FCC SAR Report

Report No.	:	**SESF1507030**
Client	:	**ELITEGROUP COMPUTER SYSTEMS CO., LTD.**
Address	:	**No.239, Sec. 2, Tiding Blvd., Neihu Dist, Taipei City 14, Taiwan (R.O.C)**
Manufacturer	:	**ELITEGROUP COMPUTER SYSTEMS CO., LTD.**
Address	:	**No.239, Sec. 2, Tiding Blvd., Neihu Dist, Taipei City 14, Taiwan (R.O.C)**
Product	:	**Tablet PC**
Brand	:	
Model	:	**TE70SA3**
FCC ID	:	**2AEKR- TE70SA3**
Standards	:	**FCC 47 CFR Part 2 (2.1093)/IEEE C95.1:2005/IEEE 1528-2013/KDB 865664 D01 v01r04/KDB648474 D04 v01r02/KDB 447498 D01 v05r02/KDB 616217 D04 v01r01/KDB248227 D01 v02r01/KDB 941225 D01 v03/ KDB 941225 D06 v02**
Test Date	:	**July 16th, 2015~ July 18th, 2015**

Statement of Compliance:

The SAR values measured for the test sample are below the maximum recommended level of 1.6W/kg averaged over any 1g tissue according to FCC Knowledge Data Base/ FCC 47CFR Part 2 (2.1093)/ IEEE STD.1528-2013.

The test result only corresponds to the tested sample. It is not permitted to copy this report, in part or in full, without the permission of the test laboratory.

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

Prepared By: _____
Leo Chen

Approved By: _____
Miro Chueh

Testing Laboratory
2877

Release Version

Report No.	Issue Date	Description
SESF1507030	2015-07-21	Initial release

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1. Summary of Maximum SAR Value

Highest Reported SAR	Head
GSM850	0.00969
PCS1900	0.050
WCDMA Band II	0.054
WCDMA Band V	0.020
	Body
GSM850	1.105
PCS1900	1.159
WCDMA Band II	0.752
WCDMA Band V	0.445
Highest Simultaneous Transmission SAR	Head
WCDMA Band II +Bluetooth	0.084
	Body
GPRS1900 +802.11b	1.193

<Unit: W/kg>

2. Description of Equipment under Test

Product Name	Tablet PC
Model No.	TE70SA3
Brand Name	
IMEI1	004402810008932
IMEI2	004402810009393
Antenna Type	Internal
Device Category	Portable
RF Exposure Environment	Uncontrolled
2G	
Support Band	GSM850/PCS1900
GPRS Type	Class B
GPRS Class	Class 12
Uplink	GSM 850: 824~849MHz PCS 1900: 1850~1910MHz
Downlink	GSM 850: 869~894MHz PCS 1900: 1930~1990MHz
Release Version	R99
Type of modulation	GMSK for GSM/GPRS; 8PSK for EDGE
Antenna Gain	GSM 850: 1.17dBi PCS1900: 1.89dBi
3G	
Support Band	WCDMA Band II/WCDMA Band V
Uplink	WCDMA Band II: 1850~1910MHz WCDMA Band V: 824~849MHz
Downlink	WCDMA Band II: 1930~1990MHz WCDMA Band V: 869~894MHz
Release Version	Rel-6
Type of modulation	QPSK
Antenna Gain	Band 2: 1.98dBi Band 5: 1.34dBi

Bluetooth	
Bluetooth Frequency	2402~2480MHz
Channel separation	1MHz/2MHz
Modulation technology	GFSK, Pi/4QPSK, 8DPSK
Antenna Gain	1.27dBi
Wi-Fi	
Hotspots Function	YES
Tx Rate	802.11b: 1/2/5.5/11 Mbps 802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11n: up to 150 Mbps
Type of modulation	802.11b: DSSS; 802.11g/n: OFDM
Wi-Fi Frequency	802.11b/g/n(20MHz): 2412 ~ 2462 MHz 802.11n(40MHz):2422~2452 MHz
Antenna Gain	1.27dBi

3. Simultaneous Transmission Condition

RF Exposure Condition	Capable Transmit Configurations
Head	1. GSM 850/1900 (GPRS/EDGE) + WiFi 2.4GHz 2. WCDMA Band II/V (RMC)+ WiFi 2.4GHz
Body-worn Accessory	1. GSM 850/1900 Voice +BT 2. GSM 850/1900(GPRS/EDGE) + BT 3. WCDMA Band II/V (Voice)+ BT 4. WCDMA Band II/V (RMC) + BT 5. GSM 850/1900(GPRS/EDGE) + WiFi 2.4GHz 6. WCDMA Band II/V (RMC)+ WiFi 2.4GHz
Wireless Router (Hotspot)	1. GSM 850/1900 (GPRS/EDGE) + WiFi 2.4GHz 2. WCDMA Band II/V + WiFi 2.4GHz

Notes:

1. GPRS/EDGE and WCDMA support hotspot mode.
2. By reason of their independent modules and antennas, when GSM/GPRS or WCDMA is on, BT function can also be at work.
3. Wi-Fi 2.4GHz Radio cannot transmit simultaneously with Bluetooth Radio.
4. According to FCC KDB Publication 447498 D01v05r02 section5.3, transmitter are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneously transmission analysis.

4. Basic restrictions and Standards

4.1. Test Standards

1. IEEE 1528-2013
2. FCC KDB Publication 447498 D01 General RF Exposure Guidance v05r02
3. FCC KDB Publication 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
4. FCC KDB Publication 616217 D04 SAR for laptop and tablets v01r01
5. FCC KDB Publication 648474 D04 D04 Handset SAR v01r02
6. FCC KDB Publication 941225 D01 3G SAR Procedures v03
7. FCC KDB Publication 941225 D06 Hotspot Mode v02
8. FCC KDB Publication 248227 D01 802.11 Wi-Fi SAR v02r01

4.2. Environment Condition

Item	Target	Measured
Ambient Temperature(℃)	18~25	21.5±2
Temperature of Simulant(℃)	20~22	21±2
Relative Humidity(%RH)	30~70	52

4.3. RF Exposure Limits

Human Exposure	Basic restrictions for electric, magnetic and electromagnetic fields. (Unit in mW/g or W/kg)
Spatial Peak SAR[1](Head and Body)	1.60
Spatial Average SAR[2](Whole Body)	0.08
Spatial Peak SAR[3](Arms and Legs)	4.00

Notes:

1. The Spatial Peak value of the SAR averaged over any 1gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over appropriate averaging time.

5. General Information

Our Lab,

Test Site	Cerpass Technology (Suzhou) Co.,Ltd
Test Site Location	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China

6. DASY5 Measurement System

DASY5 Measurement System

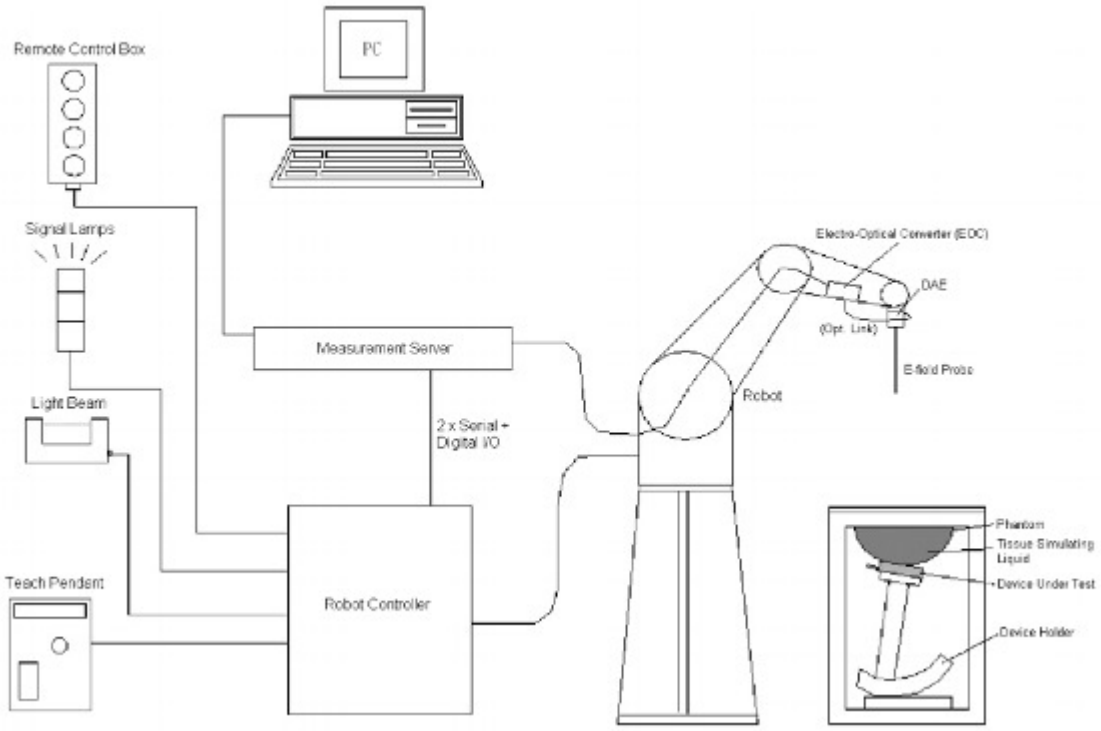


Figure 2.1 SPEAG DASY5 System Configurations

The DASY5 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(ECO)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 7
- DASY5 software
- Remove control with teach pendant 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

6.1. Uncertainty of Inter-/Extrapolation and Averaging

In order to evaluate the uncertainty of the interpolation, extrapolation and averaged SAR calculation algorithms of the Postprocessor, DASY5 allows the generation of measurement grids which are artificially predefined by analytically based test functions. Therefore, the grids of area scans and zoom scans can be filled with uncertainty test data, according to the SAR benchmark functions of IEEE 1528.The three analytical functions shown in equations as below are used to describe the possible range of the expected SAR distributions for the tested handsets. The field gradients are covered by the spatially flat distribution f1, the spatially steep distribution f3 and f2 accounts for H-field cancellation on the phantom/tissue surface.

$$f_1(x,y,z) = Ae^{-\frac{z}{2a}} \cos^2\left(\frac{\pi}{2}\frac{\sqrt{x'^2+y'^2}}{5a}\right)$$

$$f_2(x,y,z) = Ae^{-\frac{z}{a}} \frac{a^2}{a^2+x'^2}\left(3-e^{-\frac{2z}{a}}\right)\cos^2\left(\frac{\pi}{2}\frac{y'}{3a}\right)$$

$$f_3(x,y,z) = A\frac{a^2}{\frac{a^2}{4}+x'^2+y'^2}\left(e^{-\frac{2z}{a}}+\frac{a^2}{2(a+2z)^2}\right)$$

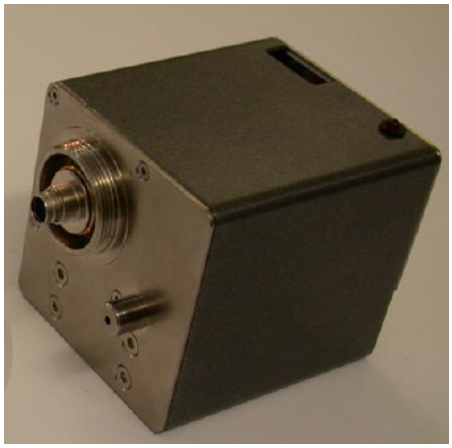
6.2. DASY5 E-Field Probe

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.

SPEAG conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528, EN 62209-1, IEC 62209, etc.) under ISO 17025. The calibration data are in Appendix D.

Model	EX3DV4
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
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
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%.

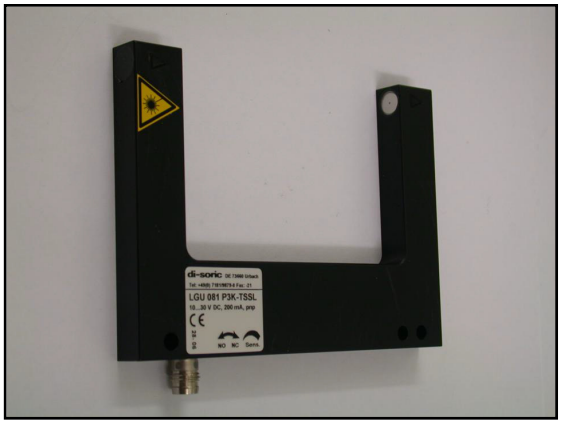
6.3. Data Acquisition Electronics (DAE)

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 DAE4 is 200M Ohm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.	

6.4. Robot

The DASY5 system uses the high precision robots TX90 XL type out of the newer series from Stäubli SA (France). For the 6-axis controller DASY5 system, the CS8C robot controller version from Stäubli is used. The XL robot series have many features that are important for our application: ■ High precision (repeatability 0.02 mm) ■ High reliability (industrial design) ■ Jerk-free straight movements ■ Low ELF interference (the closed metallic construction shields against motor control fields) ■ 6-axis controller	

6.5. Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip. The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.	

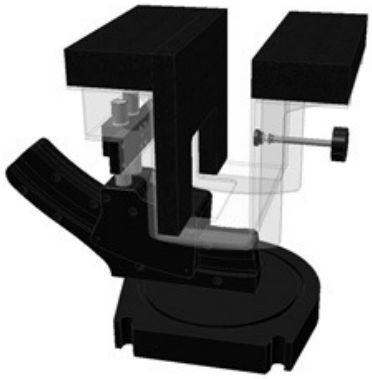
6.6. Measurement Server

The DASY5 measurement server is based on a PC/104 CPU board with a 400MHz intel ULV Celeron, 128MB chipdisk and 128MB RAM. The necessary circuits for communication with the DAE electronics 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.	

6.7. SAM Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas: ■ Left head ■ Right head ■ Flat phantom	
The ELI4 Phantom also is a fiberglass shell phantom with 2mm shell thickness. It has 30 liters filling volume, and with a dimension of 600mm for major ellipse axis, 400mm for minor axis. It is intended for compliance testing of handheld and body-mounted wireless devices in frequency range of 30 MHz to 6GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.	
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.	

6.8. Device Holder

The DASY5 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 (EPR).Thus the device needs no repositioning when changing the angles. The DASY5 device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity εr =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.	
The laptop extension is lightweight and made of POM, acrylic glass and foam. It fits easily on upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.	

6.9. Test Equipment List

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
Stäubli Robot TX60L	Stäubli	TX60L	5P6VA1/A/01	only once
Robot Controller	Stäubli	CS8C	5P6VA1/C/01	only once
Dipole Validation Kits	Speag	D850V2	1008	2017.05.26
Dipole Validation Kits	Speag	D1900V2	5d174	2017.05.19
Dipole Validation Kits	Speag	D2450V2	914	2017.05.18
SAM ELI Phantom	Speag	SAM	1211	N/A
Laptop Holder	Speag	SM LH1 001CD	N/A	N/A
Data Acquisition Electronic	Speag	DAE4	1379	2016.05.19
E-Field Probe	Speag	EX3DV4	3927	2016.05.26
SAR Software	Speag	DASY5	V5.2 Build 162	N/A
Power Amplifier	Mini-Circuit	ZVA-183W-S+	MN136701248	2016.09.02
Directional Coupler	Agilent	772D	MY52180104	2016.09.02
Directional Coupler	Agilent	778D	MY52180185	2016.09.02
Spectrum Analyzer	R&S	FSP40	100324	2016.03.23
Vector Network	Agilent	E5071C	MY4631693	2016.01.15
Signal Generator	R&S	SML	103287	2016.03.09
Power Meter	BONN	BLWA0830-160/100/40D	76659	2015.11.10
AUG Power Sensor	R&S	NRP-Z91	100384	2016.03.09

7. The SAR Measurement Procedure

7.1. System Performance Check

7.1.1 Purpose

1. To verify the simulating liquids are valid for testing.
2. To verify the performance of testing system is valid for testing.

