HCT CO.,LTD.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea
TEL: +82-31-645-6300 FAX: +82-31-645-6401

SAR TEST REPORT

Applicant Name:	Date of Issue: 07. 13, 2017
LG Electronics MobileComm USA, Inc.	Test Report No.: HCT-A-1706-F013-2
1000 Sylvan Avenue, Englewood Cliffs NJ 07632	Test Site: HCT CO., LTD.

FCC ID: ZNFM700Z

Equipment Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Model Name:	LG-M700Z
Additional FCC Model(s):	LGM700Z, M700Z, LG-M700DSK, LGM700DSK, M700DSK
Testing has been carried out in accordance with:	47CFR §2.1093 ANSI/ IEEE C95.1 – 1992 IEEE 1528-2013
Date of Test:	06/27/2017 ~ 06/29/2017

This device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in FCC KDB procedures and had been tested in accordance with the measurement procedures specified in FCC KDB procedures.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Tested By	Reviewed By
Su-Hwan Yoo	Yun-Jeang, Heo
Test Engineer	Technical Manager
SAR Team	SAR Team
Certification Division	Certification Division

DOCUMENT HISTORY

Version	DATE	DESCRIPTION
HCT-A-1706-F013	06. 30, 2017	First Approval Report
HCT-A-1706-F013-1	07. 10, 2017	ZNFM700Z _SAR_Setup_Photos were revised
HCT-A-1706-F013-2	07. 13, 2017	ZNFM700Z _Antenna and Device Information were revised

Table of Contents

1. Attestation of Test Result of Device Under Test

Test Laboratory	
Company Name:	HCT Co., LTD
Address	74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of Korea
Telephone	+82 31 645 6300
Fax.	+82 31 645 6401

Attestation of SAR test result					
Trade Name:	LG Electronics, MobileComm U.S.A., Inc.				
FCC ID:	ZNFM700Z				
Model:	LG-M700Z				
Additional FCC Model(s):	LGM700Z, M700Z, LG-M700DSK, LGM700DSK, M700DSK				
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n				
Application Type:	Certification				
The Highest Reported SAR (W/Kg)					
Band	**Tx. Frequency**	**Equipment Class**	**Reported 1g SAR (W/kg)**		
	(MHz)		**Head**	**Body-Worn**	**Hotspot**
GSM/GPRS/EDGE 850	824.2 ~ 848.8	PCE	0.27	0.66	0.66
GSM/GPRS/EDGE 1900	1 850.2 ~ 1 909.8	PCE	0.21	0.44	0.49
UMTS 850	826.4 ~ 846.6	PCE	0.28	0.62	0.69
UMTS 1900	1 852.4 ~ 1 907.6	PCE	0.22	0.60	0.78
LTE Band 5 (Cell)	824.7 ~ 848.3	PCE	0.22	0.70	0.70
LTE TDD Band 41	2 498.5 ~ 2 687.5	PCE	< 0.1	0.14	0.40
802.11b	2 412 ~ 2 462	DTS	0.99	0.15	0.15
Bluetooth	2 402 ~ 2 480	DSS/DTS	0.18	N/A	N/A
Simultaneous SAR per KDB 690783 D01v01r03			1.27	0.97	1.05
Date(s) of Tests:	06/27/2017 ~ 06/29/2017				

2. Device Under Test Description

2.1 DUT specification

Device Wireless specification overview		
Band & Mode	**Operating Mode**	**Tx Frequency**
GSM/GPRS/EDGE 850	Voice / Data	824.2 – 848.8 MHz
GSM/GPRS/EDGE 1900	Voice / Data	1 850.2 – 1 909.8 MHz
UMTS 850	Voice / Data	826.4 – 846.6 MHz
UMTS 1900	Voice / Data	1 852.4 – 1 907.6 MHz
LTE Band 5 (Cell)	Voice / Data	824.7 – 848.3 MHz
LTE TDD Band 41	Voice / Data	2 498.5 – 2 687.5 MHz
2.4 GHz WLAN	Voice / Data	2 412 – 2 462 MHz
Bluetooth	Data	2 402 – 2 480 MHz

<table>
<tr><th colspan="3">Device Description</th></tr>
<tr><td>Device Dimension</td><td colspan="2">Overall (Length x Width): 69.3 mm x 142.5 mm
Overall diagonal dimension: 151 mm
Display diagonal dimension: 135 mm</td></tr>
<tr><td>Back Cover:</td><td colspan="2">Normal Battery cover</td></tr>
<tr><td rowspan="2">Battery Options</td><td colspan="2">Standard (Li-ion Polymer Battery)</td></tr>
<tr><td colspan="2">Battery Model Name: BL-T33, Manufacturer: LishenVX</td></tr>
<tr><td rowspan="6">Device Serial Numbers</td><td>Mode</td><td>Serial Number</td></tr>
<tr><td>2.4 GHz WLAN, Bluetooth</td><td>34EOS</td></tr>
<tr><td>GMS850, UMTS 850, LTE Band 5</td><td>34EOP</td></tr>
<tr><td>GSM1900, UMTS 1900</td><td>34EON</td></tr>
<tr><td>LTE 41</td><td>33RNV</td></tr>
<tr><td colspan="2">Several samples with identical hardware were used to SAR testing.
The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics are within operational tolerances expected for production units.</td></tr>
<tr><td>Power Reduction for SAR</td><td colspan="2">There is no power reduction used for any band/mode implemented in this device for SAR purposes.</td></tr>
</table>

2.2 DUT Wireless mode

Wireless Modulation	Band	Operating Mode		Duty Cycle
GSM	850 1900	Voice(GMSK) GPRS (GMSK) EGPRS (8PSK)	GPRS/ EDGE Multi-Slot Class: Class 33 – 4 Up, 5 Down Mode class B	GSM Voice: 12.5% GPRS/EDGE: 1 Slot: 12.5% 2 Slots : 25% 3 Slots : 37.5% 4 Slots : 50%
WCDMA (UMTS)	Band 5 Band 2	UMTS Rel.99 (Voice / DATA) HSDPA (Rel. 5,Cat.10) HSUPA (Rel. 6 Cat.6) DC-HSDPA (Rel.8, Cat.24) HSPA+ (Rel. 7) (Uplink QPSK Only)		100 %
LTE	5 (Cell)	Voice / Data (QPSK, 16QAM)		100 % (FDD)
	41	Voice / Data (QPSK, 16QAM)		63.33 % (TDD)
2.4 GHz WLAN		Voice / Data	802.11 b, 802.11 g, 802.11 n (HT20)	99.84 %
Bluetooth		Data		77 % (DH5)
Bluetooth 4.2 LE		Data		N/A

2.3 LTE information

Item.		Description
Frequency Rang	LTE Band 5 (Cell)	824.7 MHz ~ 848.3 MHz
	LTE Band 41	2 498.5 MHz ~ 2 687.5 MHz
Channel Bandwidths	LTE Band 5 (Cell)	1.4 MHz, 3 MHz, 5 MHz, 10 MHz
	LTE Band 41	5 MHz, 10 MHz, 15 MHz, 20 MHz

Channel Numbers & Freq.(MHz)		Low		Mid		High
LTE Band 5 (Cell)	1.4 MHz	824.7 (20407)		836.5 (20525)		848.3 (20643)
	3 MHz	825.5 (20415)		836.5 (20525)		847.5 (20635)
	5 MHz	826.5 (20425)		836.5 (20525)		846.5 (20625)
	10 MHz	829.0 (20450)		836.5 (20525)		844.0 (20600)
LTE Band 41	5 MHz	2 498.5 (39675)	2 545.8 (40148)	2 593.0 (40620)	2 640.3 (41093)	2 687.5 (41565)
	10 MHz	2 501.0 (39700)	2 547.0 (40160)	2 593.0 (40620)	2 639.0 (41080)	2 685.0 (41540)
	15 MHz	2 503.5 (39725)	2 548.3 (41073)	2 593.0 (40620)	2 637.8 (41068)	2 682.5 (41515)
	20 MHz	2 506.0 (39750)	2 549.5(40185)	2 593.0 (40620)	2 636.5 (41055)	2 680.0 (41490)

UE Category	LTE Rel. 10, Category 6
Modulations Supported in UL	QPSK, 16QAM
LTE voice/data requirements	Voice/ DATA
	VOLTE is supported. LTE Head SAR is also evaluated.
LTE MPR options	The EUT incorporates MPR as per 3GPP TS 36.101 sec. 6.2.3 ~ 6.2.5
	The MPR is permanently built-in by design as a mandatory.
	A-MPR is not implemented in the DUT.
Power reduction explanation	This device doesn't implements power reduction.
LTE Carrier Aggregation	This device does not support downlink and uplink Carrier Aggregation for US region.
LTE Release 10 information	This device does not support full CA features on 3GPP Release 10. The following LTE Release 10 features are not supported. Uplink and Downlink Carrier aggregations, Relay, HetNet, Enhanced MIMO, eICI, WiFi offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.
Description of the test equipment, software, etc.	LTE SAR Testing was performed using a CMW500./MT8820C UE transmits with maximum output power during SAR testing.

2.4 TEST METHODOLOGY and Procedures

The tests documented in this report were performed in accordance with IEEE Standard 1528-2013 the following published KDB procedures.

- FCC KDB Publication 941225 D01 3G SAR Procedures v03r01
- FCC KDB Publication 941225 D06 Hot Spot SAR v02r01
- FCC KDB Publication 941225 D05 SAR for LTE Devices v02r05
- FCC KDB Publication 941225 D05A LTE Rel.10 KDB Inquiry sheet v01r02
- FCC KDB Publication 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB Publication 447498 D01 General SAR Guidance v06
- FCC KDB Publication 648474 D04 Handset SAR v01r03
- FCC KDB Publication 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- FCC KDB Publication 865664 D02 SAR Reporting v01r02
- October 2013 TCB Workshop Notes (GPRS testing criteria)
- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)

2.5 Nominal and Maximum Output Power Specifications

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB publication 447498 D01v06.

2.5.1 Maximum PCE Power

Mode / Band		Voice (dBm)	Burst Average GMSK GPRS (dBm)				Burst Average 8-PSK EGPRS (dBm)			
		1 Tx Slot	1 Tx Slot	2 Tx Slot	3 Tx Slot	4 Tx Slot	1 Tx Slot	2 Tx Slot	3 Tx Slot	4 Tx Slot
GSM/GPRS/EDGE 850	Maximum	33.7	33.7	30.7	28.7	28.2	26.2	25.7	25.7	24.7
	Nominal	33.2	33.2	30.2	28.2	27.7	25.7	25.2	25.2	24.2
GSM/GPRS/EDGE 1900	Maximum	30.7	30.7	28.7	26.7	25.7	25.7	25.2	25.2	24.7
	Nominal	30.2	30.2	28.2	26.2	25.2	25.2	24.7	24.7	24.2

Mode / Band		3GPP WCDMA	3GPP HSDPA(dBm)				3GPP HSUPA(dBm)					DC-HSDPA(dBm)			
			Sub test1	Sub test2	Sub test3	Sub test4	Sub test1	Sub test2	Sub test3	Sub test4	Sub Test5	Sub test1	Sub test2	Sub test3	Sub test4
UMTS Band 5 (850 MHz)	Maximum	25.2	25.2	25.2	24.7	24.7	25.2	23.2	24.2	23.2	25.2	25.2	25.2	24.7	24.7
	Nominal	24.7	24.7	24.7	24.2	24.2	24.7	22.7	23.7	22.7	24.7	24.7	24.7	24.2	24.2
UMTS Band 2 (1900 MHz)	Maximum	23.2	23.2	23.2	22.7	22.7	23.2	21.2	22.2	21.2	23.2	23.2	23.2	22.7	22.7
	Nominal	22.7	22.7	22.7	22.2	22.2	22.7	20.7	21.7	20.7	22.7	22.7	22.7	22.2	22.2

Mode / Band		Modulated Average (dBm)
LTE Band 5 (Cell)	Maximum	25.2
	Nominal	24.7
LTE Band 41	Maximum	23.7
	Nominal	23.2

2.5.2 Maximum WLAN/BT Power

Mode / Band		Modulated Average (dBm)		
		1 CH	2~10 CH	11 CH
IEEE 802.11b (2.4 GHz)	Maximum	16.0	17.0	16.0
	Nominal	15.0	16.0	15.0
IEEE 802.11n (2.4 GHz)	Maximum	15.0	16.0	15.0
	Nominal	14.0	15.0	14.0
IEEE 802.11n (2.4 GHz) HT20	Maximum	14.0	15.0	14.0
	Nominal	13.0	14.0	13.0

Mode / Band			Modulated Average (dBm)
Bluetooth	DH5	Maximum	11
		Nominal	10
	2-DH5	Maximum	11
		Nominal	10
	3-DH5	Maximum	11
		Nominal	10
	LE	Maximum	2
		Nominal	1

2.6 DUT Antenna Locations

Device Edges / Sides for SAR Testing						
Mode	Rear	Front	Left	Right	Bottom	Top
GSM/GPRS 850	Yes	Yes	No	Yes	Yes	No
GSM/GPRS 1900	Yes	Yes	Yes	No	Yes	No
UMTS 850	Yes	Yes	No	Yes	Yes	No
UMTS 1900	Yes	Yes	Yes	No	Yes	No
LTE Band 5	Yes	Yes	No	Yes	Yes	No
LTE Band 41	Yes	Yes	Yes	No	Yes	No
2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
Bluetooth	Yes	Yes	Yes	No	No	Yes

Particular EUT edges were not required to be evaluated for Wireless Router SAR if the edges were > 25 mm from the transmitting antenna according to FCC KDB 941225 D06v02r01 on page 2. The distance between the transmit antennas and the edges of the device are included in found in SAR _ Setup_ photos.

Note; All test configurations are based on front view.

2.8 SAR Summation Scenario

According to FCC KDB 447498 D01v06, transmitters 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. Possible transmission paths for the EUT are shown below paths and are mode in same rectangle to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

Path 1	Path 2
GSM/GPRS UMTS LTE	BT/WiFi

Simultaneous transmission paths

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB 447498 D01v06.

Simultaneous Transmission Scenarios			
Applicable Combination	Head	Body-Worn	Hotspot
GSM Voice + 2.4 GHz WiFi	Yes	Yes	N/A
GSM Voice + 2.4 GHz Bluetooth	Yes*	Yes	N/A
GPRS/EDGE + 2.4 GHz WiFi	Yes	Yes	Yes
GPRS/EDGE + 2.4 GHz Bluetooth	Yes*	Yes	Yes*
UMTS + 2.4 GHz WiFi	Yes	Yes	Yes
UMTS + 2.4 GHz Bluetooth	Yes*	Yes	Yes*
LTE+ 2.4 GHz WiFi	Yes	Yes	Yes
LTE+ 2.4 GHz Bluetooth	Yes*	Yes	Yes*

* BT Tethering applications are considered.

1. 2.4 GHz WLAN and 2.4 GHz Bluetooth share antenna path and cannot transmit simultaneously.
2. All licensed modes share the same antenna path and cannot transmit simultaneously.
3. UMTS +WLAN scenario also represents the UMTS Voice/DATA + WLAN hotspot scenario.
4. Per the manufacturer, GPRS support VOIP service.
5. This device support VoLTE and VoWIFI .
6. The highest reported SAR for each exposure condition is used for SAR summation purpose.

2.9 SAR Test Exclusions Applied

(A) BT & LE

Per FCC KDB 447498 D01v06, The SAR exclusion threshold for distance < 50mm is defined by the following equation:

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

Mode	Frequency	Maximum Allowed Power	Separation Distance	≤ 3.0
	[MHz]	[mW]	[mm]	
Bluetooth	2 480	13	10	2.0
Bluetooth LE	2 480	2	10	0.3

Based on the maximum conducted power of Bluetooth and antenna to use separation distance, Bluetooth SAR was not required [(13/10)*√2.480] = 2.0 < 3.0.
Based on the maximum conducted power of Bluetooth LE and antenna to use separation distance, Bluetooth LE SAR was not required [(2/10)*√2.480] = 0.3 < 3.0.

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v06 IV.C.1iii, 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 D01v06 4.3.22, the following equation must be used to estimate the standalone 1-g SAR for simultaneous transmission assessment involving that transmitter.

$$Estimated\ \ SAR = \frac{\sqrt{f(GHZ)}}{7.5} * \frac{(Max\ \ Power\ \ of\ \ channel\ \ mW)}{Min\ \ Seperation\ \ Distance}.$$

Mode	Frequency	Maximum Allowed Power	Separation Distance (Body)	Estimated SAR (Body)
	[MHz]	[mW]	[mm]	[W/kg]
Bluetooth	2 480	13	10	0.273
Bluetooth LE	2 480	2	10	0.042

Note:
1). The Estimated SAR results were determined according to FCC KDB447498 D01v06.

2) The frequency of Bluetooth and Bluetooth LE using for estimated SAR was selected highest channel of Bluetooth LE for highest estimated SAR.

(B) 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 only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r05.

Per FCC KDB 941225 D01v03r01, 12.2 kbps RMC is the primary mode and HSPA (HSUPA/HSDPA with RMC) is the secondary mode.

Per FCC KDB 941225 D01v03r01, The SAR test exclusion is applied to the secondary mode by the following equation.

$$\text{Adjusted SAR} = \text{Highest Reported SAR} * \frac{Secondary\ Max\ tune-up\ (mW)}{Primary\ Max\ tune\ tune-up(mW)} \leq 1.2\ \text{W/kg.}$$

Based on the highest Reported SAR, the secondary mode is not required.

0.777 * (209/209)] = 0.777 W/kg ≤ 1.2 W/kg

And the maximum output power and tune-up tolerance in secondary mode is ≤ 0.25 dB higher than the primary mode.

3. INTRODUCTION

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. 1992 by the Institute of Electrical and Electronics Engineers, Inc., , New York 10017. The measurement procedure described in IEEE/ANSI C95.3-1992 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring SAR due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative of the incremental electromagnetic energy (d*W*) absorbed by (dissipated in) an incremental mass (d*m*) contained in a volume element (d*V*) of a given density (*r*). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body.

$$SAR = \frac{d}{dt}\left(\frac{dU}{dm}\right)$$

Figure 1. SAR Mathematical Equation

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

$$SAR = \sigma E^2 / \rho$$

Where:
σ = conductivity of the tissue-simulant material (S/m)
ρ = mass density of the tissue-simulant material (kg/㎥)
E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.

4. DESCRIPTION OF TEST EQUIPMENT

4.1 SAR MEASUREMENT SETUP

These measurements are performed using the DASY4 & DASY5 automated dosimetric assessment system. It is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland. It consists of high precision robotics system (Staubli), robot controller, Pentium III computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Figure.2).

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The PC with Windows XP or Windows 7 is working with SAR Measurement system DASY4 & DASY5, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

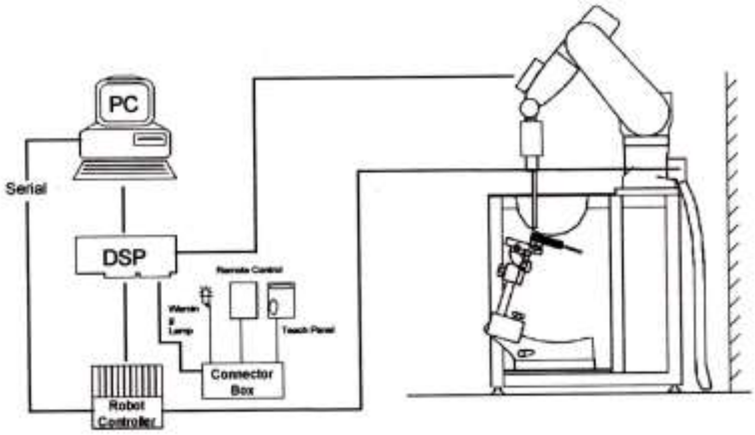


Figure 2. HCT SAR Lab. Test Measurement Set-up

The 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 PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.

5. SAR MEASUREMENT PROCEDURE

The evaluation was performed with the following procedure:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no more than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the DUT's head and body area and the horizontal grid resolution was depending on the FCC KDB 865664 D01v01r04 table 4-1 & IEEE 1528-2013.

2. Based on step, the area of the maximum absorption was determined by sophisticated interpolations routines implemented in DASY software. When an Area Scan has measured all reachable point. DASY system computes the field maximal found in the scanned are, within a range of the maximum. SAR at this fixed point was measured and used as a reference value.

3. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB 865664 D01v01r04 table 4-1 and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (reference from the DASY manual.)

   a. The data at the surface were extrapolated, since the center of the dipoles is no more than 2.7 mm away from the tip of the probe (it is different from the probe type) and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

   b. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed using the 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions. The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan. If the value changed by more than 5 %, the SAR evaluation and drift measurements were repeated.

Area scan and zoom scan resolution setting follow KDB 865664 D01v01r04 quoted below.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5±1 mm	$\frac{1}{2}\cdot\delta\cdot\ln(2)\pm0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30°±1°	20°±1°
Maximum area scan Spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤15 mm 2-3 GHz: ≤12 mm	3-4 GHz: ≤12 mm 4-6 GHz: ≤10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan Spatial resolution: Δx_{zoom}, Δy_{zoom}			≤ 2 GHz: ≤8mm 2-3 GHz: ≤5mm*	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.				

6. DESCRIPTION OF TEST POSITION

6.1 EAR REFERENCE POINT

Figure 6-2 shows the front, back and side views of the SAM phantom. The center-of-mouth reference point is labeled “M”, the left ear reference point (ERP) is marked “LE”, and the right ERP is marked “RE.” Each ERP is on the B-M (back-mouth) line located 15 mm behind the entrance-to-ear-canal (EEC) point, as shown in Figure 6-1. The Reference Plane is defined as passing through the two ear reference point and point M. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (See Figure 5-1), Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning.

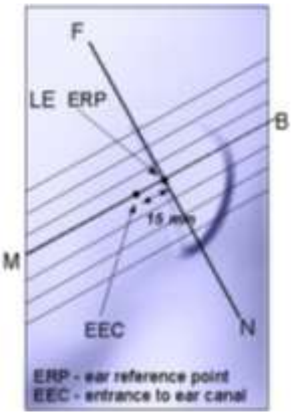


Figure 6-1
Close-up side view of ERP

6.2 HEAD POSITION

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The device under test was placed in a normal operating position with the acoustic output located along the “vertical centerline” on the front of the device aligned to the “ear reference point”(see Figure 6-3). The acoustic output was than located at the same level as the center of the ear reference point. The device under test was positioned so that the “vertical centerline” was bisecting the front surface of the handset at its top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.

Figure 6-2
Front, back and side views of SAM Twin Phantom

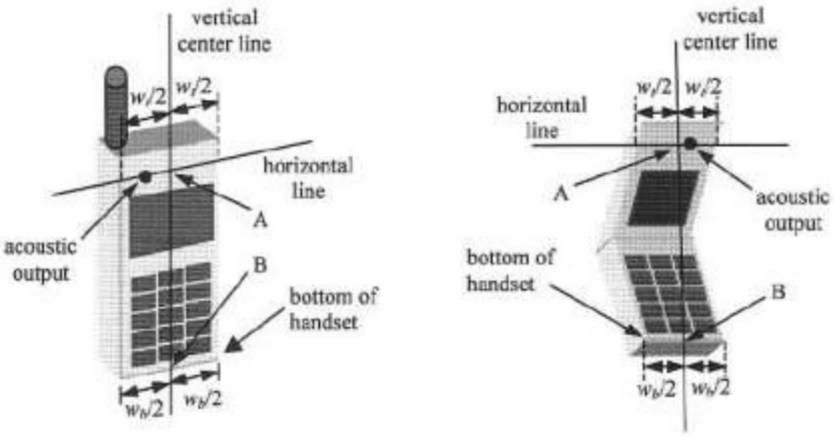


Figure 6-3. Handset vertical and horizontal reference lines

6.3 Body Holster/Belt Clip Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. A device with a headset output is tested with a headset connected to the device. Body dielectric parameters are used.

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

Body-worn accessories may not always be supplied or available as options for some Devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used.

Since this EUT does not supply any body worn accessory to the end user a distance of 1.0 cm from the EUT back surface to the liquid interface is configured for the generic test.

"See the Test SET-UP Photo"

Transmitters that are designed to operate in front of a person’s face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessory(ies), Including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

In all cases SAR measurements are performed to investigate the worst-case positioning. Worstcase positioning is then documented and used to perform Body SAR testing.

6.4 Body-Worn Accessory Configurations

Body-Worn operating configurations are tested with the belt-dips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). Per FCC KDB Publication 648474 D04v01r03 Body-Worn accessory exposure is typically related to voice mode operations when handsets are carried in body-Worn accessories. The body-Worn accessory procedures in FCC KDB Publication 447498 D01v06 should be used to test for body-Worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-Worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body- Worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body- Worn accessory with a headset attached to the handset.

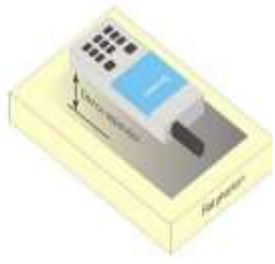


Figure 6-4
Sample Body-Worn Diagram

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

Body-Worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-Worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.

Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-Worn transmitters. SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

6.5 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets (LxW≥9cmx5 cm) are based on *a* composite test separation distance of 10 mm from the front back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-Worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-Worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The "Portable Hotspot* feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

7. ANSI/ IEEE C95.1 - 1992 RF EXPOSURE LIMITS

HUMAN EXPOSURE	UNCONTROLLED ENVIRONMENT General Population (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT Occupational (W/kg) or (mW/g)
SPATIAL PEAK SAR * (Brain)	1.60	8.00
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.40
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.00	20.00

Table 8.1 Safety Limits for Partial Body Exposure

NOTES:

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

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

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

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

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

8. FCC SAR GENERAL MEASUREMENT PROCEDURES

8.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as Reported SAR. The highest reported SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

8.2 3G SAR Test Reduction Procedure

8.2.1 GSM, GPRS AND EDGE

The following procedures may be considered for each frequency band to determine SAR test reduction for devices operating in GSM/GPRS/EDGE modes to demonstrate RF exposure compliance. GSM voice mode transmits with 1 time slot. GPRS and EDGE may transmit up to 4 time slots in the 8 time-slot frame according to the multi-slot class implemented in a device.

8.2.2 SAR Test Reduction

In FCC KDB 941225 D01v03r01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is ≤ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is ≤ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

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

8.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB 941225 D01v03r01 - 3G SAR Measurement Procedures The handset was placed into a simulated call using a base station simulator in a shielded chamber. Such test signals offer a consistent means for testing SAR and are recommended for evaluation SAR measurements were taken with a fully charged battery. In order to verify that the device was tested and maintained at full power, this was configured with the base station simulator. The SAR measurement Software calculates a reference point at the start and end of the test to check for power drifts. If conducted Power deviations of more than 5 % occurred, the tests were repeated.

8.4 SAR Measurement Conditions for UMTS

8.4.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in sec. 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all “1s” or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and speading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.4.2 Head SAR Measurements

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

8.4.3 Body SAR measurements

SAR for body exposure configurations is measured using the 12.2kbps RMC with the TPC bits all “1s”. the 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using and applicable RMC configuration with the corresponding spreading code or DPDCHn, for the highest reported SAR configuration in 12.2kbps RMC.

8.4.4 SAR Measurements with Rel. 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using and FRC with H-SET 1 in Sub-test and a 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to release 6 HSPA test procedures. 8.4.5 SAR Measurement with Rel.6 HSUPA The 3G SAR test Reduction Procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, Using H-Set 1 and QPSK for FRC and a 12.2kbps RMC configured in Test Loop Mode 1 and Power Control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

8.4.5 SAR Measurements with Rel. 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

8.4.6 DC-HSDPA

UMTS SAR was tested under RMC 12.2 kbps with HSPA inactive per KDB publication 941225 D01v03r01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

DC-HSDPA Considerations:

- 3GPP Specification 34.121-1 Release 8 Ver 8.10.0 was used for DC-HSDPA guidance
- H-Set 12(QPSK) was confirmed to be used during DC-HSDPA measurements
- Measured maximum output powers for DC-HSDPA were not greater than 1/4 dB higher than the WCDMA 12.2 kbps RMC maximum output and as a result, SAR is not required for DC-HSDPA
- The DUT supports UE category 24 for HSDPA.

8.5 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r05 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluation SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.5.1 Spectrum Plots for RB Configurations

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

8.5.2 MPR

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

8.5.3 A-MPR

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

8.5.4 Required RB Size and RB offsets for SAR testing

According to FCC KDB 941225 D05v02r05

a. Per sec 4.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
   i. The required channel and offset combination with the highest maximum output power is required for SAR.
   ii. When the reported SAR is ≤ 0.8 W/Kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
   iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Sec 4.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Sec 4.2.1.
c. Per Sec. 4.2.3, QPSK SAR is not required for the 100% all0cation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
d. Per Sec. 4.2.4 and 4.3, SAR test for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sec. 4.2.1 through 4.2.3 is less than or equal to 1/2 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/Kg.

8.5.5 LTE(TDD) Considerations

According to KDB 941225 D05v02r05, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33 %) using Uplink-downlink configuration 0 and Special subframe configuration 6.

LTE TDD Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special sub frame configurations.

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Calculated Duty Cycle – Extended cyclic prefix in uplink x (T_s) x # of S + # of U
Example for calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = 5120 x [1/(15000 x 2048)] x 2 + 6 ms = 63.33 %
Where
T_s = 1/(15000 x 2048) seconds

8.6 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

8.6.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.
A periodic duty factor is required for current generation SAR system to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92-96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

8.6.2 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating nest to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg for 1g SAR and ≤ 1.0 W/kg for 10g SAR, no additional testing for the remaining test position is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg for 1g SAR and ≤ 2.0 W/kg for 10g SAR or all test positions are measured.

8.6.3 2.4 GHz SAR test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS is that exposure configuration.
2) When the reported SAR is > 0.8 W/kg, SAR is required for that position 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.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed.

8.6.4 OFDM Transmission Mode and SAR Test Channel Selection

For the 2.4 GHz, when the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate and lowest order 802.11 g/n mode. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

8.6.5 Initial Test Configuration Procedure

For OFDM, in both 2.4 GHZ, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, and lowest data rate. If the average RF output powers of the highest identical transmission modes are within 0.25 dB of each other, mid channel of the transmission mode with highest average RF output power is the initial test channel. Otherwise, the channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements.

8.6.6 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position on procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg for 1g SAR and ≤ 3.0 W/kg for 10g SAR, no additional SAR tests for the subsequent test configurations are required.

9. Output Power Specifications

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB publication 447498 D01v06.

