SAR TEST REPORT

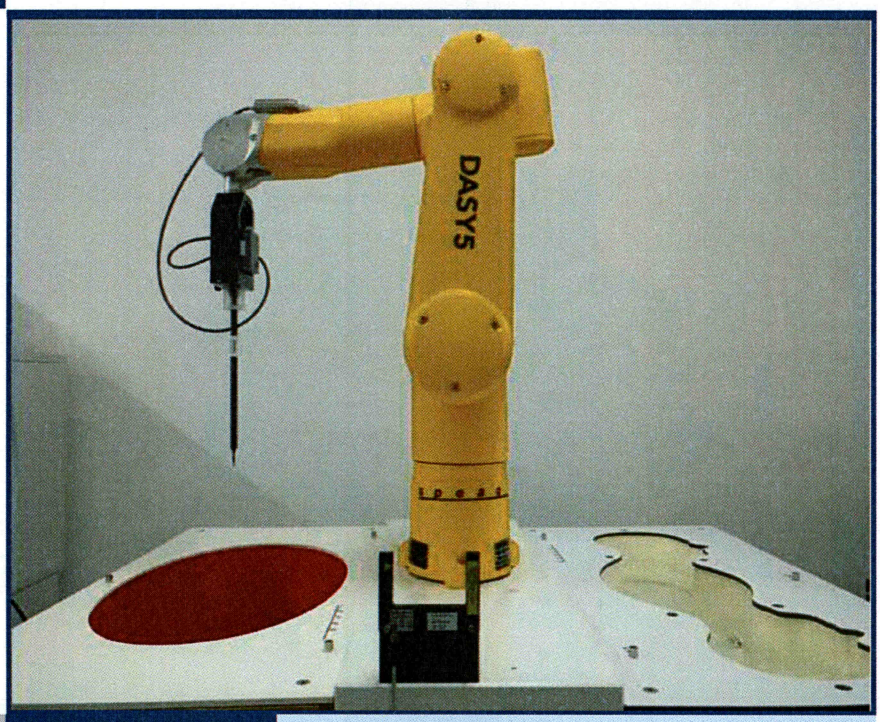
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

13.3" Notebook

ISSUED TO
E&S International Enterprises, Inc.

7801 Hayvenhurst Avenue Van Nuys, California 91406 - USA



Report No.:	BL-SZ2150149-701
EUT Name:	13.3" Notebook
Model Name:	GWTN133-1BL (refer to section 2.4)
Brand Name:	Gateway
FCC ID:	2AYPE-GWTN133-1
Test Standard:	FCC 47 CFR Part 2.1093 ANSI C95.1-1992, IEEE Std. 1528-2013
Maximum SAR:	Body 2.4GHz(1 g): 1.192 W/kg Body 5GHz(1 g): 0.783 W/kg
Test Conclusion:	Pass
Test Date:	Jun. 18, 2021 ~ Jun. 20, 2021
Date of Issue:	Jul. 02, 2021

Tested by: Zong Liyao
Date Jul. 02, 2021

Approved by: Wei Yanquan
(Chief Engineer)
Date Jul. 02, 2021

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Revision History

Version	Issue Date	Revisions Content
Rev. 01	Jul. 02, 2021	Initial Issue

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1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co.,Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province,P. R. China
Phone Number	+86 755 6685 0100
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co.,Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province,P. R. China
Accreditation Certificate	The laboratory is a testing organizatin accredited by FCC as a accredited testing laboratory. The designation number is CN1196.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Test Environment Condition

Ambient Temperature	21℃ to 23℃
Ambient Relative Humidity	37% to 49%
Ambient Pressure	100KPa to 102KPa

1.4 Announce

(1) The test report reference to the report template version v2.2.

(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

(3) The test report is invalid if there is any evidence and/or falsification.

(4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.

(5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.

(6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

(7) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	E&S International Enterprises, Inc.
Address	7801 Hayvenhurst Avenue Van Nuys, California 91406 - USA

2.2 Manufacturer Information

Manufacturer	Nanjing WZN Technology (HK) Limited
Address	RM 503, 5/F WAYSON COMM BLDG, 28 CONNAUGHT RD WEST SHEUNG WAN, HONG KONG

2.3 Factory Information

Factory	Xiamen Prima Technology Inc.
Address	No.260-268, Xilian Road, Jimei District, Xiamen, Fujian, P.R. China 361021

2.4 General Description for Equipment under Test (EUT)

EUT Name	13.3" Notebook
Model Name Under Test	GWTN133-1BL
Series Model Name	GWTN133-1BK
Description of Model name differentiation	All models are same with electrical parameters and internal circuit structure, but only different on color.
Hardware Version	83850-1
Software Version	SW_N8385A2_V005_M111_WB_B103E103A001_ATO_Pro_S19H1
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	N/A
	Model No.	U2988128PV-2S1P
	Serial No.	N/A
	Capacity	5000 mAh
	Rated Voltage	7.6 V
	Limit Charge Voltage	8.7 V

2.6 Technical Information

Network and Wireless connectivity	3G Network WCDMA/HSDPA/HSUPA Band 2/ 4/ 5; 4G Network FDD LTE Band 2/ 4/ 5/ 12/ 66; Bluetooth (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) U-NII-1/2A/2C/3

The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	WCDMA, LTE, 2.4G WLAN, 5G WLAN, Bluetooth		
Frequency Range	WCDMA Band 2	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	WCDMA Band 4	TX: 1710 ~ 1755 MHz	RX: 2110 ~ 2155 MHz
	WCDMA Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 2	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	LTE Band 4	TX: 1710 ~ 1755 MHz	RX: 2110 ~ 2155 MHz
	LTE Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 12	TX: 699 ~ 716 MHz	RX: 729 ~ 746 MHz
	LTE Band 66	TX: 1710 ~ 1780 MHz	RX: 2110 ~ 2200 MHz
	802.11b/g/n(HT20)	2412 ~ 2462 MHz	
	802.11a/ /n(HT20/HT40) /ac(VHT20/VHT40 /VHT80)	5150 ~ 5250 MHz	
		5250 ~ 5350 MHz	
		5470 ~ 5725 MHz	
		5725 ~ 5850 MHz	
	Bluetooth	2402 ~ 2480 MHz	
Antenna Type	PIFA Antenna		
Exposure Category	General Population/Uncontrolled exposure		
EUT Stage	Portable Device		
Product	Type		
	☒ Production unit	☐ Identical prototype	

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
2	ANSI C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D01 v06	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
6	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
7	KDB 248227 D01 v02r02	SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitters
8	KDB 616217 D04v01r02	SAR for laptop and tablets

3.2 Device Category and SAR Limit

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user.

Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

Table of Exposure Limits:

Body Position	SAR Value (W/Kg)	
	General Population/ Uncontrolled Exposure	Occupational/ ControlledExposure
Whole-Body SAR (averaged over the entire body)	0.08	0.4
Partial-Body SAR (averaged over any 1 gram of tissue)	1.60	8.0
SAR for hands, wrists, feet and ankles (averaged over any 10 grams of tissue)	4.0	20.0

NOTE:

General Population/Uncontrolled Exposure: Locations where there is the exposure of individuals who have no knowledge or control of their exposure. General population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Occupational/Controlled Exposure: Locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

3.3 Test Result Summary

3.3.1 Highest SAR (1 g Value)

Band		Maximum Scaled SAR (W/kg)	Maximum Report SAR (W/kg)
		Body	Body
WCDMA	Band 2	**1.192**	**1.192**
	Band 4	0.825	
	Band 5	1.153	
LTE	Band 2	1.186	
	Band 4	0.807	
	Band 5	1.170	
	Band 12	0.990	
	Band 66	0.951	
WIFI	2.4G MIMO	0.533	
	5.3G MIMO	0.581	
	5.6G MIMO	0.783	
	5.8G Mian Antenna	0.761	
Bluetooth	DH5	0.095	
Limit (W/kg)		1.60	
Verdict		Pass	

3.4 Test Uncertainty

According to KDB 865664 D01, when the highest measured 1 g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis is not required in SAR reports submitted for equipment approval.

The maximum 1 g SAR for the EUT in this report is 1.192 W/kg, which is lower than 1.5 W/kg, so the extensive SAR measurement uncertainty analysis is not required in this report.

4 MEASUREMENT SYSTEM

4.1 Specific Absorption Rate (SAR) Definition

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{d}{\mathrm{dt}}\left(\frac{d\mathrm{W}}{\mathrm{dm}}\right) = \frac{d}{\mathrm{dt}}\left(\frac{d\mathrm{W}}{\rho \mathrm{dv}}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

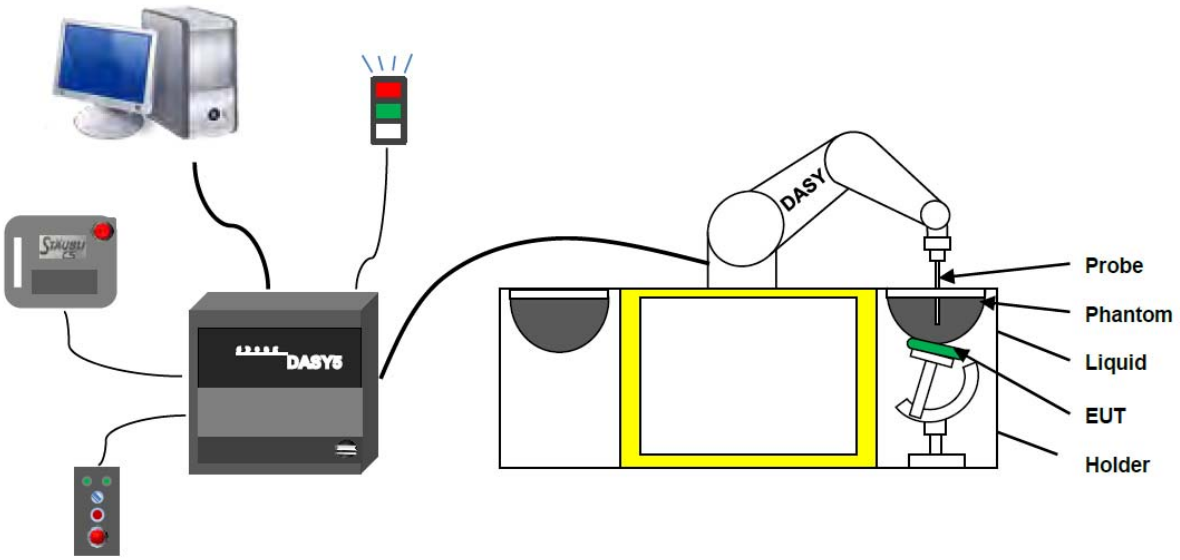
$$\mathbf{SAR} = \frac{\sigma \mathrm{E}^2}{\rho}$$

Where: σ is the conductivity of the tissue,

ρis the mass density of the tissue and E is the RMS electrical field strength.

4.2 DASY SAR System

4.2.1 DASY SAR System Diagram



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

1. A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. 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.
3. A data acquisition electronic (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.
4. A unit to operate the optical surface detector which is connected to the EOC.
5. The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.
6. The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation.
7. DASY5 software and SEMCAD data evaluation software.
8. Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
9. The generic twin phantom enabling the testing of left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. System validation dipoles allowing to validate the proper functioning of the system.

4.2.2 Robot

The Dasy SAR system uses the high precision robots. Symmetrical design with triangular core Built-in optical fiber for surface detection system For the 6-axis controller system, Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents). The robot series have many features that are important for our application:

- High precision
  (repeatability ±0.02 mm)
- High reliability
  (industrial design)
- Low maintenance costs
  (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements
  (brush less synchron motors; no stepper motors)
- Low ELF interference
  (motor control _elds shielded via the closed metallic construction shields)

4.2.3 E-Field Probe

The probe is specially designed and calibrated for use in liquids with high permittivities for the measurements the Specific Dosimetric E-Field Probe EX3DV4-SN:7510 with following specifications is used.

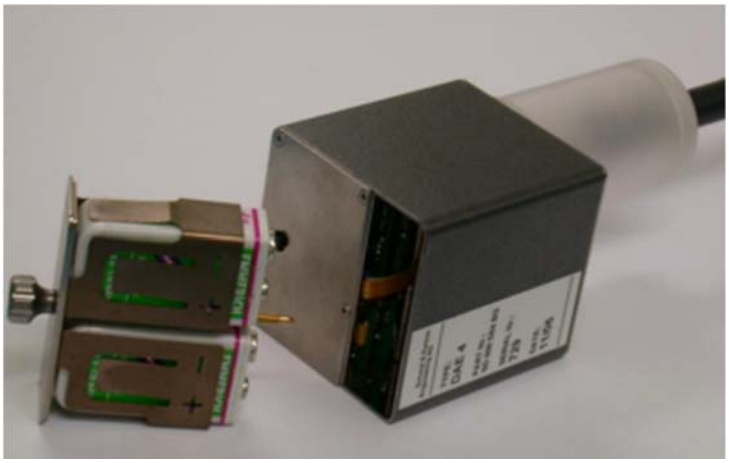
Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection systemBuilt-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ; ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic range	5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 9 mm) Tip diameter: 2.5 mm (Body: 10 mm) Distance from probe tip to dipole centers: 1.0 mm
Application	General dosimetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms (EX3DV4)

E-Field Probe Calibration Process

Probe calibration is realized, in compliance with CENELEC EN 62209-1/-2 and IEEE 1528 std, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 62209-1/2 annexe technique using reference guide at the five frequencies.

4.2.4 Data Acquisition Electronics

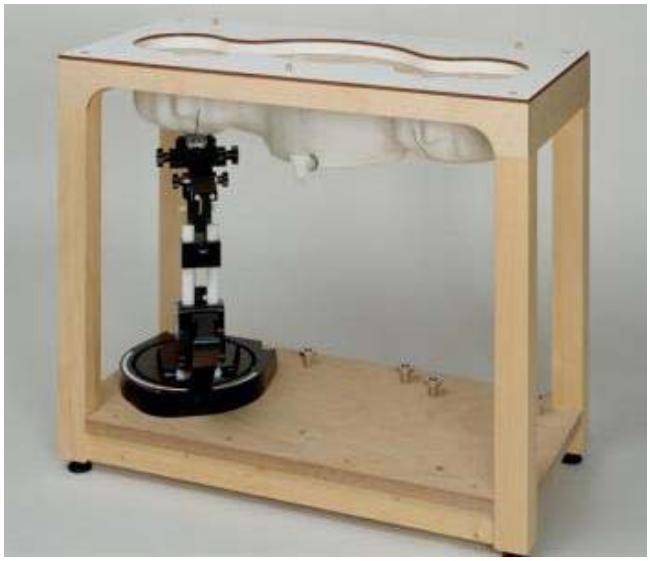
The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converte and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.



- Input Impedance: 200MOhm
- The Inputs: Symmetrical and Floating
- Commom Mode Rejection: Above 80dB

4.2.5 Phantoms

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.



- Left hand
- Right hand
- Flat phantom

Photo of Phantom SN1857

Serial Number	Material	Length	Height
SN 1857 SAM	Vinylester, glass fiber reinforced	1000	500

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209 Part II and all known tissue simulating liquids. ELI4 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.

·Flat phantom

Photo of Phantom SN1012

Serial Number	Shell Thickness (mm)	Major ellipse axis (mm)	Minor axis (mm)
SN 1012 ELI4	2.0 ± 0.2	600	500

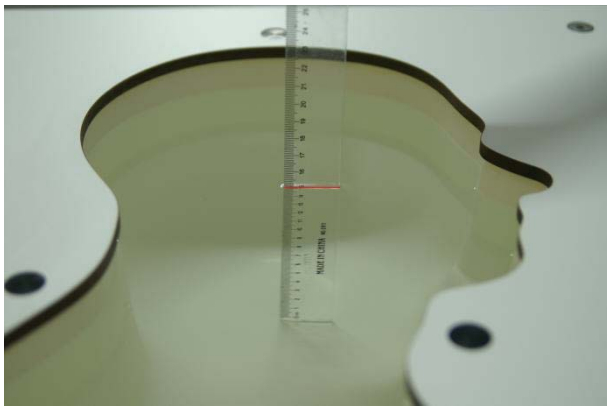
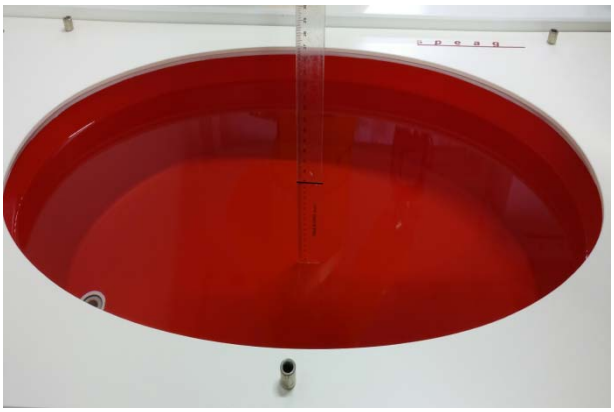
4.2.6 Device Holder

The DASY5 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. This device holder is used for standard mobile phones or PDA"s only. If necessary an additional support of polystyrene material is used. Larger DUT"s (e.g. notebooks) cannot be tested using this device holder. Instead a support of bigger polystyrene cubes and thin polystyrene plates is used to position the DUT in all relevant positions to find and measure spots with maximum SAR values. Therefore those devices are normally only tested at the flat part of the SAM.

The positioning system allows obtaining cheek and tilting position with a very good accuracy. Incompliance with CENELEC, the tilt angle uncertainty is lower than 1°.

4.2.7 Simulating Liquid

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5%.

Head Liquid Depth	Body Liquid Depth
	

The following table gives the recipes for tissue simulating liquid and the theoretical Conductivity/Permittivity.

Head (Reference IEEE1528)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ε
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.4	40.0
2450	55.0	0	0	0.1	0	44.9	1.80	39.2
2600	54.9	0	0	0.1	0	45.0	1.96	39.0
Frequency (MHz)	Water (%)	Hexyl Carbitol (%)			Triton X-100 (%)		Conductivity σ (S/m)	Permittivity ε
5200	62.52	17.24			17.24		4.66	36.0
5800	62.52	17.24			17.24		5.27	35.3
Body (From instrument manufacturer)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ε
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0.1	0	31.3	1.95	52.7
2600	68.2	0	0	0.1	0	31.7	2.16	52.5
Frequency(MHz)	Water	DGBE (%)			Salt (%)		Conductivity σ (S/m)	Permittivity ε
5200	78.60	21.40			/		5.54	47.86
5800	78.50	21.40			0.1		6.0	48.20

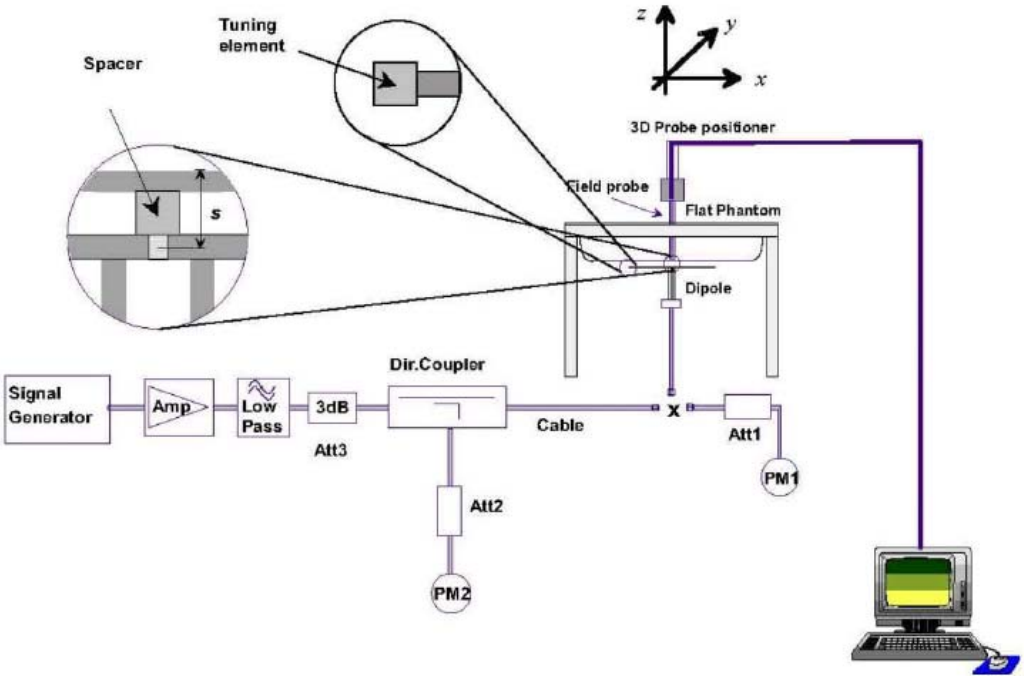
5 SYSTEM VERIFICATION

5.1 Purpose of System Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

5.2 System Check Setup

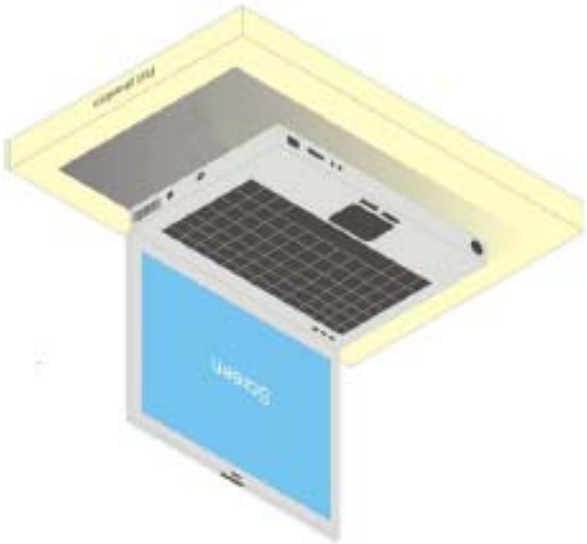
In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:



6 TEST POSITION CONFIGURATIONS

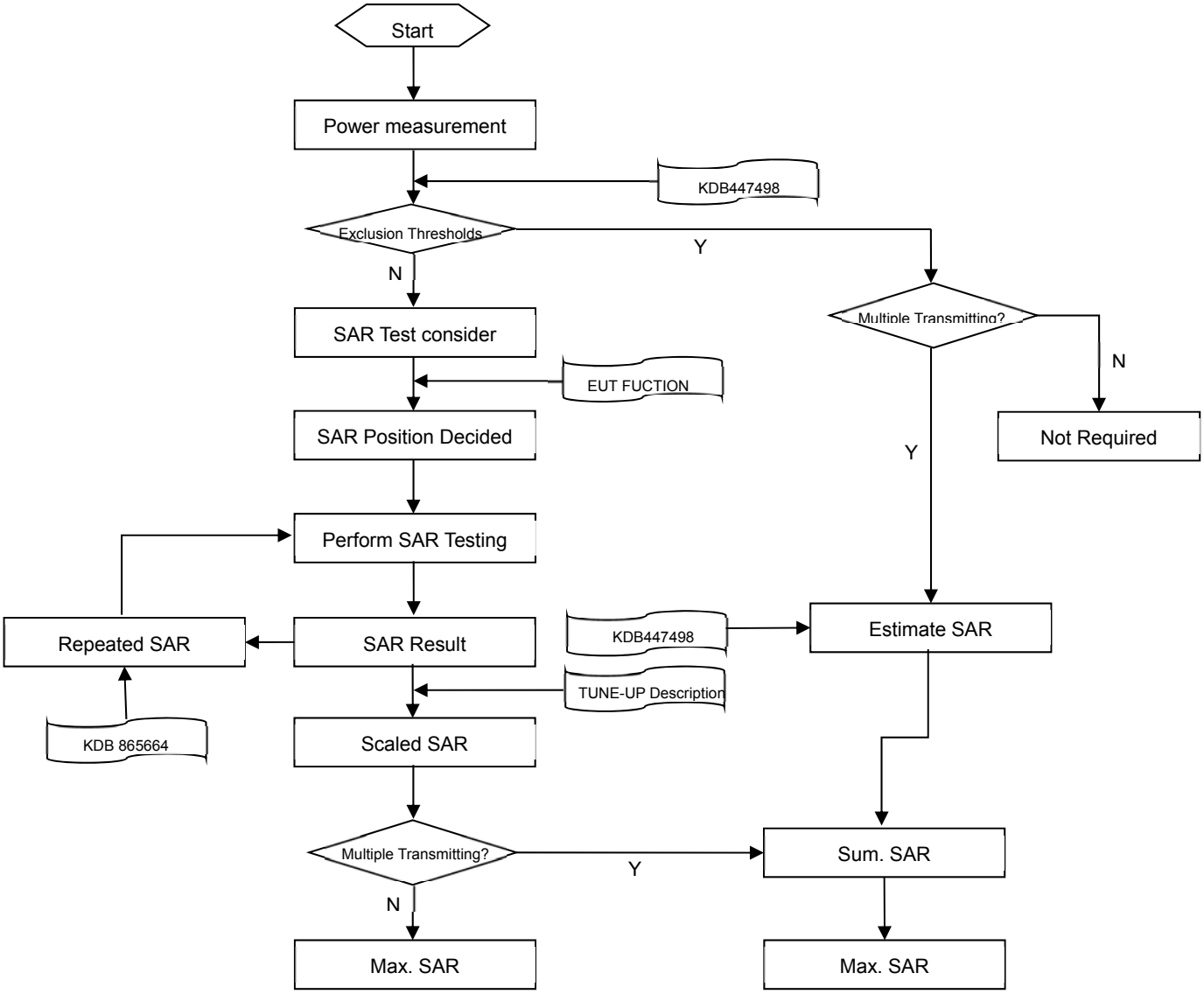
6.1 Laptop Exposure Condition

This DUT should consider one position which is bottom of laptop touching with phantom 0 mm air gap and the screen portion of the device shall be an open position at a 90° angle.



7 MEASUREMENT PROCEDURE

7.1 Measurement Process Diagram



7.2 SAR Scan General Requirement

Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Boththe 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.

<table>
<tr><th colspan="3"></th><th>≤3GHz</th><th>>3GHz</th></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5±1 mm</td><td>½·δ·ln(2)±0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30°±1°</td><td>20°±1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx Area , Δy Area</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3–4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx Zoom , Δy Zoom</td><td>≤ 2 GHz: ≤ 8 mm
2 –3 GHz: ≤ 5 mm*</td><td>3–4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="9">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2" rowspan="3">uniform grid: Δz Zoom (n)</td><td rowspan="3">≤ 5 mm</td><td>3–4 GHz: ≤ 4 mm</td></tr>
<tr><td>4–5 GHz: ≤ 3 mm</td></tr>
<tr><td>5–6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="3">graded grid</td><td rowspan="2">Δz Zoom (1): between 1st two points closest to phantom surface</td><td rowspan="3">≤ 4 mm</td><td>3–4 GHz: ≤ 3 mm</td></tr>
<tr><td>4–5 GHz: ≤ 2.5 mm</td></tr>
<tr><td>5–6 GHz: ≤ 2 mm</td></tr>
<tr><td>Δz Zoom (n>1): between subsequent points</td><td colspan="2">≤ 1.5·Δz Zoom (n-1)</td></tr>
<tr><td rowspan="3">Minimum zoom scan volume</td><td colspan="2" rowspan="3">x, y, z</td><td rowspan="3">≥30 mm</td><td>3–4 GHz: ≥ 28 mm</td></tr>
<tr><td>4–5 GHz: ≥ 25 mm</td></tr>
<tr><td>5–6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note:
1. δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
2. * 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 3GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

7.3 Measurement Procedure

The following steps are used for each test position

a. Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface

b. Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.

c. Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.

d. Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 *32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

7.4 Area & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r04 quoted below.

When the 1 g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

8 CONDUCTED RF OUPUT POWER

8.1 WCDMA

WCDMA	Band 2				Band 4			
Channel	9262	9400	9538	Tune-up Limit (dBm)	1312	1412	1513	Tune-up Limit (dBm)
RMC 12.2Kbps	**22.74**	22.59	22.58	24.00	22.68	22.80	**22.82**	24.00
HSDPA Subtest-1	21.74	21.59	21.58	23.00	21.68	21.85	21.82	23.00
HSDPA Subtest-2	21.79	21.67	21.58	23.00	21.69	21.86	21.80	23.00
HSDPA Subtest-3	21.31	21.14	21.07	22.50	21.21	21.34	21.33	22.50
HSDPA Subtest-4	21.28	21.14	21.12	22.50	21.19	21.36	21.33	22.50
HSUPA Subtest-1	21.81	21.64	21.54	23.00	21.62	21.78	21.71	23.00
HSUPA Subtest-2	19.65	19.60	19.73	21.00	19.61	19.67	19.77	21.00
HSUPA Subtest-3	20.69	20.63	20.65	22.00	20.58	20.80	20.84	22.00
HSUPA Subtest-4	19.77	19.60	19.64	21.00	19.66	19.79	19.82	21.00
HSUPA Subtest-5	21.69	21.62	21.52	23.00	21.68	21.68	21.71	23.00
WCDMA	Band 5				/			
Channel	4132	4182	4233	Tune-up Limit (dBm)	/	/	/	/
RMC 12.2Kbps	**23.36**	23.18	23.15	24.00	/	/	/	/
HSDPA Subtest-1	22.31	22.21	22.15	23.00	/	/	/	/
HSDPA Subtest-2	22.36	22.21	22.20	23.00	/	/	/	/
HSDPA Subtest-3	21.86	21.74	21.69	22.50	/	/	/	/
HSDPA Subtest-4	21.85	21.75	21.72	22.50	/	/	/	/
HSUPA Subtest-1	21.81	21.86	22.08	22.50	/	/	/	/
HSUPA Subtest-2	19.96	20.01	20.05	21.00	/	/	/	/
HSUPA Subtest-3	21.10	21.10	21.06	22.00	/	/	/	/
HSUPA Subtest-4	20.05	20.09	20.12	21.00	/	/	/	/
HSUPA Subtest-5	22.02	22.13	21.96	22.50	/	/	/	/

8.2 LTE

FDD LTE Band 2							
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			18607	18900	19193	Tune up limit (dBm)
1.4 MHz	1 (RB_Pos:0)	LOW	QPSK	22.09	22.07	22.38	24.00
	1 (RB_Pos:3)	MIDDLE	QPSK	22.15	22.15	22.48	24.00
	1 (RB_Pos:5)	HIGH	QPSK	22.12	22.06	22.41	24.00
	3 (RB_Pos:0)	LOW	QPSK	22.13	22.13	22.41	24.00
	3 (RB_Pos:1)	MIDDLE	QPSK	22.19	22.19	22.46	24.00
	3 (RB_Pos:3)	HIGH	QPSK	22.17	22.14	22.38	24.00
	6 (RB_Pos:0)	LOW	QPSK	21.12	21.14	21.37	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.29	21.60	21.42	23.00
	1 (RB_Pos:3)	MIDDLE	16QAM	21.41	21.63	21.46	23.00
	1 (RB_Pos:5)	HIGH	16QAM	21.33	21.55	21.44	23.00
	3 (RB_Pos:0)	LOW	16QAM	21.29	21.47	21.59	23.00
	3 (RB_Pos:1)	MIDDLE	16QAM	21.37	21.47	21.63	23.00
	3 (RB_Pos:3)	HIGH	16QAM	21.35	21.44	21.58	23.00
	6 (RB_Pos:0)	LOW	16QAM	20.39	20.13	20.65	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			18615	18900	19185	Tune up limit (dBm)
3 MHz	1 (RB_Pos:0)	LOW	QPSK	22.38	22.32	22.58	24.00
	1 (RB_Pos:8)	MIDDLE	QPSK	22.32	22.28	22.53	24.00
	1 (RB_Pos:14)	HIGH	QPSK	22.30	22.31	22.53	24.00
	8 (RB_Pos:0)	LOW	QPSK	21.37	21.28	21.57	23.00
	8 (RB_Pos:3)	MIDDLE	QPSK	21.33	21.28	21.58	23.00
	8 (RB_Pos:7)	HIGH	QPSK	21.37	21.27	21.51	23.00
	15 (RB_Pos:0)	LOW	QPSK	21.35	21.28	21.59	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.82	21.42	21.50	23.00
	1 (RB_Pos:8)	MIDDLE	16QAM	21.80	21.39	21.46	23.00
	1 (RB_Pos:14)	HIGH	16QAM	21.79	21.40	21.47	23.00
	8 (RB_Pos:0)	LOW	16QAM	20.53	20.40	20.73	22.00
	8 (RB_Pos:3)	MIDDLE	16QAM	20.54	20.44	20.73	22.00
	8 (RB_Pos:7)	HIGH	16QAM	20.51	20.42	20.66	22.00
	15 (RB_Pos:0)	LOW	16QAM	20.49	20.37	20.66	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			18625	18900	19175	Tune up limit (dBm)
5 MHz	1 (RB_Pos:0)	LOW	QPSK	22.42	22.38	22.60	24.00
	1 (RB_Pos:13)	MIDDLE	QPSK	22.47	22.37	22.60	24.00
	1 (RB_Pos:24)	HIGH	QPSK	22.33	22.31	22.57	24.00
	12 (RB_Pos:0)	LOW	QPSK	21.44	21.37	21.59	23.00
	12 (RB_Pos:6)	MIDDLE	QPSK	21.41	21.34	21.57	23.00
	12 (RB_Pos:13)	HIGH	QPSK	21.38	21.31	21.59	23.00

	25 (RB_Pos:0)	LOW	QPSK	21.39	21.31	21.55	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.62	21.92	21.73	23.00
	1 (RB_Pos:13)	MIDDLE	16QAM	21.67	21.98	21.69	23.00
	1 (RB_Pos:24)	HIGH	16QAM	21.66	21.88	21.67	23.00
	12 (RB_Pos:0)	LOW	16QAM	20.56	20.55	20.69	22.00
	12 (RB_Pos:6)	MIDDLE	16QAM	20.57	20.54	20.66	22.00
	12 (RB_Pos:13)	HIGH	16QAM	20.59	20.53	20.69	22.00
	25 (RB_Pos:0)	LOW	16QAM	20.51	20.50	20.57	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			18650	18900	19150	Tune up limit (dBm)
10 MHz	1 (RB_Pos:0)	LOW	QPSK	22.43	22.33	22.63	24.00
	1 (RB_Pos:25)	MIDDLE	QPSK	22.37	22.26	22.56	24.00
	1 (RB_Pos:49)	HIGH	QPSK	22.30	22.15	22.55	24.00
	25 (RB_Pos:0)	LOW	QPSK	21.39	21.27	21.59	23.00
	25 (RB_Pos:12)	MIDDLE	QPSK	21.44	21.26	21.63	23.00
	25 (RB_Pos:25)	HIGH	QPSK	21.38	21.20	21.58	23.00
	50 (RB_Pos:0)	LOW	QPSK	21.38	21.23	21.62	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.39	21.73	21.70	23.00
	1 (RB_Pos:25)	MIDDLE	16QAM	21.31	21.68	21.58	23.00
	1 (RB_Pos:49)	HIGH	16QAM	21.29	21.66	21.54	23.00
	25 (RB_Pos:0)	LOW	16QAM	20.48	20.47	20.82	22.00
	25 (RB_Pos:12)	MIDDLE	16QAM	20.46	20.45	20.81	22.00
	25 (RB_Pos:25)	HIGH	16QAM	20.40	20.41	20.75	22.00
	50 (RB_Pos:0)	LOW	16QAM	20.46	20.42	20.71	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			18675	18900	19125	Tune up limit (dBm)
15 MHz	1 (RB_Pos:0)	LOW	QPSK	22.52	22.51	22.74	24.00
	1 (RB_Pos:38)	MIDDLE	QPSK	22.43	22.35	22.54	24.00
	1 (RB_Pos:74)	HIGH	QPSK	22.42	22.30	22.59	24.00
	36 (RB_Pos:0)	LOW	QPSK	21.45	21.41	21.66	23.00
	36 (RB_Pos:20)	MIDDLE	QPSK	21.44	21.35	21.63	23.00
	36 (RB_Pos:39)	HIGH	QPSK	21.38	21.29	21.57	23.00
	75 (RB_Pos:0)	LOW	QPSK	21.46	21.37	21.62	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.55	21.99	22.12	23.00
	1 (RB_Pos:38)	MIDDLE	16QAM	21.41	21.78	21.92	23.00
	1 (RB_Pos:74)	HIGH	16QAM	21.38	21.75	21.88	23.00
	36 (RB_Pos:0)	LOW	16QAM	20.55	20.58	20.70	22.00
	36 (RB_Pos:20)	MIDDLE	16QAM	20.55	20.53	20.66	22.00
	36 (RB_Pos:39)	HIGH	16QAM	20.49	20.45	20.62	22.00
	75 (RB_Pos:0)	LOW	16QAM	20.56	20.51	20.70	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			18700	18900	19100	Tune up limit (dBm)

20 MHz	1 (RB_Pos:0)	LOW	QPSK	22.49	22.51	**22.63**	24.00
	1 (RB_Pos:50)	MIDDLE	QPSK	22.33	22.34	22.48	24.00
	1 (RB_Pos:99)	HIGH	QPSK	22.30	22.27	22.54	24.00
	50 (RB_Pos:0)	LOW	QPSK	21.45	21.44	21.55	23.00
	50 (RB_Pos:25)	MIDDLE	QPSK	21.43	21.39	21.59	23.00
	50 (RB_Pos:50)	HIGH	QPSK	21.33	21.29	21.57	23.00
	100 (RB_Pos:0)	LOW	QPSK	21.37	21.41	21.52	23.00
	1 (RB_Pos:0)	LOW	16QAM	22.05	21.97	22.05	23.00
	1 (RB_Pos:50)	MIDDLE	16QAM	21.94	21.85	21.94	23.00
	1 (RB_Pos:99)	HIGH	16QAM	21.88	21.75	21.91	23.00
	50 (RB_Pos:0)	LOW	16QAM	20.59	20.55	20.60	22.00
	50 (RB_Pos:25)	MIDDLE	16QAM	20.54	20.48	20.66	22.00
	50 (RB_Pos:50)	HIGH	16QAM	20.50	20.43	20.61	22.00
	100 (RB_Pos:0)	LOW	16QAM	20.55	20.50	20.59	22.00

FDD LTE Band 4							
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			19957	20175	20393	Tune up limit (dBm)
1.4 MHz	1 (RB_Pos:0)	LOW	QPSK	22.54	22.70	22.61	24.00
	1 (RB_Pos:3)	MIDDLE	QPSK	22.55	22.75	22.72	24.00
	1 (RB_Pos:5)	HIGH	QPSK	22.54	22.70	22.63	24.00
	3 (RB_Pos:0)	LOW	QPSK	22.49	22.67	22.64	24.00
	3 (RB_Pos:1)	MIDDLE	QPSK	22.54	22.73	22.76	24.00
	3 (RB_Pos:3)	HIGH	QPSK	22.49	22.67	22.66	24.00
	6 (RB_Pos:0)	LOW	QPSK	21.59	21.72	21.64	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.63	22.10	21.72	23.00
	1 (RB_Pos:3)	MIDDLE	16QAM	21.69	22.14	21.79	23.00
	1 (RB_Pos:5)	HIGH	16QAM	21.66	22.10	21.76	23.00
	3 (RB_Pos:0)	LOW	16QAM	21.59	21.92	21.86	23.00
	3 (RB_Pos:1)	MIDDLE	16QAM	21.69	21.99	21.93	23.00
	3 (RB_Pos:3)	HIGH	16QAM	21.65	21.90	21.87	23.00
	6 (RB_Pos:0)	LOW	16QAM	20.80	20.75	20.91	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			19965	20175	20385	Tune up limit (dBm)
3 MHz	1 (RB_Pos:0)	LOW	QPSK	22.67	22.81	22.76	24.00
	1 (RB_Pos:8)	MIDDLE	QPSK	22.63	22.75	22.74	24.00
	1 (RB_Pos:14)	HIGH	QPSK	22.63	22.77	22.71	24.00
	8 (RB_Pos:0)	LOW	QPSK	21.68	21.82	21.74	23.00
	8 (RB_Pos:3)	MIDDLE	QPSK	21.70	21.81	21.76	23.00
	8 (RB_Pos:7)	HIGH	QPSK	21.68	21.80	21.72	23.00
	15 (RB_Pos:0)	LOW	QPSK	21.66	21.83	21.75	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.57	22.20	21.82	23.00