7.1.2 Tissue Dielectric Parameters for Head and Body Phantoms

Target Frequency	Head		Body	
(MHz)	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
850	**41.5**	**0.92**	**55.2**	**0.99**
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
5200	36.0	4.66	49.0	5.30
5600	35.5	5.07	48.5	5.77
5800	35.3	5.27	48.2	6.00

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

7.1.3 Tissue Calibration Result

■The dielectric parameters of the liquids were verified prior to the SAR evaluation using DASY5 Dielectric Assessment Kit and Agilent Vector Network Analyzer E5071C.

Head Tissue Simulant Measurement

Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
850MHz	Reference result ± 5% window	41.50 39.43 to 43.58	0.92 0.87 to 0.97	N/A
	16-07-2015	41.43	0.9	21.0
1900MHz	Reference result ± 5% window	40.0 38.00 to 42.00	1.40 1.33 to 1.47	N/A
	17-07-2015	39.7	1.43	21.0
2450MHz	Reference result ± 5% window	39.2 37.24 to 41.16	1.80 1.71 to 1.89	N/A
	18-07-2015	38.00	1.83	21.0

Body Tissue Simulant Measurement

Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
850MHz	Reference result ± 5% window	55.2 52.44 to 57.96	0.99 0.94 to 1.04	N/A
	16-07-2015	55.77	0.97	21.0
1900MHz	Reference result ± 5% window	53.3 50.64 to 55.97	1.52 1.44 to 1.60	N/A
	17-07-2015	51.06	1.53	21.0
2450MHz	Reference result ± 5% window	52.7 50.065 to 55.335	1.95 1.8525 to 2.0475	N/A
	18-07-2015	52.08	1.89	21.0

■Refer to KDB 865664 D01 v01r04, The depth of body tissue-equivalent liquid in a phantom must be ≥ 15.0 cm with ≤ ± 0.5 cm variation for SAR measurements ≤ 3 GHz and ≥ 10.0 cm with ≤ ± 0.5 cm variation for measurements > 3 GHz.

7.1.4 System Performance Check Procedure

The DASY5 installation includes predefined files with recommended procedures for measurements and the system performance check. They are read-only document files and destined as fully defined but unmeasured masks, so the finished system performance check must be saved under a different name. The system performance check document requires the SAM Twin Phantom or ELI4 Phantom, so the phantom must be properly installed in your system. (User defined measurement procedures can be created by opening a new document or editing an existing document file). Before you start the system performance check, you need only to tell the system with which components (probe, medium, and device) you are performing the system performance check; the system will take care of all parameters.

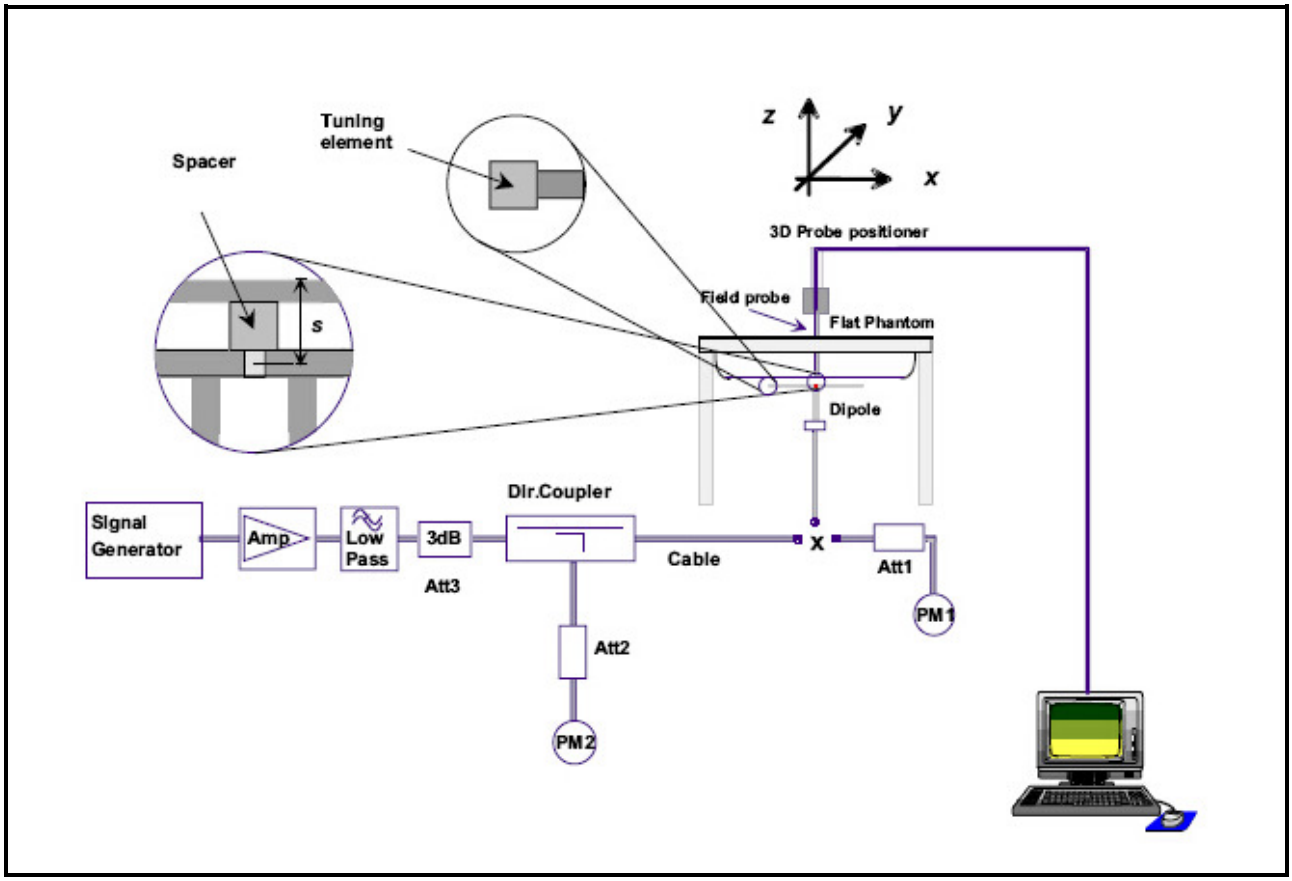
■ **The Power Reference Measurement and Power Drift Measurement** jobs are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the Dipole output power. If it is too high (above ±0.2 dB), the system performance check should be repeated;

■ **The Surface Check** job tests the optical surface detection system of the DASY5 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ±0.1mm). In that case it is better to abort the system performance check and stir the liquid;

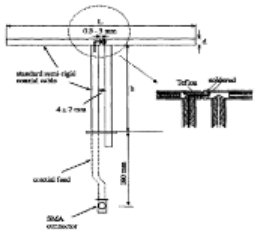
■ **The Area Scan** job measures the SAR above the dipole on a plane parallel to the surface. It is used to locate the approximate location of the peak SAR. The proposed scan uses large grid spacing for faster measurement; due to the symmetric field, the peak detection is reliable;

■ **The Zoom Scan** job measures the field in a volume around the peak SAR value assessed in the previous Area Scan job (for more information see the application note on SAR evaluation). If the system performance check gives reasonable results. The dipole input power(forward power) was 250mW, 1 g and 10 g spatial average SAR values normalized to 1W dipole input power give reference data for comparisons and it's equal to 10x(dipole forward power). The next sections analyze the expected uncertainties of these values, as well as additional checks for further information or troubleshooting.

7.1.5 System Performance Check Setup



7.1.6 Validation Dipoles

The dipoles use is based on the IEEE Std.1528-2003 and FCC KDB 865664 D01 standards, and is complied with mechanical and electrical specifications in line with the requirements of both EN62209-1 and EN62209-2. The table below provides details for the mechanical and electrical specifications for the dipoles.	

7.1.7 Result of System Performance Check: Valid Result

System Performance Check at 850MHz, 1900MHz, 2450MHz for Head.

Validation Dipole: D850V2-SN: 1008

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
850 MHz	Reference result ± 10% window	9.67 8.703 to 10.637	6.29 5.661 to 6.919	21.0
	16-07-2015	9.76	6.4	

Validation Kit: D1900V2-SN: 5d174

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
1900MHz	Reference result ± 10% window	41.1 36.99 to 45.21	21.4 19.26 to 23.54	21.0
	17-07-2015	39.8	20.6	

Validation Kit: D2450V2-SN: 914

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
2450MHz	Reference result ± 10% window	53.8 48.42 to 59.18	25.2 22.68 to 27.72	21.0
	18-07-2015	52.4	23.88	

Note: All SAR values are normalized to 1W forward power.

System Performance Check at 850MHz, 1900MHz, 2450MHz for Body.

Validation Dipole: D850V2-SN: 1008

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
850 MHz	Reference result ± 10% window	9.81 8.829 to 10.791	6.44 5.796 to 7.084	21.0
	16-07-2015	9.92	6.36	

Validation Kit: D1900V2-SN: 5d174

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
1900MHz	Reference result ± 10% window	40.5 36.45 to 44.55	21.7 19.53 to 23.87	21.0
	17-07-2015	39.36	20.44	

Validation Kit: D2450V2-SN: 914

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
2450MHz	Reference result ± 10% window	52.5 47.25 to 57.75	24.6 22.14 to 27.06	21.0
	18-07-2015	51.2	23.4	

Note: All SAR values are normalized to 1W forward power.

7.2. Test Requirements

7.2.1 Test Procedures

Step 1 Setup a Connection

First, engineer should record the conducted power before the test. Then establish a call in handset at the maximum power level with a base station simulator via air interface, or make the EUT estimate by itself in testing band. Place the EUT to the specific test location. After the testing, must export SAR test data by SEMCAD. Then writing down the conducted power of the EUT into the report, also the SAR values tested.

Step 2 Power Reference Measurements

To measure the local E-field value at a fixed location which value will be taken as a reference value for calculating a possible power drift.

Step 3 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 fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) 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 KDB 865664 D01v01r04

	≤ 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.	

Step 4 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 Zoom Scan measures points (refer to table below) within a cube whose 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 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 v01r04

			≤ 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.

Step 5 Power Drift Measurements

Repetition of the E-field measurement at the fixed location mentioned in Step 1 to make sure the two results differ by less than ± 0.2 dB.

7.2.2 Test Channel

Per FCC KDB 941225 D01 v03, When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

Here are HSDPA/HSUPA sub-test setups as show blow, per FCC KDB 941225 D01 v03:

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	CM (dB)(2)
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15.
Note 3: 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 signaled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

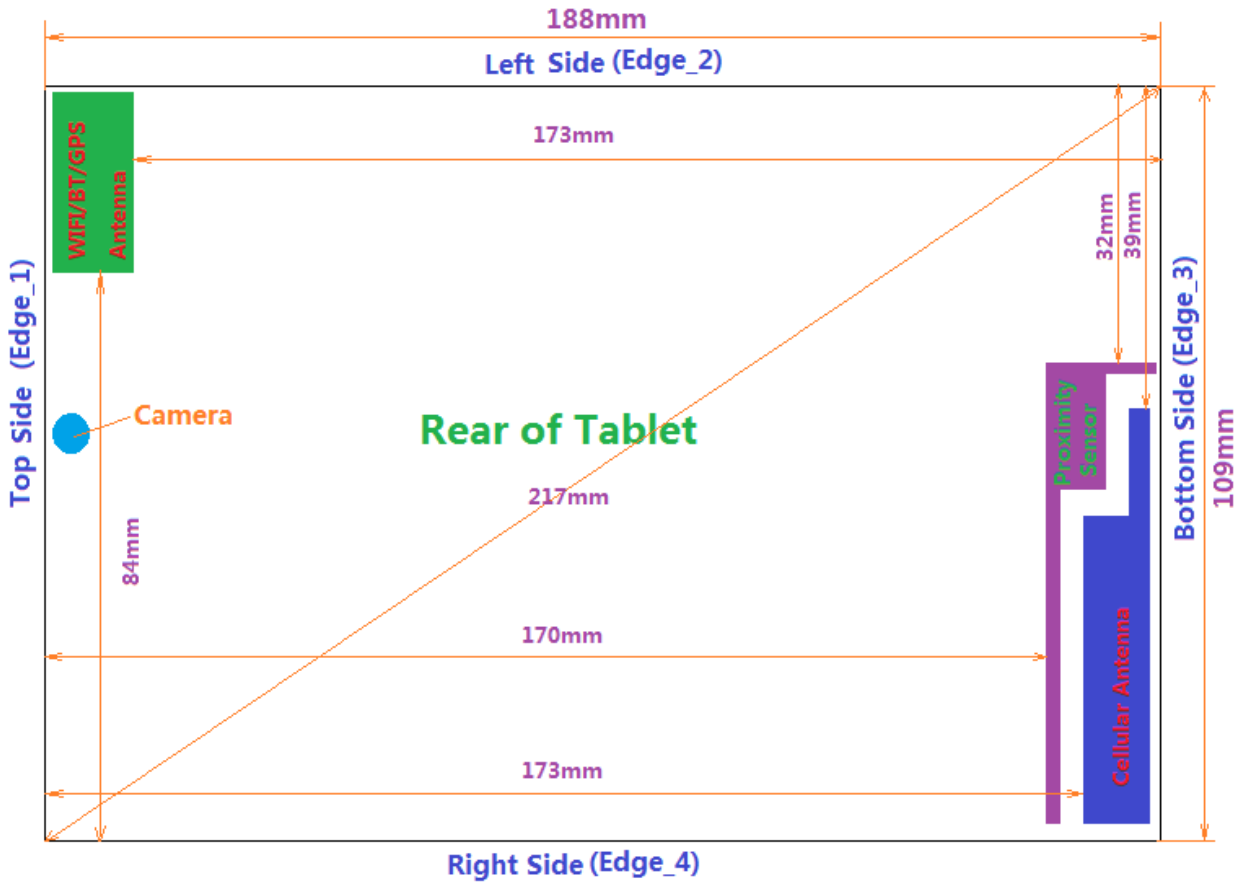
Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}: 47/15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

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$.
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 signaled 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 signaled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.
Note 6: β_{ed} cannot be set directly; it is set by Absolute Grant Value.

8. Analysis of Proximity Sensing

A proximity sensor for power reduction is implemented in this device to address RF exposure compliance when the cellular antenna is positioned close to the user's body. The sensor's mechanical structure is designed to fit within the enclosure design used in this device and also extended around the edge and top of the antenna element in order to optimize sensitivity in these orientations.

