FCC SAR Test Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	CDMA/LTE Multi-Mode Digital Mobile Phone
BRAND NAME	:	ZTE
MODEL NAME	:	ZTE N9101
FCC ID	:	Q78-ZTEN9101
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003 FCC OET Bulletin 65 Supplement C (Edition 01-01)

The product was completely tested on Apr. 08, 2013. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA2O1601	Rev. 01	Initial issue of report	Apr. 16, 2013

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **ZTE CORPORATION DUT: CDMA/LTE Multi-Mode Digital Mobile Phone; Brand Name: ZTE; Model Name: ZTE N9101** are as follows.

<Highest Reported standalone SAR Summary>

Exposure Position	Frequency Band	Reported 1g-SAR (W/kg)	Equipment Class	Highest Reported 1g-SAR (W/kg)
Head	CDMA2000 BC0	**0.96**	PCE	**1.30**
	CDMA2000 BC1	**0.99**		
	CDMA2000 BC15	**0.97**		
	LTE Band 2	**1.30**		
	LTE Band 4	**0.29**		
	LTE Band 5	**0.32**		
	LTE Band 12	**0.55**		
	WLAN 2.4GHz Band	**0.06**	DTS	**0.06**
Hotspot (1cm Gap)	CDMA2000 BC0	**1.11**	PCE	**1.39**
	CDMA2000 BC1	**1.29**		
	CDMA2000 BC15	**1.39**		
	LTE Band 2	**1.13**		
	LTE Band 4	**0.20**		
	LTE Band 5	**0.22**		
	LTE Band 12	**0.47**		
	WLAN 2.4GHz Band	**0.03**	DTS	**0.03**
Body-worn (1cm Gap)	CDMA2000 BC0	**1.15**	PCE	**1.38**
	CDMA2000 BC1	**1.25**		
	CDMA2000 BC15	**1.38**		
	LTE Band 2	**1.13**		
	LTE Band 4	**0.20**		
	LTE Band 5	**0.22**		
	LTE Band 12	**0.47**		
	WLAN 2.4GHz Band	**0.03**	DTS	**0.03**

<Highest Simultaneous transmission SAR>

Frequency Band	Equipment Class	Exposure Position	Highest Reported Simultaneous Transmission 1g-SAR (W/kg)
CDMA2000 BC15	PCE	Left Cheek	**1.58**
LTE Band 12			
WLAN2.4GHz Band	DTS		

Frequency Band	Equipment Class	Exposure Position	Highest Reported Simultaneous Transmission 1g-SAR (W/kg)
CDMA2000 BC1	PCE	Right Cheek	**1.59**
LTE Band 2			
Bluetooth	DSS		

Frequency Band	Equipment Class	Exposure Position	Highest Reported Simultaneous Transmission 1g-SAR (W/kg)
CDMA2000 BC15	PCE	**Hotspot (Back 1cm Gap)**	**1.42**
WLAN2.4GHz Band	DTS		

Frequency Band	Equipment Class	Exposure Position	Highest Reported Simultaneous Transmission 1g-SAR (W/kg)
CDMA2000 BC15	PCE	**Hotspot (Back 1cm Gap)**	**1.43**
Bluetooth	DSS		

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2003 and FCC OET Bulletin 65 Supplement C (Edition 01-01).

2. Administration Data

2.1 Testing Laboratory

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958

2.2 Applicant

Company Name	ZTE CORPORATION
Address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China

2.3 Manufacturer

Company Name	ZTE CORPORATION
Address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China

2.4 Application Details

Date of Start during the Test	Mar. 13, 2013
Date of End during the Test	Apr. 08, 2013

3. General Information

3.1 Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT	CDMA/LTE Multi-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	ZTE N9101
FCC ID	Q78-ZTEN9101
MEID Code	99000142204872
TX Frequency	CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz CDMA 2000 BC15: 1711.25 MHz ~ 1753.75 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PCB Antenna
HW Version	czbC
SW Version	N9101V1.0.0B01
Uplink Modulations	CDMA2000 1xRTT: QPSK CDMA2000 1xEV-DO: QPSK / 8PSK LTE: QPSK / 16QAM 802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth BDR (1Mbps): GFSK Bluetooth EDR (2Mbps): π/4-DQPSK Bluetooth EDR (3Mbps): 8-DPSK Bluetooth v4.0 - LE: GFSK
Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	

3.2 Maximum RF output power among production units

Maximum Average Power for Production Unit						
Band	CDMA BC0 (dBm)		CDMA BC1 (dBm)		CDMA BC15 (dBm)	
Mode	Normal	Reduced	Normal	Reduced	Normal	Reduced
1xRTT RC1 SO55	24	17	24	17	23.5	17
1xRTT RC3 SO55	24	17	24	17	23.5	17
1xRTT RC3 SO32 (+ F-SCH)	24	17	24	17	23.5	17
1xRTT RC3 SO32 (+SCH)	24	17	24	17	23.5	17
1xEV-DO Rev 0 (RTAP 153.6kbps)	24	17	24	17	23.5	17
1xEV-DO Rev A (RETAP 4096bits)	24	17	24	17	23.5	17

LTE Band 2					
Modulation	BW (MHz)	RB size	Target MPR	Normal Power	Reduced Power
QPSK	20	≤ 18	0	22	17
QPSK	20	> 18	1	21	16
16QAM	20	≤ 18	1	21	16
16QAM	20	> 18	2	20	15
QPSK	15	≤ 16	0	22	17
QPSK	15	> 16	1	21	16
16QAM	15	≤ 16	1	21	16
16QAM	15	> 16	2	20	15
QPSK	10	≤ 12	0	22	17
QPSK	10	> 12	1	21	16
16QAM	10	≤ 12	1	21	16
16QAM	10	> 12	2	20	15
QPSK	5	≤ 8	0	22	17
QPSK	5	> 8	1	21	16
16QAM	5	≤ 8	1	21	16
16QAM	5	> 8	2	20	15
QPSK	3	≤ 4	0	22	17
QPSK	3	> 4	1	21	16
16QAM	3	≤ 4	1	21	16
16QAM	3	> 4	2	20	15
QPSK	1.4	≤ 5	0	22	17
QPSK	1.4	> 5	1	21	16
16QAM	1.4	≤ 5	1	21	16
16QAM	1.4	> 5	2	20	15

LTE Band 4					
Modulation	BW (MHz)	RB size	Target MPR	Normal Power	Reduced Power
QPSK	20	≤ 18	0	22.5	17
QPSK	20	> 18	1	21.5	16
16QAM	20	≤ 18	1	21.5	16
16QAM	20	> 18	2	20.5	15
QPSK	15	≤ 16	0	22.5	17
QPSK	15	> 16	1	21.5	16
16QAM	15	≤ 16	1	21.5	16
16QAM	15	> 16	2	20.5	15
QPSK	10	≤ 12	0	22.5	17
QPSK	10	> 12	1	21.5	16
16QAM	10	≤ 12	1	21.5	16
16QAM	10	> 12	2	20.5	15
QPSK	5	≤ 8	0	22.5	17
QPSK	5	> 8	1	21.5	16
16QAM	5	≤ 8	1	21.5	16
16QAM	5	> 8	2	20.5	15
QPSK	3	≤ 4	0	22.5	17
QPSK	3	> 4	1	21.5	16
16QAM	3	≤ 4	1	21.5	16
16QAM	3	> 4	2	20.5	15
QPSK	1.4	≤ 5	0	22.5	17
QPSK	1.4	> 5	1	21.5	16
16QAM	1.4	≤ 5	1	21.5	16
16QAM	1.4	> 5	2	20.5	15

LTE Band 5					
Modulation	BW (MHz)	RB size	Target MPR	Normal Power	Reduced Power
QPSK	10	≤ 12	0	25.5	17
QPSK	10	> 12	1	24.5	16
16QAM	10	≤ 12	1	24.5	16
16QAM	10	> 12	2	23.5	15
QPSK	5	≤ 8	0	25.5	17
QPSK	5	> 8	1	24.5	16
16QAM	5	≤ 8	1	24.5	16
16QAM	5	> 8	2	23.5	15
QPSK	3	≤ 4	0	25.5	17
QPSK	3	> 4	1	24.5	16
16QAM	3	≤ 4	1	24.5	16
16QAM	3	> 4	2	23.5	15
QPSK	1.4	≤ 5	0	25.5	17
QPSK	1.4	> 5	1	24.5	16
16QAM	1.4	≤ 5	1	24.5	16
16QAM	1.4	> 5	2	23.5	15

LTE Band 12					
Modulation	BW (MHz)	RB size	Target MPR	Normal Power	Reduced Power
QPSK	10	≤ 12	0	25	17
QPSK	10	> 12	1	24	16
16QAM	10	≤ 12	1	24	16
16QAM	10	> 12	2	23	15
QPSK	5	≤ 8	0	25	17
QPSK	5	> 8	1	24	16
16QAM	5	≤ 8	1	24	16
16QAM	5	> 8	2	23	15
QPSK	3	≤ 4	0	25	17
QPSK	3	> 4	1	24	16
16QAM	3	≤ 4	1	24	16
16QAM	3	> 4	2	23	15
QPSK	1.4	≤ 5	0	25	17
QPSK	1.4	> 5	1	24	16
16QAM	1.4	≤ 5	1	24	16
16QAM	1.4	> 5	2	23	15

Remark:

1. By design, other RB configurations and higher-order modulation RF output power will never exceed maximum output power listed above; detailed information is included in “tune-up procedure” exhibit.
2. LTE MPR implementation is the same for normal mode and power reduction mode.

IEEE 802.11 maximum power(dBm)				
Mode/Band	a	b	g	n-HT 20
WLAN 2.4GHz		17	14	14

Mode / Band	Bluetooth maximum power(dBm)			
	1Mbps (GFSK)	2Mbps (π/4-DQPSK)	3Mbps (8-DPSK)	BT4.0-LE (GFSK)
2.4 GHz Bluetooth	2	0.5	0.5	1.5

The table below summarized necessary items addressed in KDB 941225 D05 v02.

FCC ID	Q78-ZTEN9101
EUT	CDMA/LTE Multi-Mode Digital Mobile Phone
Operating Frequency Range of each LTE transmission band	LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MH
Channel Bandwidth	Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz

Transmission (H, M, L) channel numbers and frequencies in each LTE band

LTE Band 12

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 5

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

LTE Band 4

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 2

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

E category, uplink modulations used	Category 3, QPSK, and 16QAM
LTE transmitter and antenna implementation (standalone or sharing hardware components / antennas)	LTE share the antenna with WLAN and Bluetooth
LTE Voice / Data requirements	Data only
LTE MPR permanently built-in by design	Yes, per 3GPP TS 36.101 v11.0.0 **Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3** Modulation | Channel bandwidth / Transmission bandwidth (RB) | MPR (dB) 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz QPSK: > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 1 16 QAM: ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 16 QAM: > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2
LTE A-MPR	In the base simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing.
Base station simulator used for Testing	Anritsu MT8820C
Power reduction applied to satisfy SAR compliance	Yes, SVLTE mode (1xRTT and LTE simultaneously) power reduction.

The SVLTE operating mode, which means CDMA 1x RTT(voice) and LTE (data) transmitting simultaneously, the power reduction is implemented on this device and cannot be changed by end users or overridden by power control command from base stations.
The power reduction implementation is defined as following table.

CDMA2000 1x voice BC0/BC1/BC15	LTE Band 2, data mode Maximum power	LTE Band 4, data mode Maximum power	LTE Band 5, data mode Maximum power	LTE Band 12, data mode Maximum power
P ≥ 17	22	22.5	25.5	25
P < 17	17	17	17	17

Table 3.1: Power Reduction Implementation (Unit: dBm)

3.3 Applied Standard

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2003
- FCC OET Bulletin 65 Supplement C (Edition 01-01)
- FCC KDB 447498 D01 v05
- FCC KDB 648474 D04v01
- FCC KDB 248227 D01 v01r02
- FCC KDB 941225 D01 v02
- FCC KDB 941225 D05 v02
- FCC KDB 941225 D06 v01
- FCC KDB 865664 D01 v01

3.4 Device Category and SAR Limits

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

3.5 Test Conditions

3.5.1 Ambient Condition

Ambient Temperature	20 to 24 ℃
Humidity	< 60 %

3.5.2 Test Configuration

For WWAN SAR testing, the device was controlled by using a base station emulator. Communication between the device and the emulator was established by air link. The distance between the EUT and the antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT.

During WLAN SAR testing EUT is configured with the WLAN continuous TX tool, and the transmission duty factor was monitored on the spectrum analyzer with zero-span setting

For WLAN SAR testing, WLAN engineering testing software installed on the EUT can provide continuous transmitting RF signal.

4. Specific Absorption Rate (SAR)

4.1 Introduction

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

4.2 SAR Definition

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

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

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

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

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

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

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

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

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

5. SAR Measurement System

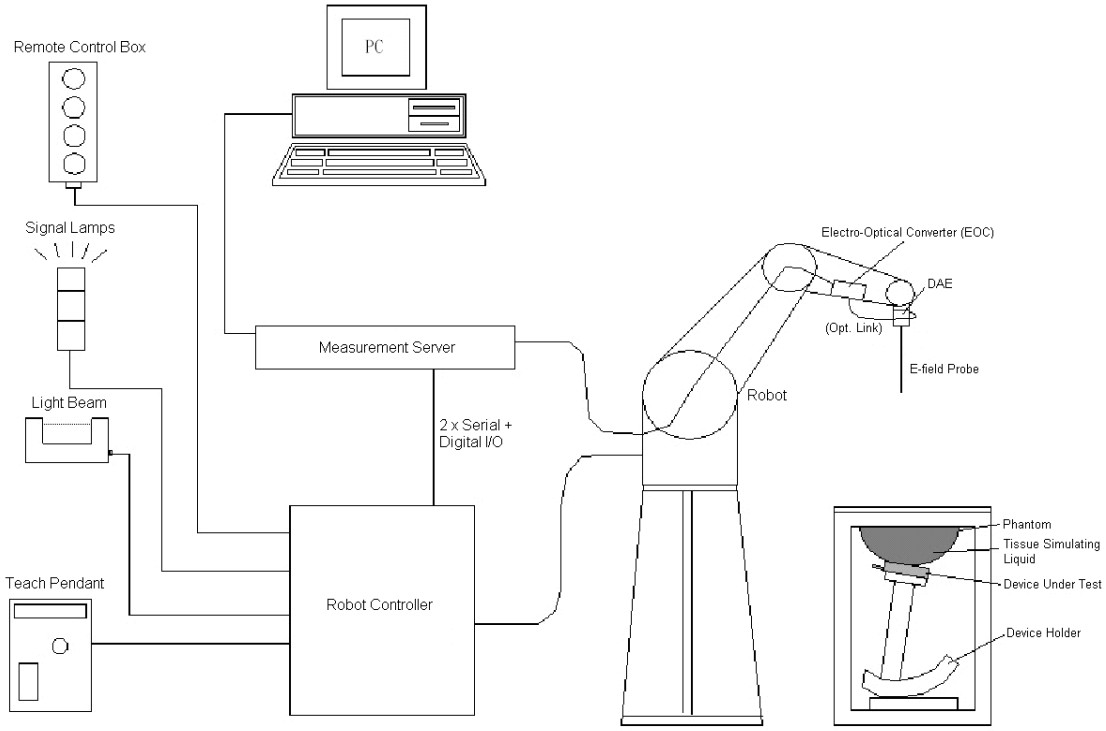


Fig 5.1 SPEAG DASY System Configurations

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

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

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

5.1 E-Field Probe

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

5.1.1 E-Field Probe Specification

<EX3DV4 Probe>

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

Fig 5.2 Photo of EX3DV4

5.1.2 E-Field Probe Calibration

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

5.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.3 Photo of DAE

5.3 Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

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

Fig 5.4 Photo of DASY5

5.4 Measurement Server

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

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

Fig 5.5 Photo of Server for DASY5

5.5 Phantom

<SAM Twin Phantom>

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

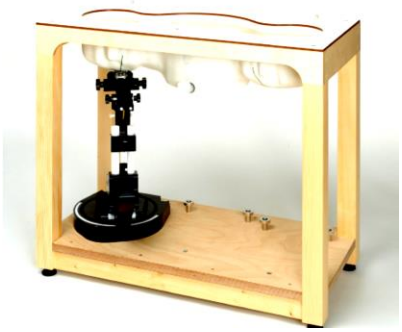


Fig 5.6 Photo of SAM Phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

5.6 Device Holder

<Device Holder for SAM Twin Phantom>

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

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

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

Fig 5.7 Device Holder

5.7 Data Storage and Evaluation

5.7.1 Data Storage

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

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

5.7.2 Data Evaluation

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

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

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

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

The formula for each channel can be given as：

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

with V_i = compensated signal of channel i, (i = x, y, z)
U_i = input signal of channel i, (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcp_i = diode compression point (DASY parameter)

