0.058	0.076	0.134	NO
	Right side	0.319	0.076	0.395	NO
WCDMA Band V	Back side	1.636	0	1.636	NO
	Left side	0.026	0.076	0.102	NO
	Right side	0.141	0.076	0.217	NO
LTE Band 2	Back side	3.16	0	3.160	NO

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	Left side	0.052	0.076	0.128	NO
	Right side	0.286	0.076	0.362	NO
LTE Band 4	Back side	3.799	0	3.799	NO
	Left side	0.061	0.076	0.137	NO
	Right side	0.343	0.076	0.419	NO
LTE Band 5	Back side	1.442	0	1.442	NO
	Left side	0.021	0.076	0.097	NO
	Right side	0.128	0.076	0.204	NO
LTE Band 7	Back side	2.557	0	2.557	NO
	Left side	0.041	0.076	0.117	NO
	Right side	0.227	0.076	0.303	NO
LTE Band 12	Back side	1.474	0	1.474	NO
	Left side	0.024	0.076	0.100	NO
	Right side	0.133	0.076	0.209	NO
LTE Band 13	Back side	1.521	0	1.521	NO
	Left side	0.028	0.076	0.104	NO
	Right side	0.14	0.076	0.216	NO
LTE Band 25	Back side	3.132	0	3.132	NO
	Left side	0.055	0.076	0.131	NO
	Right side	0.283	0.076	0.359	NO
LTE Band 26	Back side	0.1431	0	0.143	NO
	Left side	0.038	0.076	0.114	NO
	Right side	0.15	0.076	0.226	NO
LTE Band 38	Back side	3.113	0	3.113	NO
	Left side	0.053	0.076	0.129	NO
	Right side	0.257	0.076	0.333	NO
LTE Band 41	Back side	2.841	0	2.841	NO
	Left side	0.048	0.076	0.124	NO
	Right side	0.252	0.076	0.328	NO

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9 Equipment list

Test Platform	SPEAG DASY5 Professional
Location	Compliance Certification Services (Kunshan) Inc.
Software Reference	DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)
Hardware Reference	

	Equipment	Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	P C	HP	Core(rm)3.16G	CZCO48171H	N/A	N/A
☒	Signal Generator	Agilent	E5182A	MY50142015	2021/09/24	2022/09/23
☒	S-Parameter Network Analyzer	Agilent	E5071B	MY42301382	2022/02/20	2023/02/19
☒	DAK-3.5 probe	SPEAG	DAK-3.5	1102	N/A	N/A
☒	Wireless Communication Test Set	R&S	CMW500	159275	2021/10/12	2022/10/11
☒	Communication System	Anritsu	MT8820C	6201465349	2022/04/01	2023/03/31
☒	Power meter	Agilent	E4416A	GB41292714	2022/01/22	2023/01/21
☒	Power Sensor	Agilent	E9327A	Us40441788	2022/01/22	2023/01/21
☒	DAE	SPEAG	DAE4	1245	2022/05/30	2023/05/29
☒	E-field PROBE	SPEAG	EX3DV4	7346	2022/03/30	2023/03/29
☒	Dipole	SPEAG	D750V3	1188	2022/03/29	2025/03/28
☒	Dipole	SPEAG	D835V2	4d114	2022/03/31	2025/03/30
☒	Dipole	SPEAG	D1800V2	2d170	2022/03/31	2025/03/30
☒	Dipole	SPEAG	D1900V2	5d136	2022/06/07	2025/06/06
☒	Dipole	SPEAG	D2600V2	1158	2022/03/31	2025/03/30
☒	Electro Thermometer	Renke	RS-WS-N01-6J	1032862	2022/04/01	2023/03/31
☒	Amplifier	Mini-circuits	ZVE-8G	110405	N/A	N/A
☒	Amplifier	Mini-circuits	ZHL-42	QA1331003	N/A	N/A
☒	3db ATTENUATOR	MINI	MCL BW-S3W5	0533	N/A	N/A
☒	DUMMY PROBE	SPEAG	DP_2	SPDP2001AA	N/A	N/A
☒	Dual Directional Coupler	Woken	20W couple	DOM2BHW1A1	N/A	N/A
☒	SAM PHANTOM	SPEAG	QDOVA001BB	1102	N/A	N/A

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	(ELI4 v4.0)					
☒	Twin SAM Phantom	SPEAG	QD000P40CD	1609	N/A	N/A
☒	ROBOT	SPEAG	TX60	F10/5E6AA1/A101	N/A	N/A
☒	ROBOT KRC	SPEAG	CS8C	F10/5E6AA1/C101	N/A	N/A
☒	LIQUID CALIBRATION KIT	ANTENNESSA	41/05 OCP9	00425167	N/A	N/A

Note: All the equipments are within the valid period when the tests are performed.

All measurement facilities used to collect the measurement data are located at

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10 Calibration certificate

Please see the Appendix C

11 Photographs

Please see the Appendix D

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Appendix A: Detailed System Check Results

The plots are showing as followings.

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Date: 2022/10/12

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

System Performance Check- D750

DUT: Dipole 750 MHz D750V3; Type: 1188

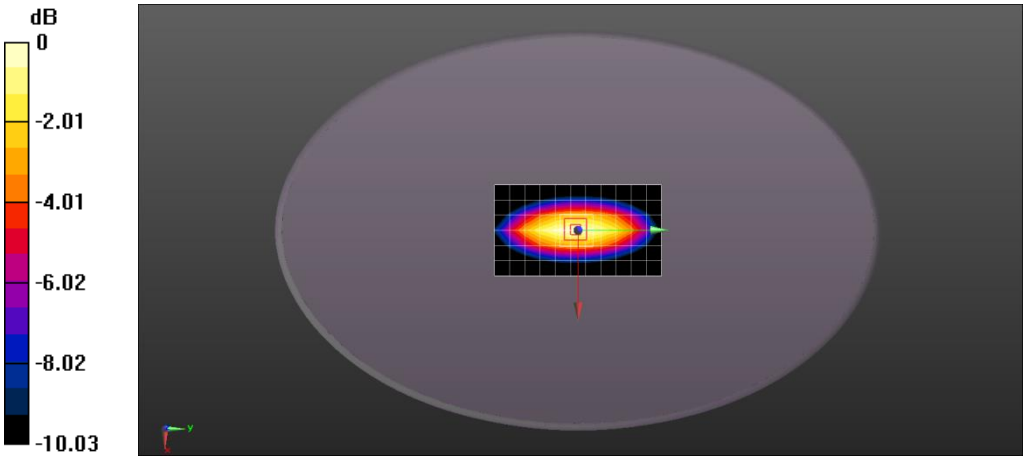
Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.888 S/m; ε_r = 40.956; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.56, 10.56, 10.56); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies Low 1 GHz/Pin=250 mW, dist=15 mm (EX-Probe)/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.22 W/kg