8.1. Antenna and Proximity Sensor Location



Antenna/Sensor	Antenna Distance to Edges(mm)				
	Back	Top	Left-side	Right-side	Bottom
GSM/WCDMA	<5	173	39	<5	<5
WIFI/BT	<5	<5	<5	84	173
Proximity Sensor	<5	170	<5	32	<5

8.2. Proximity Sensor Detection Area

The proximity sensor is triggered at the following conservative distances when:

- The Rear Surface of the device is 15 mm for the power reduced trigger, from the phantom.
- The Edge_3 of the device is 15 mm for the power reduced trigger, from the phantom.
- The Edge_4 of the device is 15 mm for the power reduced trigger, from the phantom.

8.2.1 Proximity Sensor Triggering Distances

Moved Toward the Phantom

Distance to EUT (mm)	Proximity Sensor Status		
	Rear Surface	Edge_3	Edge_4
30	NO Trigger	NO Trigger	NO Trigger
27	NO Trigger	NO Trigger	NO Trigger
24	NO Trigger	NO Trigger	NO Trigger
21	NO Trigger	NO Trigger	NO Trigger
20	NO Trigger	NO Trigger	NO Trigger
19	NO Trigger	NO Trigger	NO Trigger
18	NO Trigger	NO Trigger	NO Trigger
17	NO Trigger	NO Trigger	NO Trigger
16	NO Trigger	NO Trigger	NO Trigger
15	Trigger	Trigger	Trigger
14	Trigger	Trigger	Trigger
13	Trigger	Trigger	Trigger
12	Trigger	Trigger	Trigger
11	Trigger	Trigger	Trigger
10	Trigger	Trigger	Trigger
9	Trigger	Trigger	Trigger
6	Trigger	Trigger	Trigger
3	Trigger	Trigger	Trigger
0	Trigger	Trigger	Trigger

Moved Away the Phantom

Distance to EUT (mm)	Proximity Sensor Status		
	Rear Surface	Edge_3	Edge_4
0	Trigger	Trigger	Trigger
3	Trigger	Trigger	Trigger
6	Trigger	Trigger	Trigger
9	Trigger	Trigger	Trigger
10	Trigger	Trigger	Trigger
11	Trigger	Trigger	Trigger
12	Trigger	Trigger	Trigger
13	Trigger	Trigger	Trigger
14	Trigger	Trigger	Trigger
15	Trigger	Trigger	Trigger
16	NO Trigger	NO Trigger	NO Trigger
17	NO Trigger	NO Trigger	NO Trigger
18	NO Trigger	NO Trigger	NO Trigger
19	NO Trigger	NO Trigger	NO Trigger
20	NO Trigger	NO Trigger	NO Trigger
21	NO Trigger	NO Trigger	NO Trigger
24	NO Trigger	NO Trigger	NO Trigger
27	NO Trigger	NO Trigger	NO Trigger
30	NO Trigger	NO Trigger	NO Trigger

8.2.2 Coverage at the Corners of the DUT

The proximity sensor coverage at the Bottom Edge/Left Corner and Bottom Edge/Right Corner of the device are determined by changing the angle of the device relative to the phantom, and observing the angle at which the proximity sensor are triggered.

Bottom Edge/Right Corner

Proximity Sensor Status Table when DUT is moving towards the phantom (Edge_4 Move to Edge_3)

Angle to EUT (Degree)	Proximity Sensor Status	
	Bottom Edge/Left Corner	Bottom Edge/Right Corner
90	Trigger	Trigger
85	Trigger	Trigger
80	Trigger	Trigger
75	Trigger	Trigger
70	Trigger	Trigger
65	Trigger	Trigger
60	Trigger	Trigger
55	Trigger	Trigger
50	Trigger	Trigger
45	Trigger	Trigger
40	Trigger	Trigger
35	Trigger	Trigger
30	Trigger	Trigger
25	Trigger	Trigger
20	Trigger	Trigger
15	Trigger	Trigger
10	Trigger	Trigger
5	Trigger	Trigger
0	Trigger	Trigger

Proximity Sensor Status Table when DUT is moving away from the phantom (Edge_3 Move to Edge_4)

Angle to EUT (Degree)	Proximity Sensor Status	
	Bottom Edge/Left Corner	Bottom Edge/Right Corner
0	Trigger	Trigger
5	Trigger	Trigger
10	Trigger	Trigger
15	Trigger	Trigger
20	Trigger	Trigger
25	Trigger	Trigger
30	Trigger	Trigger
35	Trigger	Trigger
40	Trigger	Trigger
45	Trigger	Trigger
50	Trigger	Trigger
55	Trigger	Trigger
60	Trigger	Trigger
65	Trigger	Trigger
70	Trigger	Trigger
75	Trigger	Trigger
80	Trigger	Trigger
85	Trigger	Trigger
90	Trigger	Trigger

Bottom Edge/Left Corner

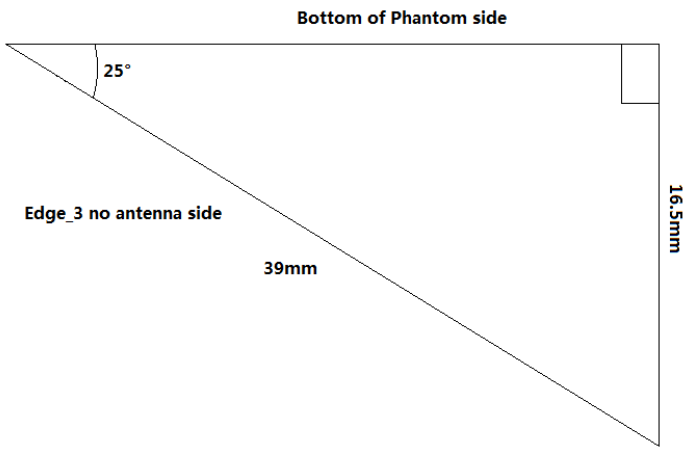
Proximity Sensor Status Table when DUT is moving towards the phantom (Edge_2 Move to Edge_3)

Angle to EUT (Degree)	Proximity Sensor Status	
	Bottom Edge/Left Corner	Bottom Edge/Right Corner
90	NO Trigger	NO Trigger
85	NO Trigger	NO Trigger
80	NO Trigger	NO Trigger
75	NO Trigger	NO Trigger
70	NO Trigger	NO Trigger
65	NO Trigger	NO Trigger
60	NO Trigger	NO Trigger
55	NO Trigger	NO Trigger
50	NO Trigger	NO Trigger
45	NO Trigger	NO Trigger
40	NO Trigger	NO Trigger
35	NO Trigger	NO Trigger
30	NO Trigger	NO Trigger
25	Trigger	Trigger
20	Trigger	Trigger
15	Trigger	Trigger
10	Trigger	Trigger
5	Trigger	Trigger
0	Trigger	Trigger

Proximity Sensor Status Table when DUT is moving away from the phantom (Edge_3 Move to Edge_2)

Angle to EUT (Degree)	Proximity Sensor Status	
	Bottom Edge/Left Corner	Bottom Edge/Right Corner
0	Trigger	Trigger
5	Trigger	Trigger
10	Trigger	Trigger
15	Trigger	Trigger
20	Trigger	Trigger
25	Trigger	Trigger
30	NO Trigger	NO Trigger
35	NO Trigger	NO Trigger
40	NO Trigger	NO Trigger
45	NO Trigger	NO Trigger
50	NO Trigger	NO Trigger
55	NO Trigger	NO Trigger
60	NO Trigger	NO Trigger
65	NO Trigger	NO Trigger
70	NO Trigger	NO Trigger
75	NO Trigger	NO Trigger
80	NO Trigger	NO Trigger
85	NO Trigger	NO Trigger
90	NO Trigger	NO Trigger

In this case, the conservative angle at which the proximity sensor is triggered is: 25° for power reducing, from the phantom.



SAR evaluation for Bottom Edge/Left Corner Tilt is not performed because, the antenna-to-flat phantom distance, in this case, is 16.5 mm, which is more than the 15 mm for the Rear Surface (at which SAR evaluation will be performed at full power).

8.2.3 Coverage at the Edges of the DUT

Proximity Sensor Status Table when DUT is moving towards the phantom

Angle to EUT (Degree)	Proximity Sensor Status	
	Edge_3	Edge_4
90	Trigger	Trigger
85	Trigger	Trigger
80	Trigger	Trigger
75	Trigger	Trigger
70	Trigger	Trigger
65	Trigger	Trigger
60	Trigger	Trigger
55	Trigger	Trigger
50	Trigger	Trigger
45	Trigger	Trigger
40	Trigger	Trigger
35	Trigger	Trigger
30	Trigger	Trigger
25	Trigger	Trigger
20	Trigger	Trigger
15	Trigger	Trigger
10	Trigger	Trigger
5	Trigger	Trigger
0	Trigger	Trigger

Proximity Sensor Status Table when DUT is moving away from the phantom

Angle to EUT (Degree)	Proximity Sensor Status	
	Edge_3	Edge_4
0	Trigger	Trigger
5	Trigger	Trigger
10	Trigger	Trigger
15	Trigger	Trigger
20	Trigger	Trigger
25	Trigger	Trigger
30	Trigger	Trigger
35	Trigger	Trigger
40	Trigger	Trigger
45	Trigger	Trigger
50	Trigger	Trigger
55	Trigger	Trigger
60	Trigger	Trigger
65	Trigger	Trigger
70	Trigger	Trigger
75	Trigger	Trigger
80	Trigger	Trigger
85	Trigger	Trigger
90	Trigger	Trigger

8.2.4 Proximity sensor SAR test configurations

■For head exposure condition, the DUT is evaluated with separation distance of 0mm to ERP, because proximity sensor isn't trigger at all configurations.

■For body exposure condition, the DUT is evaluated in the following configurations:

For Wi-Fi

Test configurations	Proximity Sensor SAR Required	Note
Rear	No	Due to there's no sensor coverage around the Wi-Fi antenna, proximity sensor SAR isn't needed.
Edge_1	No	
Edge_2	No	
Edge_3	No	
Edge_4	No	

For WWAN

Test configurations	Proximity Sensor SAR Required	Note
Rear	Yes	
Edge_1	No	Due to there's no sensor coverage around the Wi-Fi antenna, proximity sensor SAR isn't needed.
Edge_2	No	
Edge_3	Yes	
Edge_4	Yes	
Bottom Edge/Left Corner	No	The antenna-to-flat phantom distance, in this case, is 16.5 mm, which is more than the 15 mm for the Rear Surface
Bottom Edge/Right Corner	Yes	

8.3. Conducted Power

8.3.1 Measurements approaches for power reduced by proximity sensor triggering

■A proximity sensor for power reduction is implemented in this device to address RF exposure compliance when the cellular antenna is positioned close to the user's body. The sensor's mechanical structure is designed to fit within the enclosure design used in this device and also extended around the edge and top of the antenna element in order to optimize sensitivity in these orientations.

■When a certain object or human body approaches the DUT, the measured capacitance is higher than triggered value, proximity sensor is triggered, and then TX power is reduced to triggered power level.

■As applicant declared, TX power is reduced to triggered power level for SAR compliance while proximity sensor is malfunctioning.

■For getting an accurate power value, short length high quality RF Cable was used to monitor out power as shown below:

Frequency Range	Cable Length (cm)	Cable Loss(dB)
800MHz-900MHz	12	0.4
1850MHz-1950MHz	12	0.7

8.3.2 Measured Power Results (cable loss included)

■**Band850**

Mode	Freq. <MHz>	Duty Cycle Factor <dB>	Full Power				Proximity Sensor Reduced Power			
			Average Burst Power <dBm>	Frame Power <dBm>	Max. Tune-up Power (dBm)	Scaling Factor	Average Burst Power <dBm>	Frame Power <dBm>	Max. Tune-up Power (dBm)	Scaling Factor
GSM850	824.2	9	31.44	22.44	31.5	1.01	29.69	20.69	30.0	1.07
	836.4	9	31.38	22.38	31.5	1.03	29.63	20.63	30.0	1.09
	848.8	9	29.42	20.42	29.5	1.02	27.67	18.67	28.0	1.08
GPRS850 (1slot)	824.2	9	31.41	22.41	31.5	1.02	29.66	20.66	30.0	1.08
	836.4	9	31.37	22.37	31.5	1.03	29.62	20.62	30.0	1.09
	848.8	9	29.41	20.41	29.5	1.02	27.66	18.66	28.0	1.08
GPRS850 (2slot)	824.2	6	29.04	23.04	29.5	1.11	27.79	21.79	28.0	1.05
	836.4	6	29.09	23.09	29.5	1.10	27.84	21.84	28.0	1.04
	848.8	6	28.47	22.47	29.5	1.27	27.22	21.22	28.0	1.20
GPRS850 (3slot)	824.2	4.25	28.24	23.99	28.5	1.06	26.99	22.74	27.0	1.00
	836.4	4.25	28.23	23.98	28.5	1.06	26.98	22.73	27.0	1.00
	848.8	4.25	27.84	23.59	28.5	1.16	26.59	22.34	27.0	1.10
GPRS850 (4slot)	**824.2**	**3**	**27.29**	**24.29**	**27.5**	**1.05**	**26.04**	**23.04**	**26.5**	**1.11**
	836.4	**3**	**27.25**	**24.25**	**27.5**	**1.06**	**26.11**	**23.11**	**26.5**	**1.09**
	848.8	**3**	**26.74**	**23.74**	**27.5**	**1.19**	**25.69**	**22.69**	**26.5**	**1.21**
EDGE850 (1slot)	824.2	9	29.19	20.19	29.5	1.07	27.94	18.94	28.0	1.01
	836.4	9	28.32	19.32	29.5	1.31	27.07	18.07	28.0	1.24
	848.8	9	28.51	19.51	29.5	1.26	27.26	18.26	28.0	1.19
EDGE850 (2slot)	824.2	6	27.89	21.89	28.0	1.03	26.64	20.64	27.0	1.09
	836.4	6	27.86	21.86	28.0	1.03	26.61	20.61	27.0	1.09
	848.8	6	27.77	21.77	28.0	1.05	26.52	20.52	27.0	1.12
EDGE850 (3slot)	824.2	4.25	27.12	22.87	27.5	1.09	25.87	21.62	26.0	1.03
	836.4	4.25	27.07	22.82	27.5	1.10	25.82	21.57	26.0	1.04
	848.8	4.25	27.04	22.79	27.5	1.11	25.79	21.54	26.0	1.05
EDGE850 (4slot)	824.2	3	26.88	23.88	27.0	1.03	25.63	22.63	26.0	1.09
	836.4	3	26.83	23.83	27.0	1.04	25.68	22.68	26.0	1.08
	848.8	3	26.81	23.81	27.0	1.04	25.56	22.56	26.0	1.11
SIM2										
GSM850	836.4	9	31.37	22.37	31.5	1.03	29.61	20.6	30.0	1.09