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

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

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

with V_i = compensated signal of channel i, (i = x, y, z)
$Norm_i$ = sensor sensitivity of channel i, (i = x, y, z), μV/(V/m)^2 for E-field Probes
ConvF = sensitivity enhancement in solution
a_{ij} = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
E_i = electric field strength of channel i in V/m
H_i = magnetic field strength of channel i in A/m

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

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

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

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

with SAR = local specific absorption rate in mW/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

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

5.8 Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	735MHz System Validation Kit	D735V3	1065	Jul. 12, 2012	Jul. 11, 2013
SPEAG	835MHz System Validation Kit	D835V2	4d091	Nov. 18, 2011	Nov. 16, 2013
SPEAG	1750MHz System Validation Kit	D1750V2	1069	Jul. 13, 2012	Jul. 12, 2013
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2011	Nov. 16, 2013
SPEAG	2450MHz System Validation Kit	D2450V2	736	Jul. 25, 2011	Jul. 24, 2013
SPEAG	Data Acquisition Electronics	DAE4	1210	Dec. 05, 2012	Dec. 04, 2013
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	Jun. 20, 2012	Jun. 19, 2013
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1477	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1479	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201074235	Nov. 29, 2012	Nov. 28, 2013
Agilent	Wireless Communication Test Set	E5515C	MY48367160	Oct. 25, 2012	Oct. 24, 2013
R&S	Universal Radio Communication Tester	CMU200	116456	Sep. 19, 2012	Sep. 18, 2013
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	Apr. 13, 2012	Apr. 12, 2013
R&S	Signal Generator	SMR40	100455	Jan. 18, 2013	Jan. 17, 2014
Agilent	Power Meter	E4416A	MY45101555	Aug. 22, 2012	Aug. 21, 2013
Agilent	Power Sensor	E9327A	MY44421198	Aug. 22, 2012	Aug. 21, 2013
Woken	Attenuator 1	WK0602-XX	N/A	Note 4	
PE	Attenuator 2	PE7005-10	N/A	Note 4	
PE	Attenuator 3	PE7005- 3	N/A	Note 4	
Agilent	Dual Directional Coupler	778D	50422	Note 4	
Agilent	Dielectric Probe Kit	85070D	US01440205	Note 5	
AR	Power Amplifier	5S1G4M2	0328767	Note 6	
R&S	Spectrum Analyzer	FSP30	101399	Jun. 01, 2012	May 31, 2013

Table 5.1 Test Equipment List

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. Referring to KDB 865664 D01v01, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole D835V2, SN: 4d091, D1900V2, SN: 5d118, D2450V2, SN: 736 can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.
4. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
5. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Agilent.
6. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1W input power according to the ratio of 1W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the power meter is critical and we do have calibration for it
7. Attenuator 1 insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.

6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.2.

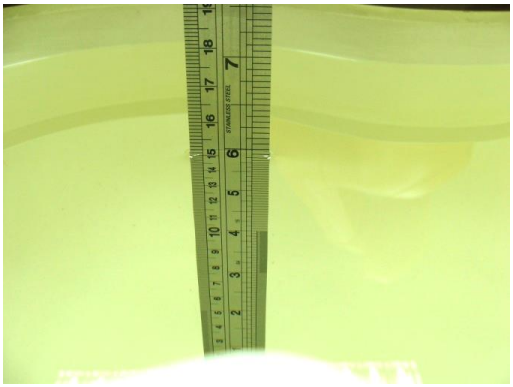


Fig 6.1 Photo of Liquid Height for Head SAR

Fig 6.2 Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquid.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ε_r)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7

Table 6.1 Recipes of Tissue Simulating Liquid

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an Agilent 85070D Dielectric Probe Kit and an Agilent Network Analyzer.

The following table shows the measuring results for simulating liquid.

Frequency (MHz)	Liquid Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	21.2	0.896	40.991	0.89	41.9	0.67	-2.17	±5	Apr. 05, 2013
835	Head	21.5	0.88	40.875	0.9	41.5	-2.22	-1.51	±5	Apr. 05, 2013
835	Head	21.3	0.904	42.236	0.9	41.5	0.44	1.77	±5	Apr. 08, 2013
1750	Head	21.3	1.375	41.541	1.37	40.1	0.36	3.59	±5	Mar. 14, 2013
1750	Head	21.2	1.377	41.359	1.37	40.1	0.51	3.14	±5	Apr. 08, 2013
1900	Head	21.1	1.454	39.351	1.4	40	3.86	-1.62	±5	Mar. 14, 2013
1900	Head	21.1	1.427	38.857	1.4	40	1.93	-2.86	±5	Apr. 08, 2013
2450	Head	21.2	1.861	39.575	1.80	39.2	3.39	0.96	±5	Apr. 07, 2013
750	Body	21.4	0.971	54.634	0.96	55.5	1.15	-1.56	±5	Apr. 06, 2013
750	Body	21.1	0.963	54.224	0.96	55.5	0.31	-2.30	±5	Apr. 08, 2013
835	Body	21.3	0.98	54.48	0.97	55.2	1.03	-1.30	±5	Apr. 06, 2013
835	Body	21.1	0.982	54.868	0.97	55.2	1.24	-0.60	±5	Apr. 08, 2013
1750	Body	21.5	1.51	55.728	1.49	53.4	1.34	4.36	±5	Apr. 06, 2013
1750	Body	21.5	1.513	55.5	1.49	53.4	1.54	3.93	±5	Apr. 08, 2013
1900	Body	21.1	1.552	53.323	1.52	53.3	2.11	0.04	±5	Mar. 13, 2013
1900	Body	21.4	1.554	53.608	1.52	53.3	2.24	0.58	±5	Apr. 08, 2013
2450	Body	21.3	1.951	53.859	1.95	52.7	0.05	2.20	±5	Apr. 07, 2013

Table 6.2 Measuring Results for Simulating Liquid

7. SAR System Verification

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

7.1 Purpose of System Performance check

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

7.2 System Setup

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

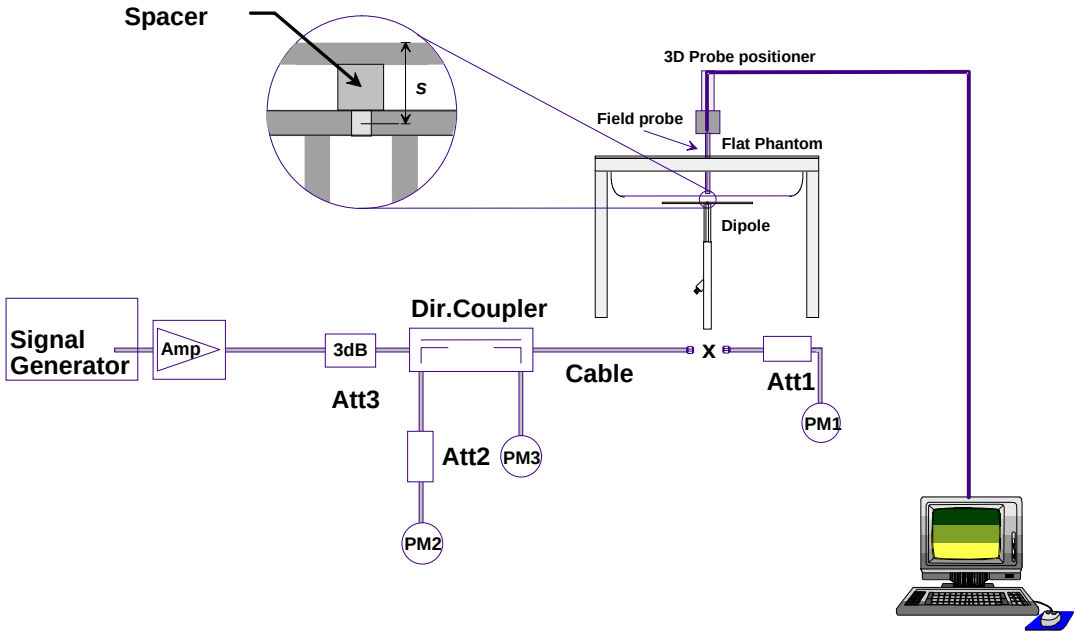


Fig 7.1 System Setup for System Evaluation

1. Signal Generator
2. Amplifier
3. Directional Coupler
4. Power Meter
5. Calibrated Dipole

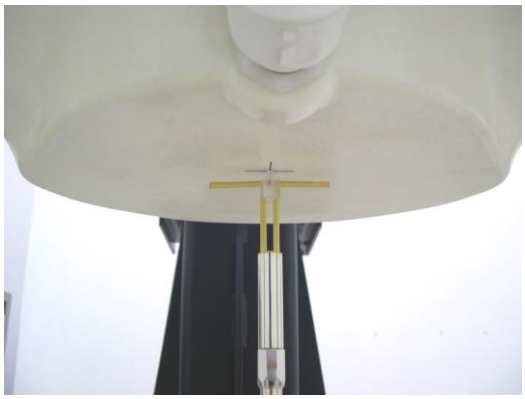


Fig 7.2 Photo of Dipole Setup

7.3 SAR System Verification Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Table 7.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Liquid Type	Power fed onto reference dipole (mW)	Target SAR_{1g} (W/kg)	Measured SAR_{1g} (W/kg)	Normalized SAR_{1g} (W/kg)	Deviation (%)
Apr. 05, 2013	750	Head	250	8.37	2.14	8.56	2.27
Apr. 05, 2013	835	Head	250	9.40	2.28	9.12	-2.98
Apr. 08, 2013	835	Head	250	9.40	2.34	9.36	-0.43
Mar. 14, 2013	1750	Head	250	36.4	9.15	36.6	0.55
Apr. 08, 2013	1750	Head	250	36.4	9.17	36.68	0.77
Mar. 14, 2013	1900	Head	250	40.3	10.2	40.8	1.24
Apr. 08, 2013	1900	Head	250	40.3	10	40	-0.74
Apr. 07, 2013	2450	Head	250	54.8	13.7	54.8	0.00
Apr. 06, 2013	750	Body	250	8.71	2.22	8.88	1.95
Apr. 08, 2013	750	Body	250	8.71	2.2	8.8	1.03
Apr. 06, 2013	835	Body	250	9.42	2.25	9	-4.46
Apr. 08, 2013	835	Body	250	9.42	2.25	9	-4.46
Apr. 06, 2013	1750	Body	250	37.1	9.12	36.48	-1.67
Apr. 08, 2013	1750	Body	250	37.1	9.14	36.56	-1.46
Mar. 13, 2013	1900	Body	250	41.8	10.5	42	0.48
Apr. 08, 2013	1900	Body	250	41.8	10.5	42	0.48
Apr. 07, 2013	2450	Body	250	52.3	13.1	52.4	0.19

Table 7.1 Target and Measurement SAR after Normalized

8. EUT Testing Position

This EUT was tested in ten different positions. They are right cheek, right tilted, left cheek, left tilted, Front of the EUT with phantom 1 cm gap, Back of the EUT with phantom 1 cm gap, Top Side of the EUT with phantom 1 cm gap, Bottom Side of the EUT with phantom 1 cm gap, Right Side of the EUT with phantom 1 cm gap, and Left Side of the EUT with phantom 1 cm gap, as illustrated below.

8.1 Define two imaginary lines on the handset

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

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

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

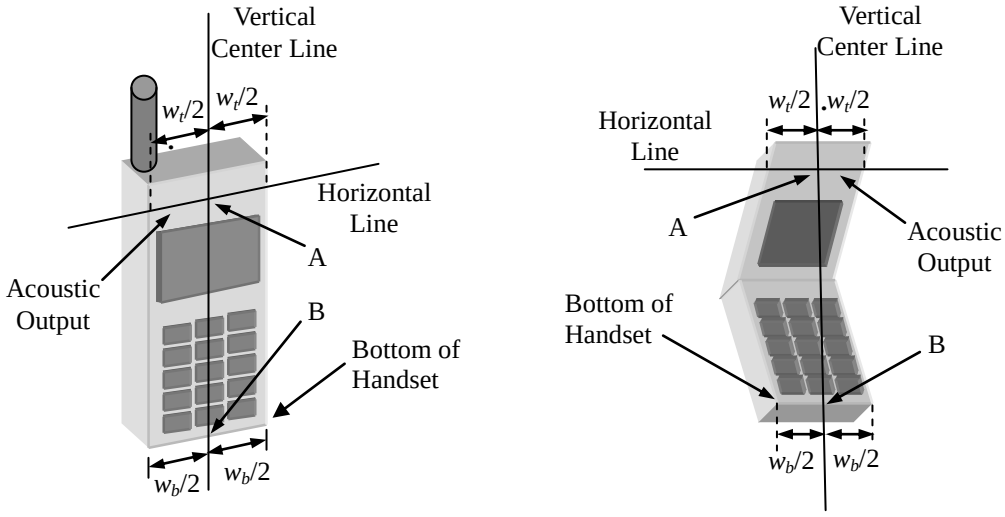


Fig 8.1 Illustration for Handset Vertical and Horizontal Reference Lines

8.2 Cheek Position

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

(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig. 8.2).

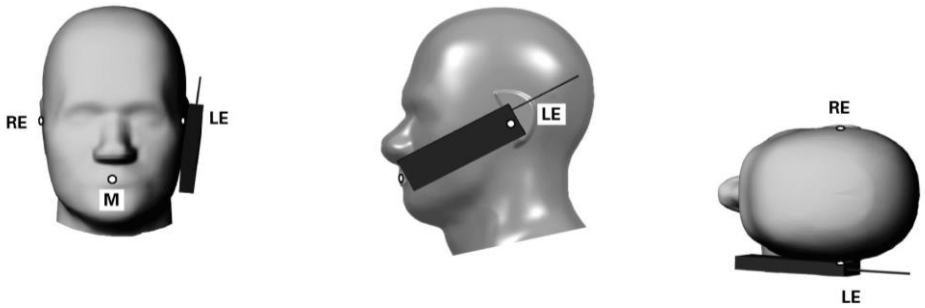


Fig 8.2 Illustration for Cheek Position

8.3 Tilted Position

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

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

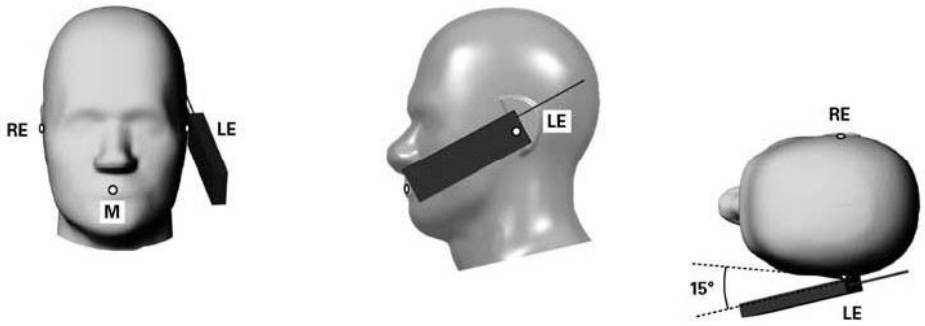


Fig 8.3 Illustration for Tilted Position

8.4 Body Worn Position

(a) To position the device parallel to the phantom surface with either keypad up or down.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device surface and the flat phantom to 1 cm.

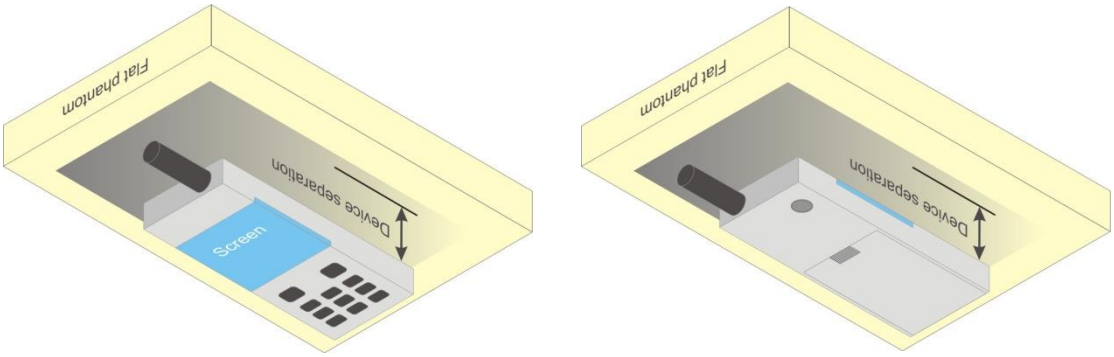


Fig 8.4 Illustration for Body Worn Position

8.5 Hotspot Position

(a) To position the device parallel to the phantom surface with all sides and either keypad up or down.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device and the flat phantom to 1 cm.

<EUT Setup Photos>

Please refer to Appendix D for the test setup photos.

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

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

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

9.1 Spatial Peak SAR Evaluation

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

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

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

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

9.2 Power Reference Measurement

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

9.3 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01 quoted below.