9.1 GSM

GSM Conducted output powers (Burst-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE Data			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
Maximum Tune-up		33.70	33.70	30.70	28.70	28.20	26.20	25.70	25.70	24.70
Nominal Tune-up		33.20	33.20	30.20	28.20	27.70	25.70	25.20	25.20	24.20
GSM 850	128	33.25	33.26	30.36	28.27	27.82	26.00	25.31	25.30	24.50
	190	33.44	33.44	30.48	28.46	27.94	26.09	25.39	25.36	24.61
	251	33.10	33.11	30.31	28.29	27.77	26.00	25.31	25.30	24.49
Maximum Tune-up		30.70	30.70	28.70	26.70	25.70	25.70	25.20	25.20	24.70
Nominal Tune-up		30.20	30.20	28.20	26.20	25.20	25.20	24.70	24.70	24.20
GSM 1900	512	30.51	30.52	28.21	26.54	25.63	25.64	25.04	24.90	24.53
	661	30.40	30.41	28.35	26.52	25.64	25.62	25.00	24.87	24.62
	810	30.37	30.37	28.27	26.50	25.60	25.68	25.07	24.93	24.67

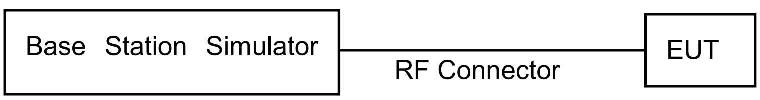
GSM Conducted output powers (Frame-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE Data			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
Maximum Tune-up		24.67	24.67	24.68	24.44	25.19	17.17	19.68	21.44	21.69
Nominal Tune-up		24.17	24.17	24.18	23.94	24.69	16.67	19.18	20.94	21.19
GSM 850	128	24.22	24.23	24.34	24.01	24.81	16.97	19.29	21.04	21.49
	190	24.41	24.41	24.46	24.20	24.93	17.06	19.37	21.10	21.60
	251	24.07	24.08	24.29	24.03	24.76	16.97	19.29	21.04	21.48
Maximum Tune-up		21.67	21.67	22.68	22.44	22.69	16.67	19.18	20.94	21.69
Nominal Tune-up		21.17	21.17	22.18	21.94	22.19	16.17	18.68	20.44	21.19
GSM 1900	512	21.48	21.49	22.19	22.28	22.62	16.61	19.02	20.64	21.52
	661	21.37	21.38	22.33	22.26	22.63	16.59	18.98	20.61	21.61
	810	21.34	21.34	22.25	22.24	22.59	16.65	19.05	20.67	21.66

Note:

Time slot average factor is as follows:
1 Tx slot = 9.03 dB, Frame-Average output power = Burst-Average output power – 9.03 dB
2 Tx slot = 6.02 dB, Frame-Average output power = Burst-Average output power – 6.02 dB
3 Tx slot = 4.26 dB, Frame-Average output power = Burst-Average output power – 4.26 dB
4 Tx slot = 3.01 dB, Frame-Average output power = Burst-Average output power – 3.01 dB

GSM Class: B
GSM voice/GPRS VOIP: Head SAR, Body worn SAR
GPRS/EDGE Multi-slots 33: Hotspot SAR with GPRS/EDGE
Multi-slot Class 33 with CS 1 (GMSK)



9.2 UMTS

9.2.1 WCDMA Band 5

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 5 [dBm]		
		Subtest	UL 4132 DL 4357	UL 4183 DL 4408	UL 4233 DL 4458
99	WCDMA	12.2 kbps RMC	24.84	24.84	24.85
99	WCDMA	12.2 kbps AMR	24.84	24.83	24.83
5	HSDPA	Subtest 1	24.74	24.69	24.68
5		Subtest 2	24.65	24.69	24.68
5		Subtest 3	24.28	24.22	24.25
5		Subtest 4	24.28	24.22	24.23
6	HSUPA	Subtest 1	24.06	24.22	24.20
6		Subtest 2	22.76	22.72	22.81
6		Subtest 3	23.71	23.72	23.79
6		Subtest 4	22.70	22.75	22.78
6		Subtest 5	24.11	24.25	24.24
8	DC-HSDPA	Subtest 1	24.66	24.73	24.71
8		Subtest 2	24.67	24.55	24.66
8		Subtest 3	24.19	24.17	24.19
8		Subtest 4	24.18	24.17	24.18

WCDMA Average Conducted output powers

9.2.2 WCDMA Band 2

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 2 [dBm]		
		Subtest	UL 9262 DL 9662	UL 9400 DL 9800	UL 9538 DL 9938
99	WCDMA	12.2 kbps RMC	23.18	23.00	23.11
99	WCDMA	12.2 kbps AMR	23.18	22.99	23.12
5	HSDPA	Subtest 1	23.05	22.96	23.12
5		Subtest 2	23.01	22.94	23.08
5		Subtest 3	22.61	22.35	22.49
5		Subtest 4	22.54	22.37	22.50
6	HSUPA	Subtest 1	22.84	22.11	23.01
6		Subtest 2	21.12	21.07	21.19
6		Subtest 3	22.05	21.97	22.18
6		Subtest 4	21.16	21.06	21.20
6		Subtest 5	22.90	22.03	23.01
8	DC-HSDPA	Subtest 1	23.14	23.04	22.92
8		Subtest 2	23.18	23.03	22.91
8		Subtest 3	22.69	22.54	22.47
8		Subtest 4	22.69	22.55	22.48

WCDMA Average Conducted output powers

9.3 LTE

9.3.1 LTE Band 5 Maximum Conducted Power

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				20407	20525	20643	[dB]	[dB]
				824.7 MHz	836.5 MHz	848.3 MHz		
1.4 MHz	QPSK	1	0	24.93	24.52	25.01	0	0
		1	3	24.99	24.88	25.01	0	0
		1	5	24.88	24.81	24.93	0	0
		3	0	24.82	24.79	24.92	0	0
		3	1	24.94	24.91	24.94	0	0
		3	3	24.83	24.96	24.80	0	0
		6	0	23.81	23.98	23.85	0-1	1
	16QAM	1	0	24.00	23.80	24.08	0-1	1
		1	3	24.05	23.72	24.18	0-1	1
		1	5	23.96	23.53	24.02	0-1	1
		3	0	23.87	23.54	24.10	0-1	1
		3	1	23.89	23.74	24.09	0-1	1
		3	3	23.81	23.69	24.04	0-1	1
		6	0	22.59	22.96	22.83	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				20415	20525	20635	[dB]	[dB]
				825.5 MHz	836.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	25.03	24.84	25.09	0	0
		1	7	25.14	24.90	25.18	0	0
		1	14	25.14	24.69	24.83	0	0
		8	0	23.87	23.94	23.97	0-1	1
		8	3	23.92	23.99	23.87	0-1	1
		8	7	23.92	23.82	23.79	0-1	1
		15	0	23.91	23.88	23.91	0-1	1
	16QAM	1	0	23.57	23.60	23.75	0-1	1
		1	7	23.79	23.78	23.80	0-1	1
		1	14	23.69	23.67	23.78	0-1	1
		8	0	23.01	22.91	22.94	0-2	2
		8	3	22.98	22.89	22.91	0-2	2
		8	7	22.98	22.98	22.79	0-2	2
		15	0	22.89	22.74	22.98	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP [dB]	MPR [dB]
				20425	20525	20625	[dB]	[dB]
				826.5 MHz	836.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	24.81	24.72	24.55	0	0
		1	12	25.09	25.16	24.81	0	0
		1	24	24.73	24.66	24.53	0	0
		12	0	23.87	23.88	23.86	0-1	1
		12	6	23.88	23.88	23.91	0-1	1
		12	11	23.99	23.86	23.86	0-1	1
		25	0	23.94	23.83	23.92	0-1	1
	16QAM	1	0	23.69	23.70	23.43	0-1	1
		1	12	23.74	23.72	23.99	0-1	1
		1	24	23.62	23.37	23.08	0-1	1
		12	0	22.79	22.82	22.87	0-2	2
		12	6	22.82	22.94	22.82	0-2	2
		12	11	22.91	22.89	22.98	0-2	2
		25	0	22.75	22.85	23.13	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)	MPR Allowed Per 3GPP	MPR
				20525	[dB]	[dB]
				836.5 MHz		
10 MHz	QPSK	1	0	24.81	0	0
		1	24	25.17	0	0
		1	49	25.14	0	0
		25	0	23.95	0-1	1
		25	12	23.90	0-1	1
		25	24	23.88	0-1	1
		50	0	23.96	0-1	1
	16QAM	1	0	23.48	0-1	1
		1	24	23.66	0-1	1
		1	49	23.39	0-1	1
		25	0	22.94	0-2	2
		25	12	22.96	0-2	2
		25	24	22.91	0-2	2
		50	0	22.98	0-2	2

Note: LTE Band 5 at 10 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

9.3.5 LTE TDD Band 41 Conducted Power

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)					MPR Allowed Per 3GPP	MPR
				39675	40148	40620	41093	41565	[dB]	[dB]
				2498.5 MHz	2545.8 MHz	2593 MHz	2640.3 MHz	2687.5 MHz		
5 MHz	QPSK	1	0	23.21	22.84	23.30	23.40	23.14	0	0
		1	12	23.39	23.50	23.41	23.36	23.06	0	0
		1	24	23.32	22.91	23.27	23.34	22.95	0	0
		12	0	22.48	22.28	22.35	22.33	22.17	0-1	1
		12	6	22.49	22.32	22.42	22.27	22.14	0-1	1
		12	11	22.44	22.30	22.45	22.30	22.13	0-1	1
		25	0	22.46	22.42	22.37	22.35	22.17	0-1	1
	16QAM	1	0	22.24	21.77	21.84	22.20	21.36	0-1	1
		1	12	22.37	21.72	22.21	22.81	21.50	0-1	1
		1	24	22.20	21.65	22.01	22.37	21.24	0-1	1
		12	0	21.64	21.13	21.24	21.62	21.09	0-2	2
		12	6	21.36	21.11	21.26	21.59	21.06	0-2	2
		12	11	21.59	21.05	21.25	21.55	21.14	0-2	2
		25	0	21.38	21.25	21.26	21.21	21.22	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)					MPR Allowed Per 3GPP	MPR
				39700	40160	40620	41080	41540	[dB]	[dB]
				2501.0 MHz	2547.0 MHz	2593.0 MHz	2639.0 MHz	2685.0 MHz		
10 MHz	QPSK	1	0	23.5	23.29	23.43	23.41	23.26	0	0
		1	24	23.32	23.14	23.46	23.57	23.12	0	0
		1	49	23.58	23.17	23.43	23.29	23.36	0	0
		25	0	22.45	22.39	22.37	22.31	22.38	0-1	1
		25	12	22.51	22.35	22.39	22.35	22.21	0-1	1
		25	24	22.40	22.37	22.60	22.25	22.20	0-1	1
		50	0	22.46	22.44	22.43	22.39	22.18	0-1	1
	16QAM	1	0	22.15	22.14	22.28	21.91	22.13	0-1	1
		1	24	22.07	22.20	22.49	22.01	21.76	0-1	1
		1	49	22.06	22.17	22.36	21.43	21.88	0-1	1
		25	0	21.32	21.50	21.39	21.54	21.38	0-2	2
		25	12	21.38	21.33	21.43	21.34	21.47	0-2	2
		25	24	21.31	21.42	21.39	21.32	21.25	0-2	2
		50	0	21.34	21.32	21.43	21.37	21.17	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)					MPR Allowed Per 3GPP	MPR
				39725	40173	40620	41068	41515	[dB]	[dB]
				2503.5 MHz	2548.3 MHz	2593.0 MHz	2637.8 MHz	2682.5 MHz		
15 MHz	QPSK	1	0	23.18	23.27	23.45	23.61	23.24	0	0
		1	36	23.27	23.28	23.24	23.55	23.14	0	0
		1	74	23.41	23.13	23.34	23.20	23.33	0	0
		36	0	22.33	22.43	22.47	22.33	22.19	0-1	1
		36	18	22.35	22.35	22.46	22.49	22.34	0-1	1
		36	39	22.39	22.29	22.51	22.44	22.17	0-1	1
		75	0	22.39	22.36	22.52	22.50	22.40	0-1	1
	16QAM	1	0	22.04	22.11	22.41	22.10	22.51	0-1	1
		1	36	21.50	22.08	22.38	21.88	22.07	0-1	1
		1	74	21.52	21.68	22.26	21.89	22.05	0-1	1
		36	0	21.34	21.36	21.42	21.61	21.25	0-2	2
		36	18	21.35	21.29	21.42	21.55	21.29	0-2	2
		36	39	21.41	21.24	21.57	21.45	21.11	0-2	2
		75	0	21.32	21.32	21.52	21.35	21.21	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)					MPR Allowed Per 3GPP	MPR
				39750	40185	40620	41055	41490	[dB]	[dB]
				2506.0 MHz	2549.5 MHz	2593.0 MHz	2636.5 MHz	2680.0 MHz		
20 MHz	QPSK	1	0	23.32	23.31	22.93	23.47	23.36	0	0
		1	49	23.22	23.31	23.40	23.65	23.25	0	0
		1	99	23.15	22.96	23.05	23.44	22.97	0	0
		50	0	22.37	22.35	22.47	22.44	22.24	0-1	1
		50	25	22.53	22.38	22.48	22.47	22.25	0-1	1
		50	49	22.61	22.30	22.37	22.36	22.14	0-1	1
		100	0	22.52	22.29	22.44	22.53	22.26	0-1	1
	16QAM	1	0	22.18	22.22	21.90	21.97	22.52	0-1	1
		1	49	22.18	22.43	22.01	22.08	22.19	0-1	1
		1	99	21.68	21.82	21.88	21.6	22.31	0-1	1
		50	0	21.56	21.42	21.38	21.43	21.27	0-2	2
		50	25	21.49	21.38	21.40	21.57	21.25	0-2	2
		50	49	21.34	21.17	21.33	21.41	21.20	0-2	2
		100	0	21.30	21.31	21.56	21.5	21.26	0-2	2

Note;

The EUT enables maximum power reduction in accordance with 3GPP 36.101. The MPR settings are configured during the manufacture process and are not configurable by the network, carrier, or end user. LTE Band 41 has 5 required test channels per FCC KDB 447498 D01v06.

9.4 WiFi

IEEE 802.11 Average RF Power

Mode	Freq.	Channel	IEEE 802.11 (2.4 GHz) Conducted Power
	[MHz]		[dBm]
802.11b	2412	1	15.38
	2417	2	16.28
	2437	6	16.41
	2457	10	16.39
	2462	11	15.40
802.11g	2412	1	14.74
	2417	2	15.49
	2437	6	15.46
	2457	10	15.50
	2462	11	14.60
802.11n (HT20)	2412	1	13.81
	2417	2	14.60
	2437	6	14.51
	2457	10	14.61
	2462	11	13.71

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

▪ Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.

▪ For transmission mode with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.

▪ For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.

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

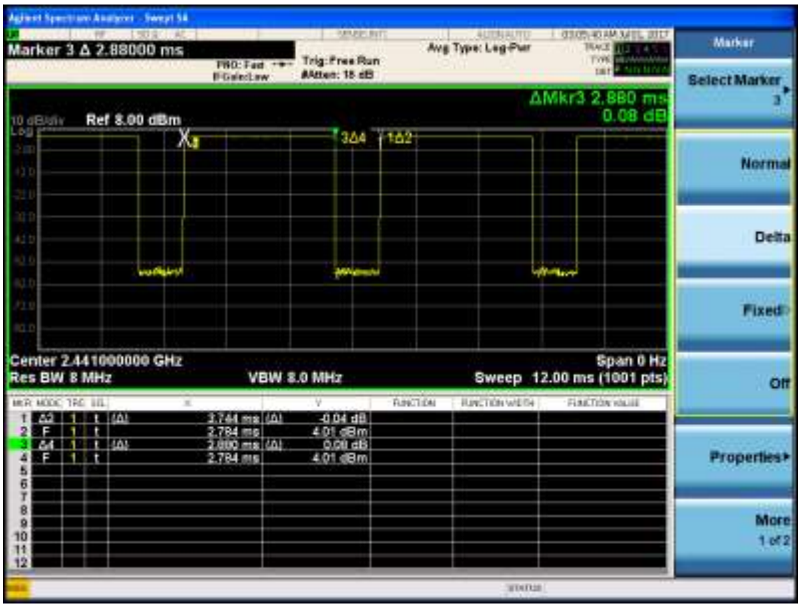
Test Configuration

9.5 BT

Averaged-conducted Power

Mode	Channel	BT Power [dBm]
DH5	0	9.79
	39	10.9
	78	10.07
2-DH5	0	9.09
	39	10.51
	78	9.37
3-DH5	0	9.09
	39	10.51
	78	9.37

Per October 2016 TCB Workshop Notes:
When call box and Bluetooth protocol are used for BT SAR measurement, time-domain plot is required to identify duty factor for supporting the test setup and result.
Bluetooth duty cycle was measured using Bluetooth tester equipment (CBT / R&S) with Bluetooth protocol. DH5 mode is the highest duty cycle and conducted power. SAR test were performed at DH5 mode.



Duty Cycle

= (BT-On time /BT-Full time) =(2.880/3.744)*100 = 0.769(DH5)

Duty factor= 1/Duty cycle : 1.300

10. SYSTEM VERIFICATION

10.1 Tissue Verification

The Head /Body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity.

Table for Head Tissue Verification

Date of Tests	Tissue Temp. (°C)	Tissue Type	Freq. (MHz)	Measured Conductivity σ (S/m)	Measured Dielectric Constant, ε	Target Conductivity σ (S/m)	Target Dielectric Constant, ε	% dev σ	% dev ε
06/28/2017	22.3	835H	820	0.887	41.400	0.899	41.578	-1.33%	-0.43%
			835	0.899	41.200	0.900	41.500	-0.11%	-0.72%
			850	0.915	40.900	0.916	41.500	-0.11%	-1.45%
06/27/2017	20.4	1900H	1850	1.402	40.776	1.400	40.000	0.14%	1.94%
			1900	1.448	40.483	1.400	40.000	3.43%	1.21%
			1910	1.450	40.429	1.400	40.000	3.57%	1.07%
06/29/2017	18.3	2450H	2400	1.784	38.526	1.756	39.290	1.59%	-1.94%
			2450	1.842	38.332	1.800	39.200	2.33%	-2.21%
			2500	1.899	38.169	1.855	39.140	2.37%	-2.48%
06/29/2017	18.3	2600H	2 500	1.905	38.383	1.855	39.140	2.70%	-1.93%
			2 600	1.999	38.067	1.964	39.010	1.78%	-2.42%
			2 700	2.107	37.793	2.073	38.880	1.64%	-2.80%

Table for Body Tissue Verification

Date of Tests	Tissue Temp. (°C)	Tissue Type	Freq. (MHz)	Measured Conductivity σ (S/m)	Measured Dielectric Constant, ε	Target Conductivity σ (S/m)	Target Dielectric Constant, ε	% dev σ	% dev ε
06/29/2017	22.5	835B	820	0.962	55.700	0.969	55.258	-0.72%	0.80%
			835	0.977	55.500	0.970	55.200	0.72%	0.54%
			850	0.990	55.400	0.988	55.154	0.20%	0.45%
06/28/2017	20.4	1900B	1850	1.489	53.192	1.520	53.300	-2.04%	-0.20%
			1900	1.548	53.069	1.520	53.300	1.84%	-0.43%
			1910	1.558	53.032	1.520	53.300	2.50%	-0.50%
06/28/2017	20.5	2450B	2400	1.884	52.317	1.902	52.770	-0.95%	-0.86%
			2450	1.948	52.114	1.950	52.700	-0.10%	-1.11%
			2500	2.010	51.938	2.021	52.640	-0.54%	-1.33%
06/27/2017	22.1	2600B	2 500	2.050	51.200	2.021	52.640	1.43%	-2.74%
			2 600	2.160	51.000	2.163	52.510	-0.14%	-2.88%
			2 700	2.300	50.500	2.305	52.380	-0.22%	-3.59%

10.2 System Verification

Prior to assessment, the system is verified to the ± 10 % of the specifications at 835 MHz / 1 900 MHz / 2 450 MHz / 2 600 MHz by using the system Verification kit. (Graphic Plots Attached)

System Verification Results

Freq.	Date	Probe (S/N)	Dipole (S/N)	Liquid	Amb. Temp.	Liquid Temp.	1 W Target SAR_{1g} (SPEAG)	Measured SAR_{1g}	1 W Normalized SAR_{1g}	Deviation	Limit [%]
[MHz]					[°C]	[°C]	[W/kg]	[W/kg]	[W/kg]	[%]	[%]
835	06/28/2017	1630	441	Head	22.5	22.3	9.38	1.00	10	+ 6.61	± 10
835	06/29/2017	1630		Body	22.7	22.5	9.62	0.998	9.98	+ 3.74	± 10
1 900	06/27/2017	3968	5d032	Head	20.6	20.4	40.0	3.75	37.5	- 6.25	± 10
1 900	06/28/2017	3903		Body	20.8	20.4	40.5	4.21	42.1	+ 3.95	± 10
2 450	06/29/2017	3968	743	Head	18.5	18.3	53.0	5.29	52.9	- 0.19	± 10
2 450	06/28/2017	3903		Body	20.8	20.5	50.6	5.13	51.3	+ 1.38	± 10
2 600	06/29/2017	3968	1015	Head	18.5	18.3	57.5	5.45	54.5	- 5.22	± 10
2 600	06/27/2017	3863		Body	22.3	22.1	55.1	5.32	53.2	- 3.45	± 10

10.3 System Verification Procedure

SAR measurement was prior to assessment, the system is verified to the ± 10 % of the specifications at each frequency band by using the system Verification kit. (Graphic Plots Attached)

- Cabling the system, using the Verification kit equipment
- Generate about 100 mW Input Level from the Signal generator to the Dipole Antenna.
- Dipole Antenna was placed below the Flat phantom.
- The measured one-gram SAR at the surface of the phantom above the dipole feed-point should be within 10 % of the target reference value.
- The results are normalized to 1 W input power.

NOTE;
SAR Verification was performed according to the FCC KDB 865664 D01v01r04.

11. SAR TEST DATA SUMMARY

11.1 HEAD SAR Measurement Results

GSM 850 Head SAR												
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(W/kg)	(W/kg)		(W/kg)	
836.6	190	GSM	33.7	33.44	-0.030	Left Cheek	1:8.3	0.217	0.168	1.062	0.230	1
836.6	190	GSM	33.7	33.44	0.132	Left Tilt	1:8.3	0.083	0.065	1.062	0.088	-
836.6	190	GSM	33.7	33.44	0.174	Right Cheek	1:8.3	0.133	0.105	1.062	0.141	-
836.6	190	GSM	33.7	33.44	-0.103	Right Tilt	1:8.3	0.077	0.060	1.062	0.082	-
836.6	190	GPRS 4Tx	28.2	27.94	0.017	Left Cheek	1:2.075	0.252	0.190	1.062	**0.268**	2
836.6	190	GPRS 4Tx	28.2	27.94	-0.057	Left Tilt	1:2.075	0.094	0.074	1.062	0.100	-
836.6	190	GPRS 4Tx	28.2	27.94	0.137	Right Cheek	1:2.075	0.126	0.087	1.062	0.134	-
836.6	190	GPRS 4Tx	28.2	27.94	0.094	Right Tilt	1:2.075	0.088	0.069	1.062	0.093	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg Averaged over 1 gram						

GSM 1900 Head SAR												
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(W/kg)	(W/kg)		(W/kg)	
1 880	661	GSM	30.7	30.40	0.03	Left Cheek	1:8.3	0.147	0.090	1.072	0.158	3
1 880	661	GSM	30.7	30.40	0.01	Left Tilt	1:8.3	0.081	0.045	1.072	0.087	-
1 880	661	GSM	30.7	30.40	0.06	Right Cheek	1:8.3	0.131	0.081	1.072	0.140	-
1 880	661	GSM	30.7	30.40	0.12	Right Tilt	1:8.3	0.088	0.049	1.072	0.094	-
1 880	661	GPRS 4Tx	25.7	25.64	0.01	Left Cheek	1:2.075	0.206	0.126	1.014	**0.209**	4
1 880	661	GPRS 4Tx	25.7	25.64	-0.07	Left Tilt	1:2.075	0.117	0.066	1.014	0.119	-
1 880	661	GPRS 4Tx	25.7	25.64	0.10	Right Cheek	1:2.075	0.181	0.112	1.014	0.184	-
1 880	661	GPRS 4Tx	25.7	25.64	-0.01	Right Tilt	1:2.075	0.119	0.067	1.014	0.121	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg Averaged over 1 gram						

UMTS 850 Head SAR

Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(W/kg)	(W/kg)		(W/kg)	
836.6	4183	RMC	25.2	24.84	-0.080	Left Cheek	1:1	0.256	0.199	1.086	**0.278**	5
836.6	4183	RMC	25.2	24.84	-0.179	Left Tilt	1:1	0.109	0.085	1.086	0.118	-
836.6	4183	RMC	25.2	24.84	-0.067	Right Cheek	1:1	0.209	0.145	1.086	0.227	-
836.6	4183	RMC	25.2	24.84	0.011	Right Tilt	1:1	0.113	0.087	1.086	0.123	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg Averaged over 1 gram						

UMTS 1900 Head SAR

Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(W/kg)	(W/kg)		(W/kg)	
1 880	9400	RMC	23.2	23.00	-0.04	Left Cheek	1:1	0.206	0.127	1.047	**0.216**	6
1 880	9400	RMC	23.2	23.00	-0.09	Left Tilt	1:1	0.113	0.064	1.047	0.118	-
1 880	9400	RMC	23.2	23.00	0.07	Right Cheek	1:1	0.190	0.117	1.047	0.199	-
1 880	9400	RMC	23.2	23.00	0.10	Right Tilt	1:1	0.121	0.068	1.047	0.127	-
ANSI/ IEEE C95.1 - 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg (mW/g) Averaged over 1 gram						

LTE Band 5 (Cell) Head SAR

Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB offset	Duty Cycle	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(dBm)	(dBm)	(dB)		(dB)				(W/kg)	(W/kg)		(W/kg)	
836.5	20525	QPSK	10	25.2	25.17	-0.024	Left Cheek	0	1	24	1:1	**0.213**	0.168	1.007	0.214	7
836.5	20525	QPSK	10	24.2	23.95	-0.095	Left Cheek	1	25	0	1:1	0.211	0.164	1.059	**0.223**	8
836.5	20525	QPSK	10	25.2	25.17	0.048	Left Tilt	0	1	24	1:1	0.093	0.074	1.007	0.094	-
836.5	20525	QPSK	10	24.2	23.95	-0.111	Left Tilt	1	25	0	1:1	0.078	0.062	1.059	0.083	-
836.5	20525	QPSK	10	25.2	25.17	-0.069	Right Cheek	0	1	24	1:1	0.201	0.144	1.007	0.202	-
836.5	20525	QPSK	10	24.2	23.95	-0.002	Right Cheek	1	25	0	1:1	0.138	0.096	1.059	0.146	-
836.5	20525	QPSK	10	25.2	25.17	0.060	Right Tilt	0	1	24	1:1	0.093	0.072	1.007	0.094	-
836.5	20525	QPSK	10	24.2	23.95	0.052	Right Tilt	1	25	0	1:1	0.066	0.053	1.059	0.070	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg Averaged over 1 gram									

LTE TDD Band 41 Head SAR

Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB offset	Duty Cycle	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(dBm)	(dBm)	(dB)		(dB)				(W/kg)	(W/kg)		(W/kg)	
2 636.5	41055	QPSK	20	23.7	23.65	-0.01	Left Cheek	0	1	49	1:1.58	0.079	0.038	1.012	**0.080**	9
2 506.0	39750	QPSK	20	22.7	22.61	0.01	Left Cheek	1	50	49	1:1.58	0.063	0.031	1.021	0.064	-
2 636.5	41055	QPSK	20	23.7	23.65	-0.04	Left Tilt	0	1	49	1:1.58	0.00518	0.00139	1.012	0.005	-
2 506.0	39750	QPSK	20	22.7	22.61	0.04	Left Tilt	1	50	49	1:1.58	0.018	0.00626	1.021	0.018	-
2 636.5	41055	QPSK	20	23.7	23.65	-0.03	Right Cheek	0	1	49	1:1.58	0.046	0.020	1.012	0.047	-
2 506.0	39750	QPSK	20	22.7	22.61	0.06	Right Cheek	1	50	49	1:1.58	0.042	0.020	1.021	0.043	-
2 636.5	41055	QPSK	20	23.7	23.65	0.05	Right Tilt	0	1	49	1:1.58	0.029	0.00806	1.012	0.029	-
2 506.0	39750	QPSK	20	22.7	22.61	0.04	Right Tilt	1	50	49	1:1.58	0.016	0.00614	1.021	0.016	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg (mW/g) Averaged over 1 gram									

DTS Head SAR

Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Area Scan Peak SAR	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)			(W/kg)	(W/kg)	(W/kg)		(Duty)	(W/kg)	
2 437	6	802.11b	22	1	17.0	16.41		Left Cheek	99.84	0.238			1.146	1.002		-
2 437	6	802.11b	22	1	17.0	16.41		Left Tilt	99.84	0.187			1.146	1.002		-
2 437	6	802.11b	22	1	17.0	16.41	0.07	Right Cheek	99.84	1.55	0.817	0.327	1.146	1.002	0.938	-
2 457	10	802.11b	22	1	17.0	16.39	0.16	Right Cheek	99.84	1.59	0.860	0.338	1.151	1.002	**0.992**	10
2 437	6	802.11b	22	1	17.0	16.41	-0.04	Right Tilt	99.84	0.5	0.306	0.134	1.146	1.002	0.351	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Head 1.6 W/kg Averaged over 1 gram								

DSS Head SAR

Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle (W/kg)	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dBm)	(d)	(dB)			(W/kg)	(W/kg)		(Duty)	(W/kg)	
2 441	39	Bluetooth DH5	11.0	10.9	0.07	Left Cheek	77.0	0.033	0.015	1.023	1.300	0.044	-
2 441	39	Bluetooth DH5	11.0	10.9	0.01	Left Tilt	77.0	0.025	0.011	1.023	1.300	0.033	-
2 441	39	Bluetooth DH5	11.0	10.9	0.04	Right Cheek	77.0	0.134	0.052	1.023	1.300	**0.178**	11
2 441	39	Bluetooth DH5	11.0	10.9	0.07	Right Tilt	77.0	0.055	0.023	1.023	1.300	0.073	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg Averaged over 1 gram							

11.2 Body-worn SAR Measurement Results

GSM/UMTS Body-Worn SAR

Frequency		Mode		Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(dB)	(dB)	(dB)			(mm)	(W/kg)			(W/kg)	
836.6	190	GSM 850	GSM	33.7	33.44	0.027	Rear	1:8.3	10	0.545	0.386	1.062	0.579	12
836.6	190	GSM 850	GPRS 4Tx	28.2	27.94	0.063	Rear	1:2.075	10	0.621	0.439	1.062	**0.660**	13
1 880.0	661	GSM 1900	GSM	30.7	30.40	0.16	Rear	1:8.3	10	0.345	0.216	1.072	0.370	14
1 880.0	661	GSM 1900	GPRS 4Tx	25.7	25.64	-0.01	Rear	1:2.075	10	0.434	0.272	1.014	**0.440**	15
836.6	4183	UMTS 850	RMC	25.2	24.84	-0.052	Rear	1:1	10	0.573	0.408	1.086	**0.622**	16
1 880.0	9400	UMTS 1900	RMC	23.2	23.00	0.04	Rear	1:1	10	0.573	0.357	1.047	**0.600**	17
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg Averaged over 1 gram							

LTE Body-Worn SAR

Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB offset	Duty Cycle	Distance	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(dBm)	(dBm)	(dB)		(dB)				(mm)	(W/kg)	(W/kg)		(W/kg)	
836.5	20525	LTE 5 QPSK	10	25.2	25.17	0.177	Rear	0	1	24	1:1	10	0.691	0.488	1.007	**0.696**	18
836.5	20525		10	24.2	23.95	0.083	Rear	1	25	0	1:1	10	0.540	0.381	1.059	0.572	-
2 636.5	41055	LTE 41 QPSK	20	23.7	23.65	0.037	Rear	0	1	49	1:1.58	10	0.122	0.060	1.012	0.123	-
2 506.0	39750		20	22.7	22.61	0.015	Rear	1	50	49	1:1.58	10	0.141	0.077	1.021	**0.144**	19
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg Averaged over 1 gram									

DTS Body-Worn SAR

Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Area Scan Peak SAR	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)			(mm)	(W/kg)	(W/kg)	(W/kg)		(Duty)	(W/kg)	
2 437	6	802.11b	22	1	17.0	16.41	-0.07	Rear	99.84	10	0.195	0.133	0.066	1.146	1.002	**0.153**	20
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg Averaged over 1 gram									

11.3 Hotspot SAR Measurement Results

GSM 850 Hotspot SAR													
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(mm)	(W/kg)	(W/kg)		(W/kg)	
836.6	190	GPRS 4Tx	28.2	27.94	0.063	Rear	1:2.075	10	0.621	0.439	1.062	**0.660**	13
836.6	190	GPRS 4Tx	28.2	27.94	0.062	Front	1:2.075	10	0.593	0.389	1.062	0.630	-
836.6	190	GPRS 4Tx	28.2	27.94	0.18	Right	1:2.075	10	0.184	0.102	1.062	0.195	-
836.6	190	GPRS 4Tx	28.2	27.94	0.113	Bottom	1:2.075	10	0.348	0.197	1.062	0.370	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg Averaged over 1 gram							

GSM 1900 Hotspot SAR													
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(mm)	(W/kg)	(W/kg)		(W/kg)	
1 880	661	GPRS 4Tx	25.7	25.64	-0.01	Rear	1:2.075	10	0.434	0.272	1.014	0.440	15
1 880	661	GPRS 4Tx	25.7	25.64	0.13	Front	1:2.075	10	0.376	0.241	1.014	0.381	-
1 880	661	GPRS 4Tx	25.7	25.64	0.06	Left	1:2.075	10	0.152	0.083	1.014	0.154	-
1 880	661	GPRS 4Tx	25.7	25.64	-0.12	Bottom	1:2.075	10	0.484	0.275	1.014	**0.491**	21
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg Averaged over 1 gram							

UMTS 850 Hotspot SAR													
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(mm)	(W/kg)	(W/kg)		(W/kg)	
836.6	4183	RMC	25.2	24.84	-0.052	Rear	1:1	10	0.573	0.408	1.086	0.622	16
836.6	4183	RMC	25.2	24.84	-0.010	Front	1:1	10	0.633	0.391	1.086	**0.687**	22
836.6	4183	RMC	25.2	24.84	-0.033	Right	1:1	10	0.181	0.101	1.086	0.197	-
836.6	4183	RMC	25.2	24.84	-0.044	Bottom	1:1	10	0.370	0.216	1.086	0.402	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg Averaged over 1 gram							

UMTS 1900 Hotspot SAR

Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(mm)	(W/kg)	(W/kg)		(W/kg)	
1 880	9400	RMC	23.2	23.00	0.04	Rear	1:1	10	0.573	0.357	1.047	0.600	17
1 880	9400	RMC	23.2	23.00	0.05	Front	1:1	10	0.500	0.321	1.047	0.524	-
1 880	9400	RMC	23.2	23.00	-0.12	Left	1:1	10	0.187	0.103	1.047	0.196	-
1 880	9400	RMC	23.2	23.00	0.07	Bottom	1:1	10	0.742	0.424	1.047	**0.777**	23
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg Averaged over 1 gram							

LTE Band 5 Hotspot SAR

Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB offset	Duty Cycle	Distance	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(dBm)	(dBm)	(dB)		(dB)				(mm)	(W/kg)	(W/kg)		(W/kg)	
836.5	20525	QPSK	10	25.2	25.17	0.177	Rear	0	1	24	1:1	10	0.691	0.488	1.007	**0.696**	18
836.5	20525	QPSK	10	24.2	23.95	0.083	Rear	1	25	0	1:1	10	0.540	0.381	1.059	0.572	-
836.5	20525	QPSK	10	25.2	25.17	0.043	Front	0	1	24	1:1	10	0.670	0.446	1.007	0.675	-
836.5	20525	QPSK	10	24.2	23.95	-0.123	Front	1	25	0	1:1	10	0.520	0.329	1.059	0.551	-
836.5	20525	QPSK	10	25.2	25.17	0.024	Right	0	1	24	1:1	10	0.190	0.105	1.007	0.191	-
836.5	20525	QPSK	10	24.2	23.95	-0.023	Right	1	25	0	1:1	10	0.154	0.086	1.059	0.163	-
836.5	20525	QPSK	10	25.2	25.17	0.015	Bottom	0	1	24	1:1	10	0.391	0.218	1.007	0.394	-
836.5	20525	QPSK	10	24.2	23.95	-0.018	Bottom	1	25	0	1:1	10	0.328	0.183	1.059	0.347	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg Averaged over 1 gram										

LTE TDD Band 41 Hotspot SAR																	
Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB offset	Duty Cycle	Distance	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(dBm)	(dBm)	(dB)		(dB)				(mm)	(W/kg)	(W/kg)		(W/kg)	
2 636.5	41055	QPSK	20	23.7	23.65	0.037	Rear	0	1	49	1:1.58	10	0.122	0.060	1.012	0.123	-
2 506.0	39750	QPSK	20	22.7	22.61	0.015	Rear	1	50	49	1:1.58	10	0.141	0.077	1.021	0.144	19
2 636.5	41055	QPSK	20	23.7	23.65	0.016	Front	0	1	49	1:1.58	10	0.138	0.073	1.012	0.140	-
2 506.0	39750	QPSK	20	22.7	22.61	0.049	Front	1	50	49	1:1.58	10	0.158	0.089	1.021	0.161	-
2 636.5	41055	QPSK	20	23.7	23.65	0.148	Left	0	1	49	1:1.58	10	0.094	0.048	1.012	0.095	-
2 506.0	39750	QPSK	20	22.7	22.61	0.144	Left	1	50	49	1:1.58	10	0.084	0.044	1.021	0.086	-
2 636.5	41055	QPSK	20	23.7	23.65	-0.057	Bottom	0	1	49	1:1.58	10	0.398	0.194	1.012	**0.403**	24
2 506.0	39750	QPSK	20	22.7	22.61	0.034	Bottom	1	50	49	1:1.58	10	0.349	0.175	1.021	0.356	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg Averaged over 1 gram										

DTS Hotspot SAR																	
Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Area Scan Peak SAR	Meas. 1g SAR	Meas. 10g SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)			(mm)	(W/kg)	(W/kg)	(W/kg)		(Duty)	(W/kg)	
2 437	6	802.11b	22	1	17.0	16.41	-0.07	Rear	99.84	10	0.195	0.133	0.066	1.146	1.002	**0.153**	20
2 437	6	802.11b	22	1	17.0	16.41		Front	99.84	10	0.168			1.146	1.002		-
2 437	6	802.11b	22	1	17.0	16.41		Left	99.84	10	0.100			1.146	1.002		-
2 437	6	802.11b	22	1	17.0	16.41		Top	99.84	10	0.108			1.146	1.002		-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg Averaged over 1 gram									

11.4 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, FCC KDB Procedure.
2. Batteries are fully charged at the beginning of the SAR measurements. A standard battery was used for all SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB 648474 D04v01r03, SAR was evaluated without a headset connected to the device. Since the standalone reported SAR was ≤ 1.2 W/kg, no additional SAR evaluation using a headset cable were required.

