FCC SAR TEST REPORT

Client Name	:	ITALCOM GROUP
Address	:	1728 Coral Way, Coral Gables, Miami, Florida, United States 33145 (Zip code : 518048)
Product Name	:	4G Mobile phone
Model	:	Nickel
Date	:	Nov. 08, 2019

Shenzhen Anbotek Compliance Laboratory Limited

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www.anbotek.com

TEST REPORT

Applicant	:	ITALCOM GROUP
Manufacturer	:	Tench(HK) Communication Technology CO.,LIMITED
Product Name	:	4G Mobile phone
Model No.	:	Nickel
Trade Mark	:	NYX Mobile
Rating(s)	:	DC 3.8V, 2000mAh Battery inside

Test Standard(s) : **IEEE 1528-2013; IEC 62209-2:2010; ANSI/IEEE C95.1:2005; FCC 47 CFR Part 2 (2.1093:2013);**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the IEEE 1528-2013, IEC 62209-2:2010, ANSI/IEEE C95.1:2005 and FCC 47 CFR Part 2 (2.1093:2013) requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt	Oct. 14, 2019
Date of Test	Oct. 14~Nov. 07, 2019
Prepared By	Bobby. Wang (Engineer / Bobby Wang)
Reviewer	Snowy Meng (Supervisor / Snowy Meng)
Approved & Authorized Signer	sally zhang (Manager / Sally Zhang)

Anbotek (SZ) Compliance Laboratory Limited Anbotek Product Safety * Approved *

Version

Version No.	Date	Description
01	Nov. 08, 2019	Original

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing are as follows.

Frequency Band	Highest Reported 1g-SAR(W/Kg)			SAR Test Limit (W/Kg)
	Head	Body	Hot Spot	
GSM 850	0.345	0.687	0.687	1.6
PCS 1900	0.295	0.713	0.713	
WCDMA Band 2	0.305	0.738	0.738	
WCDMA Band 5	0.291	0.514	0.514	
LTE Band 4	0.517	0.612	0.612	
WIFI 2.4G	0.310	0.434	0.434	
Simultaneous SAR	0.827	1.172	/	
Test Result		PASS		

<Highest SAR Summary>

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-2005, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and IEC 62209-2:2010

2. General Information

2. 1. Client Information

Applicant	:	ITALCOM GROUP
Address	:	1728 Coral Way, Coral Gables, Miami, Florida, United States 33145 (Zip code : 518048)
Manufacturer	:	Tench(HK) Communication Technology CO.,LIMITED
Address	:	Room 901-902, building 2, cofco business park, liuxian second road, baoan district, shenzhen
Factory	:	Tench(HK) Communication Technology CO.,LIMITED
Address	:	Room 901-902, building 2, cofco business park, liuxian second road, baoan district, shenzhen

2. 2. Testing Laboratory Information

Test Site:	:	Shenzhen Anbotek Compliance Laboratory Limited
Address:	:	1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. 3. Description of Equipment Under Test (EUT)

Product Name	:	4G Mobile phone	
Model No.	:	Nickel	
Trade Mark	:	NYX Mobile	
Test Power Supply	:	DC 3.8V Battery inside	
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Normal Sample)	
Product Description	:	Operation Frequency:	BDR+EDR: 2402MHz~2480MHz BLE: 2402MHz~2480MHz 2.4G WIFI:2412~2462MHz GSM/GPRS 850 TX:824.2~848.8 MHz; RX:869.2~893.8 MHz PCS/GPRS 1900 TX:1850.2~1909.8 MHz; RX:1930.2~1989.8 MHz

			UMTS-FDD Band 5 TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz UMTS-FDD Band 2 TX:1852.4~1907.6 MHz; RX: 1932.4~1987.6 MHz LTE-FDD Band 4 TX:1710.0 ~ 1754.9 MHz; RX: 2110.0 ~ 2154.9 MHz
		Transfer Rate:	BDR+EDR: 1/2/3 Mbits/s BLE: 1 Mbits/s 802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 802.11n: up to 150Mbps
		Number of Channel:	BDR+EDR: 79 Channels BLE: 40 Channels 802.11b/ g/ n(HT20): 11 Channels
		GPRS Class:	8/10/12
		Modulation Type:	GSM/GPRS: GMSK WCDMA: BPSK, 16QAM LTE: QPSK, 16QAM BDR+EDR: GFSK, π/4-DQPSK, 8-DPSK 2.4G WiFi: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
		Antenna Type:	GSM/GPRS: FPCB Antenna WCDMA: FPCB Antenna LTE: FPCB Antenna BT: FPCB Antenna 2.4G WiFi: FPCB Antenna
		Antenna Gain(Peak):	GSM 850: 0.8 dBi PCS 1900: 1.3 dBi UMTS-FDD Band 2: 1.3 dBi UMTS-FDD Band 5: 0.8 dBi LTE Band 4: 1.1 dBi BT: 2.1 dBi 2.4G WiFi: 2.2 dBi
		Hardware version	NYX_NICKEL_001
		Software version	NICKEL_AMXNYX_V001R

Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2. 4. Device Category and SAR Limits

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.

2. 5. Applied Standard

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- IEEE 1528-2013
- FCC 47 CFR Part 2 (2.1093:2013)
- ANSI/IEEE C95.1:2005
- KDB 248227 D01
- KDB 447498 D01
- KDB 648474 D04
- KDB 865664 D01
- KDB 941225 D01
- KDB 941225 D05
- KDB 941225 D06

2. 6. Environment of Test Site

Items	Required	Actual
Temperature (℃)	18-25	22~23
Humidity (%RH)	30-70	55~65

2. 7. Test Configuration

The device was controlled by using a base station emulator. Communication between the device and the emulator was established by air link. The distance between the EUT and the antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during all tests.

3. Specific Absorption Rate (SAR)

3. 1. Introduction

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.

3. 2. SAR Definition

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:

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

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where: C is the specific head capacity, δT is the temperature rise and δtisthe exposure duration, or related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

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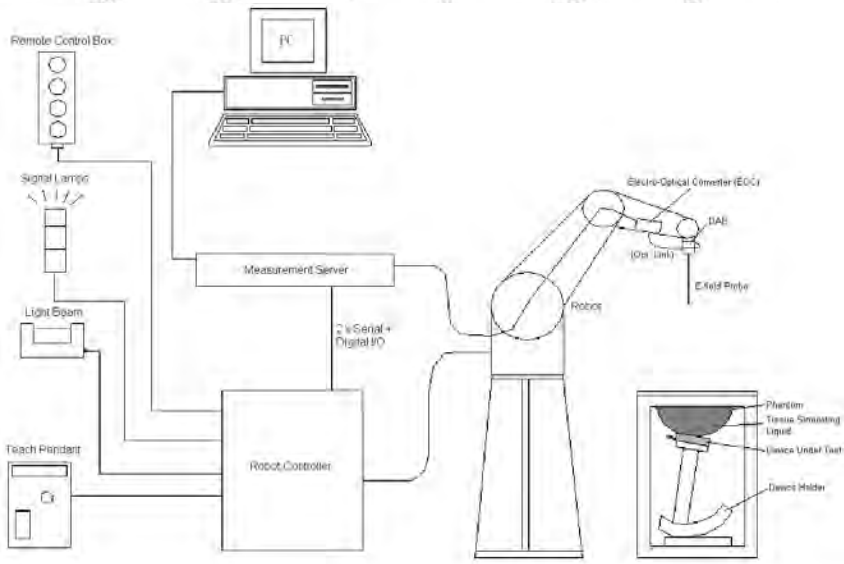
4. SAR Measurement System



DASY System Configurations

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- ➢ A standard high precision 6-axis robot with controller, a teach pendant and software
- ➢ A data acquisition electronic (DAE) attached to the robot arm extension
- ➢ A dosimetric probe equipped with an optical surface detector system
- ➢ The electro-optical converter (EOC) performs the conversion between optical and electrical signals
- ➢ A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- ➢ A probe alignment unit which improves the accuracy of the probe positioning
- ➢ A computer operating Windows XP
- ➢ DASY software
- ➢ Remove control with teach pendant and additional circuitry for robot safety such as warming lamps, etc.
- ➢ The SAM twin phantom
- ➢ A device holder
- ➢ Tissue simulating liquid
- ➢ Dipole for evaluating the proper functioning of the system

components are described in details in the following sub-sections.

4. 1. E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

➢ E-Field Probe Specification

<EX3DV4 Probe>

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	 **Photo of EX3DV4**
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

➢ E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy shall be evaluated and within ± 0.25dB. The sensitivity parameters (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix C of this report.

4. 2. Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and 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.

The input impedance of the DAE is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.

Photo of DAE

4. 3. Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX60XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

Photo of DASY5

4. 4. Measurement Server

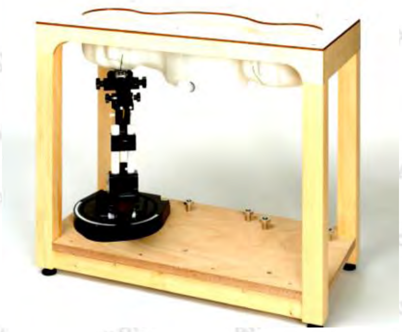
The measurement server is based on a PC/104 CPU board with CPU (DASY5: 400 MHz, Intel Celeron), chip disk (DASY5: 128 MB), RAM (DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.

Photo of Server for DASY5

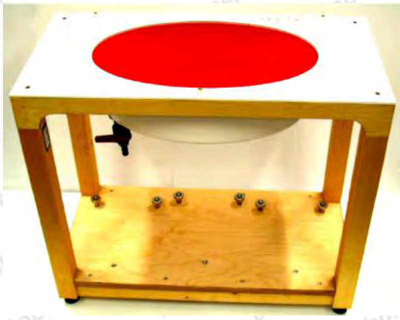
4. 5. Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	 **Photo of SAM Phantom**
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	

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. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI4 Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)	 **Photo of ELI4 Phantom**
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis:400 mm	

The ELI4 phantom is intended 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 standard and all known tissue simulating liquids.

4.6. Device Holder

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

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

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

Device Holder

4. 7. Data Storage and Evaluation

- Data Storage

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [A/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lose media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

- Data Evaluation

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

Probe parameters：	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	dcp_i
Device parameters：	- Frequency	f
	- Crest factor	cf
Media parameters：	- Conductivity	σ
	- Density	ρ

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

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

with V_i= compensated signal of channel i, (i = x, y, z)

U_i = input signal of channel i, (i = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point (DASY parameter)

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

E-field Probes: $E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$

H-field Probes: $H_i = \sqrt{V_i} \cdot \frac{a_{i0}+a_{i1}f+a_{i2}f^2}{f}$

with V_i = compensated signal of channel i,(i = x, y, z)

$Norm_i$= sensor sensitivity of channel i, (i = x, y, z), $\mu V/(V/m)^2$ for E-field Probes

ConvF= sensitivity enhancement in solution

a_{ij}= sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i= electric field strength of channel i in V/m

H_i= magnetic field strength of channel i in A/m

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

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

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

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

with SAR = local specific absorption rate in mW/g

E_{tot}= total field strength in V/m

σ = conductivity in [mho/m] or [Siemens/m]

ρ = equivalent tissue density in g/cm^3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

5. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d154	Jun. 16,2018	Jun. 15,2021
SPEAG	1750MHz System Validation Kit	D1750V2	1021	Jul. 03, 2019	Jul. 02, 2022
SPEAG	1900MHz System Validation Kit	D1900V2	5d175	Jun. 15,2019	Jun. 14,2022
SPEAG	2450MHz System Validation Kit	D2450V2	910	Jun. 15,2018	Jun. 14,2021
SPEAG	Data Acquisition Electronics	DAE4	387	Sept. 03, 2019	Sept. 02, 2020
SPEAG	Dosimetric E-Field Probe	EX3DV4	7396	May 06,2019	May 05,2020
R&S	UNIVERSAL RADIO COMMUNICATION TESTER	CMU 200	117888	Nov. 05, 2018	Nov. 04, 2019
R&S	WIDEBAND RADIO COMMUNICATION TESTER	CMW500	103974	Nov. 05, 2018	Nov. 04, 2019
Agilent	ENA Series Network Analyzer	E5071C	MY46317418	May 22, 2019	May 21, 2020
SPEAG	DAK	DAK-3.5	1226	NCR	NCR
SPEAG	SAM Twin Phantom	QD000P40CD	1802	NCR	NCR
AR	Amplifier	ZHL-42W	QA1118004	NCR	NCR
Agilent	Power Meter	N1914A	MY50001102	Dec. 06, 2018	Nov. 06, 2019
Agilent	Power Sensor	N8481H	MY51240001	Dec. 06, 2018	Nov. 06, 2019
R&S	Spectrum Analyzer	N9020A	MY51170037	May.22, 2019	May. 21, 2020
Agilent	Signal Generation	N5182A	MY48180656	May.22, 2019	May. 21, 2020
Worken	Directional Coupler	0110A05601O-10	COM5BNW1A2	May.22, 2019	May. 21, 2020

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. The dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
4. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Agilent.
5. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1W input power according to the ratio of 1W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the power meter is critical and we do have calibration for it

6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. 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, which is shown in Fig. 6.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown as followed:

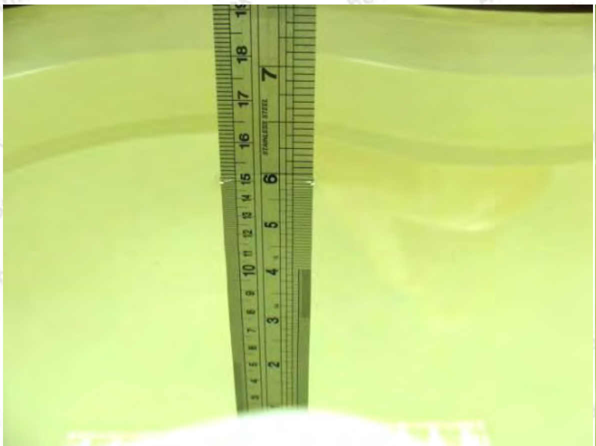


Photo of 900HSL Liquid Height for Head SAR

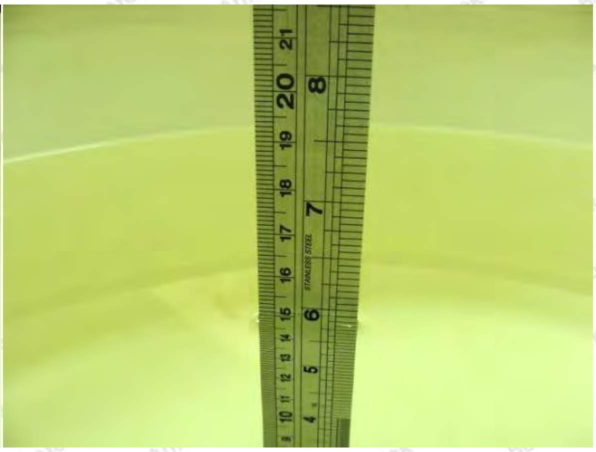


Photo of 900MSL Liquid Height for Body SAR

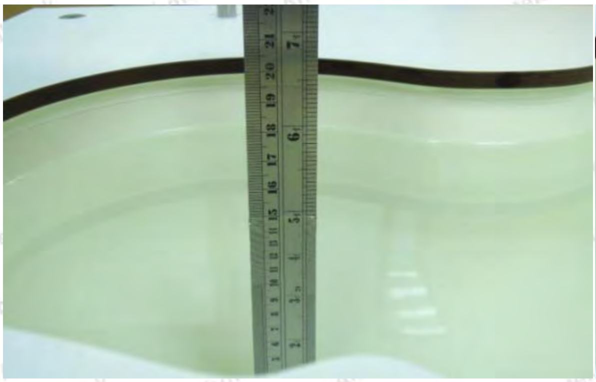


Photo of 1900HSL Liquid Height for Head SAR

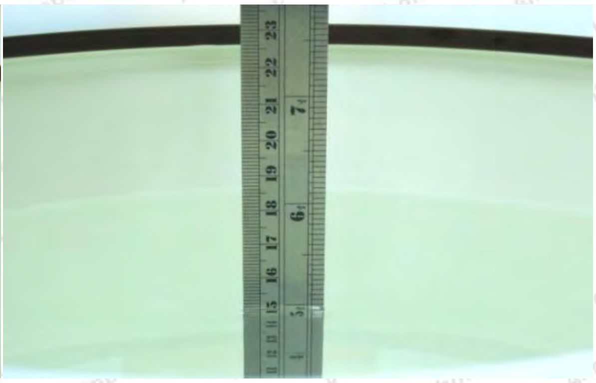


Photo of 1900MSL Liquid Height for Body SAR

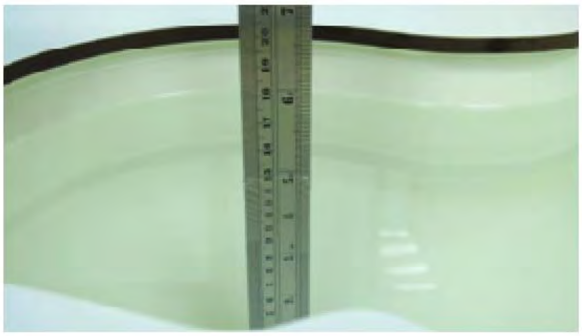


Photo of 2450HSL Liquid Height for Head SAR

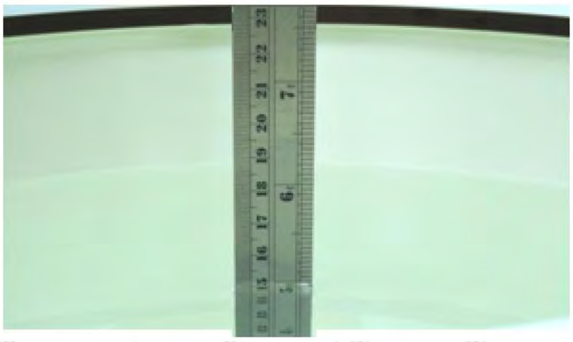


Photo of 2450MSL Liquid Height for Body SAR

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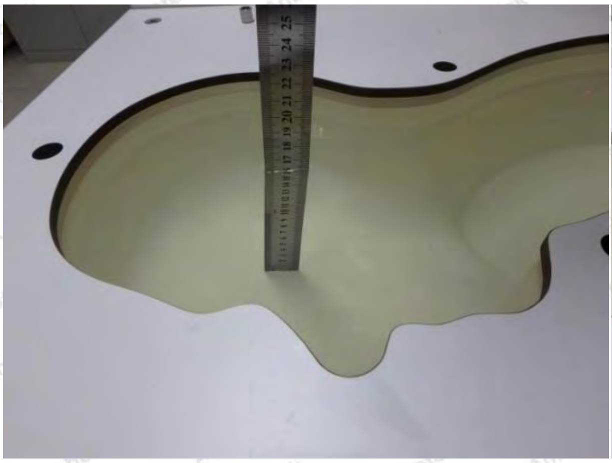


Photo of 2600HSL Liquid Height for Head SAR

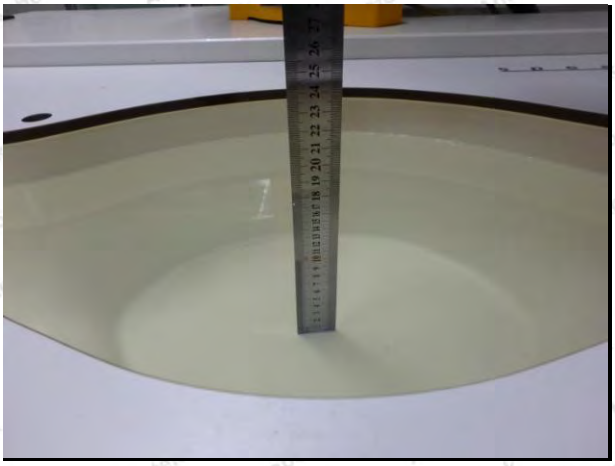


Photo of 2600MSL Liquid Height for Body SAR

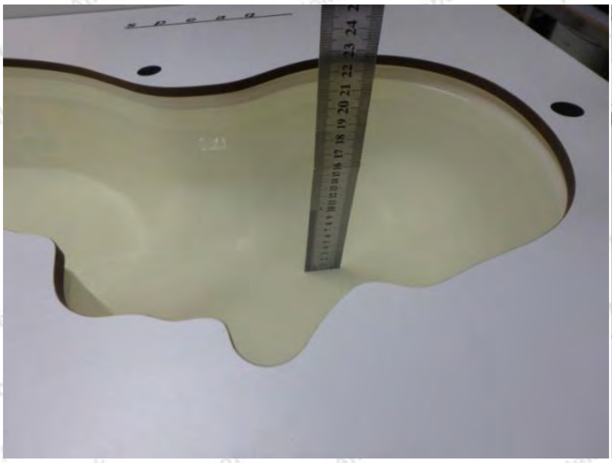


Photo of 1750HSL Liquid Height for Head SAR

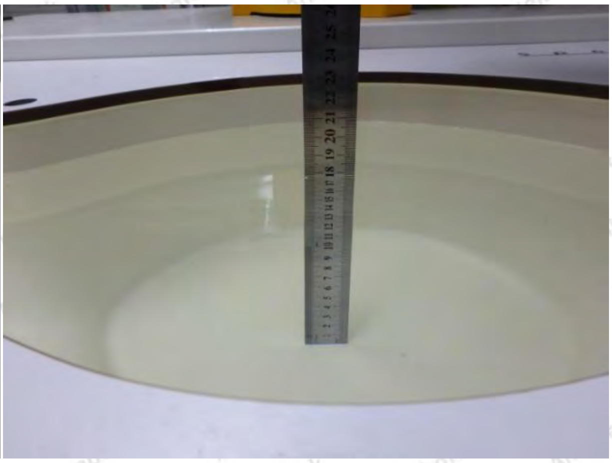


Photo of 1750MSL Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquid.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1750	55.2	0	0	0.3	0	44.5	1.37	40.1
1800,1900,2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
For Body								
900	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1750	70.2	0	0	0.4	0	29.4	1.49	53.4

1800,1900,2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7

The following table shows the measuring results for simulating liquid.

Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue				Liquid Temp.	Test Data
		ε_r	σ	ε_r	Dev. (%)	σ	Dev. (%)		
900HSL	850	41.50	0.97	41.68	0.43	0.96	-1.03	21.3	10/14/2019
900MSL	850	55.00	1.05	55.26	0.47	1.06	0.95	22.1	10/16/2019
1900HSL	1900	40.00	1.40	40.29	0.72	1.48	5.71	21.7	10/18/2019
1900MSL	1900	53.30	1.52	53.29	-0.02	1.52	0.00	22.6	10/21/2019
1750HSL	1750	40.10	1.37	40.16	0.15	1.36	-0.73	22.0	10/23/2019
1750MSL	1750	53.40	1.49	53.29	-0.21	1.50	0.67	22.2	10/25/2019
2450HSL	2450	39.20	1.80	38.88	-0.82	1.76	-2.22	21.8	10/28/2019
2450MSL	2450	52.70	1.95	52.31	-0.74	1.92	-1.54	22.4	10/30/2019

7. System Verification Procedures

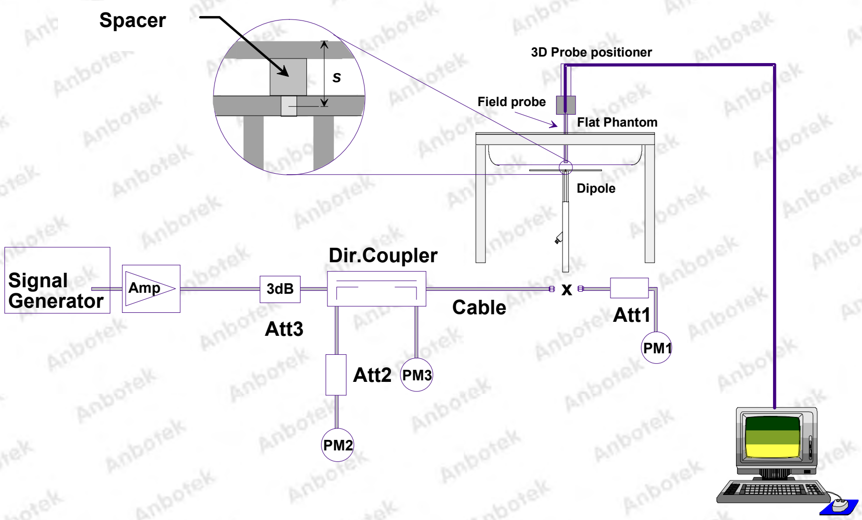
Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

➢ Purpose of System Performance 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.

➢ System 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:



System Setup for System Evaluation

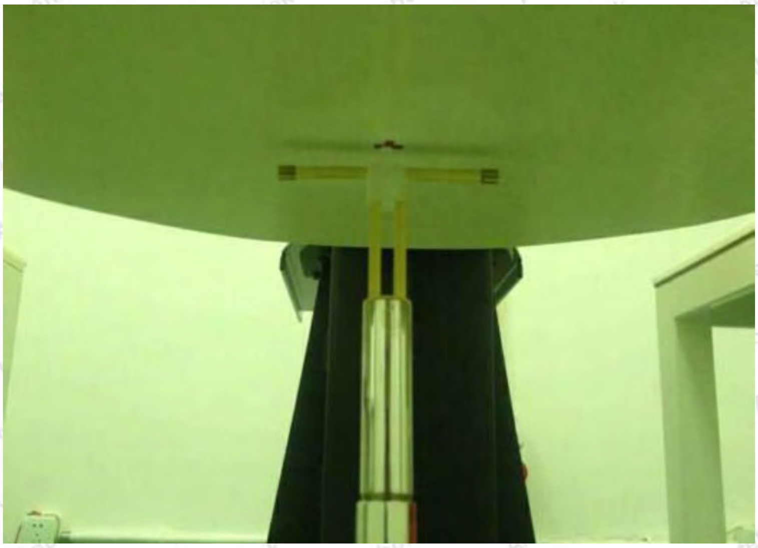


Photo of Dipole Setup

➢ **Validation Results**

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10%. The table below shows the target SAR and measured SAR after normalized to 1W input power. It indicates that the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Frequency (MHz)	Liquid Type	Power fed onto reference dipole (mW)	Targeted SAR (W/kg)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Deviation (%)	Date
850	Head	250	9.50	2.38	9.52	0.21	10/14/2019
850	Body	250	9.52	2.47	9.88	3.78	10/16/2019
1900	Head	250	39.70	9.94	39.76	0.15	10/18/2019
1900	Body	250	39.60	9.26	37.04	-6.46	10/21/2019
1750	Head	250	36.60	9.24	36.96	0.98	10/23/2019
1750	Body	250	36.70	9.09	36.36	-0.93	10/25/2019
2450	Head	250	52.00	12.97	51.88	-0.23	10/28/2019
2450	Body	250	51.10	12.15	48.6	-4.89	10/30/2019

Target and Measurement SAR after Normalized

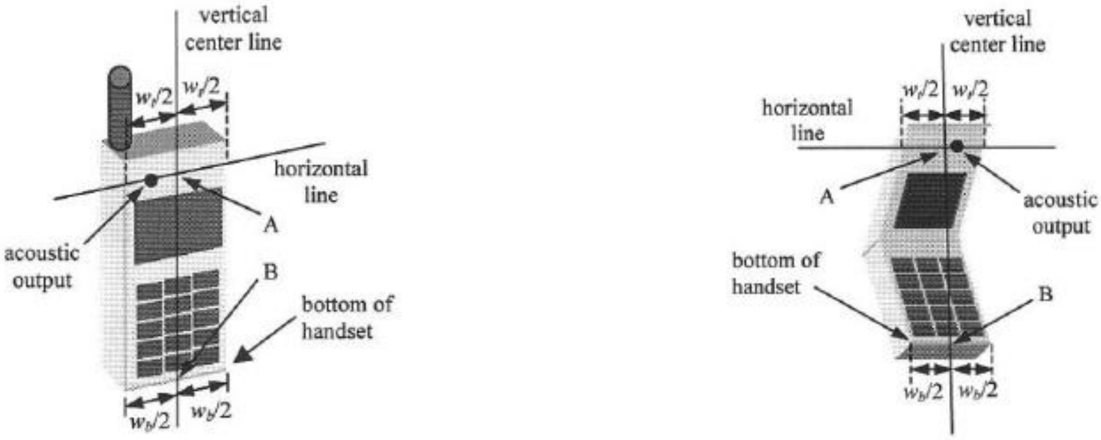
8. EUT Testing Position

8.1. Define two imaginary lines on the handset

(a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the bottom of the handset.

(b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.

(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

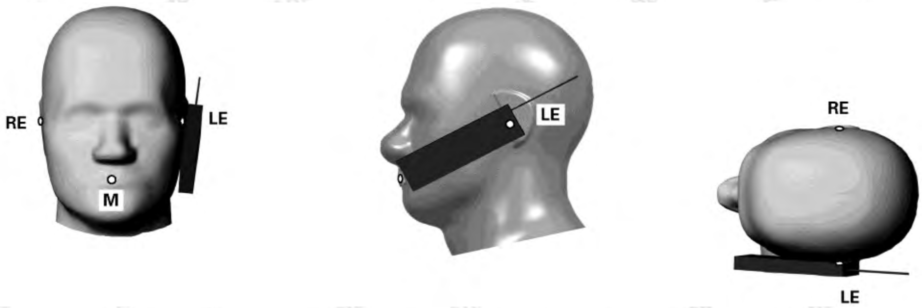


Handset Vertical and Horizontal Reference Lines

8. 2. Position for Cheek/Touch

(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.

(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost.

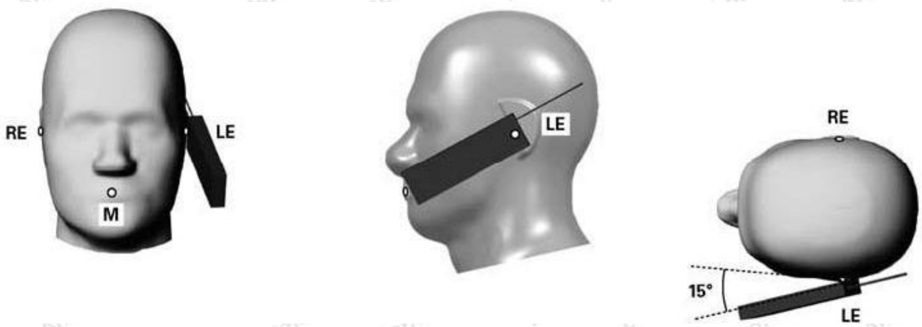


Cheek Position

8. 3. Position for Ear / 15°Tilt

(a) To position the device in the “cheek” position described above.

(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see Fig. 8.3).

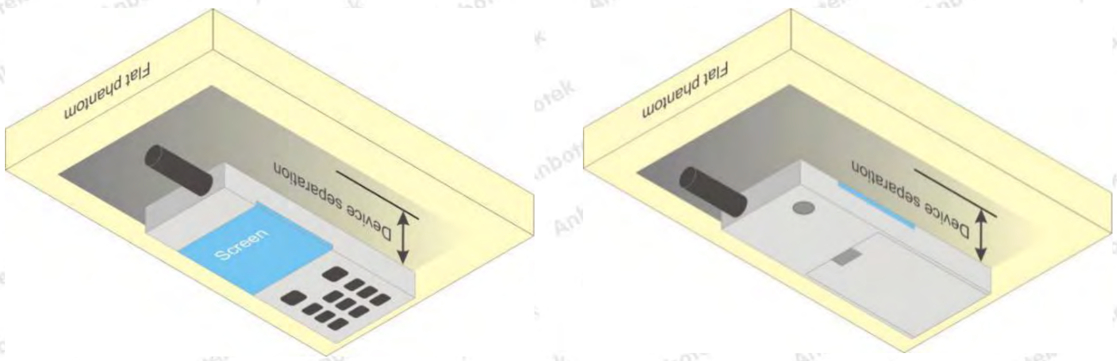


Tilt Position

8. 4. Body Worn Position

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. Per KDB 648474 D04, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is < 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.



Body Worn Position

9. Measurement Procedures

The measurement procedures are as follows:

(a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the middle channel.
(b) Keep EUT to radiate maximum output power or 100% duty factor (if applicable)
(c) Measure output power through RF cable and power meter.
(d) Place the EUT in the positions as setup photos demonstrates.
(e) Set scan area, grid size and other setting on the DASY software.
(f) Measure SAR transmitting at the middle channel for all applicable exposure positions.
(g) Identify the exposure position and device configuration resulting the highest SAR
(h) Measure SAR at the lowest and highest channels at the worst exposure position and device configuration if applicable.