System Performance Check at Frequencies Low 1 GHz/Pin=250 mW, dist=15 mm (EX-Probe)/Zoom Scan (7x7x7) (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.18 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.48 W/kg
SAR(1 g) = 2.01 W/kg; SAR(10 g) = 1.33 W/kg
Maximum value of SAR (measured) = 2.43 W/kg



0 dB = 2.43 W/kg = 3.86 dBW/kg

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Date: 2022/10/14

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

System Performance Check- D835

DUT: Dipole 835 MHz D835V2; Type: 4d114

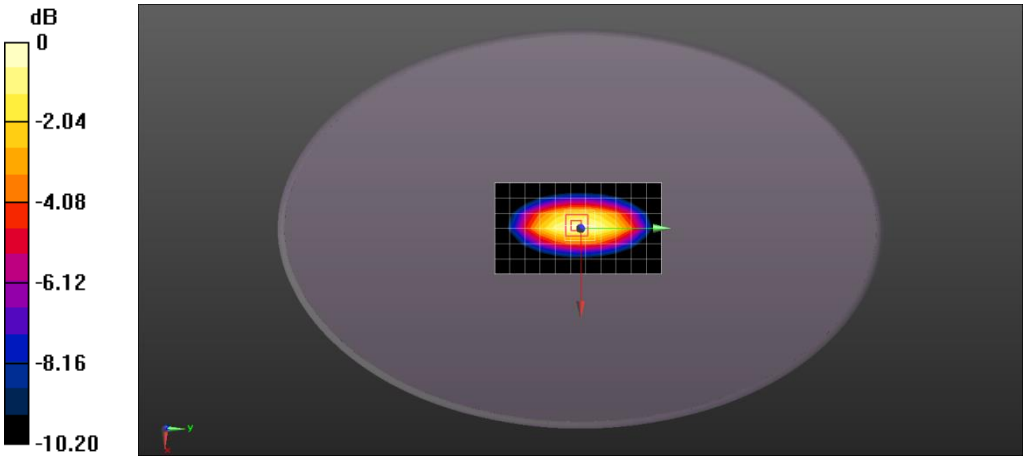
Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used (extrapolated): f = 835 MHz; σ = 0.916 S/m; ε_r = 39.821; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.12, 10.12, 10.12); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies Low 1 GHz/d=15mm, Pin=250 mW, dist=2mm (EX-Probe)/Area Scan (7x12x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.34 W/kg

System Performance Check at Frequencies Low 1 GHz/d=15mm, Pin=250 mW, dist=2mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.13 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 2.81 W/kg
SAR(1 g) = 2.22 W/kg; SAR(10 g) = 1.41 W/kg
Maximum value of SAR (measured) = 2.72 W/kg



0 dB = 2.72 W/kg = 4.35 dBW/kg

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Date: 2022/10/16

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

System Performance Check- D1800

DUT: Dipole 1800 MHz D1800V2; Type: 2d170

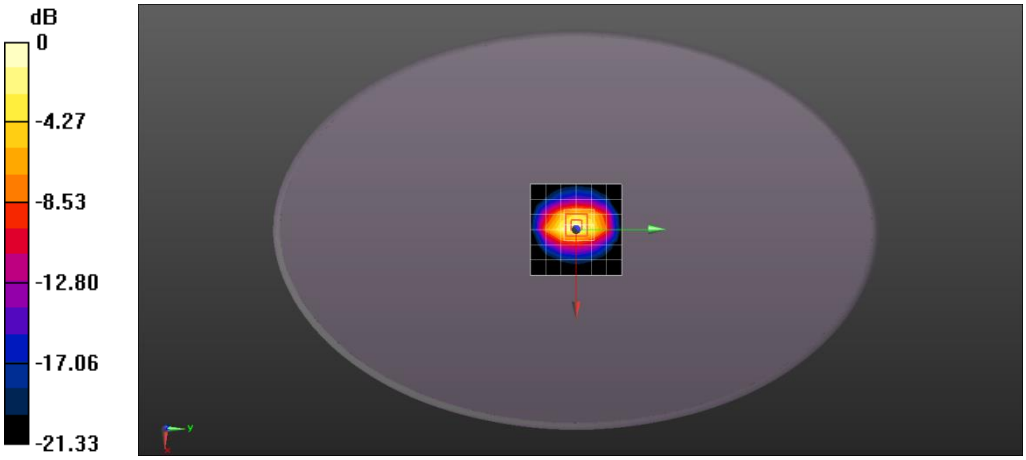
Communication System: UID 10000, CW; Frequency: 1800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1800 MHz; σ = 1.373 S/m; ε_r = 38.243; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.83, 8.83, 8.83); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe) (23.6 dBm)/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 10.3 W/kg

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe) (23.6 dBm)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.48 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 9.34 W/kg; SAR(10 g) = 4.99 W/kg
Maximum value of SAR (measured) = 13.4 W/kg