	1 (RB_Pos:8)	MIDDLE	16QAM	21.55	22.17	21.80	23.00
	1 (RB_Pos:14)	HIGH	16QAM	21.53	22.18	21.79	23.00
	8 (RB_Pos:0)	LOW	16QAM	20.79	20.95	20.85	22.00
	8 (RB_Pos:3)	MIDDLE	16QAM	20.87	20.97	20.89	22.00
	8 (RB_Pos:7)	HIGH	16QAM	20.83	20.90	20.85	22.00
	15 (RB_Pos:0)	LOW	16QAM	20.73	20.92	20.76	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			19975	20175	20375	Tune up limit (dBm)
5 MHz	1 (RB_Pos:0)	LOW	QPSK	22.71	22.85	22.80	24.00
	1 (RB_Pos:13)	MIDDLE	QPSK	22.71	22.86	22.81	24.00
	1 (RB_Pos:24)	HIGH	QPSK	22.58	22.82	22.70	24.00
	12 (RB_Pos:0)	LOW	QPSK	21.69	21.86	21.78	23.00
	12 (RB_Pos:6)	MIDDLE	QPSK	21.70	21.82	21.80	23.00
	12 (RB_Pos:13)	HIGH	QPSK	21.68	21.83	21.80	23.00
	25 (RB_Pos:0)	LOW	QPSK	21.69	21.79	21.78	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.88	22.43	21.96	23.00
	1 (RB_Pos:13)	MIDDLE	16QAM	21.89	22.37	21.96	23.00
	1 (RB_Pos:24)	HIGH	16QAM	21.83	22.36	21.94	23.00
	12 (RB_Pos:0)	LOW	16QAM	20.83	21.04	20.88	22.00
	12 (RB_Pos:6)	MIDDLE	16QAM	20.81	21.05	20.90	22.00
	12 (RB_Pos:13)	HIGH	16QAM	20.80	21.02	20.91	22.00
	25 (RB_Pos:0)	LOW	16QAM	20.77	20.99	20.85	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			20000	20175	20350	Tune up limit (dBm)
10 MHz	1 (RB_Pos:0)	LOW	QPSK	22.75	22.85	22.81	24.00
	1 (RB_Pos:25)	MIDDLE	QPSK	22.63	22.78	22.72	24.00
	1 (RB_Pos:49)	HIGH	QPSK	22.61	22.74	22.70	24.00
	25 (RB_Pos:0)	LOW	QPSK	21.76	21.90	21.85	23.00
	25 (RB_Pos:12)	MIDDLE	QPSK	21.69	21.89	21.83	23.00
	25 (RB_Pos:25)	HIGH	QPSK	21.67	21.86	21.75	23.00
	50 (RB_Pos:0)	LOW	QPSK	21.74	21.87	21.79	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.66	22.29	21.91	23.00
	1 (RB_Pos:25)	MIDDLE	16QAM	21.55	22.18	21.78	23.00
	1 (RB_Pos:49)	HIGH	16QAM	21.57	22.14	21.79	23.00
	25 (RB_Pos:0)	LOW	16QAM	20.80	20.97	20.98	22.00
	25 (RB_Pos:12)	MIDDLE	16QAM	20.83	20.98	20.97	22.00
	25 (RB_Pos:25)	HIGH	16QAM	20.80	20.92	20.93	22.00
	50 (RB_Pos:0)	LOW	16QAM	20.79	20.93	20.88	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			20025	20175	20325	Tune up limit (dBm)
15 MHz	1 (RB_Pos:0)	LOW	QPSK	22.80	22.96	22.98	24.00
	1 (RB_Pos:38)	MIDDLE	QPSK	22.60	22.76	22.78	24.00

	1 (RB_Pos:74)	HIGH	QPSK	22.70	22.77	22.81	24.00
	36 (RB_Pos:0)	LOW	QPSK	21.73	21.87	21.92	23.00
	36 (RB_Pos:20)	MIDDLE	QPSK	21.81	21.89	21.82	23.00
	36 (RB_Pos:39)	HIGH	QPSK	21.78	21.82	21.81	23.00
	75 (RB_Pos:0)	LOW	QPSK	21.81	21.87	21.87	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.76	22.36	22.35	23.00
	1 (RB_Pos:38)	MIDDLE	16QAM	21.60	22.22	22.18	23.00
	1 (RB_Pos:74)	HIGH	16QAM	21.74	22.19	22.21	23.00
	36 (RB_Pos:0)	LOW	16QAM	20.87	21.06	20.96	22.00
	36 (RB_Pos:20)	MIDDLE	16QAM	20.88	21.01	20.89	22.00
	36 (RB_Pos:39)	HIGH	16QAM	20.85	20.99	20.88	22.00
	75 (RB_Pos:0)	LOW	16QAM	20.90	20.97	20.94	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			20050	20175	20300	Tune up limit (dBm)
20 MHz	1 (RB_Pos:0)	LOW	QPSK	22.85	**23.03**	22.92	24.00
	1 (RB_Pos:50)	MIDDLE	QPSK	22.63	22.84	22.74	24.00
	1 (RB_Pos:99)	HIGH	QPSK	22.72	22.84	22.74	24.00
	50 (RB_Pos:0)	LOW	QPSK	21.80	21.97	21.97	23.00
	50 (RB_Pos:25)	MIDDLE	QPSK	21.88	21.93	21.88	23.00
	50 (RB_Pos:50)	HIGH	QPSK	21.75	21.85	21.81	23.00
	100 (RB_Pos:0)	LOW	QPSK	21.81	21.91	21.84	23.00
	1 (RB_Pos:0)	LOW	16QAM	22.38	22.44	22.39	23.00
	1 (RB_Pos:50)	MIDDLE	16QAM	22.20	22.24	22.18	23.00
	1 (RB_Pos:99)	HIGH	16QAM	22.32	22.24	22.20	23.00
	50 (RB_Pos:0)	LOW	16QAM	20.85	21.05	21.01	22.00
	50 (RB_Pos:25)	MIDDLE	16QAM	20.94	20.99	20.91	22.00
	50 (RB_Pos:50)	HIGH	16QAM	20.91	20.92	20.84	22.00
	100 (RB_Pos:0)	LOW	16QAM	20.91	20.98	20.95	22.00

FDD LTE Band 5							
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			20407	20525	20643	Tune up limit (dBm)
1.4 MHz	1 (RB_Pos:0)	LOW	QPSK	22.82	22.74	22.71	24.00
	1 (RB_Pos:3)	MIDDLE	QPSK	22.87	22.77	22.77	24.00
	1 (RB_Pos:5)	HIGH	QPSK	22.80	22.74	22.69	24.00
	3 (RB_Pos:0)	LOW	QPSK	22.85	22.63	22.71	24.00
	3 (RB_Pos:1)	MIDDLE	QPSK	22.93	22.76	22.79	24.00
	3 (RB_Pos:3)	HIGH	QPSK	22.85	22.68	22.71	24.00
	6 (RB_Pos:0)	LOW	QPSK	21.86	21.83	21.69	23.00
	1 (RB_Pos:0)	LOW	16QAM	22.06	22.14	21.68	23.00
	1 (RB_Pos:3)	MIDDLE	16QAM	22.11	22.14	21.75	23.00
	1 (RB_Pos:5)	HIGH	16QAM	22.03	22.11	21.69	23.00

	3 (RB_Pos:0)	LOW	16QAM	21.98	21.92	21.86	23.00
	3 (RB_Pos:1)	MIDDLE	16QAM	22.08	21.99	21.94	23.00
	3 (RB_Pos:3)	HIGH	16QAM	22.02	21.94	21.83	23.00
	6 (RB_Pos:0)	LOW	16QAM	21.14	20.78	20.84	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			20415	20525	20635	Tune up limit (dBm)
3 MHz	1 (RB_Pos:0)	LOW	QPSK	22.97	22.79	22.80	24.00
	1 (RB_Pos:8)	MIDDLE	QPSK	22.87	22.77	22.77	24.00
	1 (RB_Pos:14)	HIGH	QPSK	22.83	22.78	22.77	24.00
	8 (RB_Pos:0)	LOW	QPSK	21.92	21.85	21.77	23.00
	8 (RB_Pos:3)	MIDDLE	QPSK	21.89	21.92	21.83	23.00
	8 (RB_Pos:7)	HIGH	QPSK	21.80	21.88	21.76	23.00
	15 (RB_Pos:0)	LOW	QPSK	21.89	21.96	21.82	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.89	22.32	21.90	23.00
	1 (RB_Pos:8)	MIDDLE	16QAM	21.87	22.27	21.77	23.00
	1 (RB_Pos:14)	HIGH	16QAM	21.87	22.31	21.73	23.00
	8 (RB_Pos:0)	LOW	16QAM	21.17	21.05	20.75	22.00
	8 (RB_Pos:3)	MIDDLE	16QAM	21.17	21.11	20.83	22.00
	8 (RB_Pos:7)	HIGH	16QAM	21.07	21.04	20.83	22.00
	15 (RB_Pos:0)	LOW	16QAM	21.00	21.03	20.80	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			20425	20525	20625	Tune up limit (dBm)
5 MHz	1 (RB_Pos:0)	LOW	QPSK	22.97	23.03	22.84	24.00
	1 (RB_Pos:13)	MIDDLE	QPSK	22.97	22.95	22.83	24.00
	1 (RB_Pos:24)	HIGH	QPSK	22.86	22.90	22.76	24.00
	12 (RB_Pos:0)	LOW	QPSK	21.95	21.89	21.88	23.00
	12 (RB_Pos:6)	MIDDLE	QPSK	21.92	21.94	21.83	23.00
	12 (RB_Pos:13)	HIGH	QPSK	21.85	21.91	21.80	23.00
	25 (RB_Pos:0)	LOW	QPSK	21.85	21.93	21.81	23.00
	1 (RB_Pos:0)	LOW	16QAM	22.12	22.46	21.99	23.00
	1 (RB_Pos:13)	MIDDLE	16QAM	22.10	22.46	21.96	23.00
	1 (RB_Pos:24)	HIGH	16QAM	22.03	22.44	21.89	23.00
	12 (RB_Pos:0)	LOW	16QAM	21.08	21.13	20.94	22.00
	12 (RB_Pos:6)	MIDDLE	16QAM	21.13	21.15	20.89	22.00
	12 (RB_Pos:13)	HIGH	16QAM	21.09	21.10	20.88	22.00
	25 (RB_Pos:0)	LOW	16QAM	21.04	20.98	20.82	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			20450	20525	20600	Tune up limit (dBm)
10 MHz	1 (RB_Pos:0)	LOW	QPSK	**22.98**	22.95	22.86	24.00
	1 (RB_Pos:25)	MIDDLE	QPSK	22.94	22.84	22.88	24.00
	1 (RB_Pos:49)	HIGH	QPSK	22.88	22.74	22.81	24.00
	25 (RB_Pos:0)	LOW	QPSK	22.02	21.96	21.89	23.00

	25 (RB_Pos:12)	MIDDLE	QPSK	22.04	21.90	21.94	23.00
	25 (RB_Pos:25)	HIGH	QPSK	21.93	21.87	21.92	23.00
	50 (RB_Pos:0)	LOW	QPSK	21.97	21.87	21.84	23.00
	1 (RB_Pos:0)	LOW	16QAM	22.01	22.25	21.94	23.00
	1 (RB_Pos:25)	MIDDLE	16QAM	21.87	22.22	21.94	23.00
	1 (RB_Pos:49)	HIGH	16QAM	21.76	22.20	21.84	23.00
	25 (RB_Pos:0)	LOW	16QAM	21.12	21.02	21.02	22.00
	25 (RB_Pos:12)	MIDDLE	16QAM	21.06	20.96	21.05	22.00
	25 (RB_Pos:25)	HIGH	16QAM	20.93	20.95	20.98	22.00
	50 (RB_Pos:0)	LOW	16QAM	20.97	20.95	20.92	22.00

FDD LTE Band 12							
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			23017	23095	23173	Tune up limit (dBm)
1.4 MHz	1 (RB_Pos:0)	LOW	QPSK	22.66	22.77	22.83	24.00
	1 (RB_Pos:3)	MIDDLE	QPSK	22.71	22.85	22.95	24.00
	1 (RB_Pos:5)	HIGH	QPSK	22.65	22.77	22.87	24.00
	3 (RB_Pos:0)	LOW	QPSK	22.63	22.75	22.78	24.00
	3 (RB_Pos:1)	MIDDLE	QPSK	22.71	22.80	22.87	24.00
	3 (RB_Pos:3)	HIGH	QPSK	22.61	22.68	22.83	24.00
	6 (RB_Pos:0)	LOW	QPSK	21.66	21.69	21.85	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.77	22.14	21.85	23.00
	1 (RB_Pos:3)	MIDDLE	16QAM	21.85	22.20	21.95	23.00
	1 (RB_Pos:5)	HIGH	16QAM	21.75	22.13	21.95	23.00
	3 (RB_Pos:0)	LOW	16QAM	21.74	22.03	22.09	23.00
	3 (RB_Pos:1)	MIDDLE	16QAM	21.81	22.06	22.18	23.00
	3 (RB_Pos:3)	HIGH	16QAM	21.74	21.99	22.10	23.00
	6 (RB_Pos:0)	LOW	16QAM	20.81	20.73	21.14	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			23025	23095	23165	Tune up limit (dBm)
3 MHz	1 (RB_Pos:0)	LOW	QPSK	22.72	22.92	23.00	24.00
	1 (RB_Pos:8)	MIDDLE	QPSK	22.66	22.86	23.04	24.00
	1 (RB_Pos:14)	HIGH	QPSK	22.76	22.86	23.03	24.00
	8 (RB_Pos:0)	LOW	QPSK	21.77	21.92	21.95	23.00
	8 (RB_Pos:3)	MIDDLE	QPSK	21.82	21.96	22.07	23.00
	8 (RB_Pos:7)	HIGH	QPSK	21.87	21.94	22.04	23.00
	15 (RB_Pos:0)	LOW	QPSK	21.90	21.93	21.98	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.68	22.35	22.00	23.00
	1 (RB_Pos:8)	MIDDLE	16QAM	21.63	22.29	22.04	23.00
	1 (RB_Pos:14)	HIGH	16QAM	21.73	22.22	22.03	23.00
	8 (RB_Pos:0)	LOW	16QAM	20.97	21.07	21.03	22.00
	8 (RB_Pos:3)	MIDDLE	16QAM	20.97	21.09	21.14	22.00

	8 (RB_Pos:7)	HIGH	16QAM	21.03	21.01	21.09	22.00
	15 (RB_Pos:0)	LOW	16QAM	20.95	21.05	20.96	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			23035	23095	23155	Tune up limit (dBm)
5 MHz	1 (RB_Pos:0)	LOW	QPSK	22.73	22.87	22.88	24.00
	1 (RB_Pos:13)	MIDDLE	QPSK	22.87	22.95	22.89	24.00
	1 (RB_Pos:24)	HIGH	QPSK	22.72	22.85	22.93	24.00
	12 (RB_Pos:0)	LOW	QPSK	21.84	21.88	21.93	23.00
	12 (RB_Pos:6)	MIDDLE	QPSK	21.87	21.90	21.93	23.00
	12 (RB_Pos:13)	HIGH	QPSK	21.85	21.86	21.88	23.00
	25 (RB_Pos:0)	LOW	QPSK	21.85	21.86	21.88	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.94	22.34	21.94	23.00
	1 (RB_Pos:13)	MIDDLE	16QAM	22.08	22.45	21.97	23.00
	1 (RB_Pos:24)	HIGH	16QAM	22.03	22.34	22.08	23.00
	12 (RB_Pos:0)	LOW	16QAM	21.04	21.11	21.05	22.00
	12 (RB_Pos:6)	MIDDLE	16QAM	21.04	21.08	21.03	22.00
	12 (RB_Pos:13)	HIGH	16QAM	20.98	21.02	21.02	22.00
	25 (RB_Pos:0)	LOW	16QAM	20.94	20.98	20.93	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			23060	23095	23130	Tune up limit (dBm)
10 MHz	1 (RB_Pos:0)	LOW	QPSK	22.68	22.80	22.91	24.00
	1 (RB_Pos:25)	MIDDLE	QPSK	22.68	22.76	22.96	24.00
	1 (RB_Pos:49)	HIGH	QPSK	22.73	22.80	**22.98**	24.00
	25 (RB_Pos:0)	LOW	QPSK	21.80	21.85	21.92	23.00
	25 (RB_Pos:12)	MIDDLE	QPSK	21.88	21.86	21.90	23.00
	25 (RB_Pos:25)	HIGH	QPSK	21.79	21.83	21.95	23.00
	50 (RB_Pos:0)	LOW	QPSK	21.84	21.86	21.93	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.64	22.19	21.96	23.00
	1 (RB_Pos:25)	MIDDLE	16QAM	21.67	22.18	21.90	23.00
	1 (RB_Pos:49)	HIGH	16QAM	21.67	22.19	21.94	23.00
	25 (RB_Pos:0)	LOW	16QAM	20.94	21.04	21.07	22.00
	25 (RB_Pos:12)	MIDDLE	16QAM	20.95	20.99	21.03	22.00
	25 (RB_Pos:25)	HIGH	16QAM	20.95	20.91	21.09	22.00
	50 (RB_Pos:0)	LOW	16QAM	20.97	20.98	21.00	22.00

FDD LTE Band 66							
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			131979	132322	132665	Tune up limit (dBm)
1.4 MHz	1 (RB_Pos:0)	LOW	QPSK	22.68	22.69	22.78	24.00
	1 (RB_Pos:3)	MIDDLE	QPSK	22.71	22.75	22.85	24.00
	1 (RB_Pos:5)	HIGH	QPSK	22.68	22.71	22.79	24.00
	3 (RB_Pos:0)	LOW	QPSK	22.62	22.69	22.77	24.00
	3 (RB_Pos:1)	MIDDLE	QPSK	22.69	22.73	22.83	24.00
	3 (RB_Pos:3)	HIGH	QPSK	22.62	22.70	22.76	24.00
	6 (RB_Pos:0)	LOW	QPSK	21.72	21.76	21.78	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.77	22.10	21.81	23.00
	1 (RB_Pos:3)	MIDDLE	16QAM	21.84	22.14	21.84	23.00
	1 (RB_Pos:5)	HIGH	16QAM	21.81	22.13	21.81	23.00
	3 (RB_Pos:0)	LOW	16QAM	21.72	21.93	21.96	23.00
	3 (RB_Pos:1)	MIDDLE	16QAM	21.82	22.02	22.00	23.00
	3 (RB_Pos:3)	HIGH	16QAM	21.78	21.93	21.94	23.00
	6 (RB_Pos:0)	LOW	16QAM	20.93	20.73	21.03	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			131987	132322	132657	Tune up limit (dBm)
3 MHz	1 (RB_Pos:0)	LOW	QPSK	22.79	22.81	22.90	24.00
	1 (RB_Pos:8)	MIDDLE	QPSK	22.75	22.76	22.83	24.00
	1 (RB_Pos:14)	HIGH	QPSK	22.72	22.73	22.84	24.00
	8 (RB_Pos:0)	LOW	QPSK	21.80	21.78	21.83	23.00
	8 (RB_Pos:3)	MIDDLE	QPSK	21.82	21.83	21.90	23.00
	8 (RB_Pos:7)	HIGH	QPSK	21.78	21.80	21.85	23.00
	15 (RB_Pos:0)	LOW	QPSK	21.84	21.79	21.91	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.68	22.18	21.96	23.00
	1 (RB_Pos:8)	MIDDLE	16QAM	21.65	22.17	21.86	23.00
	1 (RB_Pos:14)	HIGH	16QAM	21.63	22.15	21.86	23.00
	8 (RB_Pos:0)	LOW	16QAM	20.95	20.95	20.95	22.00
	8 (RB_Pos:3)	MIDDLE	16QAM	20.97	20.94	20.95	22.00
	8 (RB_Pos:7)	HIGH	16QAM	20.93	20.94	20.90	22.00
	15 (RB_Pos:0)	LOW	16QAM	20.90	20.91	20.89	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			131997	132322	132647	Tune up limit (dBm)
5 MHz	1 (RB_Pos:0)	LOW	QPSK	22.84	22.83	22.94	24.00
	1 (RB_Pos:13)	MIDDLE	QPSK	22.83	22.85	22.90	24.00
	1 (RB_Pos:24)	HIGH	QPSK	22.72	22.80	22.86	24.00
	12 (RB_Pos:0)	LOW	QPSK	21.84	21.87	21.87	23.00
	12 (RB_Pos:6)	MIDDLE	QPSK	21.83	21.85	21.91	23.00
	12 (RB_Pos:13)	HIGH	QPSK	21.80	21.83	21.87	23.00