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

9. 1. Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

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

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from

sensor to surface

(f) Calculation of the averaged SAR within masses of 1g and 10g

9. 2. Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

9. 3. Area Scan Procedures

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

9. 4. Zoom Scan Procedures

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

9. 5. Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9. 6. Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

10. Conducted Power

<GSM Conducted power>

Mode	Frequency (MHz)	Reference Power	Peak Power	Tolerance	Avg.Burst Power	Duty cycle Factor(dB)	Frame Power (dBm)	Peak to Average Ratio
GSM850	824.2	33	**33.24**	0.24	32.96	-9	23.96	0.28
	836.6	33	32.97	-0.03	**32.87**	-9	24.08	0.10
	848.8	33	32.99	-0.01	32.57	-9	23.57	0.42
GPRS850 (1 Slot)	824.2	33	32.76	-0.24	32.76	-9	23.76	0.00
	836.6	33	32.60	-0.40	32.58	-9	23.58	0.02
	848.8	33	32.67	-0.33	32.56	-9	23.56	0.11
GPRS850 (2 Slot)	824.2	30	30.27	0.27	30.07	-6	24.07	0.20
	836.6	30	30.36	0.36	30.28	-6	**24.28**	0.28
	848.8	30	30.46	0.46	30.18	-6	24.18	0.28
GPRS850 (3 Slot)	824.2	28.74	26.85	-1.89	26.84	-4.26	22.58	0.01
	836.6	28.74	27.29	-1.45	26.92	-4.26	22.66	0.37
	848.8	28.74	27.08	-1.66	26.32	-4.26	22.06	0.76
GPRS850 (4 Slot)	824.2	27	26.02	-0.98	25.88	-3	22.88	0.14
	836.6	27	26.16	-0.84	25.72	-3	22.72	0.44
	848.8	27	26.10	-0.90	25.90	-3	22.90	0.20
EGPRS850 (1 Slot)	824.2	27	26.24	-0.76	23.01	-9	14.01	3.23
	836.6	27	26.58	-0.42	23.73	-9	14.73	2.85
	848.8	27	26.88	-0.12	23.21	-9	14.21	**3.67**
EGPRS850 (2 Slot)	824.2	24	24.52	0.52	21.70	-6	15.70	2.82
	836.6	24	24.51	0.51	21.07	-6	15.07	3.44
	848.8	24	24.70	0.70	21.49	-6	15.49	3.21
EGPRS850 (3 Slot)	824.2	22.74	22.14	-0.60	19.11	-4.26	14.85	3.03
	836.6	22.74	22.16	-0.58	19.42	-4.26	15.16	2.74
	848.8	22.74	22.83	0.09	19.47	-4.26	15.21	3.36
EGPRS850 (4 Slot)	824.2	21	20.60	-0.40	17.76	-3	14.76	2.84
	836.6	21	21.15	0.15	18.24	-3	15.24	2.91
	848.8	21	21.24	0.24	18.19	-3	15.19	3.05

Mode	Frequency (MHz)	Reference	Peak Power	Tolerance	Avg.Burst Power	Duty cycle Factor(dB)	Frame Power(dBm)	Peak to Average Ratio
GSM1900	1850.2	30	29.18	-0.82	28.91	-9	19.95	0.27
	1880	30	29.42	-0.58	28.82	-9	19.82	0.60
	1909.8	30	**29.64**	-0.36	**29.32**	-9	19.93	0.32
GPRS1900 (1 Slot)	1850.2	30	28.79	-1.21	28.51	-9	19.51	0.28
	1880	30	28.75	-1.25	28.55	-9	19.55	0.20
	1909.8	30	29.11	-0.89	28.78	-9	19.78	0.33
GPRS1900 (2 Slot)	1850.2	27	25.39	-1.61	25.36	-6	19.36	0.03
	1880	27	25.60	-1.40	25.21	-6	19.21	0.39
	1909.8	27	25.50	-1.50	25.07	-6	19.07	0.43
GPRS1900 (3 Slot)	1850.2	25.23	24.49	-0.74	24.01	-4.26	19.75	0.48
	1880	25.23	24.35	-0.88	24.04	-4.26	19.78	0.31
	1909.8	25.23	24.35	-0.88	23.77	-4.26	19.51	0.58
GPRS1900 (4 Slot)	1850.2	24	23.10	-0.90	22.73	-3	19.73	0.37
	1880	24	22.98	-1.02	22.62	-3	19.62	0.36
	1909.8	24	23.40	-0.60	22.93	-3	**19.93**	0.47
EGPRS1900 (1 Slot)	1850.2	27	27.54	0.54	24.35	-9	15.35	3.19
	1880	27	27.27	0.27	23.79	-9	14.79	3.48
	1909.8	27	27.59	0.59	24.49	-9	15.49	3.10
EGPRS1900 (2 Slot)	1850.2	24	23.99	-0.01	20.86	-6	14.86	3.13
	1880	24	24.46	0.46	21.50	-6	15.50	2.96
	1909.8	24	24.53	0.53	20.69	-6	14.69	**3.84**
EGPRS1900 (3 Slot)	1850.2	22.74	23.04	0.30	19.66	-4.26	15.40	3.38
	1880	22.74	23.32	0.58	20.06	-4.26	15.80	3.26
	1909.8	22.74	23.19	0.45	19.47	-4.26	15.21	3.72
EGPRS1900 (4 Slot)	1850.2	21	21.50	0.50	18.54	-3	15.54	2.96
	1880	21	20.98	-0.02	17.84	-3	14.84	3.14
	1909.8	21	21.73	0.73	18.45	-3	15.45	3.28

Note:

1. Per KDB 447498 D01, the maximum output power channel is used for SAR testing and for further SAR test reduction
2. For Head SAR testing, GSM should be evaluated, therefore the EUT was set in GSM Voice for GSM850and PCS1900.
3. For Body SAR testing, GPRS should be evaluated, therefore the EUT was set in GPRS 2 Tx slots for GSM850 and GPRS 4 Tx slots for PCS1900 due to its highest frame-average power.

<WCDMA Conducted Power>

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$, and Δ_{CQI} = 24/15 with $\beta_{hs} = 24/15 * \beta_c$.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.

b. The RF path losses were compensated into the measurements.

c. A call was established between EUT and Base Station with following setting * :

 i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK

 ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121

 iii. Set Cell Power = -86 dBm

 iv. Set Channel Type = 12.2k + HSPA

 v. Set UE Target Power

 vi. Power Ctrl Mode= Alternating bits

 vii. Set and observe the E-TFCI

 viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI

d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .

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

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

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

Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

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

Setup Configuration

<WCDMA Conducted Power>

UMTS BAND II

Mode	Frequency (MHz)	Reference power	Peak Power	Tolerance	Avg.Burst Power	Peak to Average Ratio
WCDMA1900 RMC	1852.4	24	24.23	0.23	**22.38**	1.85
	1880	24	23.71	-0.29	22.19	1.53
	1907.6	24	23.16	-0.84	22.12	1.04
WCDMA1900 AMR	1852.4	24	**24.55**	0.55	22.24	2.32
	1880	24	23.21	-0.79	21.89	1.32
	1907.6	24	23.56	-0.44	21.69	1.88
HSDPA Subtest 1	1852.4	24	23.07	-0.93	21.11	1.96
	1880	24	23.45	-0.55	21.10	2.35
	1907.6	24	22.33	-1.67	20.89	1.45
HSDPA Subtest 2	1852.4	24	21.62	-2.38	20.15	1.47
	1880	24	21.32	-2.68	20.05	1.27
	1907.6	24	21.88	-2.12	20.66	1.22
HSDPA Subtest 3	1852.4	24	21.14	-2.86	20.02	1.12
	1880	24	21.99	-2.01	19.89	2.09
	1907.6	24	21.43	-2.57	20.07	1.36
HSDPA Subtest 4	1852.4	24	21.59	-2.41	20.38	1.21
	1880	24	22.30	-1.70	20.49	1.81
	1907.6	24	22.76	-1.24	20.78	1.99
HSUPA Subtest 1	1852.4	24	22.69	-1.31	20.65	2.04
	1880	24	22.61	-1.39	20.14	**2.48**
	1907.6	24	21.65	-2.35	20.39	1.26
HSUPA Subtest 2	1852.4	24	24.00	0.00	21.55	2.45
	1880	24	22.68	-1.32	21.58	1.10
	1907.6	24	22.68	-1.32	21.42	1.27
HSUPA Subtest 3	1852.4	24	23.41	-0.59	21.02	2.39
	1880	24	22.38	-1.62	21.04	1.35
	1907.6	24	22.69	-1.31	21.36	1.33
HSUPA Subtest 4	1852.4	24	23.57	-0.43	21.18	2.39
	1880	24	23.80	-0.20	22.18	1.62
	1907.6	24	24.10	0.10	22.04	2.06
HSUPA Subtest 5	1852.4	24	22.32	-1.68	21.08	1.24
	1880	24	23.71	-0.29	21.75	1.96
	1907.6	24	23.62	-0.38	21.93	1.69

UMTS BAND V

Mode	Frequency (MHz)	Reference power	Peak Power	Tolerance	Avg.Burst Power	Peak to Average Ratio
WCDMA1900 RMC	826.4	24	**24.54**	0.54	**22.59**	1.95
	836.4	24	24.25	0.25	22.17	2.09
	846.6	24	24.14	0.14	22.30	1.84
WCDMA1900 AMR	1852.4	24	24.22	0.22	22.25	1.97
	1880	24	23.78	-0.22	22.17	1.62
	1907.6	24	23.68	-0.32	21.68	2.01
HSDPA Subtest 1	826.4	24	23.26	-0.74	21.19	2.07
	836.4	24	22.72	-1.28	20.87	1.85
	846.6	24	22.48	-1.52	20.74	1.74
HSDPA Subtest 2	826.4	24	22.89	-1.11	20.41	**2.49**
	836.4	24	22.10	-1.90	20.14	1.96
	846.6	24	22.51	-1.49	20.49	2.02
HSDPA Subtest 3	826.4	24	21.63	-2.37	20.16	1.47
	836.4	24	21.06	-2.94	19.75	1.31
	846.6	24	21.45	-2.55	20.31	1.14
HSDPA Subtest 4	826.4	24	21.25	-2.75	20.03	1.22
	836.4	24	22.48	-1.52	20.32	2.15
	846.6	24	22.37	-1.63	20.76	1.62
HSUPA Subtest 1	826.4	24	22.56	-1.44	20.45	2.11
	836.4	24	21.60	-2.40	20.17	1.43
	846.6	24	22.22	-1.78	20.26	1.96
HSUPA Subtest 2	826.4	24	22.99	-1.01	21.55	1.44
	836.4	24	22.76	-1.24	21.53	1.23
	846.6	24	22.66	-1.34	21.27	1.39
HSUPA Subtest 3	826.4	24	23.42	-0.58	21.31	2.11
	836.4	24	22.97	-1.03	21.09	1.88
	846.6	24	23.58	-0.42	21.16	2.42
HSUPA Subtest 4	826.4	24	22.11	-1.89	21.11	1.00
	836.4	24	23.12	-0.88	22.10	1.02
	846.6	24	23.83	-0.17	21.99	1.83
HSUPA Subtest 5	826.4	24	23.15	-0.85	21.19	1.96
	836.4	24	24.05	0.05	21.69	2.35
	846.6	24	24.37	0.37	21.97	2.40

General Note

1. Per KDB 941225 D01 v02, RMC 12.2kbps setting is used to evaluate SAR. If AMR 12.2kbps power is < 0.25dB higher than RMC 12.2kbps, SAR tests with AMR 12.2kbps can be excluded.
2. By design, AMR and HSDPA/HSUPA RF power will not be larger than RMC 12.2kbps, detailed information is included in Tune-up Procure exhibit.
3. It is expected by the manufacturer that MPR for some HSDPA/HSUPA subtests may differ from the specification of 3GPP, according to the chipset implementation in this model. The implementation and expected deviation are detailed in tune-up procedure exhibit.

<LTE Conducted Power>

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band4	1.4MHz	QPSK	19957	1RB#0	23.71	PASS
Band4	1.4MHz	QPSK	19957	1RB#2	23.67	PASS
Band4	1.4MHz	QPSK	19957	1RB#5	23.73	PASS
Band4	1.4MHz	QPSK	19957	3RB#0	23.83	PASS
Band4	1.4MHz	QPSK	19957	3RB#1	23.87	PASS
Band4	1.4MHz	QPSK	19957	3RB#3	23.81	PASS
Band4	1.4MHz	QPSK	19957	6RB#0	22.8	PASS
Band4	1.4MHz	QPSK	20175	1RB#0	23.96	PASS
Band4	1.4MHz	QPSK	20175	1RB#5	23.98	PASS
Band4	1.4MHz	QPSK	20175	1RB#2	23.97	PASS
Band4	1.4MHz	QPSK	20175	3RB#0	24.05	PASS
Band4	1.4MHz	QPSK	20175	3RB#3	23.99	PASS
Band4	1.4MHz	QPSK	20175	3RB#1	24.04	PASS
Band4	1.4MHz	QPSK	20175	6RB#0	22.94	PASS
Band4	1.4MHz	QPSK	20393	1RB#5	23.89	PASS
Band4	1.4MHz	QPSK	20393	1RB#0	23.85	PASS
Band4	1.4MHz	QPSK	20393	1RB#2	23.9	PASS
Band4	1.4MHz	QPSK	20393	3RB#0	23.78	PASS
Band4	1.4MHz	QPSK	20393	3RB#1	23.75	PASS
Band4	1.4MHz	QPSK	20393	3RB#3	23.79	PASS
Band4	1.4MHz	QPSK	20393	6RB#0	22.69	PASS
Band4	1.4MHz	16QAM	19957	1RB#0	23.3	PASS
Band4	1.4MHz	16QAM	19957	1RB#2	23.31	PASS
Band4	1.4MHz	16QAM	19957	1RB#5	23.32	PASS
Band4	1.4MHz	16QAM	19957	3RB#1	23.82	PASS
Band4	1.4MHz	16QAM	19957	3RB#0	23.82	PASS
Band4	1.4MHz	16QAM	19957	3RB#3	23.9	PASS
Band4	1.4MHz	16QAM	19957	6RB#0	21.93	PASS
Band4	1.4MHz	16QAM	20175	1RB#0	23.66	PASS
Band4	1.4MHz	16QAM	20175	1RB#2	23.73	PASS
Band4	1.4MHz	16QAM	20175	1RB#5	23.66	PASS
Band4	1.4MHz	16QAM	20175	3RB#1	24.02	PASS
Band4	1.4MHz	16QAM	20175	3RB#0	24.03	PASS
Band4	1.4MHz	16QAM	20175	3RB#3	23.98	PASS
Band4	1.4MHz	16QAM	20175	6RB#0	22.15	PASS

Band4	1.4MHz	16QAM	20393	1RB#0	23.05	PASS
Band4	1.4MHz	16QAM	20393	1RB#5	23.12	PASS
Band4	1.4MHz	16QAM	20393	1RB#2	23.11	PASS
Band4	1.4MHz	16QAM	20393	3RB#0	23.76	PASS
Band4	1.4MHz	16QAM	20393	3RB#1	23.74	PASS
Band4	1.4MHz	16QAM	20393	3RB#3	23.78	PASS
Band4	1.4MHz	16QAM	20393	6RB#0	22.11	PASS
Band4	3MHz	QPSK	19965	1RB#8	23.71	PASS
Band4	3MHz	QPSK	19965	1RB#14	23.73	PASS
Band4	3MHz	QPSK	19965	1RB#0	23.75	PASS
Band4	3MHz	QPSK	19965	8RB#7	22.74	PASS
Band4	3MHz	QPSK	19965	8RB#0	22.74	PASS
Band4	3MHz	QPSK	19965	8RB#4	22.72	PASS
Band4	3MHz	QPSK	19965	15RB#0	22.73	PASS
Band4	3MHz	QPSK	20175	1RB#0	23.78	PASS
Band4	3MHz	QPSK	20175	1RB#14	23.81	PASS
Band4	3MHz	QPSK	20175	1RB#8	23.81	PASS
Band4	3MHz	QPSK	20175	8RB#7	22.98	PASS
Band4	3MHz	QPSK	20175	8RB#4	22.98	PASS
Band4	3MHz	QPSK	20175	8RB#0	23	PASS
Band4	3MHz	QPSK	20175	15RB#0	22.92	PASS
Band4	3MHz	QPSK	20385	1RB#0	23.85	PASS
Band4	3MHz	QPSK	20385	1RB#14	23.84	PASS
Band4	3MHz	QPSK	20385	1RB#8	23.85	PASS
Band4	3MHz	QPSK	20385	8RB#7	23.09	PASS
Band4	3MHz	QPSK	20385	8RB#4	23	PASS
Band4	3MHz	QPSK	20385	8RB#0	23.1	PASS
Band4	3MHz	QPSK	20385	15RB#0	22.81	PASS
Band4	3MHz	16QAM	19965	1RB#14	22.8	PASS
Band4	3MHz	16QAM	19965	1RB#8	22.76	PASS
Band4	3MHz	16QAM	19965	1RB#0	22.74	PASS
Band4	3MHz	16QAM	19965	8RB#4	22.79	PASS
Band4	3MHz	16QAM	19965	8RB#0	22.74	PASS
Band4	3MHz	16QAM	19965	8RB#7	22.8	PASS
Band4	3MHz	16QAM	19965	15RB#0	21.78	PASS
Band4	3MHz	16QAM	20175	1RB#0	22.96	PASS
Band4	3MHz	16QAM	20175	1RB#8	22.97	PASS
Band4	3MHz	16QAM	20175	1RB#14	22.98	PASS

