In accordance with the requirements of FCC Report and Order:
FCC 47 CFR Part 2 (2.1093)

FCC SAR TEST REPORT

For

Product Name: 3G Smartphone
Brand Name: RINNO
Model No.: R355
Series Model: N/A
Test Report Number: C160111S02-SF

Issued for

Distribuidora Sinn, S.A. de C.V.
Lago Zurich No.219 Piso 12, Colonia Ampliacion Granada, Del. Miguel Hidalgo, Mexico City, Mexico

Issued by

Compliance Certification Services Inc.
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TESTING CERT #2541.01

Revision History

Revision	REPORT NO.	Date	Page Revised	Contents
Original	C160111S02-SF	January 23, 2016	N/A	N/A
01	C160111S02-SF	February 24, 2016	16,38	Add detailed measurement uncertainty evaluation table and add distance for top and bottom sides.

TABLE OF CONTENTS

1. CERTIFICATE OF COMPLIANCE (SAR EVALUATION)

Product Name:	3G Smartphone
Brand Name:	RINNO
Model Name.:	R355
Series Model:	N/A
Devices supporting GPRS/EDGE：	Class B
Device Category:	Protable DEVICES
Exposure Category:	GENERAL POPULATION/UNCONTROLLED EXPOSURE
Date of Test:	January 21, 2016 & January 22, 2016
Applicant: **Address:**	**Distribuidora Sinn, S.A. de C.V.** Lago Zurich No.219 Piso 12, Colonia Ampliacion Granada, Del. Miguel Hidalgo, Mexico City, Mexico
Manufacturer: **Address:**	**New Explorer Telecom Co.Ltd** Room 5B, 5 Floor, BLDG.1, Financial Base, No.8 Kefa Rd., Nanshan, Shenzhen, China
Application Type:	Certification

APPLICABLE STANDARDS AND TEST PROCEDURES	
STANDARDS AND TEST PROCEDURES	**TEST RESULT**
KDB 865664	compliance
Deviation from Applicable Standard	
None	

The device was tested by Compliance Certification Services Inc. in accordance with the measurement methods and procedures specified in KDB 865664 The test results in this report apply only to the tested sample of the stated device/equipment. Other similar device/equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:	***Tested by:***
Jeff.fang RF Manager Compliance Certification Services Inc.	Sam.ye Test Engineer Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product Name:	3G Smartphone	
Brand Name:	RINNO	
Model Name.:	R355	
Series Model:	N/A	
Model Discrepancy:	N/A	
FCC ID:	2AGTF-R355	
IMEI:	N/A	
Power reduction:	NO	
DTM Description:	N/A	
Device Category:	Production unit	
Frequency Range:	GSM 850: 824.2 ~ 848.8 MHz GSM1900: 1850.2 ~ 1909.8 MHz WCDMA Band II:1852.4~1907.6MHz WCDMA Band V:826.4~846.6 MHz WLAN 2.4G: 2412 ~ 2462 MHz Bluetooth: 2402 ~ 2480 MHz	
Max. Reported SAR(1g):	Head: GSM 850: 0.573 W/kg GSM 1900: 0.473 W/kg WCDMA Band II: 0.215 W/kg WCDMA Band V: 0.762 W/kg WLAN 2.4G: 0.368 W/kg	Body: GSM 850: 0.759 W/kg GSM1900: 0.766 W/kg WCDMA Band II: 0.560 W/kg WCDMA Band V: 0.742 W/kg WLAN 2.4G: 0.519 W/kg
Modulation Technique:	GSM/GPRS: GMSK EDGE:8PSK RMC/AMR: QPSK WCDMA: QPSK Release version: WCDMA:R99 HSDPA:Rel.7 HSUPA:Rel.6 IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: DSSS (CCK, DQPSK,DBPSK)+OFDM (QPSK, BPSK, 16-QAM, 64-QAM) IEEE 802.11n: OFDM(MCS 0-7) Bluetooth 3.0+EDR: GFSK + π/4DQPSK+8DPSK BLE 4.0: GFSK	
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi enabled devices. Mobile Hotspot (Wi-Fi 2.4 GHz)	
Accessories:	Battery(rating): Capacitance: 1300 mAh Rated Voltage: 3.7V	
Antenna Specification:	GSM&WCDMA: PIFA Antenna Wifi&Bluetooth: PIFA Antenna	
Operating Mode:	Maximum continuous output	
Remark: The product details information please refer to the product specification		

3. REQUIREMENTS FOR COMPLIANCE TESTING DEFINED BY THE FCC

The order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 W/Kg for an uncontrolled environment and 8.0 W/Kg for an occupational/controlled environment as recommended by the FCC 47 CFR Part 2 (2.1093).

4. TEST METHODOLOGY

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

☒ FCC 47 CFR Part 2 (2.1093)
☒ IEEE 1528:2013
☒ KDB 248227 D01v02r02 802 11 Wi-Fi SAR
☒ KDB 447498 D01v06 General RF Exposure Guidance
☒ KDB 648474 D04v01r03 Handset SAR
☒ KDB 865664 D01v01r04 SAR Measurement 100 MHz to 6 GHz
☒ KDB 865664 D02v01r02 RF Exposure Reporting
☒ KDB 941225 D01v03r01 3G SAR Procedures
☒ KDB 941225 D06v02r01 Hotspot SAR

5. TEST CONFIGURATION

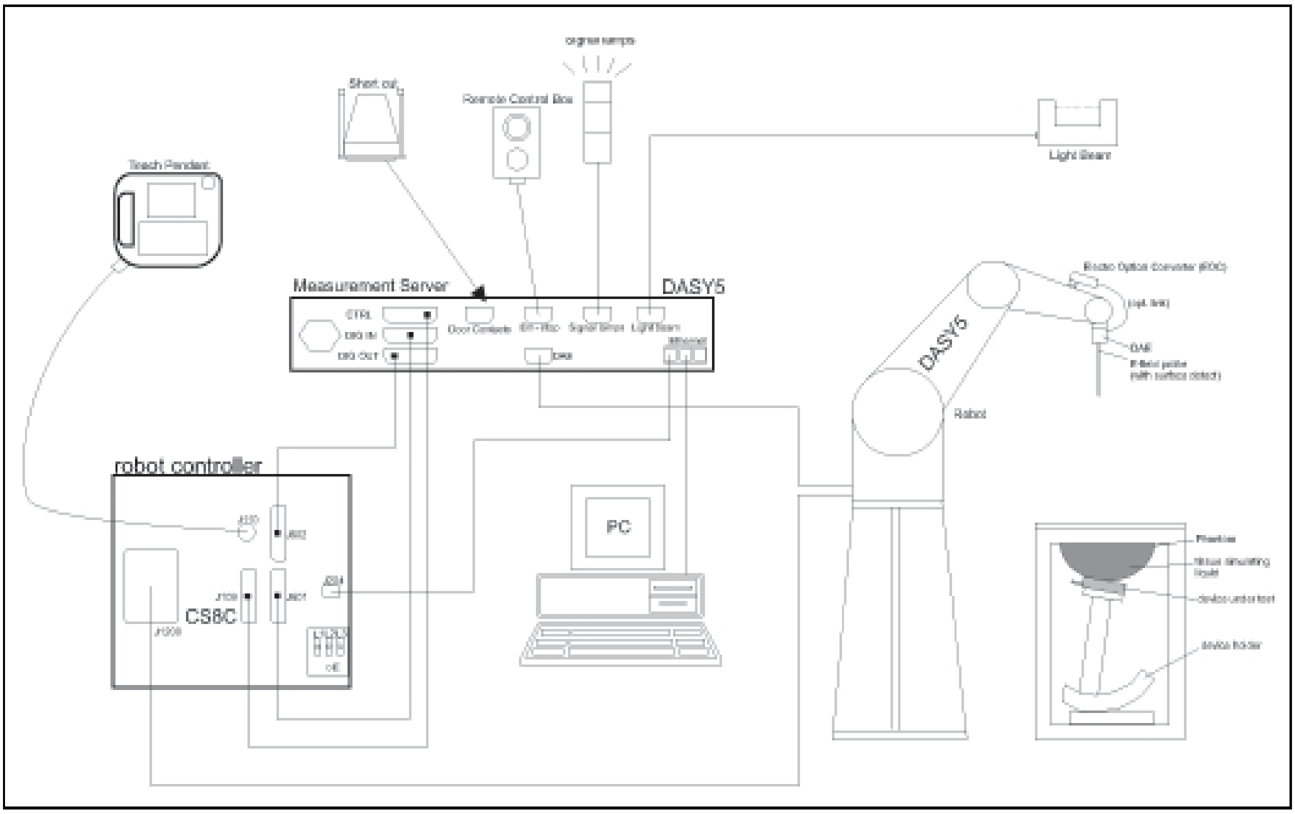
For WWAN SAR testing The device was controlled by using a base station emulator R&S CMU200. Communication between the device and the emulator was established by air link. The distance between the DUT and the antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of DUT. The DUT was set from the emulator to radiate maximum output power during all tests.

During WLAN SAR testing EUT is configured with the WLAN continuous TX tool, and the transmission duty factor was monitored on the spectrum analyzer with zero-span setting
For WLAN SAR testing, WLAN engineering test software installed on the EUT can provide continuous transmitting RF signal and duty cycle is 100%.

6. DOSIMETRIC ASSESSMENT SETUP

These measurements were performed with the automated near-field scanning system DASY 5 from SPEAG. The system is based on a high precision robot (working range greater than 0.9 m), which positions the probes with a positional repeatability of better than ± 0.02 mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines to the data acquisition unit. The SAR measurements were conducted with the E-field PROBE EX3DV4 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the procedure described in [7] with accuracy of better than ±10%. The spherical isotropy was evaluated with the procedure described in [8] and found to be better than ±0.25 dB. The phantom used was the SAM Twin Phantom as described in FCC supplement C, IEE P1528 and CENELEC EN 62209.

6.1 MEASUREMENT SYSTEM DIAGRAM



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

- A standard high precision 6-axis robot (St¨aubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 7.
- DASY5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing validating the proper functioning of the system.

6.2 SYSTEM COMPONENTS

	The DASY5 measurement server is based on a PC/104 CPU board with a 400MHz intel ULV celeron, 128MB chip-disk and 128 MB RAM. The necessary circuits for communication with either the DAE4(or DAE3) electronic box as well as the 16-bit AD-converter system for optical detection and digital I/O interface are contained on the DASY5 I/O-board, which is directly connected to the PC/104 bus of the CPU board. The measurement server performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation.
	The PC-operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with two expansion slots which are reserved for future applications. Please note that the expansion slots do not have a standardized pinout and therefore only the expansion cards provided by SPEAG can be inserted. Expansion cards from any other supplier could seriously damage the measurement server. Calibration: No calibration required.
Data Acquisition Electronics (DAE)	

The data acquisition electronics (DAE4) 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 mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection. The input impedance of the DAE4 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

EX3DV4 Isotropic E-Field Probe for Dosimetric Measurements

Construction: Symmetrical design with triangular core
Built-in shielding against static charges
PEEK enclosure material (resistant to organic solvents, e.g., DGBE)

Calibration: Basic Broad Band Calibration in air: 10-3000 MHz.
Conversion Factors (CF) for HSL 900 and HSL 1800
CF-Calibration for other liquids and frequencies upon request.

Frequency: 10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)

Directivity: ± 0.3 dB in HSL (rotation around probe axis)
± 0.5 dB in HSL (rotation normal to probe axis)

Dynamic Range: 10 μW/g to > 100 mW/g; Linearity: ± 0.2 dB
(noise: typically < 1 μW/g)

Dimensions: Overall length: 337 mm (Tip: 9 mm)
Tip diameter: 2.5 mm (Body: 10 mm)
Distance from probe tip to dipole centers: 1 mm

Application: High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

Interior of probe

SAM Twin Phantom

Construction:

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-200X, CENELEC 50360 and IEC 62209. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.

Shell Thickness: 2 ±0.2 mm

Filling Volume: Approx. 25 liters

Dimensions: Height: 850mm; Length: 1000mm; Width: 750mm

SAM Phantom (ELI4 v4.0)

Description Construction:

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209 Part II and all known tissue simulating liquids. ELI4 has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is supported by software version DASY4/DASY5.5 and higher and is compatible with all SPEAG dosimetric probes and dipoles

Shell Thickness: 2.0 ± 0.2 mm (sagging: <1%)

Filling Volume: Approx. 25 liters

Dimensions: Major ellipse axis: 600 mm

Minor axis: 400 mm 500mm

Device Holder for SAM Twin Phantom

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

System Validation Kits for SAM Twin Phantom

Construction: Symmetrical dipole with l/4 balun Enables measurement of feedpoint impedance with NWA Matched for use near flat phantoms filled with brain simulating solutions Includes distance holder and tripod adaptor. **Frequency:** 900,1800,2450,5800 MHz **ReTune loss:** > 20 dB at specified validation position **Power capability:** > 100 W (f < 1GHz); > 40 W (f > 1GHz) **Dimensions:** D835V2: dipole length: 161 mm; overall height: 340 mm D1800V2: dipole length: 72.5 mm; overall height: 300 mm D1900V2: dipole length: 67.7 mm; overall height: 300 mm D2450V2: dipole length: 51.5 mm; overall height: 290 mm D5GHzV2: dipole length: 20.6 mm; overall height: 300mm	
System Validation Kits for ELI4 phantom	
Construction: Symmetrical dipole with l/4 balun Enables measurement of feedpoint impedance with NWA Matched for use near flat phantoms filled with brain simulating solutions Includes distance holder and tripod adaptor. **Frequency:** 900, 1800, 2450, 5800 MHz **ReTune loss:** > 20 dB at specified validation position **Power capability:** > 100 W (f < 1GHz); > 40 W (f > 1GHz) **Dimensions:** D835V2: dipole length: 161 mm; overall height: 340 mm D1800V2: dipole length: 72.5 mm; overall height: 300 mm D1900V2: dipole length: 67.7 mm; overall height: 300 mm D2450V2: dipole length: 51.5 mm; overall height: 290 mm D5GHzV2: dipole length: 20.6 mm; overall height: 300 mm	

7. EVALUATION PROCEDURES

DATA EVALUATION

The DASY 5 post processing software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	$Norm_i$, 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 be imported into the software from the configuration files issued for the DASY 5 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 5 parameter)
- dcp_i = Diode compression point (DASY 5 parameter)

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

E-field probes: $$E_i = \sqrt{\frac{V_i}{Norm_i \bullet ConvF}}$$

H-field probes: $$H_i = \sqrt{Vi} \cdot \frac{a_{i10} + a_{i11} f + a_{i12} f^2}{f}$$

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 E0field Probes
- $ConvF$ = Sensitivity enhancement in solution
- aij = Sensor sensitivity factors for H-field probes
- f = Carrier frequency (GHz)
- Ei = Electric field strength of channel i in V/m
- Hi = Magnetic field strength of channel i in A/m

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

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

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 normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid.

The power flow density is calculated assuming the excitation field as a free space field.

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

with P_{pwe} = Equivalent power density of a plane wave in mW/cm^2

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

H_{tot} = total magnetic field strength in A/m

SAR EVALUATION PROCEDURES

The procedure for assessing the peak spatial-average SAR value consists of the following steps:

- **Power Reference Measurement**

  The reference and drift jobs are useful jobs for monitoring the power drift of the device under test in the batch process. Both jobs measure the field at a specified reference position, at a selectable distance from the phantom surface. The reference position can be either the selected section's grid reference point or a user point in this section. The reference job projects the selected point onto the phantom surface, orients the probe perpendicularly to the surface, and approaches the surface using the selected detection method.

- **Area Scan**

  The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a finer measurement around the hot spot. The sophisticated interpolation routines implemented in DASY 5 software can find the maximum locations even in relatively coarse grids. The scan area is defined by an editable grid. This grid is anchored at the grid reference point of the selected section in the phantom. When the area scan's property sheet is brought-up, grid was at to 15 mm by 15 mm and can be edited by a user.

- **Zoom Scan**

  Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The default zoom scan measures 5 x 5 x 7 points within a cube whose base faces are centered around the maximum found in a preceding area scan job within the same procedure. If the preceding Area Scan job indicates more then one maximum, the number of Zoom Scans has to be enlarged accordingly (The default number inserted is 1).