	25 (RB_Pos:0)	LOW	QPSK	21.77	21.80	21.86	23.00
	1 (RB_Pos:0)	LOW	16QAM	22.01	22.41	22.07	23.00
	1 (RB_Pos:13)	MIDDLE	16QAM	22.02	22.40	22.06	23.00
	1 (RB_Pos:24)	HIGH	16QAM	21.96	22.33	22.00	23.00
	12 (RB_Pos:0)	LOW	16QAM	20.94	21.03	20.99	22.00
	12 (RB_Pos:6)	MIDDLE	16QAM	20.95	21.04	21.01	22.00
	12 (RB_Pos:13)	HIGH	16QAM	20.92	21.03	20.99	22.00
	25 (RB_Pos:0)	LOW	16QAM	20.89	20.94	20.89	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			132022	132322	132622	Tune up limit (dBm)
10 MHz	1 (RB_Pos:0)	LOW	QPSK	22.85	22.86	22.87	24.00
	1 (RB_Pos:25)	MIDDLE	QPSK	22.73	22.73	22.86	24.00
	1 (RB_Pos:49)	HIGH	QPSK	22.73	22.79	22.86	24.00
	25 (RB_Pos:0)	LOW	QPSK	21.89	21.87	21.88	23.00
	25 (RB_Pos:12)	MIDDLE	QPSK	21.81	21.88	21.92	23.00
	25 (RB_Pos:25)	HIGH	QPSK	21.79	21.82	21.90	23.00
	50 (RB_Pos:0)	LOW	QPSK	21.82	21.86	21.85	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.74	22.29	21.94	23.00
	1 (RB_Pos:25)	MIDDLE	16QAM	21.67	22.19	21.90	23.00
	1 (RB_Pos:49)	HIGH	16QAM	21.69	22.19	21.86	23.00
	25 (RB_Pos:0)	LOW	16QAM	20.93	20.93	20.97	22.00
	25 (RB_Pos:12)	MIDDLE	16QAM	20.90	20.96	21.08	22.00
	25 (RB_Pos:25)	HIGH	16QAM	20.86	20.91	21.03	22.00
	50 (RB_Pos:0)	LOW	16QAM	20.88	20.94	20.91	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			132047	132322	132597	Tune up limit (dBm)
15 MHz	1 (RB_Pos:0)	LOW	QPSK	22.92	22.94	22.97	24.00
	1 (RB_Pos:38)	MIDDLE	QPSK	22.73	22.77	22.88	24.00
	1 (RB_Pos:74)	HIGH	QPSK	22.74	22.80	22.87	24.00
	36 (RB_Pos:0)	LOW	QPSK	21.87	21.94	21.89	23.00
	36 (RB_Pos:20)	MIDDLE	QPSK	21.86	21.88	21.84	23.00
	36 (RB_Pos:39)	HIGH	QPSK	21.83	21.80	21.85	23.00
	75 (RB_Pos:0)	LOW	QPSK	21.86	21.87	21.81	23.00
	1 (RB_Pos:0)	LOW	16QAM	21.83	22.36	22.37	23.00
	1 (RB_Pos:38)	MIDDLE	16QAM	21.74	22.17	22.27	23.00
	1 (RB_Pos:74)	HIGH	16QAM	21.79	22.22	22.21	23.00
	36 (RB_Pos:0)	LOW	16QAM	20.93	21.04	20.95	22.00
	36 (RB_Pos:20)	MIDDLE	16QAM	20.94	21.01	20.92	22.00
	36 (RB_Pos:39)	HIGH	16QAM	20.90	20.92	20.93	22.00
	75 (RB_Pos:0)	LOW	16QAM	20.96	20.97	20.89	22.00
Bandwidth (MHz)	RB Set	RB offest	Modulation	Power (dBm)			
	Channel			132072	132322	132572	Tune up limit (dBm)

20 MHz	1 (RB_Pos:0)	LOW	QPSK	22.96	**23.03**	22.92	24.00
	1 (RB_Pos:50)	MIDDLE	QPSK	22.74	22.80	22.73	24.00
	1 (RB_Pos:99)	HIGH	QPSK	22.76	22.95	22.83	24.00
	50 (RB_Pos:0)	LOW	QPSK	21.94	21.94	21.94	23.00
	50 (RB_Pos:25)	MIDDLE	QPSK	21.84	21.87	21.88	23.00
	50 (RB_Pos:50)	HIGH	QPSK	21.81	21.87	21.78	23.00
	100 (RB_Pos:0)	LOW	QPSK	21.87	21.92	21.87	23.00
	1 (RB_Pos:0)	LOW	16QAM	22.45	22.42	22.37	23.00
	1 (RB_Pos:50)	MIDDLE	16QAM	22.31	22.21	22.15	23.00
	1 (RB_Pos:99)	HIGH	16QAM	22.37	22.37	22.19	23.00
	50 (RB_Pos:0)	LOW	16QAM	21.00	21.04	20.97	22.00
	50 (RB_Pos:25)	MIDDLE	16QAM	20.91	20.94	20.86	22.00
	50 (RB_Pos:50)	HIGH	16QAM	20.88	20.93	20.80	22.00
	100 (RB_Pos:0)	LOW	16QAM	20.95	20.99	20.91	22.00

8.3 WIFI

8.3.1 2.4G WIFI (Main Antenna)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	14.34	15.00	No
		6	2437	**14.55**	15.00	Yes
		11	2462	14.48	15.00	No
	802.11g	1	2412	14.45	15.00	No
		6	2437	14.22	15.00	No
		11	2462	14.16	15.00	No
	802.11n(HT20)	1	2412	14.23	15.00	No
		6	2437	14.08	15.00	No
		11	2462	14.31	15.00	No

Note: According KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Adjusted SAR = Report SAR * (max power (OFDM)/ max power (DSSS)) = 1.192 * (31.62 mw)/(31.62 mw) =1.192 W/kg, so the 2.4GHz OFDM SAR test is not required.

8.3.2 2.4G WIFI (Aux. Antenna)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	14.31	15.00	No
		6	2437	**14.32**	15.00	Yes
		11	2462	14.22	15.00	No
	802.11g	1	2412	14.30	15.00	No
		6	2437	14.46	15.00	No
		11	2462	14.39	15.00	No
	802.11n(HT20)	1	2412	14.23	15.00	No
		6	2437	14.33	15.00	No
		11	2462	14.15	15.00	No

Note: According KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Adjusted SAR = Report SAR * (max power (OFDM)/ max power (DSSS)) = 1.192 * (31.62 mw)/(31.62 mw) =1.192 W/kg, so the 2.4GHz OFDM SAR test is not required.

8.3.3 2.4G WIFI (MIMO)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11n(HT20)	1	2412	**17.22**	17.50	Yes
		6	2437	17.14	17.50	No
		11	2462	17.20	17.50	No
Note: According KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.						

8.3.4 5G WIFI (Main Antenna)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11a	36	5180	14.47	15.00	No
		40	5200	14.35	15.00	No
		48	5240	14.26	15.00	No
	802.11n(HT20)	36	5180	14.24	15.00	No
		44	5220	14.12	15.00	No
		48	5240	14.07	15.00	No
	802.11n(HT40)	38	5190	14.05	15.00	No
		46	5230	14.26	15.00	No
	802.11ac(VHT20)	36	5180	14.35	15.00	No
		40	5200	14.22	15.00	No
		48	5240	14.15	15.00	No
	802.11ac(VHT40)	38	5190	14.57	15.00	No
		46	5230	14.26	15.00	No
	802.11ac(VHT80)	42	5210	14.06	14.50	No
5.3 (5.25~5.35)	802.11a	52	5260	14.32	15.00	No
		60	5300	14.50	15.00	No
		64	5320	14.44	15.00	No
	802.11n(HT20)	52	5260	14.15	15.00	No
		60	5300	14.30	15.00	No
		64	5320	14.26	15.00	No
	802.11n(HT40)	54	5270	14.45	15.00	No
		62	5310	**14.58**	15.00	Yes
	802.11ac(VHT20)	52	5260	14.16	15.00	No
		60	5300	14.28	15.00	No
		64	5320	14.33	15.00	No
	802.11ac(VHT40)	54	5270	14.46	15.00	No
		62	5310	14.59	15.00	No
	802.11ac(VHT80)	58	5290	13.35	14.50	No
5.6 (5.47~5.725)	802.11a	100	5500	14.63	15.00	No
		116	5580	14.42	15.00	No
		140	5700	14.27	15.00	No

	802.11n(HT20)	100	5500	14.01	15.00	No
		116	5580	14.23	15.00	No
		140	5700	14.71	15.00	No
	802.11n(HT40)	102	5510	14.21	15.00	No
		118	5590	14.35	15.00	No
		134	5670	14.70	15.00	No
	802.11ac(VHT20)	100	5500	14.44	15.00	No
		116	5580	14.67	15.00	No
		140	5700	14.11	15.00	No
	802.11ac(VHT40)	102	5510	14.04	15.00	No
		118	5590	14.32	15.00	No
		134	5670	14.70	15.00	No
	802.11ac(VHT80)	106	5530	12.56	14.00	No
		122	5610	**14.56**	15.00	Yes
5.8 (5.725~5.850)	802.11a	149	5745	14.18	15.00	No
		157	5785	14.04	15.00	No
		165	5825	14.41	15.00	No
	802.11n(HT20)	149	5745	14.52	15.00	No
		157	5785	14.44	15.00	No
		165	5825	14.35	15.00	No
	802.11n(HT40)	151	5755	14.13	15.00	No
		159	5795	14.02	15.00	No
	802.11ac(VHT20)	149	5745	14.52	15.00	No
		157	5785	14.39	15.00	No
		165	5825	14.32	15.00	No
	802.11ac(VHT40)	151	5755	14.18	15.00	No
		159	5795	14.05	15.00	No
	802.11ac(VHT80)	155	5775	**14.26**	15.00	Yes

8.3.5 5G WIFI (Aux. Antenna)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11a	36	5180	14.15	15.00	No
		40	5200	14.15	15.00	No
		48	5240	14.07	15.00	No
	802.11n(HT20)	36	5180	14.08	15.00	No
		44	5220	13.05	15.00	No
		48	5240	14.02	15.00	No
	802.11n(HT40)	38	5190	14.55	15.00	No
		46	5230	14.75	15.00	No
	802.11ac(VHT20)	36	5180	14.60	15.00	No
		40	5200	14.48	15.00	No
		48	5240	14.46	15.00	No
	802.11ac(VHT40)	38	5190	12.97	14.50	No
		46	5230	14.20	15.00	No
	802.11ac(VHT80)	42	5210	11.85	13.50	No
5.3 (5.25~5.35)	802.11a	52	5260	14.28	15.00	No
		60	5300	14.03	15.00	No
		64	5320	14.19	15.00	No
	802.11n(HT20)	52	5260	14.45	15.00	No
		60	5300	14.26	15.00	No
		64	5320	14.02	15.00	No
	802.11n(HT40)	54	5270	**14.64**	15.00	Yes
		62	5310	12.93	14.50	No
	802.11ac(VHT20)	52	5260	14.08	15.00	No
		60	5300	14.28	15.00	No
		64	5320	14.01	15.00	No
	802.11ac(VHT40)	54	5270	14.58	15.00	No
		62	5310	13.14	15.00	No
	802.11ac(VHT80)	58	5290	10.27	12.00	No
5.6 (5.47~5.725)	802.11a	100	5500	14.26	15.00	No
		116	5580	14.39	15.00	No
		140	5700	14.68	15.00	No
	802.11n(HT20)	100	5500	14.09	15.00	No
		116	5580	14.62	15.00	No
		140	5700	14.50	15.00	No
	802.11n(HT40)	102	5510	12.22	14.00	No
		118	5590	14.36	15.00	No
		134	5670	14.59	15.00	No
	802.11ac(VHT20)	100	5500	14.13	15.00	No
		116	5580	14.67	15.00	No
		140	5700	14.45	15.00	No
	802.11ac(VHT40)	102	5510	11.82	13.50	No
		118	5590	14.41	15.00	No

		134	5670	14.28	15.00	No
	802.11ac(VHT80)	106	5530	12.05	14.00	No
		122	5610	**14.07**	15.00	Yes
5.8 (5.725~5.850)	802.11a	149	5745	14.17	15.00	No
		157	5785	14.03	15.00	No
		165	5825	14.02	15.00	No
	802.11n(HT20)	149	5745	14.02	15.00	No
		157	5785	14.35	15.00	No
		165	5825	14.28	15.00	No
	802.11n(HT40)	151	5755	14.18	15.00	No
		159	5795	14.03	15.00	No
	802.11ac(VHT20)	149	5745	14.03	15.00	No
		157	5785	14.34	15.00	No
		165	5825	14.31	15.00	No
	802.11ac(VHT40)	151	5755	14.21	15.00	No
		159	5795	14.06	15.00	No
	802.11ac(VHT80)	155	5775	**14.14**	15.00	Yes

8.3.6 5G WIFI (MIMO)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11n(HT20)	36	5180	17.25	18.00	No
		44	5220	17.35	18.00	No
		48	5240	17.21	18.00	No
	802.11n(HT40)	38	5190	16.35	18.00	No
		46	5230	17.57	18.00	No
	802.11ac(VHT20)	36	5180	17.36	18.00	No
		40	5200	17.33	18.00	No
		48	5240	17.18	18.00	No
	802.11ac(VHT40)	38	5190	15.99	17.00	No
		46	5230	17.15	18.00	No
	802.11ac(VHT80)	42	5210	15.94	17.00	No
5.3 (5.25~5.35)	802.11n(HT20)	52	5260	17.20	18.00	No
		60	5300	17.40	18.00	No
		64	5320	15.95	17.00	No
	802.11n(HT40)	54	5270	**17.31**	18.00	Yes
		62	5310	16.00	17.00	No
	802.11ac(VHT20)	52	5260	17.20	18.00	No
		60	5300	17.16	18.00	No
		64	5320	17.06	18.00	No
	802.11ac(VHT40)	54	5270	17.30	18.00	No
		62	5310	15.90	17.00	No
	802.11ac(VHT80)	58	5290	15.12	17.00	No
5.6	802.11n(HT20)	100	5500	17.45	18.00	No

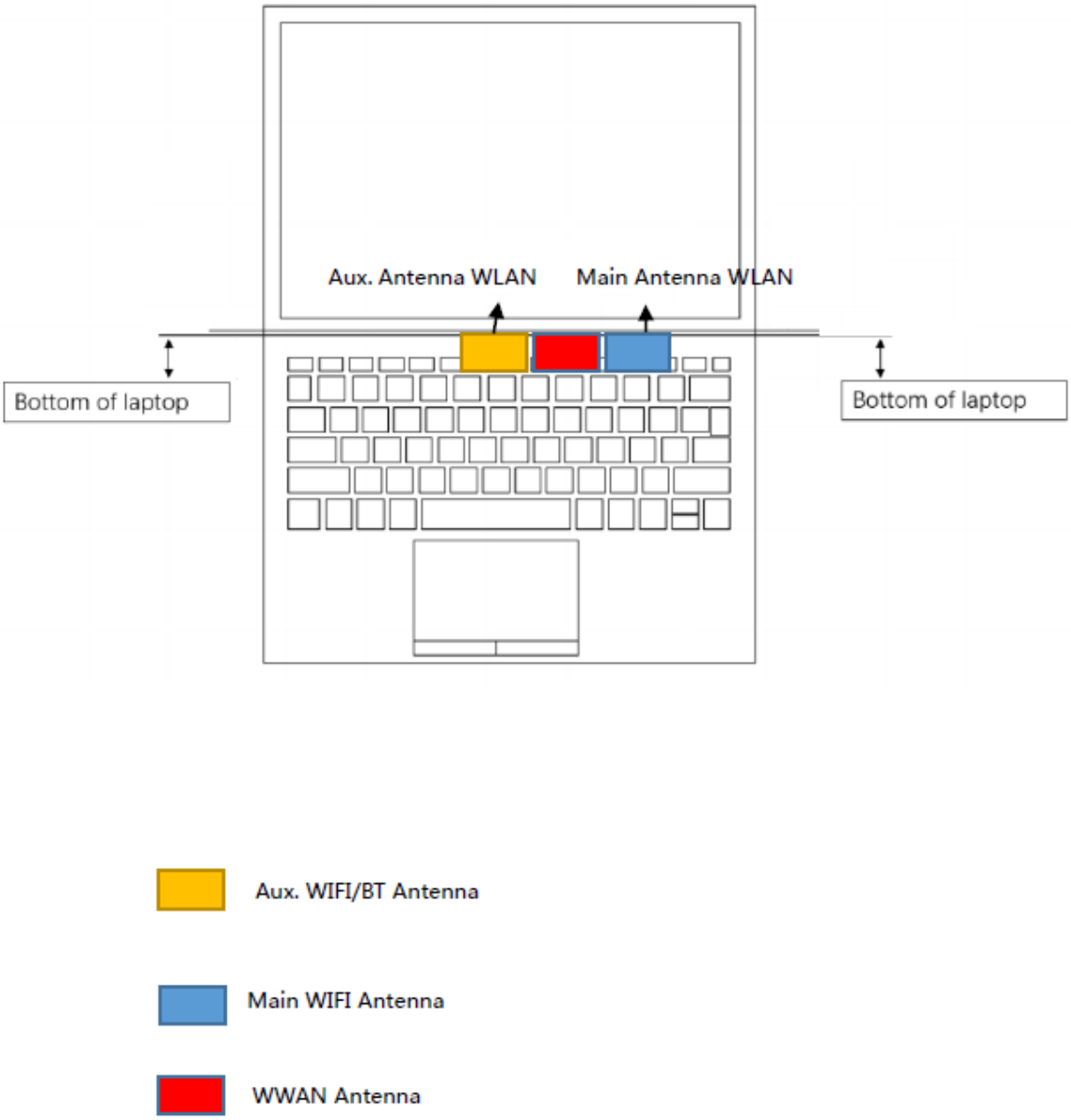
(5.47~5.725)		116	5580	17.45	18.00	No
		140	5700	17.49	18.00	No
	802.11n(HT40)	102	5510	15.05	16.00	No
		118	5590	17.27	18.00	No
		134	5670	17.51	18.00	No
	802.11ac(VHT20)	100	5500	16.84	18.00	No
		116	5580	17.29	18.00	No
		140	5700	17.47	18.00	No
	802.11ac(VHT40)	102	5510	14.92	16.00	No
		118	5590	17.31	18.00	No
		134	5670	17.50	18.00	No
	802.11ac(VHT80)	106	5530	14.92	16.00	No
		122	5610	**17.52**	18.00	Yes
5.8 (5.725~5.850)	802.11n(HT20)	149	5745	17.37	18.00	No
		157	5785	17.23	18.00	No
		165	5825	17.14	18.00	No
	802.11n(HT40)	151	5755	17.24	18.00	No
		159	5795	17.37	18.00	No
	802.11ac(VHT20)	149	5745	17.39	18.00	No
		157	5785	17.26	18.00	No
		165	5825	17.13	18.00	No
	802.11ac(VHT40)	151	5755	17.27	18.00	No
		159	5795	17.36	18.00	No
	802.11ac(VHT80)	155	5775	**17.24**	18.00	Yes

8.4 Bluetooth (Aux. Antenna)

Mode	GFSK			π/4-DQPSK		
Channel	0	39	78	0	39	78
Frequency (MHz)	2402	2441	2480	2402	2441	2480
Average Power (dBm)	7.87	**8.23**	7.65	5.86	5.73	5.46
Tune-up Power Limit (dBm)	9.00			7.00		
Mode	8-DPSK			BLE		
Channel	0	39	78	0	19	78
Frequency (MHz)	2402	2441	2480	2402	2440	2480
Average Power (dBm)	5.89	5.76	5.51	1.92	1.84	2.19
Tune-up Power Limit (dBm)	7.00			3.00		

9 TEST EXCLUSION CONSIDERATION

9.1 Laptop Mode antenna location sketch



9.2 SAR Test Consideration Table

According with FCC KDB 447498 D01, Appendix A, <SAR Test Exclusion Thresholds for 100 MHz－6 GHz and ≤ 50 mm> Table, this Device SAR test configurations consider as following :

WWAN Antenna

Band	Mode	Max. Conducted Power		Test Position Configurations
		dBm	mW	Bottom Edge
WCDMA Band 2	Distance to User			<5mm
	RMC	24.00	251.19	Yes
WCDMA Band 4	Distance to User			<5mm
	RMC	24.00	251.19	Yes
WCDMA Band 5	Distance to User			<5mm
	RMC	24.00	251.19	Yes
LTE Band 2	Distance to User			<5mm
	QPSK	24.00	251.19	Yes
LTE Band 4	Distance to User			<5mm
	QPSK	24.00	251.19	Yes
LTE Band 5	Distance to User			<5mm
	QPSK	24.00	251.19	Yes
LTE Band 12	Distance to User			<5mm
	QPSK	24.00	251.19	Yes
LTE Band 66	Distance to User			<5mm
	QPSK	24.00	251.19	Yes

WLAN Main Antenna

Band	Mode	Max. Conducted Power		Test Position Configurations
		dBm	mW	Bottom Edge
WLAN 2.4 G	Distance to User			<5mm
	802.11b	15.00	31.62	Yes
	802.11g	15.00	31.62	No
	802.11n(HT20)	15.00	31.62	No
WLAN 5.2 G	Distance to User			<5mm
	802.11a	15.00	31.62	No
	802.11n(HT20)	15.00	31.62	No
	802.11n(HT40)	15.00	31.62	No
	802.11ac(VHT20)	15.00	31.62	No
	802.11ac(VHT40)	15.00	31.62	No
	802.11ac(VHT80)	14.50	28.18	No
WLAN 5.3 G	Distance to User			<5mm
	802.11a	15.00	31.62	No
	802.11n(HT20)	15.00	31.62	No
	802.11n(HT40)	15.00	31.62	Yes
	802.11ac(VHT20)	15.00	31.62	No
	802.11ac(VHT40)	15.00	31.62	No
	802.11ac(VHT80)	14.50	28.18	No
WLAN 5.6 G	Distance to User			<5mm
	802.11a	15.00	31.62	No
	802.11n(HT20)	15.00	31.62	No
	802.11n(HT40)	15.00	31.62	No
	802.11ac(VHT20)	15.00	31.62	No
	802.11ac(VHT40)	15.00	31.62	No
	802.11ac(VHT80)	15.00	31.62	Yes
WLAN 5.8 G	Distance to User			<5mm
	802.11a	15.00	31.62	No
	802.11n(HT20)	15.00	31.62	No
	802.11n(HT40)	15.00	31.62	No
	802.11ac(VHT20)	15.00	31.62	No
	802.11ac(VHT40)	15.00	31.62	No
	802.11ac(VHT80)	15.00	31.62	Yes