Note：

1. Scaling Factor = Max. Power (mW) / AVG Burst Power (mW).

2. This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v05.

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

■ **Band1900**

Mode	Freq. <MHz>	Duty Cycle Factor <dB>	Full Power				Proximity Sensor Reduced Power			
			Average Burst Power <dBm>	Frame Power <dBm>	Max. Tune-up Power (dBm)	Scaling Factor	Average Burst Power <dBm>	Frame Power <dBm>	Max. Tune-up Power (dBm)	Scaling Factor
PCS1900	1850.2	9	29.04	20.04	29.5	1.11	26.61	17.61	27.0	1.09
	1880	9	29.08	20.08	29.5	1.10	26.65	17.65	27.0	1.08
	1909.8	9	28.71	19.71	29.5	1.20	26.28	17.28	27.0	1.18
GPRS1900 (1slot)	1850.2	9	29.02	20.02	29.5	1.12	26.59	17.59	27.0	1.10
	1880	9	29.07	20.07	29.5	1.10	26.64	17.64	27.0	1.09
	1909.8	9	28.68	19.68	29.5	1.21	26.25	17.25	27.0	1.19
GPRS1900 (2slot)	1850.2	6	28.64	22.64	29.0	1.09	26.46	20.46	27.0	1.13
	1880	6	28.69	22.69	29.0	1.07	26.41	20.41	27.0	1.15
	1909.8	6	28.58	22.58	29.0	1.10	26.38	20.38	27.0	1.15
GPRS1900 (3slot)	1850.2	4.25	28.31	24.06	28.5	1.04	25.78	21.53	26.0	1.05
	1880	4.25	28.26	24.01	28.5	1.06	25.84	21.59	26.0	1.04
	1909.8	4.25	28.23	23.98	28.5	1.06	25.81	21.56	26.0	1.04
GPRS1900 (4slot)	**1850.2**	**3**	**27.28**	**24.28**	**27.5**	**1.05**	**25.43**	**22.43**	**25.5**	**1.02**
	1880	**3**	**27.24**	**24.24**	**27.5**	**1.06**	**25.39**	**22.39**	**25.5**	**1.03**
	1909.8	**3**	**27.22**	**24.22**	**27.5**	**1.07**	**25.37**	**22.37**	**25.5**	**1.03**
EDGE1900 (1slot)	1850.2	9	28.84	19.84	29.5	1.16	26.19	17.19	26.5	1.07
	1880	9	29.07	20.07	29.5	1.10	26.22	17.22	26.5	1.07
	1909.8	9	28.43	19.43	29.5	1.28	26.18	17.18	26.5	1.08
EDGE1900 (2slot)	1850.2	6	27.89	21.89	28.0	1.03	26.04	20.04	26.5	1.11
	1880	6	27.86	21.86	28.0	1.03	26.01	20.01	26.5	1.12
	1909.8	6	27.77	21.77	28.0	1.05	25.92	19.92	26.5	1.14
EDGE1900 (3slot)	1850.2	4.25	26.12	21.87	26.5	1.09	24.27	20.02	24.5	1.05
	1880	4.25	26.07	21.82	26.5	1.10	24.22	19.97	24.5	1.07
	1909.8	4.25	26.04	21.79	26.5	1.11	24.19	19.94	24.5	1.07
EDGE1900 (4slot)	1850.2	3	25.88	22.88	26.0	1.03	24.03	21.03	24.5	1.11
	1880	3	25.83	22.83	26.0	1.04	23.98	20.98	24.5	1.13
	1909.8	3	25.81	22.81	26.0	1.04	23.96	20.96	24.5	1.13
SIM2										
PCS1900	1880	9.00	29.07	20.07	29.5	1.10	26.63	17.63	28.5	1.54

Note：

1. Scaling Factor = Max. Power (mW) / AVG Burst Power (mW).

2. This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v05.

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

■ WCDMA

Full Normal Power

Band	WCDMA Band II			WCDMA Band V			MPR
Channel	9262	9400	9538	4132	4182	4233	
Frequency	1852.4	1880.0	1907.6	826.4	836.4	846.6	
RMC 12.2Kbps	22.33	22.39	22.23	22.17	22.23	22.28	N/A
HSDPA Subtest-1	22.09	22.11	22.13	22.06	22.13	22.09	0
HSDPA Subtest-2	20.86	20.92	20.81	21.34	21.42	21.46	0
HSDPA Subtest-3	20.34	20.37	20.26	20.22	20.27	20.23	0.5
HSDPA Subtest-4	20.08	20.15	20.12	20.08	20.13	20.15	0.5
HSUPA Subtest-1	22.26	22.29	22.18	22.07	22.20	22.28	0
HSUPA Subtest-2	21.19	21.24	21.12	21.27	21.31	21.26	2.0
HSUPA Subtest-3	20.36	20.39	20.23	20.33	20.45	20.32	1.0
HSUPA Subtest-4	19.82	19.89	19.71	19.97	19.89	19.84	2.0
HSUPA Subtest-5	19.26	19.29	19.16	19.34	19.42	19.32	0

Proximity Sensor Reduced Power

Band	WCDMA Band II			WCDMA Band V			MPR
Channel	9262	9400	9538	4132	4182	4233	
Frequency	1852.4	1880.0	1907.6	826.4	836.4	846.6	
RMC 12.2Kbps	21.41	21.47	21.31	20.32	20.38	20.43	N/A
HSDPA Subtest-1	21.17	21.19	21.21	20.21	20.28	20.24	0
HSDPA Subtest-2	19.94	20.00	19.89	19.49	19.57	19.61	0
HSDPA Subtest-3	19.42	19.45	19.34	18.37	18.42	18.38	0.5
HSDPA Subtest-4	19.16	19.23	19.20	18.23	18.28	18.30	0.5
HSUPA Subtest-1	21.34	21.37	21.26	20.22	20.35	20.43	0
HSUPA Subtest-2	20.27	20.32	20.20	19.42	19.46	19.41	2.0
HSUPA Subtest-3	19.44	19.47	19.31	18.48	18.60	18.47	1.0
HSUPA Subtest-4	18.90	18.97	18.79	18.12	18.04	17.99	2.0
HSUPA Subtest-5	18.34	18.37	18.24	17.49	17.57	17.47	0

Band II

Mode	Band II Freq. <MHz>	Full Power			Proximity Sensor Reduced Power		
		Average Burst Power <dBm>	Max. Tune-up Power (dBm)	Scaling Factor	Average Burst Power <dBm>	Max. Tune-up Power (dBm)	Scaling Factor
R99 WCDMA	9262	22.33	22.5	1.04	21.41	21.5	1.02
	9400	22.39	22.5	1.03	21.47	21.5	1.01
	9538	22.23	22.5	1.06	21.31	21.5	1.04
Rel5 HSDPA	9262	22.09	22.5	1.10	21.17	21.5	1.08
	9400	22.11	22.5	1.09	21.19	21.5	1.07
	9538	22.13	22.5	1.09	21.21	21.5	1.07
Rel6 HSUPA	9262	22.26	22.5	1.06	21.34	21.5	1.04
	9400	22.29	22.5	1.05	21.37	21.5	1.03
	9538	22.18	22.5	1.08	21.26	21.5	1.06

Band V

Mode	Band V Freq. <MHz>	Full Power			Proximity Sensor Reduced Power		
		Average Burst Power <dBm>	Max. Tune-up Power (dBm)	Scaling Factor	Average Burst Power <dBm>	Max. Tune-up Power (dBm)	Scaling Factor
R99 WCDMA	4132	22.17	22.5	1.08	20.32	20.5	1.04
	4182	22.23	22.5	1.06	20.38	20.5	1.03
	4233	22.28	22.5	1.05	20.43	20.5	1.02
Rel5 HSDPA	4132	22.06	22.5	1.11	20.21	20.5	1.07
	4182	22.13	22.5	1.09	20.28	20.5	1.05
	4233	22.09	22.5	1.10	20.24	20.5	1.06
Rel6 HSUPA	4132	22.07	22.5	1.10	20.22	20.5	1.07
	4182	22.20	22.5	1.07	20.35	20.5	1.04
	4233	22.28	22.5	1.05	20.43	20.5	1.02

■ WIFI

Mode	Channel	Average Burst Power<dBm>	Max. Tune-up Power<dBm>	Scaling Factor
802.11b	2412	9.50	10.5	1.26
	2437	10.03	10.5	1.11
	2462	10.35	10.5	1.04
802.11g	2412	8.72	10.0	1.34
	2437	9.43	10.0	1.14
	2462	9.58	10.0	1.10
802.11n(HT20)	2412	8.64	10.0	1.37
	2437	9.42	10.0	1.14
	2462	9.51	10.0	1.12

■ Bluetooth

Mode	Channel	Max. Average Burst Power<dBm>	Max. Tune-up Power<dBm>	Scaling Factor
GFSK	Low	-2.164	-1.50	1.17
	Mid	-1.832	-1.50	1.08
	High	-3.003	-3.00	1.00
Pi/4 DQPSK_DH5	Low	-2.164	-1.50	1.17
	Mid	-1.832	-1.50	1.08
	High	-3.003	-3.00	1.00
8DPSK	Low	-1.713	-1.50	1.05
	Mid	-1.875	-1.50	1.09
	High	-3.240	-3.00	1.06
BLE	Low	-2.56	-2.00	1.14
	Mid	-2.49	-2.00	1.12
	High	-2.61	-2.00	1.15

9. Analysis of KDB 447498 D01

9.1. SAR exclusion

■Licensed Transmitter(s)

GSM/GPRS/EDGE DTM is not supported for US bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS/EDGE Data.

This device is capable of QPSK HSUPA/HSDPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA/HSDPA in KDB 941225 D01 v03.

When the user utilizes multiple services in UMTS 3G mode, it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.

■WWAN/ Wi-Fi/ Bluetooth SAR exclusion

1> Per FCC KDB 447498 D01v05r02, the SAR exclusion threshold for distances<50mm is defined by the following equation:

$$\frac{Max\ Power\ of\ \ Channel(mW)}{Test\ Separation\ Distance(mm)} \times \sqrt{Frequency(GHz)} \le 3.0$$

5mm Antenna Distance to Edge/Surface

Test Mode	Frq. (MHz)	Ant-to-user distance (mm)	Thresholds (mW)	Full Max. Tune-up Power		SAR Test (Y/N)	P-sensor Reduced Max. Tune-up		SAR Test (Y/N)
				dBm	mW		dBm	mW	
Bluetooth	2441	5	10	-1.5	0.7	N	N/A		
802.11b	2437	5	10	10.5	11.2	Y			
802.11g	2437	5	10	10.0	10.0	Y			
802.11n(HT20)	2437	5	10	10.0	10.0	Y			
GSM850	836.4	5	16	31.5	1412.5	Y	30.0	1000.0	Y
GPRS850(4slot)	836.4	5	16	27.5	562.3	Y	26.5	446.7	Y
EDGE850(4slot)	836.6	5	16	27.0	501.2	Y	26.0	398.1	Y
PCS1900	1880	5	11	29.5	891.3	Y	27.0	501.2	Y
GPRS1900(4slot	1880	5	11	27.5	562.3	Y	25.5	354.8	Y
EDGE1900(4slot	1880	5	11	26.0	398.1	Y	24.5	281.8	Y
WCDMA Band II	1880	5	11	22.5	177.8	Y	21.5	141.3	Y
WCDMA Band V	836.4	5	16	22.5	177.8	Y	20.5	112.2	Y

39mm Antenna Distance to Edge/Surface

Test Mode	Frq. (MHz)	Ant-to-user distance (mm)	Thresholds (mW)	Full Max. Tune-up Power		SAR Test (Y/N)
				dBm	mW	
Bluetooth	2441	39	75	-1.5	0.7	N
802.11b	2437	39	75	10.5	11.2	N
802.11g	2437	39	75	10.0	10.0	N
802.11n(HT20)	2437	39	75	10.0	10.0	N
GSM850	836.4	39	128	31.5	1412.5	Y
GPRS850(4slot)	836.4	39	128	27.5	562.3	Y
EDGE850(4slot)	836.6	39	128	27.0	501.2	Y
PCS1900	1880	39	85	29.5	891.3	Y
GPRS1900(4slot)	1880	39	85	27.5	562.3	Y
EDGE1900(4slot)	1880	39	85	26.0	398.1	Y
WCDMA Band II	1880	39	85	22.5	177.8	Y
WCDMA Band V	836.4	39	128	22.5	177.8	Y

2> At test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following:

a. [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50mm)·(f (MHz)/150)] mW, at 100 MHz to 1500 MHz

84mm Antenna Distance to Edge/Surface

Test Mode	Frq. (MHz)	Ant-to-user distance (mm)	Thresholds (mW)	Full Max. Tune-up Power		SAR Test(Y/N)
				dBm	mW	
GSM850	836.4	84	354	31.5	1413	Y
GPRS850(4slot)	836.4	84	354	27.5	562	Y
EDGE850(4slot)	836.4	84	354	27.0	501	Y
WCDMA Band V	836.4	84	354	22.5	178	N

173mm Antenna Distance to Edge/Surface

Test Mode	Frq. (MHz)	Ant-to-user distance (mm)	Thresholds (mW)	Full Max. Tune-up Power		SAR Test(Y/N)
				dBm	mW	
GSM850	836.4	173	850	31.5	1413	Y
GPRS850(4slot)	836.4	173	850	27.5	562	N
EDGE850(4slot)	836.4	173	850	27.0	501	N
WCDMA Band V	836.4	173	850	22.5	178	N

b. [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

84mm Antenna Distance to Edge/Surface

Test Mode	Frq. (MHz)	Ant-to-user distance (mm)	Thresholds (mW)	Full Max. Tune-up Power		SAR Test(Y/N)
				dBm	mW	
802.11b	2437	84	436	10.5	11.2	N
802.11g	2437	84	436	10.0	10.0	N
802.11n(HT20)	2437	84	436	10.0	10.0	N
PCS1900	1880	84	449	29.5	891.3	Y
GPRS1900(4slot)	1880	84	449	27.5	562.3	Y
EDGE1900(4slot)	1880	84	449	26.0	398.1	N
WCDMA Band II	1880	84	449	22.5	177.8	N

173mm Antenna Distance to Edge/Surface

Test Mode	Frq. (MHz)	Ant-to-user distance (mm)	Thresholds (mW)	Full Max. Tune-up Power		SAR Test(Y/N)
				dBm	mW	
802.11b	2437	173	1326	10.5	11.2	N
802.11g	2437	173	1326	10.0	10.0	N
802.11n(HT20)	2437	173	1326	10.0	10.0	N
PCS1900	1880	173	1339	29.5	891.3	N
GPRS1900(4slot)	1880	173	1339	27.5	562.3	N
EDGE1900(4slot)	1880	173	1339	26.0	398.1	N
WCDMA Band II	1880	173	1339	22.5	177.8	N

9.2. Required Configurations of SAR Test

Full Power SAR

Test Mode	Back	Top	Left side	Right side	Bottom
GSM850	Yes	Yes	Yes	Yes	Yes
GPRS850(4slot)	Yes	No	Yes	Yes	Yes
EDGE850(4slot)	Yes	No	Yes	Yes	Yes
PCS1900	Yes	No	Yes	Yes	Yes
GPRS1900(4slot)	Yes	No	Yes	Yes	Yes
EDGE1900(4slot)	Yes	No	Yes	Yes	Yes
WCDMA Band II	Yes	No	Yes	Yes	Yes
WCDMA Band V	Yes	No	Yes	Yes	Yes
WIFI	Yes	Yes	Yes	No	No
Bluetooth	No	No	No	No	No

Proximity Sensor Reduced Power SAR

Test Mode	Back	Top	Left side	Right side	Bottom
GSM850	Yes	Yes	Yes	Yes	Yes
GPRS850(4slot)	Yes	No	Yes	Yes	Yes
EDGE850(4slot)	Yes	No	Yes	Yes	Yes
PCS1900	Yes	No	Yes	Yes	Yes
GPRS1900(4slot)	Yes	No	Yes	Yes	Yes
EDGE1900(4slot)	Yes	No	Yes	Yes	Yes
WCDMA Band II	Yes	No	Yes	Yes	Yes
WCDMA Band V	Yes	No	No	Yes	Yes
WIFI	Yes	Yes	Yes	No	No
Bluetooth	No	No	No	No	No

Note: According to the power of different modulations, SAR configurations may be reduced.