- **Power Drift measurement**

  The drift job measures the field at the same location as the most recent reference job within the same procedure, and with the same settings. The drift measurement gives the field difference in dB from the reading conducted within the last reference measurement. Several drift measurements are possible for one reference measurement. This allows a user to monitor the power drift of the device under test within a batch process. In the properties of the Drift job, the user can specify a limit for the drift and have DASY 5 software stop the measurements if this limit is exceeded.

- **Z-Scan**

  The Z Scan job measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. A user can anchor the grid to the current probe location. As with any other grids, the local Z-axis of the anchor location establishes the Z-axis of the grid.

SPATIAL PEAK SAR EVALUATION

The procedure for spatial peak SAR evaluation has been implemented according to the IEEE1529 standard. It can be conducted for 1 g and 10 g.

The DASY 5 system allows evaluations that combine measured data and robot positions, such as:

- maximum search
- extrapolation
- boundary correction
- peak search for averaged SAR

During a maximum search, global and local maximum searches are automatically performed in 2-D after each Area Scan measurement with at least 6 measurement points. It is based on the evaluation of the local SAR gradient calculated by the Quadratic Shepard's method. The algorithm will find the global maximum and all local maxima within -2 dB of the global maxima for all SAR distributions.

Extrapolation

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation.

Extrapolation routines require at least 10 measurement points in 3-D space. They are used in the Cube Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the modified Quadratic Shepard's method for extrapolation. For a grid using 5x5x7 measurement points with 5mm resolution amounting to 343 measurement points, the uncertainty of the extrapolation routines is less than 1% for 1 g and 10 g cubes.

Boundary effect

For measurements in the immediate vicinity of a phantom surface, the field coupling effects between the probe and the boundary influence the probe characteristics. Boundary effect errors of different dosimetric probe types have been analyzed by measurements and using a numerical probe model. As expected, both methods showed an enhanced sensitivity in the immediate vicinity of the boundary. The effect strongly depends on the probe dimensions and disappears with increasing distance from the boundary. The sensitivity can be approximately given as:

$$S \approx S_o + S_b exp(-\frac{z}{a}) cos(\pi \frac{z}{\lambda})$$

Since the decay of the boundary effect dominates for small probes ($a<<\lambda$), the cos-term can be omitted. Factors *Sb* (parameter Alpha in the DASY 5 software) and *a* (parameter Delta in the DASY 5 software) are assessed during probe calibration and used for numerical compensation of the boundary effect. Several simulations and measurements have confirmed that the compensation is valid for different field and boundary configurations.

This simple compensation procedure can largely reduce the probe uncertainty near boundaries. It works well as long as:

- the boundary curvature is small
- the probe axis is angled less than 30_ to the boundary normal
- the distance between probe and boundary is larger than 25% of the probe diameter
- the probe is symmetric (all sensors have the same offset from the probe tip)

Since all of these requirements are fulfilled in a DASY 5 system, the correction of the probe boundary effect in the vicinity of the phantom surface is performed in a fully automated manner via the measurement data extraction during post processing.

8. MEASUREMENT UNCERTAINTY

Measurement uncertainty for 30 MHz to 3 GHz averaged over 1 gram

Uncertainty Component	Uncertainty	Prob.	Div.	$c_{i\,(1g)}$	Std. Unc. (1-g)	v_i or Veff
Measurement System						
Probe Calibration (*k*=1)	6.00	Normal	1	1	6.00	∞
Probe Isotropy	4.70	Rectangular	√3	0.7	1.90	∞
Modulation Response	2.40	Rectangular	√3	1	1.39	∞
Hemispherical Isotropy	9.60	Rectangular	√3	0.7	3.88	∞
Boundary Effect	2.00	Rectangular	√3	1	1.15	∞
Linearity	4.70	Rectangular	√3	1	2.71	∞
System Detection Limit	1.00	Rectangular	√3	1	0.58	∞
Readout Electronics	0.30	Normal	1	1	0.30	∞
Response Time	0.80	Rectangular	√3	1	0.46	∞
Integration Time	2.60	Rectangular	√3	1	1.50	∞
RF Ambient Noise	3.00	Rectangular	√3	1	1.73	∞
RF Ambient Reflections	3.00	Rectangular	√3	1	1.73	∞
Probe Positioner	0.40	Rectangular	√3	1	0.23	∞
Probe Positioning	2.90	Rectangular	√3	1	1.67	∞
Max. SAR Evaluation	2.00	Rectangular	√3	1	1.15	∞
Test sample Related						
Test sample Positioning	2.9	Normal	1	1	2.9	145
Device Holder Uncertainty	3.6	Normal	1	1	3.6	5
Power drift	5	Rectangular	√3	1	2.89	∞
Power Scaling	0	Rectangular	√3	1	0.00	∞
Phantom and Tissue Parameters						
Phantom Uncertainty	6.1	Rectangular	√3	1	3.52	∞
SAR correction	1.9	Rectangular	√3	1	1.10	∞
Liquid Conductivity (target)	5	Rectangular	√3	0.64	1.85	∞
Liquid Conductivity (meas)	1.98	Rectangular	√3	0.78	0.89	∞
Liquid Permittivity (target)	5	Rectangular	√3	0.6	1.73	∞
Liquid Permittivity (meas)	3.42	Rectangular	√3	0.26	0.51	∞
Temp. unc. - Conductivity	3.4	Rectangular	√3	0.78	1.53	∞
Temp. unc. - Permittivity	0.4	Rectangular	√3	0.23	0.05	∞
Combined Std. Uncertainty		RSS			11.47	361
Expanded STD Uncertainty		*k*=2			22.93%	
Expanded STD Uncertainty		*k*=2			1.79dB	

9. EXPOSURE LIMIT

(A). Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

(B). Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

Note: Whole-Body SAR is averaged over the entire body, **partial-body SAR** is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. **SAR for hands, wrists, feet and ankles** is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

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

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

NOTE GENERAL POPULATION/UNCONTROLLED EXPOSURE PARTIAL BODY LIMIT 1.6 W/kg

10. EUT ARRANGEMENT

Please refer to IEEE1528-2013 illustration below.

10.1 ANTHROPOMORPHIC HEAD PHANTOM

Figure 7-1a shows the front, back and side views of SAM. The point “M” is the reference point for the center of mouth, “LE” is the left ear reference point (ERP), and “RE” is the right ERP. The ERPs are 15 mm posterior to the entrance to ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 7-1b. The plane passing through the two ear reference points and M is defined as the Reference Plane. The line N-F (Neck-Front) perpendicular to the reference plane and passing through the RE (or LE) is called the Reference Pivoting Line (see Figure 7-1c). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines should be marked on the external phantom shell to facilitate handset positioning. Posterior to the N-F line, the thickness of the phantom shell with the shape of an ear is a flat surface 6 mm thick at the ERPs. Anterior to the N-F line, the ear is truncated as illustrated in Figure 7-1b. The ear truncation is introduced to avoid the handset from touching the ear lobe, which can cause unstable handset positioning at the cheek.

Figure 7-1a
Front, back and side view of SAM (model for the phantom shell)

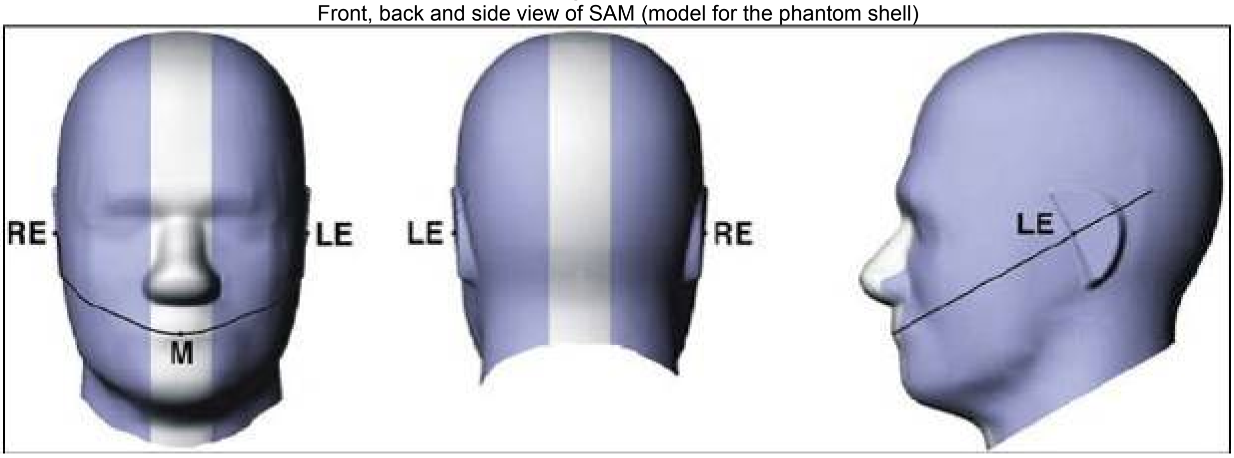
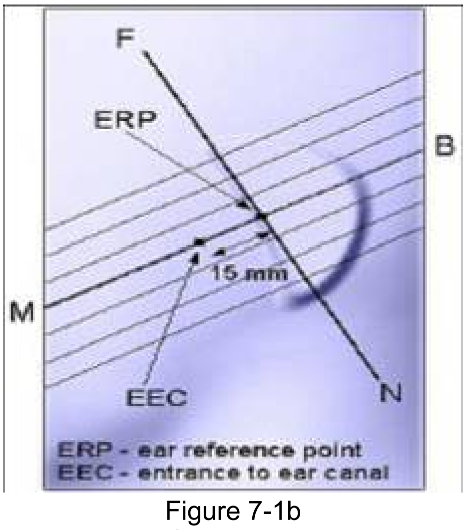


Figure 7-1b
Close up side view of phantom showing the ear region

Figure 7-1c
Side view of the phantom showing relevant markings and the 7 cross sectional plane locations



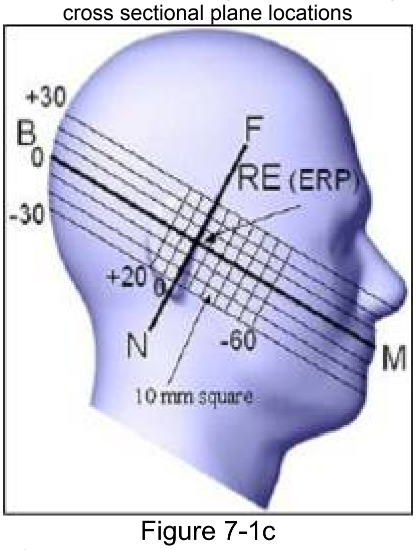


Figure 7-1b
Close up side view of phantom showing the ear region

Figure 7-1c
Side view of the phantom showing relevant markings and the 7 cross sectional plane locations

10.2 DEFINITION OF THE "CHEEK/TOUCH" POSITION

The "cheek" or "touch" position is defined as follows:

a. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece, open the cover. (If the handset can also be used with the cover closed both configurations must be tested.)

b. Define two imaginary lines on the handset: the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset: the midpoint of the width wt of the handset at the level of the acoustic output (point A on Figures 7-2a and 7-2b), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 7-2a). 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 (see Figure 7-2b), especially for clamshell handsets, handsets with flip pieces, and other irregularly-shaped handsets.

c. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 7-2c), such that the plane defined by the vertical center line and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.

d. Translate the handset towards the phantom along the line passing through RE and LE until the handset touches the pinna.

e. e) While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to MB-NF including the line MB (called the reference plane).

f. Rotate the handset around the vertical centerline until the handset (horizontal line) is symmetrical with respect to the line NF.

g. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE and maintaining the handset contact with the pinna, rotate the handset about the line NF until any point on the handset is in contact with a phantom point below the pinna (cheek). See Figure 7-2c. The physical angles of rotation should be noted.

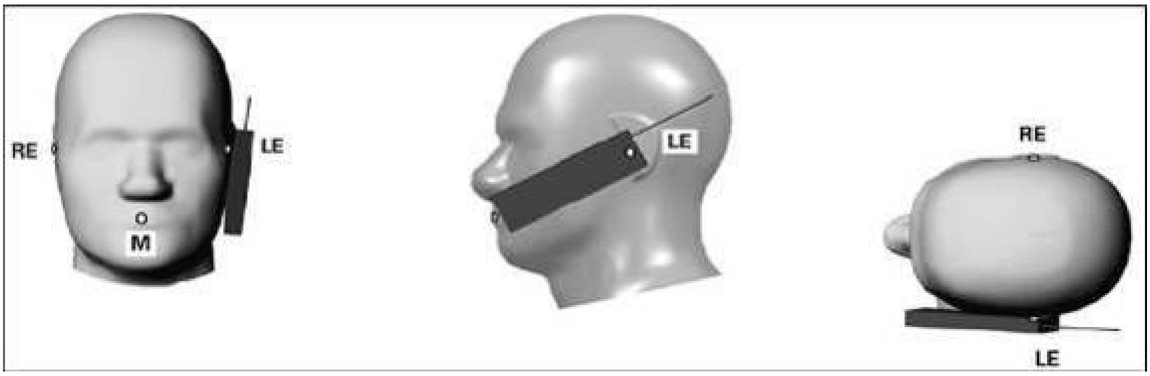


Figure 7.2c
Phone "cheek" or "touch" position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for handset positioning, are indicated.

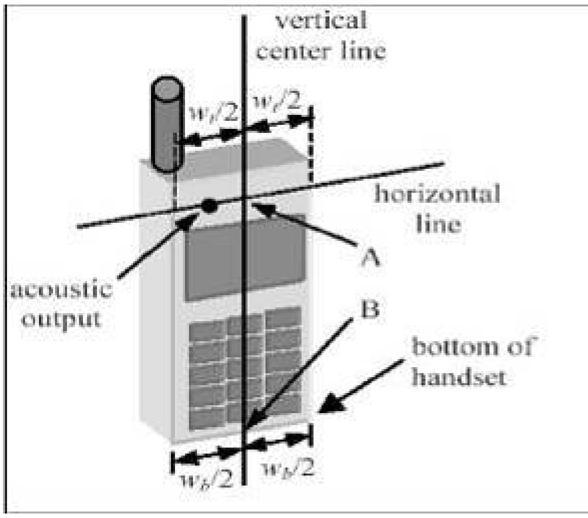


Figure 7.2a

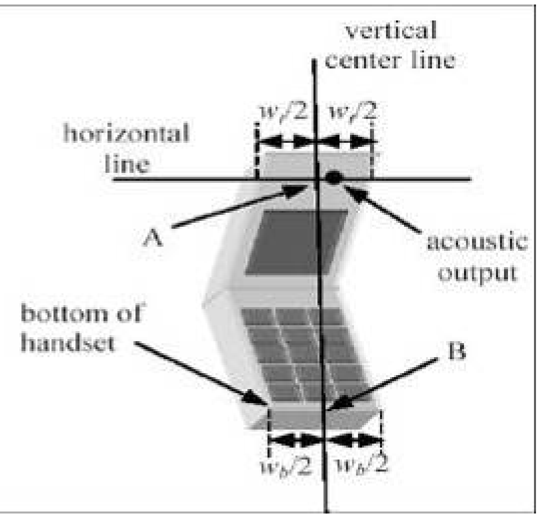


Figure 7.2b

10.3 DEFINITION OF THE "TILTED" POSITION

The "tilted" position is defined as follows:

a. Repeat steps (a) – (g) of 7.2 to place the device in the "cheek position."

b. While maintaining the orientation of the handset move the handset away from the pinna along the line passing through RE and LE in order to enable a rotation of the handset by 15 degrees.

c. Rotate the handset around the horizontal line by 15 degrees.

d. While maintaining the orientation of the handset, move the handset towards the phantom on a line passing through RE and LE until any part of the handset touches the ear. The tilted position is obtained when the contact is on the pinna. If the contact is at any location other than the pinna (e.g., the antenna with the back of the phantom head), the angle of the handset should be reduced. In this case, the tilted position is obtained if any part of the handset is in contact with the pinna as well as a second part of the handset is contact with the phantom (e.g., the antenna with the back of the head).