WLAN Aux. Antenna

Band	Mode	Max. Conducted Power		Test Position Configurations
		dBm	mW	Bottom Edge
WLAN 2.4 G	Distance to User			<5mm
	802.11b	15.00	31.62	Yes
	802.11g	15.00	31.62	No
	802.11n(HT20)	15.00	31.62	No
WLAN 5.2 G	Distance to User			<5mm
	802.11a	15.00	31.62	No
	802.11n(HT20)	15.00	31.62	No
	802.11n(HT40)	15.00	31.62	No
	802.11ac(VHT20)	15.00	31.62	No
	802.11ac(VHT40)	15.00	31.62	No
	802.11ac(VHT80)	13.50	22.39	No
WLAN 5.3 G	Distance to User			<5mm
	802.11a	15.00	31.62	No
	802.11n(HT20)	15.00	31.62	No
	802.11n(HT40)	15.00	31.62	Yes
	802.11ac(VHT20)	15.00	31.62	No
	802.11ac(VHT40)	15.00	31.62	No
	802.11ac(VHT80)	12.00	15.85	No
WLAN 5.6 G	Distance to User			<5mm
	802.11a	15.00	31.62	No
	802.11n(HT20)	15.00	31.62	No
	802.11n(HT40)	15.00	31.62	No
	802.11ac(VHT20)	15.00	31.62	No
	802.11ac(VHT40)	15.00	31.62	No
	802.11ac(VHT80)	15.00	31.62	Yes
WLAN 5.8 G	Distance to User			<5mm
	802.11a	15.00	31.62	No
	802.11n(HT20)	15.00	31.62	No
	802.11n(HT40)	15.00	31.62	No
	802.11ac(VHT20)	15.00	31.62	No
	802.11ac(VHT40)	15.00	31.62	No
	802.11ac(VHT80)	15.00	31.62	Yes
Bluetooth	Distance to User			<5mm
	BR/EDR	9.00	7.94	Yes
	BLE	3.00	2.00	No

Note:

1. Maximum power is the source-based time-average power and represents the maximum RF output power including tune-up tolerance among production units
2. Per KDB 447498 D01, 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 D01, 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 D01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
   [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   a. f(GHz) is the RF channel transmit frequency in GHz
   b. Power and distance are rounded to the nearest mW and mm before calculation
   c. The result is rounded to one decimal place for comparison
   d. For < 50 mm distance, we just calculate mW of the exclusion threshold value (3.0) to do compare.
5. Per KDB 447498 D01, at 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following
   a. [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b. [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz
6. Per KDB 941225 D01, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA /HSUPA /DC-HSDPA output power is < 0.25dB higher than RMC12.2Kbps, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.
7. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion.8. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at the lowest data rate
8. Per KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions.
   a. When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM configuration.
   b. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
9. Per KDB 248227 D01 SAR is not required for the following U-NII-1 and U-NII-2A bands conditions.
   a. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.
   b. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

10 TEST RESULT

10.1 WCDMA Band 2

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Body											
RMC	Bottom Side	0	9262	1852.4	0.17	0.892	22.74	24.00	1.337	**1.192**	1#
		0	9400	1880	0.02	0.810	22.59	24.00	1.384	1.121	/
		0	9538	1907.6	0.01	0.822	22.58	24.00	1.387	1.140	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.											

10.2 WCDMA Band 4

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Body											
RMC	Bottom Side	0	1513	1752.6	0.04	0.629	22.82	24.00	1.312	**0.825**	2#
		0	1312	1712.4	0.01	0.423	22.68	24.00	1.355	0.573	/
		0	1412	1732.4	0.03	0.466	22.80	24.00	1.318	0.614	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.											

10.3 WCDMA Band 5

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Body											
RMC	Bottom Side	0	4132	826.4	-0.16	0.995	23.36	24.00	1.159	**1.153**	3#
		0	4182	836.4	0.11	0.941	23.18	24.00	1.208	1.137	/
		0	4233	846.6	0.09	0.925	23.15	24.00	1.216	1.125	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.											

10.4LTE Band 2 (20MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Body													
QPSK	Bottom Side	0	19100	1890	1	Low	0.02	0.794	22.63	24.00	1.371	1.088	/
		0	18700	1860	1	Low	0.06	0.838	22.49	24.00	1.416	**1.186**	4#
		0	18900	1880	1	Low	-0.08	0.762	22.51	24.00	1.409	1.074	/
		0	19100	1890	50	Mid	0.15	0.665	21.59	23.00	1.384	0.920	/
		0	18700	1860	50	Low	-0.14	0.623	21.45	23.00	1.429	0.890	/
		0	18900	1880	50	Low	0.13	0.532	21.44	23.00	1.432	0.762	/
		0	19100	1890	100	Low	0.01	0.528	21.52	23.00	1.406	0.742	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

10.5LTE Band 4 (20MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Body													
QPSK	Bottom Side	0	20175	1732.5	1	Low	0.05	0.640	23.03	24.00	1.250	0.800	/
		0	20050	1720	1	Low	0.06	0.611	22.85	24.00	1.303	0.796	/
		0	20300	1745	1	Low	0.04	0.629	22.92	24.00	1.282	**0.807**	5#
		0	20175	1732.5	50	Low	-0.14	0.554	21.97	23.00	1.268	0.702	/
		0	20175	1732.5	100	Low	0.09	0.548	21.91	23.00	1.285	0.704	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

10.6LTE Band 5 (10MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Body													
QPSK	Bottom Side	0	20450	829	1	Low	0.02	0.925	22.98	24.00	1.265	**1.170**	6#
		0	20525	836.5	1	Low	0.02	0.839	22.95	24.00	1.274	1.068	/
		0	20600	844	1	Mid	0.06	0.843	22.88	24.00	1.294	1.091	/
		0	20450	829	25	Mid	0.00	0.711	22.04	23.00	1.247	0.887	/
		0	20525	836.5	25	Low	-0.16	0.695	21.96	23.00	1.271	0.883	/
		0	20600	844	25	Mid	0.13	0.675	21.94	23.00	1.276	0.862	/
		0	20450	829	50	Low	0.05	0.670	21.97	23.00	1.268	0.849	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

10.7LTE Band 12 (10MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Body													
QPSK	Bottom Side	0	23130	711	1	High	0.18	0.783	22.98	24.00	1.265	**0.990**	7#
		0	23060	704	1	High	0.02	0.725	22.73	24.00	1.340	0.971	/
		0	23095	707.5	1	High	0.01	0.711	22.80	24.00	1.318	0.937	/
		0	23130	711	25	High	0.05	0.605	21.95	23.00	1.274	0.770	/
		0	23130	711	50	Low	-0.09	0.601	21.93	23.00	1.279	0.769	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

10.8LTE Band 66 (20MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Body													
QPSK	Bottom Side	0	132322	1745	1	Low	0.02	0.506	23.03	24.00	1.250	0.633	/
		0	132072	1720	1	Low	0.01	0.467	22.96	24.00	1.271	0.593	/
		0	132572	1770	1	Low	0.05	0.742	22.92	24.00	1.282	**0.951**	8#
		0	132322	1745	50	Low	-0.11	0.431	21.94	23.00	1.276	0.550	/
		0	132322	1745	100	Low	0.13	0.425	21.92	23.00	1.282	0.545	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.													

10.9Bluetooth

Mode	Antenna	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
Body														
DH5	Aux.	Bottom Side	0	39	2441	0.11	0.061	8.23	9.00	1.194	76.94	1.300	**0.095**	9#
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

10.10 WIFI 2.4GHz

Mode	Antenna	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
Body														
802.11b	Aux.	Bottom Side	0	6	2437	0.05	0.209	14.32	15.00	1.169	99.14	1.009	0.247	/
	Main	Bottom Side	0	6	2437	-0.06	0.294	14.55	15.00	1.109	99.14	1.009	0.329	/
802.11n20	MIMO	Bottom Side	0	1	2412	-0.01	0.490	17.22	17.50	1.067	98.00	1.020	**0.533**	10#
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

10.11 WIFI 5GHz

Fre. Band	Mode	Antenna	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
Body															
5.3G	802.11 n40	Aux.	Bottom Side	0	54	5270	0.03	0.344	14.64	15.00	1.086	96.20	1.040	0.388	/
		Main	Bottom Side	0	62	5310	0.02	0.327	14.58	15.00	1.102	96.20	1.040	0.374	/
		MIMO	Bottom Side	0	54	5270	-0.03	0.477	17.31	18.00	1.172	96.20	1.040	**0.581**	11#
5.6G	802.11 ac80	Aux.	Bottom Side	0	122	5610	-0.05	0.241	14.07	15.00	1.239	92.44	1.082	0.323	/
		Main	Bottom Side	0	122	5610	-0.02	0.640	14.56	15.00	1.107	92.44	1.082	0.766	/
		MIMO	Bottom Side	0	122	5610	0.05	0.648	17.52	18.00	1.117	92.44	1.082	**0.783**	12#
5.8G	802.11 ac80	Aux.	Bottom Side	0	155	5775	0.07	0.228	14.14	15.00	1.219	92.44	1.082	0.301	/
		Main	Bottom Side	0	155	5775	0.05	0.593	14.26	15.00	1.186	92.44	1.082	**0.761**	13#
		MIMO	Bottom Side	0	155	5775	0.04	0.478	17.24	18.00	1.191	92.44	1.082	0.616	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

11 SAR Measurement Variability

According to KDB 865664 D01, SAR measurement variability was assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10, the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These 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.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is >= 0.80 W/kg, repeat that measurement once.
3. 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, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20, and the original, first or second repeated measurement is >= 1.5 W/kg, perform a third repeated measurement.

Frequency Band (MHz)	Wireless Band	RF Exposure Conditions	Test Position	Highest Measured SAR (W/kg)	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Largest to Smallest SAR Radio
1852.4	WCDMA Band 2	Body	Bottom Side	0.892	Yes	0.864	1.03
826.4	WCDMA Band 5	Body	Bottom Side	0.995	Yes	0.987	1.01
1860	LTE Band 2	Body	Bottom Side	0.838	Yes	0.825	1.02
829	LTE Band 5	Body	Bottom Side	0.925	Yes	0.903	1.02
Note: The ratio of largest to smallest SAR for the original and first repeated measurements is < 1.20, the second repeated measurement is not required.							

12 SIMULTANEOUS TRANSMISSION

Note: The product has only three antennas for WWAN and WLAN, and can’t transmit simultaneously, so simultaneous transmission evaluation is not required in this report.

13 TEST EQUIPMENTS LIST

Description	Manufacturer	Model	Serial No./Version	Cal. Date	Cal. Due
PC	Dell	N/A	N/A	N/A	N/A
Test Software	Speag	DASY5	52.8.8.1222	N/A	N/A
750MHz Validation Dipole	Speag	D750V3	SN: 1201	2020/11/11	2023/11/10
835MHz Validation Dipole	Speag	D835V2	SN: 4d187	2021/05/17	2024/05/16
1750MHz Validation Dipole	Speag	D1750V2	SN: 1130	2021/05/17	2024/05/16
1900MHz Validation Dipole	Speag	D1900V2	SN: 5d193	2021/05/20	2024/05/19
2450MHz Validation Dipole	Speag	D2450V2	SN: 952	2021/05/19	2024/05/18
5GHz Validation Dipole	Speag	D5GHzV2	SN: 1200	2021/05/18	2024/05/17
E-Field Probe	Speag	EX3DV4	SN: 7510	2020/11/30	2021/11/29
Data Acquisition Electronics	Speag	DAE4	SN: 1454	2020/11/06	2021/11/05
Signal Generator	R&S	SMB100A	182396	2020/12/21	2021/12/20
Power Meter	R&S	NRVD-B2	7250BJ-0112/2011	2020/09/25	2021/09/24
Power Sensor	R&S	NRV-Z4	100381	2020/09/25	2021/09/24
Power Sensor	R&S	NRV-Z2	100211	2020/09/25	2021/09/24
Network Analyzer	Agilent	E5071B	MY42404001	2021/04/01	2022/03/31
Thermometer	Elitech	RC-4HC	EF720B004820	2020/12/24	2021/12/23
Power Amplifier	SATIMO	6552B	22374	N/A	N/A
Dielectric Probe Kit	SATIMO	SCLMP	SN 25/13 OCPG56	N/A	N/A
Phantom1	Speag	SAM	SN: 1859	N/A	N/A
Phantom2	Speag	ELI4	SN: 1012	N/A	N/A
Attenuator	COM-MW	ZA-S1-31	1305003187	N/A	N/A
Directional coupler	AA-MCS	AAMCS-UDC	000272	N/A	N/A

Note: For dipole antennas, BALUN has adopted 3 years as calibration intervals, and on annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:

1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss in within 20% of calibrated measurement.
4. Impedance (real or imaginary parts) in within 5 Ohms of calibrated measurement.

ANNEX A SIMULATING LIQUID VERIFICATION RESULT

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an SCLMP Dielectric Probe Kit.

Head Liquid

Date	Liquid Type	Fre. (MHz)	Temp. (℃)	Meas. Conductivity (σ) (S/m)	Meas. Permittivity (ε)	Target Conductivity (σ) (S/m)	Target Permittivity (ε)	Conductivity Tolerance (%)	Permittivity Tolerance (%)
2021.06.18	Head	750	21.7	0.91	42.06	0.89	41.90	2.25	0.38
2021.06.18	Head	835	21.7	0.90	42.55	0.90	41.50	0.00	2.53
2021.06.18	Head	1750	21.7	1.39	40.08	1.37	40.10	1.46	-0.05
2021.06.19	Head	1750	21.3	1.39	40.06	1.37	40.10	1.46	-0.10
2021.06.19	Head	1900	21.3	1.42	39.46	1.40	40.00	1.43	-1.35
2021.06.19	Head	2450	21.3	1.84	38.54	1.80	39.20	2.22	-1.68
2021.06.20	Head	5250	21.1	4.62	36.61	4.71	35.50	-1.91	3.13
2021.06.20	Head	5600	21.1	5.09	35.79	5.07	35.53	0.39	0.73
2021.06.20	Head	5750	21.1	5.27	34.70	5.22	35.40	0.96	-1.98
Note: The tolerance limit of Conductivity and Permittivity is± 5%.									

ANNEX B SYSTEM CHECK RESULT

Comparing to the original SAR value provided by SPEAG, the validation data should be within itsspecification of 10 %(for 1 g).

Head liquid 1g

Date	Liquid Type	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)
2021.06.18	Head	750	100	0.851	8.51	8.29	2.65
2021.06.18	Head	835	100	0.915	9.15	9.76	-6.25
2021.06.18	Head	1750	100	3.730	37.30	36.70	1.63
2021.06.19	Head	1750	100	3.710	37.10	36.70	1.09
2021.06.19	Head	1900	100	4.040	40.40	40.30	0.25
2021.06.19	Head	2450	100	5.240	52.40	53.00	-1.13
2021.06.20	Head	5250	100	7.330	73.30	77.80	-5.78
2021.06.20	Head	5600	100	8.530	85.30	81.20	5.05
2021.06.20	Head	5750	100	7.430	74.30	77.20	-3.76
Note: The tolerance limit of System validation ±10%.							

System Performance Check Data (750MHz)

Date: 2021.06.18

Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz;Duty Cycle: 1:1

Medium parameters used (extrapolated): f = 750 MHz; σ = 0.914 S/m; ε_r = 42.059; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.5 Liquid Temperature:21.7

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(10.31, 10.31, 10.31); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 750/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

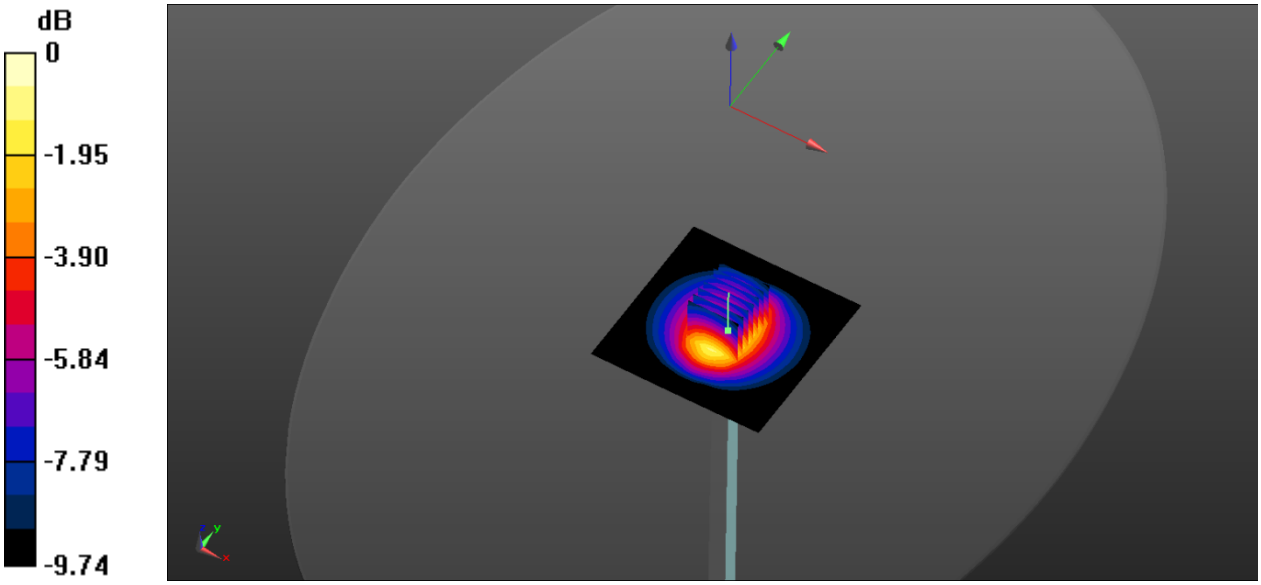
CW 750/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.05 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.24 W/kg

SAR(1 g) = 0.851 W/kg; SAR(10 g) = 0.570 W/kg

Maximum value of SAR (measured) = 0.915 W/kg



0 dB = 0.915 W/kg

System Performance Check Data (835MHz)

Date: 2021.06.18

Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;Duty Cycle: 1:1

Medium parameters used: f = 835 MHz; σ = 0.896 S/m; ε_r = 42.547; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.5 Liquid Temperature:21.7

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(9.94, 9.94, 9.94); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 835/Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.979 W/kg

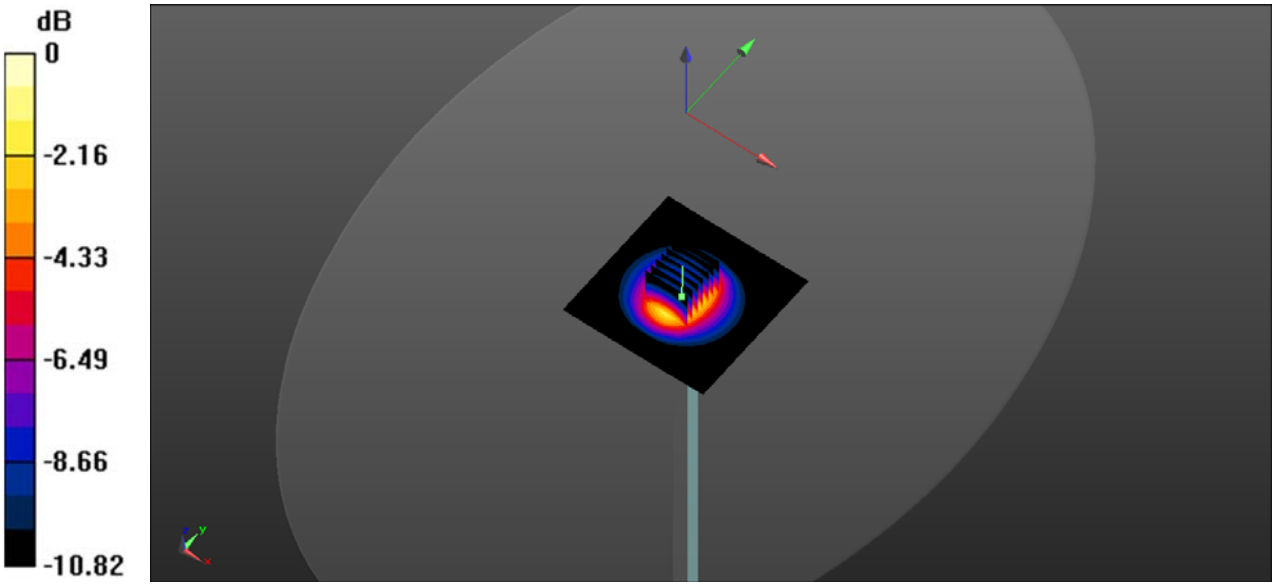
CW 835/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.99 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.915 W/kg; SAR(10 g) = 0.616 W/kg