9.3. Estimated SAR

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v05r02, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is≤1.6W/kg. When standalone SAR is not required to be measured, per FCC KDB 447498 D01v05r02 4.3.2 2, the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter.

$$Estimated\ SAR = \frac{\sqrt{f(GHz)}}{7.5} * \frac{(Max\ Power\ of\ channel, mW)}{Min.\ Separation, mm}$$

Test Position	Test Mode	Frq.(MHz)	Test Separations (mm)	Max. Tune-up Power(dBm)	Max. Tune-up Power(mW)	Estimated SAR(W/kg)
Back/Edge_1/2	Bluetooth	2441	5	-1.5	0.7	0.03

Note: An estimated SAR of 0.4 W/kg was used to determine simultaneous transmission SAR for test separation distances >50mm per 447498 D01v05r02.

10. Test Configurations and SAR Test Results Summary

10.1. Test Configurations Analysis Result

■ **Head SAR configurations**

Test Position	Test Separation Distance (mm)	Proximity Sensor
Left-Check	0	No Trigger
Left-Tilt	0	No Trigger
Right-Check	0	No Trigger
Right-Tilt	0	No Trigger

■ **Body SAR configurations**

Test Position	Test Angel (Degree)	Test Mode	Test Separation Distance (mm)		Proximity Sensor
Rear	N/A	GSM850, PCS1900, WCDMA Band II, WCDMA Band V, Wi-Fi	0	15	Trigger
Edge_1	N/A	GSM850, Wi-Fi	0	N/A	No Trigger
Edge_2	N/A	GSM850, PCS1900, WCDMA Band II, WCDMA Band V, Wi-Fi	0	N/A	No Trigger
Edge_3	0°	GSM850, PCS1900, WCDMA Band II, WCDMA Band V	0	15	Trigger
	10°, 20°, 30°, 40°, 45°	GSM850, PCS1900, WCDMA Band II, WCDMA Band V	0	N/A	Trigger
Edge_4	0°	GSM850, PCS1900, WCDMA Band II, WCDMA Band V	0	15	Trigger
	10°, 20°, 30°, 40°, 45°	GSM850, PCS1900, WCDMA Band II, WCDMA Band V	0	N/A	Trigger
Bottom Edge/ Right Corner	0°, 10°, 20°, 30°, 40°	GSM850, PCS1900, WCDMA Band II, WCDMA Band V	0	N/A	Trigger

Note: For Bottom Edge/Right Corner, when tilt angel 45°, Edge_3/4 is against the phantom.

10.2. SAR Test Results Summary

■ Band 850MHz Head

Test Mode	Test Position Head	CH.	Fre. <MHz>	Dist. mm	Measured Conducted Power (dBm)	Max.Tune-up Power (dBm)	Scaling Factor	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)	Max. Value Slot
GSM850	Left-Check	128	824.2	0	31.44	31.5	1.01	N/A	N/A	
	Left-Check	189	836.4	0	31.38	31.5	1.03	0.00943	0.00969	
	Left-Check	251	848.8	0	29.42	29.5	1.02	N/A	N/A	
	Left-Tilt	190	836.6	0	31.38	31.5	1.03	0.00193	0.00198	
	Right-Check	128	824.2	0	31.44	31.5	1.01	N/A	N/A	
	Right-Check	189	836.4	0	31.38	31.5	1.03	0.00286	0.00294	
	Right-Check	251	848.8	0	29.42	29.5	1.02	N/A	N/A	
	Right-Tilt	190	836.6	0	31.38	31.5	1.03	0.00173	0.00178	
	SIM2									
	Left-Check	189	836.4	0	31.37	31.5	1.03	0.009	0.009	

■ Band 1900MHz Head

Test Mode	Test Position Head	CH.	Fre. <MHz>	Dist. mm	Measured Conducted Power (dBm)	Max.Tune-up Power (dBm)	Scaling Factor	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)	Max. Value Slot
PCS1900	Left-Check	512	1850.2	0	29.04	29.5	1.11	N/A	N/A	
	Left-Check	661	1880	0	29.08	29.5	1.10	0.024	0.026	
	Left-Check	810	1909.8	0	28.71	29.5	1.20	N/A	N/A	
	Left-Tilt	661	1880	0	29.08	29.5	1.10	0.0082	0.0090	
	Right-Check	512	1850.2	0	29.04	29.5	1.11	N/A	N/A	
	Right-Check	661	1880	0	29.08	29.5	1.10	0.045	0.050	
	Right-Check	810	1909.8	0	28.71	29.5	1.20	N/A	N/A	
	Right-Tilt	661	1880	0	29.08	29.5	1.10	0.01	0.011	
	SIM2									
	Left-Check	661	1880	0	29.07	29.5	1.10	0.044	0.049	

Note:

1. When the 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional, refer to KDB 447498;

2. Two SIM cards cannot work simultaneously.

■ WCDMA Band II Head

Test Mode	Test Position Head	CH.	Fre. <MHz>	Dist. mm	Measured Conducted Power (dBm)	Max.Tune-up Power (dBm)	Scaling Factor	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)	Max. Value Slot
Band II	Left-Check	9262	1852.4	0	22.33	22.5	1.04	N/A	N/A	
	Left-Check	9400	1880	0	22.39	22.5	1.03	0.039	0.040	
	Left-Check	9538	1907.6	0	22.23	22.5	1.06	N/A	N/A	
	Left-Tilt	9400	1880	0	22.39	22.5	1.03	0.02	0.021	
	Right-Check	9262	1852.4	0	22.33	22.5	1.04	N/A	N/A	
	Right-Check	9400	1880	0	22.39	22.5	1.03	0.053	0.054	
	Right-Check	9538	1907.6	0	22.23	22.5	1.06	N/A	N/A	
	Right-Tilt	9400	1880	0	22.39	22.5	1.03	0.021	0.022	

■ WCDMA Band V Head

Test Mode	Test Position Head	CH.	Fre. <MHz>	Dist. mm	Measured Conducted Power (dBm)	Max.Tune-up Power (dBm)	Scaling Factor	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)	Max. Value Slot
Band V	Left-Check	4132	826.4	0	22.17	22.5	1.08	N/A	N/A	
	Left-Check	4182	836.4	0	22.23	22.5	1.06	0.011	0.012	
	Left-Check	4233	846.6	0	22.28	22.5	1.05	N/A	N/A	
	Left-Tilt	4182	836.4	0	22.23	22.5	1.06	0.00241	0.00256	
	Right-Check	4132	826.4	0	22.17	22.5	1.08	N/A	N/A	
	Right-Check	4182	836.4	0	22.23	22.5	1.06	0.019	0.020	
	Right-Check	4233	846.6	0	22.28	22.5	1.05	N/A	N/A	
	Right-Tilt	4182	836.4	0	22.23	22.5	1.06	0.00586	0.00624	

■ WIFI Head

Test Mode	Test Position Head	CH.	Fre. <MHz>	Dist. mm	Measured Conducted Power (dBm)	Max.Tune-up Power (dBm)	Scaling Factor	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)	Max. Value Slot
802.11b	Left-Check	1	2412	0	9.50	10.5	1.26	Note3		
	Left-Check	6	2437	0	10.03	10.5	1.11			
	Left-Check	11	2462	0	10.35	10.5	1.04	0.023	0.024	
	Left-Tilt	11	2462	0	10.03	10.5	1.11	0.012	0.013	
	Right-Check	1	2412	0	9.50	10.5	1.26	Note3		
	Right-Check	6	2437	0	10.03	10.5	1.11			
	Right-Check	11	2462	0	10.35	10.5	1.04	0.02	0.021	
	Right-Tilt	11	2462	0	10.03	10.5	1.11	0.015	0.017	

Note:

1. When the 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional, refer to KDB 447498;

2. Two SIM cards cannot work simultaneously.

3. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing, per KDB248227 D01 v02r01 section 5.2.1 2), so 802.11b channel 1 SAR test is reduced.

■ Band 850MHz Body

Test Mode	Test Position Body	CH.	Fre. <MHz>	Proximity Sensor	Test Angel	Dist. mm	Measured Conducted Power (dBm)	Max.Tune -up Power (dBm)	Scaling Factor	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)	Max. Value Slot
GSM850	Back	189	836.4	ON	N/A	0	29.63	30.0	1.09	0.329	0.358	
	Back	189	836.4	OFF	N/A	15	31.38	31.5	1.03	0.214	0.220	
GPRS 4slot	Back	128	824.2	ON	N/A	0	26.04	26.5	1.11	0.984	1.094	
	Back	189	836.4	ON	N/A	0	26.11	26.5	1.09	1.02	1.116	1
	Back*	189	836.4	ON	N/A	0	26.11	26.5	1.09	1.01	1.105	
	Back	251	848.8	ON	N/A	0	25.69	26.5	1.21	0.847	1.021	
	Back	128	824.2	OFF	N/A	15	27.29	27.5	1.05	--	--	
	Back	189	836.4	OFF	N/A	15	27.25	27.5	1.06	0.743	0.787	
	Back	251	848.8	OFF	N/A	15	26.74	27.5	1.19	--	--	
	Edge_1	189	836.4	OFF	N/A	0	26.11	26.5	1.09	<0.001	<0.001	
	Edge_2	189	836.4	OFF	N/A	0	26.11	26.5	1.09	0.093	0.102	
	Edge_3	189	836.4	ON	N/A	0	26.11	26.5	1.09	0.315	0.345	
	Edge_3	189	836.4	OFF	N/A	15	27.25	27.5	1.06	0.117	0.124	
	Edge_3	189	836.4	ON	10°	0	26.11	26.5	1.09	0.324	0.354	
	Edge_3	189	836.4	ON	20°	0	26.11	26.5	1.09	0.384	0.420	
	Edge_3	189	836.4	ON	30°	0	26.11	26.5	1.09	0.431	0.471	
	Edge_3	189	836.4	ON	40°	0	26.11	26.5	1.09	0.523	0.572	
	Edge_3	189	836.4	ON	45°	0	26.11	26.5	1.05	0.558	0.586	
	Edge_4	189	836.4	ON	N/A	0	26.11	26.5	1.06	0.185	0.196	
	Edge_4	189	836.4	OFF	N/A	15	27.25	27.5	1.19	0.102	0.122	
	Edge_4	189	836.4	ON	10°	0	26.11	26.5	1.09	0.211	0.231	
	Edge_4	189	836.4	ON	20°	0	26.11	26.5	1.09	0.289	0.316	
	Edge_4	189	836.4	ON	30°	0	26.11	26.5	1.09	0.314	0.344	
	Edge_4	189	836.4	ON	40°	0	26.11	26.5	1.09	0.387	0.423	
	Edge_4	189	836.4	ON	45°	0	26.11	26.5	1.09	0.412	0.451	
	Corner	189	836.4	ON	N/A	0	26.11	26.5	1.09	0.253	0.277	
	Corner	189	836.4	ON	Left10°	0	26.11	26.5	1.09	0.282	0.308	
	Corner	189	836.4	ON	Left20°	0	26.11	26.5	1.09	0.309	0.338	
	Corner	189	836.4	ON	Left30°	0	26.11	26.5	1.09	0.341	0.373	
	Corner	189	836.4	ON	Left40°	0	26.11	26.5	1.09	0.368	0.403	
	Corner	189	836.4	ON	Right10°	0	26.11	26.5	1.09	0.224	0.245	
	Corner	189	836.4	ON	Right20°	0	26.11	26.5	1.09	0.207	0.226	
	Corner	189	836.4	ON	Right30°	0	26.11	26.5	1.09	0.196	0.214	
	Corner	189	836.4	ON	Right40°	0	26.11	26.5	1.09	0.188	0.206	

Note:

1. When the 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional, refer to KDB 447498;

2. "*", repeated SAR is required, per KDB865664 D01 r01v04.

■ Band 1900MHz Body

Test Mode	Test Position Body	CH.	Fre. <MHz>	Proximity Sensor	Test Angel	Dist. mm	Measured Conducted Power (dBm)	Max.Tune-up Power (dBm)	Scaling Factor	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)	Max. Value Slot
PCS1900	Back	661	1880.0	ON	N/A	0	26.65	27.0	1.08	0.424	0.460	
	Back	661	1880.0	OFF	N/A	15	29.08	29.5	1.10	0.379	0.417	
GPRS 4slot	Back	512	1850.2	ON	N/A	0	25.43	25.5	1.02	1.07	1.087	
	Back	661	1880.0	ON	N/A	0	25.39	25.5	1.03	1.13	1.159	2
	Back*	661	1880.0	ON	N/A	0	25.39	25.5	1.03	1.12	1.149	
	Back	810	1909.8	ON	N/A	0	25.37	25.5	1.03	1.03	1.061	
	Back	512	1850.2	OFF	N/A	15	27.28	27.5	1.05	0.814	0.856	
	Back	661	1880.0	OFF	N/A	15	27.24	27.5	1.06	0.833	0.884	
	Back	810	1909.8	OFF	N/A	15	27.22	27.5	1.07	0.827	0.882	
	Edge_2	661	1880.0	OFF	N/A	0	25.39	25.5	1.03	0.137	0.141	
	Edge_3	661	1880.0	ON	N/A	0	25.39	25.5	1.03	0.171	0.175	
	Edge_3	661	1880.0	OFF	N/A	15	27.24	27.5	1.06	0.451	0.479	
	Edge_3	661	1880.0	ON	10°	0	25.39	25.5	1.03	0.312	0.320	
	Edge_3	661	1880.0	ON	20°	0	25.39	25.5	1.03	0.554	0.568	
	Edge_3	661	1880.0	ON	30°	0	25.39	25.5	1.03	0.649	0.666	
	Edge_3	661	1880.0	ON	40°	0	25.39	25.5	1.03	0.737	0.756	
	Edge_3	661	1880.0	ON	45°	0	25.39	25.5	1.03	0.773	0.793	
	Edge_4	661	1880.0	ON	N/A	0	25.39	25.5	1.03	0.171	0.175	
	Edge_4	661	1880.0	OFF	N/A	15	27.24	27.5	1.06	0.129	0.137	
	Edge_4	661	1880.0	ON	10°	0	25.39	25.5	1.03	0.204	0.209	
	Edge_4	661	1880.0	ON	20°	0	25.39	25.5	1.03	0.287	0.294	
	Edge_4	661	1880.0	ON	30°	0	25.39	25.5	1.03	0.354	0.363	
	Edge_4	661	1880.0	ON	40°	0	25.39	25.5	1.03	0.423	0.434	
	Edge_4	661	1880.0	ON	45°	0	25.39	25.5	1.03	0.479	0.491	
	Corner	661	1880.0	ON	N/A	0	25.39	25.5	1.03	0.313	0.321	
	Corner	661	1880.0	ON	Left10°	0	25.39	25.5	1.03	0.349	0.358	
	Corner	661	1880.0	ON	Left20°	0	25.39	25.5	1.03	0.382	0.392	
	Corner	661	1880.0	ON	Left30°	0	25.39	25.5	1.03	0.411	0.422	
	Corner	661	1880.0	ON	Left40°	0	25.39	25.5	1.03	0.443	0.454	
	Corner	661	1880.0	ON	Right10°	0	25.39	25.5	1.03	0.287	0.294	
	Corner	661	1880.0	ON	Right20°	0	25.39	25.5	1.03	0.255	0.262	
	Corner	661	1880.0	ON	Right30°	0	25.39	25.5	1.03	0.229	0.235	
	Corner	661	1880.0	ON	Right40°	0	25.39	25.5	1.03	0.187	0.192	

Note:

1.When the 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional, refer to KDB 447498;

2.Two SIM cards cannot work simultaneously.