Band4	3MHz	16QAM	20175	8RB#0	22.99	PASS
Band4	3MHz	16QAM	20175	8RB#7	22.98	PASS
Band4	3MHz	16QAM	20175	8RB#4	22.94	PASS
Band4	3MHz	16QAM	20175	15RB#0	21.96	PASS
Band4	3MHz	16QAM	20385	1RB#8	23.02	PASS
Band4	3MHz	16QAM	20385	1RB#0	23.07	PASS
Band4	3MHz	16QAM	20385	1RB#14	23.09	PASS
Band4	3MHz	16QAM	20385	8RB#0	23.1	PASS
Band4	3MHz	16QAM	20385	8RB#4	22.98	PASS
Band4	3MHz	16QAM	20385	8RB#7	23.1	PASS
Band4	3MHz	16QAM	20385	15RB#0	21.78	PASS
Band4	5MHz	QPSK	19975	1RB#0	23.6	PASS
Band4	5MHz	QPSK	19975	1RB#12	23.65	PASS
Band4	5MHz	QPSK	19975	1RB#24	23.67	PASS
Band4	5MHz	QPSK	19975	12RB#0	22.82	PASS
Band4	5MHz	QPSK	19975	12RB#6	22.82	PASS
Band4	5MHz	QPSK	19975	12RB#13	22.79	PASS
Band4	5MHz	QPSK	19975	25RB#0	22.82	PASS
Band4	5MHz	QPSK	20175	1RB#0	23.96	PASS
Band4	5MHz	QPSK	20175	1RB#24	23.94	PASS
Band4	5MHz	QPSK	20175	1RB#12	23.96	PASS
Band4	5MHz	QPSK	20175	12RB#0	22.89	PASS
Band4	5MHz	QPSK	20175	12RB#13	22.9	PASS
Band4	5MHz	QPSK	20175	12RB#6	22.89	PASS
Band4	5MHz	QPSK	20175	25RB#0	22.98	PASS
Band4	5MHz	QPSK	20375	1RB#24	23.66	PASS
Band4	5MHz	QPSK	20375	1RB#0	23.69	PASS
Band4	5MHz	QPSK	20375	1RB#12	23.61	PASS
Band4	5MHz	QPSK	20375	12RB#13	22.66	PASS
Band4	5MHz	QPSK	20375	12RB#0	22.8	PASS
Band4	5MHz	QPSK	20375	12RB#6	22.79	PASS
Band4	5MHz	QPSK	20375	25RB#0	22.76	PASS
Band4	5MHz	16QAM	19975	1RB#0	22.96	PASS
Band4	5MHz	16QAM	19975	1RB#12	23.04	PASS
Band4	5MHz	16QAM	19975	1RB#24	23.07	PASS
Band4	5MHz	16QAM	19975	12RB#0	22.82	PASS
Band4	5MHz	16QAM	19975	12RB#13	22.79	PASS
Band4	5MHz	16QAM	19975	12RB#6	22.72	PASS

Band4	5MHz	16QAM	19975	25RB#0	22	PASS
Band4	5MHz	16QAM	20175	1RB#24	22.41	PASS
Band4	5MHz	16QAM	20175	1RB#12	22.48	PASS
Band4	5MHz	16QAM	20175	1RB#0	22.55	PASS
Band4	5MHz	16QAM	20175	12RB#13	22.9	PASS
Band4	5MHz	16QAM	20175	12RB#6	22.9	PASS
Band4	5MHz	16QAM	20175	12RB#0	22.89	PASS
Band4	5MHz	16QAM	20175	25RB#0	22.11	PASS
Band4	5MHz	16QAM	20375	1RB#12	22.68	PASS
Band4	5MHz	16QAM	20375	1RB#0	22.6	PASS
Band4	5MHz	16QAM	20375	1RB#24	22.69	PASS
Band4	5MHz	16QAM	20375	12RB#0	22.71	PASS
Band4	5MHz	16QAM	20375	12RB#6	22.79	PASS
Band4	5MHz	16QAM	20375	12RB#13	22.66	PASS
Band4	5MHz	16QAM	20375	25RB#0	21.71	PASS
Band4	10MHz	QPSK	20000	1RB#49	23.92	PASS
Band4	10MHz	QPSK	20000	1RB#24	23.7	PASS
Band4	10MHz	QPSK	20000	1RB#0	23.73	PASS
Band4	10MHz	QPSK	20000	25RB#25	22.94	PASS
Band4	10MHz	QPSK	20000	25RB#12	22.84	PASS
Band4	10MHz	QPSK	20000	25RB#0	22.86	PASS
Band4	10MHz	QPSK	20000	50RB#0	22.96	PASS
Band4	10MHz	QPSK	20175	1RB#0	23.8	PASS
Band4	10MHz	QPSK	20175	1RB#24	23.8	PASS
Band4	10MHz	QPSK	20175	1RB#49	23.8	PASS
Band4	10MHz	QPSK	20175	25RB#0	22.94	PASS
Band4	10MHz	QPSK	20175	25RB#25	22.91	PASS
Band4	10MHz	QPSK	20175	25RB#12	22.95	PASS
Band4	10MHz	QPSK	20175	50RB#0	22.92	PASS
Band4	10MHz	QPSK	20350	1RB#49	23.84	PASS
Band4	10MHz	QPSK	20350	1RB#24	23.84	PASS
Band4	10MHz	QPSK	20350	1RB#0	23.83	PASS
Band4	10MHz	QPSK	20350	25RB#25	22.67	PASS
Band4	10MHz	QPSK	20350	25RB#12	22.79	PASS
Band4	10MHz	QPSK	20350	25RB#0	22.8	PASS
Band4	10MHz	QPSK	20350	50RB#0	22.76	PASS
Band4	10MHz	16QAM	20000	1RB#49	23	PASS
Band4	10MHz	16QAM	20000	1RB#0	22.77	PASS

Band4	10MHz	16QAM	20000	1RB#24	22.86	PASS
Band4	10MHz	16QAM	20000	25RB#25	22.95	PASS
Band4	10MHz	16QAM	20000	25RB#12	22.84	PASS
Band4	10MHz	16QAM	20000	25RB#0	22.85	PASS
Band4	10MHz	16QAM	20000	50RB#0	22.01	PASS
Band4	10MHz	16QAM	20175	1RB#24	22.78	PASS
Band4	10MHz	16QAM	20175	1RB#0	22.85	PASS
Band4	10MHz	16QAM	20175	1RB#49	22.68	PASS
Band4	10MHz	16QAM	20175	25RB#0	22.95	PASS
Band4	10MHz	16QAM	20175	25RB#12	22.96	PASS
Band4	10MHz	16QAM	20175	25RB#25	22.9	PASS
Band4	10MHz	16QAM	20175	50RB#0	22.03	PASS
Band4	10MHz	16QAM	20350	1RB#49	22.54	PASS
Band4	10MHz	16QAM	20350	1RB#24	22.55	PASS
Band4	10MHz	16QAM	20350	1RB#0	22.56	PASS
Band4	10MHz	16QAM	20350	25RB#12	22.78	PASS
Band4	10MHz	16QAM	20350	25RB#25	22.67	PASS
Band4	10MHz	16QAM	20350	25RB#0	22.75	PASS
Band4	10MHz	16QAM	20350	50RB#0	21.88	PASS
Band4	15MHz	QPSK	20025	1RB#0	23.29	PASS
Band4	15MHz	QPSK	20025	1RB#38	23.4	PASS
Band4	15MHz	QPSK	20025	1RB#74	22.86	PASS
Band4	15MHz	QPSK	20025	38RB#0	22.83	PASS
Band4	15MHz	QPSK	20025	38RB#37	22.72	PASS
Band4	15MHz	QPSK	20025	38RB#18	22.95	PASS
Band4	15MHz	QPSK	20025	75RB#0	23.45	PASS
Band4	15MHz	QPSK	20175	1RB#74	23.59	PASS
Band4	15MHz	QPSK	20175	1RB#38	23.77	PASS
Band4	15MHz	QPSK	20175	1RB#0	22.93	PASS
Band4	15MHz	QPSK	20175	38RB#37	22.51	PASS
Band4	15MHz	QPSK	20175	38RB#18	22.89	PASS
Band4	15MHz	QPSK	20175	38RB#0	22.58	PASS
Band4	15MHz	QPSK	20175	75RB#0	23.81	PASS
Band4	15MHz	QPSK	20325	1RB#0	23.52	PASS
Band4	15MHz	QPSK	20325	1RB#74	23.44	PASS
Band4	15MHz	QPSK	20325	1RB#38	22.63	PASS
Band4	15MHz	QPSK	20325	38RB#18	22.34	PASS
Band4	15MHz	QPSK	20325	38RB#37	22.72	PASS

Band4	15MHz	QPSK	20325	38RB#0	22.63	PASS
Band4	15MHz	QPSK	20325	75RB#0	22.69	PASS
Band4	15MHz	16QAM	20025	1RB#74	22.43	PASS
Band4	15MHz	16QAM	20025	1RB#0	22.64	PASS
Band4	15MHz	16QAM	20025	1RB#38	22.82	PASS
Band4	15MHz	16QAM	20025	38RB#37	22.59	PASS
Band4	15MHz	16QAM	20025	38RB#0	22.43	PASS
Band4	15MHz	16QAM	20025	38RB#18	22	PASS
Band4	15MHz	16QAM	20025	75RB#0	22.77	PASS
Band4	15MHz	16QAM	20175	1RB#38	22.77	PASS
Band4	15MHz	16QAM	20175	1RB#0	22.45	PASS
Band4	15MHz	16QAM	20175	1RB#74	22.72	PASS
Band4	15MHz	16QAM	20175	38RB#37	22.81	PASS
Band4	15MHz	16QAM	20175	38RB#18	22.74	PASS
Band4	15MHz	16QAM	20175	38RB#0	21.94	PASS
Band4	15MHz	16QAM	20175	75RB#0	22.04	PASS
Band4	15MHz	16QAM	20325	1RB#74	22.07	PASS
Band4	15MHz	16QAM	20325	1RB#0	22.33	PASS
Band4	15MHz	16QAM	20325	1RB#38	22.67	PASS
Band4	15MHz	16QAM	20325	38RB#0	22.54	PASS
Band4	15MHz	16QAM	20325	38RB#18	22.49	PASS
Band4	15MHz	16QAM	20325	38RB#37	21.72	PASS
Band4	15MHz	16QAM	20325	75RB#0	21.43	PASS
Band4	20MHz	QPSK	20050	1RB#99	23.66	PASS
Band4	20MHz	QPSK	20050	1RB#49	23.43	PASS
Band4	20MHz	QPSK	20050	1RB#0	22.58	PASS
Band4	20MHz	QPSK	20050	50RB#0	22.49	PASS
Band4	20MHz	QPSK	20050	50RB#25	22.44	PASS
Band4	20MHz	QPSK	20050	50RB#50	22.53	PASS
Band4	20MHz	QPSK	20050	100RB#0	23.52	PASS
Band4	20MHz	QPSK	20175	1RB#0	23.46	PASS
Band4	20MHz	QPSK	20175	1RB#99	**23.68**	PASS
Band4	20MHz	QPSK	20175	1RB#49	22.67	PASS
Band4	20MHz	QPSK	20175	50RB#50	22.54	PASS
Band4	20MHz	QPSK	20175	50RB#0	22.73	PASS
Band4	20MHz	QPSK	20175	50RB#25	22.87	PASS
Band4	20MHz	QPSK	20175	100RB#0	23.52	PASS
Band4	20MHz	QPSK	20300	1RB#49	23.62	PASS

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Band4	20MHz	QPSK	20300	1RB#99	23.34	PASS
Band4	20MHz	QPSK	20300	1RB#0	22.46	PASS
Band4	20MHz	QPSK	20300	50RB#25	22.73	PASS
Band4	20MHz	QPSK	20300	50RB#50	22.46	PASS
Band4	20MHz	QPSK	20300	50RB#0	22.54	PASS
Band4	20MHz	QPSK	20300	100RB#0	22.55	PASS
Band4	20MHz	16QAM	20050	1RB#0	22.7	PASS
Band4	20MHz	16QAM	20050	1RB#99	22.85	PASS
Band4	20MHz	16QAM	20050	1RB#49	22.66	PASS
Band4	20MHz	16QAM	20050	50RB#25	22.69	PASS
Band4	20MHz	16QAM	20050	50RB#0	22.78	PASS
Band4	20MHz	16QAM	20050	50RB#50	21.72	PASS
Band4	20MHz	16QAM	20050	100RB#0	22.29	PASS
Band4	20MHz	16QAM	20175	1RB#99	22.77	PASS
Band4	20MHz	16QAM	20175	1RB#49	22.24	PASS
Band4	20MHz	16QAM	20175	1RB#0	22.72	PASS
Band4	20MHz	16QAM	20175	50RB#50	22.72	PASS
Band4	20MHz	16QAM	20175	50RB#25	22.6	PASS
Band4	20MHz	16QAM	20175	50RB#0	21.57	PASS
Band4	20MHz	16QAM	20175	100RB#0	22.27	PASS
Band4	20MHz	16QAM	20300	1RB#0	22.14	PASS
Band4	20MHz	16QAM	20300	1RB#49	22.51	PASS
Band4	20MHz	16QAM	20300	1RB#99	22.57	PASS
Band4	20MHz	16QAM	20300	50RB#50	22.55	PASS
Band4	20MHz	16QAM	20300	50RB#0	22.27	PASS
Band4	20MHz	16QAM	20300	50RB#25	21.4	PASS
Band4	20MHz	16QAM	20300	100RB#0	21.7	PASS

<WIFI 2.4GHz Conducted Power>

Mode	Channel	Frequency (MHz)	Conducted Average Power (dBm)	Test Rate Data
802.11b	1	2412	14.240	1 Mbps
	6	2437	13.425	1 Mbps
	11	2462	**14.328**	1 Mbps
802.11g	1	2412	**12.525**	6 Mbps
	6	2437	11.503	6 Mbps
	11	2462	12.186	6 Mbps
802.11n(20MHz)	1	2412	11.880	MCS0
	6	2437	**11.916**	MCS0
	11	2462	10.988	MCS0

Note:

1. Per KDB 447498 D01, the 1-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, where

f(GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

Mode	Frequency (GHz)	Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
802.11b	2.462	14.328	27.09	5	8.50	3.0
802.11g	2.412	12.525	17.89	5	5.56	3.0

2. Base on the result of note1, RF exposure evaluation of 802.11 b and g modes are required.
3. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion.
4. Per KDB 248227 D01, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. SAR is not required for the following 2.4 GHz OFDM conditions:
   1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
   2) 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.
5. According to chapter 12 of this report, the max report SAR of 802.11b mode is 0.521 W/Kg, and

0.434W/Kg $\times \frac{17.89}{27.09}$ = 0.287W/Kg which is smaller than 1.2W/Kg, so SAR evaluation of 802.11g mode is not required. And the same for 802.11n.