0 dB = 13.4 W/kg = 11.27 dBW/kg

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Date: 2022/10/18

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

System Performance Check- D1900

DUT: Dipole 1900 MHz D1900V2; Type: 5d136

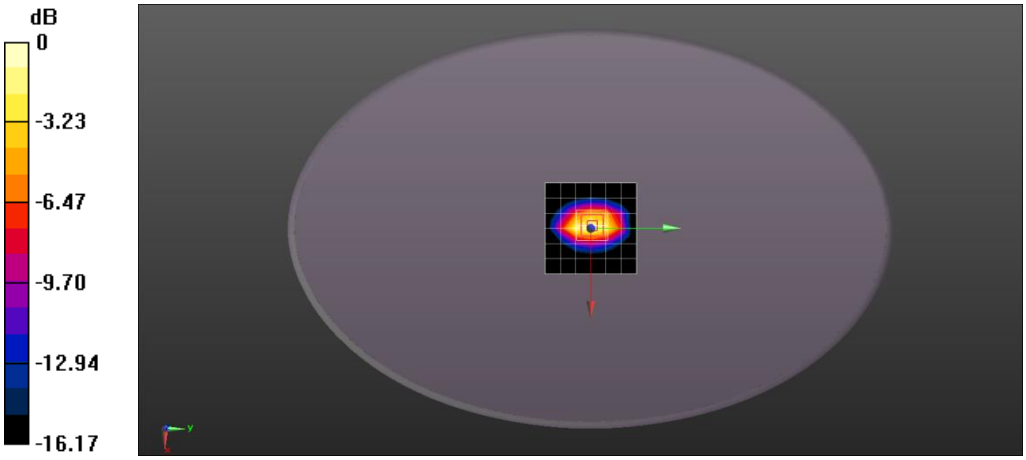
Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.365 S/m; ε_r = 38.847; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.48, 8.48, 8.48); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (7x7x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 7.47 W/kg

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 72.65 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 9.82 W/kg
SAR(1 g) = 9.69 W/kg; SAR(10 g) = 5.11 W/kg
Maximum value of SAR (measured) = 13.94 W/kg



0 dB = 13.94 W/kg = 11.44 dBW/kg

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Date: 2022/10/20

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

System Performance Check- D2600

DUT: Dipole 2600 MHz D2600V2; Type: 1158

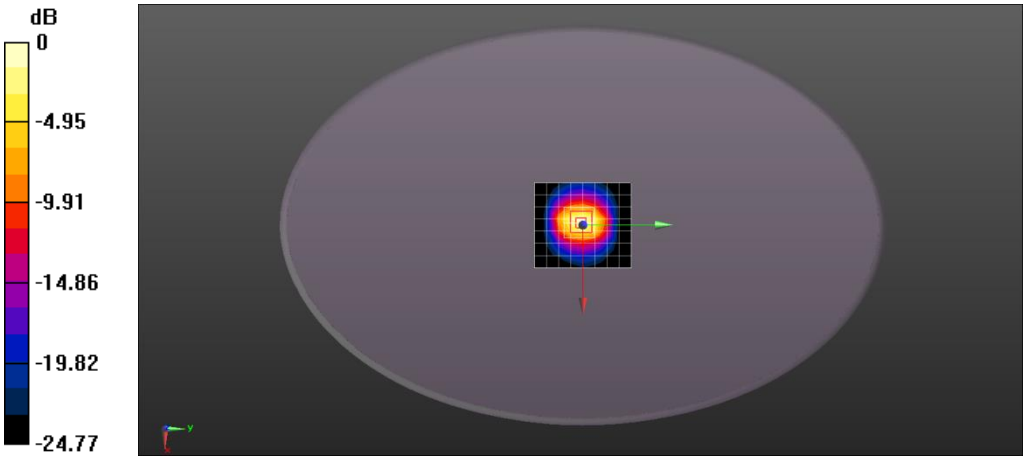
Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.027 S/m; ε_r = 37.443; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.33, 7.33, 7.33); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (8x9x1):
Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 16.6 W/kg

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.36 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 25.1 W/kg
SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.11 W/kg
Maximum value of SAR (measured) = 18.2 W/kg



0 dB = 18.2 W/kg = 12.60 dBW/kg

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Appendix B: Detailed Test Results

The plots of worse case are showing as followings.

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Test Laboratory: Compliance Certification Services (Kunshan) Inc.

GSM850 GPRS 4TS Back side Ch190 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

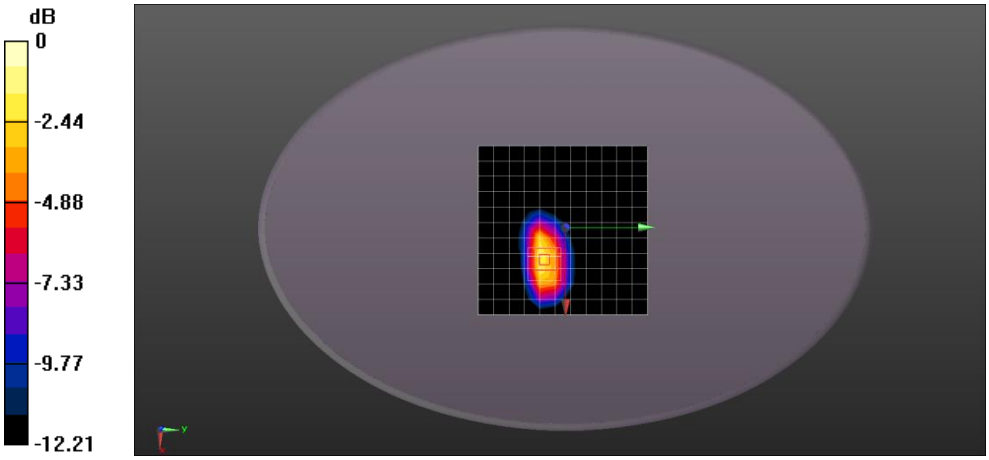
Communication System: UID 0, GPRS/EGPRS 4TX Slots (0); Frequency: 836.6 MHz;Duty Cycle: 1:2.0797
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.916 S/m; ε_r = 39.801; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.12, 10.12, 10.12); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (12x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.07 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.10 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 3.55 W/kg
SAR(1 g) = 3.59 W/kg; SAR(10 g) = 2.23 W/kg
Maximum value of SAR (measured) = 5.97 W/kg



0 dB = 5.97 W/kg = 7.76 dBW/kg

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Date: 2022/10/18

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

GSM1900 GPRS 2TS Back side Ch661 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