Maximum value of SAR (measured) = 0.992 W/kg



0 dB = 0.992 W/kg

System Performance Check Data (1750MHz)

Date: 2021.06.18

Communication System Band: D1750 (1750.0 MHz); Frequency: 1750 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1750 MHz; σ = 1.387 S/m; ε_r = 40.078; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.5 Liquid Temperature:21.7

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(8.6, 8.6, 8.6); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 1750/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 4.18 W/kg

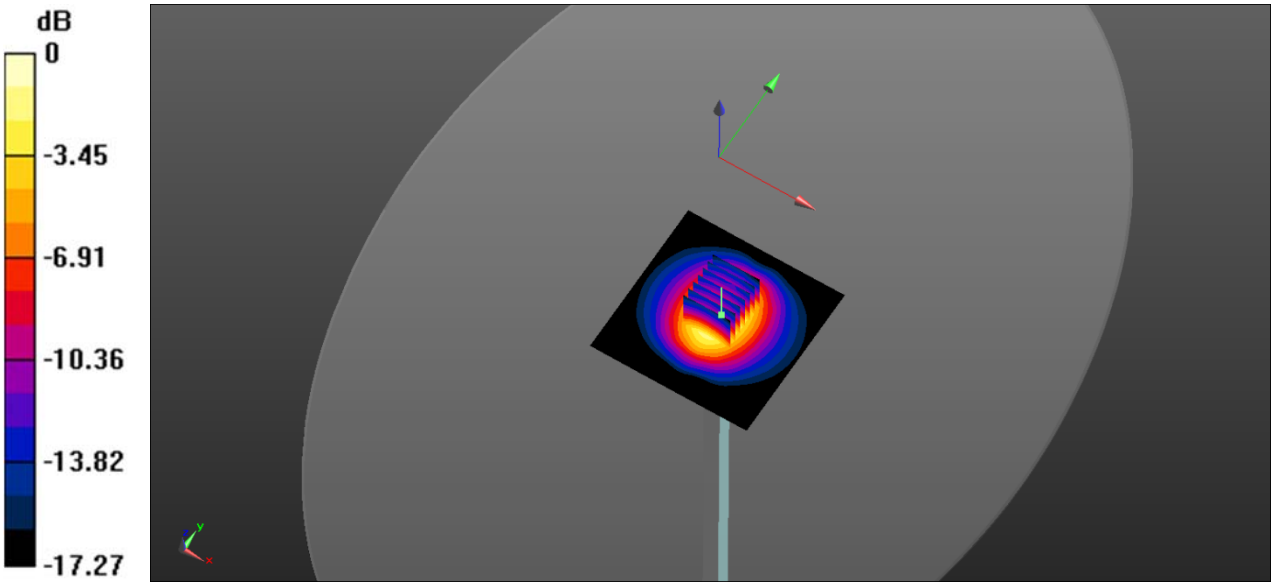
CW 1750/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.03 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 6.97 W/kg

SAR(1 g) = 3.73 W/kg; SAR(10 g) = 1.96 W/kg

Maximum value of SAR (measured) = 4.19 W/kg



0 dB = 4.19 W/kg

System Performance Check Data (1750MHz)

Date: 2021.06.19

Communication System Band: D1750 (1750.0 MHz); Frequency: 1750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1750 MHz; σ = 1.391 S/m; ε_r = 40.056; ρ = 1000 kg/m^3

Phantom section: Flat Section

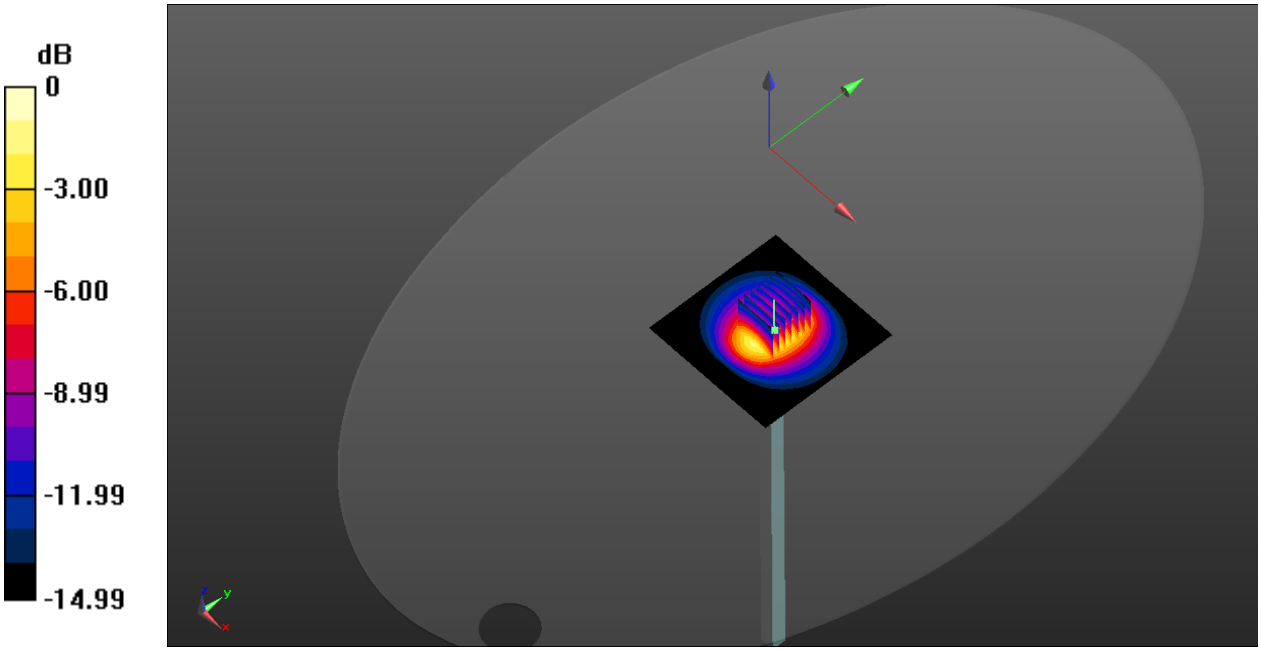
Ambient Temperature:22.1 Liquid Temperature:21.3

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(8.6, 8.6, 8.6); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 1750/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 4.19 W/kg

CW 1750/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.22 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 6.48 W/kg
SAR(1 g) = 3.71 W/kg; SAR(10 g) = 2.04 W/kg
Maximum value of SAR (measured) = 4.18 W/kg



0 dB = 4.18 W/kg

System Performance Check Data (1900MHz)

Date: 2021.06.19

Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1900 MHz; σ = 1.423 S/m; ε_r = 39.456; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.1 Liquid Temperature:21.3

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(8.3, 8.3, 8.3); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 1900/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 4.55 W/kg

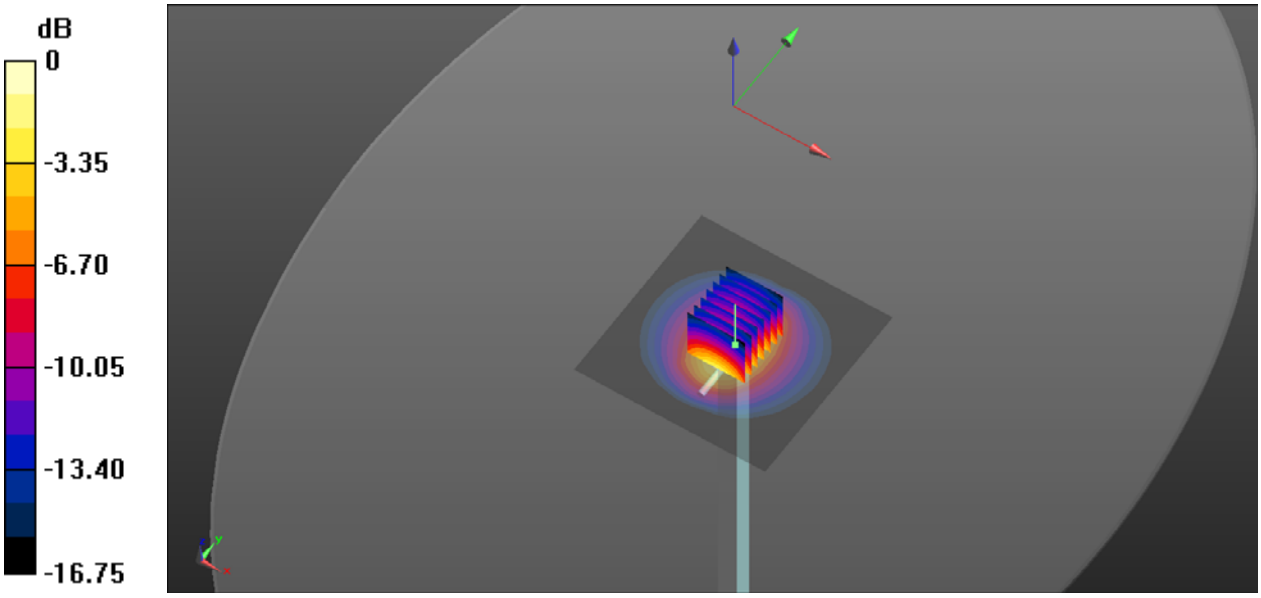
CW 1900/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.76 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 7.32 W/kg

SAR(1 g) = 4.04 W/kg; SAR(10 g) = 2.14 W/kg

Maximum value of SAR (measured) = 4.55 W/kg



0 dB = 4.55 W/kg

System Performance Check Data (2450MHz)

Date: 2021.06.19

Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 1.838 S/m; ε_r = 38.541; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.1 Liquid Temperature:21.3

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.54, 7.54, 7.54); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 2450/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 5.94 W/kg

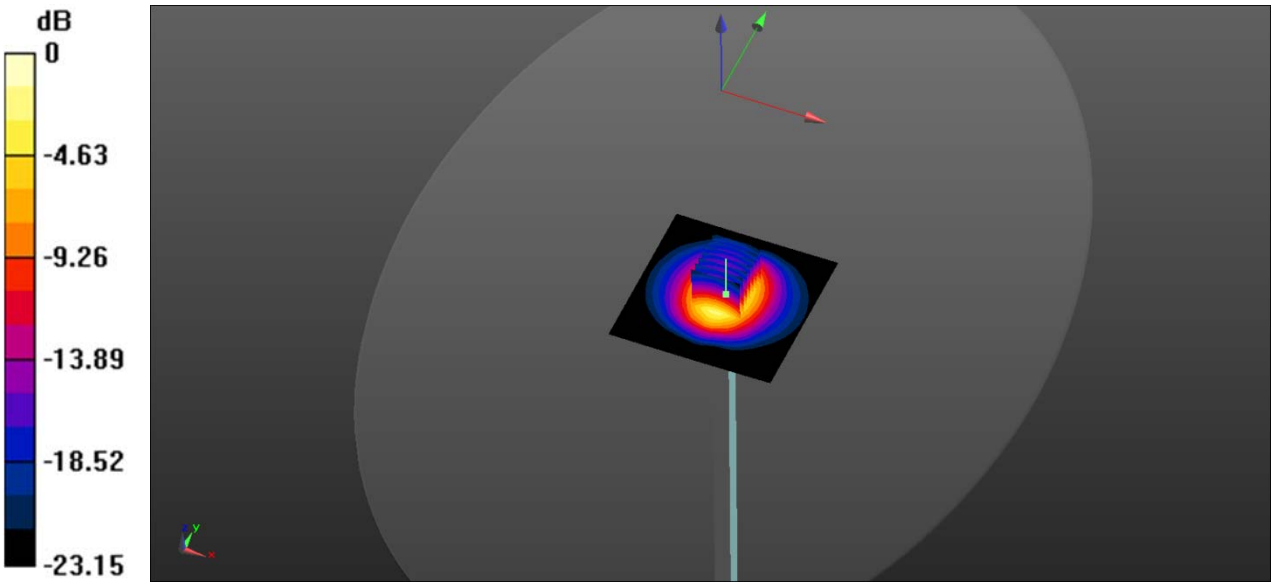
CW 2450/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.68 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 11.5 W/kg

SAR(1 g) = 5.24 W/kg; SAR(10 g) = 2.3 W/kg

Maximum value of SAR (measured) = 5.88 W/kg



0 dB = 5.88 W/kg

System Performance Check Data (5250MHz)

Date: 2021.06.20

Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5250 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5250 MHz; σ = 4.623 S/m; ε_r = 36.608; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.2 Liquid Temperature:21.1

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.46, 5.46, 5.46); Calibrated: 2020.11.30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Head 5250/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 7.95 W/kg

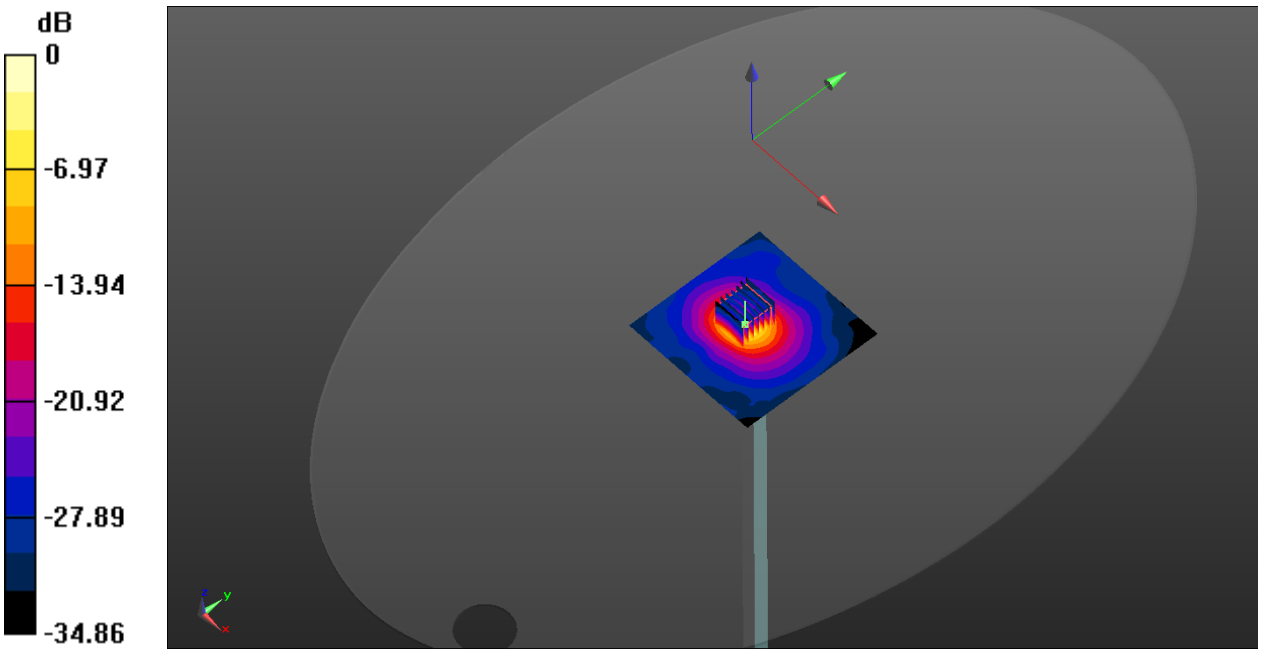
Head 5250/Zoom Scan (7x7x21)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 32.86 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 30.6 W/kg

SAR(1 g) = 7.33 W/kg; SAR(10 g) = 2.06 W/kg

Maximum value of SAR (measured) = 15.4 W/kg



0 dB = 15.4 W/kg

System Performance Check Data (5600MHz)

Date: 2021.06.20

Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5600 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5600 MHz; σ = 5.094 S/m; ε_r = 35.794; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.2 Liquid Temperature:21.1

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.89, 4.89, 4.89); Calibrated: 2020.11.30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 5600/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 8.91 W/kg

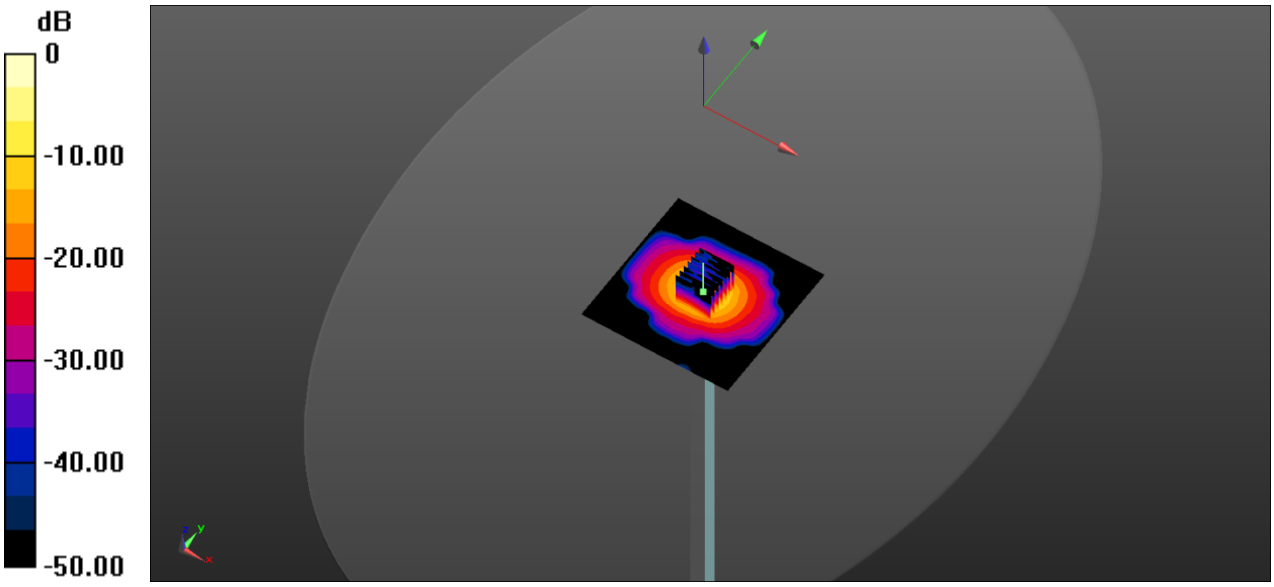
CW 5600/Zoom Scan (7x7x21)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 42.93 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 39.8 W/kg

SAR(1 g) = 8.53 W/kg; SAR(10 g) = 2.31 W/kg

Maximum value of SAR (measured) = 21.8 W/kg



0 dB = 21.8 W/kg

System Performance Check Data (5750MHz)

Date: 2021.06.20

Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5750 MHz; σ = 5.272 S/m; ε_r = 34.702; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.2 Liquid Temperature:21.1

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.96, 4.96, 4.96); Calibrated: 2020.11.30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 5750/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 7.58 W/kg

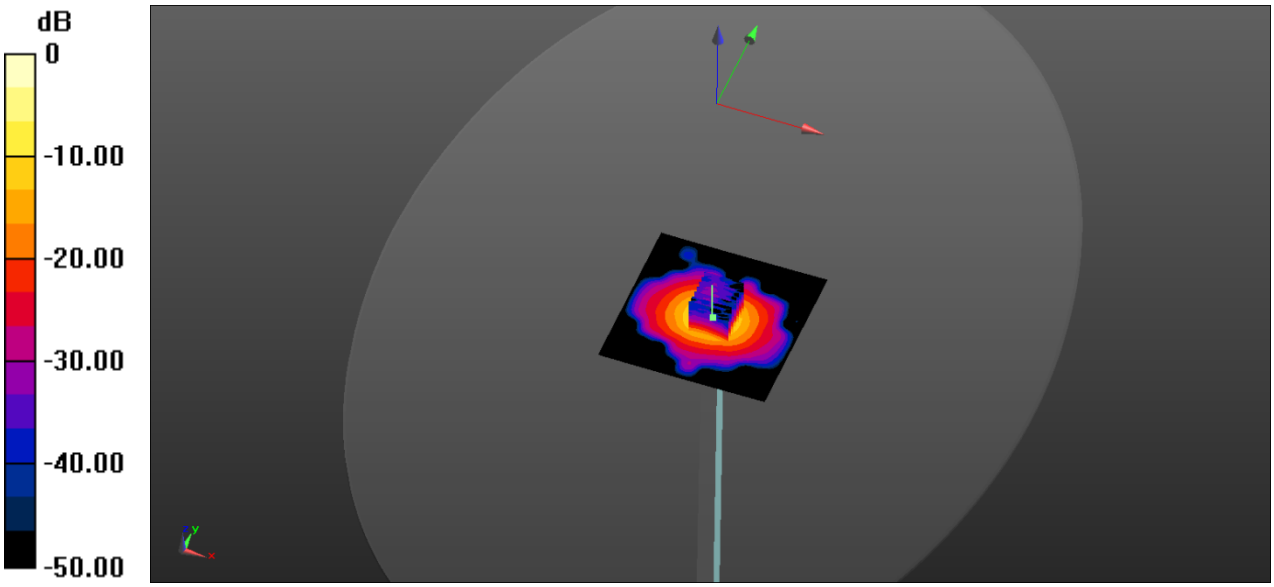
CW 5750/Zoom Scan (7x7x21)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 40.09 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 36.4 W/kg