GSM/GPRS Test Notes:

1. This EUT'S GSM and GPRS device class is B.
2. This device supports GPRS VOIP in the head and the body-worn configurations therefore GPRS was additionally evaluated for head and body-worn compliance.
3. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
4. Justification for reduced test configurations per KDB 941225 D01v03r01: The source-based time-averaged output power was evaluated for all multi-slot operations. The multi-slot configuration with the highest frame averaged output power including tolerance was evaluated for SAR.
5. Per FCC KDB 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is 1/2 dB, instead of the middle channel, the highest output power channel must be used.
6. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
7. When the maximum output power variation across the required test channels are over than 1/2 dB, instead of the middle channel, the highest output power channel was selected for SAR test according to Per FCC KDB 447498 D01v06.

UMTS Notes:

1. The 12.2 kbps RMC mode is the primary mode per KDB 941225 D01v03r01.
2. UMTS mode in Body SAR was tested under RMC 12.2 kbps with HSPA inactive per KDB 941225 D01v03r01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and Adjusted SAR value was less than 1.2 W/kg.
3. Per FCC KDB 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the channel highest output power channel was used.
4. UMTS SAR was tested under RMC 12.2 kbps with HSPA inactive per KDB publication 941225 D01v03r01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Consideration for LTE Devices in FCC KDB 941225 D05v02r05.
2. According to FCC KDB 941225 D05v02r05.
   When the reported SAR is ≤ 0.8 W/kg, testing of the 100%RB allocation and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the 1RB, 50%RB and 100%RB allocation with highest output power for that channel.
   Only one channel, and as reported SAR values for 1RB allocation and 50%RB allocation were less than 1.45W/Kg only the highest power RB offset for each allocation was required.
3. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to target MPR is indicated alongside the SAR results.
4. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator.
5. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) LTE Band 41 SAR measured at the highest output power channel for each test configuration is ≤ 0.6 W/kg then testing at the other channels is not required for such test configurations.
6. TDD LTE was tested using UL-DL configuration 0 with 6 UL sub frames and 2S subframes using extended cyclic prefix only and special sub frame configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Sec. 4**,** the duty factor using extended cyclic prefix is 0.633(cf=1.58).
7. Pre-installed VOIP applications are considered.
8. SAR test reduction is applied using the following criteria:
   Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is >0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel. Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are >0.8 W/kg, Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation <1.45 W/kg. Testing for 16-QAM modulation is not required because the reported SAR for QPSK is <1.45 W/kg and its output power is not more than 0.5 dB higher than that a QPSK. Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is <1.45 W/kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

WLAN Notes:

1. For held-to-ear and hotspot operations, the initial test position procedures were applied. For initial test position, the highest extrapolated peak SAR will be used. When reported SAR for the initial test position is ≤ 0.4 W/kg for 1g SAR and ≤ 1.0 W/kg for 10g SAR, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR results is ≤ 0.8 W/kg for 1g SAR and ≤ 2.0 W/kg for 10g SAR or all test position are measured.
2. Per KDB 248227 D01v02r02 justification for test configurations of 2.4 GHz WiFi Single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11 g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR.
3. When the maximum reported 1g averaged SAR is ≤ 0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg or all test channels were measured.
4. The device was configured to transmit continuously at the required data rated, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated WLAN test reports.

Bluetooth Notes:

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests mode type. Per October 2016 TCBC Workshop Notes, the reported SAR was scaled to 100% transmission duty factor to determine compliance. Please see sec.9.5 for the time-domain plot and calculation for duty factor of the device.

12. Simultaneous SAR Analysis

12.1 Simultaneous Transmission Summation for Head

Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN				
Exposure condition	Band	WWAN SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	∑ 1-g SAR (W/kg)
Head SAR	GSM 850	0.230	0.992	1.222
	GPRS 850	0.268	0.992	1.260
	GSM 1900	0.158	0.992	1.150
	GPRS 1900	0.209	0.992	1.201
	UMTS 850	0.278	0.992	**1.270**
	UMTS 1900	0.216	0.992	1.208
	LTE Band 5	0.223	0.992	1.215
	LTE Band 41	0.080	0.992	1.072

Simultaneous Transmission Summation Scenario with Bluetooth				
Exposure condition	Band	WWAN SAR (W/kg)	Bluetooth SAR (W/kg)	∑ 1-g SAR (W/kg)
Head SAR	GSM 850	0.230	0.178	0.408
	GPRS 850	0.268	0.178	0.446
	GSM 1900	0.158	0.178	0.336
	GPRS 1900	0.209	0.178	0.387
	UMTS 850	0.278	0.178	0.456
	UMTS 1900	0.216	0.178	0.394
	LTE Band 5	0.223	0.178	0.401
	LTE Band 41	0.080	0.178	0.258

12.2 Simultaneous Transmission Summation for Body-Worn

Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN					
Exposure condition	Distance (mm)	Band	WWAN SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	∑ 1-g SAR (W/kg)
Body-worn	10	GSM 850	0.579	0.153	0.732
		GPRS 850	0.660	0.153	0.813
		GSM 1900	0.370	0.153	0.523
		GPRS 1900	0.440	0.153	0.593
		UMTS 850	0.622	0.153	0.775
		UMTS 1900	0.600	0.153	0.753
		LTE Band 5	0.696	0.153	0.849
		LTE Band 41	0.144	0.153	0.297

Simultaneous Transmission Summation Scenario with Bluetooth					
Exposure condition	Distance (mm)	Band	WWAN SAR (W/kg)	Bluetooth SAR (W/kg)	∑ 1-g SAR (W/kg)
Body-worn	10	GSM 850	0.579	0.273	0.852
		GPRS 850	0.660	0.273	0.933
		GSM 1900	0.370	0.273	0.643
		GPRS 1900	0.440	0.273	0.713
		UMTS 850	0.622	0.273	0.895
		UMTS 1900	0.600	0.273	0.873
		LTE Band 5	0.696	0.273	**0.969**
		LTE Band 41	0.144	0.273	0.417

Note: Bluetooth SAR was not required to be measured per FCC KDB 447498 D01v06. Estimated SAR results were used for SAR summation for body-worn back side at 10 mm to determine simultaneous transmission SAR test exclusion.

12.3 Simultaneous Transmission Summation for Hotspot

Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN					
Exposure condition	Distance	Band	WWAN SAR	2.4 GHz WLAN SAR	∑ 1-g SAR
	(mm)		(W/kg)	(W/kg)	(W/kg)
Hotspot	10	GSM 850	0.660	0.153	0.813
		GSM 1900	0.491	0.153	0.644
		UMTS 850	0.687	0.153	0.840
		UMTS 1900	0.777	0.153	0.930
		LTE Band 5	0.696	0.153	0.849
		LTE Band 41	0.403	0.153	0.556

Simultaneous Transmission Summation Scenario with Bluetooth					
Exposure condition	Distance	Band	WWAN SAR	Bluetooth SAR	∑ 1-g SAR
	(mm)		(W/kg)	(W/kg)	(W/kg)
Hotspot	10	GSM 850	0.660	0.273	0.933
		GSM 1900	0.491	0.273	0.764
		UMTS 850	0.687	0.273	0.960
		UMTS 1900	0.777	0.273	**1.050**
		LTE Band 5	0.696	0.273	0.969
		LTE Band 41	0.403	0.273	0.676

Note: Bluetooth SAR was not required to be measured per FCC KDB 447498 D01v06. Estimated SAR results were used for SAR summation for body back side at 10 mm to determine simultaneous transmission SAR test exclusion.

12.4 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 D01v06 and IEEE 1528-2013.

13. SAR Measurement Variability and Uncertainty

In accordance with KDB procedure 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz, SAR additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement variability was assessed using the following procedures for each frequency band:

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg for 1g SAR or < 2.0 W/kg for 10g SAR; steps 2) through 4) do not apply.

2) When the original highest measured 1g SAR is ≥ 0.80 W/kg or 10g SAR ≥ 2.0W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg for 1g SAR or ≥ 3.625 W/kg for 10g SAR (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg for 1g SAR or ≥3.75 W/kg for 10g SAR and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Frequency		Modulation	Battery	Configuration	Original SAR	Repeated SAR	Largest to Smallest SAR Ratio	Plot No.
MHz	Channel				(W/kg)	(W/kg)		
2 457	10	802.11b	Standard	Right Cheek	0.860	0.857	1.00	25

15. MEASUREMENT UNCERTAINTY

Error Description	Tol (± %)	Prob. dist.	Div.	c_i	Standard Uncertainty (± %)	v_{eff}
1. Measurement System						
Probe Calibration	6.55	N	1	1	6.55	∞
Axial Isotropy	4.70	R	1.73	0.70	1.90	∞
Hemispherical Isotropy	9.60	R	1.73	0.70	3.88	∞
Boundary Effects	2.00	R	1.73	1	1.15	∞
Linearity	4.70	R	1.73	1	2.71	∞
System Detection Limits	0.25	R	1.73	1	0.14	∞
Readout Electronics	0.30	N	1.00	1	0.30	∞
Response Time	0.80	R	1.73	1	0.46	∞
Integration Time	2.60	R	1.73	1	1.50	∞
RF Ambient Noise	3.00	R	1.73	1	1.73	∞
RF Ambient Reflections	3.00	R	1.73	1	1.73	∞
Probe Positioner	0.80	R	1.73	1	0.46	∞
Probe Positioning	6.70	R	1.73	1	3.87	∞
Max SAR Eval	4.00	R	1.73	1	2.31	∞
2.Test Sample Related						
Device Positioning	2.11	N	1.00	1	2.11	9
Device Holder	3.60	N	1.00	1	3.60	5
Power Drift	5.00	R	1.73	1	2.89	∞
Power Scaling	0.00	R	1.73	1	0.00	∞
3.Phantom and Setup						
Phantom Uncertainty	6.60	R	1.73	1	3.82	∞
Liquid Conductivity(target)	5.00	R	1.73	0.64	1.85	∞
Liquid Permitivity(target)	5.00	R	1.73	0.60	1.73	∞
Liquid Conductivity(meas.)	3.80	N	1	0.78	2.96	5
Liquid Permitivity(meas.)	2.60	N	1	0.23	0.60	5
Liquid Conductivity(temp.)	1.70	R	1.73	0.78	0.77	∞
Liquid Permitivity(temp.)	2.70	R	1.73	0.23	0.36	∞
Combind Standard Uncertainty					12.49	
Coverage Factor for 95 %					k=2	
Expanded STD Uncertainty					24.98	

16. SAR TEST EQUIPMENT

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	SAM Phantom	-	N/A	N/A	N/A
SPEAG	Triple Flat Phantom	-	N/A	N/A	N/A
HP	SAR System Control PC	-	N/A	N/A	N/A
Staubli	Robot RX90B L	F01/ 5L76A1/ A/ 01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F12/ 5K9GA1/ A/ 01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F17/ 59CHA1/ A/ 01	N/A	N/A	N/A
Staubli	Robot ControllerCS7MB	F01/ 5L76A1/ C/ 01	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F12/ 5K9GA1/ C/ 01	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F17/ 59CHA1/ C/ 01	N/A	N/A	N/A
Staubli	Joystick D22134006 A	26050 05.17 00755	N/A	N/A	N/A
Staubli	Joystick D21142106	S-1206 0513	N/A	N/A	N/A
Staubli	Joystick D21142606B	010963	N/A	N/A	N/A
SPEAG	DAE4	652	01/20/2017	Annual	01/20/2018
SPEAG	DAE3	466	02/22/2017	Annual	02/22/2018
SPEAG	DAE4	869	09/27/2016	Annual	09/27/2017
SPEAG	DAE4	648	05/24/2017	Annual	05/24/2018
SPEAG	E-Field Probe EX3DV4	3968	05/31/2017	Annual	05/31/2018
SPEAG	E-Field Probe ET3DV6	1630	02/27/2017	Annual	02/27/2018
SPEAG	E-Field Probe EX3DV4	3863	05/31/2017	Annual	05/31/2018
SPEAG	E-Field Probe EX3DV4	3903	09/28/2016	Annual	09/28/2017
SPEAG	Dipole D835V2	441	11/16/2016	Annual	11/16/2017
SPEAG	Dipole D1900V2	5d032	03/21/2017	Annual	03/21/2018
SPEAG	Dipole D2450V2	743	03/15/2017	Annual	03/15/2018
SPEAG	Dipole D2600V2	1015	01/18/2017	Annual	01/18/2018
Agilent	Power Meter N1911A	MY45101406	09/28/2016	Annual	09/28/2017
HP	Power Sensor N1921A	MY55220026	08/24/2016	Annual	08/24/2017
SPEAG	DAKS 3.5	1031	04/27/2017	Annual	04/27/2018
SPEAG	VNA-R140	0141013	06/12/2017	Annual	06/12/2018
Agilent	Directional Bridge	86205A	10/16/2016	Annual	10/16/2017
Agilent	Base Station E5515C	GB44400269	02/02/2017	Annual	02/08/2018
HP	Signal Generator E4433B	US40052109	03/10/2017	Annual	03/10/2018
HP	11636B/Power Divider	58698	03/05/2017	Annual	03/05/2018
TESTO	175-H1/Thermometer	40332651310	02/10/2017	Annual	02/10/2018
TESTO	175-H1/Thermometer	40331949309	02/10/2017	Annual	02/10/2018
TESTO	175-H1/Thermometer	40331939309	02/10/2017	Annual	02/10/2018
EMPOWER	RF Power amplifier	1011	10/17/2016	Annual	10/17/2017
Agilent	Attenuator(3dB)	52744	10/16/2016	Annual	10/16/2017
Agilent	Attenuator(20dB)	52664	10/16/2016	Annual	10/16/2017
HP	Dielectric Probe Kit 85070C	00721521	N/A	N/A	N/A
HP	Dual Directional Coupler	16072	10/16/2016	Annual	10/16/2017
R&S	Wideband Radio Communication Tester CMW500	101519	04/27/2017	Annual	04/27/2018
Anritsu	Radio Communication Analyzer/ MT8820C	6200628628	07/05/2016	Annual	07/05/2017
Anritsu	Radio Communication Analyzer/ MT8820C	6200576565	07/05/2016	Annual	07/05/2017
R&S	Bluetooth CBT	101519	04/27/2017	Annual	04/27/2018

NOTE:
The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Verification measurement is performed by HCT Lab. before each test. The brain/body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity (dielectric constant) of the brain/body-equivalent material.

17. CONCLUSION

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the ANSI/ IEEE C95.1 1992.

These measurements are taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests.

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the FCC and Industry Canada. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

18. REFERENCES

[1] IEEE Standards Coordinating Committee 34 – IEEE Std. 1528-2013, IEEE Recommended Practice or Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body from Wireless Communications Devices.

[2] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radio frequency Radiation, Aug. 1996.

[3] ANSI/IEEE C95.1 - 1991, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 kHz to 100 GHz, New York: IEEE, Aug. 1992

[4] ANSI/IEEE C 95.1 - 2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3 kHz to 300 GHz, New York: IEEE, 2006.

[5] ANSI/IEEE C95.3 - 1991, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, 1992.

[6] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.

[7] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.

[8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 120-124.

[9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.

[10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.

[11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Head Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.

[12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300 MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.

[13] G. Hartsgrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectro magnetics, Canada: 1987, pp. 29-36.

[14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.

[15] W. Gander, Computer mathematick, Birkhaeuser, Basel, 1992.

[16] 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.

[17] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

[18] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10 kHz-300 GHz, Jan. 1995.

[19] Prof. Dr. Niels Kuster, ETH, EidgenØssische Technische Hoschschule Zòrich, Dosimetric Evaluation of the Cellular Phone.

[20] IEC 62209-1, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation and procedures – Part 1:Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz), Feb. 2005.

[21] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz) Mar. 2010.

[22] Industry Canada RSS-102 Radio Frequency Exposure Compliance of Radio communication Apparatus (All Frequency Band) Issue 5, March 2015.

[23] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Rage from 3 kHz – 300 GHz, 2009

[24] FCC SAR Test procedures for 2G-3G Devices, Mobile Hotspot and UMPC Device KDB 941225 D01.

[25] SAR Measurement Guidance for IEEE 802.11 transmitters, KDB 248227 D01.

[26] SAR Evaluation of Handsets with Multiple Transmitters and Antennas KDB 648474 D03, D04.

[27] SAR Evaluation for Laptop, Notebook, Netbook and Tablet computers KDB 616217 D04.

[28] SAR Measurement and Reporting Requirements for 100 MHz – 6 GHz, KDB 865664 D01, D02.

[29] FCC General RF Exposure Guidance and SAR procedures for Dongles, KDB 447498 D01, D02.

Attachment 1. – SAR Test Plots

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	22.3 ℃
Ambient Temperature:	22.5 ℃
Test Date:	06/28/2017
Plot No.:	1

DUT: LG-M700Z; Type: bar

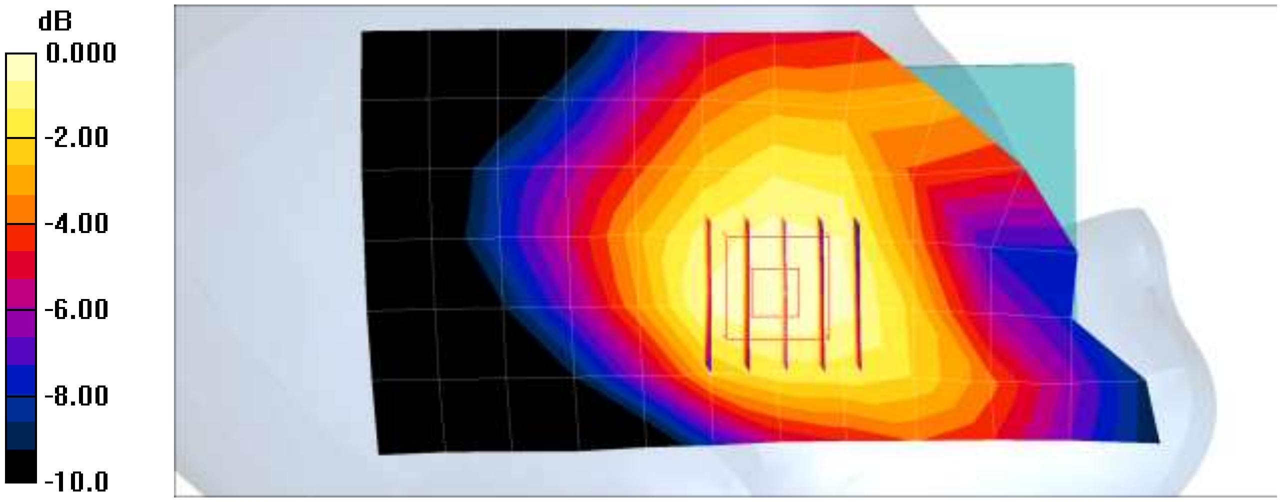
Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.901 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(7.26, 7.26, 7.26); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: SAM
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

GSM850 Head Left Touch Voice 190ch/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.227 mW/g

GSM850 Head Left Touch Voice 190ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.43 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 0.270 W/kg
SAR(1 g) = 0.217 mW/g; SAR(10 g) = 0.168 mW/g
Maximum value of SAR (measured) = 0.224 mW/g



0 dB = 0.224mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	22.3 ℃
Ambient Temperature:	22.5 ℃
Test Date:	06/28/2017
Plot No.:	2

DUT: LG-M700Z; Type: bar

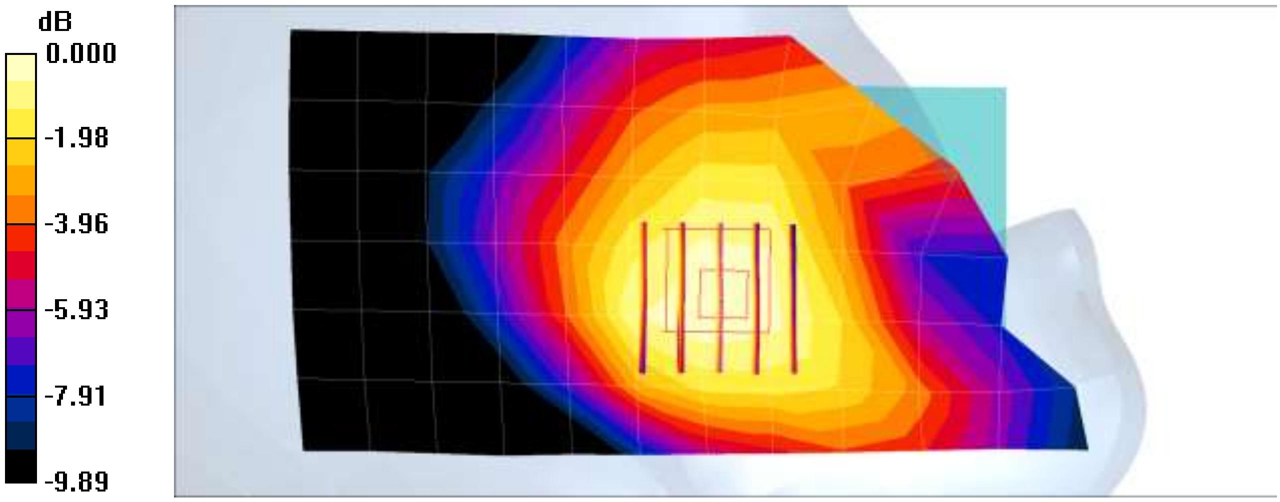
Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:2.075
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.901 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(7.26, 7.26, 7.26); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: SAM
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

GSM850 Head Left Touch 4Tx 190ch/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.256 mW/g

GSM850 Head Left Touch 4Tx 190ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.64 V/m; Power Drift = 0.017 dB
Peak SAR (extrapolated) = 0.372 W/kg
SAR(1 g) = 0.252 mW/g; SAR(10 g) = 0.190 mW/g
Maximum value of SAR (measured) = 0.260 mW/g



0 dB = 0.260mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	20.4 ℃
Ambient Temperature:	20.6 ℃
Test Date:	06/27/2017
Plot No.:	3

DUT: LG-M700Z; Type: Bar

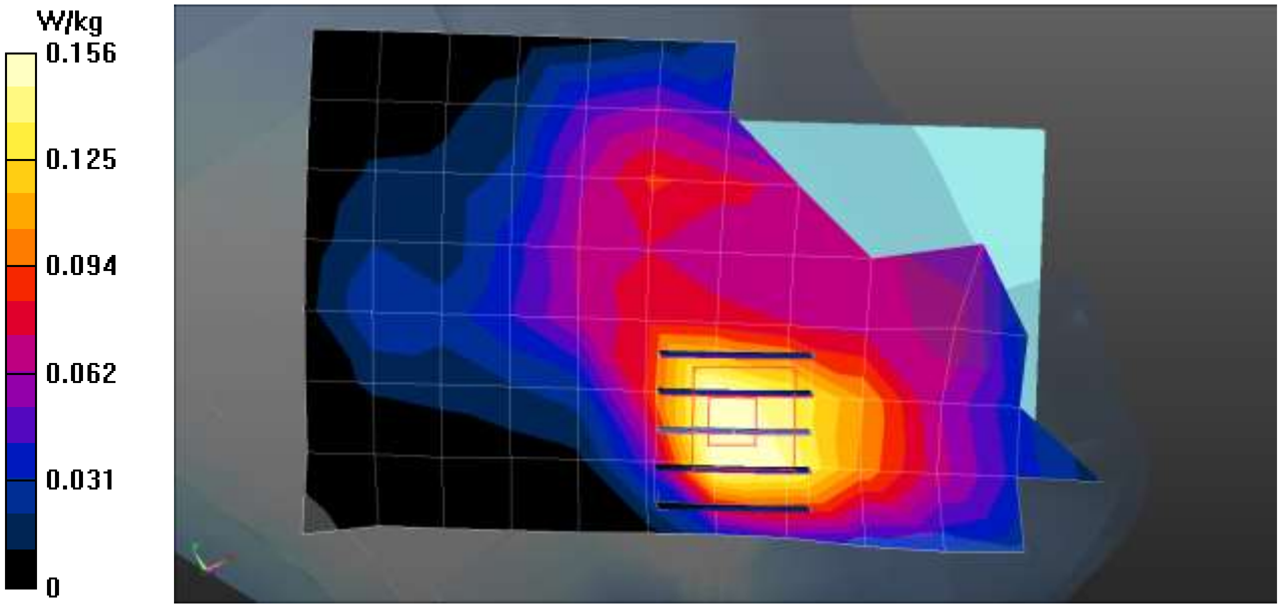
Communication System: UID 0, GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.424 S/m; ε_r = 40.564; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(8.66, 8.66, 8.66); Calibrated: 2017-05-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2017-02-22
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (1);

GSM1900 Head Left Touch 661ch/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.156 W/kg

GSM1900 Head Left Touch 661ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.805 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.235 W/kg
SAR(1 g) = 0.147 W/kg; SAR(10 g) = 0.090 W/kg
Maximum value of SAR (measured) = 0.193 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature: 20.4 ℃
Ambient Temperature: 20.6 ℃
Test Date: 06/27/2017
Plot No.: 4

DUT: LG-M700Z; Type: Bar

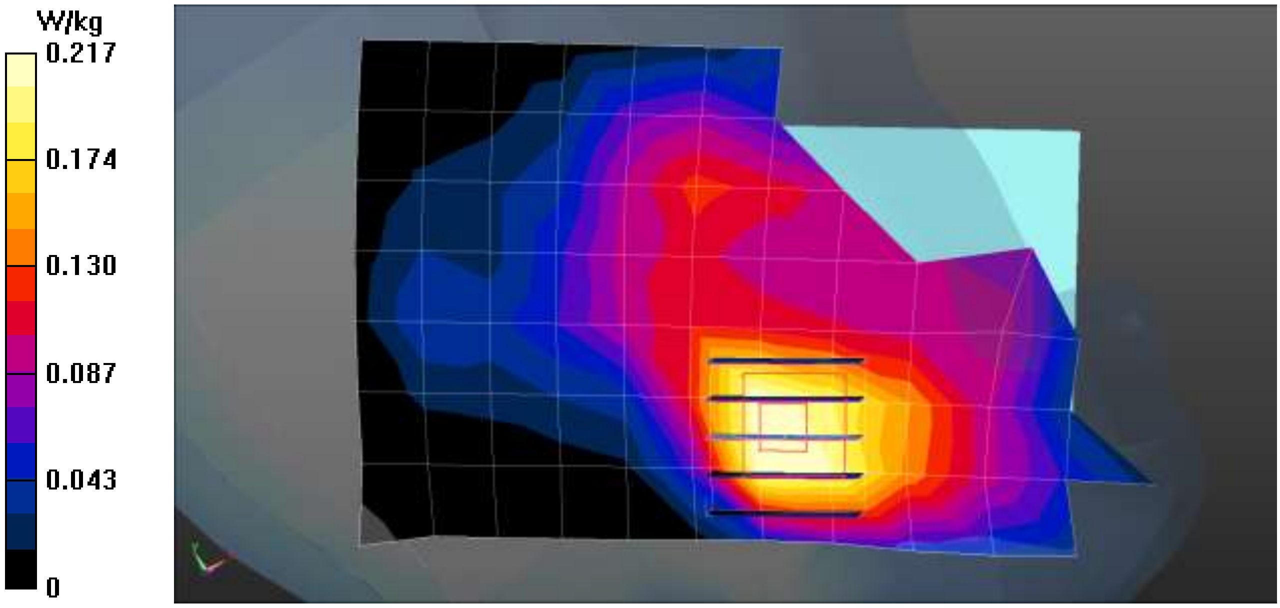
Communication System: UID 0, GSM 1900 4TX; Frequency: 1880 MHz;Duty Cycle: 1:2.07491
Medium parameters used: f = 1880 MHz; σ = 1.424 S/m; ε_r = 40.564; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(8.66, 8.66, 8.66); Calibrated: 2017-05-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2017-02-22
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (1);

GSM1900 Head Left Touch 4Tx 661ch/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.217 W/kg

GSM1900 Head Left Touch 4Tx 661ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.623 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.326 W/kg
SAR(1 g) = 0.206 W/kg; SAR(10 g) = 0.126 W/kg
Maximum value of SAR (measured) = 0.269 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature: 22.3 ℃
Ambient Temperature: 22.5 ℃
Test Date: 06/28/2017
Plot No.: 5

DUT: LG-M700Z; Type: bar

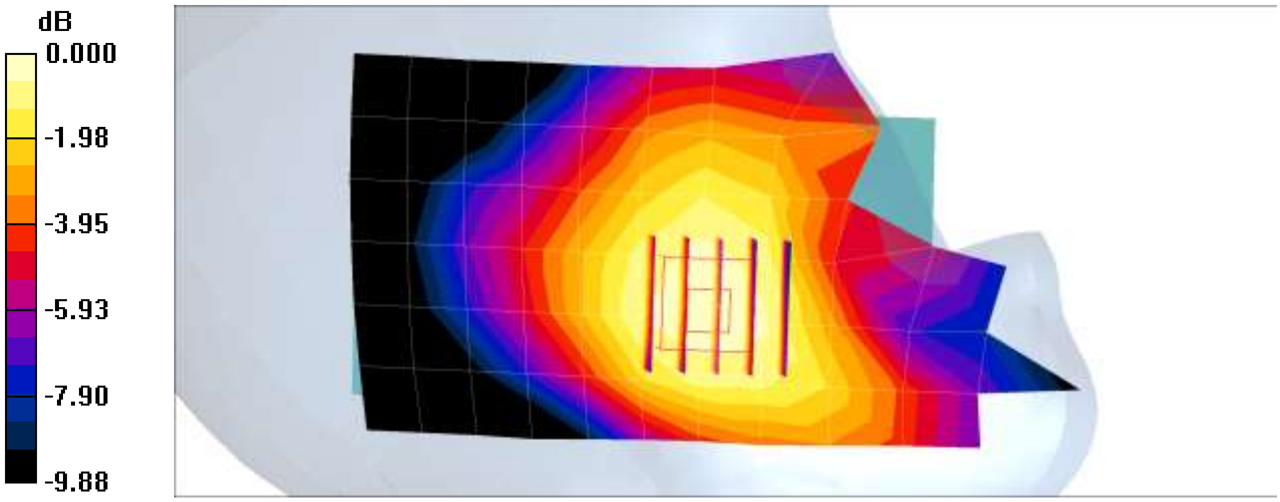
Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.979 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.73, 6.73, 6.73); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: SAM
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA850 Head Left Touch 4183ch/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.265 mW/g

WCDMA850 Head Left Touch 4183ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.72 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 0.305 W/kg
SAR(1 g) = 0.256 mW/g; SAR(10 g) = 0.199 mW/g
Maximum value of SAR (measured) = 0.268 mW/g



0 dB = 0.268mW/g

Test Laboratory: HCT CO., LTD
EUT Type: GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature: 20.4 ℃
Ambient Temperature: 20.6 ℃
Test Date: 06/27/2017
Plot No.: 6