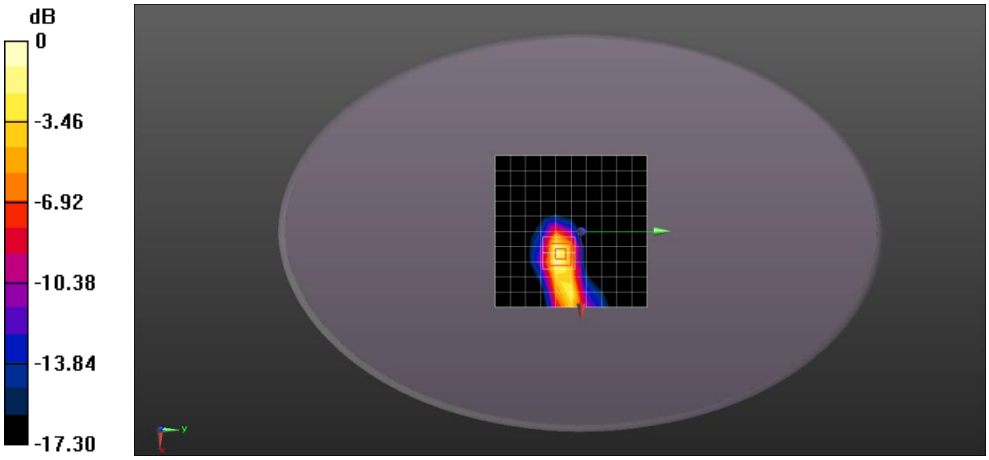
Communication System: UID 0, GPRS/EGPRS 2TX Slots (0); Frequency: 1880 MHz;Duty Cycle: 1:2.07491
Medium parameters used: f = 1880 MHz; σ = 1.347 S/m; ε_r = 38.926; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.48, 8.48, 8.48); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (11x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 6.55 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.22 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 10.6 W/kg
SAR(1 g) = 3.02 W/kg; SAR(10 g) = 1.82 W/kg
Maximum value of SAR (measured) = 5.03 W/kg



0 dB = 5.03 W/kg = 7.02 dBW/kg

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Date: 2022/10/18

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

WCDMA Band 2 RMC Bottom side CH9400 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

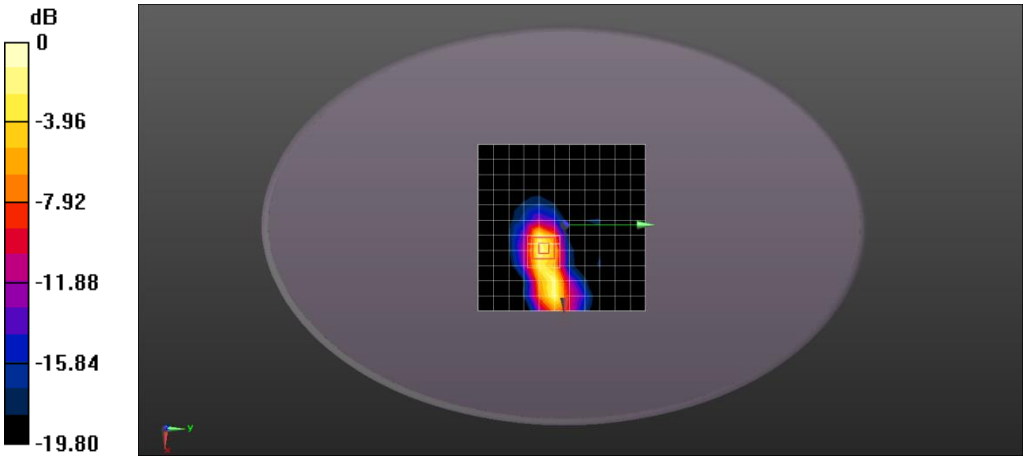
Communication System: UID 0, WCDMA / UMTS (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.347 S/m; ε_r = 38.926; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.48, 8.48, 8.48); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (12x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 5.97 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.87 V/m; Power Drift = 0.47 dB
Peak SAR (extrapolated) = 10.2 W/kg
SAR(1 g) = 5.19 W/kg; SAR(10 g) = 2.62 W/kg
Maximum value of SAR (measured) = 8.35 W/kg



0 dB = 8.35 W/kg = 9.22 dBW/kg

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Date: 2022/10/14

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

WCDMA Band 5 RMC Bottom side Ch4182 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

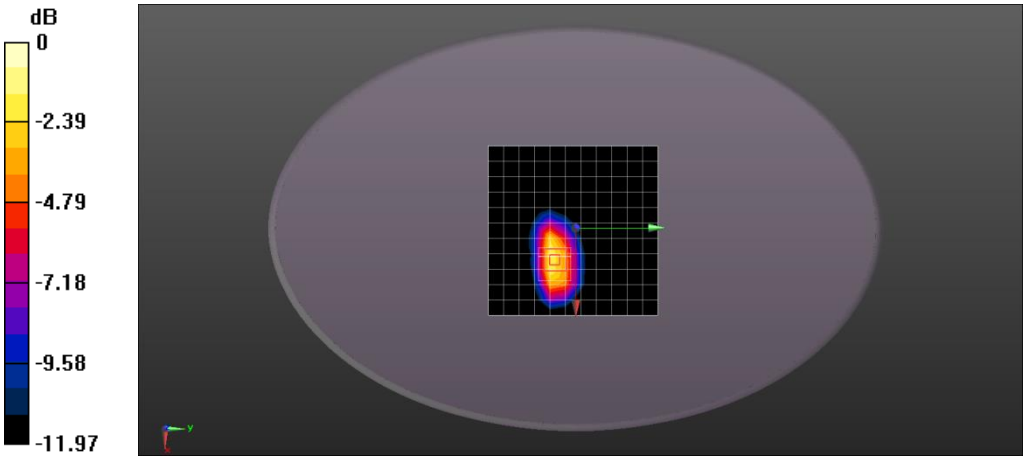
Communication System: UID 0, WCDMA / UMTS (0); Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium parameters used (extrapolated): f = 836.4 MHz; σ = 0.916 S/m; ε_r = 39.803; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.12, 10.12, 10.12); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (12x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.99 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.04 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 3.31 W/kg
SAR(1 g) = 1.84 W/kg; SAR(10 g) = 1.14 W/kg
Maximum value of SAR (measured) = 2.83 W/kg



0 dB = 2.83 W/kg = 4.52 dBW/kg

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Test Laboratory: Compliance Certification Services (Kunshan) Inc.