For any secondary peaks found in the area scan which are within 2 dB of the maximum peak and are not within this zoom scan, the zoom scan should be repeated

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the area scan based *1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

9.4 Volume Scan Procedures

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

9.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

9.6 Power Drift Monitoring

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

10. Conducted RF Output Power (Unit: dBm)

<CDMA2000 Conducted Power>

Note:

1. According to KDB 941225 D01, Head SAR for RC1+SO55 is not required because the maximum average output power of RC1 is less than 1/4 dB higher than RC3+SO55.
2. Referring to KDB 941225 D01, the CDMA Handset Body-worn SAR tests based on RC3+SO32. RC1, Ev-Do Rev 0 (RTAP 153.6kbps) Ev-Do Rev A (RETAP 4096 bits) power are all less than 1/4 dB higher than RC3, thus SAR testing in these modes are not required.
3. Referring to KDB 941225 D01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps). If 1xRTT and Ev-Do Rev A (RETAP 4096 bits) power is less than 1/4dB higher than Re v0, SAR tests with those settings are not necessary.
4. Considering VOIP capability, 1xEv-Do Rev. A. SAR was repeated on the worst position of 1xRTT head SAR and body-worn SAR testing.

<1xRTT>

Band	CDMA2000 BC0			CDMA2000 BC1			CDMA2000 BC15		
Channel	1013	384	777	25	600	1175	25	425	875
Frequency	824.7	836.52	848.31	1851.25	1880	1908.75	1711.3	1731.3	1753.8
1x Voice Mode	Full Power (24dBm)			Full Power (24dBm)			Full Power (23.5dBm)		
1xRTT RC1 SO55	23.57	23.68	23.66	23.18	23.41	23.28	23.32	23.37	23.29
1xRTT RC3 SO55	23.54	23.66	23.65	23.11	23.37	23.18	23.25	23.36	23.23
1xRTT RC3 SO32(+ F-SCH)	23.58	23.65	23.62	23.06	23.31	23.15	23.22	23.34	23.21
1xRTT RC3 SO32(+SCH)	23.53	23.62	23.58	23.06	23.30	23.12	23.23	23.33	23.20
1x Voice Mode	Reduced Power (17dBm)			Reduced Power (17dBm)			Reduced Power (17dBm)		
1xRTT RC1 SO55	16.04	16.64	16.65	16.10	16.18	16.20	16.70	16.81	16.74
1xRTT RC3 SO55	16.24	16.73	16.84	16.38	16.42	16.21	16.61	16.75	16.73
1xRTT RC3 SO32(+ F-SCH)	16.27	16.75	16.89	16.40	16.46	16.22	16.75	16.85	16.90
1xRTT RC3 SO32(+SCH)	16.21	16.72	16.85	16.37	16.42	16.19	16.74	16.69	16.81

<1xEVDO>

Band		CDMA2000 BC0			CDMA2000 BC1			CDMA2000 BC15		
Channel		1013	384	777	25	600	1175	25	425	875
Frequency		824.7	836.52	848.31	1851.25	1880	1908.75	1711.3	1731.3	1753.8
EVDO data mode		Full Power (24dBm)			Full Power (24dBm)			Full Power (23.5dBm)		
EVDO Rev.0	1xEVDO RTAP 153.6	23.57	23.64	23.55	23.00	23.22	23.09	23.21	23.30	23.18
EVDO Rev.A	1xEVDO RETAP 4096	23.59	23.64	23.57	23.01	23.27	23.10	23.20	23.31	23.22

<LTE Conducted Power>

Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each *required test channel*.
4. Per KDB 941225 D05v02, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
5. 16QAM output power for each RB allocation configuration is not > ½ dB higher than the same configuration in QPSK
6. Smaller bandwidth output power for each RB allocation configuration is not > ½ dB higher than the same configuration in the largest supported bandwidth

<LTE Band 2 Conducted Power >

		Full Power (22dBm)							Reduced Power (17dBm)						
BW	Mod / RB	Average Power. (dBm)			3GPP	MPR Result (dB)			Average Power. (dBm)			3GPP	MPR Result (dB)		
[MHz]	(Size - Offset)	Low Ch	Mid Ch	High Ch	MPR	Low Ch	Mid Ch	High Ch	Low Ch	Mid Ch	High Ch	MPR	Low Ch	Mid Ch	High Ch
Channel		18700	18900	19100		18700	18900	19100	18700	18900	19100		18700	18900	19100
Frequency (MHz)		1860	1880	1900		1860	1880	1900	1860	1880	1900		1860	1880	1900
20	QPSK 1-0	21.86	21.90	21.88	0	0.00	0.00	0.00	15.91	15.96	16.08	0	0.38	0.28	0.45
20	QPSK 1-49	21.76	21.87	21.59		0.10	0.03	0.29	16.29	16.24	15.89		0.00	0.00	0.64
20	QPSK 1-99	21.59	21.89	21.58		0.27	0.01	0.30	15.91	16.07	16.53		0.38	0.17	0.00
20	QPSK 50-0	20.39	20.45	20.37	≤ 1	1.47	1.45	1.51	15.17	15.21	15.15	≤ 1	1.12	1.03	1.38
20	QPSK 50-24	20.42	20.32	20.26		1.44	1.58	1.62	15.16	15.17	15.12		1.13	1.07	1.41
20	QPSK 50-49	20.41	20.36	20.32		1.45	1.54	1.56	15.16	15.23	14.99		1.13	1.01	1.54
20	QPSK 100-0	20.45	20.43	20.36		1.41	1.47	1.52	15.22	15.18	15.18		1.07	1.06	1.35
20	16QAM 1-0	20.94	20.95	20.87	≤ 1	0.92	0.95	1.01	15.23	14.96	15.36	≤ 1	1.06	1.28	1.17
20	16QAM 1-49	20.71	20.60	20.83		1.15	1.30	1.05	15.29	15.05	14.89		1.00	1.19	1.64
20	16QAM 1-99	20.92	20.76	20.81		0.94	1.14	1.07	15.21	15.12	15.29		1.08	1.12	1.24
20	16QAM 50-0	19.30	19.37	19.30	≤ 2	2.56	2.53	2.58	14.17	14.14	14.22	≤ 2	2.12	2.10	2.31
20	16QAM 50-24	19.36	19.29	19.27		2.50	2.61	2.61	14.27	14.17	14.23		2.02	2.07	2.30
20	16QAM 50-49	19.39	19.38	19.34		2.47	2.52	2.54	14.31	14.17	13.85		1.98	2.07	2.68
20	16QAM 100-0	19.38	19.45	19.35		2.48	2.45	2.53	14.24	14.31	14.20		2.05	1.93	2.33
Channel		18675	18900	19125		18675	18900	19125	18675	18900	19125		18675	18900	19125
Frequency (MHz)		1857.5	1880	1902.5		1857.5	1880	1902.5	1857.5	1880	1902.5		1857.5	1880	1902.5
15	QPSK 1-0	21.87	21.87	21.82	0	0.00	0.00	0.00	15.83	16.11	15.98	0	0.31	0.05	0.59
15	QPSK 1-37	21.85	21.76	21.56		0.02	0.11	0.26	16.05	16.07	16.00		0.09	0.09	0.57
15	QPSK 1-74	21.66	21.81	21.69		0.21	0.06	0.13	16.14	16.16	16.57		0.00	0.00	0.00
15	QPSK 36-0	20.54	20.62	20.56	≤ 1	1.33	1.25	1.26	15.60	15.45	15.97	≤ 1	0.54	0.71	0.60
15	QPSK 36-19	20.60	20.64	20.55		1.27	1.23	1.27	15.60	15.35	15.69		0.54	0.81	0.88
15	QPSK 36-39	20.60	20.73	20.52		1.27	1.14	1.30	15.70	15.47	15.97		0.44	0.69	0.60
15	QPSK 75-0	20.46	20.38	20.63		1.41	1.49	1.19	15.26	15.26	14.92		0.88	0.90	1.65
15	16QAM 1-0	20.93	20.94	20.87	≤ 1	0.94	0.93	0.95	15.09	14.93	15.03	≤ 1	1.05	1.23	1.54
15	16QAM 1-37	20.74	20.93	20.64		1.13	0.94	1.18	15.19	15.02	15.14		0.95	1.14	1.43
15	16QAM 1-74	20.53	20.64	20.86		1.34	1.23	0.96	15.34	15.45	15.45		0.80	0.71	1.12
15	16QAM 36-0	19.81	19.78	19.71	≤ 2	2.06	2.09	2.11	14.30	14.49	14.53	≤ 2	1.84	1.67	2.04
15	16QAM 36-19	19.64	19.69	19.61		2.23	2.18	2.21	14.45	14.45	14.33		1.69	1.71	2.24
15	16QAM 36-39	19.84	19.78	19.67		2.03	2.09	2.15	14.65	14.46	14.55		1.49	1.70	2.02
15	16QAM 75-0	19.39	19.44	19.63		2.48	2.43	2.19	14.32	14.27	13.98		1.82	1.89	2.59

Channel		18650	18900	19150		18650	18900	19150	18650	18900	19150		18650	18900	19150
Frequency (MHz)		1855	1880	1905		1855	1880	1905	1855	1880	1905		1855	1880	1905
10	QPSK 1-0	21.75	21.91	21.78	0	0.00	0.00	0.00	15.70	15.92	15.76	0	0.26	0.16	0.63
10	QPSK 1-24	21.58	21.78	21.65		0.17	0.13	0.13	15.78	15.86	15.98		0.18	0.22	0.41
10	QPSK 1-49	21.62	21.79	21.77		0.13	0.12	0.01	15.96	16.08	16.39		0.00	0.00	0.00
10	QPSK 25-0	20.47	20.43	20.43	≤ 1	1.28	1.48	1.35	15.16	15.11	14.79	≤ 1	0.80	0.97	1.60
10	QPSK 25-12	20.41	20.51	20.47		1.34	1.40	1.31	15.11	15.21	14.86		0.85	0.87	1.53
10	QPSK 25-24	20.51	20.51	20.60		1.24	1.40	1.18	15.22	15.22	15.03		0.74	0.86	1.36
10	QPSK 50-0	20.27	20.36	20.35		1.48	1.55	1.43	15.10	15.17	14.87		0.86	0.91	1.52
10	16QAM 1-0	20.97	20.88	20.98	≤ 1	0.78	1.03	0.80	14.79	15.41	15.30	≤ 1	1.17	0.67	1.09
10	16QAM 1-24	20.59	20.61	20.95		1.16	1.30	0.83	14.84	15.17	15.00		1.12	0.91	1.39
10	16QAM 1-49	20.85	20.76	20.88		0.90	1.15	0.90	15.15	15.01	15.36		0.81	1.07	1.03
10	16QAM 25-0	19.35	19.41	19.35	≤ 2	2.40	2.50	2.43	14.20	14.12	13.74	≤ 2	1.76	1.96	2.65
10	16QAM 25-12	19.32	19.54	19.51		2.43	2.37	2.27	14.10	14.31	13.83		1.86	1.77	2.56
10	16QAM 25-24	19.50	19.44	19.63		2.25	2.47	2.15	14.32	14.21	13.99		1.64	1.87	2.40
10	16QAM 50-0	19.30	19.33	19.37		2.45	2.58	2.41	14.18	14.27	13.94		1.78	1.81	2.45
Channel		18625	18900	19175		18625	18900	19175	18625	18900	19175		18625	18900	19175
Frequency (MHz)		1852.5	1880	1907.5		1852.5	1880	1907.5	1852.5	1880	1907.5		1852.5	1880	1907.5
5	QPSK 1-0	21.80	21.77	21.87	0	0.00	0.00	0.00	15.74	15.94	15.98	0	0.18	0.10	0.62
5	QPSK 1-12	21.70	21.76	21.79		0.10	0.01	0.08	15.77	15.99	16.35		0.15	0.05	0.25
5	QPSK 1-24	21.58	21.73	21.69		0.22	0.04	0.18	15.92	16.04	16.60		0.00	0.00	0.00
5	QPSK 12-0	20.47	20.68	20.76	≤ 1	1.33	1.09	1.11	15.05	15.21	15.04	≤ 1	0.87	0.83	1.56
5	QPSK 12-6	20.50	20.63	20.88		1.30	1.14	0.99	15.14	15.33	15.06		0.78	0.71	1.54
5	QPSK 12-11	20.51	20.66	20.91		1.29	1.11	0.96	15.14	15.25	15.20		0.78	0.79	1.40
5	QPSK 25-0	20.36	20.49	20.67		1.44	1.28	1.20	15.07	15.17	15.09		0.85	0.87	1.51
5	16QAM 1-0	20.88	20.90	20.97	≤ 1	0.92	0.87	0.90	14.65	14.97	15.23	≤ 1	1.27	1.07	1.37
5	16QAM 1-12	20.26	20.70	20.72		1.54	1.07	1.15	14.95	14.91	15.04		0.97	1.13	1.56
5	16QAM 1-24	20.55	20.72	20.94		1.25	1.05	0.93	15.05	14.93	15.38		0.87	1.11	1.22
5	16QAM 12-0	19.54	19.63	19.89	≤ 2	2.26	2.14	1.98	14.07	14.12	14.01	≤ 2	1.85	1.92	2.59
5	16QAM 12-6	19.54	19.70	19.94		2.26	2.07	1.93	14.16	14.29	14.00		1.76	1.75	2.60
5	16QAM 12-11	19.59	19.78	19.91		2.21	1.99	1.96	14.19	14.30	14.09		1.73	1.74	2.51
5	16QAM 25-0	19.38	19.46	19.63		2.42	2.31	2.24	14.12	14.13	14.00		1.80	1.91	2.60
Channel		18615	18900	19185		18615	18900	19185	18615	18900	19185		18615	18900	19185
Frequency (MHz)		1851.5	1880	1908.5		1851.5	1880	1908.5	1851.5	1880	1908.5		1851.5	1880	1908.5
3	QPSK 1-0	21.87	21.80	21.66	0	0.00	0.00	0.00	15.28	15.54	15.78	0	0.25	0.06	0.37
3	QPSK 1-7	21.62	21.78	21.63		0.25	0.02	0.03	15.22	15.60	15.99		0.31	0.00	0.16
3	QPSK 1-14	21.83	21.72	21.65		0.04	0.08	0.01	15.53	15.49	16.15		0.00	0.11	0.00
3	QPSK 8-0	20.60	20.74	20.69	≤ 1	1.27	1.06	0.97	14.70	14.84	14.76	≤ 1	0.83	0.76	1.39
3	QPSK 8-4	20.66	20.79	20.73		1.21	1.01	0.93	14.77	14.80	14.86		0.76	0.80	1.29
3	QPSK 8-7	20.66	20.79	20.78		1.21	1.01	0.88	14.81	14.86	14.87		0.72	0.74	1.28
3	QPSK 15-0	20.57	20.68	20.71		1.30	1.12	0.95	14.69	14.74	14.76		0.84	0.86	1.39
3	16QAM 1-0	20.85	20.64	20.88	≤ 1	1.02	1.16	0.78	14.04	14.62	14.73	≤ 1	1.49	0.98	1.42
3	16QAM 1-7	20.70	20.50	20.72		1.17	1.30	0.94	14.25	14.19	14.87		1.28	1.41	1.28
3	16QAM 1-14	20.69	20.51	20.76		1.18	1.29	0.90	14.37	14.75	14.60		1.16	0.85	1.55
3	16QAM 8-0	19.59	19.83	19.66	≤ 2	2.28	1.97	2.00	13.67	13.83	13.53	≤ 2	1.86	1.77	2.62
3	16QAM 8-4	19.60	19.84	19.63		2.27	1.96	2.03	13.64	13.86	13.81		1.89	1.74	2.34
3	16QAM 8-7	19.52	19.80	19.78		2.35	2.00	1.88	13.85	13.85	13.86		1.68	1.75	2.29
3	16QAM 15-0	19.58	19.84	19.74		2.29	1.96	1.92	13.80	14.08	13.73		1.73	1.52	2.42
Channel		18607	18900	19193		18607	18900	19193	18607	18900	19193		18607	18900	19193
Frequency (MHz)		1850.7	1880	1909.3		1850.7	1880	1909.3	1850.7	1880	1909.3		1850.7	1880	1909.3
1.4	QPSK 1-0	21.77	21.75	21.66	0	0.00	0.00	0.00	15.83	15.86	16.43	0	0.00	0.17	0.15
1.4	QPSK 1-2	21.73	21.66	21.65		0.04	0.09	0.01	15.78	16.00	16.54		0.05	0.03	0.04
1.4	QPSK 1-5	21.75	21.67	21.58		0.02	0.08	0.08	15.79	15.92	16.55		0.04	0.11	0.03
1.4	QPSK 3-0	21.75	21.72	21.62	≤ 1	0.02	0.03	0.04	15.79	15.97	16.58	≤ 1	0.04	0.06	0.00
1.4	QPSK 3-1	21.72	21.74	21.62		0.05	0.01	0.04	15.73	16.03	16.49		0.10	0.00	0.09
1.4	QPSK 3-2	21.70	21.71	21.59		0.07	0.04	0.07	15.79	15.93	16.46		0.04	0.10	0.12
1.4	QPSK 6-0	20.72	20.74	20.65		1.05	1.01	1.01	15.17	15.25	15.41		0.66	0.78	1.17
1.4	16QAM 1-0	20.81	20.76	20.86	≤ 1	0.96	0.99	0.80	15.31	15.12	15.09	≤ 1	0.52	0.91	1.49
1.4	16QAM 1-2	20.70	20.63	20.62		1.07	1.12	1.04	14.96	14.98	15.13		0.87	1.05	1.45
1.4	16QAM 1-5	20.80	20.65	20.65		0.97	1.10	1.01	15.01	14.91	15.29		0.82	1.12	1.29
1.4	16QAM 3-0	20.71	20.69	20.61	≤ 2	1.06	1.06	1.05	14.82	14.70	15.63	≤ 2	1.01	1.33	0.95
1.4	16QAM 3-1	20.75	20.65	20.54		1.02	1.10	1.12	14.84	14.51	15.54		0.99	1.52	1.04
1.4	16QAM 3-2	20.73	20.75	20.61		1.04	1.00	1.05	14.69	14.59	15.39		1.14	1.44	1.19
1.4	16QAM 6-0	19.90	19.77	19.60		1.87	1.98	2.06	14.14	14.34	14.44		1.69	1.69	2.14