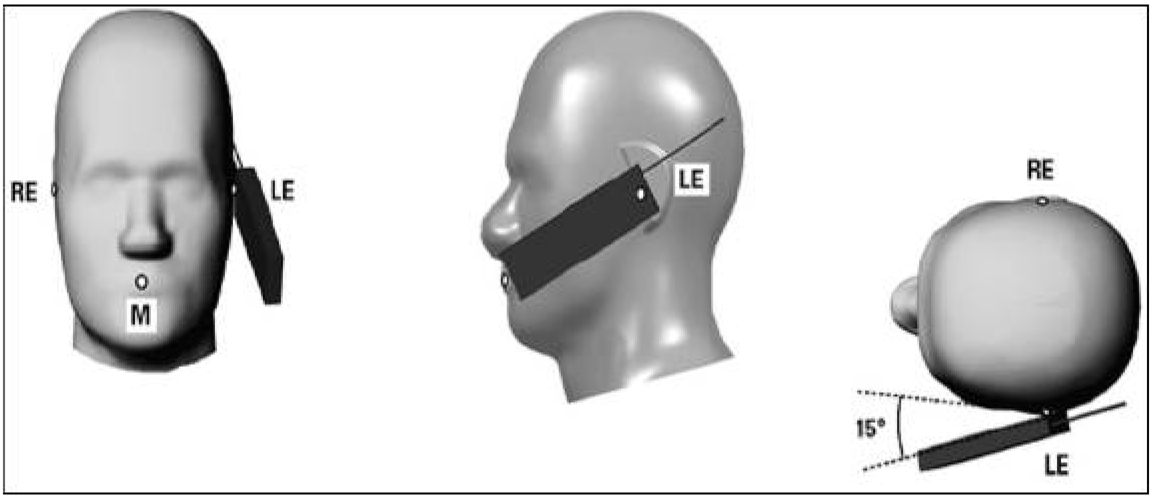


Figure 7-3
Phone "tilted" position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for handset positioning, are indicated.

11. MEASUREMENT RESULTS

11.1 TEST LIQUIDS CONFIRMATION

SIMULATED TISSUE LIQUID PARAMETER CONFIRMATION

The dielectric parameters were checked prior to assessment using the HP85070C dielectric probe kit. The dielectric parameters measured are reported in each correspondent section.

KDB865664 D01 RECOMMENDED TISSUE DIELECTRIC PARAMETERS

The head and Body tissue dielectric parameters recommended by the KDB865664 D01 have been incorporated in the following table.

Target Frequency (MHz)	Head		Body	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

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

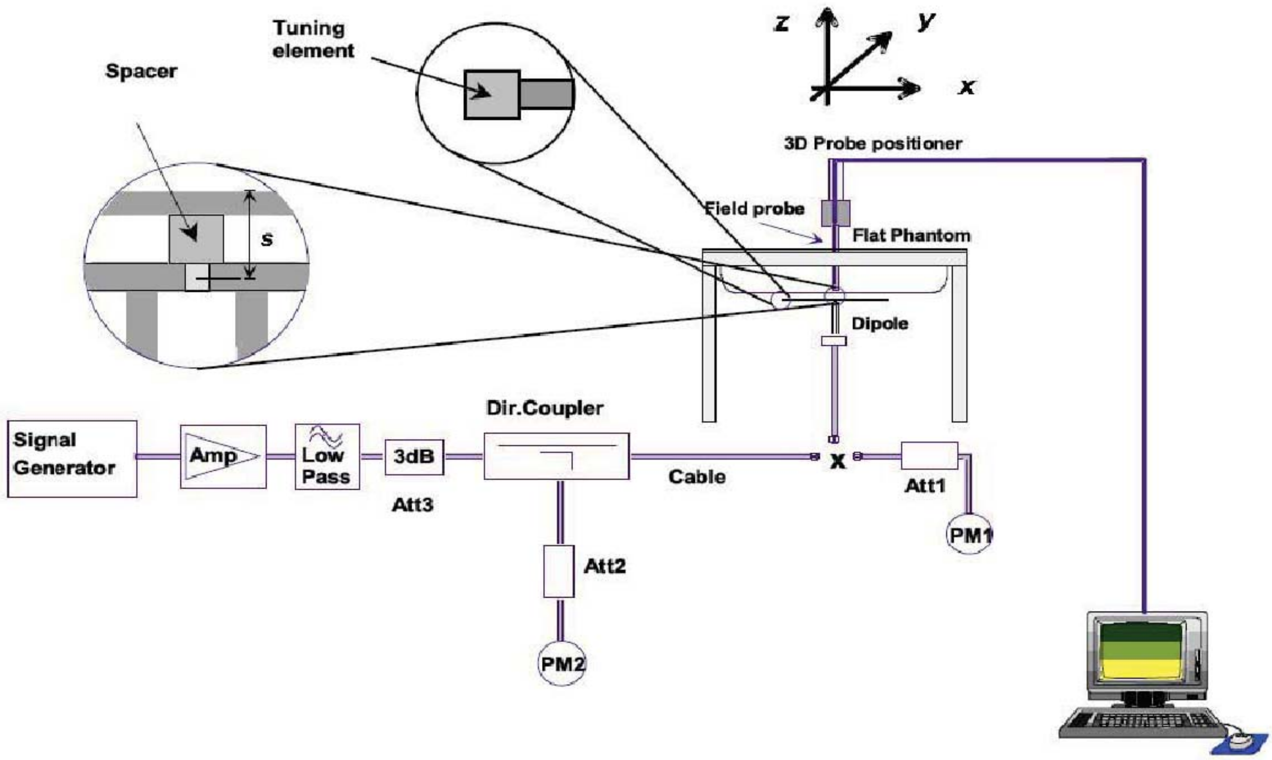
11.2 LIQUID MEASUREMENT RESULTS

The following table show the measuring results for simulating liquid:

Liquid Type	Liquid Temp. (°C)	Parameters	Target	Measured	Deviation (%)	Limited (%)	Measured Date
Head835	21.5	Permitivity(ε)	41.50	41.75	0.60	± 5	2016-1-21
		Conductivity(σ)	0.90	0.91	0.89	± 5	
Body835	21.5	Permitivity(ε)	55.20	55.49	0.53	± 5	2016-1-21
		Conductivity(σ)	0.97	0.96	-1.44	± 5	
Head1900	21.5	Permitivity(ε)	40.00	39.50	-1.26	± 5	2016-1-21
		Conductivity(σ)	1.40	1.40	-0.21	± 5	
Body1900	21.5	Permitivity(ε)	53.30	51.61	-3.17	± 5	2016-1-21
		Conductivity(σ)	1.52	1.54	1.25	± 5	
Head2450	21.5	Permitivity(ε)	39.20	40.54	3.42	± 5	2016-1-22
		Conductivity(σ)	1.80	1.76	-2.00	± 5	
Body2450	21.5	Permitivity(ε)	52.70	51.71	-1.88	± 5	2016-1-22
		Conductivity(σ)	1.95	1.98	1.49	± 5	

11.3 SYSTEM PERFORMANCE CHECK

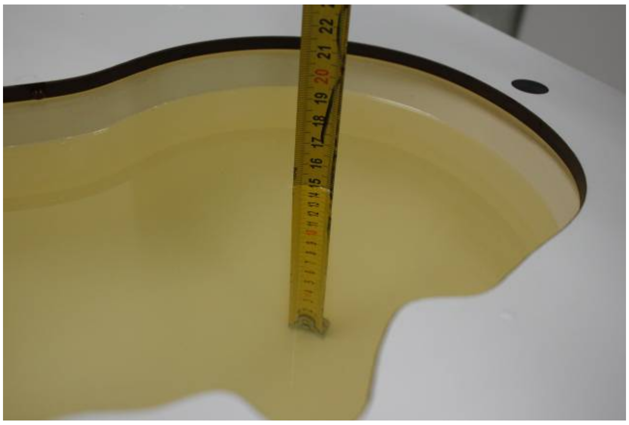
The system performance check is performed prior to any usage of the system in order to guarantee reproducible results. The system performance check verifies that the system operates within its specifications of ±10%. The system performance check results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.
System check is performed regularly on all frequency bands where tests are performed with the DASY5 system .



SYSTEM PERFORMANCE CHECK MEASUREMENT CONDITIONS

- The measurements were performed in the flat section of the SAM twin phantom filled with head and body simulating liquid of the following parameters.
- The DASY5 system withan E-fileld probe EX3DV4：3798 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15 mm (below 1 GHz) and 10 mm (above 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 10mm was aligned with the dipole.
- Special 7x7x7 fine cube was chosen for cube integration (dx= 5 mm, dy= 5 mm, dz= 5 mm).
- Distance between probe sensors and phantom surface was set to 2 mm.
- The dipole input power was 250mW±3%.
- The results are normalized to 1 W input power.

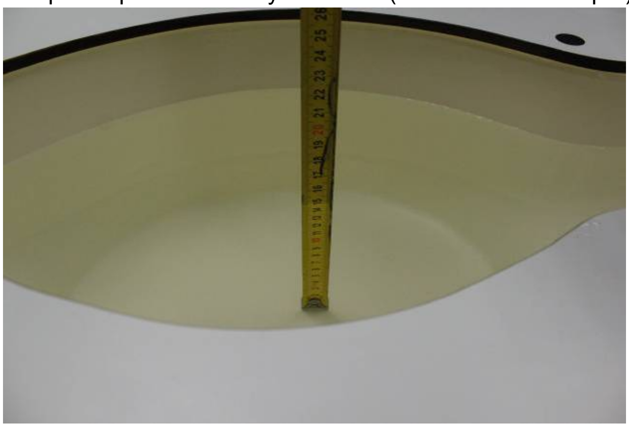
Depth of Liquid



Liquid depth in the head Phantom (835 MHz 15cm depth)

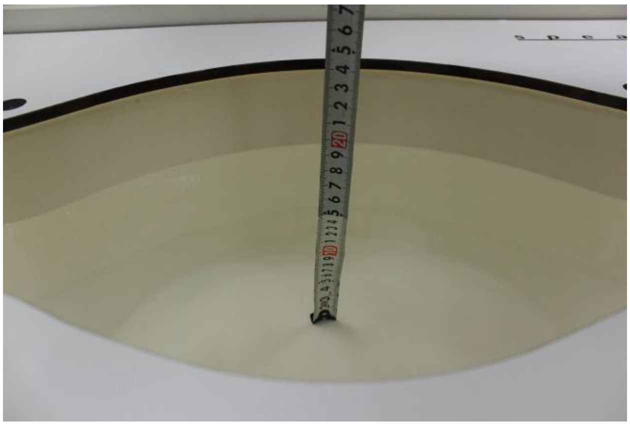
Liquid depth in the Body Phantom (835 MHz 15cm depth)

Liquid depth in the head Phantom (1900 MHz 15cm depth)



Liquid depth in the Body Phantom (1900 MHz 15cm depth)

Liquid depth in the head Phantom (2450 MHz 15cm depth)



Liquid depth in the Body Phantom (2450 MHz 15cm depth)

The following table gives the recipes for tissue simulating liquids.

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency	water	sugar	cellulose	Salt	bactericide	DGBE	conductivity	permittivity
For Head								
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
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								
835	50.6	48.2	0.2	0.9	0.1	0	0.97	55.2
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

alt: 99+% Pure Sodium Chloride Sugar: 98+% Pure Sucrose
DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]

<Tissue Dielectric Parameter Check Results>

Liquid Type	Ambient Temp. (°C)	Liquid Temp. (°C)	Input Power (W)	Measured SAR1g (W/Kg)	1W Target SAR1g(W/Kg)	1W Normalized SAR1g(W/Kg)	Deviation (%)	Limited (%)	Date
Head835	22	21.5	0.25	2.31	9.50	9.24	-2.74	± 10	2016-1-21
Body835	22	21.5	0.25	2.52	9.53	10.08	5.77	± 10	2016-1-21
Head1900	22	21.5	0.25	10.22	40.40	40.88	1.19	± 10	2016-1-21
Body1900	22	21.5	0.25	10.51	40.50	42.04	3.80	± 10	2016-1-21
Head2450	22	21.5	0.25	12.45	52.60	49.80	-5.32	± 10	2016-1-22
Body2450	22	21.5	0.25	12.32	49.20	49.28	0.16	± 10	2016-1-22

11.4 EUT TUNE-UP PROCEDURES AND TEST MODE

The following procedure had been used to prepare the EUT for the SAR test.
To setup the desire channel frequency and the maximum output power. A Radio Communication Tester "CMU200 " was used to program the EUT.

General 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, the EUT was set in GPRS 4 Tx slots for GSM850 and GSM1900 due to its highest frame-average power.
3. For body worn SAR testing, the EUT was set in GPRS 4 Tx slots for GSM850 and GPRS 4 Tx GSM1900 due to its highest frame-average power.
4. For hotspot SAR testing, the EUT was set in GPRS 4 Tx slots for GSM850 and GPRS 4 Tx GSM1900 due to its highest frame-average power.

GSM Conducted output power(dBm):

Band	GSM 850			GSM 1900		
Channel	128	190	251	512	661	810
Frequency(MHz)	824.2	836.6	848.8	1850.2	1880.0	1909.8
Maximum Burst-Averaged Output Power						
GSM(GMSK,1Uplink)	32.23	32.34	32.19	28.64	28.35	28.42
GPRS 8 (GMSK,1 Uplink)	32.24	32.31	32.15	28.56	28.34	28.43
GPRS 10 (GMSK,2 Uplink)	31.18	31.24	31.12	27.49	27.30	27.35
GPRS 11 (GMSK,3 Uplink)	30.14	30.15	30.01	26.55	26.45	26.43
GPRS 12 (GMSK,4 Uplink)	29.24	29.17	29.04	25.56	25.35	25.41
EDGE 8 (8PSK,1 Uplink)	27.36	27.53	27.54	25.43	25.65	25.35
EDGE 10 (8PSK,2 Uplink)	26.41	26.45	26.50	24.48	24.37	24.51
EDGE 11 (8PSK,3 Uplink)	25.37	25.49	25.45	23.33	23.42	23.57
EDGE 12 (8PSK,4 Uplink)	24.27	24.65	24.33	22.48	22.36	22.45
Maximum Frame-Averaged Output Power						
GSM(GMSK,1Uplink)	23.21	23.32	23.17	19.62	19.33	19.40
GPRS 8 (GMSK,1 Uplink)	23.21	23.28	23.12	19.53	19.31	19.40
GPRS 10 (GMSK,2 Uplink)	25.15	25.21	25.09	21.46	21.27	21.32
GPRS 11 (GMSK,3 Uplink)	25.88	25.89	25.75	22.29	22.19	22.17
GPRS 12 (GMSK,4 Uplink)	**26.23**	26.16	26.03	**22.55**	22.34	22.40
EDGE 8 (8PSK,1 Uplink)	18.33	18.50	18.51	16.40	16.62	16.32
EDGE 10 (8PSK,2 Uplink)	20.39	20.43	20.48	18.46	18.35	18.49
EDGE 11 (8PSK,3 Uplink)	21.11	21.23	21.19	19.07	19.16	19.31
EDGE 12 (8PSK,4 Uplink)	21.26	21.64	21.32	19.47	19.35	19.44

Remark: The frame-averaged power is linearly scaled the maximum burst-averaged power based on time slots. The calculated methods are shown as below:
Frame-averaged power = Burst-averaged power (1 Uplink) – 9.03 dBm
Frame-averaged power = Burst averaged power (2 Uplink) – 6.02 dBm
Frame-averaged power = Burst-averaged power (3 Uplink) – 4.26 dBm
Frame-averaged power = Burst averaged power (4 Uplink) – 3.01 dBm

Note:

1. Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.

2. GPRS/EDGE (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.

3. EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8PSK modulation do not have an impact on output power.
4. Per KDB 447498 D01, the maximum output power channel is used for SAR testing and for further SAR test reduction.

WCDMA Conducted output power(dBm):
As the SAR body tests for WCDMA **Band II and Band V** , we established the radio link through call processing. The Maximum Burst-Averaged Output Power were verified on high, middle and low channels for each test band according to 3GPP TS 34.121 with the following configuration: a 12.2kbps RMC, 64,144,384 kbps RMC with TPC set to all "all '1's"b Test loop Mode 1
The following procedures had been used to prepare the EUT for the SAR test.