WCDMA Band 4 RMC Bottom side Ch1413 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

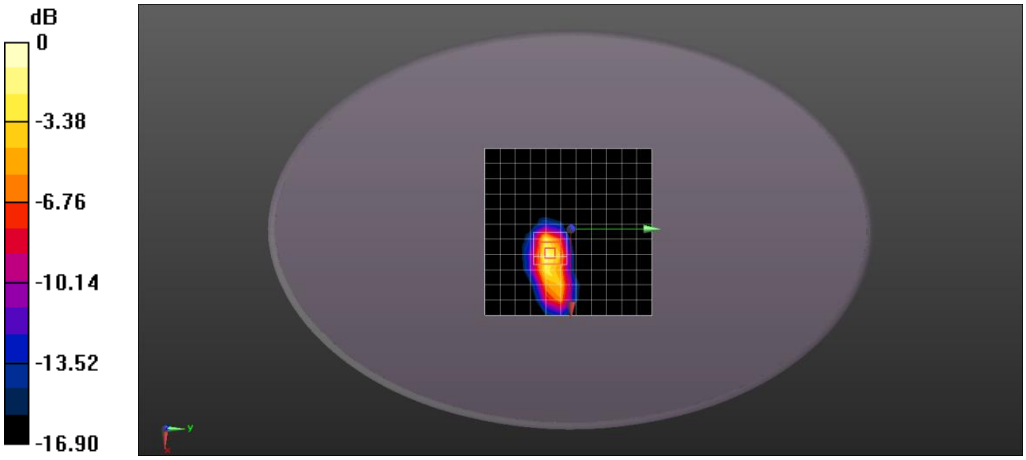
Communication System: UID 0, WCDMA / UMTS (0); Frequency: 1732.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1733 MHz; σ = 1.31 S/m; ε_r = 38.547; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.83, 8.83, 8.83); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (12x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 7.98 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.63 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 12.5 W/kg
SAR(1 g) = 6.71 W/kg; SAR(10 g) = 3.55 W/kg
Maximum value of SAR (measured) = 10.6 W/kg



0 dB = 10.6 W/kg = 10.25 dBW/kg

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Test Laboratory: Compliance Certification Services (Kunshan) Inc.

LTE Band 2 20M QPSK 1RB50 Back side Ch18900 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

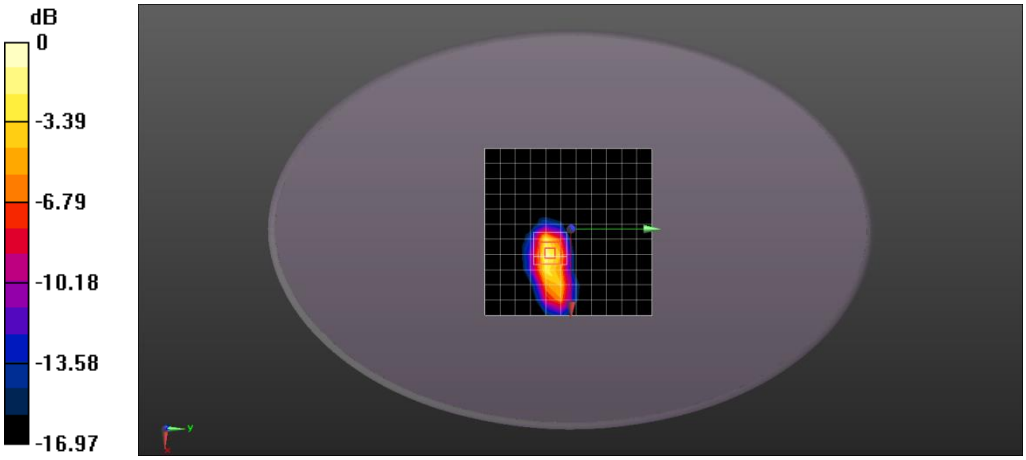
Communication System: UID 0, FDD_LTE (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.347 S/m; ε_r = 38.926; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.48, 8.48, 8.48); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (11x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 6.14 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.21 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 9.65 W/kg
SAR(1 g) = 5.14 W/kg; SAR(10 g) = 2.69 W/kg
Maximum value of SAR (measured) = 7.89 W/kg



0 dB = 7.89 W/kg = 8.97 dBW/kg

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Test Laboratory: Compliance Certification Services (Kunshan) Inc.

LTE Band 4 20M QPSK 1RB50 Back side Ch20175 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

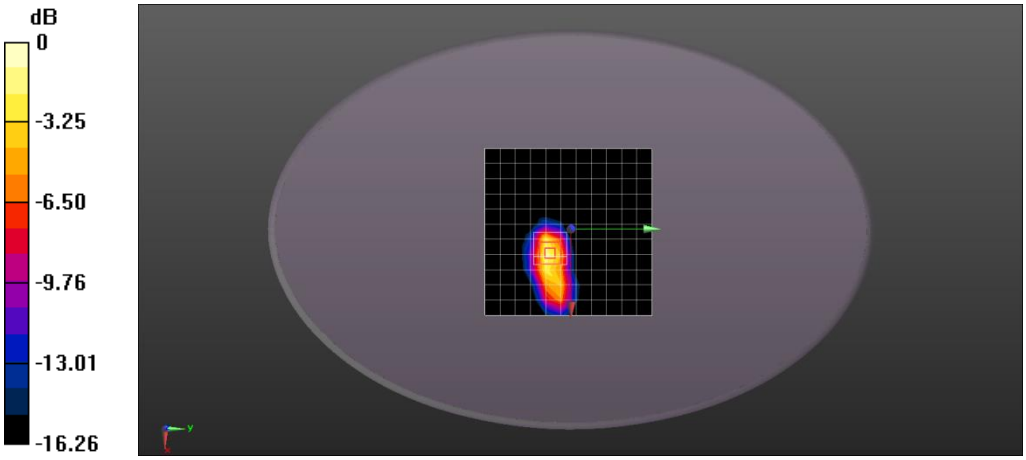
Communication System: UID 0, FDD_LTE (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.312 S/m; ε_r = 38.553; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.83, 8.83, 8.83); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (11x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 8.75 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.56 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 12.8 W/kg
SAR(1 g) = 6.98 W/kg; SAR(10 g) = 3.73 W/kg
Maximum value of SAR (measured) = 10.7 W/kg