<LTE Band 4 Conducted Power >

		Full Power (22.5dBm)							Reduced Power (17dBm)						
BW [MHz]	Mod / RB (Size - Offset)	Average Power. (dBm)			3GPP MPR	MPR Result (dB)			Average Power. (dBm)			3GPP MPR	MPR Result (dB)		
		Low Ch	Mid Ch	High Ch		Low Ch	Mid Ch	High Ch	Low Ch	Mid Ch	High Ch		Low Ch	Mid Ch	High Ch
Channel		20050	20175	20300		20050	20175	20300	20050	20175	20300		20050	20175	20300
Frequency (MHz)		1720	1732.5	1745		1720	1732.5	1745	1720	1732.5	1745		1720	1732.5	1745
20	QPSK 1-0	22.15	22.16	21.99	0	0.00	0.00	0.00	16.47	16.49	16.32	0	0.00	0.00	0.00
20	QPSK 1-49	21.98	21.90	21.98		0.17	0.26	0.01	16.30	16.24	16.16		0.17	0.25	0.16
20	QPSK 1-99	22.10	22.04	21.90		0.05	0.12	0.09	16.23	16.25	16.16		0.24	0.24	0.16
20	QPSK 50-0	20.62	20.65	20.60	≤ 1	1.53	1.51	1.39	15.16	15.30	15.11	≤ 1	1.31	1.19	1.21
20	QPSK 50-24	20.60	20.49	20.55		1.55	1.67	1.44	15.19	15.15	15.06		1.28	1.34	1.26
20	QPSK 50-49	20.52	20.55	20.50		1.63	1.61	1.49	15.16	15.13	14.98		1.31	1.36	1.34
20	QPSK 100-0	20.77	20.80	20.66		1.38	1.36	1.33	15.22	15.18	15.15		1.25	1.31	1.17
20	16QAM 1-0	21.03	21.04	21.21	≤ 1	1.12	1.12	0.78	15.86	15.38	15.04	≤ 1	0.61	1.11	1.28
20	16QAM 1-49	20.82	20.82	21.13		1.33	1.34	0.86	15.26	15.18	15.15		1.21	1.31	1.17
20	16QAM 1-99	20.80	21.03	21.20		1.35	1.13	0.79	15.67	15.20	14.73		0.80	1.29	1.59
20	16QAM 50-0	19.61	19.60	19.56	≤ 2	2.54	2.56	2.43	14.32	14.39	14.20	≤ 2	2.15	2.10	2.12
20	16QAM 50-24	19.52	19.52	19.49		2.63	2.64	2.50	14.21	14.24	14.14		2.26	2.25	2.18
20	16QAM 50-49	19.62	19.56	19.63		2.53	2.60	2.36	14.30	14.22	14.00		2.17	2.27	2.32
20	16QAM 100-0	19.70	19.66	19.65		2.45	2.50	2.34	14.32	14.22	14.18		2.15	2.27	2.14
Channel		20025	20175	20325		20025	20175	20325	20025	20175	20325		20025	20175	20325
Frequency (MHz)		1717.5	1732.5	1747.5		1717.5	1732.5	1747.5	1717.5	1732.5	1747.5		1717.5	1732.5	1747.5
15	QPSK 1-0	22.16	22.13	22.19	0	0.00	0.00	0.00	16.60	16.54	16.31	0	0.00	0.00	0.00
15	QPSK 1-37	21.96	22.12	21.98		0.20	0.01	0.21	16.53	16.39	16.15		0.07	0.15	0.16
15	QPSK 1-74	22.15	21.90	21.95		0.01	0.23	0.24	16.42	16.40	16.11		0.18	0.14	0.20
15	QPSK 36-0	20.94	20.86	20.86	≤ 1	1.22	1.27	1.33	15.33	15.39	15.24	≤ 1	1.27	1.15	1.07
15	QPSK 36-19	20.89	20.89	20.82		1.27	1.24	1.37	15.27	15.30	15.10		1.33	1.24	1.21
15	QPSK 36-39	20.79	20.76	20.92		1.37	1.37	1.27	15.24	15.23	15.15		1.36	1.31	1.16
15	QPSK 75-0	20.66	20.62	20.57		1.50	1.51	1.62	15.20	15.22	15.05		1.40	1.32	1.26
15	16QAM 1-0	21.32	21.19	21.14	≤ 1	0.84	0.94	1.05	15.75	15.75	15.59	≤ 1	0.85	0.79	0.72
15	16QAM 1-37	20.83	20.93	20.83		1.33	1.20	1.36	15.25	15.07	14.79		1.35	1.47	1.52
15	16QAM 1-74	20.95	20.76	21.13		1.21	1.37	1.06	15.34	15.64	15.39		1.26	0.90	0.92
15	16QAM 36-0	19.88	19.92	19.88	≤ 2	2.28	2.21	2.31	14.36	14.45	14.38	≤ 2	2.24	2.09	1.93
15	16QAM 36-19	19.85	19.96	19.85		2.31	2.17	2.34	14.40	14.43	14.22		2.20	2.11	2.09
15	16QAM 36-39	19.87	19.77	19.89		2.29	2.36	2.30	14.43	14.29	14.14		2.17	2.25	2.17
15	16QAM 75-0	19.80	19.58	19.57		2.36	2.55	2.62	14.27	14.26	14.07		2.33	2.28	2.24
Channel		20000	20175	20350		20000	20175	20350	20000	20175	20350		20000	20175	20350
Frequency (MHz)		1715	1732.5	1750		1715	1732.5	1750	1715	1732.5	1750		1715	1732.5	1750
10	QPSK 1-0	22.04	22.05	21.99	0	0.00	0.00	0.00	16.47	16.41	16.24	0	0.00	0.00	0.00
10	QPSK 1-24	21.94	21.81	21.96		0.10	0.24	0.03	16.34	16.28	16.24		0.13	0.13	0.00
10	QPSK 1-49	21.88	21.96	21.93		0.16	0.09	0.06	16.21	16.30	16.18		0.26	0.11	0.06
10	QPSK 25-0	20.80	20.82	20.68	≤ 1	1.24	1.23	1.31	15.28	15.27	15.11	≤ 1	1.19	1.14	1.13
10	QPSK 25-12	20.82	20.75	20.76		1.22	1.30	1.23	15.31	15.21	15.19		1.16	1.20	1.05
10	QPSK 25-24	20.77	20.68	20.76		1.27	1.37	1.23	15.27	15.13	15.07		1.20	1.28	1.17
10	QPSK 50-0	20.53	20.49	20.57		1.51	1.56	1.42	15.21	15.13	14.99		1.26	1.28	1.25
10	16QAM 1-0	20.98	21.27	20.78	≤ 1	1.06	0.78	1.21	15.14	15.63	15.44	≤ 1	1.33	0.78	0.80
10	16QAM 1-24	20.84	21.25	20.69		1.20	0.80	1.30	15.36	15.50	15.12		1.11	0.91	1.12
10	16QAM 1-49	20.92	20.89	20.75		1.12	1.16	1.24	15.31	15.34	15.00		1.16	1.07	1.24
10	16QAM 25-0	19.81	19.84	19.73	≤ 2	2.23	2.21	2.26	14.38	14.36	14.15	≤ 2	2.09	2.05	2.09
10	16QAM 25-12	19.75	19.65	19.74		2.29	2.40	2.25	14.30	14.38	14.20		2.17	2.03	2.04
10	16QAM 25-24	19.64	19.65	19.69		2.40	2.40	2.30	14.33	14.21	14.20		2.14	2.20	2.04
10	16QAM 50-0	19.50	19.56	19.51		2.54	2.49	2.48	14.24	14.21	14.05		2.23	2.20	2.19
Channel		19975	20175	20375		19975	20175	20375	19975	20175	20375		19975	20175	20375
Frequency (MHz)		1712.5	1732.5	1752.5		1712.5	1732.5	1752.5	1712.5	1732.5	1752.5		1712.5	1732.5	1752.5
5	QPSK 1-0	22.01	22.23	22.25	0	0.00	0.00	0.00	16.48	16.37	16.22	0	0.00	0.06	0.00
5	QPSK 1-12	22.00	22.20	22.02		0.01	0.03	0.23	16.39	16.43	16.15		0.09	0.00	0.07
5	QPSK 1-24	21.92	21.91	21.84		0.09	0.32	0.41	16.36	16.36	16.16		0.12	0.07	0.06
5	QPSK 12-0	21.01	20.90	20.88	≤ 1	1.00	1.33	1.37	15.32	15.33	15.19	≤ 1	1.16	1.10	1.03
5	QPSK 12-6	21.07	20.90	20.93		0.94	1.33	1.32	15.29	15.35	15.15		1.19	1.08	1.07
5	QPSK 12-11	21.00	20.94	20.96		1.01	1.29	1.29	15.36	15.38	15.27		1.12	1.05	0.95
5	QPSK 25-0	20.83	20.64	20.73		1.18	1.59	1.52	15.15	15.19	15.13		1.33	1.24	1.09
5	16QAM 1-0	21.38	21.05	21.13	≤ 1	0.63	1.18	1.12	15.11	15.56	15.52	≤ 1	1.37	0.87	0.70
5	16QAM 1-12	21.32	20.95	21.03		0.69	1.28	1.22	15.28	15.75	15.45		1.20	0.68	0.77
5	16QAM 1-24	21.14	20.88	20.83		0.87	1.35	1.42	15.18	15.44	14.79		1.30	0.99	1.43
5	16QAM 12-0	19.96	19.99	19.99	≤ 2	2.05	2.24	2.26	14.39	14.46	14.18	≤ 2	2.09	1.97	2.04
5	16QAM 12-6	19.98	20.11	19.96		2.03	2.12	2.29	14.47	14.40	14.24		2.01	2.03	1.98
5	16QAM 12-11	20.09	20.05	20.13		1.92	2.18	2.12	14.39	14.31	14.28		2.09	2.12	1.94
5	16QAM 25-0	19.74	19.67	19.72		2.27	2.56	2.53	14.42	14.16	14.09		2.06	2.27	2.13

Channel		19965	20175	20385		19965	20175	20385	19965	20175	20385		19965	20175	20385
Frequency (MHz)		1711.5	1732.5	1753.5		1711.5	1732.5	1753.5	1711.5	1732.5	1753.5		1711.5	1732.5	1753.5
3	QPSK 1-0	22.05	22.03	22.13	0	0.00	0.00	0.00	16.41	16.33	16.03	0	0.00	0.14	0.06
3	QPSK 1-7	22.00	21.95	21.97		0.05	0.08	0.16	16.40	16.47	16.07		0.01	0.00	0.02
3	QPSK 1-14	22.02	21.98	21.99		0.03	0.05	0.14	16.40	16.41	16.09		0.01	0.06	0.00
3	QPSK 8-0	21.01	20.96	20.91	≤ 1	1.04	1.07	1.22	15.40	15.31	15.20	≤ 1	1.01	1.16	0.89
3	QPSK 8-4	21.13	20.91	20.97		0.92	1.12	1.16	15.31	15.35	15.15		1.10	1.12	0.94
3	QPSK 8-7	21.04	20.96	20.99		1.01	1.07	1.14	15.32	15.35	15.24		1.09	1.12	0.85
3	QPSK 15-0	20.84	20.77	20.74		1.21	1.26	1.39	15.29	15.25	15.08		1.12	1.22	1.01
3	16QAM 1-0	21.18	21.25	21.12	≤ 1	0.87	0.78	1.01	15.49	15.63	15.35	≤ 1	0.92	0.84	0.74
3	16QAM 1-7	21.01	20.93	20.51		1.04	1.10	1.62	15.68	15.34	15.39		0.73	1.13	0.70
3	16QAM 1-14	21.15	21.21	21.10		0.90	0.82	1.03	15.27	15.22	14.99		1.14	1.25	1.10
3	16QAM 8-0	20.05	19.97	20.04	≤ 2	2.00	2.06	2.09	14.25	14.29	14.29	≤ 2	2.16	2.18	1.80
3	16QAM 8-4	20.08	19.93	20.09		1.97	2.10	2.04	14.38	14.34	14.05		2.03	2.13	2.04
3	16QAM 8-7	20.14	20.07	20.04		1.91	1.96	2.09	14.29	14.37	14.24		2.12	2.10	1.85
3	16QAM 15-0	19.85	19.74	19.84		2.20	2.29	2.29	14.40	14.47	14.16		2.01	2.00	1.93
Channel		19957	20175	20393		19957	20175	20393	19957	20175	20393		19957	20175	20393
Frequency (MHz)		1710.7	1732.5	1754.3		1710.7	1732.5	1754.3	1710.7	1732.5	1754.3		1710.7	1732.5	1754.3
1.4	QPSK 1-0	22.18	22.28	22.33	0	0.00	0.00	0.00	16.43	16.31	16.02	0	0.03	0.09	0.14
1.4	QPSK 1-2	22.16	22.04	22.12		0.02	0.24	0.21	16.32	16.26	16.12		0.14	0.14	0.04
1.4	QPSK 1-5	22.15	22.20	21.98		0.03	0.08	0.35	16.31	16.40	16.16		0.15	0.00	0.00
1.4	QPSK 3-0	22.08	21.96	21.99	≤ 1	0.10	0.32	0.34	16.45	16.32	16.12	≤ 1	0.01	0.08	0.04
1.4	QPSK 3-1	22.12	21.99	22.02		0.06	0.29	0.31	16.46	16.37	16.12		0.00	0.03	0.04
1.4	QPSK 3-2	22.11	21.95	22.01		0.07	0.33	0.32	16.45	16.37	16.11		0.01	0.03	0.05
1.4	QPSK 6-0	21.24	21.00	21.04		0.94	1.28	1.29	15.41	15.33	15.18		1.05	1.07	0.98
1.4	16QAM 1-0	21.22	21.19	21.13	≤ 1	0.96	1.09	1.20	15.23	15.49	14.92	≤ 1	1.23	0.91	1.24
1.4	16QAM 1-2	21.08	20.95	21.10		1.10	1.33	1.23	15.22	15.25	15.00		1.24	1.15	1.16
1.4	16QAM 1-5	21.03	20.90	20.87		1.15	1.38	1.46	15.27	15.33	15.30		1.19	1.07	0.86
1.4	16QAM 3-0	21.15	21.04	21.05	≤ 2	1.03	1.24	1.28	15.46	15.39	15.30	≤ 2	1.00	1.01	0.86
1.4	16QAM 3-1	21.07	21.04	21.08		1.11	1.24	1.25	15.34	15.40	15.20		1.12	1.00	0.96
1.4	16QAM 3-2	21.07	20.83	20.99		1.11	1.45	1.34	15.35	15.30	15.32		1.11	1.10	0.84
1.4	16QAM 6-0	19.98	20.10	19.99		2.20	2.18	2.34	14.49	14.30	14.28		1.97	2.10	1.88