HSDPA Setup Configuration:

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 β_{hs} = 30/15 * β_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 β_{hs} = 30/15 * β_c , and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_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.

HSUPA Setup Configuration:

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.

Band	WCDMA Band II			WCDMA Band V		
Channel	9262	9400	9538	4132	4182	4233
Frequency(MHz)	1852.4	1880	1907.6	826.4	836.4	846.6
Maximum Burst-Averaged Output Power						
AMR	22.24	22.34	22.12	22.05	22.21	22.11
RMC12.2K	22.46	**22.57**	22.34	22.19	**22.31**	22.18
HSDPA Subtest-1	22.01	22.31	22.05	21.35	21.67	21.48
HSDPA Subtest-2	21.89	21.74	21.65	21.24	21.36	21.33
HSDPA Subtest-3	21.64	21.59	21.57	21.09	21.31	21.20
HSDPA Subtest-4	21.15	21.32	21.08	20.86	20.88	20.71
HSUPA Subtest-1	21.79	21.91	21.86	21.01	21.32	21.25
HSUPA Subtest-2	21.11	21.26	21.31	21.03	21.21	21.27
HSUPA Subtest-3	21.23	21.06	21.16	20.95	21.13	21.31
HSUPA Subtest-4	21.16	21.20	21.21	20.84	21.01	21.15
HSUPA Subtest-5	20.87	20.89	20.92	20.47	20.73	20.88

Note:

Per KDB 941225 D01, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA output power is < 0.25dB higher than RMC, HSDPA/HSUPA SAR evaluation can be excluded.

General Note:

1 Power must be measured at each transmit antenna port according to the DSSS and OFDM transmission configurations in each standalone and aggregated frequency band.

2 Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.

1) When the same highest maximum output power specification applies to multiple transmission modes, the largest channel bandwidth configuration with the lowest order modulation and lowest data rate is measured.

2) When the same highest maximum output power is specified for multiple largest channel bandwidth configurations with the same lowest order modulation or lowest order modulation and lowest data rate, power measurement is required for all equivalent 802.11 configurations with the same maximum output power.

3 For each transmission mode configuration, power must be measured for the highest and lowest channels; and at the mid-band channel(s) when there are at least 3 channels. For configurations with multiple mid-band channels, due to an even number of channels, both channels should be measured.

WLAN 2.4G Conducted output power(dBm):

Mode	Channel	Frequence	Average power(dBm)
802.11 b	1	2412 MHZ	18.18
	6	2437 MHZ	**18.43**
	11	2462 MHZ	17.05
802.11 g	1	2412 MHZ	15.23
	6	2437 MHZ	15.42
	11	2462 MHZ	15.64
802.11 n 20M	1	2412 MHZ	15.29
	6	2437 MHZ	16.29
	11	2462 MHZ	15.36
802.11 n 40M	3	2422 MHZ	13.08
	7	2442 MHZ	15.04
	11	2462 MHZ	13.12

Bluetooth 3.0 Conducted output power(dBm):

Channel	Frequency	Peak power(dBm)		
		Date Rate		
		1Mbps	2Mbps	3Mbps
CH00	2402MHZ	-0.51	-1.02	-0.89
CH39	2441MHZ	-0.17	-0.51	-0.65
CH78	2480MHZ	-0.48	-0.96	-1.14

Bluetooth 4.0 Conducted output power(dBm):

Channel	Frequency	Peak power(dBm)
		Date Rate
		1Mbps
CH00	2402MHZ	-7.29
CH19	2440MHZ	-8.43
CH39	2480MHZ	-9.33

According to KDB447498 D01:The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
[(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] · [√$f_{(GHz)}$] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,[24] where

- $f_{(GHz)}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation[25]
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below
- If the test separation distance (antenna-user) is < 5mm, 5mm is used for excluded SAR calculation

	Wireless Interface	Bluetooth
Tune-up Maximum power (dBm)		0
Tune-up Maximum rated power (mW)		1
Head & Body	Antenna to user (mm)	5
	Frequency(GHz)	2.480
	SAR exclusion threshold	0.315
Body	Antenna to user (mm)	10
	Frequency(GHz)	2.480
	SAR exclusion threshold	0.157

Per KDB 447498 D01 exclusion thresholds is[(*max. power of channel, including tune-up tolerance: 1 mW*)/(*min. test separation distance: 5mm*)] · [√2.480] =0.315< 3, Bluetooth RF exposure evaluation is not required.

Maximum Burst-Averaged output power for Product unit

Mode	The Tune-up Maximum Power(Customer Declared)(dBm)	Tune up limit	Measured Conduct Maximum Power(dBm)
GSM 850	32+/-1	33	32.34
GPRS 850-1TS	32+/-1	33	32.31
GPRS 850-2TS	31+/-1	32	31.24
GPRS 850-3TS	30+/-1	31	30.15
GPRS 850-4TS	28.5+/-1	29.5	29.24
EDGE 850-1TS	27+/-1	28	27.54
EDGE 850-2TS	26+/-1	27	26.50
EDGE 850-3TS	25+/-1	26	25.49
EDGE 850-4TS	24+/-1	25	24.65
GSM 1900	28+/-1	29	28.64
GPRS 1900-1TS	28+/-1	29	28.56
GPRS 1900-2TS	27+/-1	28	27.49
GPRS 1900-3TS	26+/-1	27	26.55
GPRS 1900-4TS	25+/-1	26	25.56
EDGE 1900-1TS	25+/-1	26	25.65
EDGE 1900-2TS	24+/-1	25	24.51
EDGE 1900-3TS	23+/-1	24	23.57
EDGE 1900-4TS	22+/-1	23	22.48
WCDMA Band II RMC 12.2K	22+/-1	23	22.57
WCDMA Band II AMR	22+/-1	23	22.34
HSDPA Band II	22+/-1	23	22.31
HSUPA Band II	21+/-1	22	21.91
WCDMA Band V RMC 12.2K	21.5+/-1	22.5	22.31
WCDMA Band V AMR	21.5+/-1	22.5	22.21
HSDPA Band V	21 +/-1	22	21.67
HSUPA Band V	20.5 +/-1	21.5	21.32
IEEE 802.11b	17.5+/-1	18.5	18.43
IEEE 802.11g	15+/-1	16	15.64
IEEE 802.11n(20M)	15.5+/-1	16.5	16.29
IEEE 802.11n(40M)	13.5+/-2	15.5	15.04

Maximum output power for Product unit

Mode	The Tune-up Maximum Power(Customer Declared)(dBm)	Tune up limit	Measured Conduct Maximum Power(dBm)
Bluetooth 1Mbps	-1+/-1	0	-0.17
Bluetooth 2Mbps	-1+/-1	0	-0.51
Bluetooth 3Mbps	-1+/-1	0	-0.65
Bluetooth 4.0	-9+/-2	-7	-7.29

So, they are in tune-up range and complied.

11.5 SAR TEST CONFIGURATIONS

Body-Support Accessory Exposure Conditions

(1) To position the EUT parallel to the phantom surface.
(2) To adjust the EUT parallel to the flat phantom.
(3) To adjust the distance between the EUT surface and the flat phantom to 5mm.

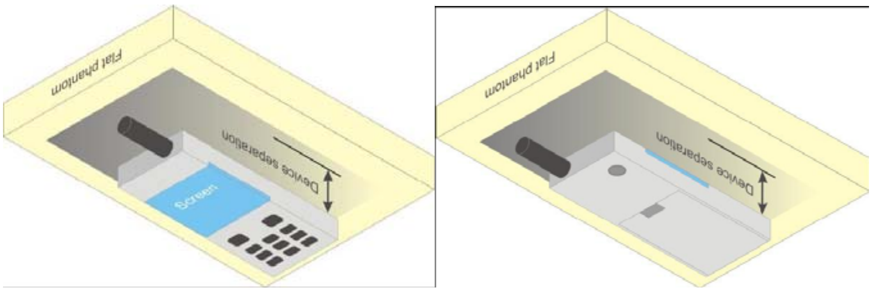
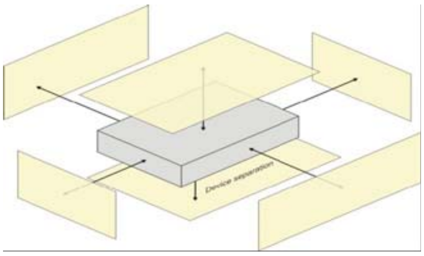


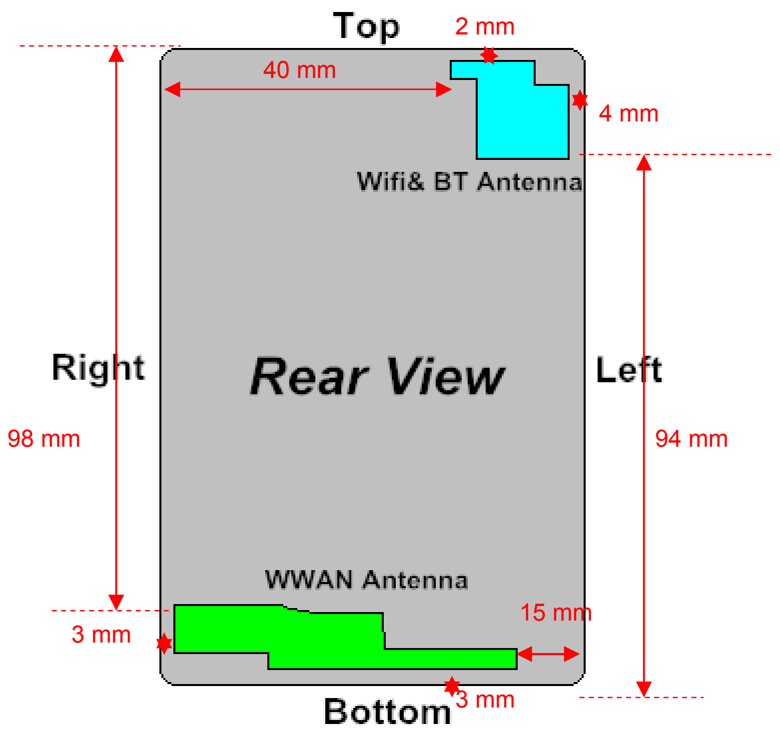
Illustration for Body Worn Position

Hotspot Mode Exposure conditions

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing functions, the relevant hand and body exposure conditions are tested according to the hotspot SAR procedures in KDB 941225 D06. A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm.
(1) To position the EUT parallel to the phantom surface.
(2) To adjust the EUT parallel to the flat phantom.
(3) To adjust the distance between the EUT surface and the flat phantom to 10mm.



11.6 ANTENNA POSITION



Device dimensions (H x W): 118 x 63 mm

Antenna	Wireless Interface
WWAN Antenna	GSM850/GSM1900 WCDMA Band II WCDMA Band V
WiFi&BT Antenna	WLAN 2.4G Bluetooth

Test Mode

GSM 850/GSM1900	Data transmission mode(GPRS)
WCDMA Band II WCDMA Band V	Data transmission mode(12.2k RMC)
WLAN 2.4GHz	Data transmission mode(802.11b)

Body Exposure Condition

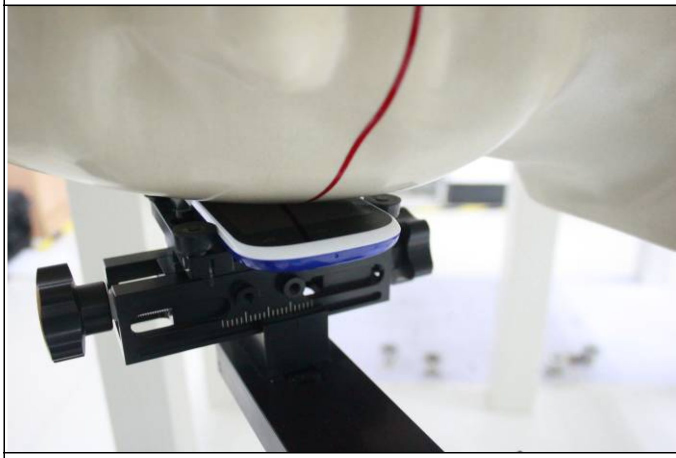
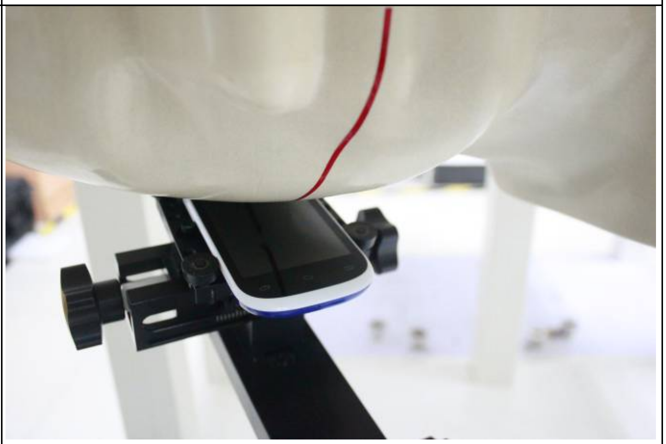
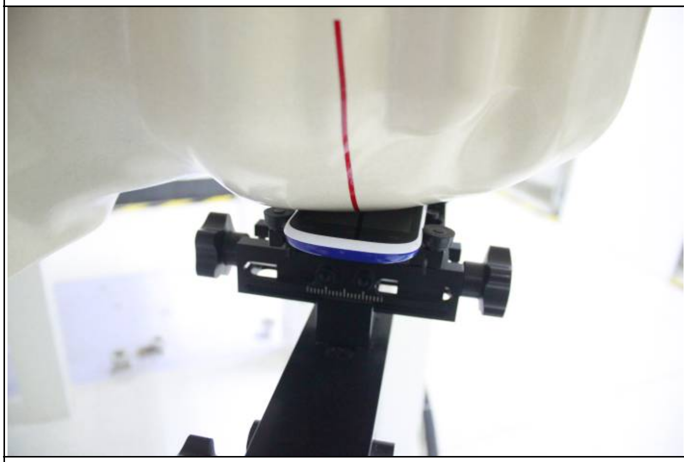
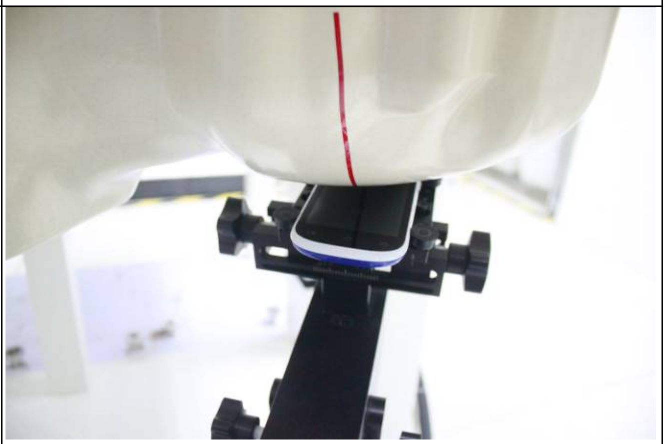
Distance of the Antenna to the EUT surface/edge Test distance: 10 mm						
Antenna	Front （mm）	Rear （mm）	Right side （mm）	Left side （mm）	Top side （mm）	Bottom side （mm）
WWAN	7<25	2<25	3<25	15<25	98>25	3<25
WLAN	5<25	2<25	40>25	4<25	2<25	94>25