DUT: LG-M700Z; Type: Bar

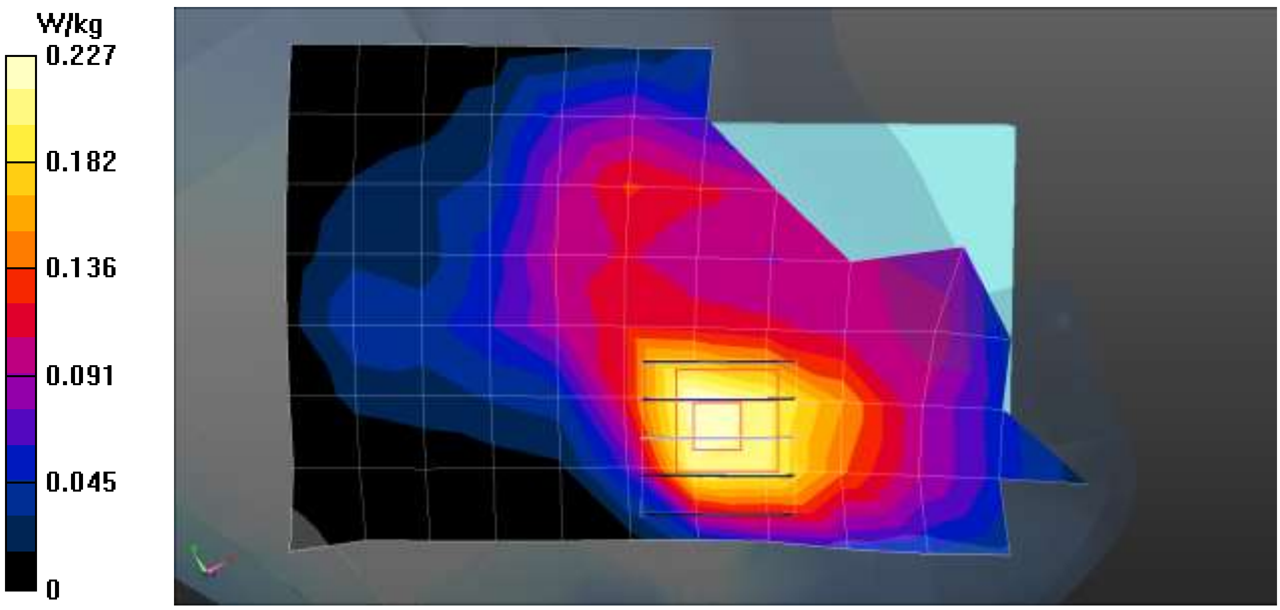
Communication System: UID 0, WCDMA1900; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.424 S/m; ε_r = 40.564; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(8.66, 8.66, 8.66); Calibrated: 2017-05-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2017-02-22
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (1);

WCDMA1900 Head Left Touch 9400ch/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.227 W/kg

WCDMA1900 Head Left Touch 9400ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.995 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.325 W/kg
SAR(1 g) = 0.206 W/kg; SAR(10 g) = 0.127 W/kg
Maximum value of SAR (measured) = 0.268 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	22.3 ℃
Ambient Temperature:	22.5 ℃
Test Date:	06/28/2017
Plot No.:	7

DUT: LG-M700Z; Type: bar

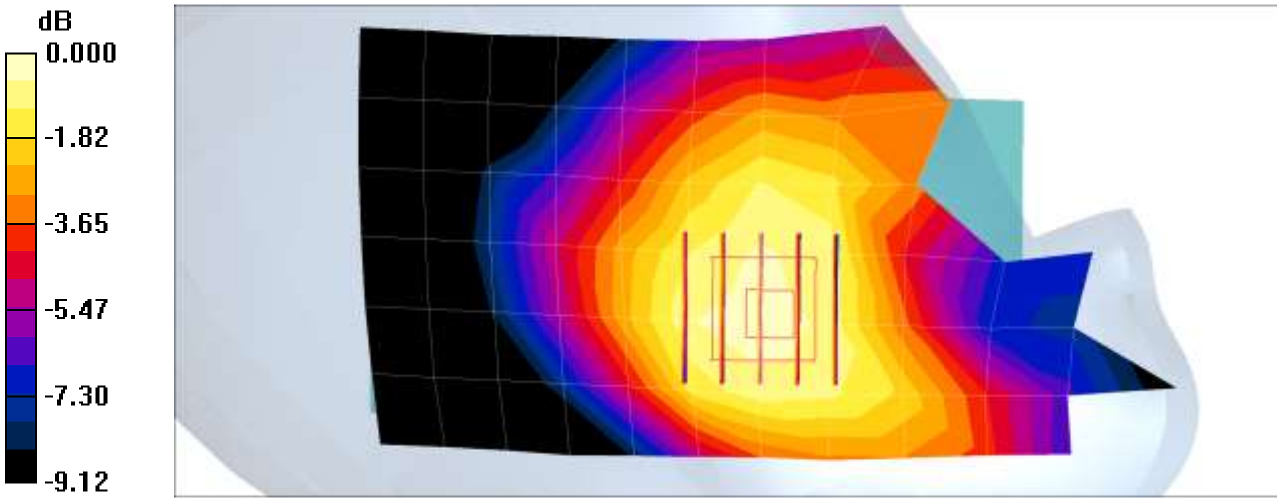
Communication System: LTE Band 5; Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.901 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(7.26, 7.26, 7.26); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: SAM
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE Band5 Head Left Touch QPSK 10MHz 1RB 24offset 20525ch/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.213 mW/g

LTE Band5 Head Left Touch QPSK 10MHz 1RB 24offset 20525ch/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.92 V/m; Power Drift = -0.024 dB
Peak SAR (extrapolated) = 0.254 W/kg
SAR(1 g) = 0.213 mW/g; SAR(10 g) = 0.168 mW/g
Maximum value of SAR (measured) = 0.222 mW/g



0 dB = 0.222mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	22.3 ℃
Ambient Temperature:	22.5 ℃
Test Date:	06/28/2017
Plot No.:	8

DUT: LG-M700Z; Type: bar

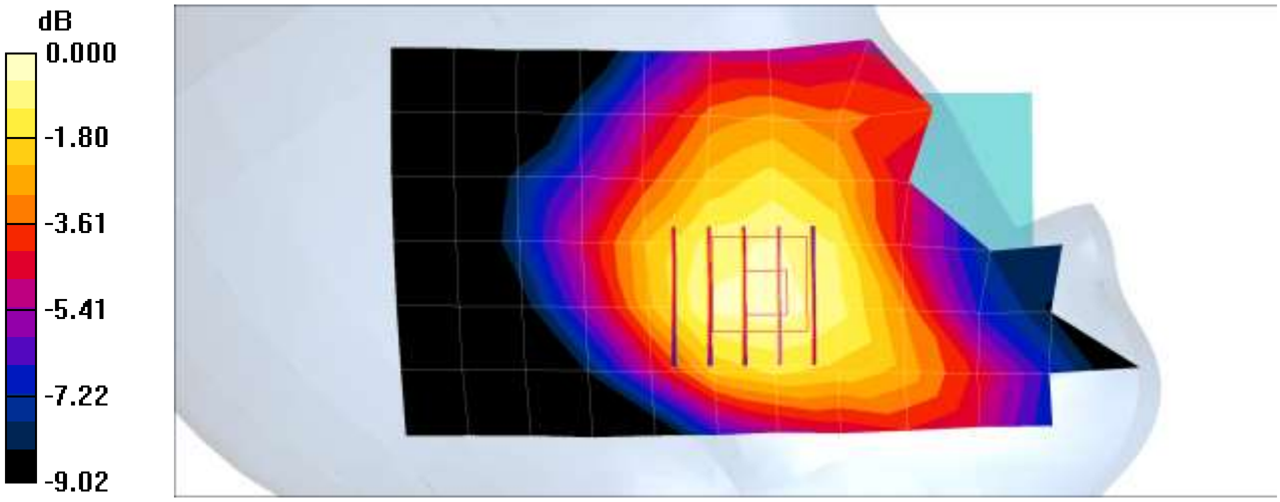
Communication System: LTE Band 5; Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.901 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(7.26, 7.26, 7.26); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: SAM
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE Band5 Head Left Touch QPSK 10MHz 25RB 0offset 20525ch/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.210 mW/g

LTE Band5 Head Left Touch QPSK 10MHz 25RB 0offset 20525ch/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.88 V/m; Power Drift = -0.095 dB
Peak SAR (extrapolated) = 0.257 W/kg
SAR(1 g) = 0.211 mW/g; SAR(10 g) = 0.164 mW/g
Maximum value of SAR (measured) = 0.222 mW/g



0 dB = 0.222mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	18.3 ℃
Ambient Temperature:	18.5 ℃
Test Date:	06/29/2017
Plot No.:	9

DUT: LG-M700Z; Type: Bar

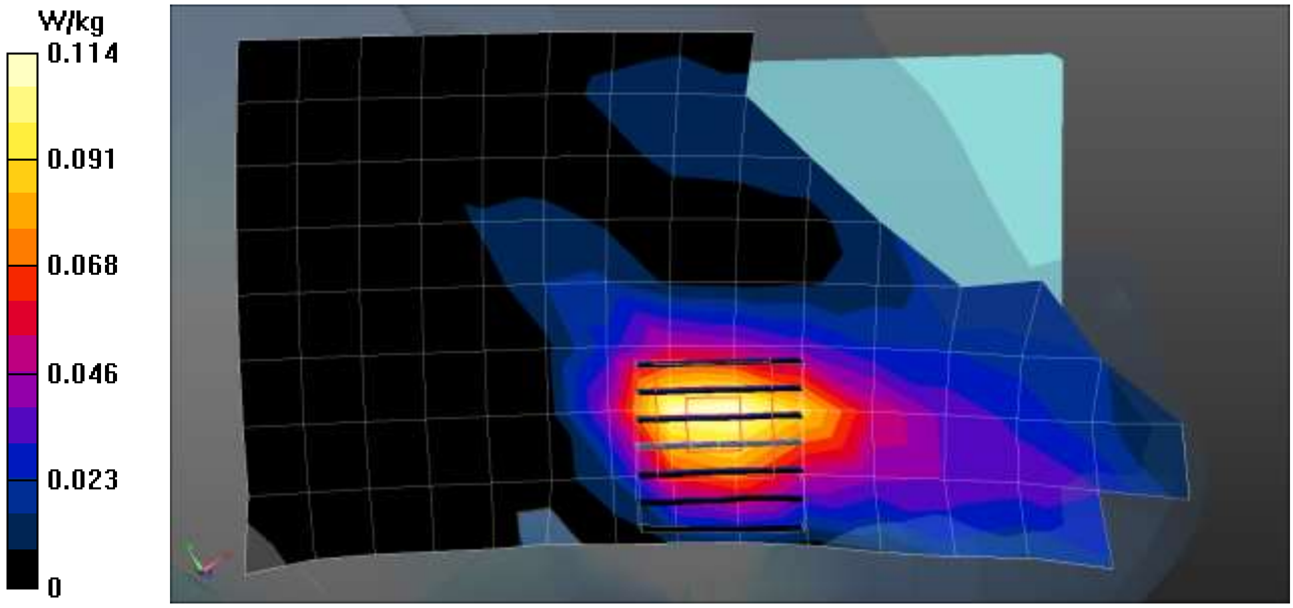
Communication System: UID 0, LTE Band 41; Frequency: 2636.5 MHz;Duty Cycle: 1:1.58052
Medium parameters used (interpolated): f = 2636.5 MHz; σ = 2.037 S/m; ε_r = 37.958; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.72, 7.72, 7.72); Calibrated: 2017-05-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2017-02-22
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (1);

LTE Band41 Head Left Touch 20MHz QPSK 1RB 49offset 41055ch/Area Scan (9x15x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.114 W/kg

LTE Band41 Head Left Touch 20MHz QPSK 1RB 49offset 41055ch/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.973 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.159 W/kg
SAR(1 g) = 0.079 W/kg; SAR(10 g) = 0.038 W/kg
Maximum value of SAR (measured) = 0.112 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	18.3 ℃
Ambient Temperature:	18.5 ℃
Test Date:	06/29/2017
Plot No.:	10

DUT: LG-M700Z; Type: Bar

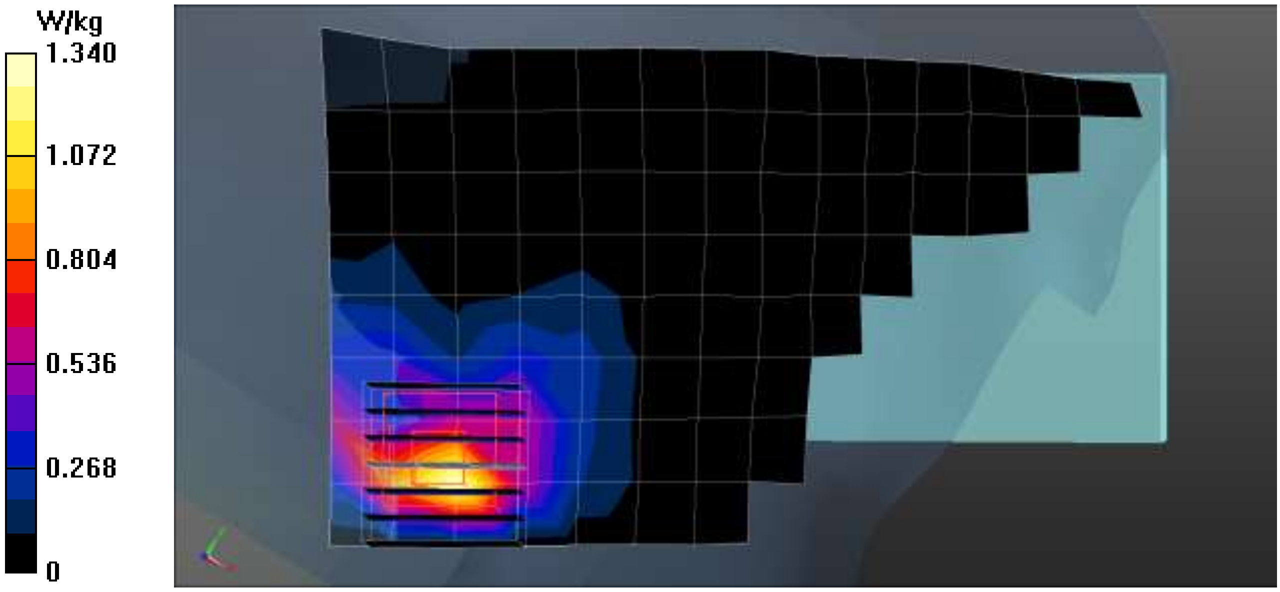
Communication System: UID 0, 2450MHz FCC; Frequency: 2457 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2457 MHz; σ = 1.849 S/m; ε_r = 38.295; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.95, 7.95, 7.95); Calibrated: 2017-05-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2017-02-22
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (1);

802.11b Head Right touch 1Mbps 10ch/Area Scan (9x15x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 1.34 W/kg

802.11b Head Right touch 1Mbps 10ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.092 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 2.29 W/kg
SAR(1 g) = 0.860 W/kg; SAR(10 g) = 0.338 W/kg
Maximum value of SAR (measured) = 1.44 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	18.3 ℃
Ambient Temperature:	18.5 ℃
Test Date:	06/29/2017
Plot No.:	11

DUT: LG-M700Z; Type: Bar

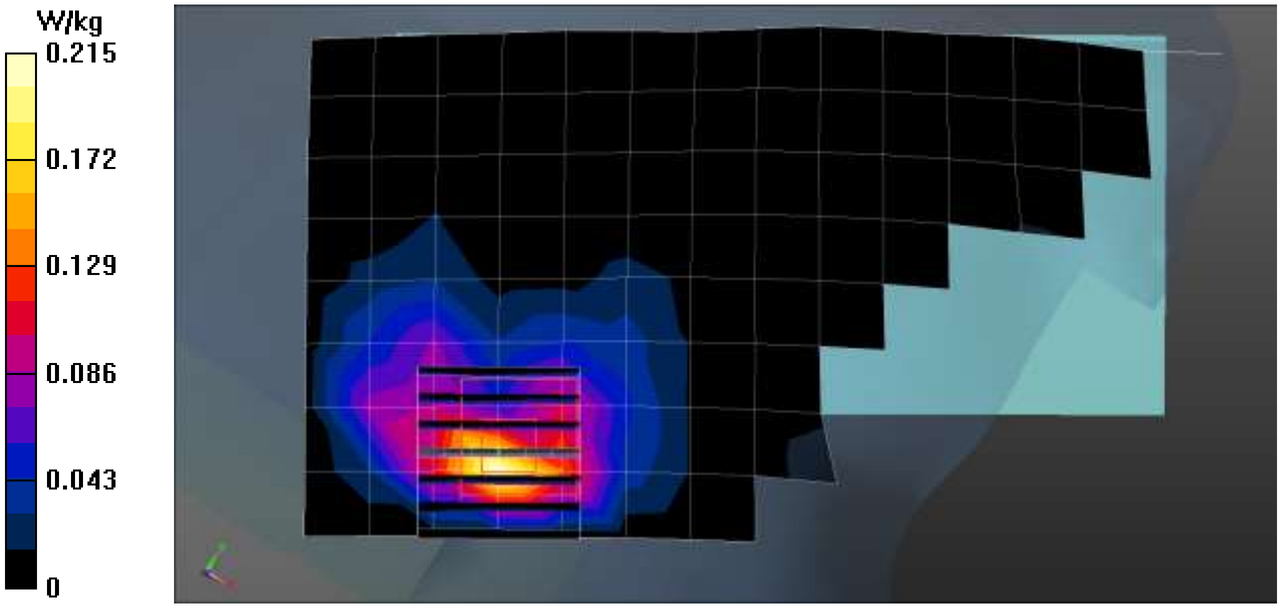
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2441 MHz; σ = 1.828 S/m; ε_r = 38.37; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.95, 7.95, 7.95); Calibrated: 2017-05-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2017-02-22
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (1);

BT Head Right touch DH5 39ch/Area Scan (9x15x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.215 W/kg

BT Head Right touch DH5 39ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.190 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.359 W/kg
SAR(1 g) = 0.134 W/kg; SAR(10 g) = 0.052 W/kg
Maximum value of SAR (measured) = 0.227 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	22.5 ℃
Ambient Temperature:	22.7 ℃
Test Date:	06/29/2017
Plot No.:	12

DUT: LG-M700Z; Type: bar

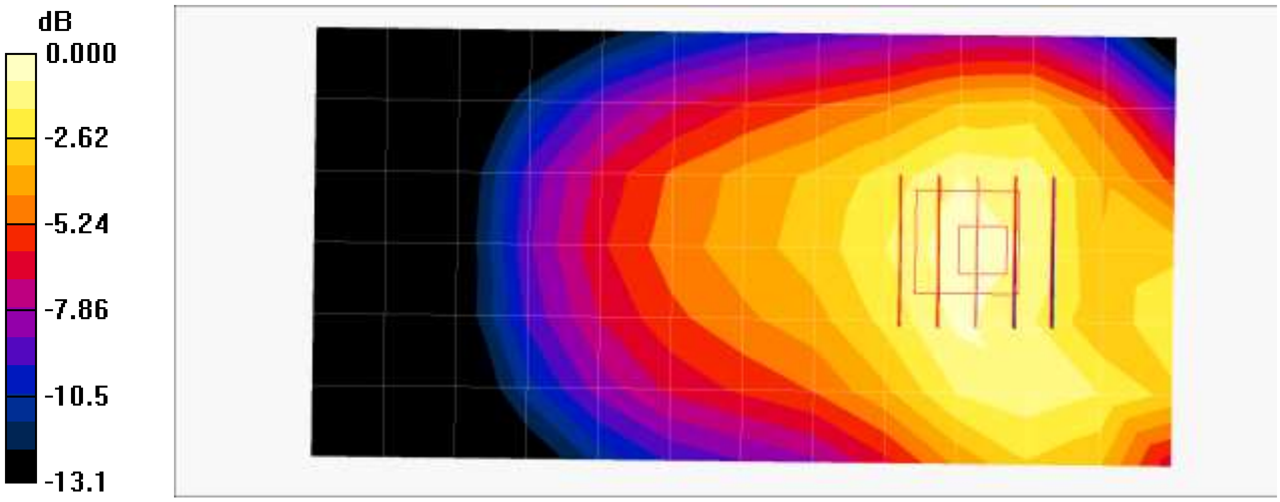
Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.979 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.73, 6.73, 6.73); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

GSM850 Body Rear voice 190ch/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.557 mW/g

GSM850 Body Rear voice 190ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.2 V/m; Power Drift = 0.027 dB
Peak SAR (extrapolated) = 0.736 W/kg
SAR(1 g) = 0.545 mW/g; SAR(10 g) = 0.386 mW/g
Maximum value of SAR (measured) = 0.582 mW/g



0 dB = 0.582mW/g

Note: Per 865664 D01V01r04 Sec 2.7.3, The first peak is lower than 2dB of the SAR limit and the second peak is not much higher than the first peak.

Test Laboratory: HCT CO., LTD
EUT Type: GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature: 22.5 ℃
Ambient Temperature: 22.7 ℃
Test Date: 06/29/2017
Plot No.: 13

DUT: LG-M700Z; Type: bar

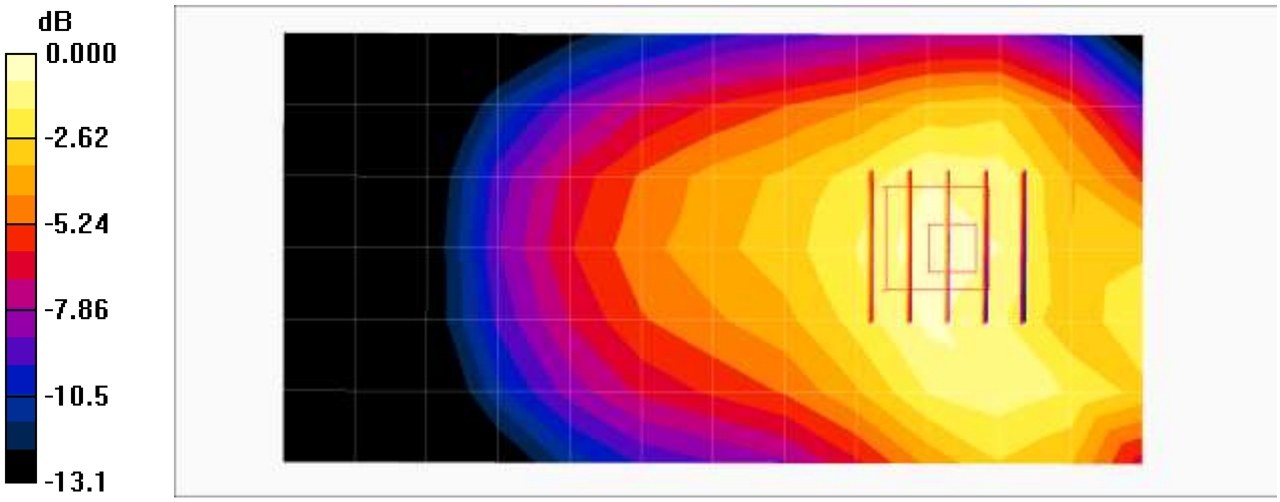
Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:2.075
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.979 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.73, 6.73, 6.73); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

GSM850 Body Rear 4Tx 190ch/Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.632 mW/g

GSM850 Body Rear 4Tx 190ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.2 V/m; Power Drift = 0.063 dB
Peak SAR (extrapolated) = 0.853 W/kg
SAR(1 g) = 0.621 mW/g; SAR(10 g) = 0.439 mW/g
Maximum value of SAR (measured) = 0.656 mW/g



0 dB = 0.656mW/g

Note: Per 865664 D01V01r04 Sec 2.7.3, The first peak is lower than 2dB of the SAR limit and the second peak is not much higher than the first peak.

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	20.4 ℃
Ambient Temperature:	20.8 ℃
Test Date:	06/28/2017
Plot No.:	14

DUT: LG-M700Z; Type: Bar

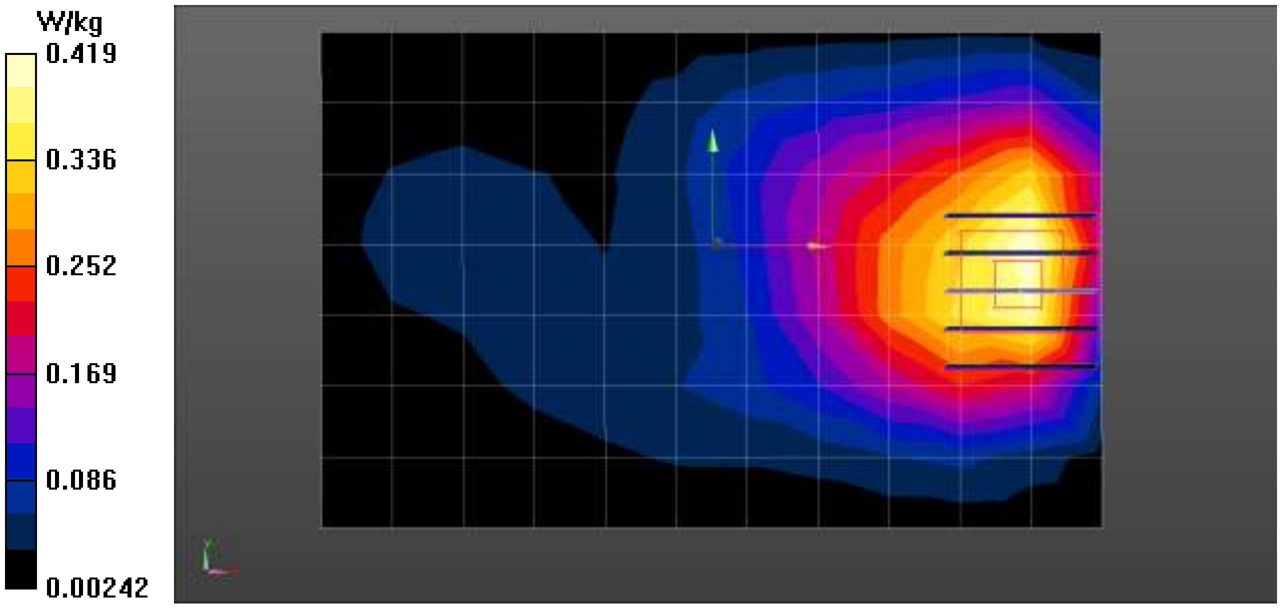
Communication System: UID 0, GSM 1900 4Tx (0); Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.525 S/m; ε_r = 53.066; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.1, 8.1, 8.1); Calibrated: 2016-09-28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2016-09-27
- Phantom: MFP Triple Phantom
- Measurement SW: DASY52, Version 52.8 (8);

GSM1900 Body Rear 661ch body worn/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.419 W/kg

GSM1900 Body Rear 661ch body worn/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.227 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.527 W/kg
SAR(1 g) = 0.345 W/kg; SAR(10 g) = 0.216 W/kg
Maximum value of SAR (measured) = 0.444 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	20.4 ℃
Ambient Temperature:	20.8 ℃
Test Date:	06/28/2017
Plot No.:	15

DUT: LG-M700Z; Type: Bar

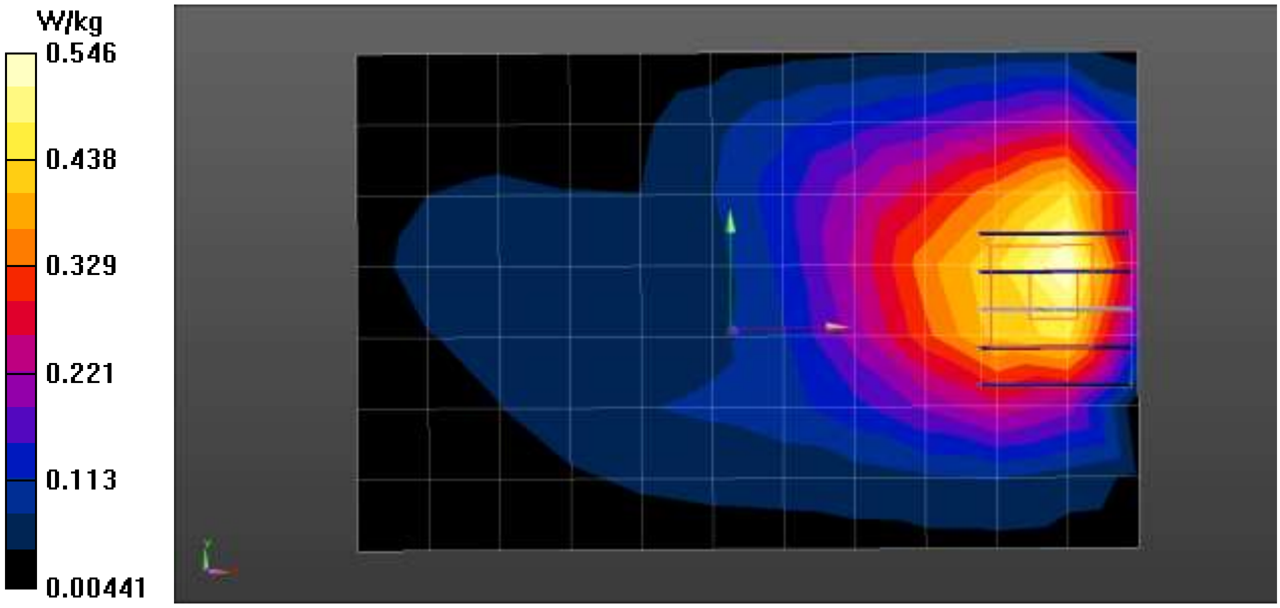
Communication System: UID 0, GSM 1900 4Tx (0); Frequency: 1880 MHz;Duty Cycle: 1:2.07491
Medium parameters used: f = 1880 MHz; σ = 1.525 S/m; ε_r = 53.066; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.1, 8.1, 8.1); Calibrated: 2016-09-28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2016-09-27
- Phantom: MFP Triple Phantom
- Measurement SW: DASY52, Version 52.8 (8);

GSM1900 Body Rear 4Tx 661ch/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.546 W/kg

GSM1900 Body Rear 4Tx 661ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.553 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.665 W/kg
SAR(1 g) = 0.434 W/kg; SAR(10 g) = 0.272 W/kg
Maximum value of SAR (measured) = 0.553 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	22.5 ℃
Ambient Temperature:	22.7 ℃
Test Date:	06/29/2017
Plot No.:	16

DUT: LG-M700Z; Type: bar

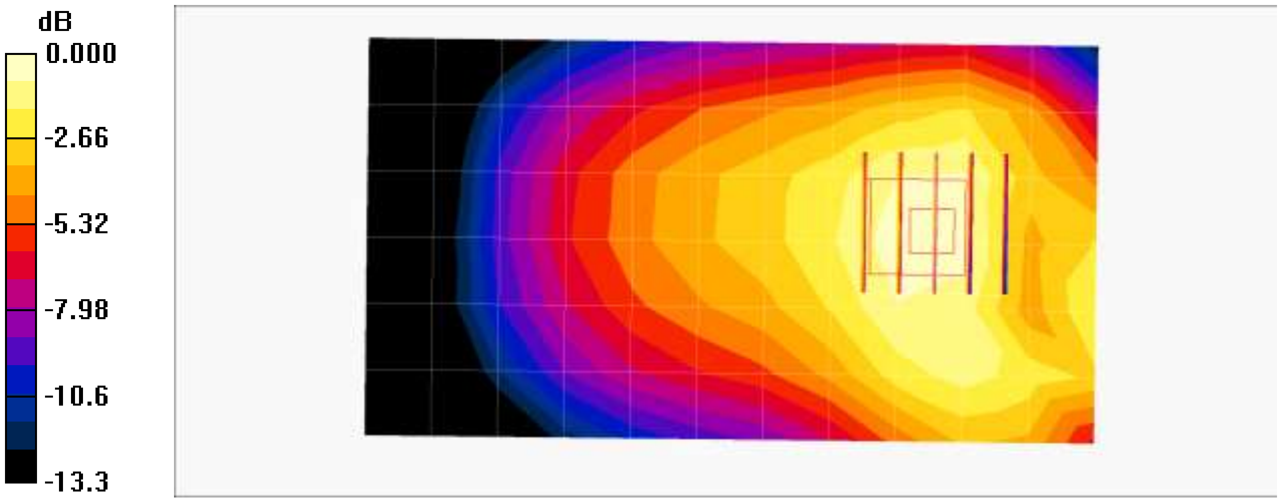
Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.979 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.73, 6.73, 6.73); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA850 Body Front 4183ch/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.564 mW/g

WCDMA850 Body Front 4183ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.5 V/m; Power Drift = -0.052 dB
Peak SAR (extrapolated) = 0.762 W/kg
SAR(1 g) = 0.573 mW/g; SAR(10 g) = 0.408 mW/g
Maximum value of SAR (measured) = 0.610 mW/g



0 dB = 0.610mW/g

Note: Per 865664 D01V01r04 Sec 2.7.3, The first peak is lower than 2dB of the SAR limit and the second peak is not much higher than the first peak.