0 dB = 10.7 W/kg = 10.29 dBW/kg

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Date: 2022/10/14

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

LTE Band 5 10M QPSK 1RB25 Back side Ch20525 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

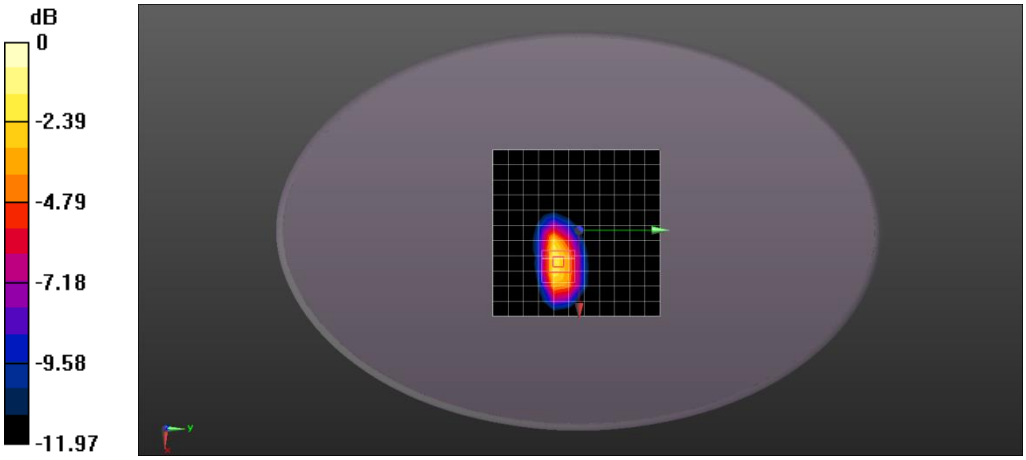
Communication System: UID 0, FDD_LTE (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (extrapolated): f = 836.5 MHz; σ = 0.916 S/m; ε_r = 39.802; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.12, 10.12, 10.12); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (12x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.99 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.05 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.31 W/kg
SAR(1 g) = 1.84 W/kg; SAR(10 g) = 1.14 W/kg
Maximum value of SAR (measured) = 2.83 W/kg



0 dB = 2.83 W/kg = 4.52 dBW/kg

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Date: 2022/10/20

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

LTE Band 7 20M QPSK 1RB50 Back side Ch21100 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

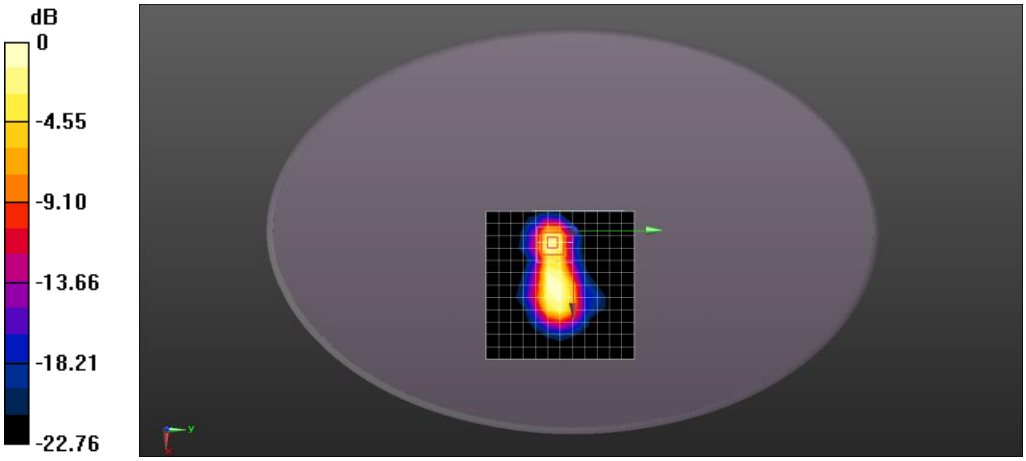
Communication System: UID 0, FDD_LTE (0); Frequency: 2535.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2535.5 MHz; σ = 1.948 S/m; ε_r = 37.716; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.33, 7.33, 7.33); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (13x13x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 7.74 W/kg

Configuration/Body/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.012 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 11.5 W/kg
SAR(1 g) = 5 W/kg; SAR(10 g) = 2.05 W/kg
Maximum value of SAR (measured) = 9.18 W/kg



0 dB = 9.18 W/kg = 9.63 dBW/kg

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Test Laboratory: Compliance Certification Services (Kunshan) Inc.

LTE Band 12 10M QPSK 1RB25 Back side Ch23095 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

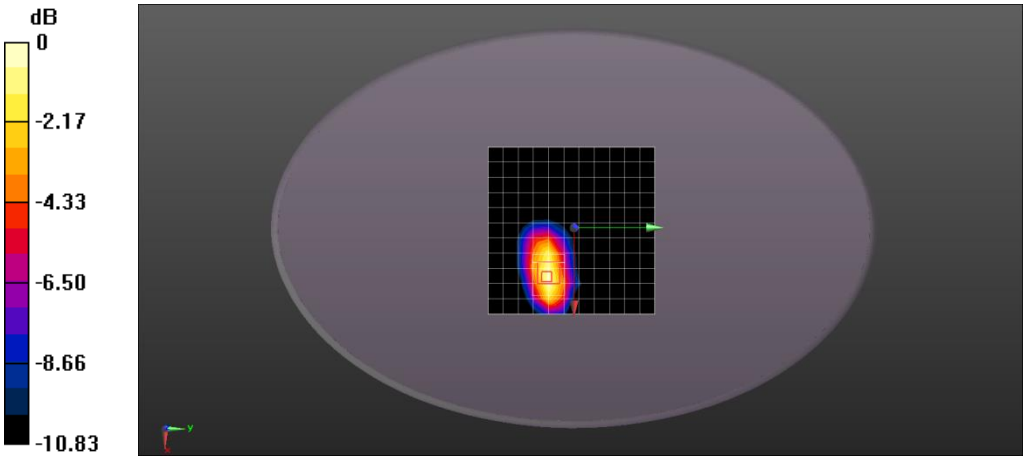
Communication System: UID 0, FDD_LTE (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.868 S/m; ε_r = 41.442; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.56, 10.56, 10.56); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (12x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.73 W/kg