<LTE Band 5 Conducted Power >

		Full Power (25.5dBm)							Reduced Power (17dBm)						
BW [MHz]	Mod / RB (Size - Offset)	Average Power. (dBm)			3GPP MPR	MPR Result (dB)			Average Power. (dBm)			3GPP MPR	MPR Result (dB)		
		Low Ch	Mid Ch	High Ch		Low Ch	Mid Ch	High Ch	Low Ch	Mid Ch	High Ch		Low Ch	Mid Ch	High Ch
Channel		20450	20525	20600		20450	20525	20600	20450	20525	20600		20450	20525	20600
Frequency (MHz)		829	836.5	844		829	836.5	844	829	836.5	844		829	836.5	844
10	QPSK 1-0	24.87	24.88	24.78	0	0.00	0.00	0.00	16.49	16.71	16.61	0	0.16	0.00	0.04
10	QPSK 1-24	24.82	24.67	24.65		0.05	0.21	0.13	16.59	16.58	16.65		0.06	0.13	0.00
10	QPSK 1-49	24.80	24.76	24.72		0.07	0.12	0.06	16.65	16.70	16.49		0.00	0.01	0.16
10	QPSK 25-0	23.52	23.68	23.44	≤ 1	1.35	1.20	1.34	15.44	15.63	15.61	≤ 1	1.21	1.08	1.04
10	QPSK 25-12	23.53	23.40	23.57		1.34	1.48	1.21	15.53	15.57	15.66		1.12	1.14	0.99
10	QPSK 25-24	23.65	23.38	23.27		1.22	1.50	1.51	15.70	15.56	15.55		0.95	1.15	1.10
10	QPSK 50-0	23.49	23.53	23.32		1.38	1.35	1.46	15.55	15.64	15.62		1.10	1.07	1.03
10	16QAM 1-0	23.81	23.84	23.68	≤ 1	1.06	1.04	1.10	15.90	15.39	15.28	≤ 1	0.75	1.32	1.37
10	16QAM 1-24	23.75	23.76	23.66		1.12	1.12	1.12	15.86	15.56	15.91		0.79	1.15	0.74
10	16QAM 1-49	23.75	23.77	23.39		1.12	1.11	1.39	15.84	15.60	15.54		0.81	1.11	1.11
10	16QAM 25-0	22.59	22.36	22.35	≤ 2	2.28	2.52	2.43	14.52	14.60	14.69	≤ 2	2.13	2.11	1.96
10	16QAM 25-12	22.52	22.30	22.53		2.35	2.58	2.25	14.58	14.43	14.69		2.07	2.28	1.96
10	16QAM 25-24	22.48	22.32	22.26		2.39	2.56	2.52	14.75	14.56	14.64		1.90	2.15	2.01
10	16QAM 50-0	22.49	22.37	22.23		2.38	2.51	2.55	14.45	14.48	14.52		2.20	2.23	2.13
Channel		20425	20525	20625		20425	20525	20625	20425	20525	20625		20425	20525	20625
Frequency (MHz)		825.5	836.5	846.5		825.5	836.5	846.5	825.5	836.5	846.5		825.5	836.5	846.5
5	QPSK 1-0	24.65	24.79	24.57	0	0.08	0.00	0.00	16.64	16.56	16.61	0	0.05	0.00	0.00
5	QPSK 1-12	24.62	24.70	24.50		0.11	0.09	0.07	16.52	16.50	16.39		0.17	0.06	0.22
5	QPSK 1-24	24.73	24.77	24.56		0.00	0.02	0.01	16.69	16.55	16.50		0.00	0.01	0.11
5	QPSK 12-0	23.43	23.55	23.63	≤ 1	1.30	1.24	0.94	15.53	15.58	15.68	≤ 1	1.16	0.98	0.93
5	QPSK 12-6	23.48	23.59	23.61		1.25	1.20	0.96	15.49	15.59	15.60		1.20	0.97	1.01
5	QPSK 12-11	23.55	23.53	23.42		1.18	1.26	1.15	15.64	15.74	15.51		1.05	0.82	1.10
5	QPSK 25-0	23.32	23.43	23.43		1.41	1.36	1.14	15.46	15.58	15.46		1.23	0.98	1.15
5	16QAM 1-0	23.80	23.68	23.93	≤ 1	0.93	1.11	0.64	15.64	15.86	15.96	≤ 1	1.05	0.70	0.65
5	16QAM 1-12	23.71	23.60	23.53		1.02	1.19	1.04	15.89	15.77	15.95		0.80	0.79	0.66
5	16QAM 1-24	23.83	23.66	23.16		0.90	1.13	1.41	15.95	15.86	15.29		0.74	0.70	1.32
5	16QAM 12-0	22.42	22.49	22.22	≤ 2	2.31	2.30	2.35	14.65	14.58	14.68	≤ 2	2.04	1.98	1.93
5	16QAM 12-6	22.50	22.60	22.59		2.23	2.19	1.98	14.63	14.73	14.64		2.06	1.83	1.97
5	16QAM 12-11	22.55	22.58	22.39		2.18	2.21	2.18	14.67	14.59	14.71		2.02	1.97	1.90
5	16QAM 25-0	22.22	22.32	21.97		2.51	2.47	2.60	14.33	14.45	14.48		2.36	2.11	2.13
Channel		20415	20525	20635		20415	20525	20635	20415	20525	20635		20415	20525	20635
Frequency (MHz)		825.5	836.5	847.5		825.5	836.5	847.5	825.5	836.5	847.5		825.5	836.5	847.5
3	QPSK 1-0	24.69	24.78	24.76	0	0.02	0.00	0.00	16.62	16.55	16.54	0	0.00	0.11	0.00
3	QPSK 1-7	24.64	24.68	24.69		0.07	0.10	0.07	16.47	16.59	16.37		0.15	0.07	0.17
3	QPSK 1-14	24.71	24.69	24.65		0.00	0.09	0.11	16.51	16.66	16.39		0.11	0.00	0.15
3	QPSK 8-0	23.66	23.61	23.45	≤ 1	1.05	1.17	1.31	15.63	15.55	15.56	≤ 1	0.99	1.11	0.98
3	QPSK 8-4	23.54	23.59	23.54		1.17	1.19	1.22	15.57	15.66	15.57		1.05	1.00	0.97
3	QPSK 8-7	23.54	23.62	23.48		1.17	1.16	1.28	15.60	15.72	15.64		1.02	0.94	0.90
3	QPSK 15-0	23.41	23.47	23.44		1.30	1.31	1.32	15.57	15.51	15.49		1.05	1.15	1.05
3	16QAM 1-0	23.68	23.48	23.69	≤ 1	1.03	1.30	1.07	15.88	15.40	15.95	≤ 1	0.74	1.26	0.59
3	16QAM 1-7	23.75	23.47	23.66		0.96	1.31	1.10	15.38	15.46	15.45		1.24	1.20	1.09
3	16QAM 1-14	23.62	23.46	23.56		1.09	1.32	1.20	15.43	15.83	15.49		1.19	0.83	1.05
3	16QAM 8-0	22.56	22.44	22.34	≤ 2	2.15	2.34	2.42	14.62	14.52	14.35	≤ 2	2.00	2.14	2.19
3	16QAM 8-4	22.45	22.52	22.61		2.26	2.26	2.15	14.43	14.54	14.56		2.19	2.12	1.98
3	16QAM 8-7	22.48	22.46	22.34		2.23	2.32	2.42	14.42	14.59	14.59		2.20	2.07	1.95
3	16QAM 15-0	22.33	22.27	22.33		2.38	2.51	2.43	14.51	14.61	14.56		2.11	2.05	1.98
Channel		20407	20525	20643		20407	20525	20643	20407	20525	20643		20407	20525	20643
Frequency (MHz)		824.7	836.5	848.5		824.7	836.5	848.5	824.7	836.5	848.5		824.7	836.5	848.5
1.4	QPSK 1-0	24.79	24.97	24.95	0	0.00	0.00	0.00	16.68	16.57	16.42	0	0.00	0.06	0.11
1.4	QPSK 1-2	24.64	24.66	24.88		0.15	0.31	0.07	16.52	16.63	16.50		0.16	0.00	0.03
1.4	QPSK 1-5	24.56	24.61	24.81		0.23	0.36	0.14	16.58	16.50	16.51		0.10	0.13	0.02
1.4	QPSK 3-0	24.63	24.49	24.50	≤ 1	0.16	0.48	0.45	16.64	16.58	16.49	≤ 1	0.04	0.05	0.04
1.4	QPSK 3-1	24.72	24.53	24.58		0.07	0.44	0.37	16.63	16.57	16.53		0.05	0.06	0.00
1.4	QPSK 3-2	24.61	24.48	24.54		0.18	0.49	0.41	16.65	16.56	16.52		0.03	0.07	0.01
1.4	QPSK 6-0	23.60	23.51	23.51		1.19	1.46	1.44	15.62	15.58	15.64		1.06	1.05	0.89
1.4	16QAM 1-0	23.66	23.72	23.80	≤ 1	1.13	1.25	1.15	15.78	15.73	15.82	≤ 1	0.90	0.90	0.71
1.4	16QAM 1-2	23.65	23.66	23.38		1.14	1.31	1.57	15.61	15.96	15.84		1.07	0.67	0.69
1.4	16QAM 1-5	23.69	23.71	23.52		1.10	1.26	1.43	15.23	15.67	15.86		1.45	0.96	0.67
1.4	16QAM 3-0	23.56	23.61	23.68	≤ 2	1.23	1.36	1.27	15.78	15.44	15.72	≤ 2	0.90	1.19	0.81
1.4	16QAM 3-1	23.55	23.61	23.68		1.24	1.36	1.27	15.70	15.68	15.80		0.98	0.95	0.73
1.4	16QAM 3-2	23.54	23.52	23.67		1.25	1.45	1.28	15.58	15.45	15.78		1.10	1.18	0.75
1.4	16QAM 6-0	22.52	22.61	22.49		2.27	2.36	2.46	14.59	14.70	14.74		2.09	1.93	1.79

<LTE Band 12 Conducted Power >

		Full Power (25dBm)							Reduced Power (17dBm)						
BW [MHz]	Mod / RB (Size - Offset)	Average Power. (dBm)			3GPP MPR	MPR Result (dB)			Average Power. (dBm)			3GPP MPR	MPR Result (dB)		
		Low Ch	Mid Ch	High Ch		Low Ch	Mid Ch	High Ch	Low Ch	Mid Ch	High Ch		Low Ch	Mid Ch	High Ch
Channel		23060	23095	23130		23060	23095	23130	23060	23095	23130		23060	23095	23130
Frequency (MHz)		704	707.5	711		704	707.5	711	704	707.5	711		704	707.5	711
10	QPSK 1-0	24.47	24.48	24.40	0	0.00	0.00	0.00	16.25	16.41	16.46	0	0.31	0.15	0.25
10	QPSK 1-24	24.37	24.36	24.39		0.10	0.12	0.01	16.29	16.56	16.45		0.27	0.00	0.26
10	QPSK 1-49	24.46	24.05	24.14		0.01	0.43	0.26	16.56	16.53	16.71		0.00	0.03	0.00
10	QPSK 25-0	22.92	23.19	22.97	≤ 1	1.55	1.29	1.43	15.28	15.36	15.43	≤ 1	1.28	1.20	1.28
10	QPSK 25-12	22.95	23.10	23.12		1.52	1.38	1.28	15.25	15.44	15.35		1.31	1.12	1.36
10	QPSK 25-24	23.10	23.16	23.08		1.37	1.32	1.32	15.29	15.44	15.47		1.27	1.12	1.24
10	QPSK 50-0	22.86	22.90	22.84		1.61	1.58	1.56	15.39	15.30	15.39		1.17	1.26	1.32
10	16QAM 1-0	23.49	23.45	23.49	≤ 1	0.98	1.03	0.91	15.25	15.35	15.63	≤ 1	1.31	1.21	1.08
10	16QAM 1-24	23.32	23.42	23.48		1.15	1.06	0.92	15.61	15.49	15.58		0.95	1.07	1.13
10	16QAM 1-49	23.44	23.39	23.08		1.03	1.09	1.32	15.86	15.82	15.47		0.70	0.74	1.24
10	16QAM 25-0	21.87	22.06	22.01	≤ 2	2.60	2.42	2.39	14.29	14.23	14.37	≤ 2	2.27	2.33	2.34
10	16QAM 25-12	21.94	22.03	21.92		2.53	2.45	2.48	14.22	14.19	14.45		2.34	2.37	2.26
10	16QAM 25-24	22.00	22.18	22.02		2.47	2.30	2.38	14.33	14.40	14.41		2.23	2.16	2.30
10	16QAM 50-0	21.80	21.74	21.92		2.67	2.74	2.48	14.25	14.15	14.30		2.31	2.41	2.41
Channel		23035	23095	23155		23035	23095	23155	23035	23095	23155		23035	23095	23155
Frequency (MHz)		701.5	707.5	713.5		701.5	707.5	713.5	701.5	707.5	713.5		701.5	707.5	713.5
5	QPSK 1-0	24.44	24.48	24.54	0	0.00	0.00	0.00	16.46	16.17	16.34	0	0.05	0.32	0.21
5	QPSK 1-12	24.43	24.44	24.03		0.01	0.04	0.51	16.51	16.43	16.44		0.00	0.06	0.11
5	QPSK 1-24	24.28	24.42	24.14		0.16	0.06	0.40	16.49	16.49	16.55		0.02	0.00	0.00
5	QPSK 12-0	23.30	23.34	23.34	≤ 1	1.14	1.14	1.20	15.32	15.48	15.58	≤ 1	1.19	1.01	0.97
5	QPSK 12-6	23.21	23.39	23.36		1.23	1.09	1.18	15.41	15.51	15.59		1.10	0.98	0.96
5	QPSK 12-11	22.97	23.36	23.37		1.47	1.12	1.17	15.32	15.50	15.57		1.19	0.99	0.98
5	QPSK 25-0	23.04	23.12	23.09		1.40	1.36	1.45	15.34	15.36	15.49		1.17	1.13	1.06
5	16QAM 1-0	23.23	23.24	23.74	≤ 1	1.21	1.24	0.80	15.37	15.43	15.31	≤ 1	1.14	1.06	1.24
5	16QAM 1-12	23.16	23.16	23.69		1.28	1.32	0.85	15.32	15.83	15.85		1.19	0.66	0.70
5	16QAM 1-24	22.88	23.18	23.67		1.56	1.30	0.87	15.63	15.78	15.86		0.88	0.71	0.69
5	16QAM 12-0	22.08	22.39	22.39	≤ 2	2.36	2.09	2.15	14.32	14.59	14.42	≤ 2	2.19	1.90	2.13
5	16QAM 12-6	22.20	22.47	22.44		2.24	2.01	2.10	14.41	14.61	14.47		2.10	1.88	2.08
5	16QAM 12-11	22.02	22.32	22.47		2.42	2.16	2.07	14.33	14.34	14.57		2.18	2.15	1.98
5	16QAM 25-0	21.94	22.06	22.10		2.50	2.42	2.44	14.18	14.26	14.41		2.33	2.23	2.14
Channel		23025	23095	23165		23025	23095	23165	23025	23095	23165		23025	23095	23165
Frequency (MHz)		700.5	707.5	714.5		700.5	707.5	714.5	700.5	707.5	714.5		700.5	707.5	714.5
3	QPSK 1-0	24.44	24.57	24.51	0	0.00	0.00	0.00	16.50	16.61	16.41	0	0.02	0.00	0.19
3	QPSK 1-7	24.13	24.44	24.49		0.31	0.13	0.02	16.25	16.53	16.41		0.27	0.08	0.19
3	QPSK 1-14	24.36	24.31	24.47		0.08	0.26	0.04	16.52	16.55	16.60		0.00	0.06	0.00
3	QPSK 8-0	23.23	23.45	23.26	≤ 1	1.21	1.12	1.25	15.40	15.50	15.50	≤ 1	1.12	1.11	1.10
3	QPSK 8-4	23.19	23.39	23.49		1.25	1.18	1.02	15.30	15.48	15.63		1.22	1.13	0.97
3	QPSK 8-7	23.11	23.35	23.51		1.33	1.22	1.00	15.45	15.45	15.62		1.07	1.16	0.98
3	QPSK 15-0	23.11	23.32	23.26		1.33	1.25	1.25	15.31	15.42	15.53		1.21	1.19	1.07
3	16QAM 1-0	23.28	23.62	23.50	≤ 1	1.16	0.95	1.01	15.25	15.30	15.77	≤ 1	1.27	1.31	0.83
3	16QAM 1-7	23.21	23.33	23.42		1.23	1.24	1.09	15.40	15.41	15.42		1.12	1.20	1.18
3	16QAM 1-14	23.24	23.22	23.41		1.20	1.35	1.10	15.23	15.53	15.50		1.29	1.08	1.10
3	16QAM 8-0	22.21	22.38	22.49	≤ 2	2.23	2.19	2.02	14.29	14.31	14.36	≤ 2	2.23	2.30	2.24
3	16QAM 8-4	22.19	22.13	22.51		2.25	2.44	2.00	14.16	14.38	14.34		2.36	2.23	2.26
3	16QAM 8-7	22.20	22.25	22.43		2.24	2.32	2.08	14.30	14.34	14.47		2.22	2.27	2.13
3	16QAM 15-0	22.08	22.39	22.30		2.36	2.18	2.21	14.39	14.44	14.56		2.13	2.17	2.04
Channel		23017	23095	23173		23017	23095	23173	23017	23095	23173		23017	23095	23173
Frequency (MHz)		699.7	707.5	715.3		699.7	707.5	715.3	699.7	707.5	715.3		699.7	707.5	715.3
1.4	QPSK 1-0	24.45	24.56	24.52	0	0.00	0.00	0.00	16.53	16.63	16.59	0	0.00	0.09	0.20
1.4	QPSK 1-2	24.44	24.45	24.50		0.01	0.11	0.02	16.44	16.72	16.79		0.09	0.00	0.00
1.4	QPSK 1-5	24.14	24.37	24.44		0.31	0.19	0.08	16.44	16.55	16.65		0.09	0.17	0.14
1.4	QPSK 3-0	24.26	24.45	24.39	≤ 1	0.19	0.11	0.13	16.44	16.52	16.62	≤ 1	0.09	0.20	0.17
1.4	QPSK 3-1	24.31	24.37	24.42		0.14	0.19	0.10	16.44	16.56	16.65		0.09	0.16	0.14
1.4	QPSK 3-2	24.29	24.36	24.49		0.16	0.20	0.03	16.37	16.56	16.66		0.16	0.16	0.13
1.4	QPSK 6-0	23.22	23.32	23.47		1.23	1.24	1.05	15.43	15.41	15.54		1.10	1.31	1.25
1.4	16QAM 1-0	23.43	23.48	23.32	≤ 1	1.02	1.08	1.20	15.05	15.45	15.56	≤ 1	1.48	1.27	1.23
1.4	16QAM 1-2	23.05	23.33	23.27		1.40	1.23	1.25	15.26	15.83	15.31		1.27	0.89	1.48
1.4	16QAM 1-5	23.39	23.28	22.84		1.06	1.28	1.68	15.48	15.72	15.28		1.05	1.00	1.51
1.4	16QAM 3-0	23.26	23.38	23.15	≤ 2	1.19	1.18	1.37	15.47	15.47	15.46	≤ 2	1.06	1.25	1.33
1.4	16QAM 3-1	23.26	23.34	23.04		1.19	1.22	1.48	15.37	15.43	15.38		1.16	1.29	1.41
1.4	16QAM 3-2	23.36	23.40	23.09		1.09	1.16	1.43	15.47	15.54	15.62		1.06	1.18	1.17
1.4	16QAM 6-0	22.22	22.34	22.47		2.23	2.22	2.05	14.44	14.40	14.68		2.09	2.32	2.11