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<Bluetooth Conducted Power>

Mode	Channel	Frequency (MHz)	Conducted peak Power (dBm)
GFSK	00	2402	4.121
	39	2441	5.401
	78	2480	4.347
π/4DQPSK	00	2402	5.829
	39	2441	7.073
	78	2480	6.124
8DPSK	00	2402	6.123
	39	2441	**7.322**
	78	2480	6.407
BLE	00	2402	4.364
	19	2440	**5.590**
	39	2480	4.600

Note:

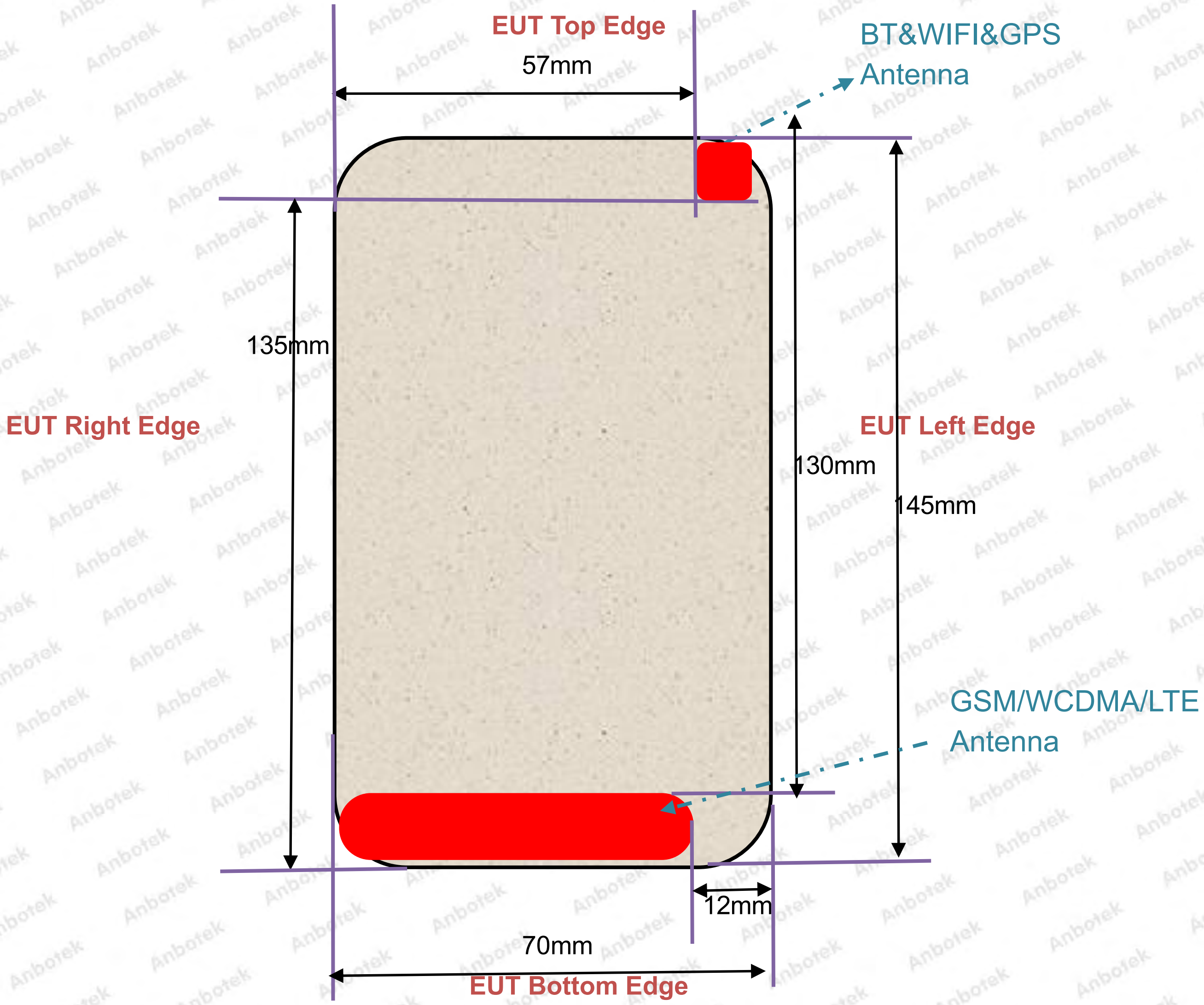
1. Per KDB 447498 D01Chapter 4.3.1, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
   [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   f(GHz) is the RF channel transmit frequency in GHz
   Power and distance are rounded to the nearest mW and mm before calculation
   The result is rounded to one decimal place for comparison

Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
7.322	0	2.441	1.687

2. Per KDB 447498 D01Chapter 4.3.1, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is 1.687 which is<= 3, SAR test for BT mode is not required.
3. Per KDB 447498 D01Chapter 4.3.2b), When an antenna qualifies for the standalone SAR test exclusion of 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to the following to determine the simultaneous transmission SAR test exclusion criteria:
   [(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]·[√f(GHz)/x] W/kg, for test separation distances ≤ 50 mm;
   where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.
   0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distance is > 50 mm.

Test position	Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	Scaled SAR value (W/kg)
Head	7.322	5	2.441	**0.225**
Body	7.322	5	2.441	**0.225**

11. Antenna Location



EUT BACK VIEW

Distance of The Antenna to the EUT surface and edge						
Antennas	**Front**	**Back**	**Top Side**	**Bottom Side**	**Left Side**	**Right Side**
WWAN	/	/	>25mm	<25mm	<25mm	<25mm
WIFI/BT	/	/	<25mm	>25mm	<25mm	>25mm

General Note:

Referring to KDB 941225 D06, When the overall device length and width are ≥9cm*5cm, the test distance is 10mm, SAR must be measured for all sides and surfaces with a transmitting antenna located with 25mm from that surface or edge.

12. SAR Test Results Summary

General Note:

1. Per KDB 447498 D01v05r01, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   Reported SAR(W/kg)= Measured SAR(W/kg) Scaling Factor*
2. Per KDB 447498 D01v05r01, for each exposure position, if the highest output channel reported SAR≤0.8W/kg, other channels SAR testing are not necessary

12. 1. Head SAR Results

<GSM>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
	GSM850	GSM Voice	Right Cheek	0	190	836.6	32.96	33.0	1.01	0.05	0.315	0.318
	GSM850	GSM Voice	Right Tilt	0	190	836.6	32.96	33.0	1.01	0.03	0.258	0.26
#1	GSM850	GSM Voice	Left Cheek	0	190	836.6	32.96	33.0	1.01	-0.06	0.342	**0.345**
	GSM850	GSM Voice	Left Tilt	0	190	836.6	32.96	33.0	1.01	-0.07	0.274	0.277
	PCS1900	GSM Voice	Right Cheek	0	885	1909.8	29.32	29.5	1.04	0.03	0.266	0.277
	PCS1900	GSM Voice	Right Tilt	0	885	1909.8	29.32	29.5	1.04	-0.08	0.215	0.224
#2	PCS1900	GSM Voice	Left Cheek	0	885	1909.8	29.32	29.5	1.04	-0.11	0.283	**0.295**
	PCS1900	GSM Voice	Left Tilt	0	885	1909.8	29.32	29.5	1.04	0.13	0.221	0.23

<WCDMA>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
	WCDMA Band2	RMC12.2K	Right Cheek	0	9262	1852.4	22.38	22.50	1.03	-0.06	0.276	0.284
	WCDMA Band2	RMC12.2K	Right Tilt	0	9262	1852.4	22.38	22.50	1.03	-0.04	0.202	0.208
#3	WCDMA Band2	RMC12.2K	Left Cheek	0	9262	1852.4	22.38	22.50	1.03	0.03	0.297	**0.305**
	WCDMA	RMC12.2K	Left Tilt	0	9262	1852.4	22.38	22.50	1.03	0.08	0.235	0.242

	Band2										
	WCDMA Band5	RMC12.2K	Right Cheek	0	4132	826.4	22.59	23.00	1.10	-0.09	0.251	0.276
	WCDMA Band5	RMC12.2K	Right Tilt	0	4132	826.4	22.59	23.00	1.10	0.12	0.186	0.204
#4	WCDMA Band5	RMC12.2K	Left Cheek	0	4132	826.4	22.59	23.00	1.10	-0.03	0.265	**0.291**
	WCDMA Band5	RMC12.2K	Left Tilt	0	4132	826.4	22.59	23.00	1.10	-0.07	0.192	0.211

<LTE>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR$_{1g}$ (W/kg)	Reported SAR$_{1g}$ (W/kg)
	LTE Band 4	1RB	Right Cheek	0	20175	1732.5	23.68	24.50	1.21	0.12	0.403	0.487
	LTE Band 4	1RB	Right Tilt	0	20175	1732.5	23.68	24.50	1.21	0.11	0.321	0.388
#5	LTE Band 4	1RB	Left Cheek	0	20175	1732.5	23.68	24.50	1.21	0.06	0.428	**0.517**
	LTE Band 4	1RB	Left Tilt	0	20175	1732.5	23.68	24.50	1.21	0.09	0.334	0.403
	LTE Band 4	50RB	Right Cheek	0	20175	1732.5	23.68	24.50	1.21	0.03	0.385	0.465
	LTE Band 4	50RB	Right Tilt	0	20175	1732.5	23.68	24.50	1.21	-0.06	0.286	0.345
	LTE Band 4	50RB	Left Cheekk	0	20175	1732.5	23.68	24.50	1.21	0.05	0.407	0.492
	LTE Band 4	50RB	Left Tilt	0	20175	1732.5	23.68	24.50	1.21	0.11	0.294	0.355

<WIFI 2.4GHz>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR$_{1g}$ (W/kg)	Reported SAR$_{1g}$ (W/kg)
	WIFI2.4G	802.11b	Right Cheek	0	11	2462	14.33	14.50	1.04	-0.07	0.279	0.290
	WIFI2.4G	802.11b	Right Tilt	0	11	2462	14.33	14.50	1.04	0.11	0.223	0.232
#6	WIFI2.4G	802.11b	Left Cheek	0	11	2462	14.33	14.50	1.04	0.04	0.298	**0.310**
	WIFI2.4G	802.11b	Left Tilt	0	11	2462	14.33	14.50	1.04	-0.03	0.235	0.244

Per KDB865664 D01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/Kg; if the deviation among the repeated measurement is ≤20%,and the measured SAR <1.45W/Kg, only one repeated measurement is required.

12. 2. Body SAR Results

<GSM>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
	GSM850	GPRS(2 Tx slots)	Front	0.5	190	836.6	30.28	30.5	1.05	0.03	0.446	0.469
#7	GSM850	GPRS(2 Tx slots)	Back	0.5	190	836.6	30.28	30.5	1.05	-0.04	0.653	**0.687**
	GSM850	GPRS(2 Tx slots)	Left Side	0.5	190	836.6	30.28	30.5	1.05	-0.04	0.385	0.405
	GSM850	GPRS(2 Tx slots)	Right Side	0.5	190	836.6	30.28	30.5	1.05	0.09	0.303	0.319
	GSM850	GPRS(2 Tx slots)	Top Side	0.5	190	836.6	30.28	30.5	1.05	N/A	N/A	N/A
	GSM850	GPRS(2 Tx slots)	Bottom Side	0.5	190	836.6	30.28	30.5	1.05	-0.06	0.266	0.28
	PCS1900	GPRS(4 Tx slots)	Front	0.5	885	1909.8	22.93	23.0	1.02	0.03	0.585	0.595
#8	PCS1900	GPRS(4 Tx slots)	Back	0.5	885	1909.8	22.93	23.0	1.02	-0.01	0.702	**0.713**
	PCS1900	GPRS(4 Tx slots)	Left Side	0.5	885	1909.8	22.93	23.0	1.02	-0.05	0.496	0.504
	PCS1900	GPRS(4 Tx slots)	Right Side	0.5	885	1909.8	22.93	23.0	1.02	0.03	0.431	0.438
	PCS1900	GPRS(4 Tx slots)	Top Side	0.5	885	1909.8	22.93	23.0	1.02	N/A	N/A	N/A
	PCS1900	GPRS(4 Tx slots)	Bottom Side	0.5	885	1909.8	22.93	23.0	1.02	0.11	0.338	0.343

<WCDMA>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
	WCDMA Band 2	RMC 12.2K	Front	0.5	9262	1852.4	22.38	22.50	1.03	0.03	0.604	0.621
#9	WCDMA	RMC 12.2K	Back	0.5	9262	1852.4	22.38	22.50	1.03	-0.11	0.718	**0.738**

	Band 2											
	WCDMA Band 2	RMC 12.2K	Left Side	0.5	9262	1852.4	22.38	22.50	1.03	0.06	0.551	0.566
	WCDMA Band 2	RMC 12.2K	Right Side	0.5	9262	1852.4	22.38	22.50	1.03	0.12	0.487	0.501
	WCDMA Band 2	RMC 12.2K	Top Side	0.5	9262	1852.4	22.38	22.50	1.03	N/A	N/A	N/A
	WCDMA Band 2	RMC 12.2K	Bottom Side	0.5	9262	1852.4	22.38	22.50	1.03	0.05	0.365	0.375
	WCDMA Band 5	RMC 12.2K	Front	0.5	4132	826.4	22.59	23.00	1.10	0.02	0.275	0.302
#10	WCDMA Band 5	RMC 12.2K	Back	0.5	4132	826.4	22.59	23.00	1.10	0.07	0.468	**0.514**
	WCDMA Band 5	RMC 12.2K	Left Side	0.5	4132	826.4	22.59	23.00	1.10	-0.04	0.256	0.281
	WCDMA Band 5	RMC 12.2K	Right Side	0.5	4132	826.4	22.59	23.00	1.10	-0.09	0.221	0.243
	WCDMA Band 5	RMC 12.2K	Top Side	0.5	4132	826.4	22.59	23.00	1.10	N/A	N/A	N/A
	WCDMA Band 5	RMC 12.2K	Bottom Side	0.5	4132	826.4	22.59	23.00	1.10	0.06	0.194	0.213

<LTE>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
	LTE Band 4	20MHz/1RB	Front	0.5	20175	1732.5	23.68	24.50	1.21	0.13	0.395	0.477
#11	LTE Band 4	20MHz/1RB	Back	0.5	20175	1732.5	23.68	24.50	1.21	-0.02	0.507	**0.612**
	LTE Band 4	20MHz/1RB	Left Side	0.5	20175	1732.5	23.68	24.50	1.21	0.07	0.331	0.400
	LTE Band 4	20MHz/1RB	Right Side	0.5	20175	1732.5	23.68	24.50	1.21	0.01	0.286	0.345
	LTE Band 4	20MHz/1RB	Top Side	0.5	20175	1732.5	23.68	24.50	1.21	N/A	N/A	N/A
	LTE Band 4	20MHz/1RB	Bottom Side	0.5	20175	1732.5	23.68	24.50	1.21	0.02	0.204	0.246
	LTE Band 4	20MHz/50RB	Front	0.5	20175	1732.5	23.68	24.50	1.21	0.00	0.388	0.469
	LTE Band 4	20MHz/50RB	Back	0.5	20175	1732.5	23.68	24.50	1.21	0.06	0.493	0.595
	LTE Band 4	20MHz/50RB	Left Side	0.5	20175	1732.5	23.68	24.50	1.21	-0.04	0.324	0.391
	LTE Band 4	20MHz/50RB	Right Side	0.5	20175	1732.5	23.68	24.50	1.21	-0.08	0.277	0.335

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	LTE Band 4	20MHz/50RB	Top Side	0.5	20175	1732.5	23.68	24.50	1.21	N/A	N/A	N/A
	LTE Band 4	20MHz/50RB	Bottom Side	0.5	20175	1732.5	23.68	24.50	1.21	0.06	0.192	0.232

<WIFI 2.4GHz>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
	WIFI 2.4GHz	802.11b	Front	0.5	11	2462	14.33	14.50	1.04	-0.09	0.325	0.338
#12	WIFI 2.4GHz	802.11b	Back	0.5	11	2462	14.33	14.50	1.04	0.05	0.417	**0.434**
	WIFI 2.4GHz	802.11b	Left Side	0.5	11	2462	14.33	14.50	1.04	0.03	0.294	0.306
	WIFI 2.4GHz	802.11b	Right Side	0.5	11	2462	14.33	14.50	1.04	N/A	N/A	N/A
	WIFI 2.4GHz	802.11b	Top Side	0.5	11	2462	14.33	14.50	1.04	0.11	0.282	0.293
	WIFI 2.4GHz	802.11b	Bottom Side	0.5	11	2462	14.33	14.50	1.04	N/A	N/A	N/A

Note:

1. Per KDB865664 D01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/Kg; if the deviation among the repeated measurement is ≤20%,and the measured SAR <1.45W/Kg, only one repeated measurement is required.