SAR(1 g) = 7.43 W/kg; SAR(10 g) = 2.15 W/kg

Maximum value of SAR (measured) = 19.8 W/kg



0 dB = 19.8 W/kg

ANNEX C TEST DATA

1-Body Plane With Bottom Edge 0mm on Low Channel in WCDMA Band2 mode

Date: 2021.06.19

Communication System Band: Band2; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.382 S/m; ε_r = 40.515; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.1 Liquid Temperature:21.3

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(8.3, 8.3, 8.3); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch9262/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.999 W/kg

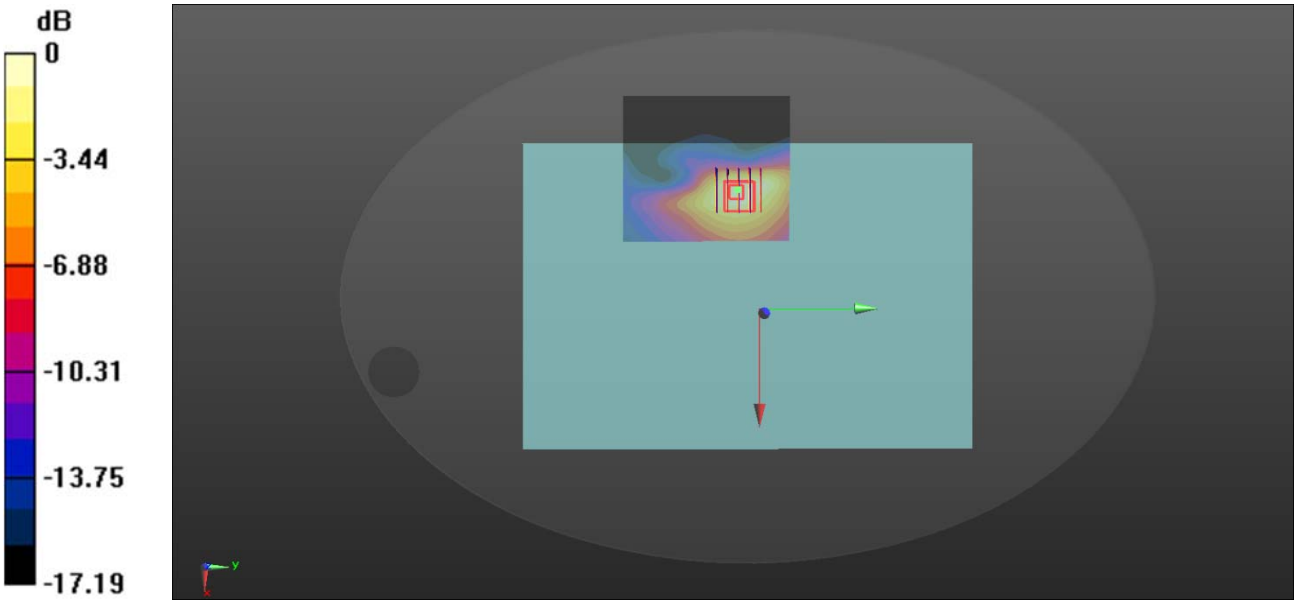
Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.506 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 0.892 W/kg; SAR(10 g) = 0.485 W/kg

Maximum value of SAR (measured) = 0.981 W/kg



0 dB = 0.981 W/kg

2-Body Plane With Bottom Edge 0mm on High Channel in WCDMA Band4 mode

Date: 2021.06.18

Communication System Band: Band4; Frequency: 1752.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1752.6 MHz; σ = 1.395 S/m; ε_r = 39.987; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.5 Liquid Temperature:21.7

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(8.6, 8.6, 8.6); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch1513/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.809 W/kg

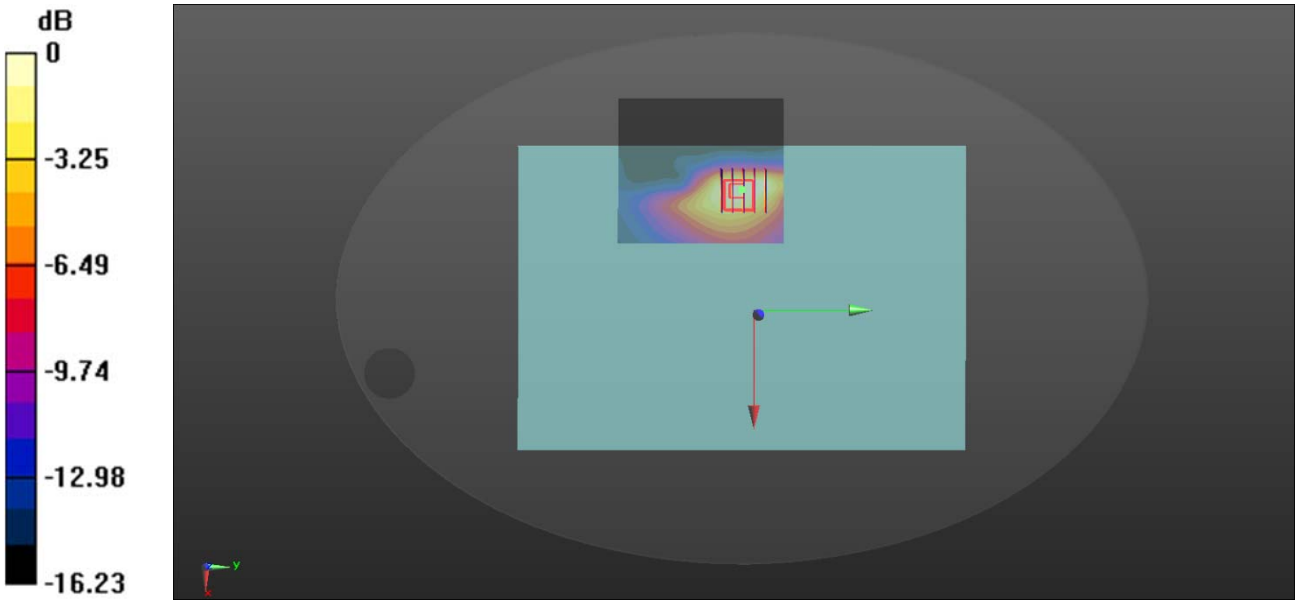
Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.403 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.16 W/kg

SAR(1 g) = 0.629 W/kg; SAR(10 g) = 0.347 W/kg

Maximum value of SAR (measured) = 0.690 W/kg



0 dB = 0.690 W/kg

3-Body Plane with Bottom Side 0mm on Low Channel in WCDMA Band5 Mode

Date: 2021.06.18

Communication System Band: band5; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.888 S/m; ε_r = 42.7; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.5 Liquid Temperature:21.7

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(9.94, 9.94, 9.94); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch4132/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.02 W/kg

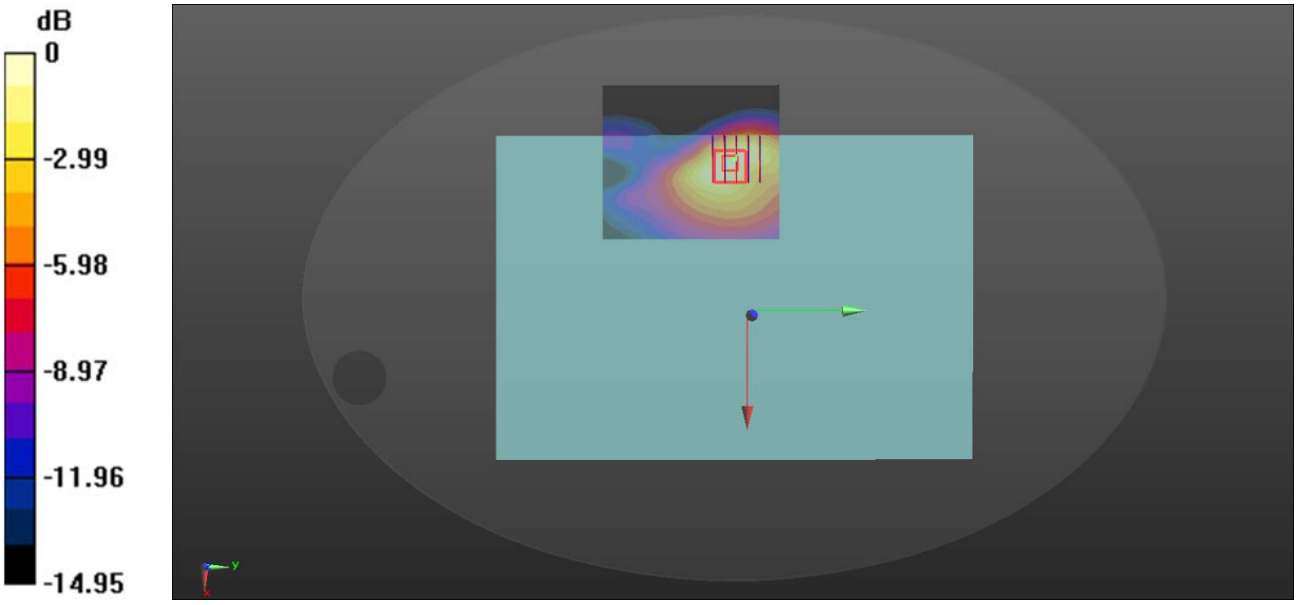
Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.819 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 1.85 W/kg

SAR(1 g) = 0.995 W/kg; SAR(10 g) = 0.562 W/kg

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



0 dB = 1.09 W/kg

4-Body Plane With Bottom Edge 0mm on Low Channel in LTE Band2 mode

Date: 2021.06.19

Communication System Band: Band2; Frequency: 1860 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1860 MHz; σ = 1.393 S/m; ε_r = 40.333; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.1 Liquid Temperature:21.3

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(9.94, 9.94, 9.94); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch18700/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.956 W/kg

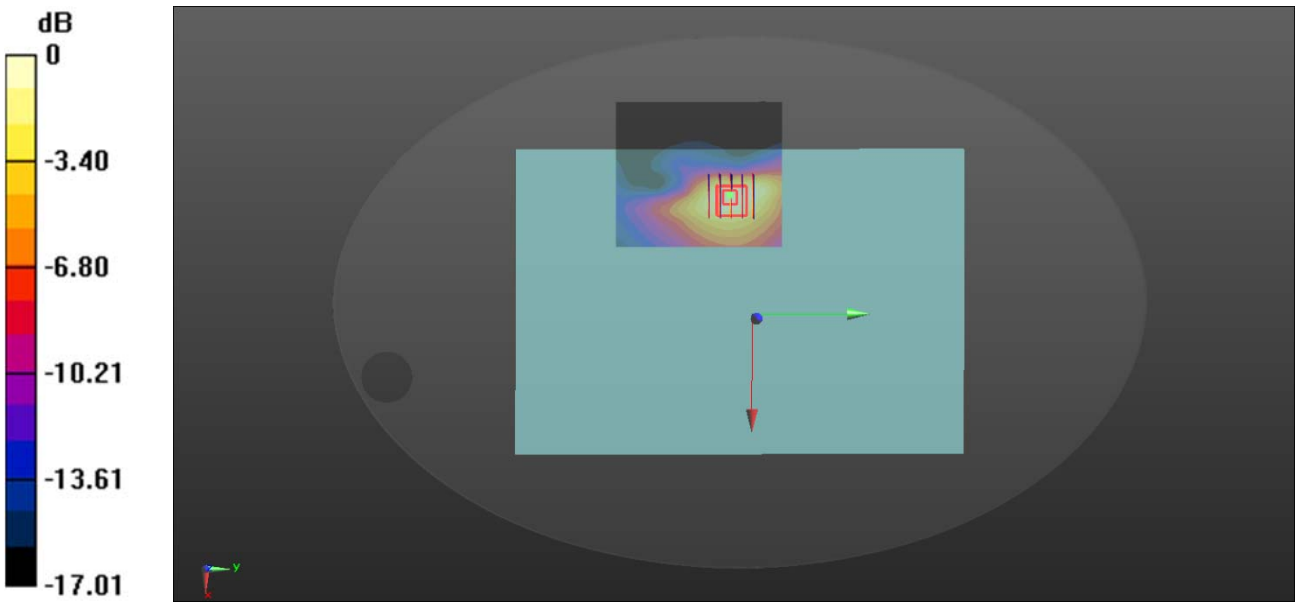
Ch18700/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.253 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 1.64 W/kg

SAR(1 g) = 0.838 W/kg; SAR(10 g) = 0.458 W/kg

Maximum value of SAR (measured) = 0.921 W/kg



0 dB = 0.921 W/kg

5-Body Plane With Bottom Edge 0mm on High Channel High in LTE Band4 mode

Date: 2021.06.18

Communication System Band: Band4; Frequency: 1745 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1745 MHz; σ = 1.367 S/m; ε_r = 40.236; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.5 Liquid Temperature:21.7

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(8.6, 8.6, 8.6); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch20300/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.773 W/kg

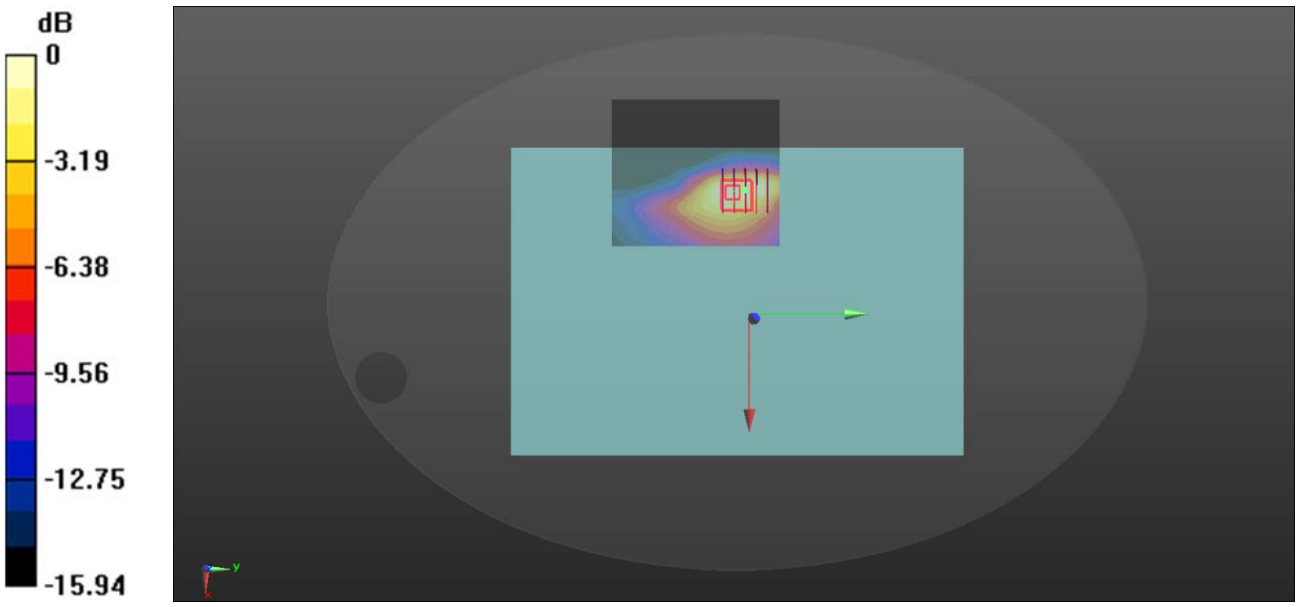
Ch20300/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.418 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.18 W/kg

SAR(1 g) = 0.629 W/kg; SAR(10 g) = 0.343 W/kg

Maximum value of SAR (measured) = 0.681 W/kg



0 dB = 0.681 W/kg

6-Body Plane with Bottom Side 0mm on Low Channel in LTE Band5 Mode

Date: 2021.06.18

Communication System Band: Band5; Frequency: 829 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 829 MHz; σ = 0.891 S/m; ε_r = 42.675; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.5 Liquid Temperature:21.7

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(9.94, 9.94, 9.94); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch20450/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.02 W/kg

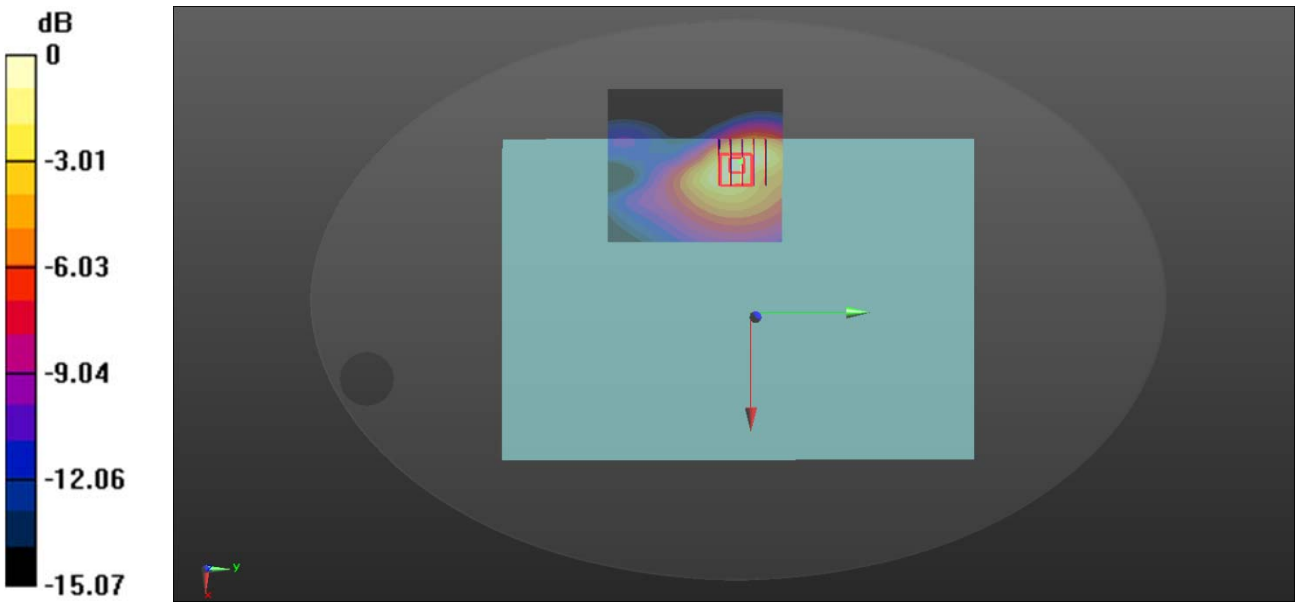
Ch20450/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.401 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.77 W/kg

SAR(1 g) = 0.925 W/kg; SAR(10 g) = 0.539 W/kg

Maximum value of SAR (measured) = 1.08 W/kg



0 dB = 1.08 W/kg

7-Body Plane with Bottom Side 0mm on High Channel in LTE Band12 Mode

Date: 2021.06.18

Communication System Band: Band12; Frequency: 711 MHz;Duty Cycle: 1:1

Medium parameters used: f = 711 MHz; σ = 0.9 S/m; ε_r = 42.483; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.5 Liquid Temperature:21.7

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(10.31, 10.31, 10.31); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch23130/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.809 W/kg