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	20.4 ℃
Ambient Temperature:	20.8 ℃
Test Date:	06/28/2017
Plot No.:	17

DUT: LG-M700Z; Type: Bar

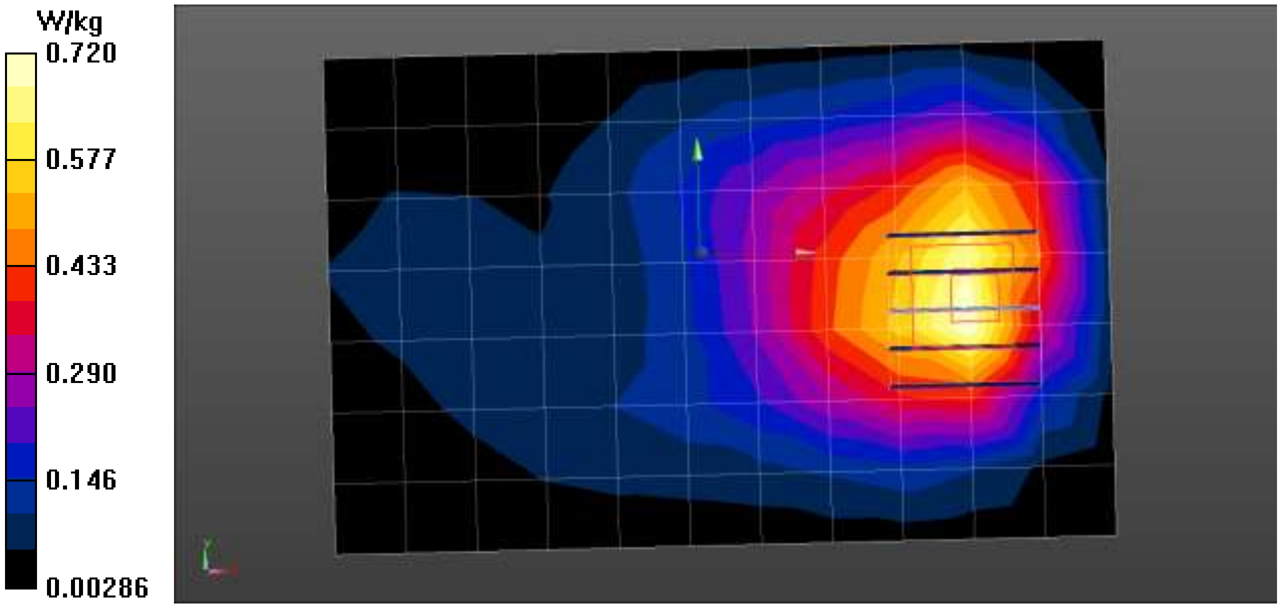
Communication System: UID 0, WCDMA1900 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.525 S/m; ε_r = 53.066; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.1, 8.1, 8.1); Calibrated: 2016-09-28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2016-09-27
- Phantom: MFP Triple Phantom
- Measurement SW: DASY52, Version 52.8 (8);

WCDMA band 2 Body Rear 9400ch/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.720 W/kg

WCDMA band 2 Body Rear 9400ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.882 W/kg
SAR(1 g) = 0.573 W/kg; SAR(10 g) = 0.357 W/kg
Maximum value of SAR (measured) = 0.724 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	22.5 ℃
Ambient Temperature:	22.7 ℃
Test Date:	06/29/2017
Plot No.:	18

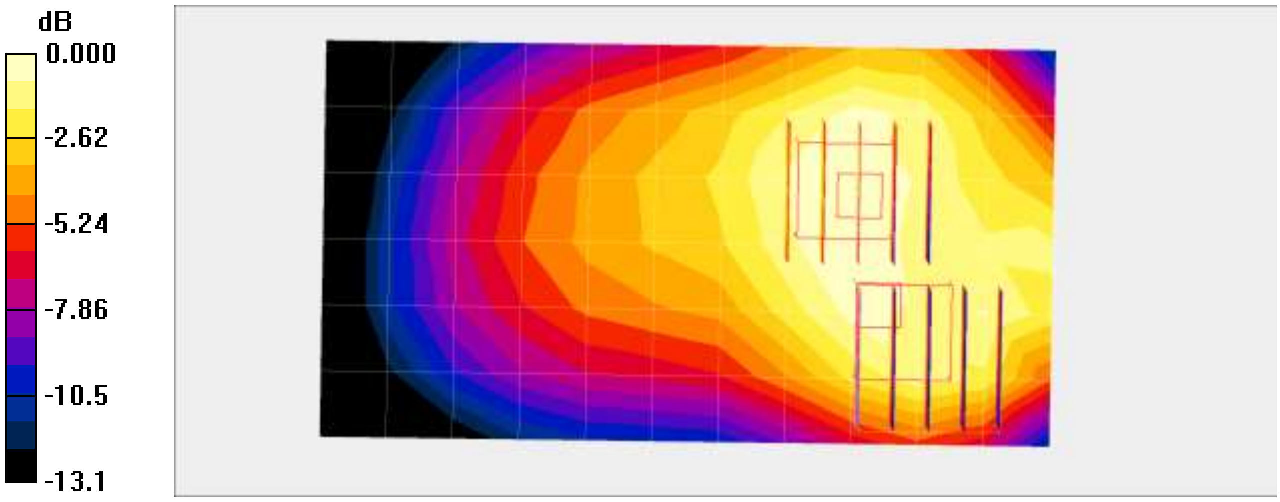
DUT: LG-M700Z; Type: bar

Communication System: LTE Band 5; Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.979 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.73, 6.73, 6.73); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE Band5 Body Rear QPSK 10MHz 1RB 24offset 20525ch/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.736 mW/g
LTE Band5 Body Rear QPSK 10MHz 1RB 24offset 20525ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.6 V/m; Power Drift = 0.177 dB
Peak SAR (extrapolated) = 0.947 W/kg
SAR(1 g) = 0.691 mW/g; SAR(10 g) = 0.488 mW/g
Maximum value of SAR (measured) = 0.737 mW/g
LTE Band5 Body Rear QPSK 10MHz 1RB 24offset 20525ch/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.6 V/m; Power Drift = 0.177 dB
Peak SAR (extrapolated) = 0.869 W/kg
SAR(1 g) = 0.550 mW/g; SAR(10 g) = 0.332 mW/g
Maximum value of SAR (measured) = 0.626 mW/g



0 dB = 0.626mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	22.1 ℃
Ambient Temperature:	22.3 ℃
Test Date:	06/27/2017
Plot No.:	19

DUT: LG-M700Z; Type: bar

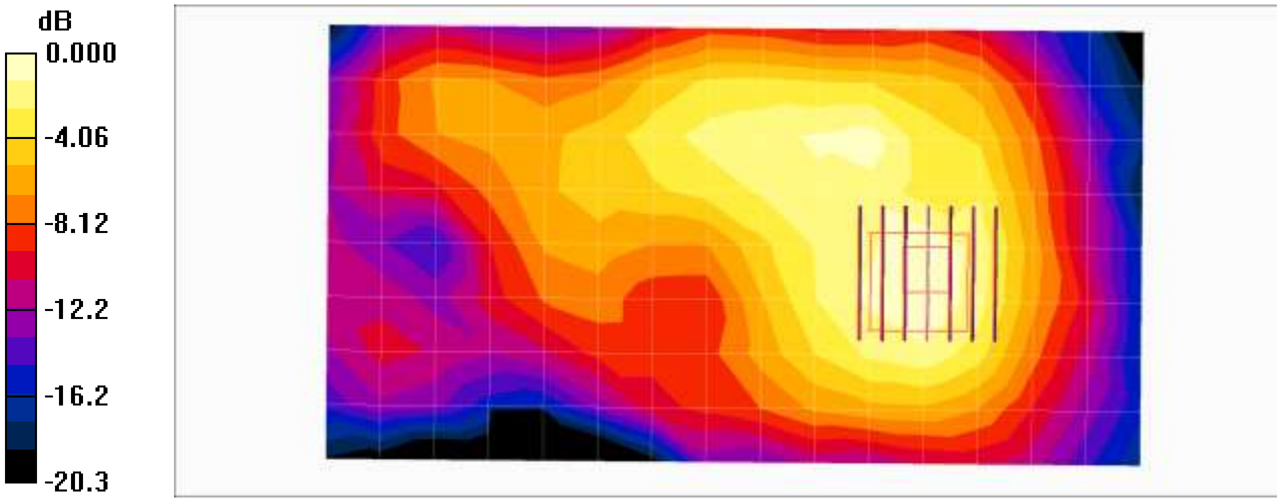
Communication System: LTE Band 41 (FCC); Frequency: 2506 MHz;Duty Cycle: 1:1.58
Medium parameters used (interpolated): f = 2506 MHz; σ = 2.06 mho/m; ε_r = 51.2; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(7.7, 7.7, 7.7); Calibrated: 2017-05-31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2017-05-24
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE Band 41 Body Rear QPSK 20MHz 50RB 49offset 39750ch/Area Scan (9x16x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.197 mW/g

LTE Band 41 Body Rear QPSK 20MHz 50RB 49offset 39750ch/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.14 V/m; Power Drift = 0.015 dB
Peak SAR (extrapolated) = 0.261 W/kg
SAR(1 g) = 0.141 mW/g; SAR(10 g) = 0.077 mW/g
Maximum value of SAR (measured) = 0.199 mW/g



0 dB = 0.199mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	20.5 ℃
Ambient Temperature:	20.8 ℃
Test Date:	06/28/2017
Plot No.:	20

DUT: LG-M700Z; Type: Bar

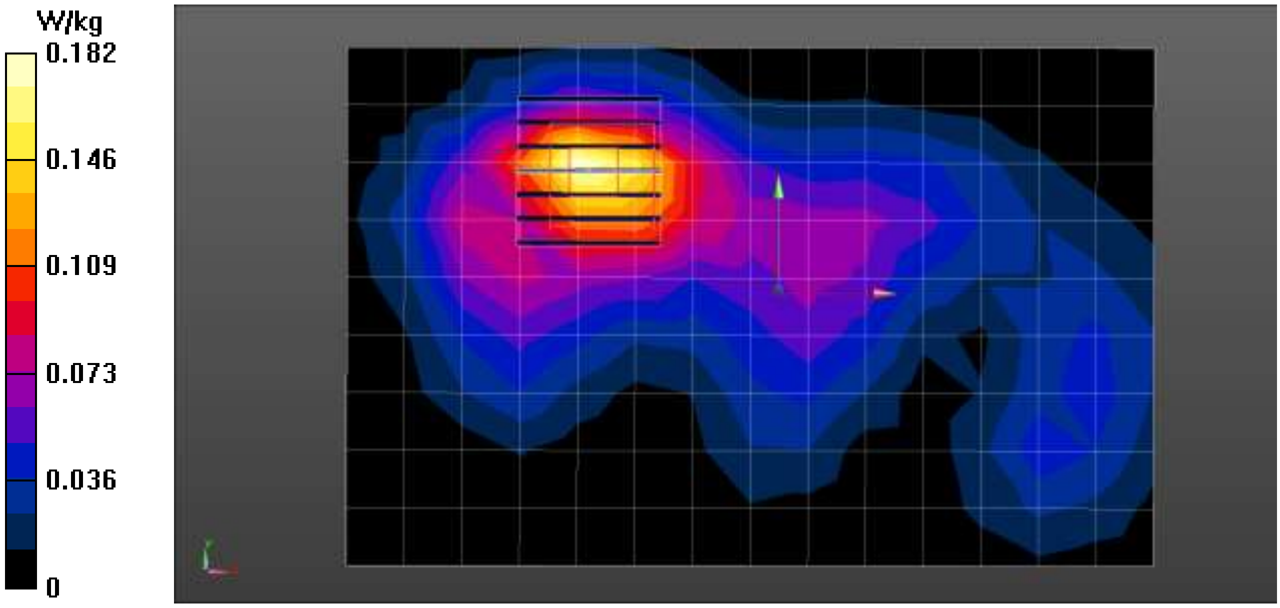
Communication System: UID 0, 2450MHz FCC (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.93 S/m; ε_r = 52.172; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.69, 7.69, 7.69); Calibrated: 2016-09-28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2016-09-27
- Phantom: MFP Triple Phantom
- Measurement SW: DASY52, Version 52.8 (8);

802.11b Body Rear 1Mbps 6ch/Area Scan (10x15x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.182 W/kg

802.11b Body Rear 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.670 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.254 W/kg
SAR(1 g) = 0.133 W/kg; SAR(10 g) = 0.066 W/kg
Maximum value of SAR (measured) = 0.194 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	20.4 ℃
Ambient Temperature:	20.8 ℃
Test Date:	06/28/2017
Plot No.:	21

DUT: LG-M700Z; Type: Bar

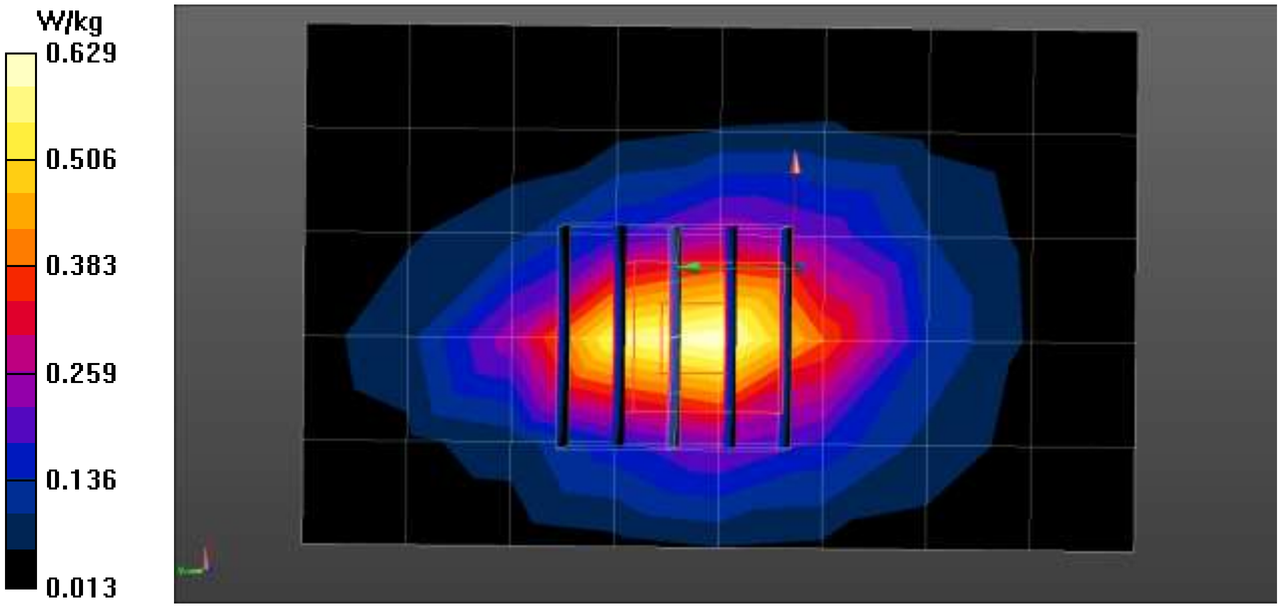
Communication System: UID 0, GSM 1900 4Tx (0); Frequency: 1880 MHz;Duty Cycle: 1:2.07491
Medium parameters used: f = 1880 MHz; σ = 1.525 S/m; ε_r = 53.066; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.1, 8.1, 8.1); Calibrated: 2016-09-28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2016-09-27
- Phantom: MFP Triple Phantom
- Measurement SW: DASY52, Version 52.8 (8);

GSM1900 Body Bottom 4Tx 661ch/Area Scan (9x6x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.629 W/kg

GSM1900 Body Bottom 4Tx 661ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.00 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.793 W/kg
SAR(1 g) = 0.484 W/kg; SAR(10 g) = 0.275 W/kg
Maximum value of SAR (measured) = 0.644 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	22.5 ℃
Ambient Temperature:	22.7 ℃
Test Date:	06/29/2017
Plot No.:	22

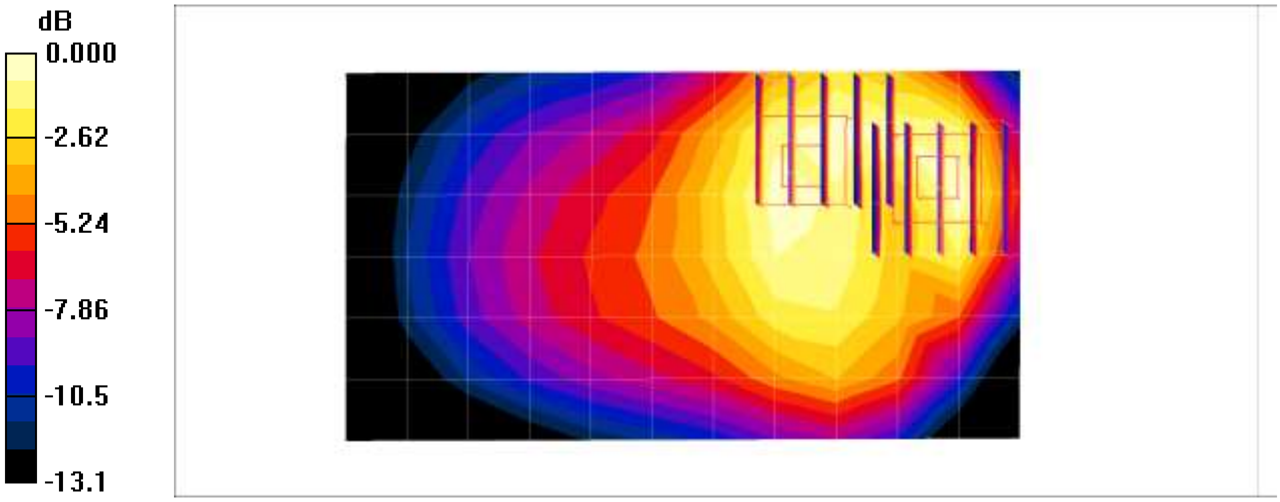
DUT: LG-M700Z; Type: bar

Communication System: WCDMA850; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.979 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.73, 6.73, 6.73); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA850 Body Front 4183ch/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.636 mW/g
WCDMA850 Body Front 4183ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.7 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 1.05 W/kg
SAR(1 g) = 0.633 mW/g; SAR(10 g) = 0.366 mW/g
Maximum value of SAR (measured) = 0.692 mW/g
WCDMA850 Body Front 4183ch/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.7 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 0.951 W/kg
SAR(1 g) = 0.618 mW/g; SAR(10 g) = 0.391 mW/g
Maximum value of SAR (measured) = 0.660 mW/g



0 dB = 0.660mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	20.4 ℃
Ambient Temperature:	20.8 ℃
Test Date:	06/28/2017
Plot No.:	23

DUT: LG-M700Z; Type: Bar

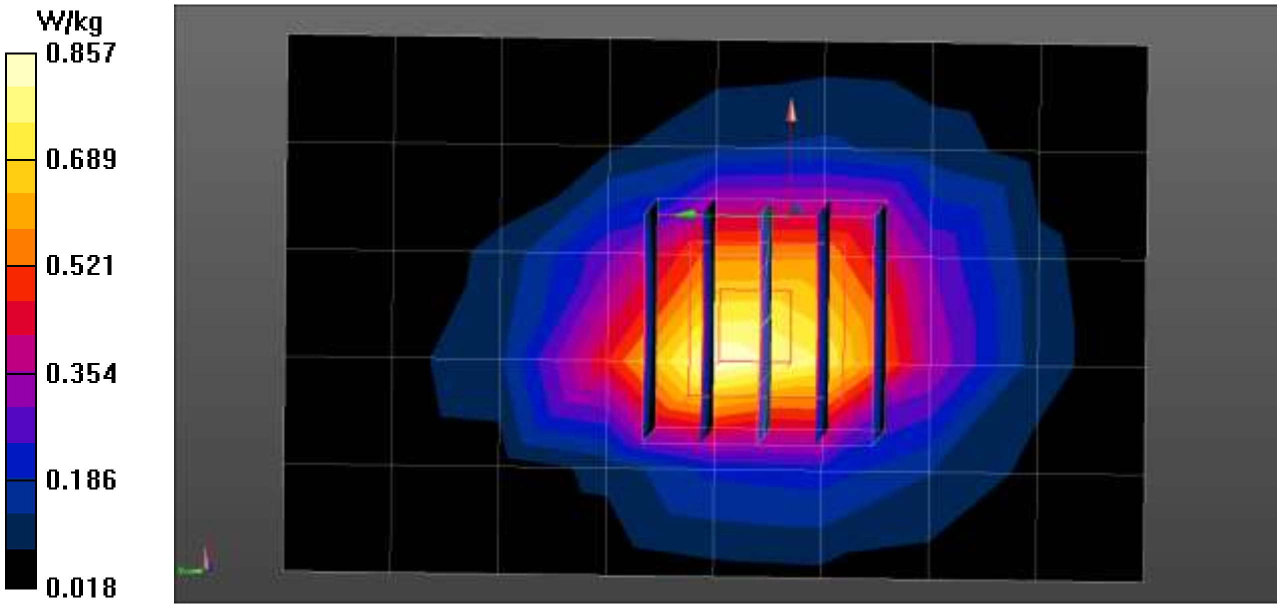
Communication System: UID 0, WCDMA1900 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.525 S/m; ε_r = 53.066; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.1, 8.1, 8.1); Calibrated: 2016-09-28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2016-09-27
- Phantom: MFP Triple Phantom
- Measurement SW: DASY52, Version 52.8 (8);

WCDMA band 2 Body Bottom 9400ch/Area Scan (9x6x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.857 W/kg

WCDMA band 2 Body Bottom 9400ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.73 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.20 W/kg
SAR(1 g) = 0.742 W/kg; SAR(10 g) = 0.424 W/kg
Maximum value of SAR (measured) = 0.989 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	22.1 ℃
Ambient Temperature:	22.3 ℃
Test Date:	06/27/2017
Plot No.:	24

DUT: LG-M700Z; Type: bar

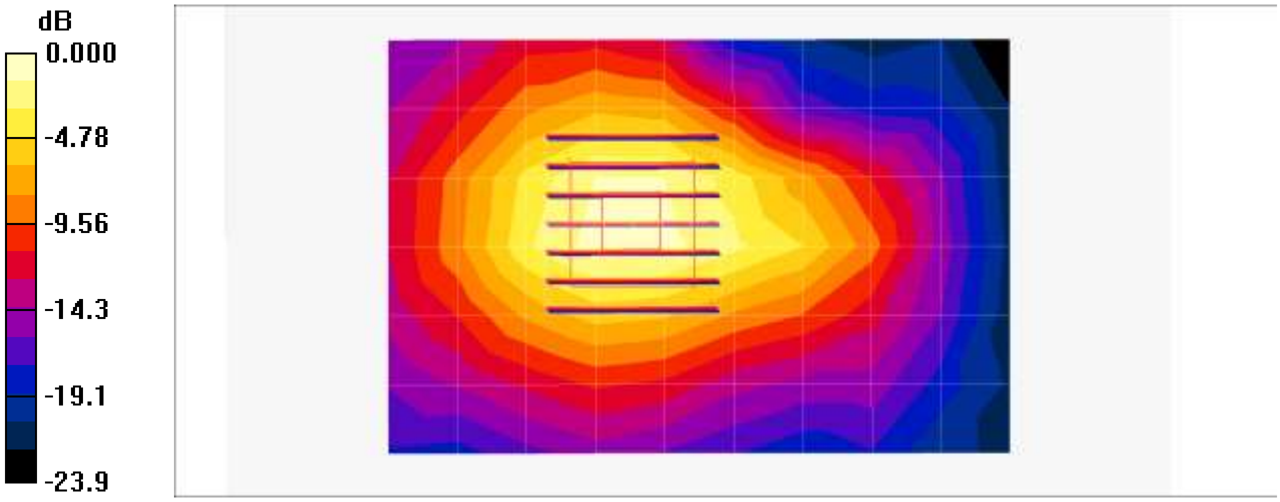
Communication System: LTE Band 41 (FCC); Frequency: 2636.5 MHz;Duty Cycle: 1:1.58
Medium parameters used (interpolated): f = 2636.5 MHz; σ = 2.2 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(7.7, 7.7, 7.7); Calibrated: 2017-05-31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2017-05-24
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE Band 41 Body Bottom QPSK 20MHz 1RB 49offset 41055ch/Area Scan (10x7x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.488 mW/g

LTE Band 41 Body Bottom QPSK 20MHz 1RB 49offset 41055ch/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = -0.057 dB
Peak SAR (extrapolated) = 0.817 W/kg
SAR(1 g) = 0.398 mW/g; SAR(10 g) = 0.194 mW/g
Maximum value of SAR (measured) = 0.598 mW/g



0 dB = 0.598mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	GSM/WCDMA/LTE Phone with Bluetooth4.2LE, WIFI802.11 b/g/n
Liquid Temperature:	18.3 ℃
Ambient Temperature:	18.5 ℃
Test Date:	06/29/2017
Plot No.:	25

DUT: LG-M700Z; Type: Bar

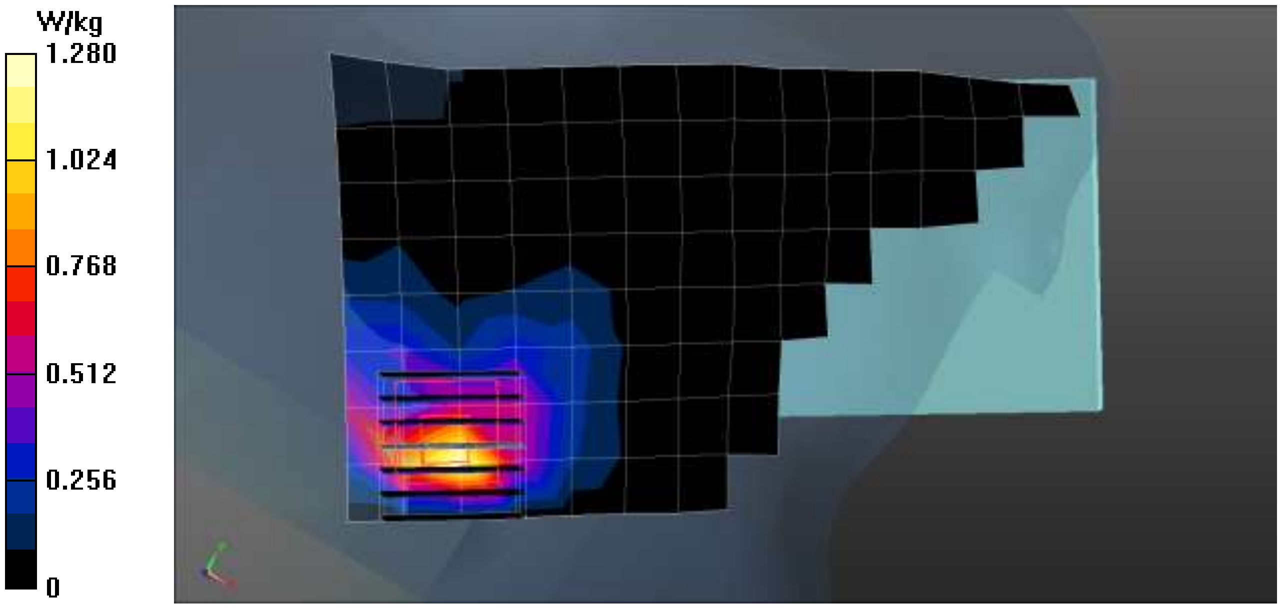
Communication System: UID 0, 2450MHz FCC; Frequency: 2457 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2457 MHz; σ = 1.849 S/m; ε_r = 38.295; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.95, 7.95, 7.95); Calibrated: 2017-05-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2017-02-22
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (1);

802.11b Head Right touch 1Mbps 10ch/Area Scan (9x15x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 1.28 W/kg

802.11b Head Right touch 1Mbps 10ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.060 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 2.29 W/kg
SAR(1 g) = 0.857 W/kg; SAR(10 g) = 0.336 W/kg
Maximum value of SAR (measured) = 1.43 W/kg



Attachment 2. – Dipole Verification Plots

■ Verification Data (835 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	22.3 ℃
Test Date:	06/28/2017

DUT: Dipole 835 MHz; Type: D835V2

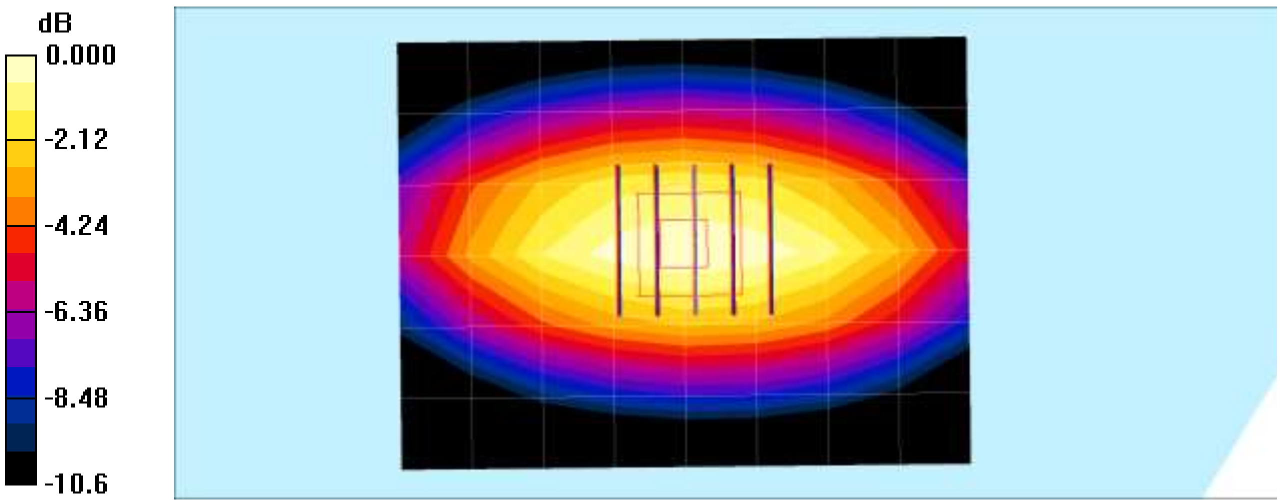
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 835 MHz; σ = 0.899 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(7.26, 7.26, 7.26); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: SAM
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

835 MHz Head Verification/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.11 mW/g

835 MHz Head Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.5 V/m; Power Drift = -0.032 dB
Peak SAR (extrapolated) = 1.45 W/kg
SAR(1 g) = 1 mW/g; SAR(10 g) = 0.656 mW/g
Maximum value of SAR (measured) = 1.08 mW/g



0 dB = 1.08mW/g

■ Verification Data (835 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	22.5 ℃
Test Date:	06/29/2017

DUT: Dipole 835 MHz; Type: D835V2

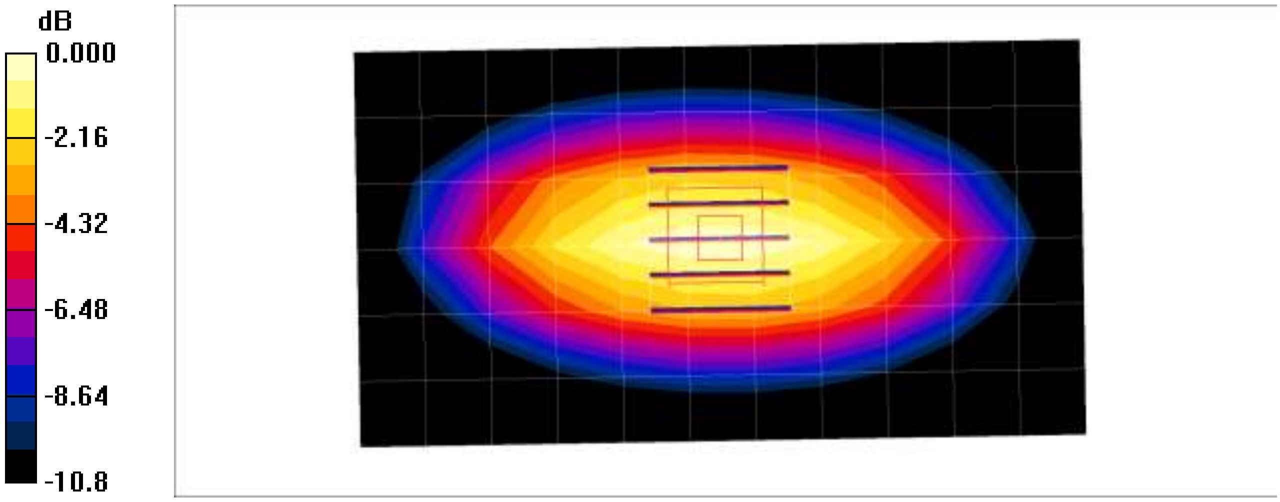
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 835 MHz; σ = 0.977 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1630; ConvF(6.73, 6.73, 6.73); Calibrated: 2017-02-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2017-01-20
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

835 MHz Body Verification/Area Scan (12x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.05 mW/g

835 MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.2 V/m; Power Drift = -0.014 dB
Peak SAR (extrapolated) = 1.48 W/kg
SAR(1 g) = 0.998 mW/g; SAR(10 g) = 0.645 mW/g
Maximum value of SAR (measured) = 1.08 mW/g



0 dB = 1.08mW/g

■ Verification Data (1 900 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.4 ℃
Test Date:	06/27/2017

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2

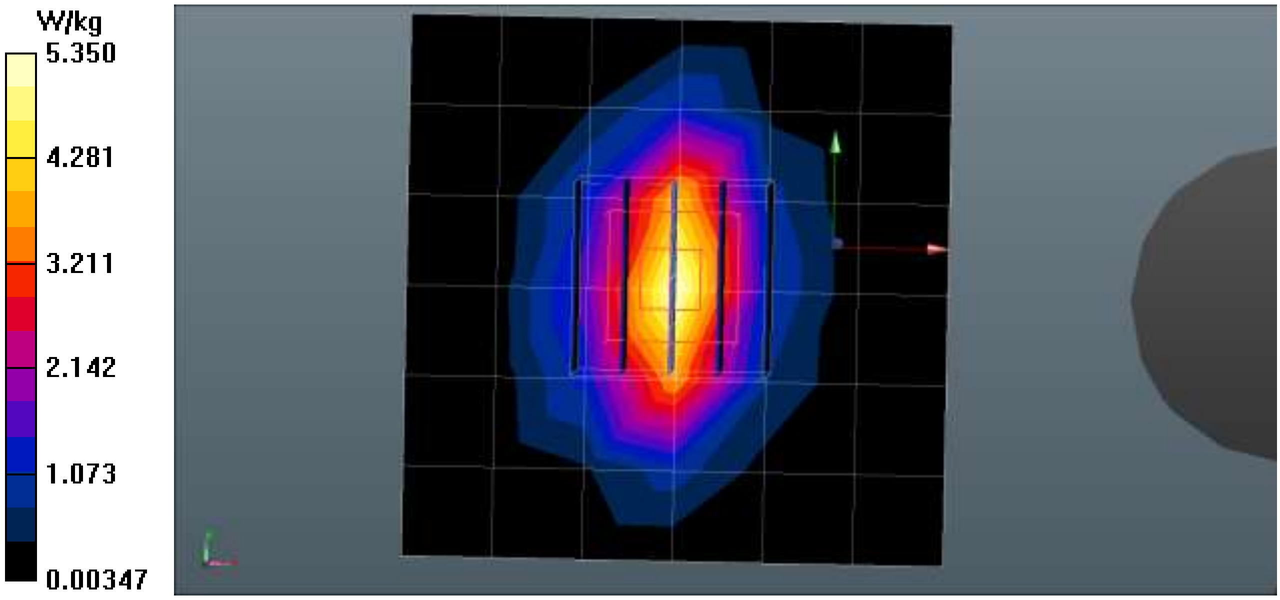
Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.448 S/m; ε_r = 40.483; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(8.66, 8.66, 8.66); Calibrated: 2017-05-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2017-02-22
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (1);