13. Simultaneous Transmission Analysis

13. 1. Simultaneous TX SAR Considerations

No.	Applicable Simultaneous Transmission
1.	GSM+WIFI 2.4GHz
2.	WCDMA+WIFI2.4GHz
3.	LTE+WIFI2.4G
4.	GSM+BT
5.	WCDMA+BT
6.	LTE+BT

Note:

1. WIFI and Bluetooth share the same antenna, and can not transmit simultaneously.

13. 2. Evaluation of Simultaneous SAR

< Head Exposure Conditions>

Simultaneous transmission SAR for WIFI2.4G and GSM

Test Position	GSM850 SAR_{1-g} (W/Kg)	GSM1900 SAR_{1-g} (W/Kg)	WIFI2.4G SAR_{1-g} (W/Kg)	MAX. ΣSAR_{1-g} (W/Kg)	SAR_{1-g} Limit (W/Kg)	Simut. Meas. Required
Right Cheek	0.318	0.277	0.290	0.608	1.6	NO
Right Tilt	0.260	0.224	0.232	0.492	1.6	NO
Left Cheek	**0.345**	**0.295**	**0.310**	**0.655**	1.6	NO
Left Tilt	0.277	0.230	0.244	0.521	1.6	NO

Simultaneous transmission SAR for WIFI2.4G and WCDMA

Test Position	WCDMA Band2 SAR_{1-g} (W/Kg)	WCDMA Band5 SAR_{1-g} (W/Kg)	WIFI2.4G SAR_{1-g} (W/Kg)	MAX. ΣSAR_{1-g} (W/Kg)	SAR_{1-g} Limit (W/Kg)	Simut. Meas. Required
Right Cheek	0.284	0.276	0.290	0.574	1.6	NO
Right Tilt	0.208	0.204	0.232	0.440	1.6	NO
Left Cheek	**0.305**	**0.291**	**0.310**	**0.615**	1.6	NO
Left Tilt	0.242	0.211	0.244	0.486	1.6	NO

Simultaneous transmission SAR for WIFI2.4G and LTE

Test Position	LTE Band4 SAR_{1-g} (W/Kg)	WIFI2.4G SAR_{1-g} (W/Kg)	MAX. ΣSAR_{1-g} (W/Kg)	SAR_{1-g} Limit (W/Kg)	Simut. Meas. Required
Right Cheek	0.487	0.290	0.777	1.6	NO
Right Tilt	0.388	0.232	0.620	1.6	NO
Left Cheek	**0.517**	**0.310**	**0.827**	1.6	NO
Left Tilt	0.403	0.244	0.647	1.6	NO

Simultaneous transmission SAR for BT and GSM

Address: 1/F., Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.
Tel:(86) 755-26066440 Fax: (86) 755-26014772 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

Test Position	GSM850 SAR$_{1-g}$ (W/Kg)	GSM1900 SAR$_{1-g}$ (W/Kg)	BT SAR$_{1-g}$ (W/Kg)	MAX. ΣSAR$_{1-g}$ (W/Kg)	SAR$_{1-g}$ Limit (W/Kg)	Simut. Meas. Required
Right Cheek	0.348	0.296	**0.225**	0.573	1.6	NO
Right Tilt	0.285	0.240	**0.225**	0.510	1.6	NO
Left Cheek	**0.378**	**0.315**	**0.225**	**0.603**	1.6	NO
Left Tilt	0.303	0.246	**0.225**	0.528	1.6	NO

Simultaneous transmission SAR for BT and WCDMA

Test Position	WCDMA Band2 SAR$_{1-g}$ (W/Kg)	WCDMA Band5 SAR$_{1-g}$ (W/Kg)	BT SAR$_{1-g}$ (W/Kg)	MAX. ΣSAR$_{1-g}$ (W/Kg)	SAR$_{1-g}$ Limit (W/Kg)	Simut. Meas. Required
Right Cheek	0.284	0.276	**0.225**	0.509	1.6	NO
Right Tilt	0.208	0.204	**0.225**	0.433	1.6	NO
Left Cheek	**0.305**	**0.291**	**0.225**	**0.530**	1.6	NO
Left Tilt	0.242	0.211	**0.225**	0.467	1.6	NO

Simultaneous transmission SAR for BT and LTE

Test Position	LTE Band4 SAR$_{1-g}$ (W/Kg)	BT SAR$_{1-g}$ (W/Kg)	MAX. ΣSAR$_{1-g}$ (W/Kg)	SAR$_{1-g}$ Limit (W/Kg)	Simut. Meas. Required
Right Cheek	0.487	**0.225**	0.712	1.6	NO
Right Tilt	0.388	**0.225**	0.613	1.6	NO
Left Cheek	**0.517**	**0.225**	**0.742**	1.6	NO
Left Tilt	0.403	**0.225**	0.628	1.6	NO

<Body Exposure Conditions>

Simultaneous transmission SAR for WIFI2.4G and GSM

Test Position	GSM850 SAR_{1-g} (W/Kg)	GSM1900 SAR_{1-g} (W/Kg)	WIFI2.4G SAR_{1-g} (W/Kg)	MAX. ΣSAR_{1-g} (W/Kg)	SAR_{1-g} Limit (W/Kg)	Simut. Meas. Required
Front	0.469	0.595	0.338	0.933	1.6	NO
Back	**0.687**	**0.713**	**0.434**	**1.147**	1.6	NO
Left Side	0.405	0.504	0.306	0.81	1.6	NO
Right Side	0.319	0.438	N/A	N/A	1.6	NO
Top Side	N/A	N/A	0.293	N/A	1.6	NO
Bottom Side	0.28	0.343	N/A	N/A	1.6	NO

Simultaneous transmission SAR for WIFI2.4G and WCDMA

Test Position	WCDMA Band2 SAR_{1-g} (W/Kg)	WCDMA Band5 SAR_{1-g} (W/Kg)	WIFI2.4G SAR_{1-g} (W/Kg)	MAX. ΣSAR_{1-g} (W/Kg)	SAR_{1-g} Limit (W/Kg)	Simut. Meas. Required
Front	0.621	0.302	0.338	0.959	1.6	NO
Back	**0.738**	**0.514**	**0.434**	**1.172**	1.6	NO
Left Side	0.566	0.281	0.306	0.872	1.6	NO
Right Side	0.501	0.243	N/A	N/A	1.6	NO
Top Side	N/A	N/A	0.293	N/A	1.6	NO
Bottom Side	0.375	0.213	N/A	N/A	1.6	NO

Simultaneous transmission SAR for WIFI2.4G and LTE

Test Position	LTE Band4 SAR_{1-g} (W/Kg)	WIFI2.4G SAR_{1-g} (W/Kg)	MAX. ΣSAR_{1-g} (W/Kg)	SAR_{1-g} Limit (W/Kg)	Simut. Meas. Required
Front	0.477	0.338	0.815	1.6	NO
Back	**0.612**	**0.434**	**1.046**	1.6	NO
Left Side	0.400	0.306	0.706	1.6	NO
Right Side	0.345	N/A	N/A	1.6	NO
Top Side	N/A	0.293	N/A	1.6	NO
Bottom Side	0.246	N/A	N/A	1.6	NO

Simultaneous transmission SAR for BT and GSM

Test Position	GSM850 SAR_{1-g} (W/Kg)	GSM1900 SAR_{1-g} (W/Kg)	BT SAR_{1-g} (W/Kg)	MAX. ΣSAR_{1-g} (W/Kg)	SAR_{1-g} Limit (W/Kg)	Simut. Meas. Required
Front	0.463	0.631	**0.225**	0.856	1.6	NO
Back	**0.678**	**0.757**	**0.225**	**0.982**	1.6	NO
Left Side	0.399	0.535	**0.225**	0.760	1.6	NO
Right Side	0.314	0.465	**0.225**	0.690	1.6	NO
Top Side	N/A	N/A	**0.225**	N/A	1.6	NO
Bottom Side	0.276	0.365	**0.225**	0.590	1.6	NO

Simultaneous transmission SAR for BT and WCDMA

Test Position	WCDMA Band2 SAR_{1-g} (W/Kg)	WCDMA Band5 SAR_{1-g} (W/Kg)	BT SAR_{1-g} (W/Kg)	MAX. ΣSAR_{1-g} (W/Kg)	SAR_{1-g} Limit (W/Kg)	Simut. Meas. Required
Front	0.621	0.302	**0.225**	0.846	1.6	NO
Back	**0.738**	**0.514**	**0.225**	**0.963**	1.6	NO
Left Side	0.566	0.281	**0.225**	0.791	1.6	NO
Right Side	0.501	0.243	**0.225**	0.726	1.6	NO
Top Side	N/A	N/A	**0.225**	N/A	1.6	NO
Bottom Side	0.375	0.213	**0.225**	0.600	1.6	NO

Simultaneous transmission SAR for BT and LTE

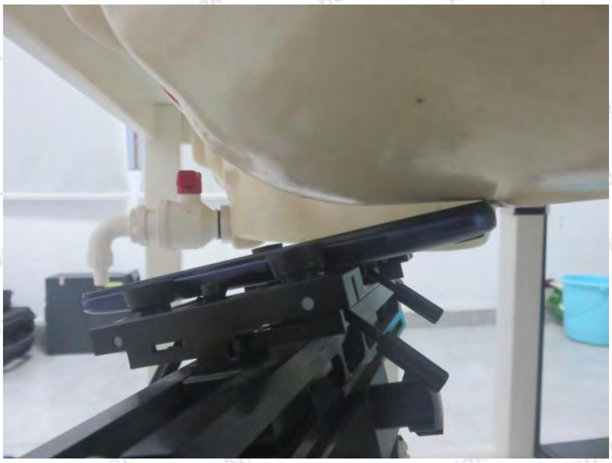
Test Position	LTE Band4 SAR_{1-g} (W/Kg)	BT SAR_{1-g} (W/Kg)	MAX. ΣSAR_{1-g} (W/Kg)	SAR_{1-g} Limit (W/Kg)	Simut. Meas. Required
Front	0.477	**0.225**	0.702	1.6	NO
Back	**0.612**	**0.225**	**0.837**	1.6	NO
Left Side	0.400	**0.225**	0.625	1.6	NO
Right Side	0.345	**0.225**	0.570	1.6	NO
Top Side	N/A	**0.225**	N/A	1.6	NO
Bottom Side	0.246	**0.225**	0.471	1.6	NO

14. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is< 1.5 W/Kg, the extensive SAR measurement uncertainty analysis described in IEC 62209-2:2010 is not required in SAR reports submitted for equipment approval.

Appendix A. SAR Test Setup Photos

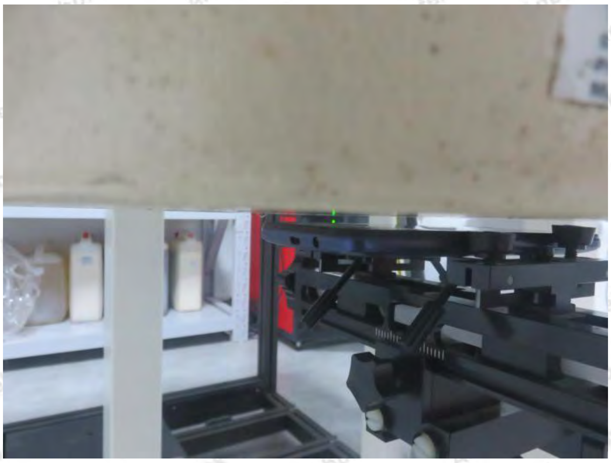
Left Cheek



Left Tilt 15°

Right Cheek

Right Tilt 15°



Body Front(5mm)

Body Back(5mm)

Top Side(5mm)

Bottom Side(5mm)

Left Side(5mm)

Right Side(5mm)

Appendix B. Plots of SAR System Check

Date: 10/14/2019

835MHz Head System Check

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d154

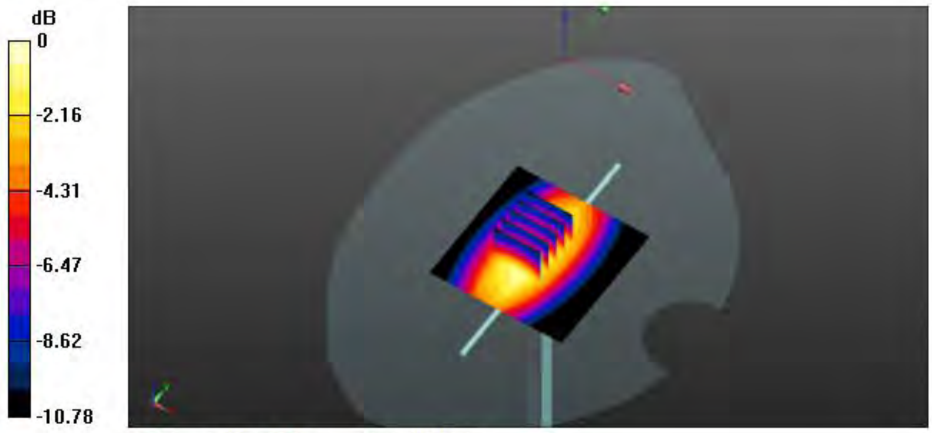
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.96 S/m; ε_r = 41.68; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(9.71, 9.71, 9.71); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.83 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.852 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.39 W/kg
SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.66 W/kg
Maximum value of SAR (measured) = 2.86 W/kg



0 dB = 2.86 W/kg = 4.56 dBW/kg

835MHz Body System Check

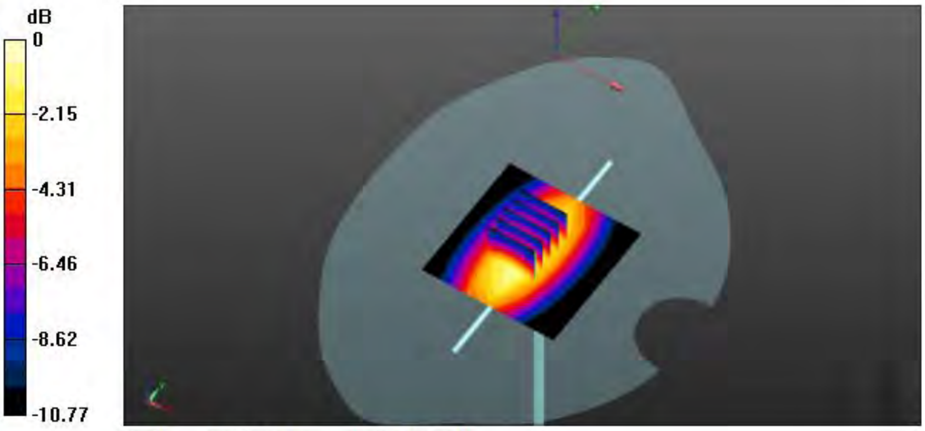
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d154

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 1.06 S/m; ε_r = 55.26; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(9.88, 9.88, 9.88); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.74 W/kg
Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.894 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 4.02 W/kg
SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.71 W/kg
Maximum value of SAR (measured) = 3.01 W/kg



0 dB = 3.01 W/kg = 4.79 dBW/kg

Date: 10/18/2019

1900MHz Head System Check

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d175

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.48 S/m; ε_r = 40.29; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(8.13, 8.13, 8.13); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 14.8 W/kg

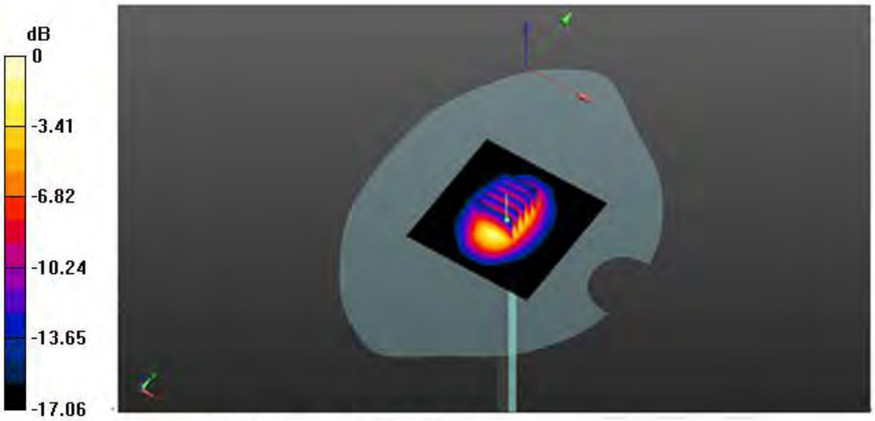
Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 100.4 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 18.0 W/kg