■ WCDMA Band II Body

Test Mode	Test Position Body	CH.	Fre. <MHz>	Proximity Sensor	Test Angel	Dist. mm	Measured Conducted Power (dBm)	Max.Tune-up Power (dBm)	Scaling Factor	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)	Max. Value Slot
WCDMA Band II	Back	9262	1852.4	ON	N/A	0	21.41	21.5	1.02	--	--	
	Back	9400	1880.0	ON	N/A	0	21.47	21.5	1.01	0.747	0.752	3
	Back	9538	1907.6	ON	N/A	0	21.37	21.5	1.03	--	--	
	Back	9262	1852.4	OFF	N/A	15	22.33	22.5	1.04	--	--	
	Back	9400	1880.0	OFF	N/A	15	22.39	22.5	1.03	0.531	0.545	
	Back	9538	1907.6	OFF	N/A	15	22.23	22.5	1.06	--	--	
	Edge_2	9400	1880.0	OFF	N/A	0	21.47	21.5	1.01	0.021	0.021	
	Edge_3	9400	1880.0	ON	N/A	0	21.47	21.5	1.04	0.560	0.582	
	Edge_3	9400	1880.0	OFF	N/A	15	22.39	22.5	1.03	0.567	0.582	
	Edge_3	9400	1880.0	ON	10°	0	21.47	21.5	1.06	0.574	0.611	
	Edge_3	9400	1880.0	ON	20°	0	21.47	21.5	1.01	0.599	0.603	
	Edge_3	9400	1880.0	ON	30°	0	21.47	21.5	1.01	0.614	0.618	
	Edge_3	9400	1880.0	ON	40°	0	21.47	21.5	1.01	0.623	0.627	
	Edge_3	9400	1880.0	ON	45°	0	21.47	21.5	1.01	0.629	0.633	
	Edge_4	9400	1880.0	ON	N/A	0	21.47	21.5	1.01	0.056	0.056	
	Edge_4	9400	1880.0	OFF	N/A	15	22.39	22.5	1.03	0.068	0.069	
	Edge_4	9400	1880.0	ON	10°	0	21.47	21.5	1.01	0.079	0.080	
	Edge_4	9400	1880.0	ON	20°	0	21.47	21.5	1.01	0.084	0.085	
	Edge_4	9400	1880.0	ON	30°	0	21.47	21.5	1.01	0.097	0.098	
	Edge_4	9400	1880.0	ON	40°	0	21.47	21.5	1.01	0.113	0.114	
	Edge_4	9400	1880.0	ON	45°	0	21.47	21.5	1.01	0.121	0.122	
	Corner	9400	1880.0	ON	N/A	0	21.47	21.5	1.01	0.254	0.256	
	Corner	9400	1880.0	ON	Left10°	0	21.47	21.5	1.01	0.327	0.329	
	Corner	9400	1880.0	ON	Left20°	0	21.47	21.5	1.01	0.391	0.394	
	Corner	9400	1880.0	ON	Left30°	0	21.47	21.5	1.01	0.468	0.471	
	Corner	9400	1880.0	ON	Left40°	0	21.47	21.5	1.01	0.503	0.506	
	Corner	9400	1880.0	ON	Right10°	0	21.47	21.5	1.01	0.213	0.214	
	Corner	9400	1880.0	ON	Right20°	0	21.47	21.5	1.01	0.167	0.168	
	Corner	9400	1880.0	ON	Right30°	0	21.47	21.5	1.01	0.138	0.139	
	Corner	9400	1880.0	ON	Right40°	0	21.47	21.5	1.01	0.097	0.098	

Note:

1.When the 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional, refer to KDB 447498;

2.Two SIM cards cannot work simultaneously.

■ WCDMA Band V Body

Test Mode	Test Position Body	CH.	Fre. <MHz>	Proximity Sensor	Test Angel	Dist. mm	Measured Conducted Power (dBm)	Max.Tune-up Power (dBm)	Scaling Factor	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)	Max. Value Slot
WCDMA Band V	Back	4132	826.4	ON	N/A	0	20.32	20.5	1.04	--	--	
	Back	4182	836.4	ON	N/A	0	20.38	20.5	1.03	0.433	0.445	4
	Back	4233	846.6	ON	N/A	0	20.43	20.5	1.02	--	--	
	Back	4132	826.4	OFF	N/A	15	22.17	22.5	1.08	--	--	
	Back	4182	836.4	OFF	N/A	15	22.23	22.5	1.06	0.324	0.345	
	Back	4233	846.6	OFF	N/A	15	22.28	22.5	1.05	--	--	
	Edge_2	4182	836.4	OFF	N/A	0	20.38	20.5	1.03	0.022	0.023	
	Edge_3	4182	836.4	ON	N/A	0	20.38	20.5	1.03	0.233	0.240	
	Edge_3	4182	836.4	OFF	N/A	15	22.23	22.5	1.06	0.147	0.156	
	Edge_3	4182	836.4	ON	10°	0	20.38	20.5	1.03	0.187	0.192	
	Edge_3	4182	836.4	ON	20°	0	20.38	20.5	1.03	0.209	0.215	
	Edge_3	4182	836.4	ON	30°	0	20.38	20.5	1.03	0.246	0.253	
	Edge_3	4182	836.4	ON	40°	0	20.38	20.5	1.03	0.287	0.295	
	Edge_3	4182	836.4	ON	45°	0	20.38	20.5	1.03	0.311	0.320	
	Edge_4	4182	836.4	ON	N/A	0	20.38	20.5	1.03	0.034	0.035	
	Edge_4	4182	836.4	OFF	N/A	15	22.23	22.5	1.06	0.00247	0.00263	
	Edge_4	4182	836.4	ON	10°	0	20.38	20.5	1.03	0.063	0.065	
	Edge_4	4182	836.4	ON	20°	0	20.38	20.5	1.03	0.116	0.119	
	Edge_4	4182	836.4	ON	30°	0	20.38	20.5	1.03	0.167	0.172	
	Edge_4	4182	836.4	ON	40°	0	20.38	20.5	1.03	0.189	0.194	
	Edge_4	4182	836.4	ON	45°	0	20.38	20.5	1.03	0.227	0.233	
	Corner	4182	836.4	ON	N/A	0	20.38	20.5	1.03	0.136	0.140	
	Corner	4182	836.4	ON	Left10°	0	20.38	20.5	1.03	0.153	0.157	
	Corner	4182	836.4	ON	Left20°	0	20.38	20.5	1.03	0.171	0.176	
	Corner	4182	836.4	ON	Left30°	0	20.38	20.5	1.03	0.199	0.205	
	Corner	4182	836.4	ON	Left40°	0	20.38	20.5	1.03	0.217	0.223	
	Corner	4182	836.4	ON	Right10	0	20.38	20.5	1.03	0.124	0.127	
	Corner	4182	836.4	ON	Right20	0	20.38	20.5	1.03	0.112	0.115	
	Corner	4182	836.4	ON	Right30	0	20.38	20.5	1.03	0.0743	0.0764	
	Corner	4182	836.4	ON	Right40	0	20.38	20.5	1.03	0.048	0.049	

Note:

1.When the 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional, refer to KDB 447498;

2.Two SIM cards cannot work simultaneously.

■WIFI Body

Test Mode	Test Position Body	CH.	Fre. <MHz>	Proximity Sensor	Test Angel	Dist. mm	Measured Conducted Power (dBm)	Max.Tune-up Power (dBm)	Scaling Factor	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)	Max. Value Slot
802.11b	Back	1	2412	N/A	N/A	0	9.5	10.50	1.26	Note1		
	Back	6	2437	N/A	N/A	0	10.03	10.50	1.11			
	Back	11	2462	N/A	N/A	0	10.35	10.50	1.04	0.026	0.027	5
	Edge_1	11	2462	N/A	N/A	0	10.35	10.50	1.04	0.020	0.021	
	Edge_2	11	2462	N/A	N/A	0	10.35	10.50	1.04	0.00421	0.00436	

Note:

1.When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing, per KDB248227 D01 v02r01 section 5.2.1 2), so 802.11b channel 1 SAR test is reduced.

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, 802.11g/n OFDM SAR is not required, per KDB248227 D01 v02r01 section 5.2.2 2).

11. Simultaneous Transmission Analysis

11.1. Simultaneous Transmission Scenario with Wi-Fi

Configuration	Mode	Max. Scaled SAR(W/kg)	Wi-Fi SAR(W/kg)	∑ SAR(W/kg)
Head	GSM850	0.00969	0.024	0.0337
Head	PCS1900	0.050	0.024	0.074
Head	WCDMA Band II	0.054	0.024	0.078
Head	WCDMA Band V	0.020	0.024	0.044
Body	GSM850	1.105	0.027	1.132
Body	PCS1900	1.159	0.027	1.186
Body	WCDMA Band II	0.752	0.027	0.779
Body	WCDMA Band V	0.445	0.027	0.472

Note: WIFI SAR was not required to be measured per FCC KDB 447498. Estimated SAR results were used in the above table to determine simultaneous transmission SAR test exclusion.

11.2. Simultaneous Transmission Scenario with Bluetooth

Configuration	Mode	Max. Scaled SAR(W/kg)	Bluetooth SAR(W/kg)	∑ SAR(W/kg)
Head	GSM850	0.00969	0.03	0.0397
Head	PCS1900	0.050	0.03	0.08
Head	WCDMA Band II	0.054	0.03	**0.084**
Head	WCDMA Band V	0.020	0.03	0.05
Body	GSM850	1.105	0.03	1.135
Body	PCS1900	1.159	0.03	1.189
Body	WCDMA Band II	0.752	0.03	0.782
Body	WCDMA Band V	0.445	0.03	0.475

Note: Bluetooth SAR was not required to be measured per FCC KDB 447498. Estimated SAR results were used in the above table to determine simultaneous transmission SAR test exclusion.

11.3. Simultaneous Transmission Scenario with Wi-Fi & Bluetooth

Bluetooth and WIFI cannot be transmit at same time, due to they share the same antenna.

11.4. Simultaneous Transmission Scenario (Hotspot)

Simult Tx	Configuration	GPRS850 SAR(W/kg)	Wi-Fi SAR(W/kg)	∑ SAR(W/kg)
Body	Back	1.105	0.027	1.132
	Edge_1	0.001	0.021	0.022
	Edge_2	0.102	0.00436	0.106
	Edge_3	0.586	0.4	0.986
	Edge_4	0.451	0.4	0.851
Simult Tx	Configuration	GPRS1900 SAR(W/kg)	Wi-Fi SAR(W/kg)	∑ AR(W/kg)
Body	Back	1.159	0.027	1.186
	Edge_1	0.4	0.021	0.421
	Edge_2	0.141	0.00436	0.145
	Edge_3	0.793	0.4	**1.193**
	Edge_4	0.491	0.4	0.891
Simult Tx	Configuration	WCDMA Band II SAR(W/kg)	Wi-Fi SAR(W/kg)	∑ SAR(W/kg)
Body	Back	0.572	0.027	0.599
	Edge_1	0.4	0.021	0.421
	Edge_2	0.021	0.00436	0.025
	Edge_3	0.633	0.4	1.033
	Edge_4	0.122	0.4	0.522
Simult Tx	Configuration	WCDMA Band V SAR(W/kg)	Wi-Fi SAR (W/kg)	∑ SAR(W/kg)
Body	Back	0.445	0.027	0.472
	Edge_1	0.4	0.021	0.421
	Edge_2	0.023	0.00436	0.027
	Edge_3	0.320	0.4	0.72
	Edge_4	0.233	0.4	0.633

Note: An estimated SAR of 0.4 W/kg was used to determine simultaneous transmission SAR for test separation distances >50mm per 447498 D01v05r02.

11.5. Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v05r02.

12. 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 IEEE Std 1528-2003 is not required in SAR reports submitted for equipment approval.

--END--

APPENDIX A. SAR System Verification Data

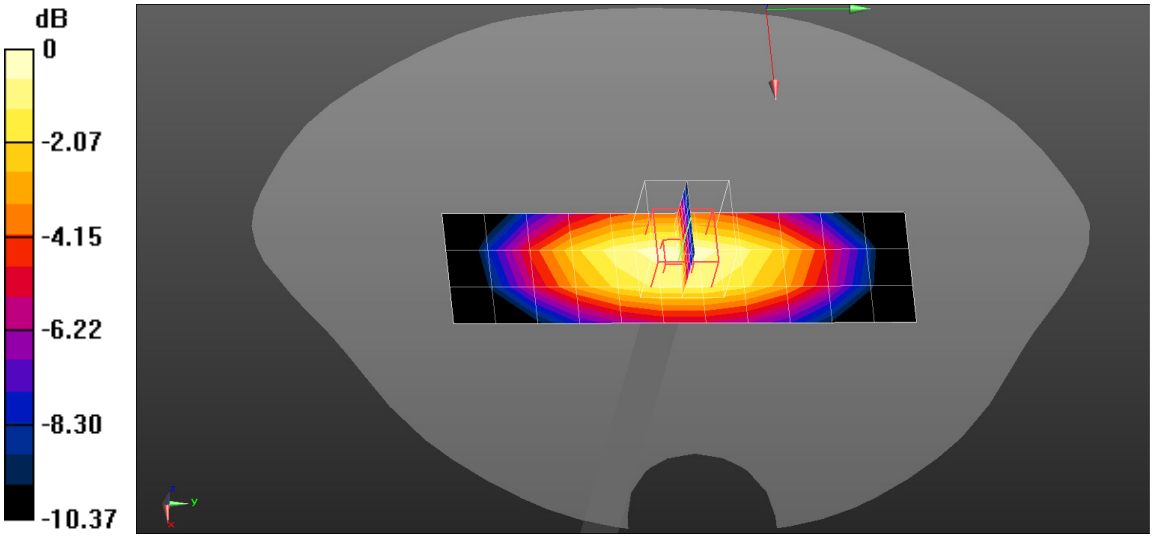
The plots for system verification with largest deviation for each SAR system combination are shown as follows.