<WLAN 2.4GHz Conducted Power>

WLAN 2.4G 802.11b Average Power (dBm)					
Channel	Frequency (MHz)	Data Rate (bps)			
		1M	2M	5.5M	11M
CH 01	2412	**16.53**	16.32	16.28	16.46
CH 06	2437	15.31	15.51	15.67	15.52
CH 11	2462	15.34	15.18	15.54	15.33

WLAN 2.4G 802.11g Average Power (dBm)									
Channel	Frequency (MHz)	Data Rate (bps)							
		6M	9M	12M	18M	24M	36M	48M	54M
CH 01	2412	**13.59**	13.52	13.53	13.48	13.58	13.53	13.40	13.51
CH 06	2437	12.73	12.77	12.75	12.77	11.86	12.92	13.02	13.01
CH 11	2462	12.63	12.52	12.52	12.52	12.42	12.67	12.64	12.76

WLAN 2.4G 802.11n (HT 20) Average Power (dBm)									
Channel	Frequency (MHz)	MCS Index							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412	13.24	13.37	13.31	13.36	13.43	13.29	13.39	**13.51**
CH 06	2437	12.95	12.91	12.99	13.04	13.02	13.16	13.12	13.18
CH 11	2462	12.79	12.70	12.79	12.80	12.79	12.75	12.95	13.06

Note:

1. Per KDB 248227 D01 v01r02, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at the lowest data rate
3. Per KDB 248227 D01 v01r02, 11g and 11n-HT20 output power is less than 1/4dB higher than 11b mode, thus the SAR can be excluded.

<Bluetooth Conducted Power>

Bluetooth Average Power (dBm)										
Channel	Frequency (MHz)	Data Rate								
		DH1	DH3	DH5	2DH1	2DH3	2DH5	3DH1	3DH3	3DH5
CH 00	2402	0.90	1.11	0.92	-0.20	-0.21	-0.21	0.27	-0.24	-0.20
CH 39	2441	0.99	1.19	1.14	-0.12	-0.08	-0.12	-0.11	-0.10	-0.32
CH 78	2480	1.47	**1.71**	1.66	0.19	0.37	0.37	0.36	0.38	0.38

Channel	Frequency (MHz)	Average power (dBm)
		Mode
		BT v4.0 LE, GFSK
CH 0	2402	0.78
CH 19	2440	0.61
CH 39	2480	**1.14**

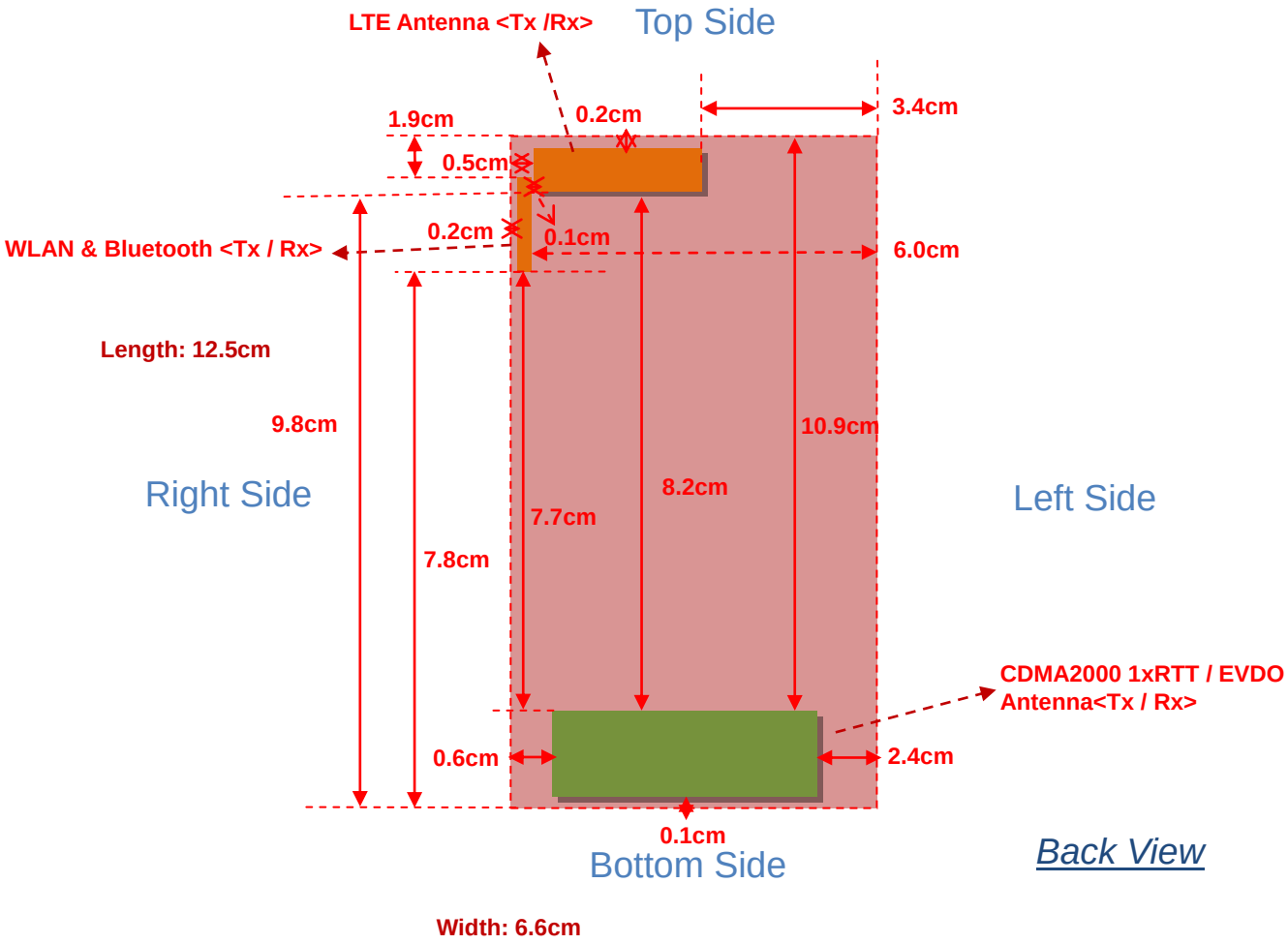
Note:

1. Per KDB 447498 D01v05, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison

Bluetooth Max Power (dBm)	mW	Test Distance (mm)	Frequency (GHz)	exclusion thresholds
2	1.58	5	2.48	0.5

2. Per KDB 447498 D01v05 exclusion thresholds is 0.5 < 3, RF exposure evaluation is not required.

11. Exposure Positions Consideration



Antennas	Wireless Interface
LTE Antenna <Tx / Rx>	LTE: Band 2/4/5/12
CDMA2000 1xRTT / EVDO <Tx / Rx>	CDMA2000 1xRTT and EVDO BC 0/1/15
WLAN & Bluetooth Antenna <Tx / Rx>	WLAN 2.4GHz Bluetooth

Distance of the Antenna to the EUT surface/edge Test distance: 10 mm						
Antennas	**Back**	**Front**	**Top Side**	**Bottom Side**	**Right Side**	**Left Side**
CDMA 1xRTT / EVDO	≤ 25mm	≤ 25mm	109mm	≤ 25mm	≤ 25mm	≤ 25mm
LTE	≤ 25mm	≤ 25mm	≤ 25mm	98mm	≤ 25mm	34mm
WLAN & Bluetooth	≤ 25mm	≤ 25mm	≤ 25mm	78mm	≤ 25mm	60mm

Positions for SAR tests; Hotspot mode Test distance: 10 mm						
Antennas	**Back**	**Front**	**Top Side**	**Bottom Side**	**Right Side**	**Left Side**
CDMA 1xRTT / EVDO	Yes	Yes	NO	Yes	Yes	Yes
LTE	Yes	Yes	Yes	NO	Yes	NO
WLAN & Bluetooth	Yes	Yes	Yes	NO	Yes	NO

Note:

1. Head/Body-worn/Hotspot mode SAR assessments are required.
2. Referring to KDB 941225 D06 v01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge
3. Per KDB 447498 D01v05, for handsets the *test separation distance* is determined by the smallest distance between the outer surface of the device and the user; which is 0mm for head SAR, 10mm for hotspot SAR, and 10mm for body-worn SAR.

12. SAR Test Results

Note:

1. Per KDB 447498 D01v05, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   *Reported SAR (W/kg) = Measured SAR (W/kg) * Scaling Factor*
2. Per KDB 447498 D01v05, for each exposure position, if the highest output channel reported SAR ≤0.8W/kg, other channels SAR testing are not necessary
3. Considering the possibility of VOIP operation, per KDB 941225 D01 1xEv-Do RevA (4096 bits) SAR for the head exposure positions and body-worn positions are performed.

12.1 Test Records for Head SAR Test

<CDMA2000 SAR>

Plot No.	Antenna	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)	Reduced Power (dB)
1	1xRTT/EVDO	CDMA2000 BC0	RC3 SO55	Right Cheek	384	836.52	23.66	24	1.081	-0.02	0.852	0.921	0
2	1xRTT/EVDO	CDMA2000 BC0	RC3 SO55	Right Tilted	384	836.52	23.66	24	1.081	-0.12	0.509	0.550	0
3	1xRTT/EVDO	CDMA2000 BC0	RC3 SO55	Left Cheek	384	836.52	23.66	24	1.081	0.10	0.757	0.819	0
4	1xRTT/EVDO	CDMA2000 BC0	RC3 SO55	Left Tilted	384	836.52	23.66	24	1.081	0.04	0.431	0.466	0
5	1xRTT/EVDO	CDMA2000 BC0	RC3 SO55	Right Cheek	1013	824.7	23.54	24	1.112	-0.08	0.680	0.756	0
6	1xRTT/EVDO	CDMA2000 BC0	RC3 SO55	Right Cheek	777	848.31	23.65	24	1.084	-0.09	0.844	0.915	0
7	1xRTT/EVDO	CDMA2000 BC0	RC3 SO55	Left Cheek	1013	824.7	23.54	24	1.112	0.12	0.577	0.641	0
8	1xRTT/EVDO	CDMA2000 BC0	RC3 SO55	Left Cheek	777	848.31	23.65	24	1.084	0.12	0.766	0.830	0
186	1xRTT/EVDO	CDMA2000 BC0	RC3 SO55	Left Cheek	777	848.31	16.84	17	1.038	0.061	0.153	0.159	7
9	1xRTT/EVDO	CDMA2000 BC0	RTEAP 4096	Right Cheek	384	836.52	23.64	24	1.086	-0.04	0.856	0.930	0
10	1xRTT/EVDO	CDMA2000 BC0	RTEAP 4096	Right Cheek	1013	824.7	23.59	24	1.099	-0.02	0.699	0.768	0
11	**1xRTT/EVDO**	**CDMA2000 BC0**	**RTEAP 4096**	**Right Cheek**	**777**	**848.31**	**23.57**	**24**	**1.104**	**-0.06**	**0.868**	**0.958**	**0**
12	1xRTT/EVDO	CDMA2000 BC1	RC3 SO55	Right Cheek	600	1880	23.37	24	1.156	-0.08	0.708	0.820	0
13	1xRTT/EVDO	CDMA2000 BC1	RC3 SO55	Right Tilted	600	1880	23.37	24	1.156	0.06	0.193	0.223	0
14	1xRTT/EVDO	CDMA2000 BC1	RC3 SO55	Left Cheek	600	1880	23.37	24	1.156	0.10	0.501	0.581	0
187	1xRTT/EVDO	CDMA2000 BC1	RC3 SO55	Left Cheek	600	1880	16.21	17	1.199	0.11	0.097	0.116	7
15	1xRTT/EVDO	CDMA2000 BC1	RC3 SO55	Left Tilted	600	1880	23.37	24	1.156	-0.01	0.205	0.237	0
16	1xRTT/EVDO	CDMA2000 BC1	RC3 SO55	Right Cheek	25	1851.25	23.11	24	1.227	-0.07	0.717	0.852	0
17	1xRTT/EVDO	CDMA2000 BC1	RC3 SO55	Right Cheek	1175	1908.75	23.18	24	1.208	-0.07	0.675	0.806	0
18	**1xRTT/EVDO**	**CDMA2000 BC1**	**RTEAP 4096**	**Right Cheek**	**25**	**1851.25**	**23.01**	**24**	**1.256**	**-0.12**	**0.784**	**0.985**	**0**
19	1xRTT/EVDO	CDMA2000 BC1	RTEAP 4096	Right Cheek	600	1880	23.27	24	1.183	-0.06	0.775	0.917	0
20	1xRTT/EVDO	CDMA2000 BC1	RTEAP 4096	Right Cheek	1175	1908.75	23.1	24	1.230	0.086	0.729	0.897	0
21	1xRTT/EVDO	CDMA2000 BC15	RC3 SO55	Right Cheek	425	1731.25	23.36	23.5	1.033	-0.02	0.695	0.803	0
22	1xRTT/EVDO	CDMA2000 BC15	RC3 SO55	Right Tilted	425	1731.25	23.36	23.5	1.033	-0.02	0.302	0.312	0
23	**1xRTT/EVDO**	**CDMA2000 BC15**	**RC3 SO55**	**Left Cheek**	**425**	**1731.25**	**23.36**	**23.5**	**1.033**	**0.04**	**0.939**	**0.970**	**0**
188	1xRTT/EVDO	CDMA2000 BC15	RC3 SO55	Left Cheek	425	1731.25	16.75	17	1.059	0.19	0.182	0.193	7.5
24	1xRTT/EVDO	CDMA2000 BC15	RC3 SO55	Left Tilted	425	1731.25	23.36	23.5	1.033	-0.10	0.263	0.272	0
25	1xRTT/EVDO	CDMA2000 BC15	RC3 SO55	Right Cheek	25	1711.25	23.25	23.5	1.059	-0.02	0.571	0.605	0
26	1xRTT/EVDO	CDMA2000 BC15	RC3 SO55	Right Cheek	875	1753.75	23.23	23.5	1.064	-0.14	0.669	0.712	0
27	1xRTT/EVDO	CDMA2000 BC15	RC3 SO55	Left Cheek	25	1711.25	23.25	23.5	1.059	0.03	0.674	0.714	0
28	1xRTT/EVDO	CDMA2000 BC15	RC3 SO55	Left Cheek	875	1753.75	23.23	23.5	1.064	0.09	0.764	0.813	0
29	1xRTT/EVDO	CDMA2000 BC15	RTEAP 4096	Left Cheek	425	1731.25	23.31	23.5	1.045	-0.05	0.847	0.885	0
30	1xRTT/EVDO	CDMA2000 BC15	RTEAP 4096	Left Cheek	25	1711.25	23.2	23.5	1.072	0.04	0.661	0.708	0
31	1xRTT/EVDO	CDMA2000 BC15	RTEAP 4096	Left Cheek	875	1753.75	23.22	23.5	1.067	0.04	0.746	0.796	0