1 900 MHz Head Verification/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 5.35 W/kg

1 900 MHz Head Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 61.44 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 6.88 W/kg
SAR(1 g) = 3.75 W/kg; SAR(10 g) = 1.94 W/kg
Maximum value of SAR (measured) = 5.41 W/kg



■ Verification Data (1 900 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.4 ℃
Test Date:	06/28/2017

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2

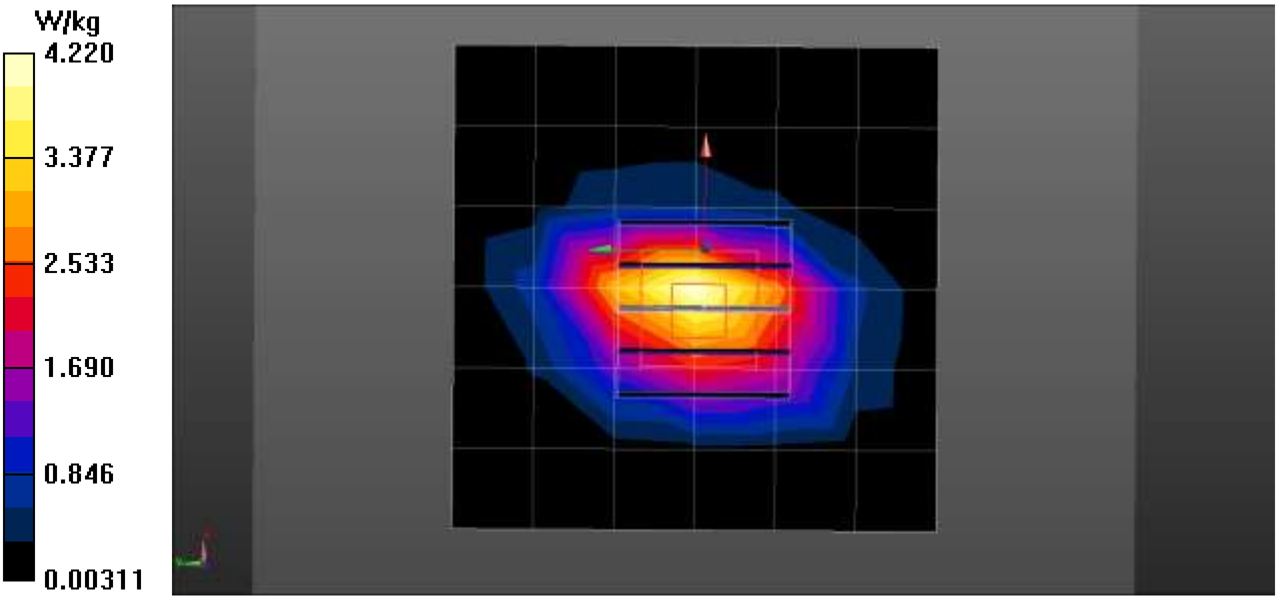
Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.548 S/m; ε_r = 53.069; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.1, 8.1, 8.1); Calibrated: 2016-09-28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2016-09-27
- Phantom: Triple Flat Phantom
- Measurement SW: DASY52, Version 52.8 (1);

1 900 MHz Body Verification/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.22 W/kg

1 900 MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.31 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 7.90 W/kg
SAR(1 g) = 4.21 W/kg; SAR(10 g) = 2.14 W/kg
Maximum value of SAR (measured) = 4.75 W/kg



■ Verification Data (2 450 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	18.3 ℃
Test Date:	06/29/2017

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2

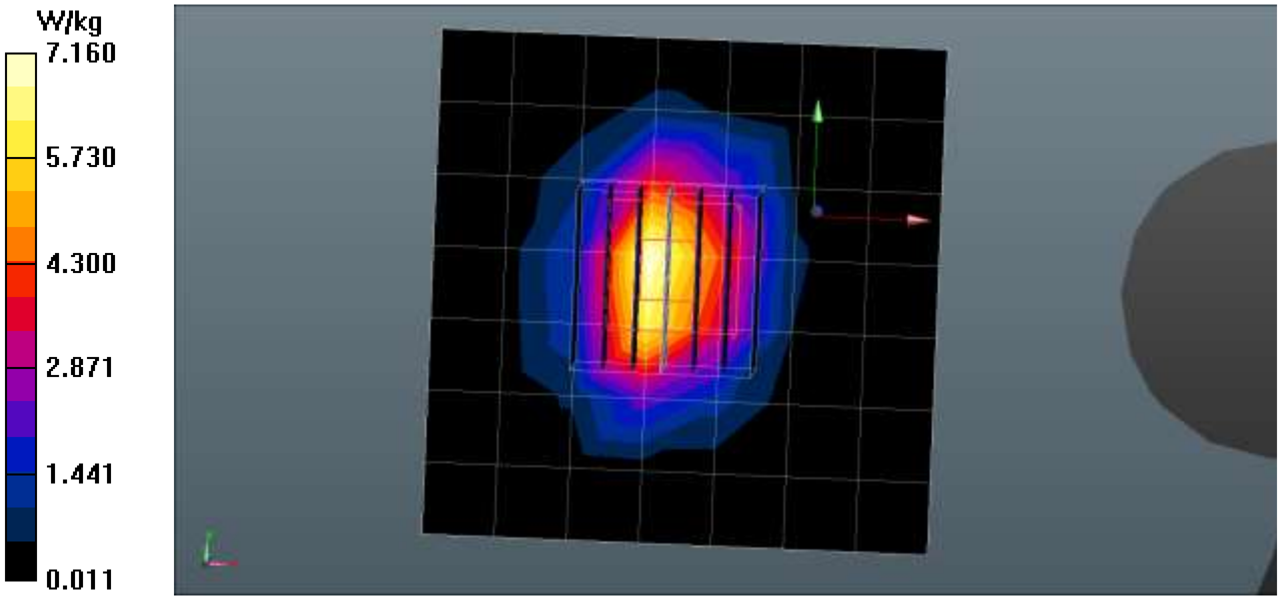
Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.842 S/m; ε_r = 38.332; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.95, 7.95, 7.95); Calibrated: 2017-05-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2017-02-22
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (1);

2 450 MHz Head Verification/Area Scan (8x8x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 7.16 W/kg

2 450 MHz Head Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.65 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 10.8 W/kg
SAR(1 g) = 5.29 W/kg; SAR(10 g) = 2.45 W/kg
Maximum value of SAR (measured) = 8.02 W/kg



■ Verification Data (2 450 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	20.5 ℃
Test Date:	06/28/2017

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2

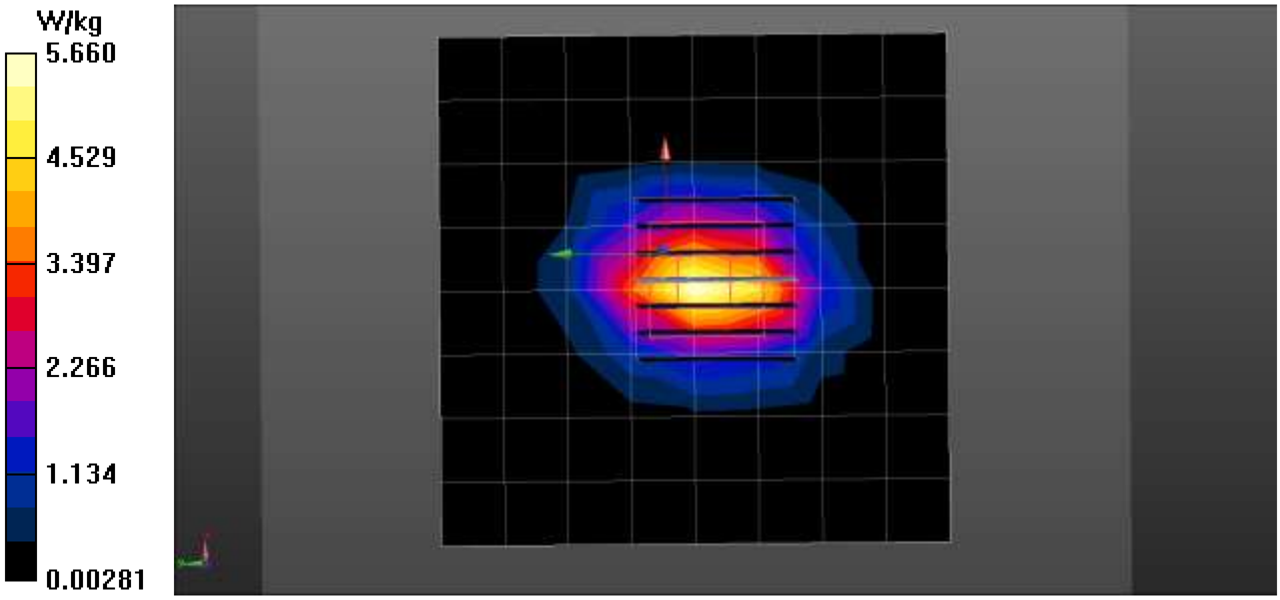
Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.948 S/m; ε_r = 52.114; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.69, 7.69, 7.69); Calibrated: 2016-09-28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2016-09-27
- Phantom: Triple Flat Phantom
- Measurement SW: DASY52, Version 52.8 (1);

2 450 MHz Body Verification/Area Scan (9x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 5.66 W/kg

2 450 MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.07 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 10.2 W/kg
SAR(1 g) = 5.13 W/kg; SAR(10 g) = 2.46 W/kg
Maximum value of SAR (measured) = 6.90 W/kg



■ Verification Data (2 600 MHz Head)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	18.3 ℃
Test Date:	06/29/2017

DUT: Dipole 2600 MHz D2600V2; Type: D2600V2

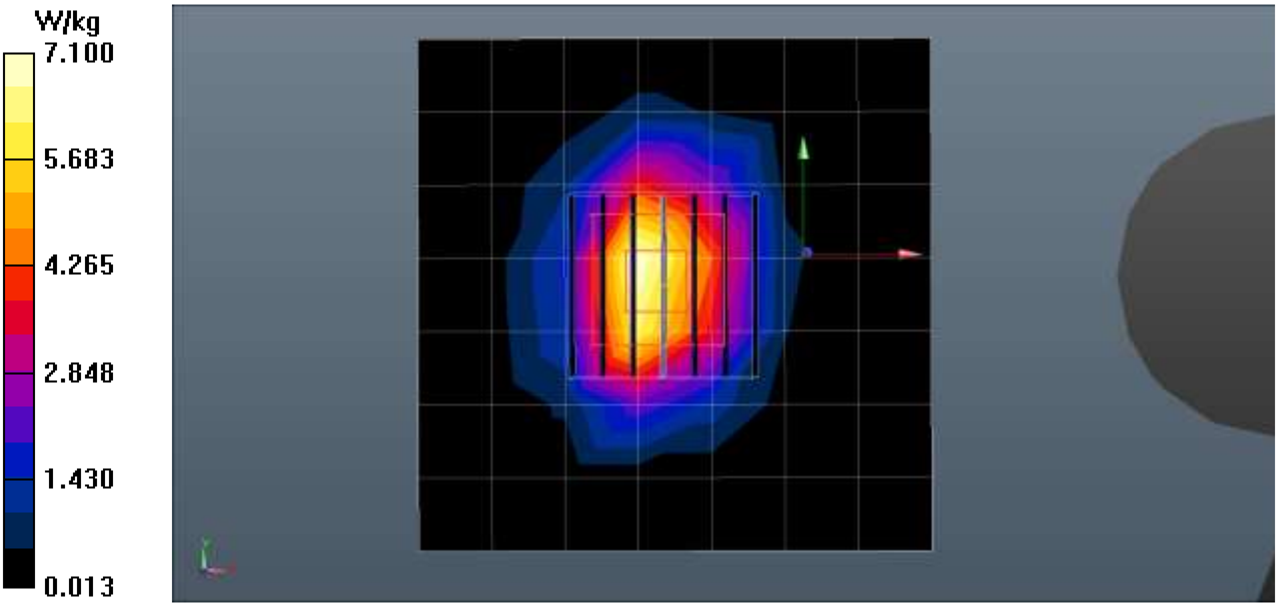
Communication System: UID 0, CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 1.999 S/m; ε_r = 38.067; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.72, 7.72, 7.72); Calibrated: 2017-05-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2017-02-22
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (1);

2 600 MHz Head Verification/Area Scan (8x8x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 7.10 W/kg

2 600 MHz Head Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.48 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 11.1 W/kg
SAR(1 g) = 5.45 W/kg; SAR(10 g) = 2.54 W/kg
Maximum value of SAR (measured) = 8.31 W/kg



Verification Data (2 600 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	100 mW (20 dBm)
Liquid Temp:	22.1 ℃
Test Date:	06/27/2017

DUT: Dipole 2600 MHz; Type: D2600V2

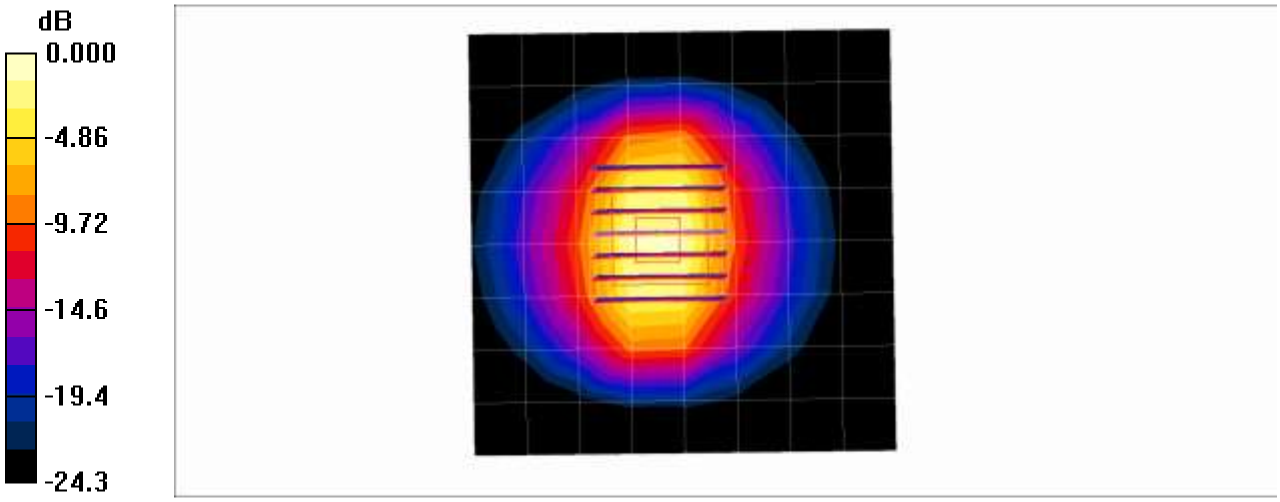
Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.16 mho/m; ε_r = 51; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(7.7, 7.7, 7.7); Calibrated: 2017-05-31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2017-05-24
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

2 600 MHz Body Verification/Area Scan (9x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 6.30 mW/g

2 600 MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 46.2 V/m; Power Drift = -0.104 dB
Peak SAR (extrapolated) = 11.7 W/kg
SAR(1 g) = 5.32 mW/g; SAR(10 g) = 2.37 mW/g
Maximum value of SAR (measured) = 8.38 mW/g



0 dB = 8.38mW/g

Attachment 3. – Probe Calibration Data

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **EX3-3968_May17**

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3968

Calibration procedure(s): QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: May 31, 2017

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02525)	Apr-18
Reference 20 dB Attenuator	SN: S5277 (20x)	07-Apr-17 (No. 217-02528)	Apr-18
Reference Probe ES3DV2	SN: 3013	31-Dec-16 (No. ES3-3013_Dec16)	Dec-17
DAE4	SN: 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	[signature]
Approved by:	Katja Pokovic	Technical Manager	[signature]

Issued: May 31, 2017

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: EX3-3968_May17 Page 1 of 38

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Probe EX3DV4

SN:3968

Manufactured: September 30, 2013
Calibrated: May 31, 2017

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3968

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m)²)[A]	0.34	0.33	0.41	± 10.1 %
DCP (mV)[B]	105.3	103.7	101.6	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√µV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	166.8	±2.7 %
		Y	0.0	0.0	1.0		167.0	
		Z	0.0	0.0	1.0		162.8	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V⁻¹	T1 ms.V⁻²	T2 ms.V⁻¹	T3 ms	T4 V⁻²	T5 V⁻¹	T6
X	38.91	285.0	34.75	14.00	1.299	4.917	0.303	0.332	1.002
Y	38.40	282.5	34.90	12.77	1.162	4.935	0.244	0.361	1.003
Z	27.87	209.3	36.27	12.33	1.412	4.946	0.00	0.285	1.004

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

EX3DV4– SN:3968 May 31, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3968

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
600	42.7	0.88	10.91	10.91	10.91	0.10	1.10	± 13.3 %
750	41.9	0.89	10.78	10.78	10.78	0.58	0.80	± 12.0 %
835	41.5	0.90	10.55	10.55	10.55	0.51	0.80	± 12.0 %
900	41.5	0.97	10.23	10.23	10.23	0.50	0.80	± 12.0 %
1450	40.5	1.20	9.14	9.14	9.14	0.39	0.80	± 12.0 %
1750	40.1	1.37	9.06	9.06	9.06	0.43	0.85	± 12.0 %
1900	40.0	1.40	8.66	8.66	8.66	0.43	0.80	± 12.0 %
2450	39.2	1.80	7.95	7.95	7.95	0.37	0.91	± 12.0 %
2600	39.0	1.96	7.72	7.72	7.72	0.42	0.93	± 12.0 %
5250	35.9	4.71	5.49	5.49	5.49	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.90	4.90	4.90	0.40	1.80	± 13.1 %
5750	35.4	5.22	5.07	5.07	5.07	0.40	1.80	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

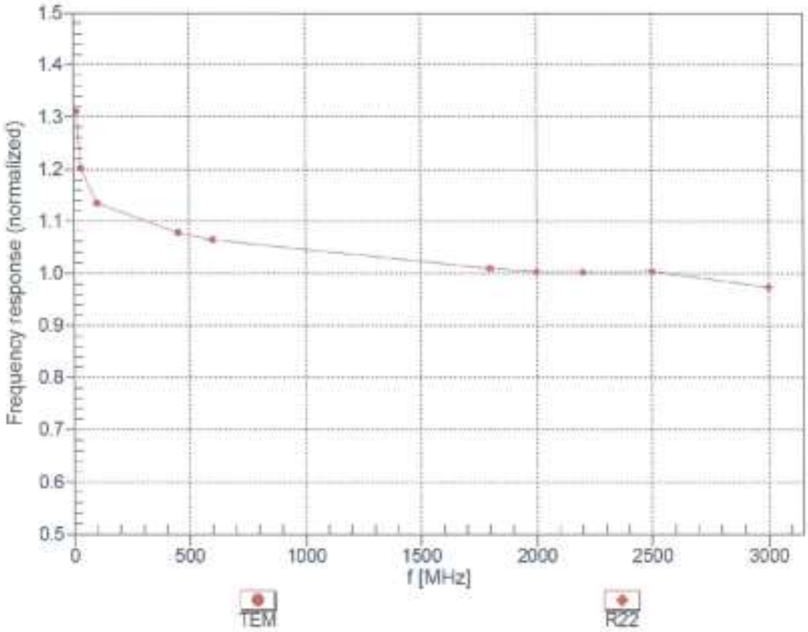
DASY/EASY - Parameters of Probe: EX3DV4 - SN:3968

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
600	56.1	0.95	10.81	10.81	10.81	0.09	1.10	± 13.3 %
750	55.5	0.96	10.57	10.57	10.57	0.46	0.80	± 12.0 %
835	55.2	0.97	10.15	10.15	10.15	0.45	0.88	± 12.0 %
1750	53.4	1.49	8.54	8.54	8.54	0.44	0.84	± 12.0 %
1900	53.3	1.52	8.19	8.19	8.19	0.40	0.80	± 12.0 %
2450	52.7	1.95	8.05	8.05	8.05	0.43	0.90	± 12.0 %
2600	52.5	2.16	7.87	7.87	7.87	0.32	0.98	± 12.0 %
5250	48.9	5.36	4.90	4.90	4.90	0.40	1.90	± 13.1 %
5600	48.5	5.77	4.18	4.18	4.18	0.45	1.90	± 13.1 %
5750	48.3	5.94	4.28	4.28	4.28	0.50	1.90	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)

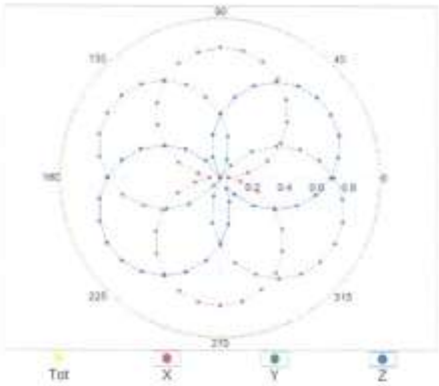


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

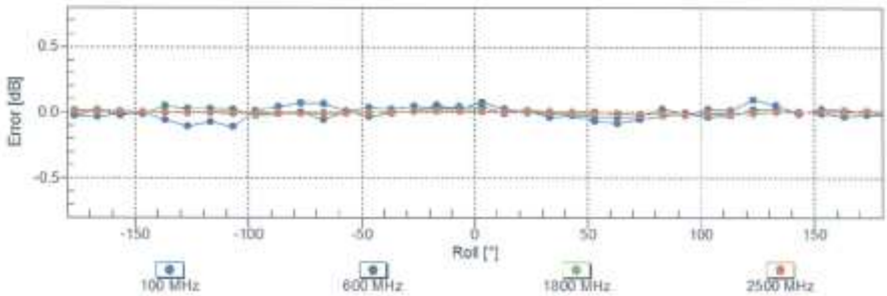
EX3DV4– SN:3968 May 31, 2017

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



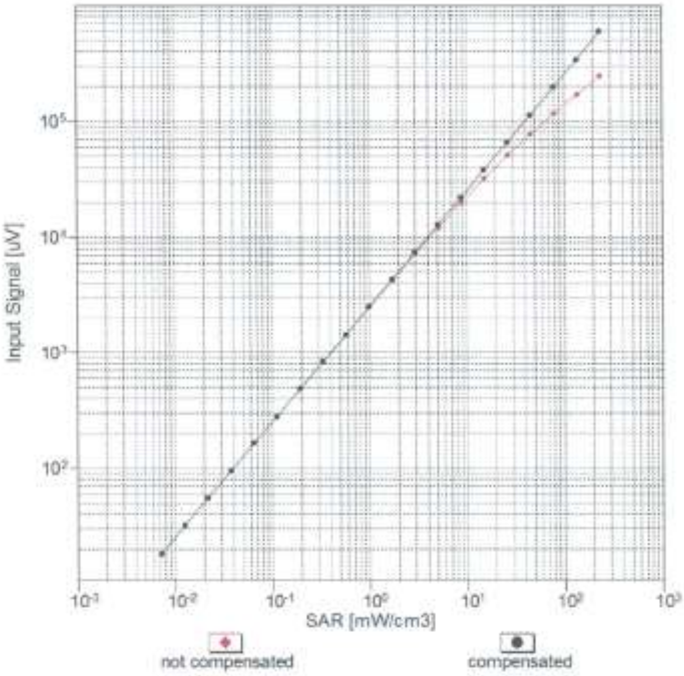
f=1800 MHz,R22

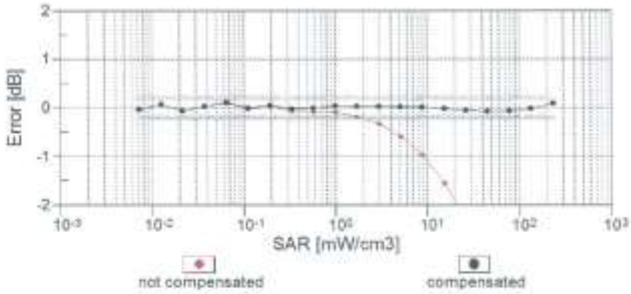


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

EX3DV4– SN:3968 May 31, 2017

Dynamic Range f(SAR$_{head}$)
(TEM cell , f_{eval}= 1900 MHz)





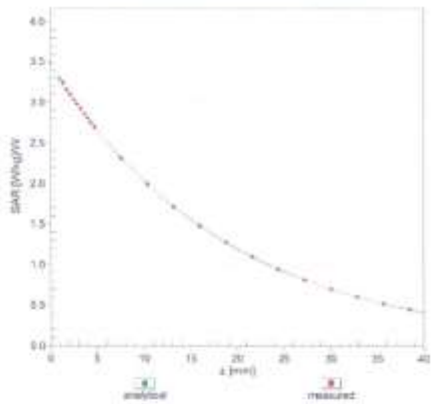
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Certificate No: EX3-3968_May17 Page 9 of 38

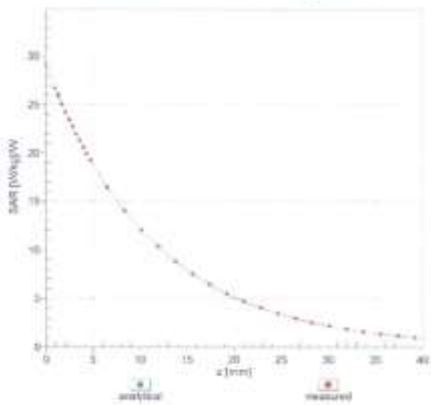
EX3DV4– SN:3968 May 31, 2017

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

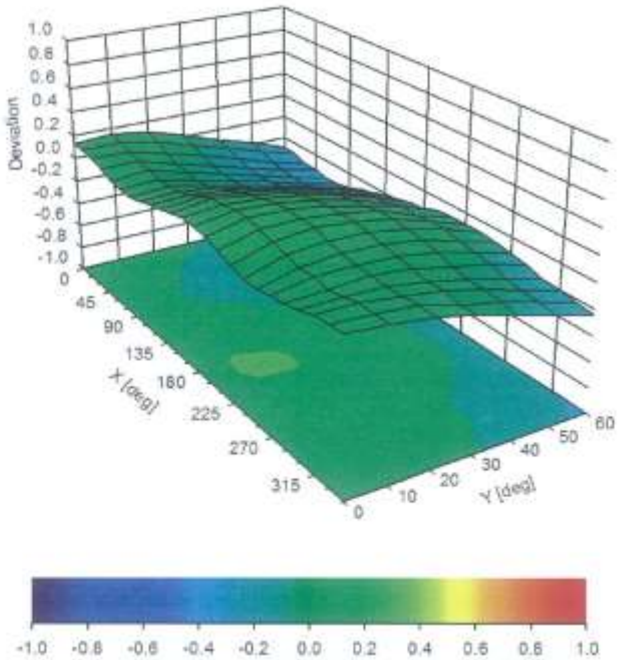


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Certificate No: EX3-3968_May17 Page 10 of 38

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3968

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	63.1
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

EX3DV4– SN:3968 May 31, 2017

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Max Unc[E] (k=2)
0	CW	X	0.00	0.00	1.00	0.00	166.8	± 2.7 %
		Y	0.00	0.00	1.00		167.0	
		Z	0.00	0.00	1.00		162.8	
10010-CAA	SAR Validation (Square, 100ms, 10ms)	X	2.67	65.27	10.31	10.00	20.0	± 9.6 %
		Y	2.64	65.46	10.40		20.0	
		Z	3.46	68.69	12.53		20.0	
10011-CAB	UMTS-FDD (WCDMA)	X	2.04	81.42	22.42	0.00	150.0	± 9.6 %
		Y	1.40	74.05	19.02		150.0	
		Z	2.07	81.87	22.38		150.0	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.29	66.65	17.30	0.41	150.0	± 9.6 %
		Y	1.23	65.47	16.42		150.0	
		Z	1.30	66.68	17.29		150.0	
10013-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.76	66.97	17.12	1.46	150.0	± 9.6 %
		Y	4.74	66.83	17.01		150.0	
		Z	4.66	67.38	17.36		150.0	
10021-DAC	GSM-FDD (TDMA, GMSK)	X	5.21	73.16	14.87	9.39	50.0	± 9.6 %
		Y	6.15	75.66	15.87		50.0	
		Z	13.17	86.61	20.51		50.0	
10023-DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	4.93	72.26	14.53	9.57	50.0	± 9.6 %
		Y	5.58	74.24	15.34		50.0	
		Z	9.65	82.17	19.03		50.0	
10024-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	4.50	73.46	13.82	6.56	60.0	± 9.6 %
		Y	6.18	77.37	15.27		60.0	
		Z	100.00	110.63	25.27		60.0	
10025-DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	5.90	76.91	27.81	12.57	50.0	± 9.6 %
		Y	3.94	66.02	22.20		50.0	
		Z	8.17	86.75	33.07		50.0	
10026-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	9.94	90.70	30.72	9.56	60.0	± 9.6 %
		Y	8.23	86.52	29.19		60.0	
		Z	9.07	90.03	31.36		60.0	
10027-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	8.90	81.45	15.73	4.80	80.0	± 9.6 %
		Y	26.42	92.49	18.83		80.0	
		Z	100.00	110.93	24.58		80.0	
10028-DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	104.11	20.79	3.55	100.0	± 9.6 %
		Y	100.00	105.45	21.29		100.0	
		Z	100.00	113.44	24.98		100.0	
10029-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	6.40	81.85	26.45	7.80	80.0	± 9.6 %
		Y	5.60	79.03	25.33		80.0	
		Z	5.92	81.05	26.87		80.0	
10030-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	3.52	71.63	12.55	5.30	70.0	± 9.6 %
		Y	4.51	74.62	13.71		70.0	
		Z	83.47	106.60	23.34		70.0	
10031-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	104.21	19.69	1.88	100.0	± 9.6 %
		Y	100.00	105.19	20.02		100.0	
		Z	100.00	116.94	25.06		100.0	

EX3DV4– SN:3968 May 31, 2017

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	116.57	23.84	1.17	100.0	± 9.6 %
		Y	100.00	115.60	23.40		100.0	
		Z	100.00	139.46	33.13		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	4.53	75.57	16.99	5.30	70.0	± 9.6 %
		Y	4.36	75.57	17.12		70.0	
		Z	4.63	75.58	16.67		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	3.55	77.24	16.84	1.88	100.0	± 9.6 %
		Y	2.72	74.13	15.70		100.0	
		Z	2.99	74.09	14.52		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	3.85	80.24	17.98	1.17	100.0	± 9.6 %
		Y	2.43	74.53	15.87		100.0	
		Z	3.13	76.10	15.07		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	5.07	77.22	17.66	5.30	70.0	± 9.6 %
		Y	4.89	77.31	17.83		70.0	
		Z	5.15	77.15	17.32		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	3.16	75.93	16.35	1.88	100.0	± 9.6 %
		Y	2.48	73.10	15.28		100.0	
		Z	2.53	72.37	13.88		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	4.08	81.32	18.49	1.17	100.0	± 9.6 %
		Y	2.50	75.14	16.23		100.0	
		Z	3.35	77.15	15.58		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	100.00	127.95	31.45	0.00	150.0	± 9.6 %
		Y	26.45	108.25	26.43		150.0	
		Z	100.00	116.70	25.69		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	3.92	70.88	12.92	7.78	50.0	± 9.6 %
		Y	4.53	72.92	13.76		50.0	
		Z	15.64	88.11	19.60		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	116.31	1.84	0.00	150.0	± 9.6 %
		Y	0.00	105.81	1.81		150.0	
		Z	0.03	60.00	41768.38		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	4.84	68.58	14.54	13.80	25.0	± 9.6 %
		Y	5.18	69.74	15.02		25.0	
		Z	6.81	73.79	17.39		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	4.93	71.14	14.34	10.79	40.0	± 9.6 %
		Y	5.27	72.36	14.86		40.0	
		Z	7.31	77.25	17.52		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	6.42	75.87	17.61	9.03	50.0	± 9.6 %
		Y	6.65	76.85	18.08		50.0	
		Z	7.13	77.78	18.49		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	4.93	77.31	24.05	6.55	100.0	± 9.6 %
		Y	4.44	75.18	23.16		100.0	
		Z	4.62	76.59	24.40		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.36	68.02	17.83	0.61	110.0	± 9.6 %
		Y	1.28	66.56	16.85		110.0	
		Z	1.38	68.08	17.88		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	135.52	34.61	1.30	110.0	± 9.6 %
		Y	37.24	120.78	31.25		110.0	
		Z	100.00	139.93	36.67		110.0	