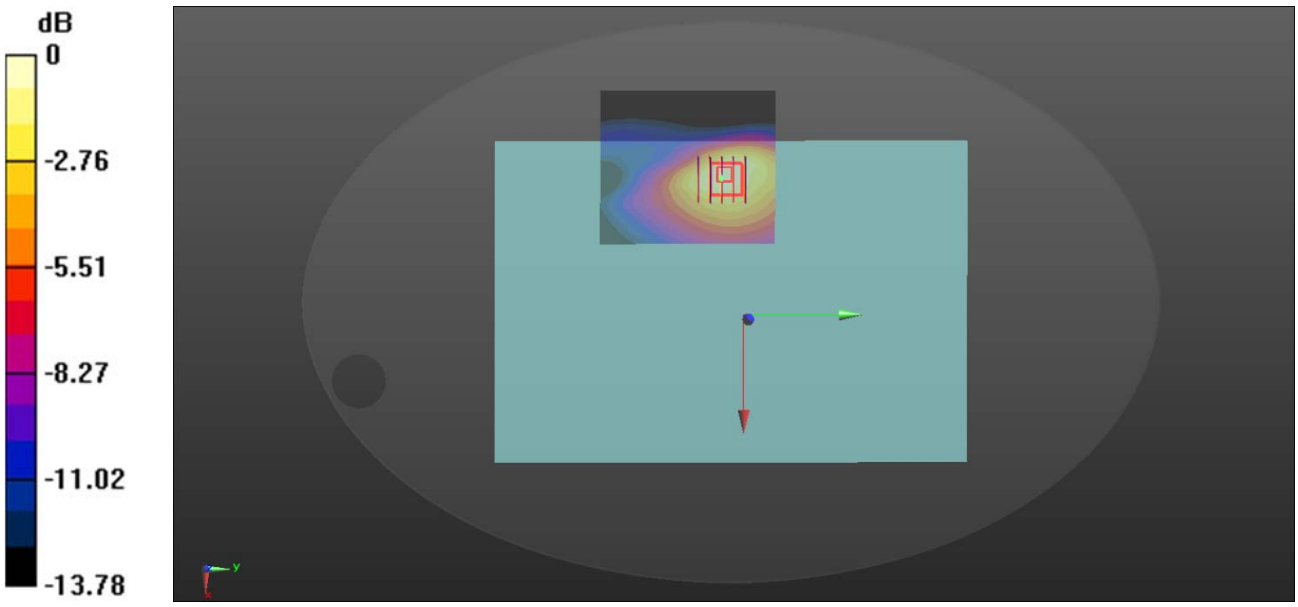
Ch23130/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.624 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.783 W/kg; SAR(10 g) = 0.464 W/kg

Maximum value of SAR (measured) = 0.828 W/kg



0 dB = 0.828 W/kg

8-Body Plane With Bottom Side 0mm on High Channel in LTE Band66 mode

Date: 2021.06.19

Communication System Band: Band66; Frequency: 1770 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1770 MHz; σ = 1.403 S/m; ε_r = 39.813; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.1 Liquid Temperature:21.3

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(8.6, 8.6, 8.6); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch132572/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.895 W/kg

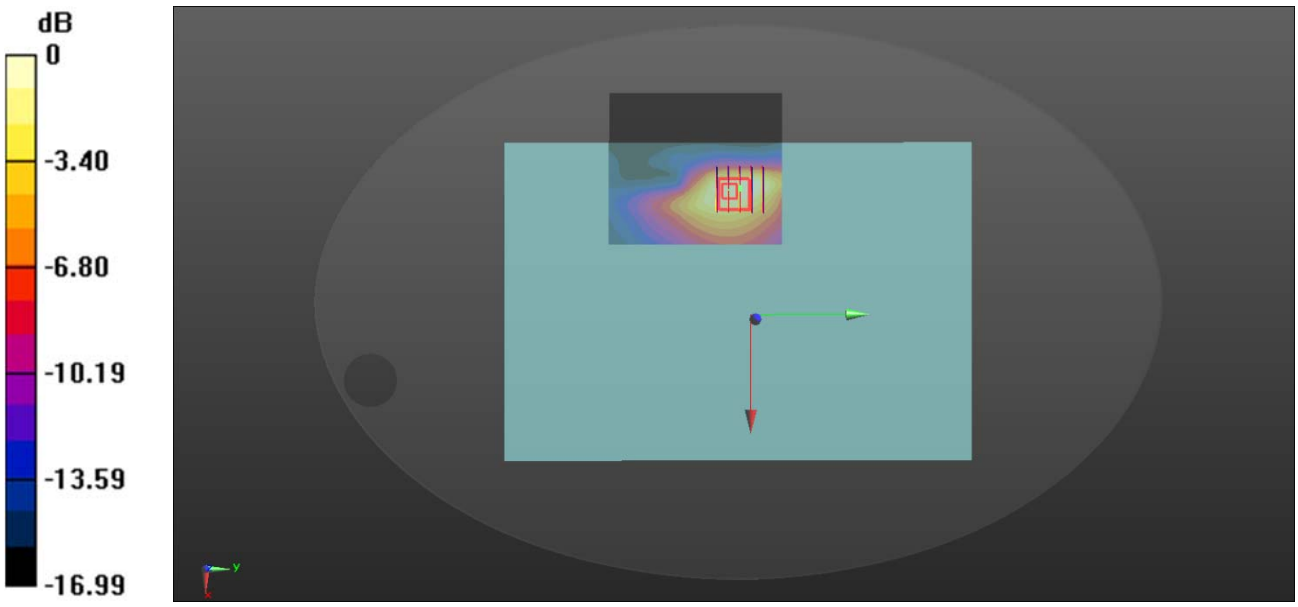
Ch132572/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.726 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.38 W/kg

SAR(1 g) = 0.742 W/kg; SAR(10 g) = 0.412 W/kg

Maximum value of SAR (measured) = 0.814 W/kg



0 dB = 0.814 W/kg

9-Body Plane with Bottom Side 0mm on 39 Channel in Bluetooth **Mode with Antenna Auxiliary**

Date: 2021.06.19

Communication System Band:Bluetooth; Frequency: 2441 MHz;Duty Cycle: 1:1.3

Medium parameters used: f = 2441 MHz; σ = 1.826 S/m; ε_r = 38.643; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.1 Liquid Temperature:21.3

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.54, 7.54, 7.54); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch39/Area Scan (91x121x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.0764 W/kg

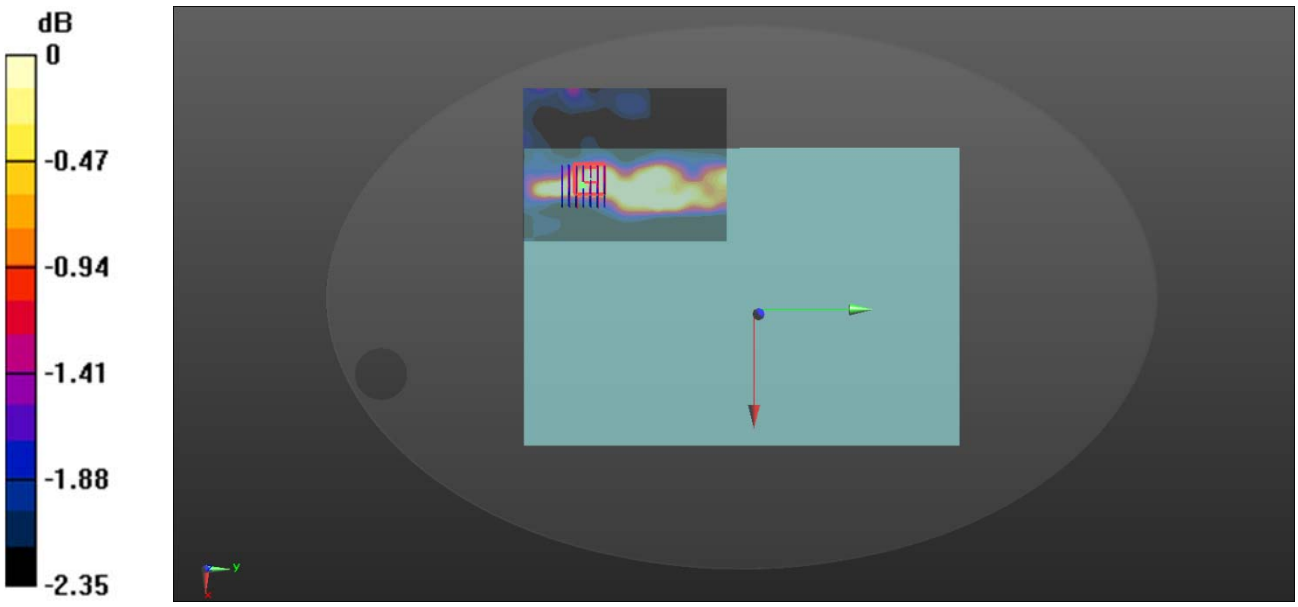
Ch39/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.040 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.188 W/kg

SAR(1 g) = 0.061 W/kg; SAR(10 g) = 0.046 W/kg

Maximum value of SAR (measured) = 0.0605 W/kg



0 dB = 0.0605 W/kg

10-Body Plane with Bottom Side 0mm on 1 Channel in 802.11n HT20 Mode With MIMO

Date: 2021.06.19

Communication System Band: WLAN(n) 20Mhz; Frequency: 2412 MHz;Duty Cycle: 1:1.02

Medium parameters used (interpolated): f = 2412 MHz; σ = 1.787 S/m; ε_r = 39.158; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.1 Liquid Temperature:21.3

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.54, 7.54, 7.54); Calibrated: 2020.11.30;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch1/Area Scan (91x121x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.581 W/kg

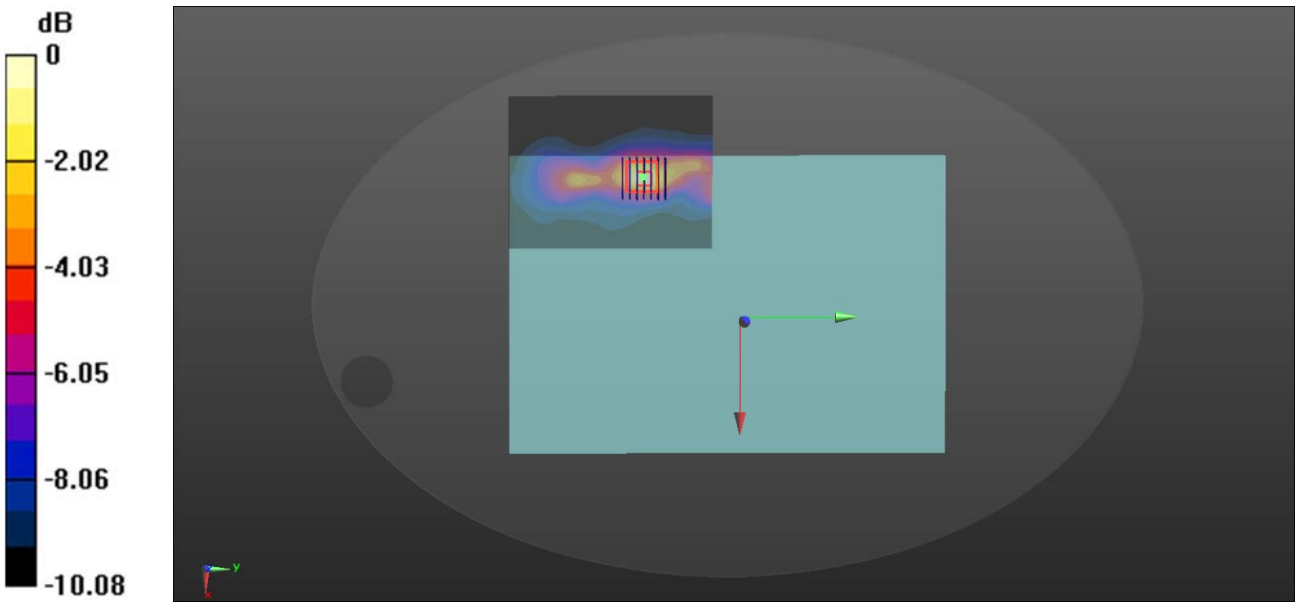
Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.466 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.490 W/kg; SAR(10 g) = 0.235 W/kg

Maximum value of SAR (measured) = 0.544 W/kg



0 dB = 0.544 W/kg

11-Body Plane with Bottom Side 0mm on 54 Channel in 802.11n40 Mode With MIMO

Date: 2021.06.20

Communication System Band: WLAN(n40); Frequency: 5270 MHz;Duty Cycle: 1:1.04

Medium parameters used: f = 5270 MHz; σ = 4.658 S/m; ε_r = 36.372; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.2 Liquid Temperature:21.1

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.46, 5.46, 5.46); Calibrated: 2020.11.30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch54/Area Scan (111x151x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

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

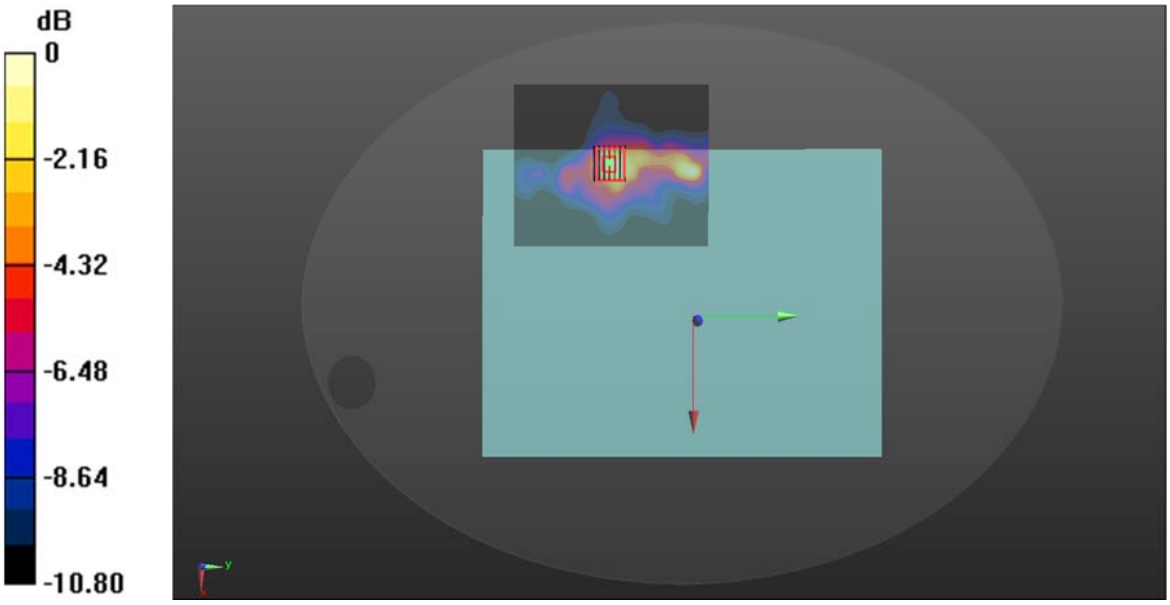
Ch54/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.710 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.71 W/kg

SAR(1 g) = 0.477 W/kg; SAR(10 g) = 0.216 W/kg

Maximum value of SAR (measured) = 0.888 W/kg



0 dB = 0.888 W/kg

12-Body Plane with Bottom Side 0mm on 122 Channel in 802.11ac80 Mode With MIMO

Date: 2021.06.20

Communication System Band: WLAN(ac80); Frequency: 5610 MHz;Duty Cycle: 1:1.082

Medium parameters used (interpolated): f = 5610 MHz; σ = 5.134 S/m; ε_r = 35.042; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.2 Liquid Temperature:21.1

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.89, 4.89, 4.89); Calibrated: 2020.11.30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch122/Area Scan (111x151x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.40 W/kg

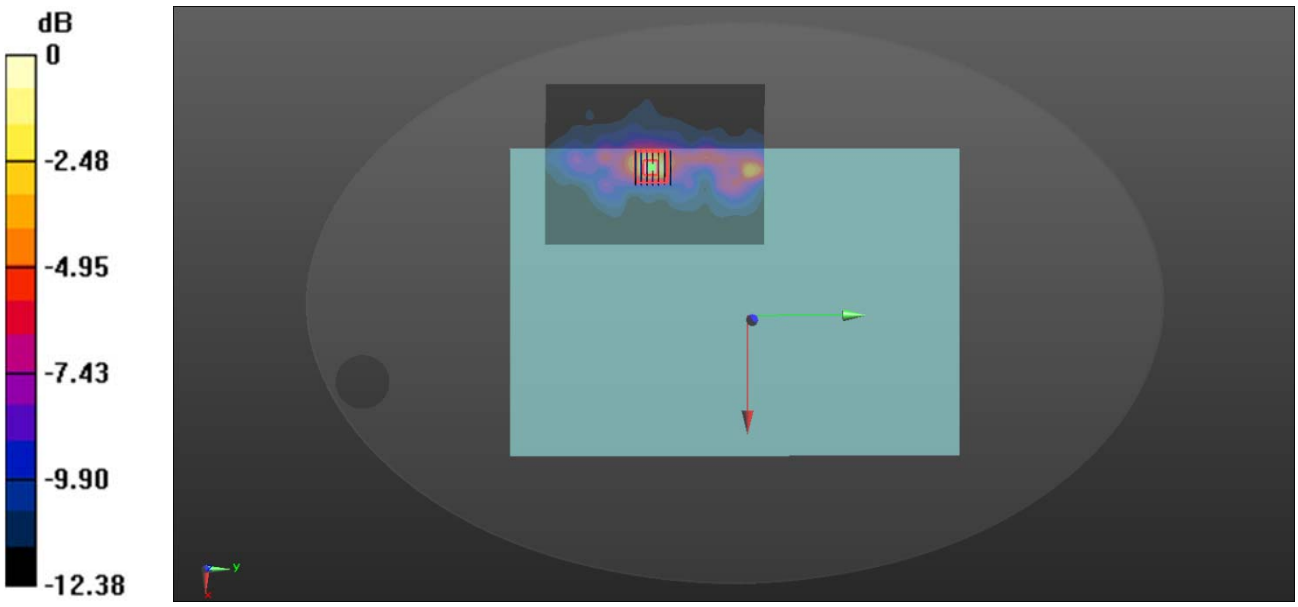
Ch122/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.613 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 2.65 W/kg

SAR(1 g) = 0.648 W/kg; SAR(10 g) = 0.247 W/kg

Maximum value of SAR (measured) = 1.28 W/kg



0 dB = 1.28 W/kg

13-Body Plane with Bottom Side 0mm on 155 Channel in 802.1ac80 Mode With Antenna Main

Date: 2021.06.20

Communication System Band: WLAN(ac80); Frequency: 5775 MHz;Duty Cycle: 1:1.082

Medium parameters used (interpolated): f = 5775 MHz; σ = 5.344 S/m; ε_r = 34.406; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.2 Liquid Temperature:21.1

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.96, 4.96, 4.96); Calibrated: 2020.11.30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2020.11.06
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch155/Area Scan (111x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

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

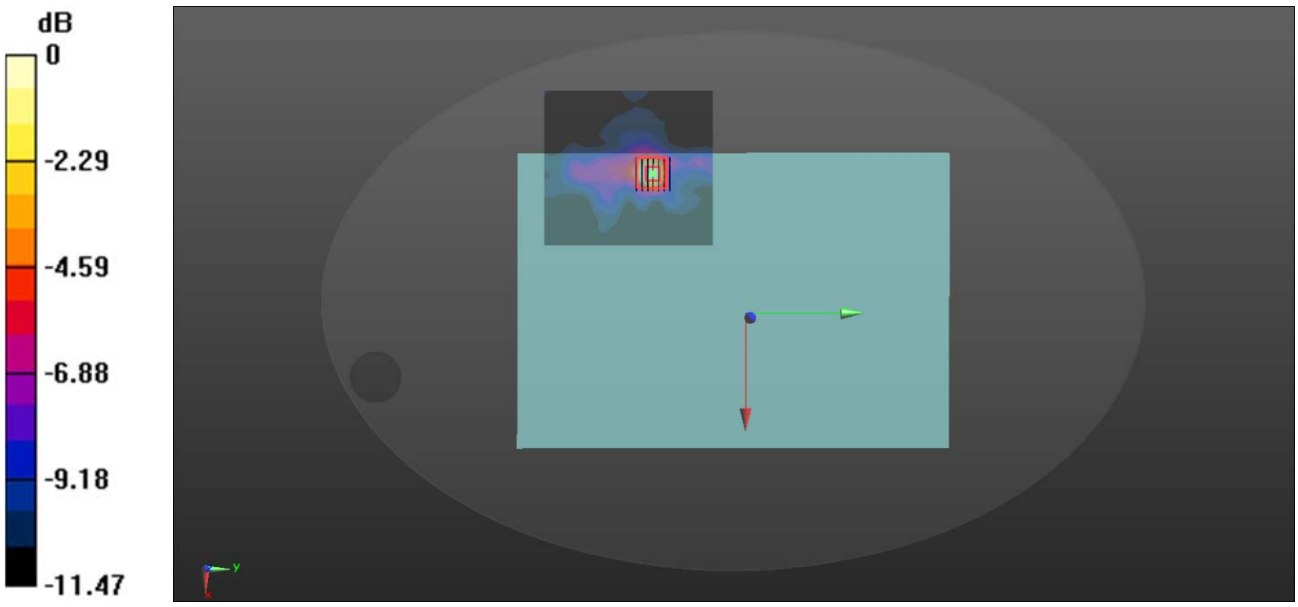
Ch155/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.689 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 2.47 W/kg

SAR(1 g) = 0.593 W/kg; SAR(10 g) = 0.243 W/kg

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



0 dB = 1.15 W/kg

ANNEX D EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2150149-AW.pdf”.

ANNEX E SAR TEST SETUP PHOTOS

Please refer the document “BL-SZ2150149-AS.pdf”.

ANNEX F CALIBRATION REPORT

Please refer the document “CALIBRATION REPORT.pdf”.

--END OF REPORT--