SAR(1 g) = 9.94 W/kg; SAR(10 g) = 5.06 W/kg

Maximum value of SAR (measured) = 15.3 W/kg



0 dB = 15.3 W/kg = 11.85 dBW/kg

Date: 10/21/2019

1900MHz Body System Check

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d175

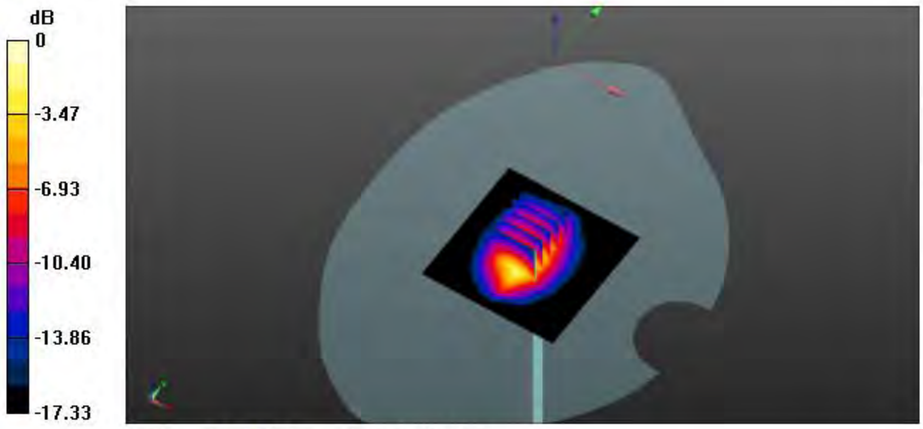
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.52 S/m; ε_r = 53.29; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.97, 7.97, 7.97); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 12.3 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 86.92 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 17.8 W/kg
SAR(1 g) = 9.29 W/kg; SAR(10 g) = 4.87 W/kg
Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg = 11.67 dBW/kg

1750MHz Head System Check

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1021

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1750 MHz; σ = 1.36 S/m; ε_r = 40.16; ρ = 1000 kg/m^3

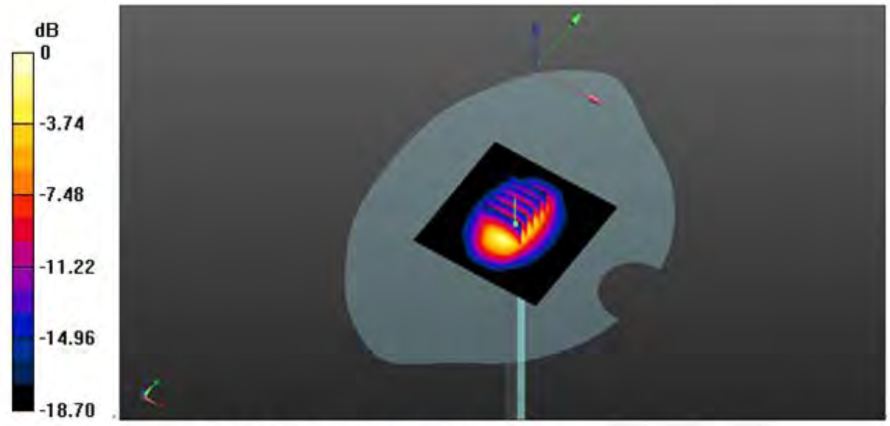
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(8.61, 8.61, 8.61); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.6 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 100.6 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.24 W/kg; SAR(10 g) = 4.17 W/kg
Maximum value of SAR (measured) = 14.9 W/kg



0 dB = 14.9 W/kg = 11.73 dBW/kg

1750MHz Body System Check

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1021

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1750 MHz; σ = 1.50 S/m; ε_r = 53.29; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(8.24, 8.24, 8.24); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Maximum value of SAR (interpolated) = 10.6 W/kg

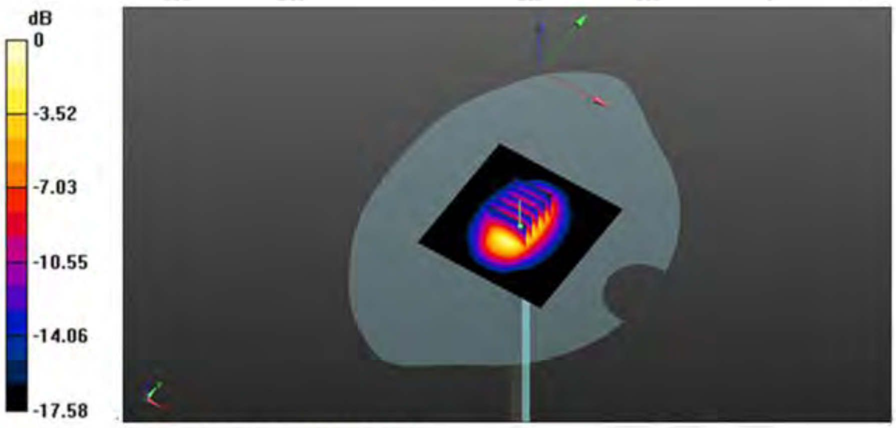
Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 87.674 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 18.1 W/kg

SAR(1 g) = 9.09 W/kg; SAR(10 g) = 4.77 W/kg

Maximum value of SAR (measured) = 10.7 W/kg



0 dB = 10.7 W/kg = 10.14 dBW/kg

Date:10/28/2019

2450MHz Head System Check

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:910

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

Medium parameters used: f = 2450 MHz; σ = 1.76 S/m; ε_r = 38.88; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.57, 7.57, 7.57); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 20.1W/kg

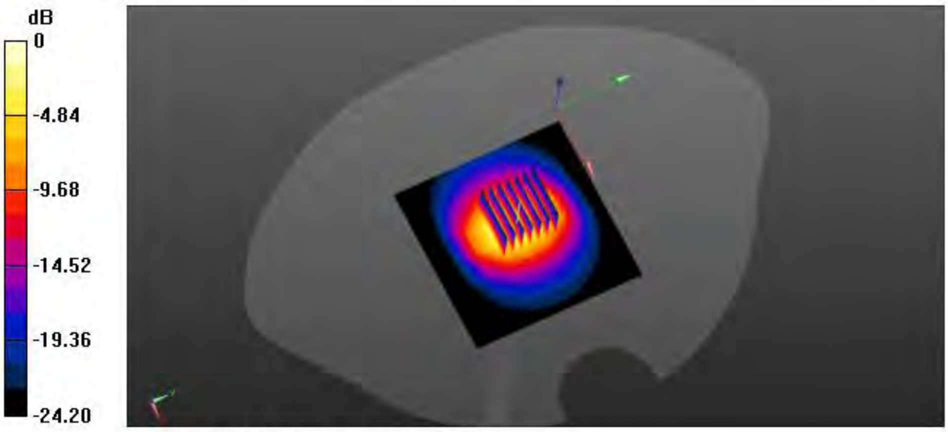
Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 98.406 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 28.4 W/kg

SAR(1 g) = 12.97W/kg; SAR(10 g) = 5.82 W/kg

Maximum value of SAR (measured) = 20.5 W/kg



0 dB = 20.5 W/kg = 13.12 dBW/kg

Date:10/30/2019

2450MHz Body System Check

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:910

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

Medium parameters used: f = 2450 MHz; σ = 1.92 S/m; ε_r = 52.31; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.53, 7.53, 7.53); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 17.9 W/kg

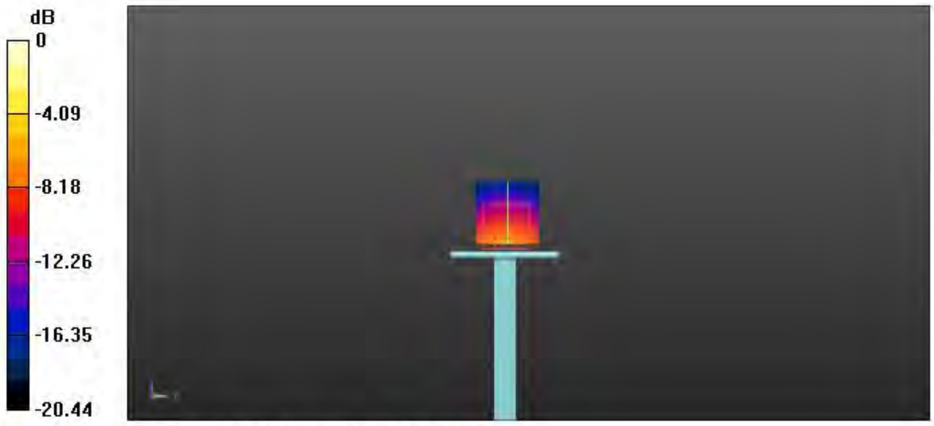
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 82.331 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 24.6 W/kg

SAR(1 g) = 12.15 W/kg; SAR(10 g) = 5.73 W/kg

Maximum value of SAR (measured) = 18.3 W/kg



0 dB = 18.3 W/kg = 12.62 dBW/kg

Appendix C. Plots of SAR Test Data

#1 Date: 10/14/2019

GSM850_GSM Voice_Left Cheek_Ch190

Communication System: UID 0, CW; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium parameters used: f = 836.6 MHz; σ = 0.96 S/m; ε_r = 41.68; ρ = 1000 kg/m^3

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(9.71, 9.71, 9.71); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

LEFT/L-C/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.403 W/kg

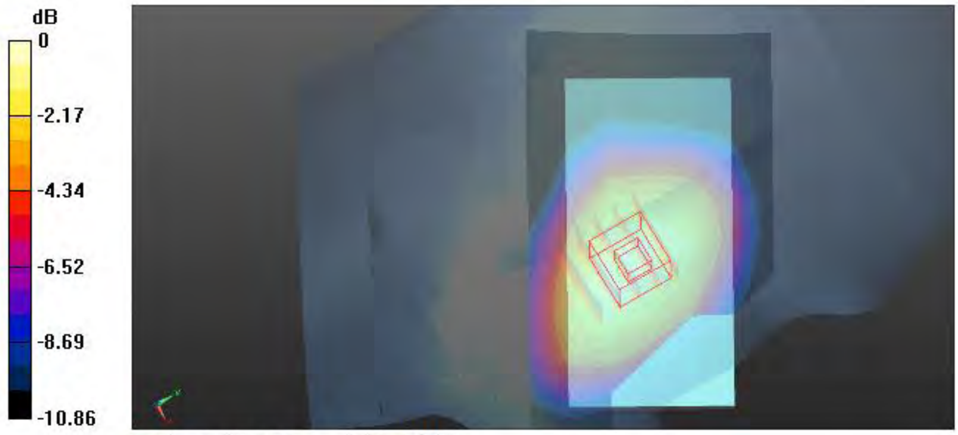
LEFT/L-C/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.926 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.455 W/kg

SAR(1 g) = 0.342 W/kg; SAR(10 g) = 0.254 W/kg

Maximum value of SAR (measured) = 0.407 W/kg



0 dB = 0.407 W/kg = -3.90 dBW/kg

#2 Date: 10/18/2019

PCS1900_GSM Voice_Left Cheek_Ch885

Communication System: UID 0, CW; Frequency: 1909.8 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1909.8 MHz; σ = 1.43 S/m; ε_r = 40.19; ρ = 1000 kg/m^3

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(8.13, 8.13, 8.13); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

LEFT/L-C/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.327 W/kg

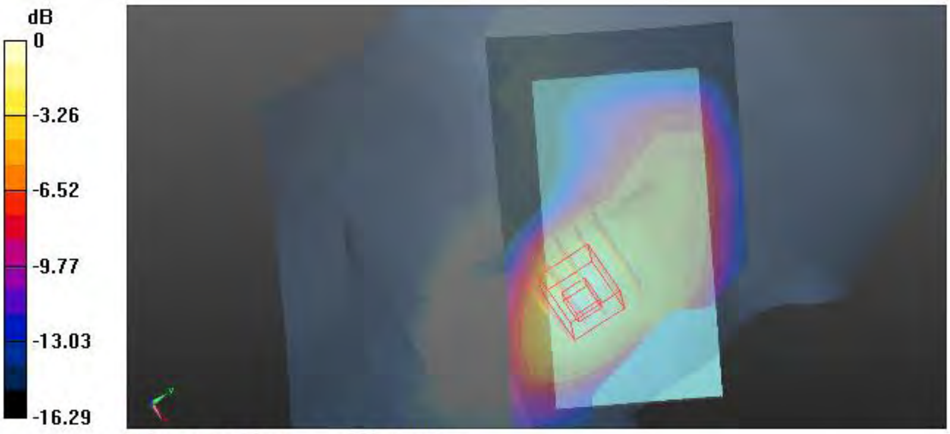
LEFT/L-C/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.192 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.430 W/kg

SAR(1 g) = 0.283 W/kg; SAR(10 g) = 0.169 W/kg

Maximum value of SAR (measured) = 0.350 W/kg



0 dB = 0.350 W/kg = -4.56 dBW/kg

#3 Date: 10/18/2019

WCDMA 1900_RMC 12.2K_Left Cheek_Ch9262

Communication System: UID 0, Generic WCDMA (0); Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1852.4 MHz; σ = 1.39 S/m; ε_r = 39.72; ρ = 1000 kg/m^3

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(8.13, 8.13, 8.13); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

LEFT/L-C/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.344 W/kg

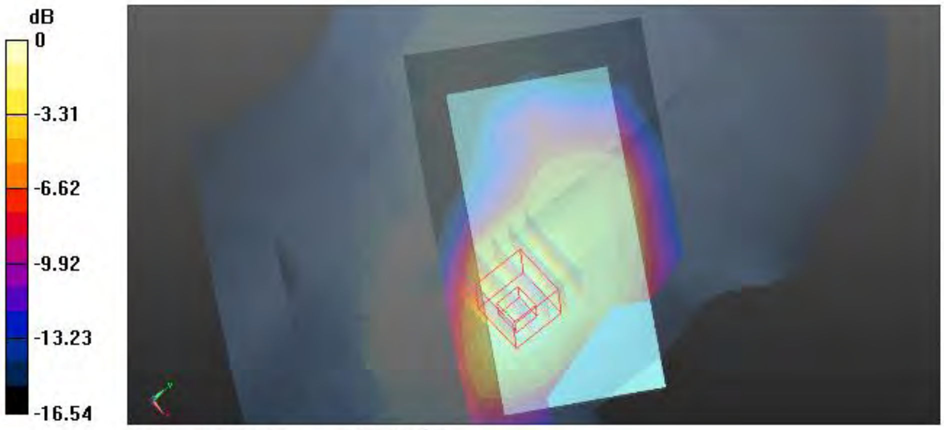
LEFT/L-C/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.819 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.462 W/kg

SAR(1 g) = 0.297 W/kg; SAR(10 g) = 0.175 W/kg

Maximum value of SAR (measured) = 0.360 W/kg



0 dB = 0.360 W/kg = -4.44 dBW/kg

#4 Date: 10/14/2019

WCDMA 850_RMC 12.2K_Left Cheek_Ch4132

Communication System: UID 0, Generic WCDMA (0); Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium parameters used: f = 826.4 MHz; σ = 0.96 S/m; ε_r = 41.68; ρ = 1000 kg/m^3

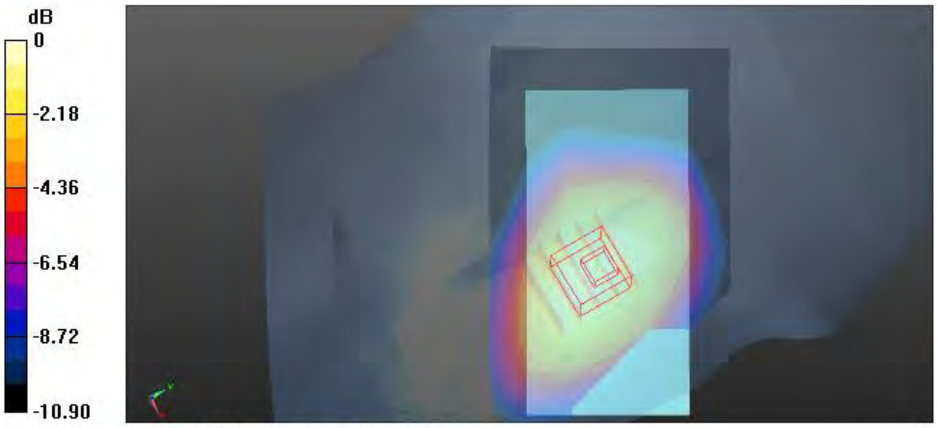
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(9.71, 9.71, 9.71); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