Body test position

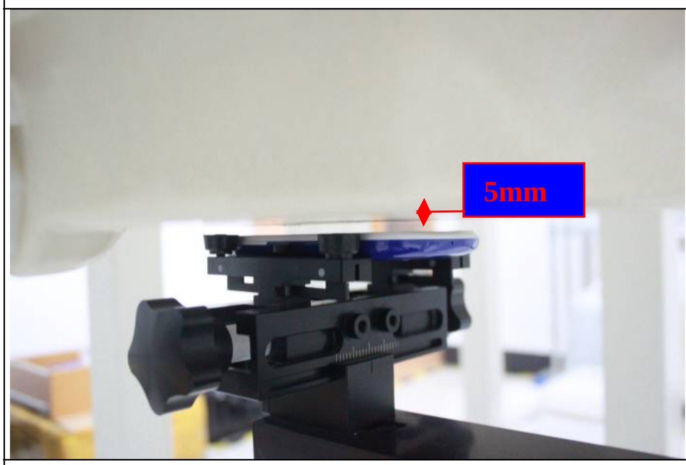
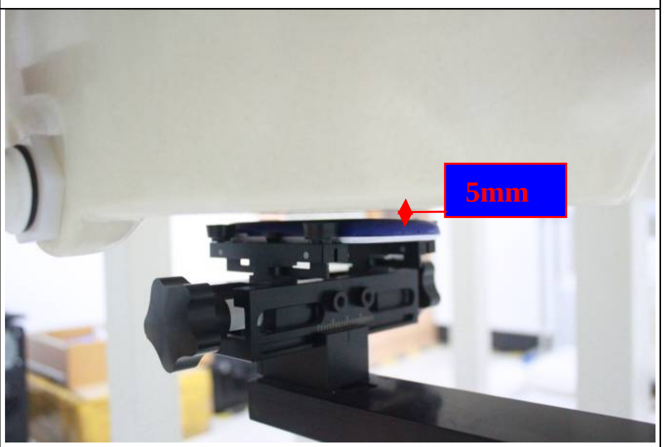
Distance of the Antenna to the EUT surface/edge Test distance: 10 mm						
Antenna	Front	Rear	Right side	Left side	Top side	Bottom side
WWAN	Yes	Yes	Yes	Yes	No	Yes
WLAN	Yes	Yes	No	Yes	Yes	No

11.7 EUT SETUP PHOTOS

Head position

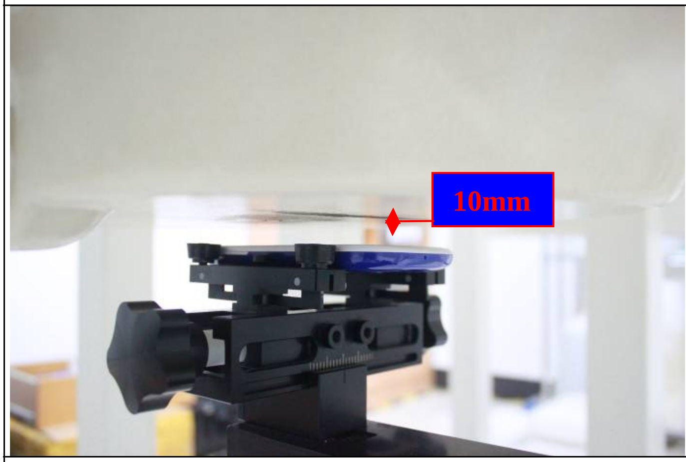
Cheek device with right head phantom.	Tilt device with right head phantom
	
EUT Setup Configuration 1	**EUT Setup Configuration 2**
Cheek device with left head phantom.	Tilt device with left head phantom
	
UT Setup Configuration 3	**EUT Setup Configuration 4**

Body Support test position

Front in body position	Rear in body position
	
EUT Setup Configuration 5	**EUT Setup Configuration 6**

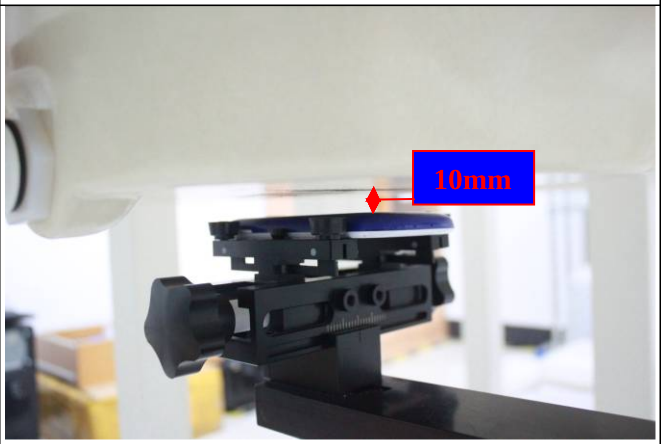
Hotspot test position

Front in body position



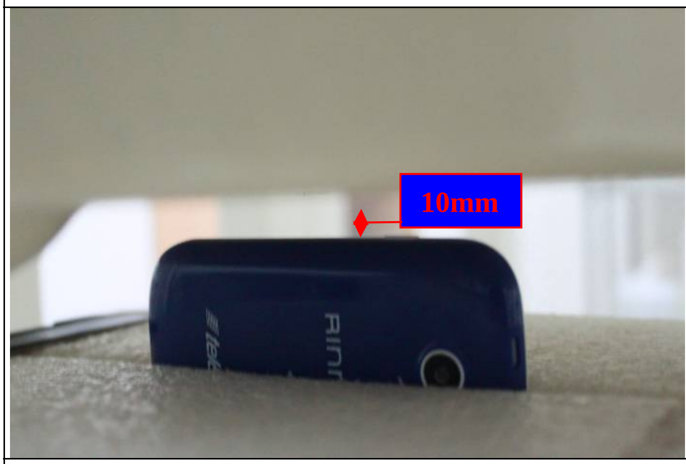
EUT Setup Configuration 1

Rear in body position



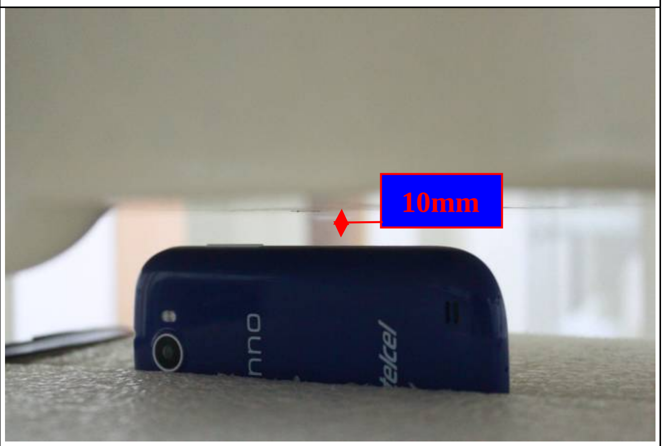
EUT Setup Configuration 2

Right Side in body position



EUT Setup Configuration 3

Left Side in body position



EUT Setup Configuration 4

Top Side in body position

EUT Setup Configuration 5

Bottom Side in body position

EUT Setup Configuration 6

11.8 SAR MEASUREMENT RESULTS

Head SAR Test Records

Band	Mode	Test Position	Ch.	Freq. (MHZ)	max Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	SAR1g (mW/g)	Scaled SAR1g (mW/g)
GSM850	GPRS 4slots	Right Cheek	128	824.2	29.24	29.5	1.062	-0.07	0.514	0.546
GSM850	GPRS 4slots	Right Tilted	128	824.2	29.24	29.5	1.062	0.12	0.307	0.326
GSM850	GPRS 4slots	Left Cheek	128	824.2	29.24	29.5	1.062	-0.17	0.540	0.573
GSM850	GPRS 4slots	Left Tilted	128	824.2	29.24	29.5	1.062	0.09	0.279	0.296
GSM1900	GPRS 4slots	Right Cheek	512	1850.2	25.56	26	1.107	0.06	0.427	0.473
GSM1900	GPRS 4slots	Right Tilted	512	1850.2	25.56	26	1.107	0.03	0.177	0.196
GSM1900	GPRS 4slots	Left Cheek	512	1850.2	25.56	26	1.107	-0.04	0.246	0.272
GSM1900	GPRS 4slots	Left Tilted	512	1850.2	25.56	26	1.107	-0.07	0.153	0.169
WCDMA II	RMC 12.2k	Right Cheek	9400	1880	22.57	23	1.104	0.04	0.195	0.215
WCDMA II	RMC 12.2k	Right Tilted	9400	1880	22.57	23	1.104	0.04	0.079	0.087
WCDMA II	RMC 12.2k	Left Cheek	9400	1880	22.57	23	1.104	0.08	0.093	0.103
WCDMA II	RMC 12.2k	Left Tilted	9400	1880	22.57	23	1.104	0.14	0.072	0.079
WCDMA V	RMC 12.2k	Right Cheek	4182	836.4	22.31	22.5	1.045	-0.10	0.729	0.762
WCDMA V	RMC 12.2k	Right Tilted	4182	836.4	22.31	22.5	1.045	0.04	0.376	0.393
WCDMA V	RMC 12.2k	Left Cheek	4182	836.4	22.31	22.5	1.045	-0.12	0.671	0.701
WCDMA V	RMC 12.2k	Left Tilted	4182	836.4	22.31	22.5	1.045	-0.03	0.278	0.290
WLAN 2.4G	802.11 b	Right Cheek	6	2437	18.43	18.5	1.016	0.14	0.362	0.368
WLAN 2.4G	802.11 b	Right Tilted	6	2437	18.43	18.5	1.016	0.15	0.279	0.284
WLAN 2.4G	802.11 b	Left Cheek	6	2437	18.43	18.5	1.016	0.14	0.139	0.141
WLAN 2.4G	802.11 b	Left Tilted	6	2437	18.43	18.5	1.016	-0.09	0.136	0.138

SAR for Body-Worn Test Records

Band	Mode	Test Position	Dist. (mm)	Ch.	Freq. (MHZ)	max Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	SAR1g (mW/g)	Scaled SAR1g (mW/g)
GSM850	GPRS 4slots	Front	5	128	824.2	29.24	29.5	1.062	-0.18	0.480	0.510
GSM850	GPRS 4slots	Rear	5	128	824.2	29.24	29.5	1.062	0.01	0.715	0.759
GSM1900	GPRS 4slots	Front	5	512	1850.2	25.56	26	1.107	-0.04	0.365	0.404
GSM1900	GPRS 4slots	Rear	5	512	1850.2	25.56	26	1.107	-0.13	0.692	0.766
WCDMA II	RMC 12.2k	Front	5	9400	1880	22.57	23	1.104	0.10	0.122	0.135
WCDMA II	RMC 12.2k	Rear	5	9400	1880	22.57	23	1.104	-0.03	0.507	0.560
WCDMA V	RMC 12.2k	Front	5	4182	836.4	22.31	22.5	1.045	-0.03	0.458	0.478
WCDMA V	RMC 12.2k	Rear	5	4182	836.4	22.31	22.5	1.045	-0.03	0.710	0.742
WLAN 2.4G	802.11 b	Front	5	6	2437	18.43	18.5	1.016	-0.08	0.108	0.110
WLAN 2.4G	802.11 b	Rear	5	6	2437	18.43	18.5	1.016	-0.20	0.511	0.519

Note:
According to October 2013TCB Workshop, For GSM / GPRS , the number of time slots to test for SAR should correspond to the highest source-based time-averaged maximum output power configuration, Considering the possibility of e.g. 3rd party VoIP operation for body-worn SAR testing, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900 band due to its highest frame-average power.

SAR for Hotspot Test Records

Band	Mode	Test Position	Dist. (mm)	Ch.	Freq. (MHZ)	max Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	SAR1g (mW/g)	Scaled SAR1g (mW/g)
GSM850	GPRS 4slots	Front	10	128	824.2	29.24	29.5	1.062	-0.05	0.256	0.272
GSM850	GPRS 4slots	Rear	10	128	824.2	29.24	29.5	1.062	0.01	0.457	0.485
GSM850	GPRS 4slots	Right	10	128	824.2	29.24	29.5	1.062	-0.15	0.585	0.621
GSM850	GPRS 4slots	Left	10	128	824.2	29.24	29.5	1.062	-0.12	0.477	0.506
GSM850	GPRS 4slots	Bottom	10	128	824.2	29.24	29.5	1.062	0.03	0.228	0.242
GSM1900	GPRS 4slots	Front	10	512	1850.2	25.56	26	1.107	-0.05	0.216	0.239
GSM1900	GPRS 4slots	Rear	10	512	1850.2	25.56	26	1.107	-0.03	0.435	0.481
GSM1900	GPRS 4slots	Right	10	512	1850.2	25.56	26	1.107	0.13	0.212	0.235
GSM1900	GPRS 4slots	Left	10	512	1850.2	25.56	26	1.107	0.12	0.052	0.058
GSM1900	GPRS 4slots	Bottom	10	512	1850.2	25.56	26	1.107	0.04	0.253	0.280
WCDMA II	RMC 12.2k	Front	10	9400	1880	22.57	23	1.104	0.14	0.087	0.096
WCDMA II	RMC 12.2k	Rear	10	9400	1880	22.57	23	1.104	-0.03	0.334	0.369
WCDMA II	RMC 12.2k	Right	10	9400	1880	22.57	23	1.104	-0.06	0.077	0.085
WCDMA II	RMC 12.2k	Left	10	9400	1880	22.57	23	1.104	0.05	0.072	0.079
WCDMA II	RMC 12.2k	Bottom	10	9400	1880	22.57	23	1.104	0.04	0.246	0.272
WCDMA V	RMC 12.2k	Front	10	4182	836.4	22.31	22.5	1.045	-0.03	0.321	0.335
WCDMA V	RMC 12.2k	Rear	10	4182	836.4	22.31	22.5	1.045	-0.03	0.533	0.557
WCDMA V	RMC 12.2k	Right	10	4182	836.4	22.31	22.5	1.045	-0.04	0.470	0.491
WCDMA V	RMC 12.2k	Left	10	4182	836.4	22.31	22.5	1.045	0.04	0.396	0.414
WCDMA V	RMC 12.2k	Bottom	10	4182	836.4	22.31	22.5	1.045	-0.16	0.317	0.331
WLAN 2.4G	802.11 b	Front	10	6	2437	18.43	18.5	1.016	-0.14	0.095	0.097
WLAN 2.4G	802.11 b	Rear	10	6	2437	18.43	18.5	1.016	0.01	0.249	0.253
WLAN 2.4G	802.11 b	Left	10	6	2437	18.43	18.5	1.016	0.10	0.190	0.193
WLAN 2.4G	802.11 b	Top	10	6	2437	18.43	18.5	1.016	0.19	0.178	0.181

11.9 REPEATED SAR MEASUREMENT

Band	Mode	Test Position	Dist. (mm)	Ch.	Original Measured SAR1g (mW/g)	1st Repeated SAR1g (mW/g)	Ratio	Original Measured SAR1g (mW/g)	2nd Repeated SAR1g (mW/g)	Ratio
--	--	--	--	--	--	--	--	--	--	--

Note:

1. Per KDB 865664 D01v01,for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8W/Kg
2. Per KDB 865664 D01v01,if the ratio of largest to smallest SAR for the original and first repeated measurement is ≤1.2 and the measured SAR ＜1.45W/Kg,only one repeated measurement is required.
3. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg
4. The ratio is the difference in percentage between original and repeated measured SAR.

12. SAR HANDSETS MULTI XMITER ASSESSMENT

	Position	Applicable Combination
Simultaneous Transmission	Head	WWAN + WLAN
		WWAN + BT
	Body-worn	WWAN + WLAN
		WWAN + BT
	Hotspot	WWAN + WLAN
		WWAN + BT

Note:

1. 2.4GHz WLAN and BT share the same antenna, and cannot transmit simultaneously.
2. The reported SAR summation is calculated based on the same configuration and test position.
3. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01 based on the formula below.
   (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 distances is > 50 mm.