Configuration/Body/Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.79 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.44 W/kg
Maximum value of SAR (measured) = 2.83 W/kg



0 dB = 2.83 W/kg = 4.52 dBW/kg

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Date: 2022/10/12

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

LTE Band 13 10M QPSK 1RB25 Back side Ch23230 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

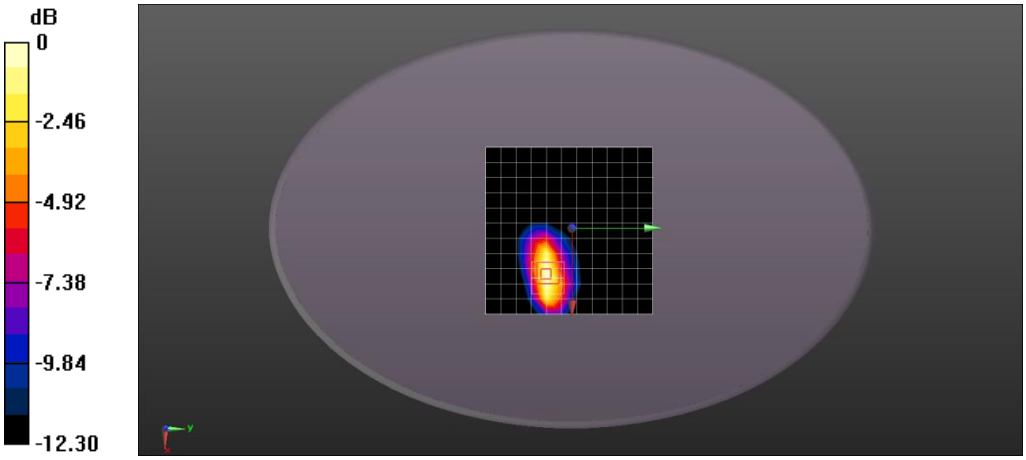
Communication System: UID 0, FDD_LTE (0); Frequency: 782 MHz;Duty Cycle: 1:1
Medium parameters used: f = 782 MHz; σ = 0.879 S/m; ε_r = 40.443; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.56, 10.56, 10.56); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (12x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.84 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.68 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.30 W/kg
SAR(1 g) = 1.85 W/kg; SAR(10 g) = 1.17 W/kg
Maximum value of SAR (measured) = 2.80 W/kg



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

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Test Laboratory: Compliance Certification Services (Kunshan) Inc.

LTE Band 25 20M QPSK 1RB50 Back side Ch26365 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

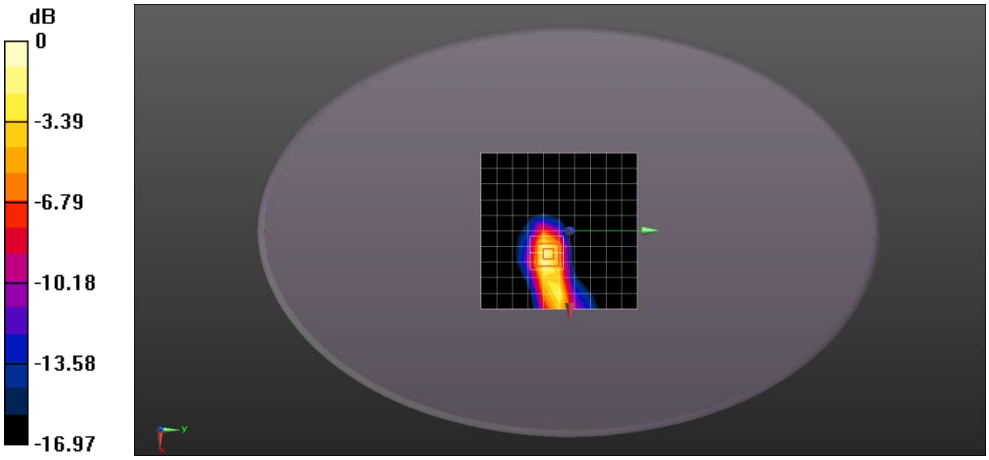
Communication System: UID 0, FDD_LTE (0); Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.346 S/m; ε_r = 38.891; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.48, 8.48, 8.48); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (11x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 6.14 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.21 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 9.65 W/kg
SAR(1 g) = 5.39 W/kg; SAR(10 g) = 2.83 W/kg
Maximum value of SAR (measured) = 7.89 W/kg



0 dB = 7.89 W/kg = 8.97 dBW/kg

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Test Laboratory: Compliance Certification Services (Kunshan) Inc.