Date/Time: 16/07/2015

Test Laboratory: Cerpass Lab
SystemPerformanceCheck-D850 Head
DUT: Dipole 850 MHz D850V2; Type: D850V2; Serial: D850V2
Communication System: CW; Frequency: 850 MHz
Medium parameters used: f = 850 MHz; σ = 0.9 S/m; εr = 41.43; ρ = 1000 kg/m3
Phantom section: Flat Section; Meas. Ambient Temp (celsius) -22℃; Input power-250mW
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)
DASY Configuration:

- Probe: EX3DV4 - SN3927; ConvF(9.78, 9.78, 9.78); Calibrated: 2015/5/27;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/SystemPerformanceCheck-D850 Head/Area Scan (4x12x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 2.41 W/kg
Configuration/SystemPerformanceCheck-D850 Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 54.04 V/m; Power Drift = 0.01 dB, Peak SAR (extrapolated) = 3.62 W/kg
SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.6 W/kg Maximum value of SAR (measured) = 2.63 W/kg



0 dB = 2.63 W/kg = 4.20 dBW/kg

Date/Time: 17/07/2015

Test Laboratory: Cerpass Lab

SystemPerformanceCheck-D1900 Head

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; σ = 1.43 S/m; εr = 39.7; ρ = 1000 kg/m3

Phantom section: Flat Section; Meas. Ambient Temp (celsius) -22℃; Input power-250mW

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: EX3DV4 - SN3927; ConvF(8.24, 8.24, 8.24); Calibrated: 2015/5/27;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

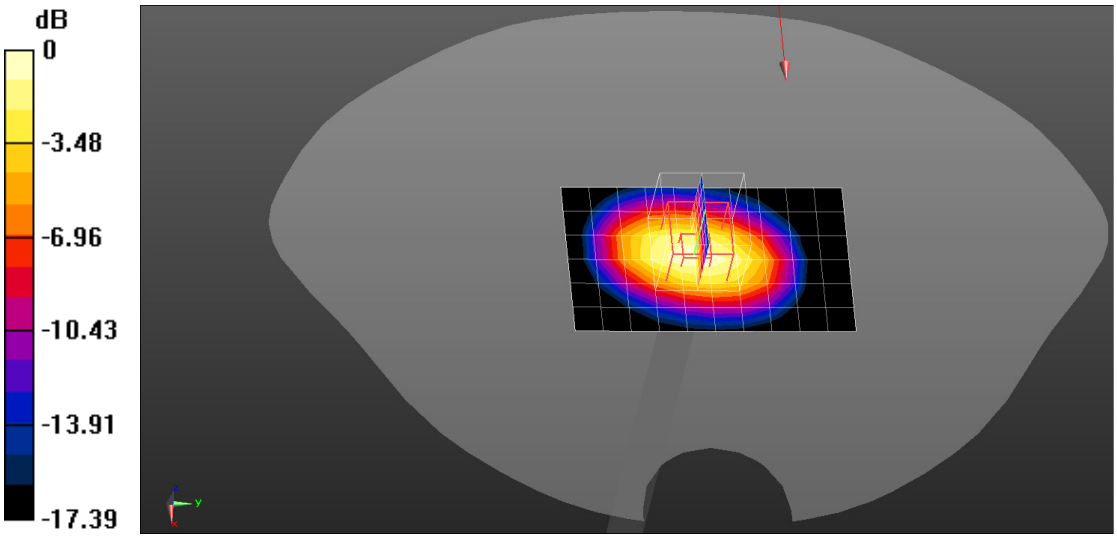
Configuration/SystemPerformanceCheck D1900 Head/Area Scan (7x11x1):

Measurement grid: dx=10mm, dy=10mm, Maximum value of SAR (measured) = 10.7 W/kg

Configuration/SystemPerformanceCheck D1900 Head/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 85.11 V/m; Power Drift = 0.03 dB, Peak SAR (extrapolated) = 18.5 W/kg

SAR(1 g) = 9.95 W/kg; SAR(10 g) = 5.15 W/kg Maximum value of SAR (measured) = 11.3 W/kg



0 dB = 11.3 W/kg = 10.53 dBW/kg

Date/Time: 18/07/2015

Test Laboratory: Cerpass Lab

SystemPerformanceCheck-D2450 Head

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2

Communication System: CW; Frequency: 2450 MHz

Medium parameters used: f = 2450 MHz; σ = 1.83 S/m; εr = 38.00; ρ = 1000 kg/m3

Phantom section: Flat Section; Meas. Ambient Temp (celsius) -22℃; Input power-250mW

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

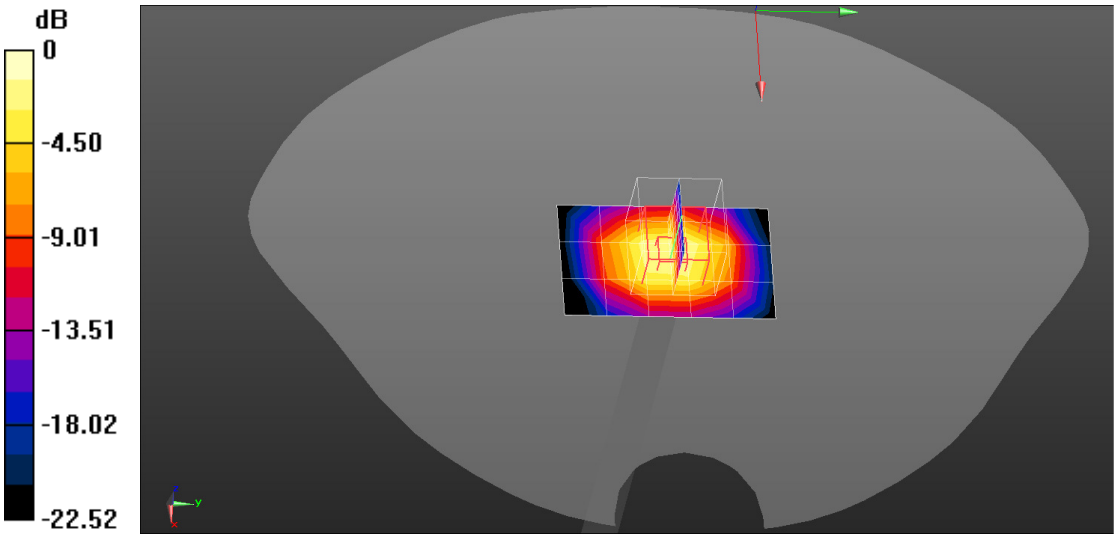
DASY Configuration:

- Probe: EX3DV4 - SN3927; ConvF(7.51, 7.51, 7.51); Calibrated: 2015/5/27;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/SystemPerformanceCheck-D2450 Head/Area Scan (4x6x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 10.7 W/kg

Configuration/SystemPerformanceCheck-D2450 Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 90.18 V/m; Power Drift = 0.04 dB, Peak SAR (extrapolated) = 28.0 W/kg

SAR(1 g) = 13.1 W/kg; SAR(10 g) = 5.97 W/kg Maximum value of SAR (measured) = 15.0 W/kg



0 dB = 15.0 W/kg = 11.76 dBW/kg

Date/Time: 16/07/2015

Test Laboratory: Cerpass Lab

SystemPerformanceCheck-D850 Body

DUT: Dipole 850 MHz D850V2; Type: D850V2; Serial: D850V2

Communication System: CW; Frequency: 850 MHz

Medium parameters used: f = 850 MHz; σ = 0.97 S/m; εr = 55.77; ρ = 1000 kg/m3

Phantom section: Flat Section; Meas. Ambient Temp (celsius) -22℃; Input power-250mW

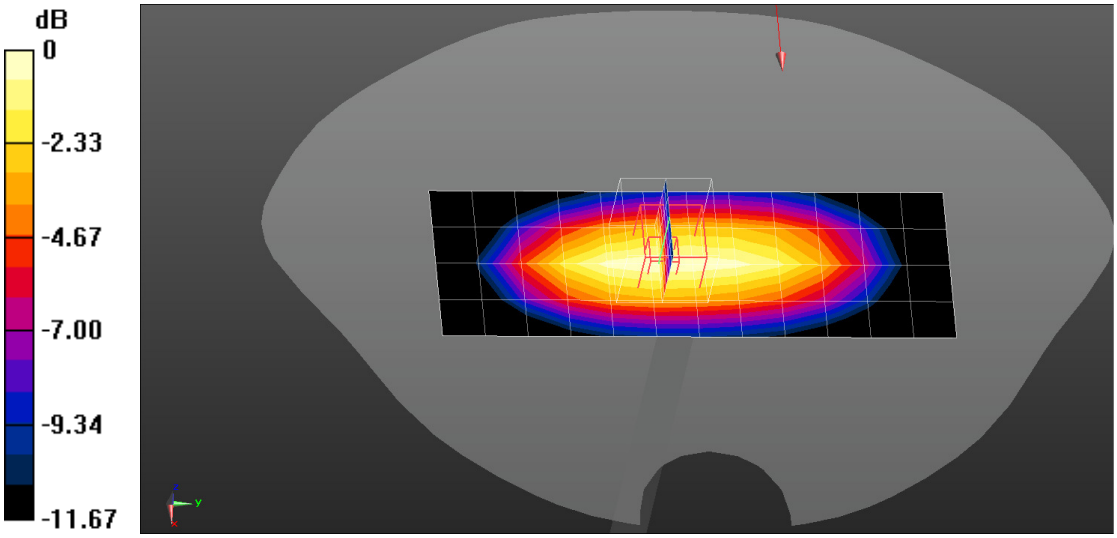
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3927; ConvF(9.74, 9.74, 9.74); Calibrated: 2015/5/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

System Performance Check at Frequencies above 1 GHz/Systemcheck-D850 Body/Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 3.16 W/kg

System Performance Check at Frequencies above 1 GHz/Systemcheck-D850 Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 40.83 V/m; Power Drift = 0.06 dB, Peak SAR (extrapolated) = 3.72 W/kg **SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.59 W/kg** Maximum value of SAR (measured) = 3.17 W/kg



0 dB = 3.17 W/kg = 5.01 dBW/kg

Date/Time: 17/07/2015

Test Laboratory: Cerpass Lab

SystemPerformanceCheck-D1900 Body

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; σ = 1.53 S/m; εr = 51.06; ρ = 1000 kg/m3

Phantom section: Flat Section; Meas. Ambient Temp (celsius) -22℃; Input power-250mW

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

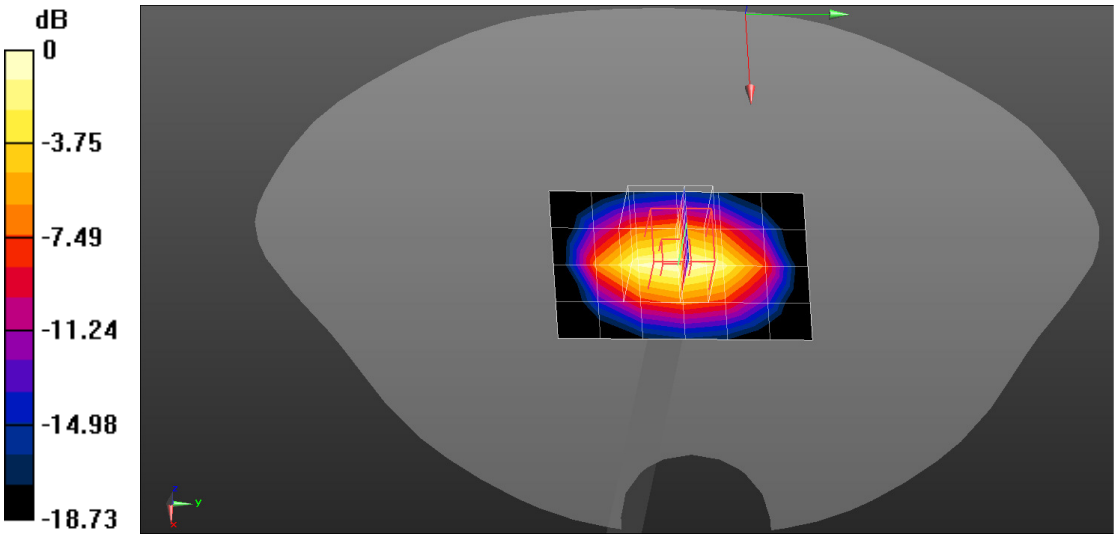
- Probe: EX3DV4 - SN3927; ConvF(7.93, 7.93, 7.93); Calibrated: 2015/5/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

System Performance Check at Frequencies above 1 GHz/Systemcheck-D1900 Body/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 14.1 W/kg

System Performance Check at Frequencies above 1 GHz/Systemcheck-D1900 Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.64 V/m; Power Drift = 0.13 dB, Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 9.84 W/kg; SAR(10 g) = 5.11 W/kg



0 dB = 14.1 W/kg = 11.49 dBW/kg

Date/Time: 18/07/2015

Test Laboratory: Cerpass Lab

SystemPerformanceCheck-D2450 Body

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2

Communication System: CW; Frequency: 2450 MHz

Medium parameters used: f = 2450 MHz; σ = 1.89 S/m; εr = 52.08; ρ = 1000 kg/m3

Phantom section: Flat Section; Meas. Ambient Temp (celsius) -22℃; Input power-250mW

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

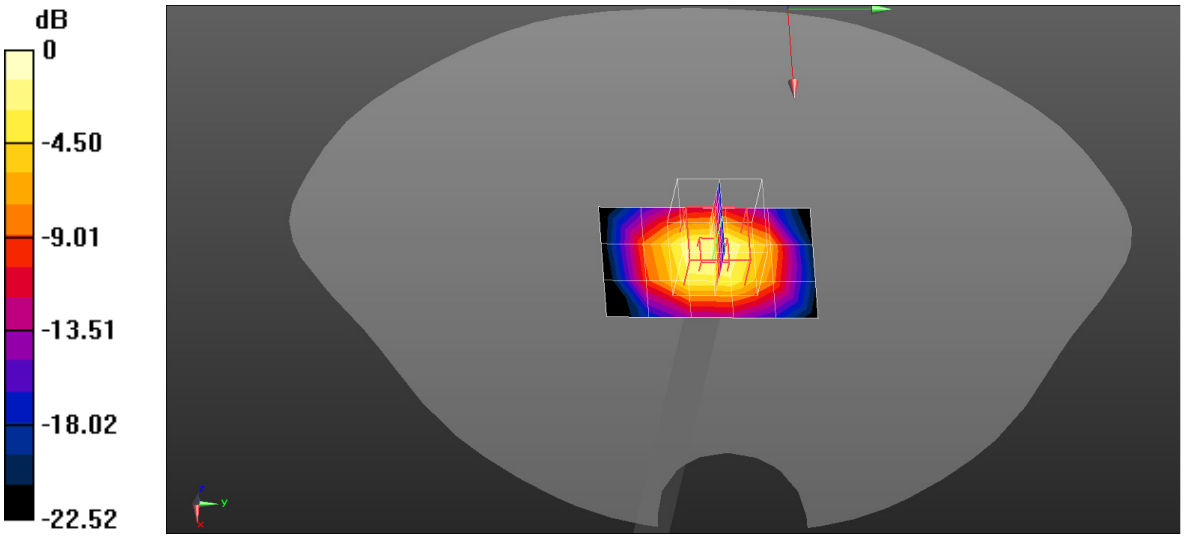
DASY Configuration:

- Probe: EX3DV4 - SN3927; ConvF(7.54, 7.54, 7.54); Calibrated: 2015/5/27;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/SystemPerformanceCheck-D2450 Body/Area Scan (4x6x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 10.4 W/kg

Configuration/SystemPerformanceCheck-D2450 Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 89.29 V/m; Power Drift = 0.04 dB, Peak SAR (extrapolated) = 27.5 W/kg

SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.85 W/kg Maximum value of SAR (measured) = 14.7 W/kg



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

APPENDIX B. SAR measurement Data

The SAR plots are shown as follows.