EX3DV4– SN:3968 May 31, 2017

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	4.03	84.42	22.84	2.04	110.0	± 9.6 %
		Y	2.88	79.06	20.91		110.0	
		Z	4.10	85.58	23.75		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.60	67.19	16.81	0.49	100.0	± 9.6 %
		Y	4.58	67.01	16.66		100.0	
		Z	4.46	67.43	16.92		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.60	67.23	16.85	0.72	100.0	± 9.6 %
		Y	4.58	67.06	16.70		100.0	
		Z	4.47	67.53	17.00		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.85	67.38	16.99	0.86	100.0	± 9.6 %
		Y	4.83	67.21	16.85		100.0	
		Z	4.68	67.63	17.12		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.71	67.19	17.00	1.21	100.0	± 9.6 %
		Y	4.69	67.03	16.87		100.0	
		Z	4.56	67.43	17.15		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.72	67.14	17.09	1.46	100.0	± 9.6 %
		Y	4.69	66.98	16.96		100.0	
		Z	4.56	67.38	17.23		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	4.99	67.29	17.45	2.04	100.0	± 9.6 %
		Y	4.97	67.15	17.34		100.0	
		Z	4.83	67.60	17.63		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	5.02	67.19	17.54	2.55	100.0	± 9.6 %
		Y	5.00	67.04	17.43		100.0	
		Z	4.90	67.61	17.81		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	5.09	67.20	17.71	2.67	100.0	± 9.6 %
		Y	5.07	67.05	17.60		100.0	
		Z	4.94	67.57	17.94		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.84	66.98	17.32	1.99	100.0	± 9.6 %
		Y	4.83	66.84	17.21		100.0	
		Z	4.76	67.44	17.60		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.81	67.24	17.47	2.30	100.0	± 9.6 %
		Y	4.79	67.08	17.36		100.0	
		Z	4.72	67.65	17.75		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.87	67.38	17.72	2.83	100.0	± 9.6 %
		Y	4.85	67.21	17.60		100.0	
		Z	4.82	67.94	18.09		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.88	67.30	17.82	3.30	100.0	± 9.6 %
		Y	4.86	67.13	17.71		100.0	
		Z	4.87	68.01	18.27		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	4.92	67.37	18.05	3.82	90.0	± 9.6 %
		Y	4.89	67.17	17.93		90.0	
		Z	4.93	68.08	18.51		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	4.96	67.24	18.19	4.15	90.0	± 9.6 %
		Y	4.93	67.04	18.07		90.0	
		Z	4.98	68.00	18.69		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	4.99	67.33	18.28	4.30	90.0	± 9.6 %
		Y	4.96	67.12	18.17		90.0	
		Z	5.03	68.14	18.82		90.0	

Certificate No: EX3-3968_May17 Page 14 of 38

EX3DV4– SN:3968 May 31, 2017

10081-CAB	CDMA2000 (1xRTT, RC3)	X	68.67	125.16	30.28	0.00	150.0	± 9.6 %
		Y	1.87	77.92	17.29		150.0	
		Z	28.98	104.13	22.27		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	0.89	60.00	4.78	4.77	80.0	± 9.6 %
		Y	0.66	57.32	2.78		80.0	
		Z	0.87	60.00	5.11		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	4.44	73.28	13.76	6.56	60.0	± 9.6 %
		Y	6.04	77.10	15.19		60.0	
		Z	100.00	110.63	25.29		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	2.55	74.94	19.44	0.00	150.0	± 9.6 %
		Y	2.23	72.22	18.02		150.0	
		Z	2.84	77.31	19.86		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	2.51	74.99	19.48	0.00	150.0	± 9.6 %
		Y	2.18	72.20	18.01		150.0	
		Z	2.80	77.36	19.91		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	9.97	90.71	30.71	9.56	60.0	± 9.6 %
		Y	8.26	86.55	29.18		60.0	
		Z	9.10	90.06	31.36		60.0	
10100-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.76	74.65	19.15	0.00	150.0	± 9.6 %
		Y	3.44	72.90	18.25		150.0	
		Z	3.41	73.56	18.91		150.0	
10101-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.40	69.35	17.20	0.00	150.0	± 9.6 %
		Y	3.30	68.65	16.74		150.0	
		Z	3.24	69.00	17.13		150.0	
10102-CAC	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.49	69.24	17.24	0.00	150.0	± 9.6 %
		Y	3.41	68.62	16.82		150.0	
		Z	3.33	68.95	17.17		150.0	
10103-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.09	74.44	19.37	3.98	65.0	± 9.6 %
		Y	5.86	73.97	19.23		65.0	
		Z	6.05	75.35	20.19		65.0	
10104-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	6.32	73.41	19.75	3.98	65.0	± 9.6 %
		Y	6.08	72.80	19.51		65.0	
		Z	6.09	73.52	20.07		65.0	
10105-CAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	5.87	71.91	19.40	3.98	65.0	± 9.6 %
		Y	5.72	71.55	19.26		65.0	
		Z	5.72	72.17	19.76		65.0	
10108-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	3.27	74.13	19.15	0.00	150.0	± 9.6 %
		Y	2.99	72.32	18.18		150.0	
		Z	2.99	73.55	19.04		150.0	
10109-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	3.09	69.75	17.36	0.00	150.0	± 9.6 %
		Y	2.98	68.90	16.81		150.0	
		Z	2.94	69.71	17.28		150.0	
10110-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.75	74.22	19.20	0.00	150.0	± 9.6 %
		Y	2.46	71.96	18.00		150.0	
		Z	2.59	74.44	19.15		150.0	
10111-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	3.10	72.77	18.57	0.00	150.0	± 9.6 %
		Y	2.90	71.37	17.76		150.0	
		Z	3.06	73.60	18.47		150.0	

Certificate No: EX3-3968_May17 Page 15 of 38

EX3DV4– SN:3968 May 31, 2017

10112-CAD	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.21	69.66	17.35	0.00	150.0	± 9.6 %
		Y	3.10	68.88	16.84		150.0	
		Z	3.06	69.73	17.30		150.0	
10113-CAD	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	3.24	72.71	18.58	0.00	150.0	± 9.6 %
		Y	3.05	71.45	17.84		150.0	
		Z	3.18	73.49	18.44		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.10	67.80	16.95	0.00	150.0	± 9.6 %
		Y	5.07	67.60	16.78		150.0	
		Z	4.95	67.75	17.03		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.34	67.80	16.94	0.00	150.0	± 9.6 %
		Y	5.31	67.63	16.79		150.0	
		Z	5.18	67.81	17.03		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.19	68.00	16.97	0.00	150.0	± 9.6 %
		Y	5.16	67.80	16.80		150.0	
		Z	5.02	67.94	17.05		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.08	67.72	16.93	0.00	150.0	± 9.6 %
		Y	5.05	67.54	16.76		150.0	
		Z	4.92	67.62	16.99		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.41	67.97	17.03	0.00	150.0	± 9.6 %
		Y	5.38	67.80	16.87		150.0	
		Z	5.24	67.98	17.12		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.18	67.97	16.97	0.00	150.0	± 9.6 %
		Y	5.15	67.78	16.80		150.0	
		Z	5.03	67.97	17.07		150.0	
10140-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.52	69.25	17.15	0.00	150.0	± 9.6 %
		Y	3.43	68.61	16.72		150.0	
		Z	3.35	69.02	17.10		150.0	
10141-CAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.64	69.34	17.30	0.00	150.0	± 9.6 %
		Y	3.56	68.75	16.90		150.0	
		Z	3.48	69.20	17.28		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.87	76.71	19.74	0.00	150.0	± 9.6 %
		Y	2.39	73.30	18.07		150.0	
		Z	2.84	77.56	19.40		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	3.59	76.68	19.32	0.00	150.0	± 9.6 %
		Y	3.09	73.98	18.00		150.0	
		Z	3.47	76.63	18.17		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.58	70.43	16.00	0.00	150.0	± 9.6 %
		Y	2.34	68.71	15.02		150.0	
		Z	2.11	68.46	13.98		150.0	
10145-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	1.80	71.43	14.14	0.00	150.0	± 9.6 %
		Y	1.22	66.46	11.71		150.0	
		Z	0.59	60.37	6.54		150.0	
10146-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	1.30	63.14	9.02	0.00	150.0	± 9.6 %
		Y	1.23	62.47	8.58		150.0	
		Z	0.74	60.00	5.47		150.0	
10147-CAD	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	1.47	64.42	9.80	0.00	150.0	± 9.6 %
		Y	1.35	63.41	9.19		150.0	
		Z	0.75	60.00	5.53		150.0	

Certificate No: EX3-3968_May17 Page 16 of 38

EX3DV4– SN:3968 May 31, 2017

10149-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	3.10	69.85	17.43	0.00	150.0	± 9.6 %
		Y	2.99	68.99	16.87		150.0	
		Z	2.95	69.81	17.34		150.0	
10150-CAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.22	69.74	17.41	0.00	150.0	± 9.6 %
		Y	3.12	68.97	16.90		150.0	
		Z	3.07	69.82	17.36		150.0	
10151-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.61	77.26	20.48	3.98	65.0	± 9.6 %
		Y	6.23	76.49	20.24		65.0	
		Z	6.65	78.63	21.37		65.0	
10152-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	5.81	73.18	19.23	3.98	65.0	± 9.6 %
		Y	5.56	72.52	18.96		65.0	
		Z	5.58	73.31	19.36		65.0	
10153-CAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	6.26	74.38	20.12	3.98	65.0	± 9.6 %
		Y	6.00	73.76	19.89		65.0	
		Z	6.04	74.64	20.30		65.0	
10154-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.88	75.05	19.63	0.00	150.0	± 9.6 %
		Y	2.56	72.71	18.40		150.0	
		Z	2.69	75.11	19.49		150.0	
10155-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	3.10	72.81	18.60	0.00	150.0	± 9.6 %
		Y	2.90	71.40	17.79		150.0	
		Z	3.08	73.70	18.53		150.0	
10156-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	3.13	79.40	20.43	0.00	150.0	± 9.6 %
		Y	2.38	74.57	18.24		150.0	
		Z	3.10	79.69	19.48		150.0	
10157-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.76	73.09	16.84	0.00	150.0	± 9.6 %
		Y	2.33	70.29	15.42		150.0	
		Z	1.97	69.03	13.65		150.0	
10158-CAD	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	3.26	72.85	18.66	0.00	150.0	± 9.6 %
		Y	3.07	71.58	17.92		150.0	
		Z	3.21	73.68	18.54		150.0	
10159-CAD	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	3.01	74.12	17.33	0.00	150.0	± 9.6 %
		Y	2.51	71.14	15.85		150.0	
		Z	2.07	69.37	13.82		150.0	
10160-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	3.13	72.38	18.51	0.00	150.0	± 9.6 %
		Y	2.93	71.01	17.72		150.0	
		Z	2.96	72.46	18.52		150.0	
10161-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.13	69.90	17.42	0.00	150.0	± 9.6 %
		Y	3.02	69.07	16.87		150.0	
		Z	2.98	70.05	17.29		150.0	
10162-CAC	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.25	70.07	17.52	0.00	150.0	± 9.6 %
		Y	3.14	69.26	16.99		150.0	
		Z	3.10	70.32	17.43		150.0	
10166-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.33	69.90	19.53	3.01	150.0	± 9.6 %
		Y	3.29	69.40	19.18		150.0	
		Z	2.92	68.78	19.45		150.0	
10167-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	4.00	72.90	20.01	3.01	150.0	± 9.6 %
		Y	3.89	72.10	19.55		150.0	
		Z	3.29	71.42	19.88		150.0	

Certificate No: EX3-3968_May17 Page 17 of 38

10168-CAD	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	4.63	76.13	21.82	3.01	150.0	± 9.6 %
		Y	4.52	75.41	21.43		150.0	
		Z	3.72	74.32	21.63		150.0	
10169-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.65	68.33	18.90	3.01	150.0	± 9.6 %
		Y	2.63	67.83	18.51		150.0	
		Z	2.39	66.76	18.51		150.0	
10170-CAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	3.56	74.73	21.63	3.01	150.0	± 9.6 %
		Y	3.49	73.90	21.15		150.0	
		Z	2.83	71.38	20.67		150.0	
10171-AAC	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	2.85	69.97	18.42	3.01	150.0	± 9.6 %
		Y	2.78	69.08	17.86		150.0	
		Z	2.41	67.99	18.00		150.0	
10172-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	5.00	80.18	23.19	6.02	65.0	± 9.6 %
		Y	4.48	78.21	22.53		65.0	
		Z	4.20	78.93	23.75		65.0	
10173-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	7.13	83.28	22.36	6.02	65.0	± 9.6 %
		Y	6.38	81.79	22.03		65.0	
		Z	5.93	83.17	23.46		65.0	
10174-CAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	5.18	77.63	19.84	6.02	65.0	± 9.6 %
		Y	3.87	73.57	18.53		65.0	
		Z	4.51	78.07	21.06		65.0	
10175-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.61	68.01	18.63	3.01	150.0	± 9.6 %
		Y	2.60	67.49	18.23		150.0	
		Z	2.37	66.53	18.29		150.0	
10176-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	3.56	74.76	21.64	3.01	150.0	± 9.6 %
		Y	3.49	73.93	21.16		150.0	
		Z	2.83	71.40	20.68		150.0	
10177-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.63	68.16	18.72	3.01	150.0	± 9.6 %
		Y	2.62	67.64	18.33		150.0	
		Z	2.38	66.62	18.35		150.0	
10178-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	3.53	74.54	21.53	3.01	150.0	± 9.6 %
		Y	3.46	73.70	21.03		150.0	
		Z	2.82	71.31	20.62		150.0	
10179-CAD	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	3.17	72.23	19.90	3.01	150.0	± 9.6 %
		Y	3.09	71.29	19.33		150.0	
		Z	2.60	69.67	19.26		150.0	
10180-CAD	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	2.84	69.91	18.37	3.01	150.0	± 9.6 %
		Y	2.78	69.02	17.81		150.0	
		Z	2.41	67.97	17.96		150.0	
10181-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.63	68.14	18.72	3.01	150.0	± 9.6 %
		Y	2.61	67.62	18.32		150.0	
		Z	2.38	66.61	18.35		150.0	
10182-CAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	3.52	74.52	21.51	3.01	150.0	± 9.6 %
		Y	3.45	73.67	21.01		150.0	
		Z	2.82	71.28	20.60		150.0	
10183-AAB	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	2.84	69.89	18.36	3.01	150.0	± 9.6 %
		Y	2.77	68.99	17.80		150.0	
		Z	2.41	67.95	17.97		150.0	

EX3DV4– SN:3968 May 31, 2017

10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.64	68.18	18.74	3.01	150.0	± 9.6 %
		Y	2.62	67.67	18.35		150.0	
		Z	2.39	66.64	18.36		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	3.54	74.60	21.56	3.01	150.0	± 9.6 %
		Y	3.47	73.75	21.06		150.0	
		Z	2.83	71.35	20.64		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	2.85	69.96	18.40	3.01	150.0	± 9.6 %
		Y	2.78	69.06	17.83		150.0	
		Z	2.42	68.00	18.00		150.0	
10187-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.65	68.25	18.82	3.01	150.0	± 9.6 %
		Y	2.63	67.74	18.42		150.0	
		Z	2.40	66.72	18.45		150.0	
10188-CAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	3.66	75.34	21.98	3.01	150.0	± 9.6 %
		Y	3.60	74.54	21.51		150.0	
		Z	2.89	71.81	20.95		150.0	
10189-AAD	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	2.92	70.41	18.71	3.01	150.0	± 9.6 %
		Y	2.85	69.50	18.14		150.0	
		Z	2.45	68.32	18.25		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.52	67.52	16.76	0.00	150.0	± 9.6 %
		Y	4.48	67.29	16.56		150.0	
		Z	4.37	67.78	16.83		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.67	67.77	16.88	0.00	150.0	± 9.6 %
		Y	4.64	67.54	16.68		150.0	
		Z	4.49	67.92	16.94		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.71	67.79	16.89	0.00	150.0	± 9.6 %
		Y	4.67	67.56	16.69		150.0	
		Z	4.51	67.88	16.93		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.51	67.54	16.76	0.00	150.0	± 9.6 %
		Y	4.48	67.31	16.56		150.0	
		Z	4.35	67.73	16.79		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.68	67.78	16.88	0.00	150.0	± 9.6 %
		Y	4.65	67.55	16.69		150.0	
		Z	4.49	67.91	16.94		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.70	67.79	16.89	0.00	150.0	± 9.6 %
		Y	4.67	67.57	16.70		150.0	
		Z	4.50	67.87	16.93		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.47	67.60	16.75	0.00	150.0	± 9.6 %
		Y	4.43	67.36	16.54		150.0	
		Z	4.31	67.83	16.81		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.67	67.74	16.87	0.00	150.0	± 9.6 %
		Y	4.64	67.51	16.67		150.0	
		Z	4.48	67.86	16.92		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.71	67.71	16.87	0.00	150.0	± 9.6 %
		Y	4.68	67.49	16.68		150.0	
		Z	4.52	67.82	16.91		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.05	67.71	16.91	0.00	150.0	± 9.6 %
		Y	5.03	67.52	16.75		150.0	
		Z	4.90	67.64	16.98		150.0	

Certificate No: EX3-3968_May17 Page 19 of 38

EX3DV4– SN:3968 May 31, 2017

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.32	67.86	16.99	0.00	150.0	± 9.6 %
		Y	5.30	67.68	16.83		150.0	
		Z	5.10	67.66	16.98		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.10	67.84	16.91	0.00	150.0	± 9.6 %
		Y	5.07	67.64	16.74		150.0	
		Z	4.95	67.80	16.99		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.93	68.25	16.51	0.00	150.0	± 9.6 %
		Y	2.84	67.58	16.02		150.0	
		Z	2.78	68.41	15.93		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	7.54	84.28	22.80	6.02	65.0	± 9.6 %
		Y	6.75	82.79	22.48		65.0	
		Z	6.25	84.16	23.89		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	6.92	81.86	21.35	6.02	65.0	± 9.6 %
		Y	6.37	80.91	21.22		65.0	
		Z	5.81	82.09	22.53		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	6.62	85.29	25.06	6.02	65.0	± 9.6 %
		Y	5.62	82.48	24.18		65.0	
		Z	5.19	83.13	25.38		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	7.18	83.37	22.40	6.02	65.0	± 9.6 %
		Y	6.43	81.89	22.07		65.0	
		Z	5.96	83.24	23.49		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	6.58	81.03	20.98	6.02	65.0	± 9.6 %
		Y	6.06	80.07	20.84		65.0	
		Z	5.52	81.20	22.15		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	6.33	84.43	24.68	6.02	65.0	± 9.6 %
		Y	5.39	81.67	23.80		65.0	
		Z	5.00	82.33	25.01		65.0	
10232-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	7.17	83.35	22.40	6.02	65.0	± 9.6 %
		Y	6.42	81.87	22.07		65.0	
		Z	5.95	83.23	23.49		65.0	
10233-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	6.56	81.01	20.98	6.02	65.0	± 9.6 %
		Y	6.04	80.05	20.84		65.0	
		Z	5.51	81.18	22.15		65.0	
10234-CAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	6.09	83.61	24.26	6.02	65.0	± 9.6 %
		Y	5.21	80.93	23.40		65.0	
		Z	4.86	81.70	24.66		65.0	
10235-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	7.17	83.38	22.40	6.02	65.0	± 9.6 %
		Y	6.42	81.89	22.07		65.0	
		Z	5.96	83.26	23.50		65.0	
10236-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	6.61	81.10	21.01	6.02	65.0	± 9.6 %
		Y	6.09	80.13	20.86		65.0	
		Z	5.55	81.29	22.18		65.0	
10237-CAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	6.34	84.47	24.69	6.02	65.0	± 9.6 %
		Y	5.39	81.70	23.81		65.0	
		Z	5.00	82.36	25.03		65.0	
10238-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	7.15	83.33	22.39	6.02	65.0	± 9.6 %
		Y	6.40	81.85	22.06		65.0	
		Z	5.94	83.21	23.48		65.0	

Certificate No: EX3-3968_May17 Page 20 of 38

EX3DV4– SN:3968 May 31, 2017

10239-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	6.55	80.98	20.97	6.02	65.0	± 9.6 %
		Y	6.03	80.02	20.83		65.0	
		Z	5.49	81.16	22.14		65.0	
10240-CAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	6.32	84.44	24.68	6.02	65.0	± 9.6 %
		Y	5.38	81.67	23.80		65.0	
		Z	4.99	82.36	25.02		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	7.54	79.78	23.89	6.98	65.0	± 9.6 %
		Y	7.12	78.68	23.50		65.0	
		Z	7.29	81.76	25.37		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	6.65	77.35	22.83	6.98	65.0	± 9.6 %
		Y	6.39	76.59	22.56		65.0	
		Z	6.46	79.39	24.36		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	5.60	74.76	22.64	6.98	65.0	± 9.6 %
		Y	5.39	73.91	22.28		65.0	
		Z	5.48	76.41	24.04		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	3.97	68.56	13.68	3.98	65.0	± 9.6 %
		Y	3.88	68.47	13.69		65.0	
		Z	2.96	65.44	11.23		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.92	68.19	13.46	3.98	65.0	± 9.6 %
		Y	3.83	68.09	13.47		65.0	
		Z	2.93	65.12	11.02		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	4.09	72.00	15.70	3.98	65.0	± 9.6 %
		Y	3.87	71.55	15.57		65.0	
		Z	3.03	68.36	13.27		65.0	
10247-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	4.48	70.89	16.01	3.98	65.0	± 9.6 %
		Y	4.29	70.48	15.86		65.0	
		Z	3.71	68.56	14.08		65.0	
10248-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	4.46	70.46	15.82	3.98	65.0	± 9.6 %
		Y	4.28	70.04	15.66		65.0	
		Z	3.64	67.99	13.80		65.0	
10249-CAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	5.68	77.13	18.91	3.98	65.0	± 9.6 %
		Y	5.27	76.33	18.67		65.0	
		Z	4.90	75.49	17.78		65.0	
10250-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	5.88	75.29	19.89	3.98	65.0	± 9.6 %
		Y	5.60	74.67	19.68		65.0	
		Z	5.60	75.21	19.60		65.0	
10251-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	5.51	73.06	18.59	3.98	65.0	± 9.6 %
		Y	5.25	72.42	18.34		65.0	
		Z	5.09	72.51	18.03		65.0	
10252-CAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.68	79.38	21.06	3.98	65.0	± 9.6 %
		Y	6.19	78.37	20.75		65.0	
		Z	6.73	80.63	21.61		65.0	
10253-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	5.72	72.77	18.98	3.98	65.0	± 9.6 %
		Y	5.48	72.14	18.73		65.0	
		Z	5.49	72.91	18.99		65.0	
10254-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	6.11	73.81	19.75	3.98	65.0	± 9.6 %
		Y	5.86	73.21	19.52		65.0	
		Z	5.86	73.96	19.75		65.0	

Certificate No: EX3-3968_May17 Page 21 of 38

EX3DV4– SN:3968 May 31, 2017

10255-CAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.37	76.83	20.48	3.98	65.0	± 9.6 %
		Y	6.01	76.03	20.21		65.0	
		Z	6.39	78.07	21.20		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	2.99	64.96	10.83	3.98	65.0	± 9.6 %
		Y	2.92	64.89	10.83		65.0	
		Z	2.22	62.40	8.44		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	2.97	64.63	10.57	3.98	65.0	± 9.6 %
		Y	2.90	64.54	10.57		65.0	
		Z	2.21	62.15	8.20		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	2.91	67.08	12.50	3.98	65.0	± 9.6 %
		Y	2.79	66.85	12.43		65.0	
		Z	2.13	63.74	9.80		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	5.01	72.58	17.44	3.98	65.0	± 9.6 %
		Y	4.79	72.08	17.26		65.0	
		Z	4.39	71.02	16.07		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	5.04	72.34	17.34	3.98	65.0	± 9.6 %
		Y	4.82	71.86	17.17		65.0	
		Z	4.39	70.72	15.92		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	5.86	77.47	19.56	3.98	65.0	± 9.6 %
		Y	5.44	76.58	19.28		65.0	
		Z	5.45	77.05	19.07		65.0	
10262-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	5.86	75.21	19.83	3.98	65.0	± 9.6 %
		Y	5.58	74.59	19.62		65.0	
		Z	5.57	75.10	19.53		65.0	
10263-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	5.50	73.03	18.58	3.98	65.0	± 9.6 %
		Y	5.24	72.40	18.33		65.0	
		Z	5.08	72.49	18.02		65.0	
10264-CAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	6.61	79.16	20.96	3.98	65.0	± 9.6 %
		Y	6.12	78.16	20.64		65.0	
		Z	6.64	80.39	21.49		65.0	
10265-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	5.81	73.19	19.23	3.98	65.0	± 9.6 %
		Y	5.56	72.52	18.97		65.0	
		Z	5.58	73.32	19.37		65.0	
10266-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	6.25	74.36	20.11	3.98	65.0	± 9.6 %
		Y	5.99	73.74	19.87		65.0	
		Z	6.03	74.63	20.29		65.0	
10267-CAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.59	77.22	20.46	3.98	65.0	± 9.6 %
		Y	6.22	76.45	20.22		65.0	
		Z	6.64	78.58	21.35		65.0	
10268-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	6.49	73.39	19.85	3.98	65.0	± 9.6 %
		Y	6.26	72.83	19.63		65.0	
		Z	6.27	73.63	20.18		65.0	
10269-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	6.49	73.06	19.76	3.98	65.0	± 9.6 %
		Y	6.26	72.51	19.54		65.0	
		Z	6.29	73.33	20.07		65.0	
10270-CAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.52	75.03	19.84	3.98	65.0	± 9.6 %
		Y	6.26	74.48	19.66		65.0	
		Z	6.50	76.04	20.64		65.0	

Certificate No: EX3-3968_May17 Page 22 of 38

EX3DV4– SN:3968 May 31, 2017

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.83	69.40	16.84	0.00	150.0	± 9.6 %
		Y	2.72	68.44	16.21		150.0	
		Z	2.77	69.99	16.52		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	2.37	76.27	19.94	0.00	150.0	± 9.6 %
		Y	1.96	72.56	18.08		150.0	
		Z	2.42	77.27	20.03		150.0	
10277-CAA	PHS (QPSK)	X	2.52	61.59	7.17	9.03	50.0	± 9.6 %
		Y	2.39	61.33	6.95		50.0	
		Z	2.48	61.77	7.29		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	3.57	65.95	11.54	9.03	50.0	± 9.6 %
		Y	3.51	66.04	11.58		50.0	
		Z	3.35	64.91	10.65		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	3.64	66.13	11.67	9.03	50.0	± 9.6 %
		Y	3.57	66.21	11.72		50.0	
		Z	3.38	64.97	10.72		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	28.93	109.20	26.52	0.00	150.0	± 9.6 %
		Y	3.08	79.96	17.95		150.0	
		Z	2.21	75.33	14.40		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	37.67	117.33	28.53	0.00	150.0	± 9.6 %
		Y	1.72	76.79	16.85		150.0	
		Z	12.13	95.30	20.16		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	100.00	137.32	34.35	0.00	150.0	± 9.6 %
		Y	100.00	132.22	32.19		150.0	
		Z	100.00	124.89	28.34		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	100.00	143.15	37.02	0.00	150.0	± 9.6 %
		Y	100.00	137.89	34.78		150.0	
		Z	100.00	132.56	31.71		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	7.26	76.93	18.86	9.03	50.0	± 9.6 %
		Y	7.41	77.59	19.20		50.0	
		Z	12.74	84.07	20.73		50.0	
10297-AAB	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.30	74.32	19.25	0.00	150.0	± 9.6 %
		Y	3.02	72.49	18.28		150.0	
		Z	3.01	73.73	19.14		150.0	
10298-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	3.48	80.92	19.41	0.00	150.0	± 9.6 %
		Y	2.06	73.13	16.18		150.0	
		Z	1.48	69.53	13.10		150.0	
10299-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	2.32	69.41	13.38	0.00	150.0	± 9.6 %
		Y	2.01	67.41	12.36		150.0	
		Z	1.09	62.15	8.23		150.0	
10300-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	1.48	63.38	9.67	0.00	150.0	± 9.6 %
		Y	1.43	62.86	9.30		150.0	
		Z	0.87	59.93	6.20		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	4.58	66.01	17.79	4.17	50.0	± 9.6 %
		Y	4.57	65.86	17.62		50.0	
		Z	4.64	67.36	18.12		50.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	5.06	66.60	18.47	4.96	50.0	± 9.6 %
		Y	5.01	66.28	18.21		50.0	
		Z	5.06	67.60	18.66		50.0	

Certificate No: EX3-3968_May17 Page 23 of 38

EX3DV4– SN:3968 May 31, 2017

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	4.83	66.30	18.31	4.96	50.0	± 9.6 %
		Y	4.78	65.96	18.04		50.0	
		Z	4.88	67.53	18.55		50.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	4.65	66.26	17.89	4.17	50.0	± 9.6 %
		Y	4.60	65.95	17.63		50.0	
		Z	4.67	67.39	18.08		50.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	4.64	69.67	20.36	6.02	35.0	± 9.6 %
		Y	4.49	68.76	19.76		35.0	
		Z	5.52	73.70	21.11		35.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	4.74	67.70	19.59	6.02	35.0	± 9.6 %
		Y	4.65	67.17	19.19		35.0	
		Z	5.13	70.44	20.25		35.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	4.67	67.99	19.62	6.02	35.0	± 9.6 %
		Y	4.57	67.39	19.18		35.0	
		Z	5.10	70.79	20.28		35.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	4.67	68.31	19.82	6.02	35.0	± 9.6 %
		Y	4.56	67.65	19.36		35.0	
		Z	5.15	71.28	20.56		35.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	4.77	67.81	19.69	6.02	35.0	± 9.6 %
		Y	4.68	67.26	19.28		35.0	
		Z	5.12	70.46	20.33		35.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	4.71	67.86	19.62	6.02	35.0	± 9.6 %
		Y	4.62	67.30	19.21		35.0	
		Z	5.14	70.74	20.36		35.0	
10311-AAB	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.69	73.06	18.59	0.00	150.0	± 9.6 %
		Y	3.41	71.48	17.76		150.0	
		Z	3.35	72.16	18.40		150.0	
10313-AAA	iDEN 1:3	X	3.19	69.59	14.03	6.99	70.0	± 9.6 %
		Y	3.06	69.62	14.17		70.0	
		Z	3.95	73.55	16.44		70.0	
10314-AAA	iDEN 1:6	X	4.34	74.73	18.66	10.00	30.0	± 9.6 %
		Y	4.44	75.75	19.25		30.0	
		Z	5.90	80.62	21.70		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.21	67.12	17.72	0.17	150.0	± 9.6 %
		Y	1.16	65.82	16.72		150.0	
		Z	1.23	67.09	17.63		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.51	67.28	16.67	0.17	150.0	± 9.6 %
		Y	4.49	67.07	16.49		150.0	
		Z	4.36	67.48	16.75		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.51	67.28	16.67	0.17	150.0	± 9.6 %
		Y	4.49	67.07	16.49		150.0	
		Z	4.36	67.48	16.75		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	4.64	67.79	16.86	0.00	150.0	± 9.6 %
		Y	4.60	67.54	16.65		150.0	
		Z	4.41	67.81	16.87		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.28	67.49	16.76	0.00	150.0	± 9.6 %
		Y	5.25	67.30	16.59		150.0	
		Z	5.12	67.47	16.84		150.0	

Certificate No: EX3-3968_May17 Page 24 of 38

EX3DV4– SN:3968 May 31, 2017

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.60	67.98	16.88	0.00	150.0	± 9.6 %
		Y	5.58	67.81	16.73		150.0	
		Z	5.46	67.90	16.96		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	28.93	109.20	26.52	0.00	115.0	± 9.6 %
		Y	3.08	79.96	17.95		115.0	
		Z	2.21	75.33	14.40		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	28.93	109.20	26.52	0.00	115.0	± 9.6 %
		Y	3.08	79.96	17.95		115.0	
		Z	2.21	75.33	14.40		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	100.00	125.52	31.37	0.00	100.0	± 9.6 %
		Y	100.00	124.20	30.84		100.0	
		Z	100.00	128.01	31.68		100.0	
10410-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.07	80.58	17.68	3.23	80.0	± 9.6 %
		Y	4.32	79.23	17.48		80.0	
		Z	10.97	94.77	23.32		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.12	66.35	17.40	0.00	150.0	± 9.6 %
		Y	1.08	65.14	16.40		150.0	
		Z	1.14	66.31	17.26		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.51	67.52	16.83	0.00	150.0	± 9.6 %
		Y	4.48	67.29	16.63		150.0	
		Z	4.35	67.67	16.87		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.51	67.52	16.83	0.00	150.0	± 9.6 %
		Y	4.48	67.29	16.63		150.0	
		Z	4.35	67.67	16.87		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule)	X	4.52	67.76	16.90	0.00	150.0	± 9.6 %
		Y	4.48	67.51	16.69		150.0	
		Z	4.35	67.95	16.98		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule)	X	4.53	67.67	16.87	0.00	150.0	± 9.6 %
		Y	4.50	67.43	16.67		150.0	
		Z	4.36	67.85	16.94		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.63	67.60	16.85	0.00	150.0	± 9.6 %
		Y	4.60	67.38	16.66		150.0	
		Z	4.45	67.76	16.92		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	4.77	67.88	16.94	0.00	150.0	± 9.6 %
		Y	4.74	67.65	16.75		150.0	
		Z	4.56	67.99	16.99		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	4.70	67.85	16.94	0.00	150.0	± 9.6 %
		Y	4.67	67.62	16.74		150.0	
		Z	4.50	67.93	16.97		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.29	67.89	16.98	0.00	150.0	± 9.6 %
		Y	5.27	67.71	16.82		150.0	
		Z	5.11	67.80	17.03		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.30	67.95	17.01	0.00	150.0	± 9.6 %
		Y	5.28	67.77	16.85		150.0	
		Z	5.16	68.01	17.13		150.0	