<LTE SAR>

Plot No.	Antenna	Band	BW (MHz)	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)	Reduced Power (dB)
32	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Right Cheek	18900	1880	21.9	22	1.023	0.06	0.529	0.541	0
33	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Right Tilted	18900	1880	21.9	22	1.023	-0.15	0.370	0.379	0
34	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Left Cheek	18900	1880	21.9	22	1.023	0.02	1.220	1.248	0
35	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Left Tilted	18900	1880	21.9	22	1.023	0.04	0.717	0.734	0
36	**LTE**	**LTE Band 2**	**20M**	**QPSK 1RB 0offset**	**Left Cheek**	**18700**	**1860**	**21.9**	**22**	**1.023**	**0.04**	**1.270**	**1.300**	**0**
189	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Left Cheek	18700	1860	16.49	17	1.125	0.11	0.398	0.448	5
38	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Left Cheek	19100	1900	21.88	22	1.028	-0.002	1.140	1.172	0
39	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Right Cheek	18900	1880	20.45	21	1.135	-0.06	0.275	0.312	0
40	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Right Tilted	18900	1880	20.45	21	1.135	-0.07	0.242	0.275	0
41	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Left Cheek	18900	1880	20.45	21	1.135	-0.06	0.921	1.045	0
42	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Left Tilted	18900	1880	20.45	21	1.135	0.04	0.426	0.484	0
43	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Left Cheek	18700	1860	20.42	21	1.143	-0.05	1.030	1.177	0
44	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Left Cheek	19100	1900	20.37	21	1.156	0.07	0.733	0.847	0
47	LTE	LTE Band 2	20M	QPSK 100RB 0offset	Left Cheek	18900	1880	20.43	21	1.140	0.07	0.933	1.064	0
49	LTE	LTE Band 4	20M	QPSK 1RB 0offset	Right Cheek	20175	1732.5	22.16	22.5	1.081	0.02	0.124	0.134	0
50	LTE	LTE Band 4	20M	QPSK 1RB 0offset	Right Tilted	20175	1732.5	22.16	22.5	1.081	-0.05	0.150	0.162	0
51	**LTE**	**LTE Band 4**	**20M**	**QPSK 1RB 0offset**	**Left Cheek**	**20175**	**1732.5**	**22.16**	**22.5**	**1.081**	**0.17**	**0.264**	**0.285**	**0**
52	LTE	LTE Band 4	20M	QPSK 1RB 0offset	Left Tilted	20175	1732.5	22.16	22.5	1.081	-0.06	0.172	0.186	0
53	LTE	LTE Band 4	20M	QPSK 50RB 0offset	Right Cheek	20175	1732.5	20.65	21.5	1.216	0.06	0.108	0.131	0
54	LTE	LTE Band 4	20M	QPSK 50RB 0offset	Right Tilted	20175	1732.5	20.65	21.5	1.216	0.16	0.098	0.119	0
55	LTE	LTE Band 4	20M	QPSK 50RB 0offset	Left Cheek	20175	1732.5	20.65	21.5	1.216	0.16	0.179	0.218	0
56	LTE	LTE Band 4	20M	QPSK 50RB 0offset	Left Tilted	20175	1732.5	20.65	21.5	1.216	-0.09	0.115	0.140	0
57	LTE	LTE Band 5	10M	QPSK 1RB 0offset	Right Cheek	20525	836.5	24.88	25.5	1.153	0.03	0.199	0.230	0
58	LTE	LTE Band 5	10M	QPSK 1RB 0offset	Right Tilted	20525	836.5	24.88	25.5	1.153	0.08	0.138	0.159	0
59	**LTE**	**LTE Band 5**	**10M**	**QPSK 1RB 0offset**	**Left Cheek**	**20525**	**836.5**	**24.88**	**25.5**	**1.153**	**0.13**	**0.280**	**0.323**	**0**
60	LTE	LTE Band 5	10M	QPSK 1RB 0offset	Left Tilted	20525	836.5	24.88	25.5	1.153	0.07	0.205	0.236	0
61	LTE	LTE Band 5	10M	QPSK 25RB 0offset	Right Cheek	20525	836.5	23.68	24.5	1.208	0.10	0.144	0.174	0
62	LTE	LTE Band 5	10M	QPSK 25RB 0offset	Right Tilted	20525	836.5	23.68	24.5	1.208	0.13	0.107	0.129	0
63	LTE	LTE Band 5	10M	QPSK 25RB 0offset	Left Cheek	20525	836.5	23.68	24.5	1.208	0.13	0.213	0.257	0
64	LTE	LTE Band 5	10M	QPSK 25RB 0offset	Left Tilted	20525	836.5	23.68	24.5	1.208	0.05	0.158	0.191	0
65	LTE	LTE Band 12	10M	QPSK 1RB 0offset	Right Cheek	23095	707.5	24.48	25	1.127	0.06	0.348	0.392	0
66	LTE	LTE Band 12	10M	QPSK 1RB 0offset	Right Tilted	23095	707.5	24.48	25	1.127	-0.16	0.270	0.304	0
67	LTE	LTE Band 12	10M	QPSK 1RB 0offset	Left Cheek	23095	707.5	24.48	25	1.127	0.06	0.482	0.543	0
68	LTE	LTE Band 12	10M	QPSK 1RB 0offset	Left Tilted	23095	707.5	24.48	25	1.127	0.16	0.438	0.494	0
69	LTE	LTE Band 12	10M	QPSK 25RB 0offset	Right Cheek	23095	707.5	23.19	24	1.205	0.07	0.322	0.388	0
70	LTE	LTE Band 12	10M	QPSK 25RB 0offset	Right Tilted	23095	707.5	23.19	24	1.205	0.09	0.234	0.282	0
71	**LTE**	**LTE Band 12**	**10M**	**QPSK 25RB 0offset**	**Left Cheek**	**23095**	**707.5**	**23.19**	**24**	**1.205**	**-0.03**	**0.460**	**0.554**	**0**
72	LTE	LTE Band 12	10M	QPSK 25RB 0offset	Left Tilted	23095	707.5	23.19	24	1.205	0.02	0.382	0.460	0

Note:

1. Per KDB 941225 D05v02, when reported SAR of 1RB and 50%RB allocation for QPSK >0.8W/kg for any exposure position, SAR testing of 100%RB allocation for QPSK is performed at the highest power channel.
2. 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the *reported* SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02, 16QAM SAR testing is not required.
3. Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth.

<WLAN 2.4GHz SAR>

Plot No.	Antenna	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)	Reduced Power (dB)
73	WLAN/BT	WLAN 2.4GHz	802.11b, 1Mbps	Right Cheek	1	2412	16.53	17	1.114	0.08	0.025	0.028	0
74	WLAN/BT	WLAN 2.4GHz	802.11b, 1Mbps	Right Tilted	1	2412	16.53	17	1.114	0.07	0.013	0.014	0
75	**WLAN/BT**	**WLAN 2.4GHz**	**802.11b, 1Mbps**	**Left Cheek**	**1**	**2412**	**16.53**	**17**	**1.114**	**0.09**	**0.052**	**0.058**	**0**
76	WLAN/BT	WLAN 2.4GHz	802.11b, 1Mbps	Left Tilted	1	2412	16.53	17	1.114	0.07	0.023	0.026	0

12.2 Test Records for Hotspot SAR Test

<CDMA2000 SAR>

Plot No.	Antenna	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)	Reduced Power (dB)
77	1xRTT/EVDO	CDMA2000 BC0	RTAP 153.6	Front	1	384	836.52	23.64	24	1.086	-0.01	0.911	0.990	0
78	**1xRTT/EVDO**	**CDMA2000 BC0**	**RTAP 153.6**	**Back**	**1**	**384**	**836.52**	**23.64**	**24**	**1.086**	**0.02**	**1.020**	**1.108**	**0**
79	1xRTT/EVDO	CDMA2000 BC0	RTAP 153.6	Left Side	1	384	836.52	23.64	24	1.086	0.03	0.712	0.774	0
80	1xRTT/EVDO	CDMA2000 BC0	RTAP 153.6	Right Side	1	384	836.52	23.64	24	1.086	0.04	0.772	0.839	0
81	1xRTT/EVDO	CDMA2000 BC0	RTAP 153.6	Bottom Side	1	384	836.52	23.64	24	1.086	0.06	0.253	0.275	0
82	1xRTT/EVDO	CDMA2000 BC0	RTAP 153.6	Front	1	1013	824.7	23.57	24	1.104	0.018	0.767	0.847	0
83	1xRTT/EVDO	CDMA2000 BC0	RTAP 153.6	Front	1	777	848.31	23.55	24	1.109	-0.01	0.876	0.972	0
84	1xRTT/EVDO	CDMA2000 BC0	RTAP 153.6	Back	1	1013	824.7	23.57	24	1.104	-0.028	1.000	1.104	0
85	1xRTT/EVDO	CDMA2000 BC0	RTAP 153.6	Back	1	777	848.31	23.55	24	1.109	-0.058	0.918	1.018	0
86	1xRTT/EVDO	CDMA2000 BC0	RTAP 153.6	Right Side	1	1013	824.7	23.57	24	1.104	0.01	0.653	0.721	0
87	1xRTT/EVDO	CDMA2000 BC0	RTAP 153.6	Right Side	1	777	848.31	23.55	24	1.109	-0.10	0.675	0.749	0
95	1xRTT/EVDO	CDMA2000 BC1	RTAP 153.6	Front	1	600	1880	23.22	24	1.197	-0.07	0.933	1.117	0
96	1xRTT/EVDO	CDMA2000 BC1	RTAP 153.6	Back	1	600	1880	23.22	24	1.197	-0.003	1.030	1.233	0
97	1xRTT/EVDO	CDMA2000 BC1	RTAP 153.6	Left Side	1	600	1880	23.22	24	1.197	-0.09	0.199	0.238	0
98	1xRTT/EVDO	CDMA2000 BC1	RTAP 153.6	Right Side	1	600	1880	23.22	24	1.197	-0.06	0.298	0.357	0
99	**1xRTT/EVDO**	**CDMA2000 BC1**	**RTAP 153.6**	**Bottom Side**	**1**	**600**	**1880**	**23.22**	**24**	**1.197**	**0.02**	**1.080**	**1.292**	**0**
101	1xRTT/EVDO	CDMA2000 BC1	RTAP 153.6	Front	1	25	1851.25	23	24	1.259	-0.04	0.823	1.036	0
102	1xRTT/EVDO	CDMA2000 BC1	RTAP 153.6	Front	1	1175	1908.75	23.09	24	1.233	0.02	0.873	1.077	0
103	1xRTT/EVDO	CDMA2000 BC1	RTAP 153.6	Back	1	25	1851.25	23	24	1.259	0.02	1.020	1.284	0
104	1xRTT/EVDO	CDMA2000 BC1	RTAP 153.6	Back	1	1175	1908.75	23.09	24	1.233	0.09	0.878	1.083	0
105	1xRTT/EVDO	CDMA2000 BC1	RTAP 153.6	Bottom Side	1	25	1851.25	23	24	1.259	0.02	0.869	1.094	0
106	1xRTT/EVDO	CDMA2000 BC1	RTAP 153.6	Bottom Side	1	1175	1908.75	23.09	24	1.233	0.07	0.915	1.128	0
116	1xRTT/EVDO	CDMA2000 BC15	RTAP 153.6	Front	1	425	1731.25	23.3	23.5	1.047	-0.02	1.080	1.131	0
117	**1xRTT/EVDO**	**CDMA2000 BC15**	**RTAP 153.6**	**Back**	**1**	**425**	**1731.25**	**23.3**	**23.5**	**1.047**	**0.055**	**1.330**	**1.393**	**0**
119	1xRTT/EVDO	CDMA2000 BC15	RTAP 153.6	Left Side	1	425	1731.25	23.3	23.5	1.047	-0.088	0.222	0.232	0
120	1xRTT/EVDO	CDMA2000 BC15	RTAP 153.6	Right Side	1	425	1731.25	23.3	23.5	1.047	-0.01	0.265	0.277	0
121	1xRTT/EVDO	CDMA2000 BC15	RTAP 153.6	Bottom Side	1	425	1731.25	23.3	23.5	1.047	0.07	1.080	1.131	0
122	1xRTT/EVDO	CDMA2000 BC15	RTAP 153.6	Front	1	25	1711.25	23.21	23.5	1.069	0.03	0.838	0.896	0
123	1xRTT/EVDO	CDMA2000 BC15	RTAP 153.6	Front	1	875	1753.75	23.18	23.5	1.076	-0.02	0.885	0.953	0
124	1xRTT/EVDO	CDMA2000 BC15	RTAP 153.6	Back	1	25	1711.25	23.21	23.5	1.069	0.01	1.160	1.240	0
125	1xRTT/EVDO	CDMA2000 BC15	RTAP 153.6	Back	1	875	1753.75	23.18	23.5	1.076	0.07	1.110	1.195	0
126	1xRTT/EVDO	CDMA2000 BC15	RTAP 153.6	Bottom Side	1	25	1711.25	23.21	23.5	1.069	0.06	0.841	0.899	0
127	1xRTT/EVDO	CDMA2000 BC15	RTAP 153.6	Bottom Side	1	875	1753.75	23.18	23.5	1.076	0.07	0.970	1.044	0

<LTE SAR>

Plot No.	Antenna	Band	BW (MHz)	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)	Reduced Power (dB)
137	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Front	1	18900	1880	21.9	22	1.023	0.09	0.271	0.277	0
138	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Back	1	18900	1880	21.9	22	1.023	0.08	0.969	0.992	0
139	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Right Side	1	18900	1880	21.9	22	1.023	-0.03	0.692	0.708	0
140	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Top Side	1	18900	1880	21.9	22	1.023	0.03	0.369	0.378	0
141	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Back	1	18700	1860	21.86	22	1.033	0.08	0.841	0.869	0
142	**LTE**	**LTE Band 2**	**20M**	**QPSK 1RB 0offset**	**Back**	**1**	**19100**	**1900**	**21.88**	**22**	**1.028**	**0.04**	**1.100**	**1.131**	**0**
196	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Back	1	19100	1900	16.08	17	1.236	0.024	0.28	0.346	5
146	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Front	1	18900	1880	20.63	21.5	1.222	0.03	0.223	0.272	0
147	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Back	1	18900	1880	20.63	21.5	1.222	0.04	0.657	0.803	0
148	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Right Side	1	18900	1880	20.63	21.5	1.222	-0.01	0.494	0.604	0
149	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Top Side	1	18900	1880	20.63	21.5	1.222	0.024	0.259	0.316	0
150	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Back	1	18700	1860	20.54	21.5	1.247	0.09	0.706	0.881	0
151	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Back	1	19100	1900	20.62	21.5	1.225	0.031	0.592	0.725	0
153	LTE	LTE Band 2	20M	QPSK 100RB 0offset	Back	1	18900	1880	20.68	21.5	1.208	0.022	0.681	0.823	0
156	LTE	LTE Band 4	20M	QPSK 1RB 0offset	Front	1	20175	1732.5	22.16	22.5	1.081	0.047	0.094	0.102	0
157	LTE	LTE Band 4	20M	QPSK 1RB 0offset	Back	1	20175	1732.5	22.16	22.5	1.081	0.10	0.174	0.188	0
158	LTE	LTE Band 4	20M	QPSK 1RB 0offset	Right Side	1	20175	1732.5	22.16	22.5	1.081	0.054	0.107	0.116	0
159	LTE	LTE Band 4	20M	QPSK 1RB 0offset	Top Side	1	20175	1732.5	22.16	22.5	1.081	0.07	0.130	0.141	0
160	LTE	LTE Band 4	20M	QPSK 50RB 0offset	Front	1	20175	1732.5	20.65	21.5	1.216	0.071	0.060	0.073	0
161	**LTE**	**LTE Band 4**	**20M**	**QPSK 50RB 0offset**	**Back**	**1**	**20175**	**1732.5**	**20.65**	**21.5**	**1.216**	**0.032**	**0.163**	**0.198**	**0**
162	LTE	LTE Band 4	20M	QPSK 50RB 0offset	Right Side	1	20175	1732.5	20.65	21.5	1.216	0.14	0.074	0.090	0
163	LTE	LTE Band 4	20M	QPSK 50RB 0offset	Top Side	1	20175	1732.5	20.65	21.5	1.216	0.14	0.089	0.108	0
164	LTE	LTE Band 5	10M	QPSK 1RB 0offset	Front	1	20525	836.5	24.88	25.5	1.153	0.02	0.116	0.134	0
165	**LTE**	**LTE Band 5**	**10M**	**QPSK 1RB 0offset**	**Back**	**1**	**20525**	**836.5**	**24.88**	**25.5**	**1.153**	**0.04**	**0.187**	**0.216**	**0**
166	LTE	LTE Band 5	10M	QPSK 1RB 0offset	Right Side	1	20525	836.5	24.88	25.5	1.153	-0.04	0.161	0.186	0
167	LTE	LTE Band 5	10M	QPSK 1RB 0offset	Top Side	1	20525	836.5	24.88	25.5	1.153	0.06	0.137	0.158	0
168	LTE	LTE Band 5	10M	QPSK 25RB 0offset	Front	1	20525	836.5	23.68	24.5	1.208	0.06	0.090	0.109	0
169	LTE	LTE Band 5	10M	QPSK 25RB 0offset	Back	1	20525	836.5	23.68	24.5	1.208	0.09	0.129	0.156	0
170	LTE	LTE Band 5	10M	QPSK 25RB 0offset	Right Side	1	20525	836.5	23.68	24.5	1.208	0.02	0.107	0.129	0
171	LTE	LTE Band 5	10M	QPSK 25RB 0offset	Top Side	1	20525	836.5	23.68	24.5	1.208	0.022	0.103	0.124	0
172	LTE	LTE Band 12	10M	QPSK 1RB 0offset	Front	1	23095	707.5	24.48	25	1.127	-0.0019	0.231	0.260	0
173	**LTE**	**LTE Band 12**	**10M**	**QPSK 1RB 0offset**	**Back**	**1**	**23095**	**707.5**	**24.48**	**25**	**1.127**	**0.13**	**0.418**	**0.471**	**0**
200	LTE	LTE Band 12	10M	QPSK 1RB 0offset	Back	1	23095	707.5	16.41	17	1.146	0.17	0.061	0.070	8
174	LTE	LTE Band 12	10M	QPSK 1RB 0offset	Right Side	1	23095	707.5	24.48	25	1.127	0.06	0.357	0.402	0
175	LTE	LTE Band 12	10M	QPSK 1RB 0offset	Top Side	1	23095	707.5	24.48	25	1.127	0.0024	0.097	0.109	0
176	LTE	LTE Band 12	10M	QPSK 25RB 0offset	Front	1	23095	707.5	23.19	24	1.205	0.0033	0.206	0.248	0
177	LTE	LTE Band 12	10M	QPSK 25RB 0offset	Back	1	23095	707.5	23.19	24	1.205	0.10	0.355	0.428	0
178	LTE	LTE Band 12	10M	QPSK 25RB 0offset	Right Side	1	23095	707.5	23.19	24	1.205	0.06	0.305	0.368	0
179	LTE	LTE Band 12	10M	QPSK 25RB 0offset	Top Side	1	23095	707.5	23.19	24	1.205	0.10	0.081	0.098	0