Date/Time: 16/07/2015

Test Laboratory: Cerpass Lab

DUT: Tablet PC; Type: TE70SA3

Procedure Name: GPRS850(4up) Mid Body-Back

Communication System Band: GPRS850MHz(4up); Frequency: 836.4 MHz; Duty Cycle: 1:2.1

Medium parameters used: f = 836.4 MHz; σ = 0.96 S/m; εr = 55.81; ρ = 1000 kg/m3

Phantom section: Flat Section; Tissue Temp(celsius)- 21℃

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

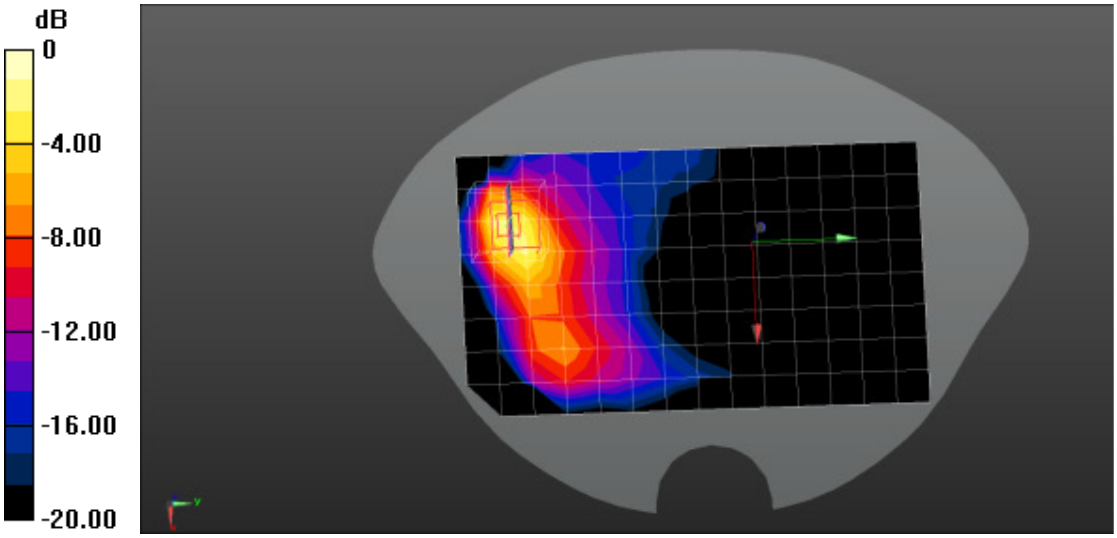
DASY5 Configuration:

- Probe: EX3DV4 - SN3927; ConvF(9.74, 9.74, 9.74); Calibrated: 2015/5/27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/GPRS850(4up) Mid Body-Back/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.720 W/kg

Configuration/GPRS850(4up) Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 0.4670 V/m; Power Drift = -0.09 dB, Peak SAR (extrapolated) = 2.31 W/kg

SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.432 W/kg Maximum value of SAR (measured) = 1.21 W/kg



0 dB = 1.21 W/kg = 0.83 dBW/kg

Date/Time: 17/07/2015

Test Laboratory: Cerpass Lab

DUT: Tablet PC; Type: TE70SA3

Procedure Name: GPRS1900(4up) Mid Body-Back

Communication System Band: GPRS1900MHz(4up); Frequency: 1880 MHz; Duty Cycle: 1:2.1

Medium parameters used: f = 1880 MHz; σ = 1.51 S/m; εr = 51.14; ρ = 1000 kg/m3

Phantom section: Flat Section; Tissue Temp(celsius)- 21℃

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

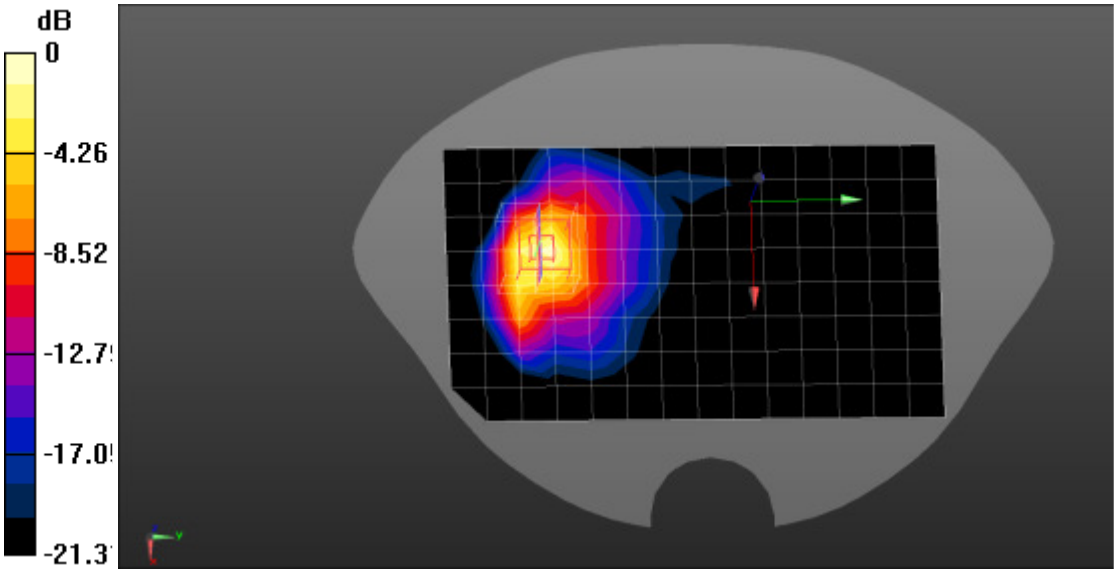
DASY5 Configuration:

- Probe: EX3DV4 - SN3927; ConvF(7.93, 7.93, 7.93); Calibrated: 2015/5/27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/GPRS1900(4up) Mid Body-Back/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 1.05 W/kg

Configuration/GPRS1900(4up) Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 3.848 V/m; Power Drift = 0.15 dB, Peak SAR (extrapolated) = 2.44 W/kg

SAR(1 g) = 1.13 W/kg; SAR(10 g) = 0.518 W/kg Maximum value of SAR (measured) = 1.17 W/kg



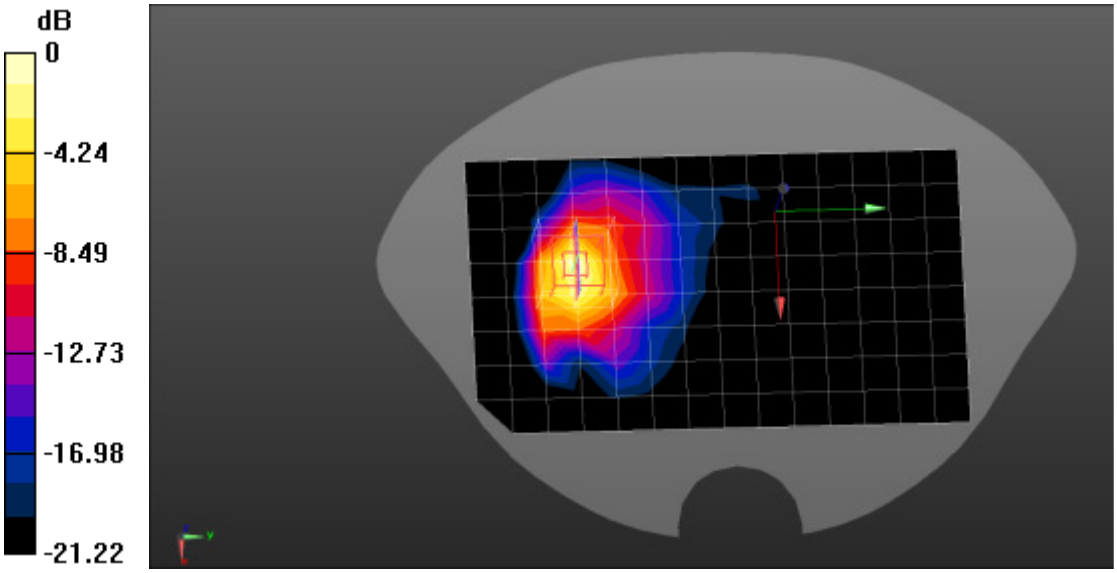
0 dB = 1.17 W/kg = 0.68 dBW/kg

Date/Time: 17/07/2015

Test Laboratory: Cerpass Lab
DUT: Tablet PC; Type: TE70SA3
Procedure Name: WCDMA Band II Mid Body-Back
Communication System Band: WCDMA Band II; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.51 S/m; εr = 51.14; ρ = 1000 kg/m3
Phantom section: Flat Section; Tissue Temp(celsius)- 21℃
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)
DASY5 Configuration:

- Probe: EX3DV4 - SN3927; ConvF(7.93, 7.93, 7.93); Calibrated: 2015/5/27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/WCDMA Band II Mid Body-Back/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.816 W/kg
Configuration/WCDMA Band II Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 4.386 V/m; Power Drift = 0.19 dB, Peak SAR (extrapolated) = 1.54 W/kg
SAR(1 g) = 0.747 W/kg; SAR(10 g) = 0.352 W/kg Maximum value of SAR (measured) = 0.801 W/kg



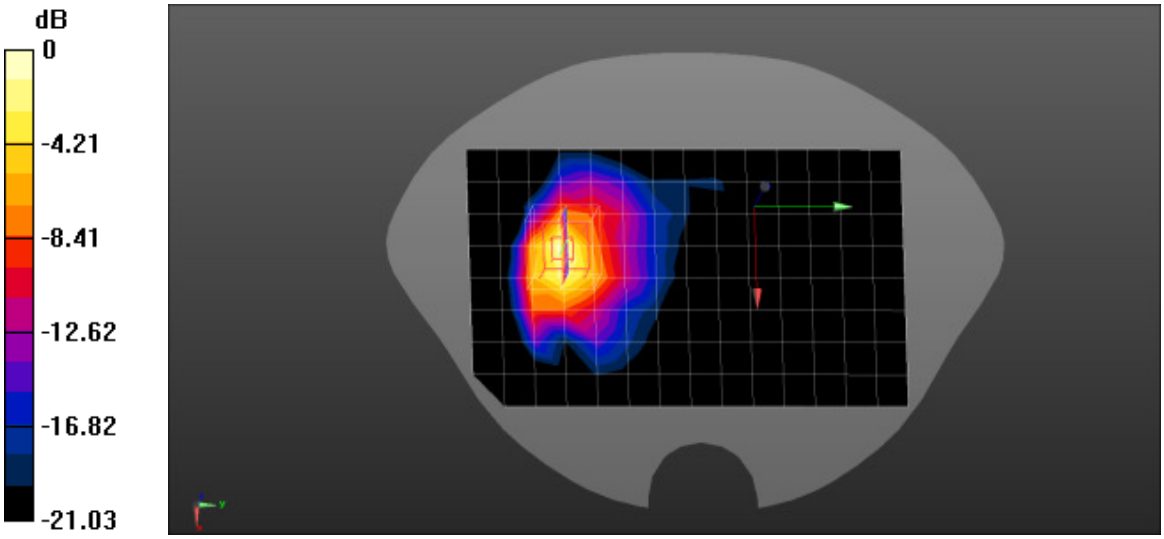
0 dB = 0.801 W/kg = -0.96 dBW/kg

Date/Time: 16/07/2015

Test Laboratory: Cerpass Lab
DUT: Tablet PC; Type: TE70SA3
Procedure Name: WCDMA Band V Mid Body-Back
Communication System Band: WCDMA Band V; Frequency: 836.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.4 MHz; σ = 0.96 S/m; εr = 55.81; ρ = 1000 kg/m3
Phantom section: Flat Section; Tissue Temp(celsius)- 21℃
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)
DASY5 Configuration:

- Probe: EX3DV4 - SN3927; ConvF(9.74, 9.74, 9.74); Calibrated: 2015/5/27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/WCDMA Band V Mid Body-Back/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.470 W/kg
Configuration/WCDMA Band V Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 3.986 V/m; Power Drift = 0.18 dB, Peak SAR (extrapolated) = 0.893 W/kg
SAR(1 g) = 0.433 W/kg; SAR(10 g) = 0.204 W/kg Maximum value of SAR (measured) = 0.468 W/kg



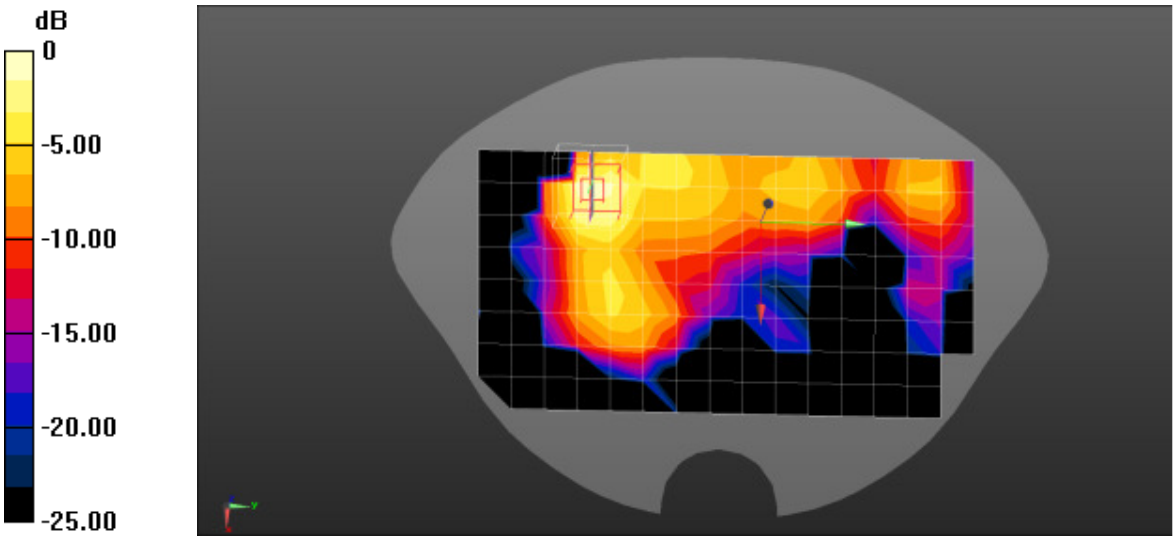
0 dB = 0.468 W/kg = -3.30 dBW/kg

Date/Time: 18/07/2015

Test Laboratory: Cerpass Lab
DUT: Tablet PC; Type: TE70SA3
Procedure Name: 802.11b 2462MHz High Body-Back
Communication System Band: 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2462 MHz; σ = 1.91 S/m; εr = 51.95; ρ = 1000 kg/m3
Phantom section: Flat Section; Tissue Temp(celsius)- 21℃
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)
DASY5 Configuration:

- Probe: EX3DV4 - SN3927; ConvF(7.54, 7.54, 7.54); Calibrated: 2015/5/27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1379; Calibrated: 2015/5/20
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/802.11b 2462MHz High Body-Back/Area Scan (9x16x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.0234 W/kg
Configuration/802.11b 2462MHz High Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 0.9550 V/m; Power Drift = 0.13 dB, Peak SAR (extrapolated) = 0.0440 W/kg
SAR(1 g) = 0.026 W/kg; SAR(10 g) = 0.012 W/kg Maximum value of SAR (measured) = 0.0303 W/kg



0 dB = 0.0303 W/kg = -15.19 dBW/kg

APPENDIX C. Calibration Data for Probe, Dipole and DAE

Please refer to attached files.

APPENDIX D. Photographs of EUT and Setup

Please refer to attached files.