Bluetooth:

	Max power	Head & Body (5mm distance)	Body (10mm distance)
Estimated SAR (W/kg)	0 dBm	0.042 W/kg	0.021 W/kg

4. Bluetooth estimated SAR is conservatively determined by 5mm separation, for all applicable exposure positions
5. Per KDB 447498 D01, simultaneous transmission SAR is compliant if,
   1) Scalar SAR summation < 1.6W/kg.
   2) SPLSR = (SAR1 + SAR2)1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan
   If SPLSR ≤ 0.04, simultaneously transmission SAR is compliant
   3) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg

Result of SUM ∑SAR1g of Head

SUM ∑SAR1g (GSM850+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	GPRS 850	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Right Cheek	0	0.546	0.368	0.042	0.914	0.588
Right Tilted	0	0.326	0.284	0.042	0.610	0.368
Left Cheek	0	0.573	0.141	0.042	0.714	0.615
Left Tilted	0	0.296	0.138	0.042	0.434	0.338

SUM ∑SAR1g (GSM1900+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	GPRS 1900	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Right Cheek	0	0.473	0.368	0.042	0.841	0.515
Right Tilted	0	0.196	0.284	0.042	0.480	0.238
Left Cheek	0	0.272	0.141	0.042	0.413	0.314
Left Tilted	0	0.169	0.138	0.042	0.307	0.211

SUM ∑SAR1g (WCDMA Band II+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	WCDMA II	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Right Cheek	0	0.215	0.368	0.042	0.583	0.257
Right Tilted	0	0.087	0.284	0.042	0.371	0.129
Left Cheek	0	0.103	0.141	0.042	0.244	0.145
Left Tilted	0	0.079	0.138	0.042	0.217	0.121

SUM ∑SAR1g (WCDMA Band V+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	WCDMA V	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Right Cheek	0	0.762	0.368	0.042	1.130	0.804
Right Tilted	0	0.393	0.284	0.042	0.677	0.435
Left Cheek	0	0.701	0.141	0.042	0.842	0.743
Left Tilted	0	0.290	0.138	0.042	0.428	0.332

Result of SUM ∑SAR1g for Body Support

SUM ∑SAR1g (GSM850+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	GPRS850	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Front	5	0.510	0.110	0.042	0.620	0.552
Rear	5	0.759	0.519	0.042	1.278	0.801

SUM ∑SAR1g (GSM1900+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	GPRS 1900	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Front	5	0.404	0.110	0.042	0.514	0.446
Rear	5	0.766	0.519	0.042	1.285	0.808

SUM ∑SAR1g (WCDMA Band II+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	WCDMA II	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Front	5	0.135	0.110	0.042	0.245	0.177
Rear	5	0.560	0.519	0.042	1.079	0.602

SUM ∑SAR1g (WCDMA Band V+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	WCDMA V	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Front	5	0.478	0.110	0.042	0.588	0.520
Rear	5	0.742	0.519	0.042	1.261	0.784

Result of SUM ∑SAR1g for Hotspot

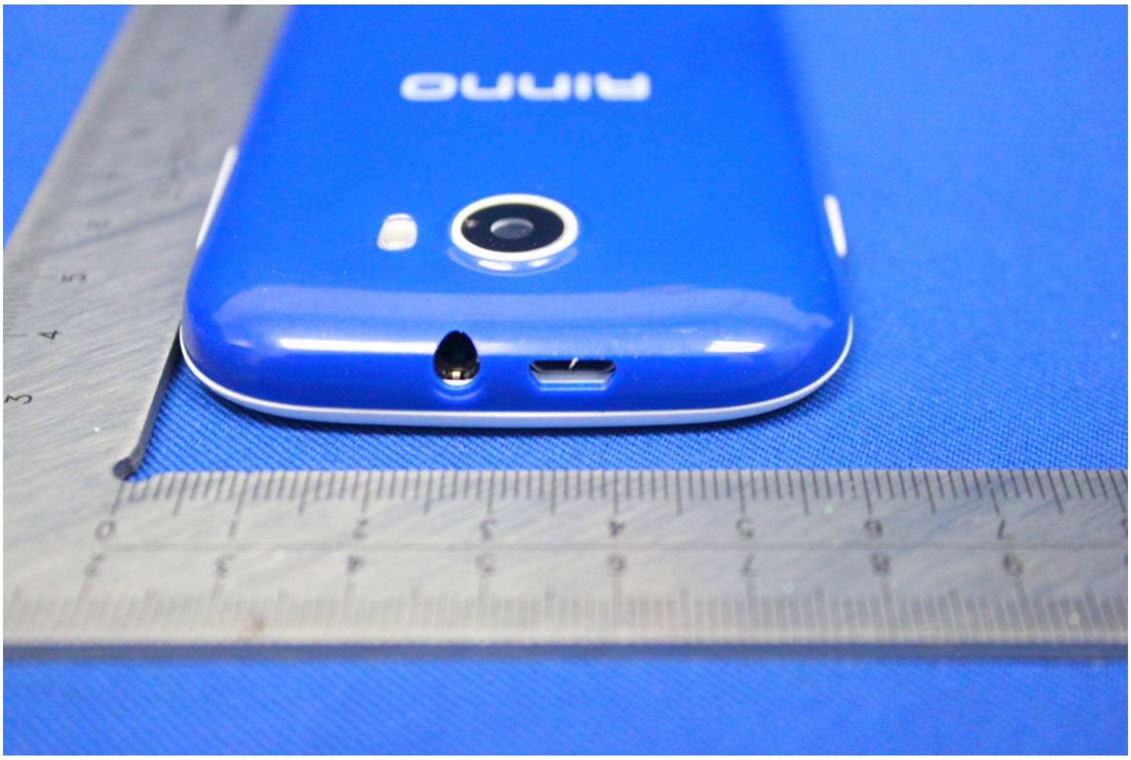
SUM ∑SAR1g (GSM850+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	GPRS850	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Front	10	0.272	0.097	0.021	0.369	0.293
Rear	10	0.485	0.253	0.021	0.738	0.506
Left Side	10	0.506	0.193	0.021	0.699	0.527

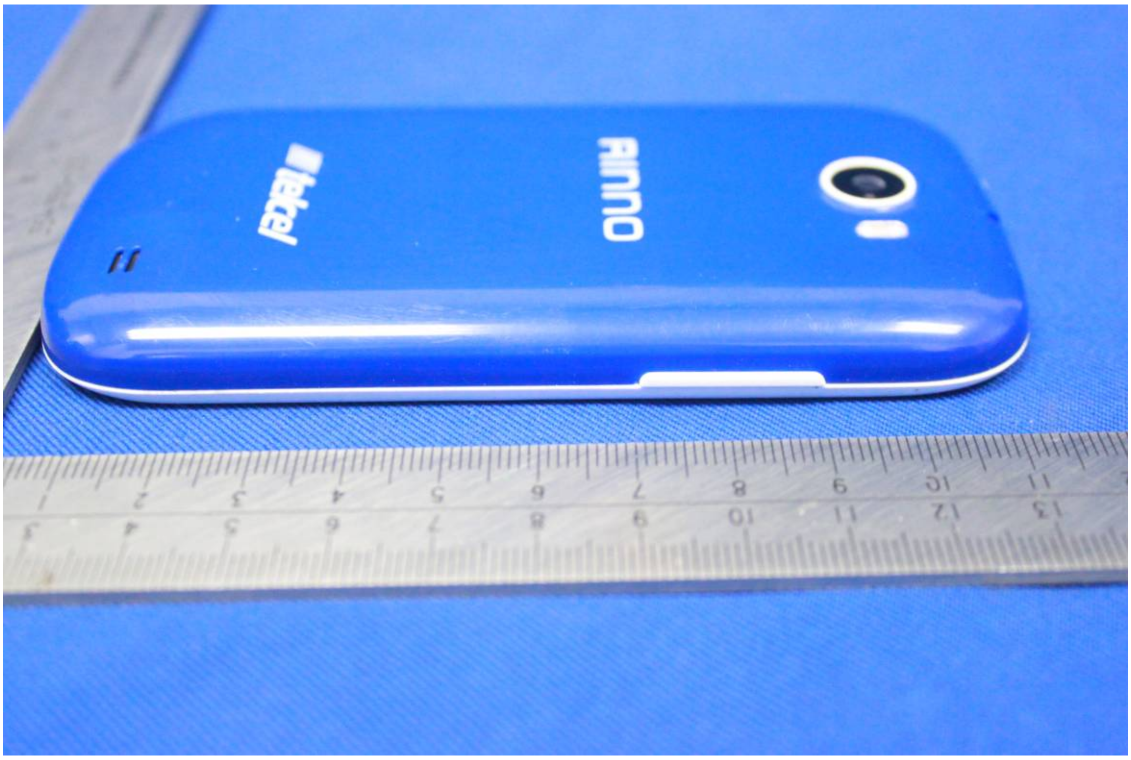
SUM ∑SAR1g (GSM1900+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	GPRS 1900	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Front	10	0.239	0.097	0.021	0.336	0.260
Rear	10	0.481	0.253	0.021	0.734	0.502
Left Side	10	0.058	0.193	0.021	0.251	0.079

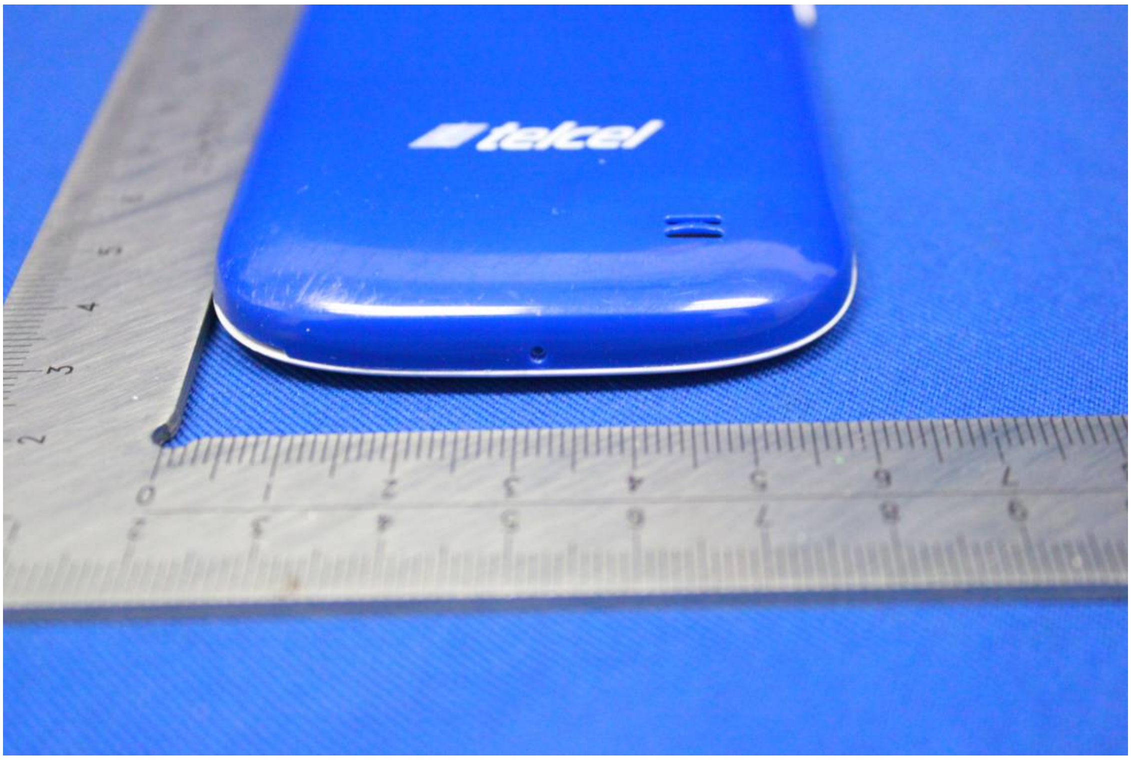
SUM ∑SAR1g (WCDMA Band II+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	WCDMA II	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Front	10	0.096	0.097	0.021	0.193	0.117
Rear	10	0.369	0.253	0.021	0.622	0.390
Left Side	10	0.079	0.193	0.021	0.272	0.100

SUM ∑SAR1g (WCDMA Band V+WLAN(2.4G) or Bluetooth)						
Position	Distance	Stand alone SAR(1g) [W/kg]			SUM SAR(1g)[W/kg]	SUM SAR(1g)[W/kg]
	[mm]	WCDMA V	WLAN 2.4G	Bluetooth	WWAN + WLAN(2.4G)	WWAN + Bluetooth
Front	10	0.335	0.097	0.021	0.432	0.356
Rear	10	0.557	0.253	0.021	0.810	0.578
Left Side	10	0.414	0.193	0.021	0.607	0.435

13. EUT PHOTO



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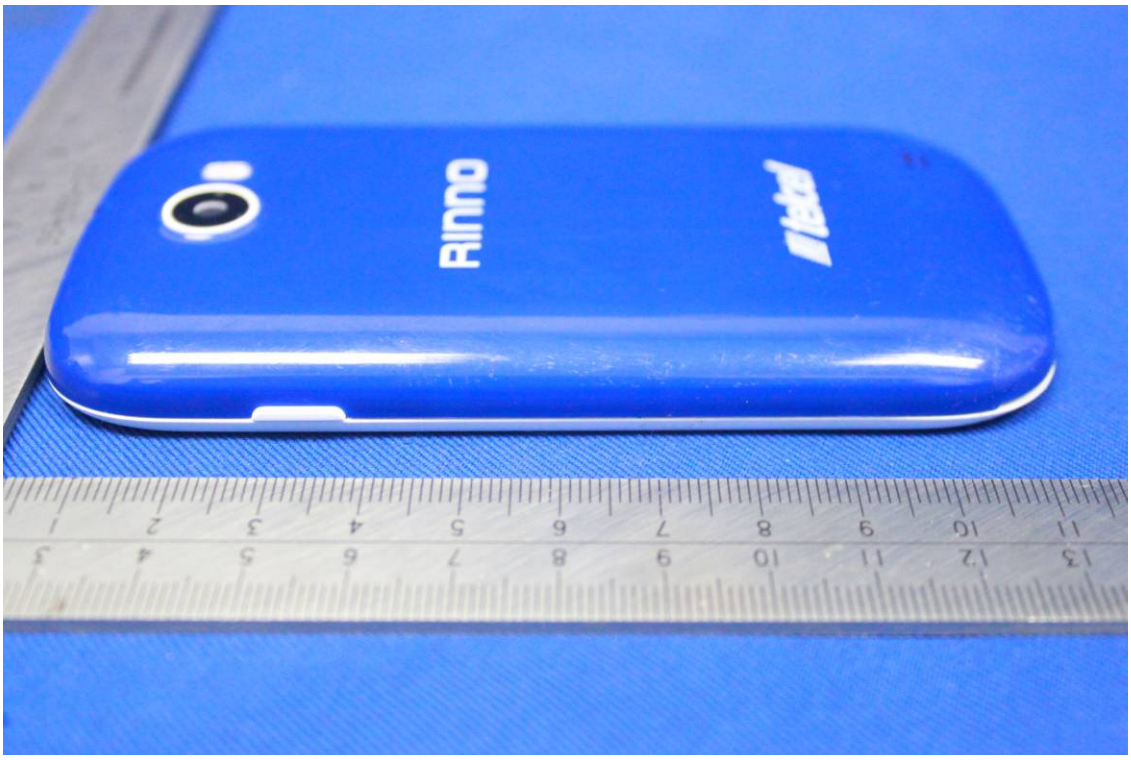
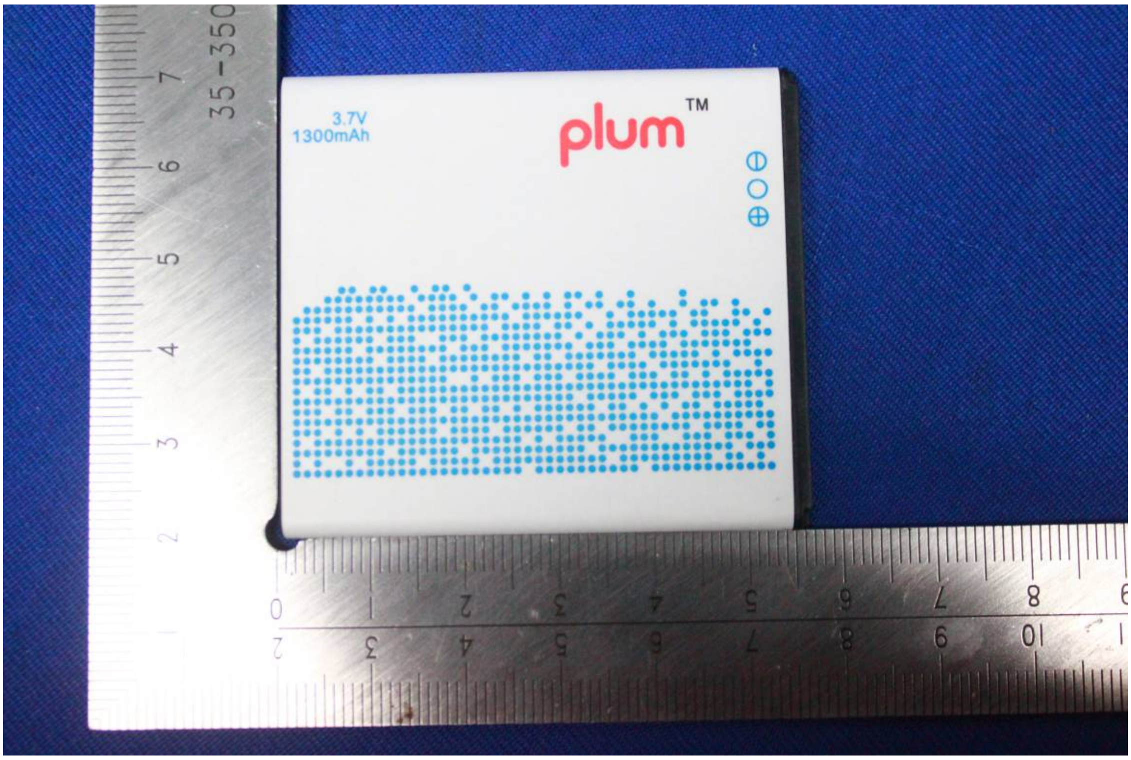
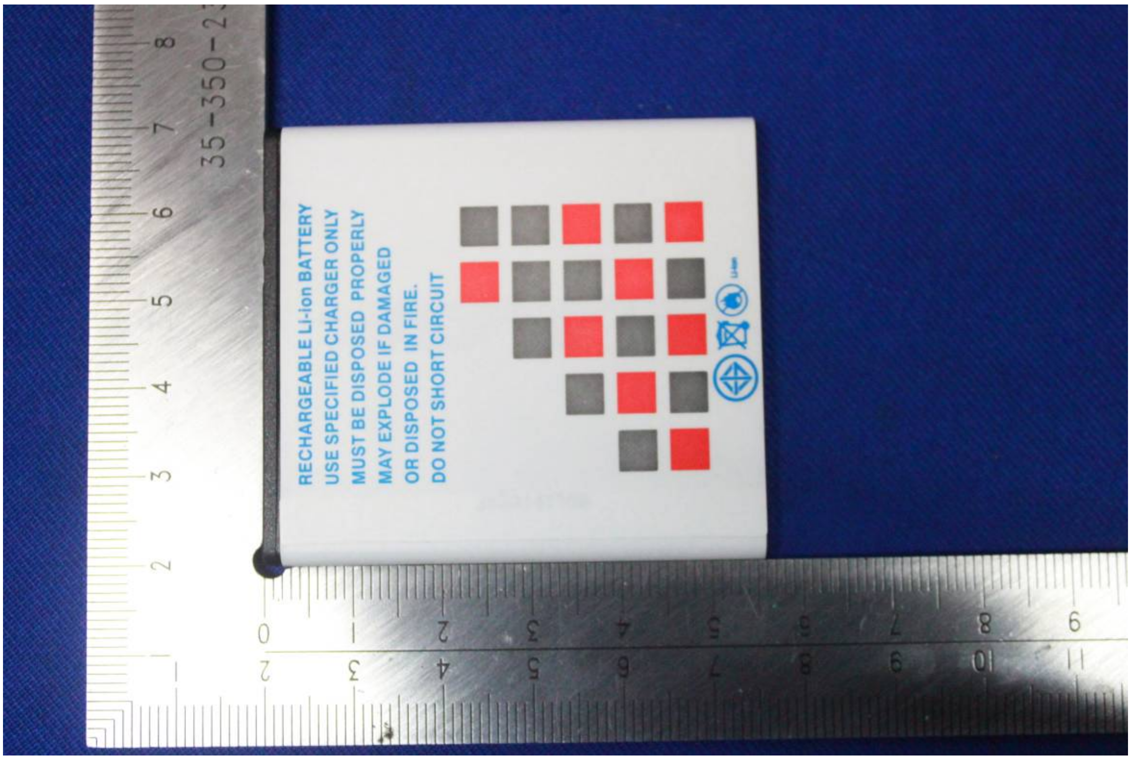