LTE Band 26 15M QPSK 1RB38 Back side Ch26865 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

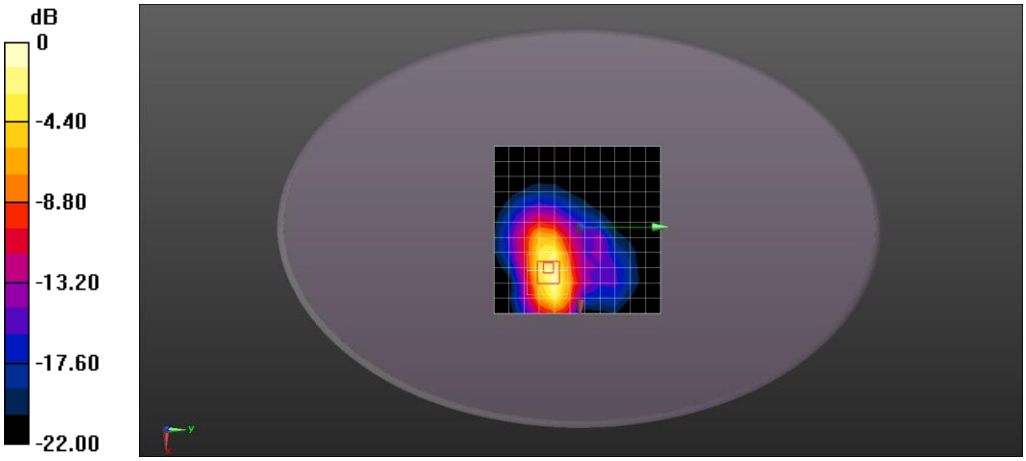
Communication System: UID 0, FDD_LTE (0); Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium parameters used (extrapolated): f = 831.5 MHz; σ = 0.915 S/m; ε_r = 39.864; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.12, 10.12, 10.12); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (12x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.41 W/kg

Configuration/Body/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.751 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 5.78 W/kg
SAR(1 g) = 1.97 W/kg; SAR(10 g) = 1.23 W/kg
Maximum value of SAR (measured) = 2.93 W/kg



0 dB = 2.93 W/kg = 4.67 dBW/kg

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Date: 2022/10/20

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

LTE Band 38 20M QPSK 1RB50 Back side Ch38000 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

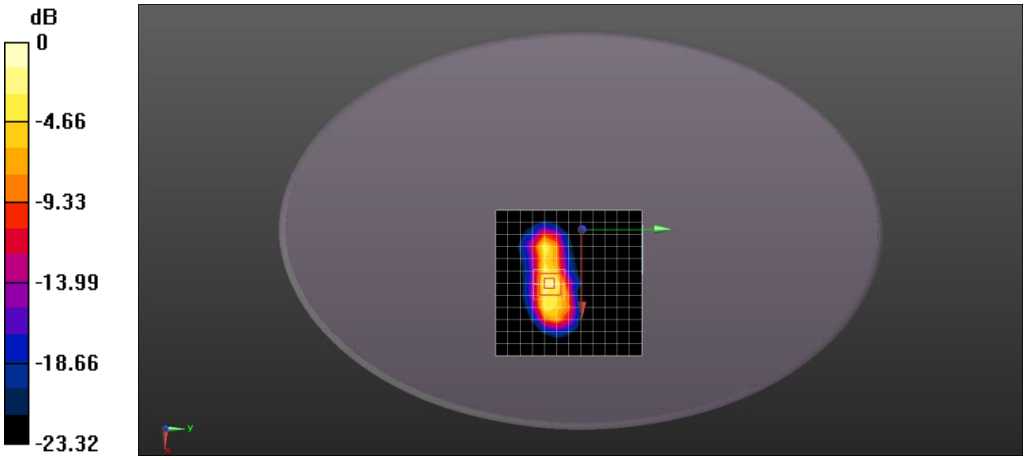
Communication System: UID 0, TDD_LTE (0); Frequency: 2595 MHz;Duty Cycle: 1:1.57943
Medium parameters used: f = 2595 MHz; σ = 2.02 S/m; ε_r = 37.493; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.33, 7.33, 7.33); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (13x13x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 7.62 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.246 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 15.0 W/kg
SAR(1 g) = 6.29 W/kg; SAR(10 g) = 2.65 W/kg
Maximum value of SAR (measured) = 11.7 W/kg



0 dB = 11.7 W/kg = 10.68 dBW/kg

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Date: 2022/10/20

Test Laboratory: Compliance Certification Services (Kunshan) Inc.

LTE Band 41 20M QPSK 1RB50 Back side Ch40620 0mm

DUT: Pipe and Cable Locator; Type: vLoc3 RTK-Pro

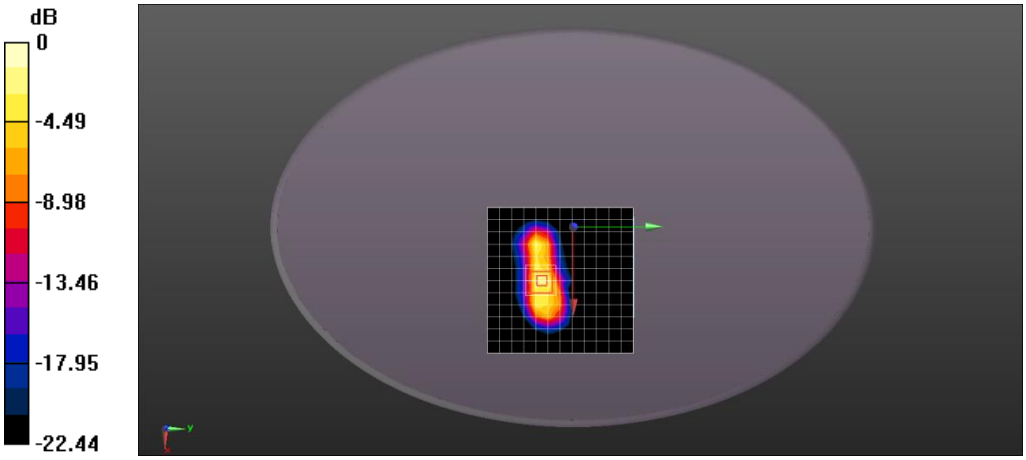
Communication System: UID 0, TDD_LTE (0); Frequency: 2593 MHz;Duty Cycle: 1:1.57943
Medium parameters used: f = 2593 MHz; σ = 2.015 S/m; ε_r = 37.518; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.33, 7.33, 7.33); Calibrated: 2022/03/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2022/05/30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Body/Area Scan (13x13x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 6.65 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.780 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 14.3 W/kg
SAR(1 g) = 6.05 W/kg; SAR(10 g) = 2.52 W/kg
Maximum value of SAR (measured) = 11.1 W/kg



0 dB = 11.1 W/kg = 10.45 dBW/kg

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Appendix C: Calibration certificate

Appendix D: Photographs

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