LEFT/L-C/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.300 W/kg

LEFT/L-C/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.674 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.357 W/kg
SAR(1 g) = 0.265 W/kg; SAR(10 g) = 0.197 W/kg
Maximum value of SAR (measured) = 0.322 W/kg



0 dB = 0.322 W/kg = -4.92 dBW/kg

#5 Date: 10/23/2019

LTE Band4_1RB_Left Cheek_Ch20175

Communication System: UID 0, Generic LTE (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.36 S/m; ε_r = 40.16; ρ = 1000 kg/m^3

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7396; ConvF(8.61, 8.61, 8.61); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

LEFT HEAD/L-C/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.532 W/kg

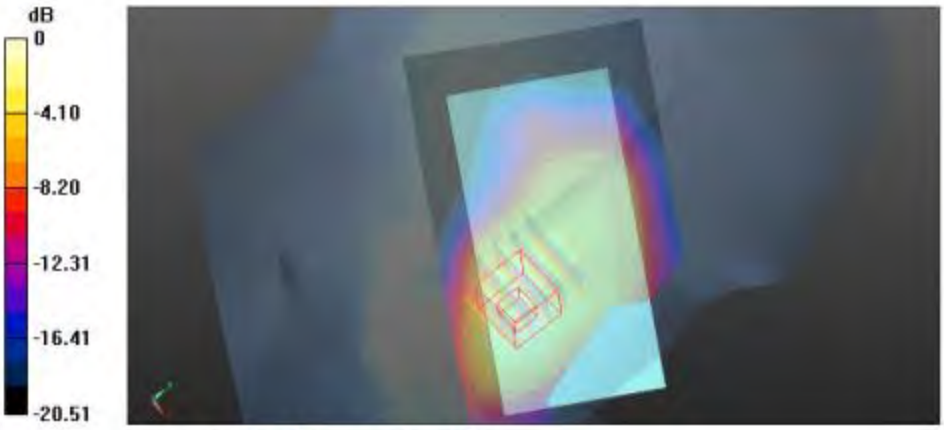
LEFT HEAD/L-C/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.666 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.800 W/kg

SAR(1 g) = 0.428 W/kg; SAR(10 g) = 0.266 W/kg

Maximum value of SAR (measured) = 0.634 W/kg



0 dB = 0.634 W/kg = -1.98 dBW/kg

#6 Date: 10/28/2019

WIFI 2.4G_Left Cheek_Ch11

Communication System: UID 0, wifi (fcc) (0); Frequency: 2462 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2462 MHz; σ = 1.76 S/m; εr = 38.88; ρ = 1000 kg/m3

Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.57, 7.57, 7.57); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

LEFT HEAD/L-C/Area Scan (7x11x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.279 W/kg

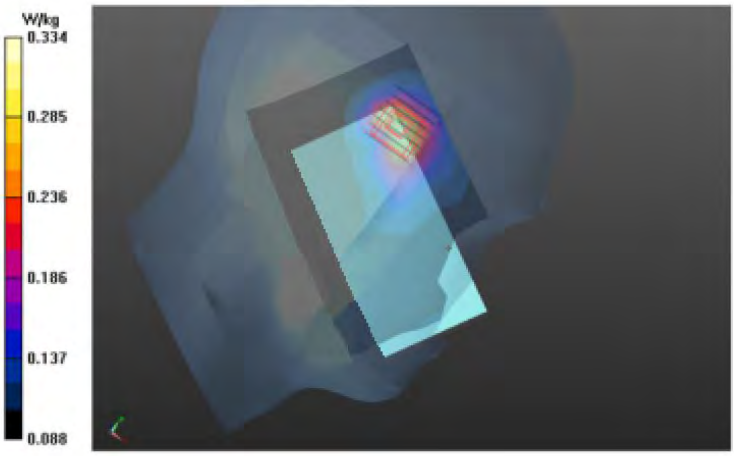
LEFT HEAD/L-C/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.199 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.58 W/kg

SAR(1 g) = 0.298 W/kg; SAR(10 g) = 0.162 W/kg

Maximum value of SAR (measured) = 0.334 W/kg



#7 Date: 10/16/2019

GSM850_GPRS_2TX_Body Back_Ch190

Communication System: UID 0, GPRS(2 Tx slots) (0); Frequency: 836.6 MHz;Duty Cycle: 1:1.99986

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.96 S/m; ε_r = 55.86; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(9.88, 9.88, 9.88); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/2ST-BACK/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.17 W/kg

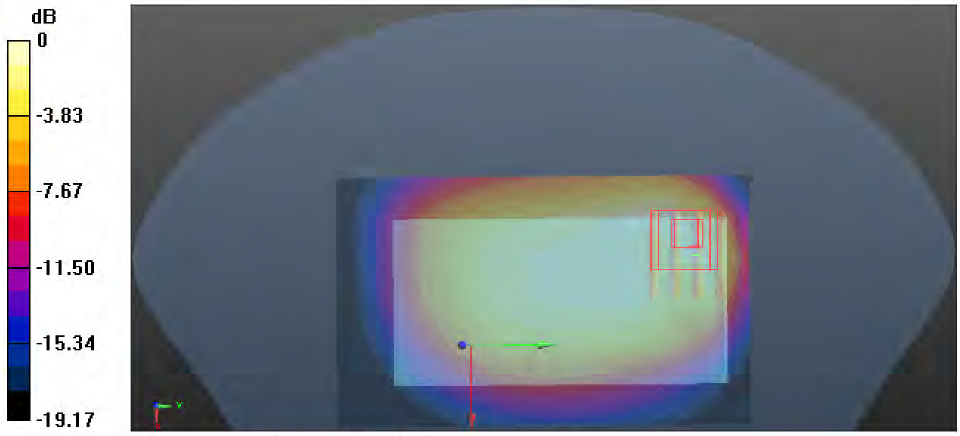
BODY/2ST-BACK/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 30.932 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.653 W/kg; SAR(10 g) = 0.407 W/kg

Maximum value of SAR (measured) = 1.13 W/kg



0 dB = 1.13 W/kg = 0.53 dBW/kg

#8 Date: 10/21/2019

GSM1900_GPRS_4TX_Body Back_Ch885

Communication System: UID 0, GPRS(4 Tx slots) (0); Frequency: 1909.8 MHz;Duty Cycle: 1:1.99986

Medium parameters used: f = 1909.8 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.97, 7.97, 7.97); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/4ST-BACK/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.20 W/kg

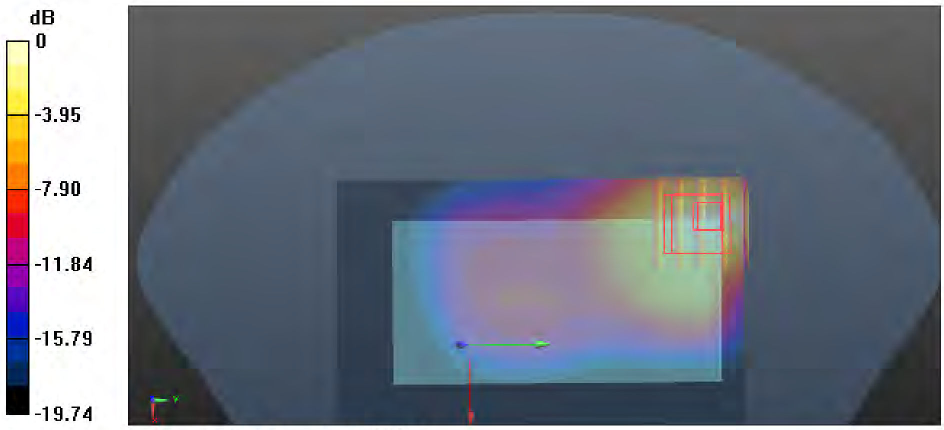
BODY/4ST-BACK/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.909 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 0.702 W/kg; SAR(10 g) = 0.446 W/kg

Maximum value of SAR (measured) = 1.18 W/kg



0 dB = 1.18 W/kg = 0.72 dBW/kg

#9 Date: 10/21/2019

WCDMA 1900_RMC 12.2K_Body Back_Ch9262

Communication System: UID 0, Generic WCDMA (0); Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1852.4 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.97, 7.97, 7.97); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/BACK/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.900 W/kg

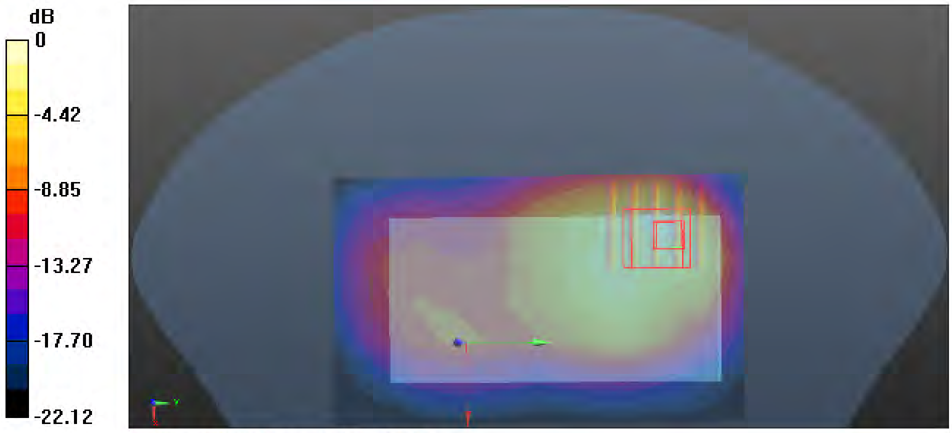
BODY/BACK/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.142 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 1.45 W/kg

SAR(1 g) = 0.718 W/kg; SAR(10 g) = 0.373 W/kg

Maximum value of SAR (measured) = 1.05 W/kg



0 dB = 1.05 W/kg = 0.21 dBW/kg

#10 Date: 10/16/2019

WCDMA 850_RMC 12.2K_Body Back_Ch4132

Communication System: UID 0, Generic WCDMA (0); Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.96 S/m; ε_r = 55.86; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(9.88, 9.88, 9.88); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/BACK/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.637 W/kg

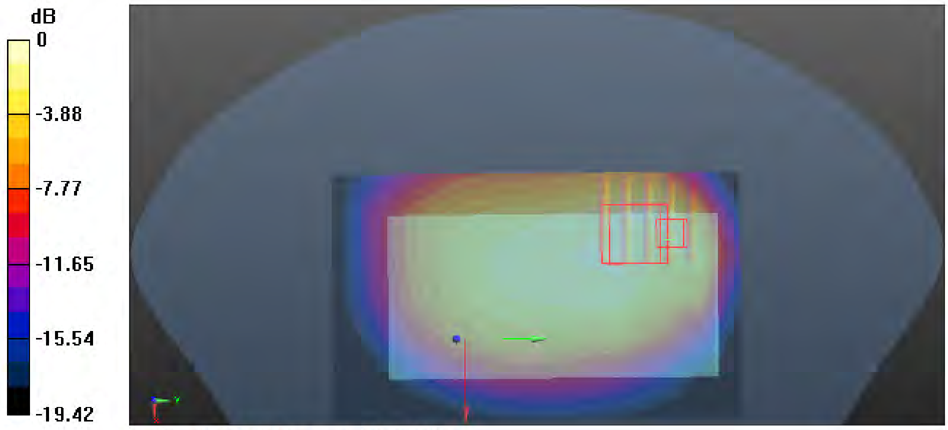
BODY/BACK/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.769 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.953 W/kg

SAR(1 g) = 0.468 W/kg; SAR(10 g) = 0.266 W/kg

Maximum value of SAR (measured) = 0.729 W/kg



0 dB = 0.729 W/kg = -1.37 dBW/kg

Address: 1/F., Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.
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Hotline 400-003-0500
www.anbotek.com

#11 Date: 10/21/2019

LTE Band4_1RB_Body Back_Ch20175

Communication System: UID 0, Generic LTE (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.50 S/m; ε_r = 53.29; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7396; ConvF(8.24, 8.24, 8.24); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/BACK/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.686 W/kg

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

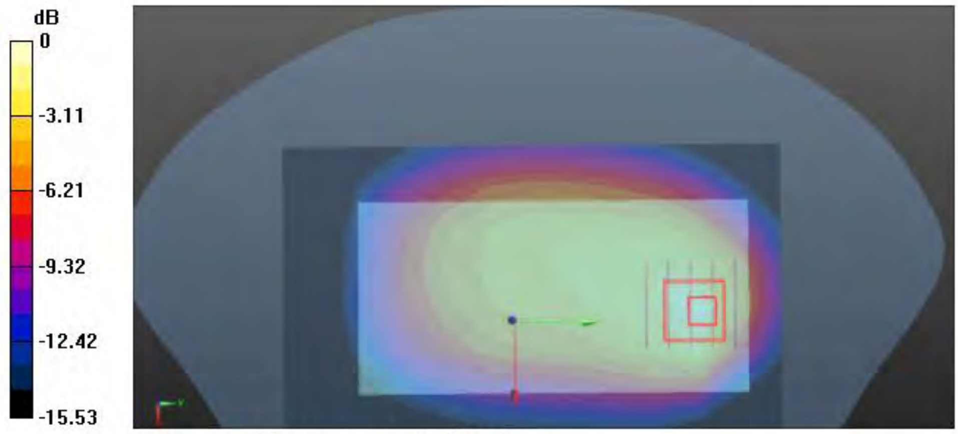
Reference Value = 17.627 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.630 W/kg

Peak SAR (extrapolated) = 0.882 W/kg

SAR(1 g) = 0.507 W/kg; SAR(10 g) = 0.285 W/kg

Maximum value of SAR (measured) = 0.649 W/kg



0 dB = 0.649 W/kg = -1.88 dBW/kg

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#12 Date: 10/30/2019

WIFI 2.4G_Body Back_Ch11

Communication System: UID 0, wifi (fcc) (0); Frequency: 2462 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2462 MHz; σ = 1.92 S/m; εr = 52.31; ρ = 1000 kg/m3

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.53, 7.53, 7.53); Calibrated: 6.5.2019;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 3.9.2019
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/BACK/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.467 W/kg

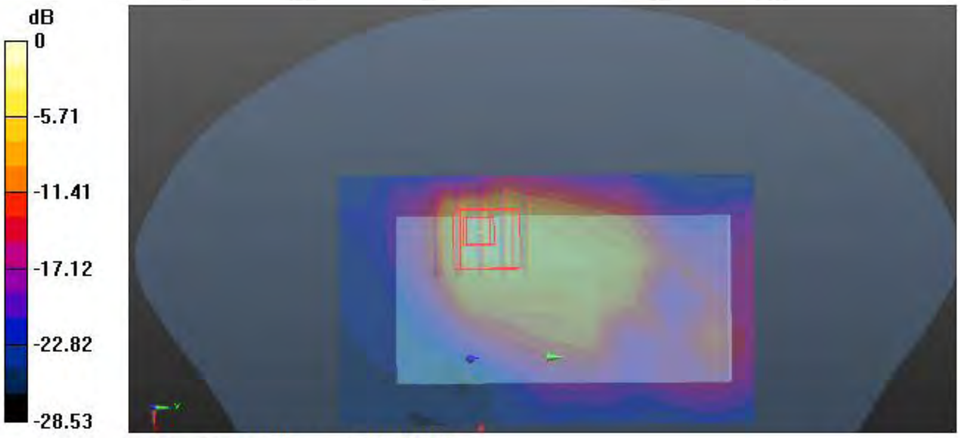
BODY/BACK/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.344 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.59 W/kg

SAR(1 g) = 0.417 W/kg; SAR(10 g) = 0.203 W/kg

Maximum value of SAR (measured) = 0.944 W/kg



0 dB = 0.944 W/kg = -0.25 dBW/kg