RINNO
telcel


3.7V
1300mAh
plum™


RECHARGEABLE Li-ion BATTERY
USE SPECIFIED CHARGER ONLY
MUST BE DISPOSED PROPERLY
MAY EXPLODE IF DAMAGED
OR DISPOSED IN FIRE.
DO NOT SHORT CIRCUIT

14. EQUIPMENT LIST & CALIBRATION STATUS

Name of Equipment	Manufacturer	Type/Model	Serial Number	Last Calibration	Calibration Due
P C	HP	Core(rm)3.16G	CZCO48171H	N/A	N/A
Signal Generator	Agilent	E8257C	MY43321570	11/20/2015	11/19/2016
S-Parameter Network Analyzer	Agilent	E5071B	MY42301382	03/03/2015	03/02/2016
Wireless Communication Test Set	R&S	CMU200	SN:109525	01/06/2016	01/05/2017
Power Meter	Agilent	E4416A	GB41292714	03/03/2015	03/02/2016
Peak & Average sensor	Agilent	E9327A	us40441788	03/03/2015	03/02/2016
Power meter	Anritsu	ML2495A	1445010	03/03/2015	03/02/2016
Power sensor	Anritsu	MA2411B	1339220	03/03/2015	03/02/2016
E-field PROBE	SPEAG	EX3DV4	3798	07/24/2015	07/23/2016
DAE	SPEAG	DEA4	1245	07/22/2015	07/21/2016
DIPOLE 835MHZ ANTENNA	SPEAG	D835V2	4d114	07/30/2013	07/27/2016
DIPOLE 1900MHZ ANTENNA	SPEAG	D1900V2	5d136	07/22/2013	07/19/2016
DIPOLE 2450MHZ ANTENNA	SPEAG	D2450V2	817	07/31/2013	07/28/2016
Dielectric Probe Kit	SPEAG	DAK 3.5	1102	N/A	N/A
Dual Directional Coupler	Woken	20W couple	DOM2BHW1A1	N/A	N/A
DUMMY PROBE	SPEAG	DP_2	SPDP2001AA	N/A	N/A
SAM PHANTOM (ELI4 v4.0)	SPEAG	QDOVA001BB	1102	N/A	N/A
Twin SAM Phantom	SPEAG	QD000P40CD	1609	N/A	N/A
ROBOT	SPEAG	TX60	F10/5E6AA1/A101	N/A	N/A
ROBOT KRC	SPEAG	CS8C	F10/5E6AA1/C101	N/A	N/A
LIQUID CALIBRATION KIT	ANTENNESSA	41/05 OCP9	00425167	N/A	N/A

15. FACILITIES

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

☒ No.10, Weiye Rd., Innovation Park, Eco & Tec. Development Part, Kunshan City, Jiangsu Province, China.

16. REFERENCES

[1] Federal Communications Commission, \Report and order: Guidelines for evaluating the environ-mental effects of radiofrequency radiation", Tech. Rep. FCC 96-326, FCC, Washington, D.C. 20554, 1996.

[2] David L. Means Kwok Chan, Robert F. Cleveland, \Evaluating compliance with FCC guidelines for human exposure to radiofrequency electromagnetic fields", Tech. Rep., Federal Communication Commision, O_ce of Engineering & Technology, Washington, DC, 1997.

[3] Thomas Schmid, Oliver Egger, and Niels Kuster, \Automated E-_eld scanning system for dosimetric assessments", IEEE Transactions on Microwave Theory and Techniques, vol. 44, pp. 105{113, Jan. 1996.

[4] Niels Kuster, Ralph K.astle, and Thomas Schmid, \Dosimetric evaluation of mobile communications equipment with known precision", IEICE Transactions on Communications, vol. E80-B, no. 5, pp. 645{652, May 1997.

[5] CENELEC, \Considerations for evaluating of human exposure to electromagnetic fields (EMFs) from mobile telecommunication equipment (MTE) in the frequency range 30MHz – 6GHz", Tech. Rep., CENELEC, European Committee for Electrotechnical Standardization, Brussels, 1997.

[6] ANSI, ANSI/IEEE C95.1-1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz, The Institute of Electrical and Electronics Engineers, Inc., New York, NY 10017, 1992.

[7] Katja Pokovic, Thomas Schmid, and Niels Kuster, \Robust setup for precise calibration of E-_eld probes in tissue simulating liquids at mobile communications frequencies", in ICECOM _ 97, Dubrovnik, October 15{17, 1997, pp. 120{124.

[8] Katja Pokovic, Thomas Schmid, and Niels Kuster, \E-_eld probe with improved isotropy in brain simulating liquids", in Proceedings of the ELMAR, Zadar, Croatia, 23{25 June, 1996, pp. 172{175.

[9] Volker Hombach, Klaus Meier, Michael Burkhardt, Eberhard K. uhn, and Niels Kuster, \The dependence of EM energy absorption upon human head modeling at 900 MHz", IEEE Transactions onMicrowave Theory and Techniques, vol. 44, no. 10, pp. 1865{1873, Oct. 1996.

[10] Klaus Meier, Ralf Kastle, Volker Hombach, Roger Tay, and Niels Kuster, \The dependence of EM energy absorption upon human head modeling at 1800 MHz", IEEE Transactions on Microwave Theory and Techniques, Oct. 1997, in press.

[11] W. Gander, Computermathematik, Birkhaeuser, Basel, 1992.

[12] W. H. Press, S. A. Teukolsky,W. T. Vetterling, and B. P. Flannery, Numerical Recepies in C, The Art of Scientific Computing, Second Edition, Cambridge University Press, 1992..Dosimetric Evaluation of Sample device, month 1998 9

[13] NIS81 NAMAS, \The treatment of uncertainity in EMC measurement", Tech. Rep., NAMAS Executive, National Physical Laboratory, Teddington, Middlesex, England, 1994.

[14] Barry N. Taylor and Christ E. Kuyatt, \Guidelines for evaluating and expressing the uncertainty of NIST measurement results", Tech. Rep., National Institute of Standards and Technology, 1994. Dosimetric Evaluation of Sample device, month 1998 10

APPENDIX A: PLOTS OF PERFORMANCE CHECK

The plots are showing as followings.

Test Laboratory: Compliance Certification Services Inc. Date: 1/21/2016
System Performance Check-Head D835
DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d114
Communication System: UID 0, CW; Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 835 MHz; σ = 0.908 S/m; ε_r = 41.75; ρ = 1000 kg/m^3
Room Ambient Temperature: 22°C; Liquid Temperature: 21.5°C
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

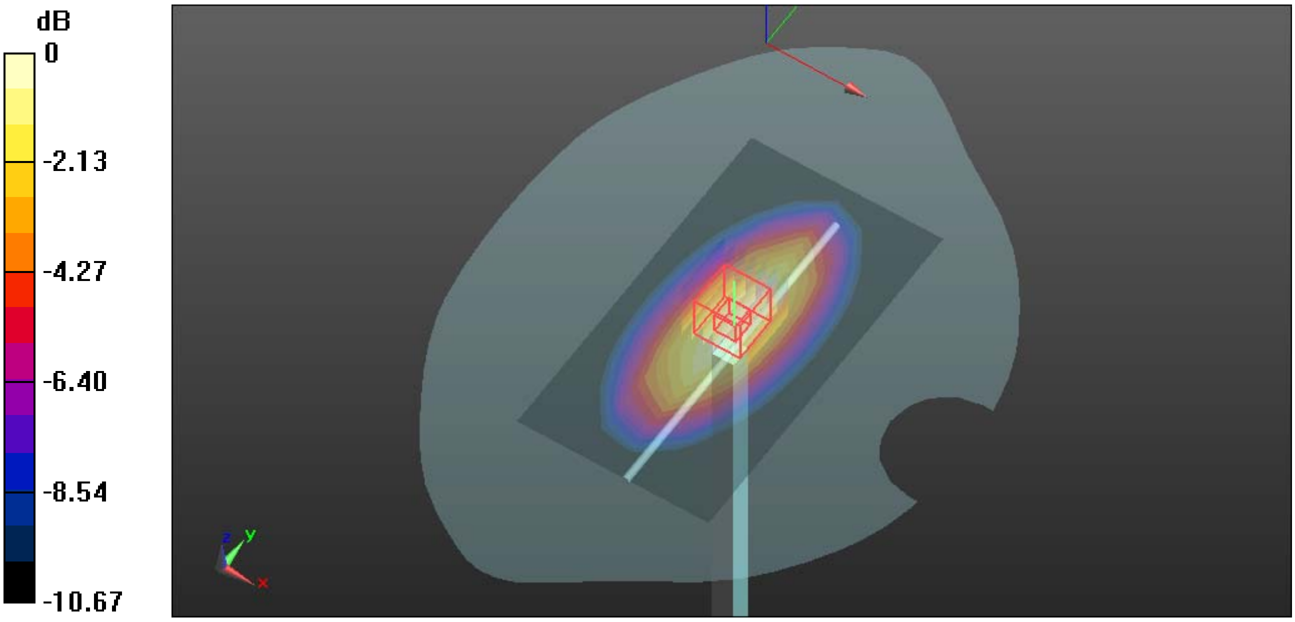
- Probe: EX3DV4 - SN3798; ConvF(9.13, 9.13, 9.13); Calibrated: 7/24/2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 7/22/2015
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- DASY52 52.8.8(1222);
- SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies Low 1 GHz/Pin=250 mW, dist=15 mm (EX-Probe)/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.24 W/kg

System Performance Check at Frequencies Low 1 GHz/Pin=250 mW, dist=15 mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 62.31 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 3.57 W/kg
SAR(1 g) = 2.31 W/kg; SAR(10 g) = 1.58 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.23 W/kg



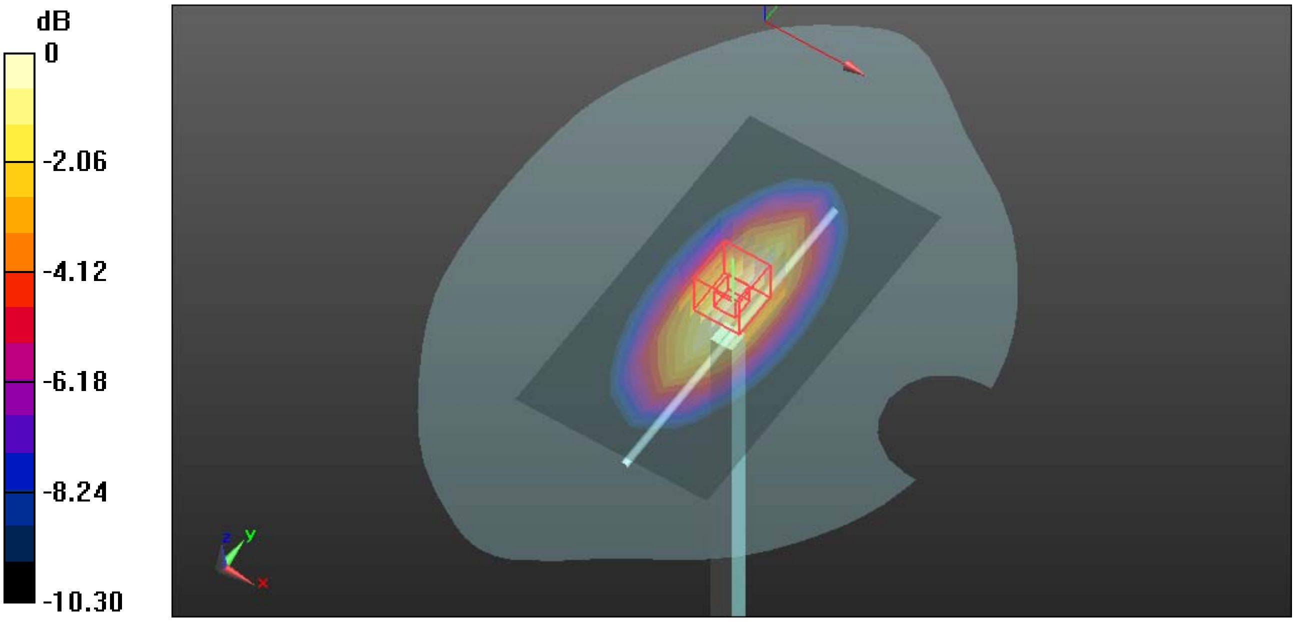
0 dB = 3.23 W/kg = 5.09 dBW/kg

Test Laboratory: Compliance Certification Services Inc. Date: 1/21/2016
System Performance Check-Body D835
DUT: Dipole 835 MHz ; Type: D835V2; Serial: 4d114
Communication System: UID 0, CW; Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.956 S/m; ε_r = 55.494; ρ = 1000 kg/m^3
Room Ambient Temperature: 22°C; Liquid Temperature: 21.5°C
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- Probe: EX3DV4 - SN3798; ConvF(8.87, 8.87, 8.87); Calibrated: 7/24/2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 7/22/2015
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- DASY52 52.8.8(1222);
- SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies Low 1 GHz/dist=15mm, Pin=250 mW(EX-Probe)/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.16 W/kg