Certificate No: EX3-3968_May17 Page 25 of 38

EX3DV4– SN:3968 May 31, 2017

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.29	67.81	16.94	0.00	150.0	± 9.6 %
		Y	5.26	67.63	16.77		150.0	
		Z	5.11	67.74	17.00		150.0	
10430-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	5.05	75.77	20.50	0.00	150.0	± 9.6 %
		Y	5.01	75.52	20.30		150.0	
		Z	5.26	77.59	20.50		150.0	
10431-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.21	68.46	16.96	0.00	150.0	± 9.6 %
		Y	4.15	68.11	16.69		150.0	
		Z	3.98	68.69	16.84		150.0	
10432-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.49	68.06	16.95	0.00	150.0	± 9.6 %
		Y	4.44	67.79	16.72		150.0	
		Z	4.28	68.23	16.96		150.0	
10433-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	4.72	67.89	16.96	0.00	150.0	± 9.6 %
		Y	4.68	67.66	16.76		150.0	
		Z	4.52	67.98	17.00		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	5.66	78.13	20.93	0.00	150.0	± 9.6 %
		Y	5.55	77.68	20.64		150.0	
		Z	5.82	79.40	20.42		150.0	
10435-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.77	79.73	17.34	3.23	80.0	± 9.6 %
		Y	4.12	78.53	17.19		80.0	
		Z	9.86	93.17	22.80		80.0	
10447-AAA	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.59	69.14	16.44	0.00	150.0	± 9.6 %
		Y	3.48	68.49	15.99		150.0	
		Z	3.25	68.82	15.52		150.0	
10448-AAA	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	X	4.07	68.28	16.85	0.00	150.0	± 9.6 %
		Y	4.01	67.91	16.57		150.0	
		Z	3.87	68.53	16.75		150.0	
10449-AAA	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	X	4.32	67.94	16.88	0.00	150.0	± 9.6 %
		Y	4.28	67.65	16.65		150.0	
		Z	4.14	68.10	16.89		150.0	
10450-AAA	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.51	67.71	16.85	0.00	150.0	± 9.6 %
		Y	4.48	67.46	16.64		150.0	
		Z	4.34	67.79	16.88		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.49	69.42	16.00	0.00	150.0	± 9.6 %
		Y	3.35	68.60	15.46		150.0	
		Z	2.95	68.04	14.36		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.21	68.40	17.09	0.00	150.0	± 9.6 %
		Y	6.19	68.25	16.96		150.0	
		Z	6.42	69.29	17.68		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.81	66.18	16.56	0.00	150.0	± 9.6 %
		Y	3.79	65.98	16.36		150.0	
		Z	3.76	66.54	16.65		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.17	68.04	14.87	0.00	150.0	± 9.6 %
		Y	3.04	67.24	14.33		150.0	
		Z	2.32	64.70	11.78		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.29	66.38	15.98	0.00	150.0	± 9.6 %
		Y	4.06	65.37	15.37		150.0	
		Z	3.61	64.80	14.10		150.0	

Certificate No: EX3-3968_May17 Page 26 of 38

EX3DV4– SN:3968 May 31, 2017

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	2.58	90.05	26.41	0.00	150.0	± 9.6 %
		Y	1.45	78.32	21.49		150.0	
		Z	2.79	91.24	26.54		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.12	76.58	17.21	3.29	80.0	± 9.6 %
		Y	2.41	73.81	16.46		80.0	
		Z	10.41	96.12	24.53		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.87	60.00	7.19	3.23	80.0	± 9.6 %
		Y	0.86	60.00	7.41		80.0	
		Z	0.75	60.00	7.65		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.89	60.00	6.68	3.23	80.0	± 9.6 %
		Y	0.88	60.00	6.89		80.0	
		Z	0.76	60.00	7.01		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.08	71.38	14.72	3.23	80.0	± 9.6 %
		Y	1.78	69.87	14.37		80.0	
		Z	6.21	88.00	21.46		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.87	60.00	7.13	3.23	80.0	± 9.6 %
		Y	0.86	60.00	7.35		80.0	
		Z	0.75	60.00	7.60		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.90	60.00	6.64	3.23	80.0	± 9.6 %
		Y	0.88	60.00	6.85		80.0	
		Z	0.76	60.00	6.97		80.0	
10467-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.21	72.14	15.04	3.23	80.0	± 9.6 %
		Y	1.86	70.47	14.64		80.0	
		Z	7.28	90.21	22.16		80.0	
10468-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.87	60.00	7.15	3.23	80.0	± 9.6 %
		Y	0.86	60.00	7.36		80.0	
		Z	0.75	60.00	7.62		80.0	
10469-AAB	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.89	60.00	6.64	3.23	80.0	± 9.6 %
		Y	0.88	60.00	6.85		80.0	
		Z	0.76	60.00	6.98		80.0	
10470-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.20	72.13	15.02	3.23	80.0	± 9.6 %
		Y	1.86	70.46	14.63		80.0	
		Z	7.38	90.41	22.21		80.0	
10471-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.87	60.00	7.13	3.23	80.0	± 9.6 %
		Y	0.86	60.00	7.35		80.0	
		Z	0.75	60.00	7.61		80.0	
10472-AAB	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.89	60.00	6.62	3.23	80.0	± 9.6 %
		Y	0.88	60.00	6.83		80.0	
		Z	0.76	60.00	6.96		80.0	
10473-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.20	72.08	15.00	3.23	80.0	± 9.6 %
		Y	1.85	70.42	14.61		80.0	
		Z	7.31	90.27	22.17		80.0	
10474-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.87	60.00	7.13	3.23	80.0	± 9.6 %
		Y	0.86	60.00	7.35		80.0	
		Z	0.75	60.00	7.61		80.0	
10475-AAB	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.89	60.00	6.62	3.23	80.0	± 9.6 %
		Y	0.88	60.00	6.83		80.0	
		Z	0.76	60.00	6.96		80.0	

EX3DV4– SN:3968 May 31, 2017

10477-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	0.87	60.00	7.11	3.23	80.0	± 9.6 %
		Y	0.86	60.00	7.33		80.0	
		Z	0.75	60.00	7.58		80.0	
10478-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	0.89	60.00	6.61	3.23	80.0	± 9.6 %
		Y	0.88	60.00	6.82		80.0	
		Z	0.76	60.00	6.95		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	5.13	79.55	19.37	3.23	80.0	± 9.6 %
		Y	4.22	77.09	18.60		80.0	
		Z	21.65	102.19	26.38		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.66	67.78	13.04	3.23	80.0	± 9.6 %
		Y	2.55	67.43	12.98		80.0	
		Z	2.99	70.98	14.03		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.13	64.99	11.45	3.23	80.0	± 9.6 %
		Y	2.09	64.87	11.48		80.0	
		Z	1.84	65.40	11.31		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	2.32	68.30	14.02	2.23	80.0	± 9.6 %
		Y	2.01	66.66	13.30		80.0	
		Z	1.48	63.65	10.80		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.07	63.78	11.13	2.23	80.0	± 9.6 %
		Y	1.98	63.38	10.95		80.0	
		Z	1.30	60.00	8.01		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.03	63.37	10.93	2.23	80.0	± 9.6 %
		Y	1.95	63.00	10.76		80.0	
		Z	1.32	60.00	7.99		80.0	
10485-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.25	72.90	17.20	2.23	80.0	± 9.6 %
		Y	2.75	70.63	16.28		80.0	
		Z	3.15	72.97	16.56		80.0	
10486-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	2.82	67.74	14.41	2.23	80.0	± 9.6 %
		Y	2.59	66.65	13.89		80.0	
		Z	2.10	64.72	12.00		80.0	
10487-AAB	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	2.80	67.30	14.19	2.23	80.0	± 9.6 %
		Y	2.58	66.29	13.71		80.0	
		Z	2.07	64.20	11.71		80.0	
10488-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.62	72.90	18.33	2.23	80.0	± 9.6 %
		Y	3.22	71.10	17.57		80.0	
		Z	3.69	74.34	18.95		80.0	
10489-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.46	69.30	16.80	2.23	80.0	± 9.6 %
		Y	3.24	68.32	16.33		80.0	
		Z	3.42	70.03	16.82		80.0	
10490-AAB	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.53	69.11	16.73	2.23	80.0	± 9.6 %
		Y	3.33	68.19	16.29		80.0	
		Z	3.45	69.69	16.65		80.0	
10491-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.79	71.27	17.94	2.23	80.0	± 9.6 %
		Y	3.50	70.00	17.38		80.0	
		Z	3.72	72.09	18.48		80.0	
10492-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.79	68.57	16.95	2.23	80.0	± 9.6 %
		Y	3.61	67.82	16.59		80.0	
		Z	3.70	69.13	17.15		80.0	

EX3DV4– SN:3968 May 31, 2017

10493-AAB	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.84	68.43	16.90	2.23	80.0	± 9.6 %
		Y	3.68	67.71	16.55		80.0	
		Z	3.73	68.93	17.04		80.0	
10494-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.11	72.66	18.38	2.23	80.0	± 9.6 %
		Y	3.74	71.19	17.76		80.0	
		Z	4.03	73.42	19.00		80.0	
10495-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.82	68.90	17.17	2.23	80.0	± 9.6 %
		Y	3.64	68.12	16.79		80.0	
		Z	3.74	69.38	17.45		80.0	
10496-AAB	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.90	68.65	17.10	2.23	80.0	± 9.6 %
		Y	3.73	67.93	16.75		80.0	
		Z	3.80	69.14	17.36		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	1.35	62.07	9.89	2.23	80.0	± 9.6 %
		Y	1.26	61.45	9.55		80.0	
		Z	1.00	60.00	7.36		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	1.29	60.00	7.73	2.23	80.0	± 9.6 %
		Y	1.28	60.00	7.70		80.0	
		Z	1.19	60.00	6.08		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	1.31	60.00	7.59	2.23	80.0	± 9.6 %
		Y	1.30	60.00	7.56		80.0	
		Z	1.22	60.00	5.90		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.38	72.81	17.64	2.23	80.0	± 9.6 %
		Y	2.93	70.77	16.79		80.0	
		Z	3.45	73.92	17.65		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.15	68.71	15.47	2.23	80.0	± 9.6 %
		Y	2.91	67.62	14.97		80.0	
		Z	2.74	67.51	14.14		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.18	68.47	15.30	2.23	80.0	± 9.6 %
		Y	2.94	67.44	14.82		80.0	
		Z	2.71	67.08	13.86		80.0	
10503-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	3.57	72.66	18.22	2.23	80.0	± 9.6 %
		Y	3.17	70.88	17.47		80.0	
		Z	3.63	74.08	18.82		80.0	
10504-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.44	69.18	16.73	2.23	80.0	± 9.6 %
		Y	3.22	68.21	16.26		80.0	
		Z	3.39	69.89	16.74		80.0	
10505-AAB	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.51	69.00	16.66	2.23	80.0	± 9.6 %
		Y	3.30	68.08	16.22		80.0	
		Z	3.42	69.56	16.58		80.0	
10506-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.07	72.49	18.29	2.23	80.0	± 9.6 %
		Y	3.70	71.04	17.68		80.0	
		Z	3.99	73.25	18.92		80.0	
10507-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	3.80	68.83	17.12	2.23	80.0	± 9.6 %
		Y	3.63	68.04	16.75		80.0	
		Z	3.72	69.31	17.41		80.0	

Certificate No: EX3-3968_May17 Page 29 of 38

EX3DV4– SN:3968 May 31, 2017

10508-AAB	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	3.88	68.57	17.05	2.23	80.0	± 9.6 %
		Y	3.71	67.85	16.70		80.0	
		Z	3.78	69.05	17.31		80.0	
10509-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.38	71.20	17.84	2.23	80.0	± 9.6 %
		Y	4.10	70.16	17.39		80.0	
		Z	4.26	71.62	18.37		80.0	
10510-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.27	68.48	17.16	2.23	80.0	± 9.6 %
		Y	4.11	67.85	16.86		80.0	
		Z	4.13	68.66	17.43		80.0	
10511-AAB	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.33	68.26	17.11	2.23	80.0	± 9.6 %
		Y	4.18	67.68	16.82		80.0	
		Z	4.20	68.49	17.38		80.0	
10512-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	4.57	72.57	18.24	2.23	80.0	± 9.6 %
		Y	4.21	71.30	17.71		80.0	
		Z	4.41	72.82	18.74		80.0	
10513-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	4.16	68.68	17.24	2.23	80.0	± 9.6 %
		Y	4.00	68.00	16.92		80.0	
		Z	4.03	68.78	17.51		80.0	
10514-AAB	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	4.19	68.31	17.14	2.23	80.0	± 9.6 %
		Y	4.04	67.69	16.84		80.0	
		Z	4.07	68.43	17.40		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	1.10	66.90	17.70	0.00	150.0	± 9.6 %
		Y	1.05	65.52	16.60		150.0	
		Z	1.11	66.83	17.54		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	99.99	177.80	50.50	0.00	150.0	± 9.6 %
		Y	1.87	94.13	28.28		150.0	
		Z	15.95	138.93	41.89		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	1.12	73.13	20.66	0.00	150.0	± 9.6 %
		Y	0.98	69.56	18.47		150.0	
		Z	1.11	72.41	20.24		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.51	67.64	16.83	0.00	150.0	± 9.6 %
		Y	4.48	67.40	16.62		150.0	
		Z	4.35	67.84	16.89		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.66	67.79	16.90	0.00	150.0	± 9.6 %
		Y	4.63	67.56	16.70		150.0	
		Z	4.47	67.95	16.95		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.53	67.79	16.85	0.00	150.0	± 9.6 %
		Y	4.49	67.54	16.64		150.0	
		Z	4.34	67.91	16.89		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.46	67.79	16.86	0.00	150.0	± 9.6 %
		Y	4.42	67.53	16.64		150.0	
		Z	4.27	67.84	16.86		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.52	67.91	16.95	0.00	150.0	± 9.6 %
		Y	4.48	67.65	16.73		150.0	
		Z	4.29	67.87	16.90		150.0	

EX3DV4– SN:3968 May 31, 2017

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.44	67.91	16.87	0.00	150.0	± 9.6 %
		Y	4.40	67.64	16.65		150.0	
		Z	4.28	68.14	16.98		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.47	67.86	16.93	0.00	150.0	± 9.6 %
		Y	4.43	67.60	16.72		150.0	
		Z	4.26	67.97	16.98		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.50	66.97	16.56	0.00	150.0	± 9.6 %
		Y	4.46	66.72	16.34		150.0	
		Z	4.34	67.16	16.63		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.64	67.28	16.68	0.00	150.0	± 9.6 %
		Y	4.59	67.02	16.46		150.0	
		Z	4.43	67.37	16.72		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.57	67.28	16.64	0.00	150.0	± 9.6 %
		Y	4.53	67.01	16.42		150.0	
		Z	4.38	67.39	16.69		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.58	67.29	16.66	0.00	150.0	± 9.6 %
		Y	4.54	67.02	16.44		150.0	
		Z	4.39	67.38	16.71		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.58	67.29	16.66	0.00	150.0	± 9.6 %
		Y	4.54	67.02	16.44		150.0	
		Z	4.39	67.38	16.71		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.56	67.36	16.67	0.00	150.0	± 9.6 %
		Y	4.51	67.07	16.44		150.0	
		Z	4.34	67.37	16.67		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.44	67.24	16.62	0.00	150.0	± 9.6 %
		Y	4.39	66.95	16.39		150.0	
		Z	4.24	67.27	16.63		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.60	67.38	16.68	0.00	150.0	± 9.6 %
		Y	4.55	67.11	16.45		150.0	
		Z	4.40	67.52	16.74		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.10	67.10	16.58	0.00	150.0	± 9.6 %
		Y	5.07	66.89	16.41		150.0	
		Z	4.94	67.03	16.64		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.16	67.26	16.66	0.00	150.0	± 9.6 %
		Y	5.12	67.04	16.48		150.0	
		Z	4.97	67.13	16.69		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.05	67.29	16.66	0.00	150.0	± 9.6 %
		Y	5.02	67.07	16.47		150.0	
		Z	4.87	67.16	16.69		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.10	67.23	16.63	0.00	150.0	± 9.6 %
		Y	5.07	67.02	16.45		150.0	
		Z	4.96	67.24	16.73		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.17	67.18	16.64	0.00	150.0	± 9.6 %
		Y	5.14	66.97	16.46		150.0	
		Z	4.98	67.06	16.67		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.10	67.17	16.65	0.00	150.0	± 9.6 %
		Y	5.07	66.96	16.48		150.0	
		Z	4.92	67.03	16.68		150.0	

EX3DV4– SN:3968 May 31, 2017

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.08	67.07	16.59	0.00	150.0	± 9.6 %
		Y	5.05	66.86	16.41		150.0	
		Z	4.92	67.00	16.64		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.23	67.13	16.63	0.00	150.0	± 9.6 %
		Y	5.20	66.94	16.46		150.0	
		Z	5.05	67.04	16.67		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.29	67.14	16.65	0.00	150.0	± 9.6 %
		Y	5.26	66.96	16.49		150.0	
		Z	5.12	67.14	16.75		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.43	67.12	16.52	0.00	150.0	± 9.6 %
		Y	5.40	66.93	16.36		150.0	
		Z	5.30	66.95	16.56		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.61	67.53	16.68	0.00	150.0	± 9.6 %
		Y	5.58	67.34	16.52		150.0	
		Z	5.47	67.44	16.77		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.47	67.27	16.56	0.00	150.0	± 9.6 %
		Y	5.44	67.07	16.40		150.0	
		Z	5.32	67.06	16.58		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.54	67.33	16.59	0.00	150.0	± 9.6 %
		Y	5.51	67.14	16.43		150.0	
		Z	5.46	67.39	16.75		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	5.71	68.04	16.91	0.00	150.0	± 9.6 %
		Y	5.68	67.82	16.74		150.0	
		Z	5.50	67.68	16.87		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.52	67.38	16.63	0.00	150.0	± 9.6 %
		Y	5.49	67.20	16.48		150.0	
		Z	5.45	67.53	16.83		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.48	67.26	16.54	0.00	150.0	± 9.6 %
		Y	5.45	67.06	16.37		150.0	
		Z	5.30	66.98	16.53		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.45	67.24	16.53	0.00	150.0	± 9.6 %
		Y	5.42	67.05	16.37		150.0	
		Z	5.31	67.13	16.59		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.50	67.19	16.53	0.00	150.0	± 9.6 %
		Y	5.47	67.00	16.37		150.0	
		Z	5.34	67.00	16.55		150.0	
10554-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	5.84	67.40	16.56	0.00	150.0	± 9.6 %
		Y	5.82	67.23	16.41		150.0	
		Z	5.74	67.21	16.59		150.0	
10555-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	5.95	67.66	16.66	0.00	150.0	± 9.6 %
		Y	5.92	67.47	16.51		150.0	
		Z	5.81	67.40	16.67		150.0	
10556-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	5.98	67.74	16.70	0.00	150.0	± 9.6 %
		Y	5.95	67.56	16.55		150.0	
		Z	5.88	67.60	16.76		150.0	
10557-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	5.94	67.62	16.66	0.00	150.0	± 9.6 %
		Y	5.91	67.45	16.51		150.0	
		Z	5.81	67.39	16.67		150.0	

Certificate No: EX3-3968_May17 Page 32 of 38

EX3DV4– SN:3968 May 31, 2017

10558-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	5.97	67.74	16.73	0.00	150.0	± 9.6 %
		Y	5.94	67.55	16.58		150.0	
		Z	5.78	67.33	16.66		150.0	
10560-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	5.97	67.61	16.71	0.00	150.0	± 9.6 %
		Y	5.94	67.44	16.56		150.0	
		Z	5.81	67.31	16.69		150.0	
10561-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	5.90	67.59	16.73	0.00	150.0	± 9.6 %
		Y	5.87	67.42	16.58		150.0	
		Z	5.75	67.31	16.72		150.0	
10562-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	5.97	67.83	16.85	0.00	150.0	± 9.6 %
		Y	5.94	67.63	16.69		150.0	
		Z	5.79	67.44	16.78		150.0	
10563-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.04	67.69	16.74	0.00	150.0	± 9.6 %
		Y	6.02	67.52	16.60		150.0	
		Z	5.93	67.56	16.81		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	4.80	67.49	16.83	0.46	150.0	± 9.6 %
		Y	4.77	67.28	16.64		150.0	
		Z	4.63	67.66	16.91		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.01	67.93	17.15	0.46	150.0	± 9.6 %
		Y	4.98	67.73	16.98		150.0	
		Z	4.81	68.06	17.21		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	4.85	67.77	16.97	0.46	150.0	± 9.6 %
		Y	4.81	67.56	16.79		150.0	
		Z	4.65	67.87	17.03		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	4.90	68.26	17.40	0.46	150.0	± 9.6 %
		Y	4.87	68.07	17.23		150.0	
		Z	4.70	68.33	17.45		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	4.73	67.45	16.67	0.46	150.0	± 9.6 %
		Y	4.70	67.21	16.47		150.0	
		Z	4.51	67.41	16.65		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	4.88	68.50	17.53	0.46	150.0	± 9.6 %
		Y	4.86	68.30	17.37		150.0	
		Z	4.72	68.70	17.66		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	4.89	68.25	17.42	0.46	150.0	± 9.6 %
		Y	4.86	68.06	17.25		150.0	
		Z	4.68	68.36	17.49		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.29	67.25	17.52	0.46	130.0	± 9.6 %
		Y	1.22	65.91	16.56		130.0	
		Z	1.30	67.30	17.53		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.32	68.20	18.07	0.46	130.0	± 9.6 %
		Y	1.25	66.70	17.04		130.0	
		Z	1.34	68.20	18.06		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	100.00	157.88	43.29	0.46	130.0	± 9.6 %
		Y	12.33	118.14	33.50		130.0	
		Z	100.00	159.43	44.14		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	2.02	80.96	24.00	0.46	130.0	± 9.6 %
		Y	1.63	76.18	21.71		130.0	
		Z	1.89	79.55	23.50		130.0	

Certificate No: EX3-3968_May17 Page 33 of 38

EX3DV4– SN:3968 May 31, 2017

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.55	67.14	16.73	0.46	130.0	± 9.6 %
		Y	4.53	66.95	16.56		130.0	
		Z	4.40	67.34	16.81		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.59	67.37	16.84	0.46	130.0	± 9.6 %
		Y	4.56	67.18	16.67		130.0	
		Z	4.44	67.63	16.95		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	4.76	67.60	16.98	0.46	130.0	± 9.6 %
		Y	4.73	67.42	16.81		130.0	
		Z	4.58	67.82	17.07		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	4.68	67.83	17.14	0.46	130.0	± 9.6 %
		Y	4.65	67.64	16.97		130.0	
		Z	4.50	68.03	17.23		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.41	66.91	16.31	0.46	130.0	± 9.6 %
		Y	4.38	66.67	16.11		130.0	
		Z	4.23	67.00	16.35		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.44	66.95	16.32	0.46	130.0	± 9.6 %
		Y	4.41	66.71	16.12		130.0	
		Z	4.23	66.96	16.31		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	4.59	67.94	17.12	0.46	130.0	± 9.6 %
		Y	4.56	67.73	16.94		130.0	
		Z	4.44	68.22	17.27		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.33	66.63	16.06	0.46	130.0	± 9.6 %
		Y	4.30	66.38	15.85		130.0	
		Z	4.14	66.74	16.11		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.55	67.14	16.73	0.46	130.0	± 9.6 %
		Y	4.53	66.95	16.56		130.0	
		Z	4.40	67.34	16.81		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.59	67.37	16.84	0.46	130.0	± 9.6 %
		Y	4.56	67.18	16.67		130.0	
		Z	4.44	67.63	16.95		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	4.76	67.60	16.98	0.46	130.0	± 9.6 %
		Y	4.73	67.42	16.81		130.0	
		Z	4.58	67.82	17.07		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	4.68	67.83	17.14	0.46	130.0	± 9.6 %
		Y	4.65	67.64	16.97		130.0	
		Z	4.50	68.03	17.23		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.41	66.91	16.31	0.46	130.0	± 9.6 %
		Y	4.38	66.67	16.11		130.0	
		Z	4.23	67.00	16.35		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.44	66.95	16.32	0.46	130.0	± 9.6 %
		Y	4.41	66.71	16.12		130.0	
		Z	4.23	66.96	16.31		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	4.59	67.94	17.12	0.46	130.0	± 9.6 %
		Y	4.56	67.73	16.94		130.0	
		Z	4.44	68.22	17.27		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.33	66.63	16.06	0.46	130.0	± 9.6 %
		Y	4.30	66.38	15.85		130.0	
		Z	4.14	66.74	16.11		130.0	

Certificate No: EX3-3968_May17 Page 34 of 38

EX3DV4– SN:3968 May 31, 2017

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	4.71	67.20	16.84	0.46	130.0	± 9.6 %
		Y	4.68	67.03	16.68		130.0	
		Z	4.56	67.44	16.95		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	4.84	67.52	16.97	0.46	130.0	± 9.6 %
		Y	4.81	67.34	16.81		130.0	
		Z	4.65	67.68	17.06		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	4.75	67.39	16.82	0.46	130.0	± 9.6 %
		Y	4.73	67.20	16.66		130.0	
		Z	4.58	67.57	16.92		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	4.81	67.59	17.00	0.46	130.0	± 9.6 %
		Y	4.79	67.41	16.84		130.0	
		Z	4.63	67.76	17.10		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	4.78	67.56	16.90	0.46	130.0	± 9.6 %
		Y	4.75	67.37	16.74		130.0	
		Z	4.60	67.75	17.01		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	4.71	67.53	16.90	0.46	130.0	± 9.6 %
		Y	4.68	67.33	16.72		130.0	
		Z	4.52	67.66	16.98		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	4.66	67.40	16.75	0.46	130.0	± 9.6 %
		Y	4.63	67.19	16.57		130.0	
		Z	4.48	67.52	16.82		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	4.66	67.70	17.06	0.46	130.0	± 9.6 %
		Y	4.63	67.50	16.90		130.0	
		Z	4.50	67.86	17.15		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.35	67.53	16.97	0.46	130.0	± 9.6 %
		Y	5.34	67.40	16.84		130.0	
		Z	5.33	68.01	17.32		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	5.45	67.87	17.10	0.46	130.0	± 9.6 %
		Y	5.44	67.72	16.97		130.0	
		Z	5.33	68.04	17.31		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.36	67.68	17.03	0.46	130.0	± 9.6 %
		Y	5.35	67.54	16.90		130.0	
		Z	5.29	68.02	17.32		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.48	67.77	16.99	0.46	130.0	± 9.6 %
		Y	5.45	67.61	16.84		130.0	
		Z	5.31	67.79	17.11		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	5.56	68.13	17.31	0.46	130.0	± 9.6 %
		Y	5.54	67.96	17.17		130.0	
		Z	5.32	67.91	17.32		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.44	67.76	17.11	0.46	130.0	± 9.6 %
		Y	5.42	67.61	16.98		130.0	
		Z	5.22	67.53	17.10		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.45	67.78	17.11	0.46	130.0	± 9.6 %
		Y	5.43	67.63	16.97		130.0	
		Z	5.27	67.74	17.21		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.21	67.14	16.64	0.46	130.0	± 9.6 %
		Y	5.20	66.99	16.50		130.0	
		Z	5.15	67.48	16.93		130.0	

Certificate No: EX3-3968_May17 Page 35 of 38

EX3DV4– SN:3968 May 31, 2017

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.57	66.63	16.53	0.46	130.0	± 9.6 %
		Y	4.54	66.43	16.36		130.0	
		Z	4.43	66.89	16.66		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	4.72	66.99	16.68	0.46	130.0	± 9.6 %
		Y	4.69	66.78	16.51		130.0	
		Z	4.54	67.15	16.78		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	4.62	66.82	16.50	0.46	130.0	± 9.6 %
		Y	4.58	66.59	16.32		130.0	
		Z	4.44	66.99	16.60		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	4.67	67.01	16.68	0.46	130.0	± 9.6 %
		Y	4.64	66.79	16.51		130.0	
		Z	4.49	67.19	16.79		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	4.58	66.79	16.52	0.46	130.0	± 9.6 %
		Y	4.55	66.56	16.33		130.0	
		Z	4.40	66.94	16.61		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	4.58	66.92	16.55	0.46	130.0	± 9.6 %
		Y	4.54	66.68	16.36		130.0	
		Z	4.37	67.01	16.62		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	4.57	66.73	16.40	0.46	130.0	± 9.6 %
		Y	4.53	66.49	16.20		130.0	
		Z	4.37	66.81	16.45		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	4.55	67.04	16.71	0.46	130.0	± 9.6 %
		Y	4.51	66.82	16.52		130.0	
		Z	4.37	67.15	16.77		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	4.56	66.56	16.25	0.46	130.0	± 9.6 %
		Y	4.53	66.33	16.05		130.0	
		Z	4.38	66.75	16.35		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.19	66.85	16.62	0.46	130.0	± 9.6 %
		Y	5.17	66.69	16.48		130.0	
		Z	5.04	66.86	16.74		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.24	67.01	16.67	0.46	130.0	± 9.6 %
		Y	5.22	66.83	16.53		130.0	
		Z	5.07	66.94	16.76		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.16	67.11	16.75	0.46	130.0	± 9.6 %
		Y	5.13	66.93	16.60		130.0	
		Z	4.98	67.03	16.82		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.15	66.84	16.54	0.46	130.0	± 9.6 %
		Y	5.13	66.66	16.39		130.0	
		Z	5.04	66.98	16.73		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.23	66.84	16.58	0.46	130.0	± 9.6 %
		Y	5.20	66.67	16.44		130.0	
		Z	5.05	66.77	16.66		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.25	67.02	16.81	0.46	130.0	± 9.6 %
		Y	5.23	66.87	16.68		130.0	
		Z	5.08	66.95	16.88		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.25	67.14	16.86	0.46	130.0	± 9.6 %
		Y	5.22	66.98	16.72		130.0	
		Z	5.07	67.05	16.93		130.0	

Certificate No: EX3-3968_May17 Page 36 of 38

EX3DV4– SN:3968 May 31, 2017

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.12	66.62	16.46	0.46	130.0	± 9.6 %
		Y	5.09	66.44	16.31		130.0	
		Z	4.98	66.65	16.57		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.31	66.86	16.64	0.46	130.0	± 9.6 %
		Y	5.29	66.70	16.50		130.0	
		Z	5.15	66.84	16.74		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	5.46	67.18	16.86	0.46	130.0	± 9.6 %
		Y	5.43	66.99	16.71		130.0	
		Z	5.24	67.04	16.91		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.50	66.84	16.54	0.46	130.0	± 9.6 %
		Y	5.49	66.69	16.41		130.0	
		Z	5.39	66.76	16.64		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	5.73	67.41	16.79	0.46	130.0	± 9.6 %
		Y	5.71	67.26	16.66		130.0	
		Z	5.61	67.41	16.94		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.50	66.82	16.42	0.46	130.0	± 9.6 %
		Y	5.48	66.65	16.29		130.0	
		Z	5.37	66.70	16.51		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	5.58	66.92	16.47	0.46	130.0	± 9.6 %
		Y	5.56	66.77	16.34		130.0	
		Z	5.57	67.23	16.77		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	5.86	67.97	17.00	0.46	130.0	± 9.6 %
		Y	5.83	67.78	16.85		130.0	
		Z	5.63	67.59	16.96		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	5.85	68.09	17.26	0.46	130.0	± 9.6 %
		Y	5.83	67.94	17.14		130.0	
		Z	5.64	67.78	17.25		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	5.72	67.59	17.03	0.46	130.0	± 9.6 %
		Y	5.71	67.46	16.92		130.0	
		Z	5.71	67.92	17.34		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	5.56	67.02	16.57	0.46	130.0	± 9.6 %
		Y	5.54	66.85	16.43		130.0	
		Z	5.38	66.77	16.59		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	5.57	67.13	16.68	0.46	130.0	± 9.6 %
		Y	5.55	66.98	16.56		130.0	
		Z	5.43	67.04	16.77		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.40	66.27	15.95	0.46	130.0	± 9.6 %
		Y	5.38	66.10	15.80		130.0	
		Z	5.26	66.16	16.04		130.0	
10636-AAA	IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	5.92	67.15	16.59	0.46	130.0	± 9.6 %
		Y	5.91	67.02	16.48		130.0	
		Z	5.84	67.05	16.69		130.0	
10637-AAA	IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.05	67.48	16.74	0.46	130.0	± 9.6 %
		Y	6.03	67.33	16.62		130.0	
		Z	5.94	67.32	16.82		130.0	
10638-AAA	IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.07	67.51	16.73	0.46	130.0	± 9.6 %
		Y	6.05	67.36	16.61		130.0	
		Z	6.02	67.55	16.90		130.0	

Certificate No: EX3-3968_May17 Page 37 of 38

10639-AAA	IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.03	67.41	16.73	0.46	130.0	± 9.6 %
		Y	6.01	67.27	16.61		130.0	
		Z	5.92	67.26	16.80		130.0	
10640-AAA	IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.01	67.35	16.64	0.46	130.0	± 9.6 %
		Y	5.99	67.19	16.50		130.0	
		Z	5.84	67.01	16.62		130.0	
10641-AAA	IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.08	67.33	16.64	0.46	130.0	± 9.6 %
		Y	6.06	67.19	16.52		130.0	
		Z	5.97	67.23	16.75		130.0	
10642-AAA	IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.12	67.61	16.97	0.46	130.0	± 9.6 %
		Y	6.11	67.48	16.86		130.0	
		Z	5.98	67.36	16.99		130.0	
10643-AAA	IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	5.96	67.26	16.67	0.46	130.0	± 9.6 %
		Y	5.94	67.11	16.55		130.0	
		Z	5.82	67.03	16.70		130.0	
10644-AAA	IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.04	67.53	16.83	0.46	130.0	± 9.6 %
		Y	6.02	67.37	16.70		130.0	
		Z	5.87	67.20	16.81		130.0	
10645-AAA	IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.15	67.50	16.78	0.46	130.0	± 9.6 %
		Y	6.13	67.36	16.65		130.0	
		Z	6.00	67.29	16.82		130.0	
10646-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	11.81	95.73	30.81	9.30	60.0	± 9.6 %
		Y	9.29	91.01	29.34		60.0	
		Z	8.85	92.75	31.14		60.0	
10647-AAB	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	10.77	94.53	30.54	9.30	60.0	± 9.6 %
		Y	8.45	89.70	29.01		60.0	
		Z	7.92	91.02	30.68		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	1.41	74.35	15.50	0.00	150.0	± 9.6 %
		Y	0.80	67.01	12.12		150.0	
		Z	0.57	64.32	9.21		150.0	

[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.