System Performance Check at Frequencies Low 1 GHz/dist=15mm, Pin=250 mW(EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 60.13 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.56 W/kg
SAR(1 g) = 2.52 W/kg; SAR(10 g) = 1.63 W/kg
Maximum value of SAR (measured) = 3.02 W/kg



0 dB = 3.02 W/kg = 4.80 dBW/kg

Test Laboratory: Compliance Certification Services Inc. Date: 1/21/2016
System Performance Check-Head D1900
DUT: Dipole 1900 MHz ; Type: D1900V2; Serial: 5d136
Communication System: UID 0, CW; Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used (extrapolated): f = 1900 MHz; σ = 1.397 S/m; ε_r = 39.497; ρ = 1000 kg/m^3
Room Ambient Temperature: 22°C; Liquid Temperature: 21.5°C
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

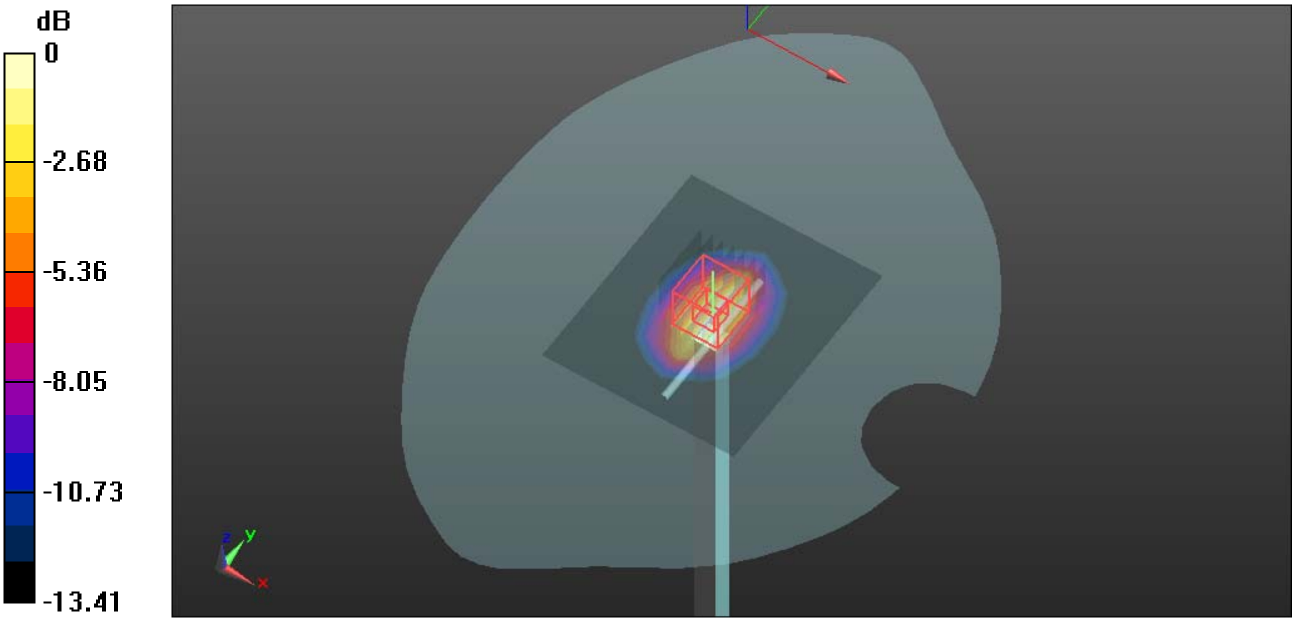
- Probe: EX3DV4 - SN3798; ConvF(7.63, 7.63, 7.63); Calibrated: 7/24/2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 7/22/2015
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- DASY52 52.8.8(1222);
- SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm

Info: Extrapolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 16.8 W/kg

System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.6 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 24.5 W/kg
SAR(1 g) = 10.22 W/kg; SAR(10 g) = 5.38 W/kg

Info: Extrapolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 18.3 W/kg



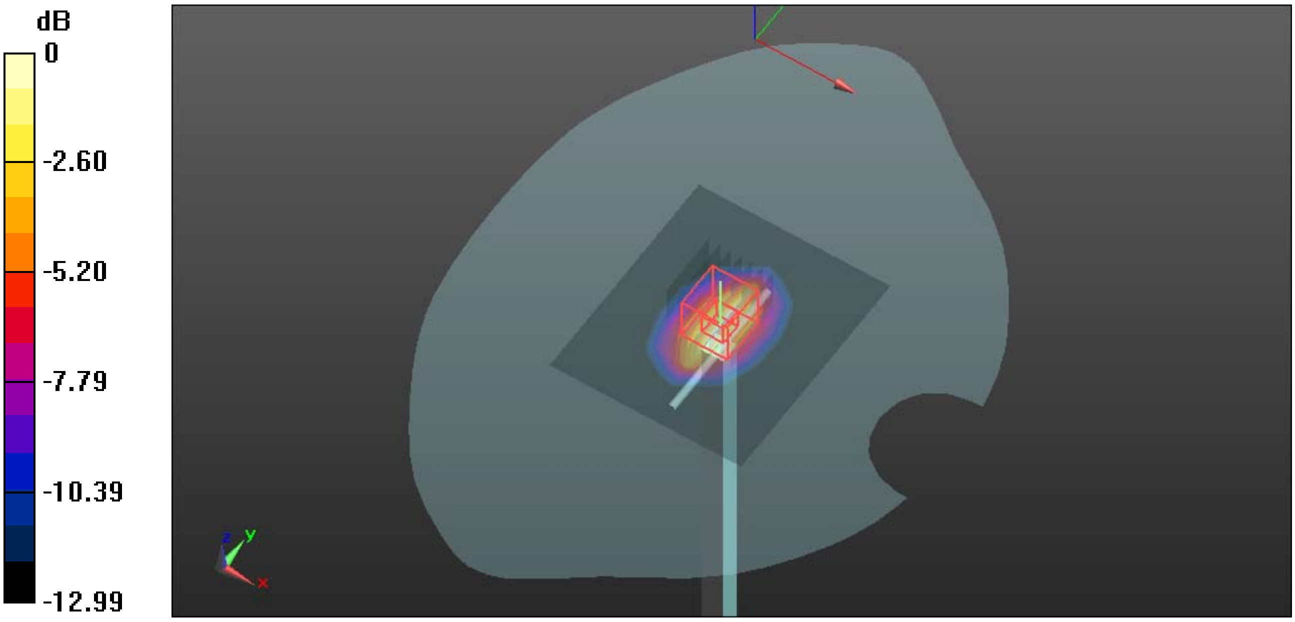
0 dB = 18.3 W/kg = 12.62 dBW/kg

Test Laboratory: Compliance Certification Services Inc. Date: 1/21/2016
System Performance Check-Body D1900
DUT: Dipole 1900 MHz ; Type: D1900V2; Serial: 5d136
Communication System: UID 0, CW; Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.539 S/m; ε_r = 51.612; ρ = 1000 kg/m^3
Room Ambient Temperature: 22°C; Liquid Temperature: 21.5°C
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.29, 7.29, 7.29); Calibrated: 7/24/2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 7/22/2015
- Phantom: Twin SAM Phantom; Type: QD 000 P40 CD; Serial: 1609
- DASY52 52.8.8(1222);
- SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 15.2 W/kg

System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 107.3 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 23.5 W/kg
SAR(1 g) = 10.51 W/kg; SAR(10 g) = 5.11 W/kg
Maximum value of SAR (measured) = 16.8 W/kg



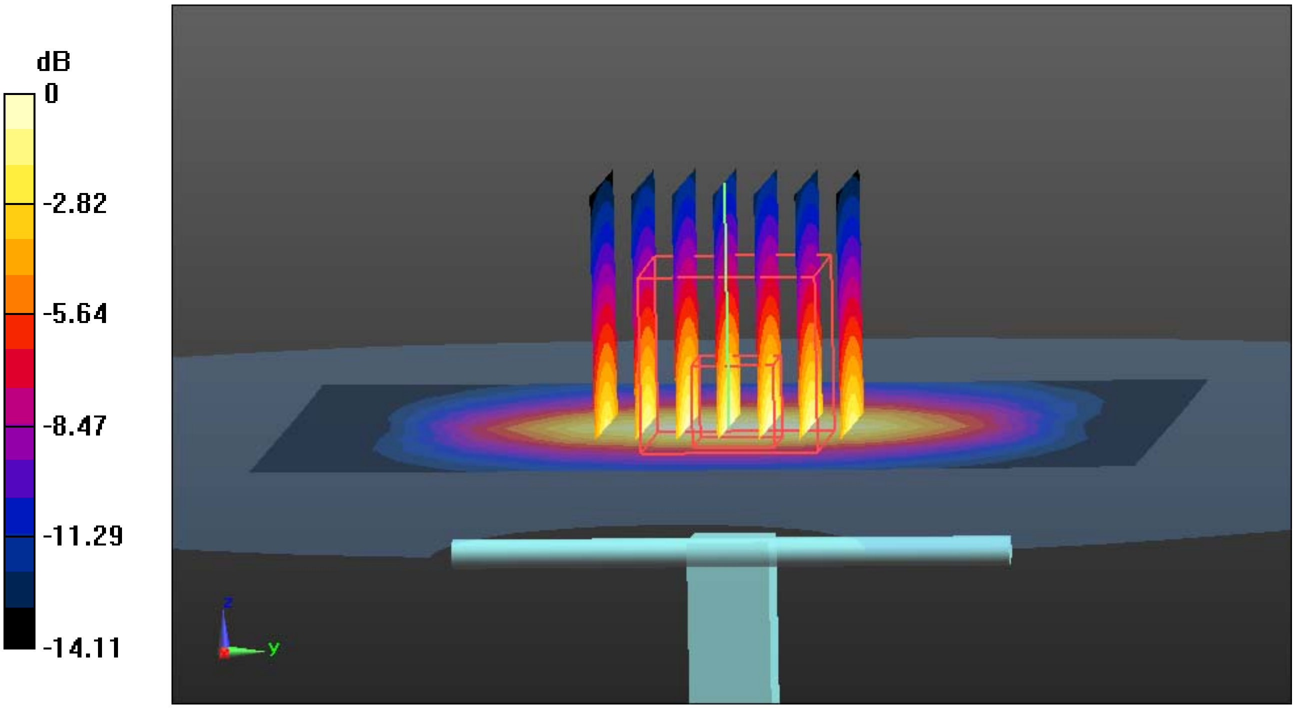
0 dB = 16.8 W/kg = 12.25 dBW/kg

Test Laboratory: Compliance Certification Services Inc. Date: 1/22/2016
System Performance Check-Head D2450
DUT: Dipole 2450 MHz ; Type: D24500V2; Serial: 817
Communication System: UID 0, CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.764 S/m; ε_r = 40.54; ρ = 1000 kg/m^3
Room Ambient Temperature: 22°C; Liquid Temperature: 21.5°C
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- Probe: EX3DV4 - SN3798; ConvF(6.97, 6.97, 6.97); Calibrated: 7/24/2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 7/22/2015
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- DASY52 52.8.8(1222);
- SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Area Scan (9x10x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 17.5 W/kg

System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 103.3 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 28.1 W/kg
SAR(1 g) = 12.45 W/kg; SAR(10 g) = 6.21 W/kg
Maximum value of SAR (measured) = 18.8 W/kg



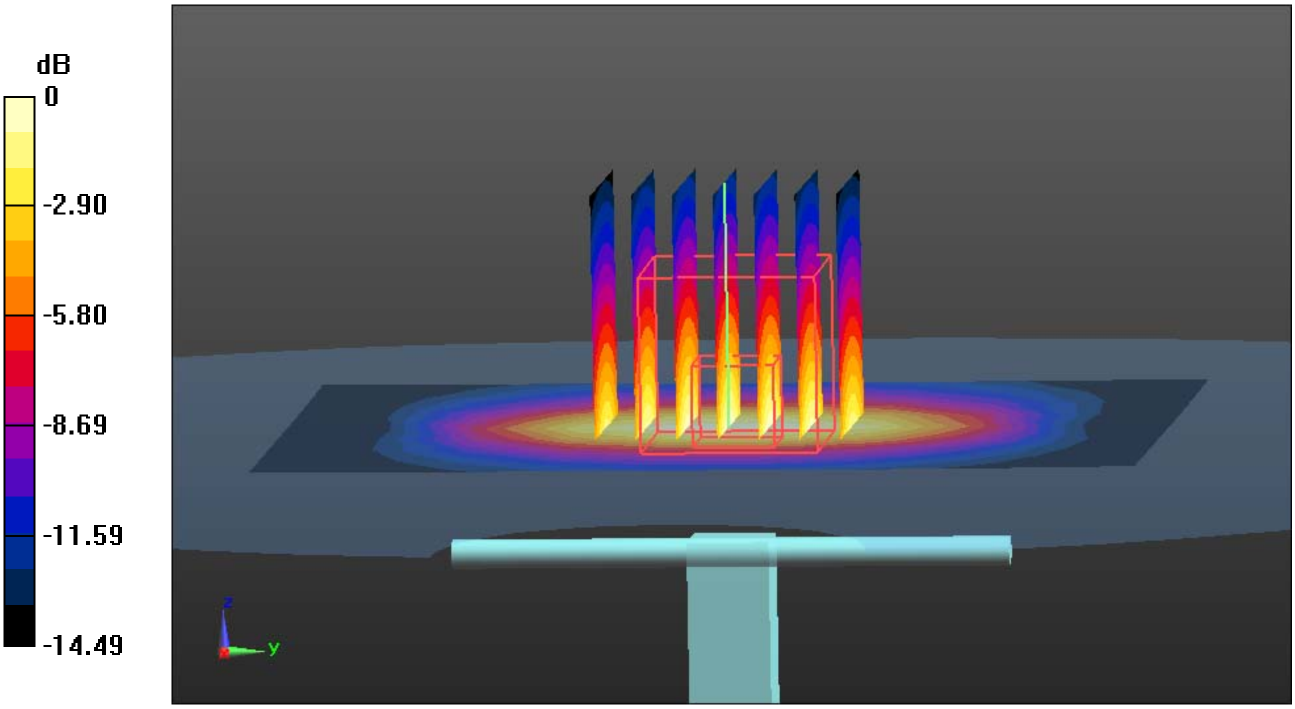
0 dB = 18.8 W/kg = 12.74 dBW/kg

Test Laboratory: Compliance Certification Services Inc. Date: 1/22/2016
System Performance Check-D2450 Body
DUT: Dipole 2450 MHz ; Type: D2450V2; Serial: 817
Communication System: UID 0, CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.979 S/m; ε_r = 51.707; ρ = 1000 kg/m^3
Room Ambient Temperature: 22°C; Liquid Temperature: 21.5°C
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.08, 7.08, 7.08); Calibrated: 7/24/2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 7/22/2015
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:xxxx
- DASY52 52.8.8(1222);
- SEMCAD X Version 14.6.10 (7331)

System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Area Scan (9x10x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 18.9 W/kg

System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.63 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 27.6 W/kg
SAR(1 g) = 12.32 W/kg; SAR(10 g) = 5.99 W/kg
Maximum value of SAR (measured) = 20.2 W/kg



0 dB = 20.2 W/kg = 13.05 dBW/kg

APPENDIX B: DASY CALIBRATION CERTIFICATE

The DASY Calibration Certificates are showing in the file named Appendix B DASY Calibration Certificate.

APPENDIX C: PLOTS OF HIGHEST SAR TEST RESULT

The plots are showing in the file named Appendix C Plots of Highest SAR Test Result

END REPORT