Note:

1. Per KDB 941225 D05v02, when reported SAR of 1RB and 50%RB allocation for QPSK >0.8W/kg for any exposure position, SAR testing of 100%RB allocation for QPSK is performed at the highest power channel.
2. 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the *reported* SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02, 16QAM SAR testing is not required.
3. Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the *reported* SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02, 16QAM SAR testing is not required.

<WLAN 2.4GHz SAR>

Plot No.	Antenna	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)	Reduced Power (dB)
180	WLAN/BT	WLAN 2.4GHz	802.11b, 1Mbps	Front	1	1	2412	16.53	17	1.114	0.059	0.0064	0.007	0
181	**WLAN/BT**	**WLAN 2.4GHz**	**802.11b, 1Mbps**	**Back**	**1**	**1**	**2412**	**16.53**	**17**	**1.114**	**0.080**	**0.027**	**0.030**	**0**
182	WLAN/BT	WLAN 2.4GHz	802.11b, 1Mbps	Right Side	1	1	2412	16.53	17	1.114	-0.025	0.019	0.021	0
184	WLAN/BT	WLAN 2.4GHz	802.11b, 1Mbps	Top Side	1	1	2412	16.53	17	1.114	0.062	0.00487	0.005	0

12.3 Test Records for Body-worn SAR Test

Note:

1. Body-worn SAR testing was performed at 10mm separation, and this distance is determined by the handset manufacturer that there will be body-worn accessories that users may acquire at the time of equipment certification, to enable users to purchase aftermarket body-worn accessories with the required minimum separation.
2. Per KDB 941225 D06, when the same wireless mode and device transmission configurations are required for testing body-worn accessories and hotspot mode, it is not necessary to test body-worn accessory SAR for the same device orientation if the test separation distance for hotspot mode is more conservative than that used for body-worn accessories. In this report, the worst exposure position is the back exposure position of the device.
3. Body-worn exposure conditions are intended to voice call operations, therefore CDMA voice call is selected to be tested at the back exposure position.
4. Considering the possibility of VOIP operation, per KDB 941225 D01 1xEv-Do RevA (4096 bits) SAR for the Body-Worn exposure positions and body-worn positions are performed

<CDMA2000 SAR>

Plot No.	Antenna	Band	Mode	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)	Reduced Power (dB)
88	**1xRTT/EVDO**	**CDMA2000 BC0**	**RC3 SO32**	**Back**	**1**	**-**	**384**	**836.52**	**23.65**	**24**	**1.084**	**-0.07**	**1.060**	**1.149**	**0**
191	1xRTT/EVDO	CDMA2000 BC0	RC3 SO32	Back	1	-	384	836.52	16.75	17	1.059	-0.0025	0.212	0.225	7
90	1xRTT/EVDO	CDMA2000 BC0	RC3 SO32	Back	1	-	1013	824.7	23.58	24	1.102	-0.07	0.982	1.082	0
91	1xRTT/EVDO	CDMA2000 BC0	RC3 SO32	Back	1	-	777	848.31	23.62	24	1.091	0.04	0.935	1.020	0
92	1xRTT/EVDO	CDMA2000 BC0	RETAP 4096	Back	1	-	384	836.52	23.64	24	1.086	-0.01	1.030	1.119	0
93	1xRTT/EVDO	CDMA2000 BC0	RETAP 4096	Back	1	-	1013	824.7	23.59	24	1.099	-0.086	1.000	1.099	0
94	1xRTT/EVDO	CDMA2000 BC0	RETAP 4096	Back	1	-	777	848.31	23.57	24	1.104	-0.05	0.915	1.010	0
107	1xRTT/EVDO	CDMA2000 BC1	RC3 SO32	Back	1	-	600	1880	23.31	24	1.172	-0.01	0.983	1.152	0
108	**1xRTT/EVDO**	**CDMA2000 BC1**	**RC3 SO32**	**Back**	**1**	**-**	**25**	**1851.25**	**23.06**	**24**	**1.242**	**-0.0042**	**0.961**	**1.193**	**0**
192	1xRTT/EVDO	CDMA2000 BC1	RC3 SO32	Back	1	-	25	1851.25	16.4	17	1.148	0.1	0.231	0.265	7
109	1xRTT/EVDO	CDMA2000 BC1	RC3 SO32	Back	1	-	1175	1908.75	23.15	24	1.216	0.06	0.873	1.062	0
113	1xRTT/EVDO	CDMA2000 BC1	RETAP 4096	Back	1	-	600	1880	23.27	24	1.183	0.09	1	1.183	0
114	1xRTT/EVDO	CDMA2000 BC1	RETAP 4096	Back	1	-	25	1851.25	23.01	24	1.256	0.03	0.932	1.171	0
115	1xRTT/EVDO	CDMA2000 BC1	RETAP 4096	Back	1	-	1175	1908.75	23.1	24	1.230	0.05	0.885	1.089	0
128	**1xRTT/EVDO**	**CDMA2000 BC15**	**RC3 SO32**	**Back**	**1**	**-**	**425**	**1731.25**	**23.34**	**23.5**	**1.038**	**-0.07**	**1.15**	**1.193**	**0**
194	1xRTT/EVDO	CDMA2000 BC15	RC3 SO32	Back	1	-	425	1731.25	16.85	17	1.035	0.07	0.273	0.283	7.5
129	1xRTT/EVDO	CDMA2000 BC15	RC3 SO32	Back	1	-	25	1711.25	23.22	23.5	1.067	-0.06	0.984	1.050	0
130	1xRTT/EVDO	CDMA2000 BC15	RC3 SO32	Back	1	-	875	1753.75	23.21	23.5	1.069	0.11	0.862	0.922	0
134	1xRTT/EVDO	CDMA2000 BC15	RETAP 4096	Back	1	-	425	1731.25	23.31	23.5	1.045	0.04	1.14	1.191	0
135	1xRTT/EVDO	CDMA2000 BC15	RETAP 4096	Back	1	-	25	1711.25	23.2	23.5	1.072	0.09	0.916	0.982	0
136	1xRTT/EVDO	CDMA2000 BC15	RETAP 4096	Back	1	-	875	1753.75	23.22	23.5	1.067	0.02	0.885	0.944	0

<LTE SAR>

Plot No.	Antenna	Band	BW (MHz)	Mode	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)	Reduced Power (dB)
138	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Back	1	-	18900	1880	21.9	22	1.023	0.08	0.969	0.992	0
141	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Back	1	-	18700	1860	21.86	22	1.033	0.08	0.841	0.869	0
142	**LTE**	**LTE Band 2**	**20M**	**QPSK 1RB 0offset**	**Back**	**1**	**-**	**19100**	**1900**	**21.88**	**22**	**1.028**	**0.04**	**1.100**	**1.131**	**0**
196	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Back	1	-	19100	1900	16.08	17	1.236	0.024	0.28	0.346	5
147	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Back	1	-	18900	1880	20.63	21.5	1.222	0.04	0.657	0.803	0
150	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Back	1	-	18700	1860	20.54	21.5	1.247	0.09	0.706	0.881	0
151	LTE	LTE Band 2	20M	QPSK 50RB 0offset	Back	1	-	19100	1900	20.62	21.5	1.225	0.031	0.592	0.725	0
153	LTE	LTE Band 2	20M	QPSK 100RB 0offset	Back	1	-	18900	1880	20.68	21.5	1.208	0.022	0.681	0.823	0
157	LTE	LTE Band 4	20M	QPSK 1RB 0offset	Back	1	-	20175	1732.5	22.16	22.5	1.081	0.10	0.174	0.188	0
161	**LTE**	**LTE Band 4**	**20M**	**QPSK 50RB 0offset**	**Back**	**1**	**-**	**20175**	**1732.5**	**20.65**	**21.5**	**1.216**	**0.032**	**0.163**	**0.198**	**0**
165	**LTE**	**LTE Band 5**	**10M**	**QPSK 1RB 0offset**	**Back**	**1**	**-**	**20525**	**836.5**	**24.88**	**25.5**	**1.153**	**0.04**	**0.187**	**0.216**	**0**
169	LTE	LTE Band 5	10M	QPSK 25RB 0offset	Back	1	-	20525	836.5	23.68	24.5	1.208	0.09	0.129	0.156	0
173	**LTE**	**LTE Band 12**	**10M**	**QPSK 1RB 0offset**	**Back**	**1**	**-**	**23095**	**707.5**	**24.48**	**25**	**1.127**	**0.13**	**0.418**	**0.471**	**0**
200	LTE	LTE Band 12	10M	QPSK 1RB 0offset	Back	1	-	23095	707.5	16.41	17	1.146	0.17	0.061	0.070	8
177	LTE	LTE Band 12	10M	QPSK 25RB 0offset	Back	1	-	23095	707.5	23.19	24	1.205	0.10	0.355	0.428	0

<WLAN 2.4GHz SAR>

Plot No.	Antenna	Band	Mode	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)	Reduced Power (dB)
181	**WLAN/BT**	**WLAN 2.4GHz**	**802.11b, 1Mbps**	**Back**	**1**	**-**	**1**	**2412**	**16.53**	**17**	**1.114**	**0.08**	**0.027**	**0.030**	**0**

12.4 Repeated SAR Measurement

Plot No.	Antenna	Band	BW (MHz)	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Ratio	Reported SAR_{1g} (W/kg)
36	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Left Cheek	-	18700	1860	21.9	22	1.023	0.04	1.270	1	1.300
37	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Left Cheek	-	18700	1860	21.9	22	1.023	0.01	1.260	1.008	1.289
88	1xRTT/EVDO	CDMA2000 BC0	-	RC3 SO32	Back	1	384	836.52	23.65	24	1.084	-0.07	1.060	1	1.149
89	1xRTT/EVDO	CDMA2000 BC0	-	RC3 SO32	Back	1	384	836.52	23.65	24	1.084	-0.01	1.020	1.039	1.106
99	1xRTT/EVDO	CDMA2000 BC1	-	RTAP 153.6	Bottom Side	1	600	1880	23.22	24	1.197	0.02	1.080	1	1.292
100	1xRTT/EVDO	CDMA2000 BC1	-	RTAP 153.6	Bottom Side	1	600	1880	23.22	24	1.197	-0.06	1.070	1.010	1.281
117	1xRTT/EVDO	CDMA2000 BC15	-	RTAP 153.6	Back	1	425	1731.25	23.3	23.5	1.047	0.055	1.330	1	1.393
118	1xRTT/EVDO	CDMA2000 BC15	-	RTAP 153.6	Back	1	425	1731.25	23.3	23.5	1.047	0.02	1.330	1	1.393

Note:

1. Per KDB 865664 D01v01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg
2. Per KDB 865664 D01v01, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

12.5 Highest SAR Plot

Plot No.	Antenna	Band	BW (MHz)	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
88	1xRTT/EVDO	CDMA2000 BC0	-	RC3 SO32	Back	1	384	836.52	23.65	24	1.084	-0.07	1.060	1.149
99	1xRTT/EVDO	CDMA2000 BC1	-	RTAP 153.6	Bottom Side	1	600	1880	23.22	24	1.197	0.02	1.080	1.292
117	1xRTT/EVDO	CDMA2000 BC15		RTAP 153.6	Back	1	425	1731.25	23.3	23.5	1.047	0.055	1.330	1.393
36	LTE	LTE Band 2	20M	QPSK 1RB 0offset	Left Cheek	-	18700	1860	21.9	22	1.023	0.04	1.270	1.300
51	LTE	LTE Band 4	20M	QPSK 1RB 0offset	Left Cheek	-	20175	1732.5	22.16	22.5	1.081	0.17	0.264	0.285
59	LTE	LTE Band 5	10M	QPSK 1RB 0offset	Left Cheek	-	20525	836.5	24.88	25.5	1.153	0.13	0.280	0.323
67	LTE	LTE Band 12	10M	QPSK 1RB 0offset	Left Cheek	-	23095	707.5	24.48	25	1.127	0.06	0.482	0.554
75	WLAN/BT	WLAN 2.4GHz	-	802.11b, 1Mbps	Left Cheek	-	1	2412	16.53	17	1.114	0.09	0.052	0.058

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013-4-6

#88 CDMA2000 BC0_RC3 SO32_Back 1cm_Ch384

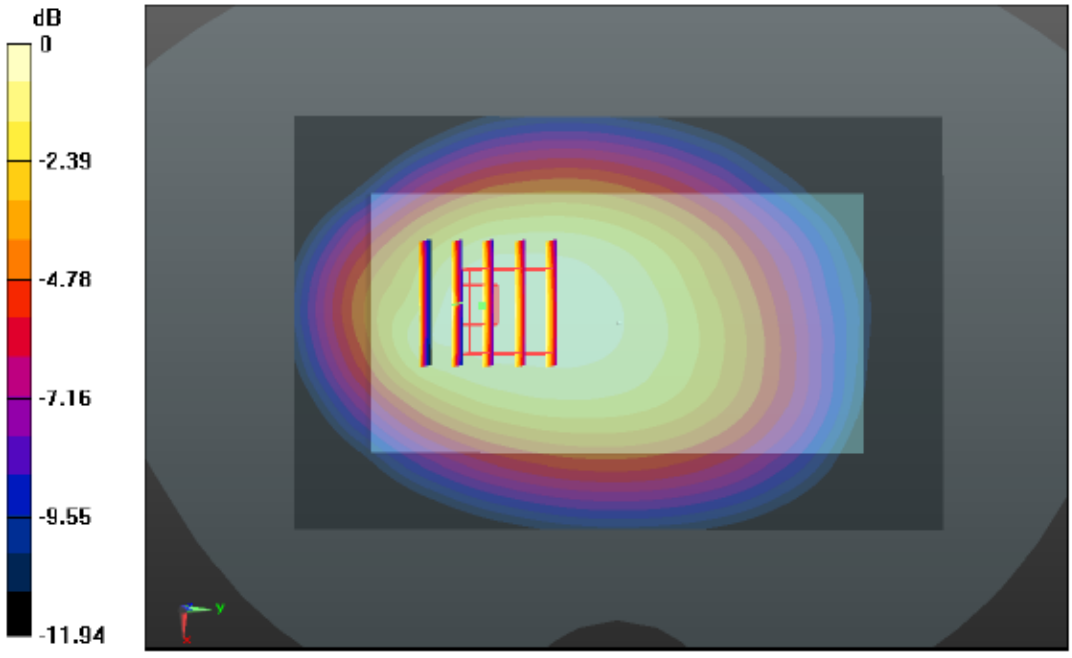
DUT: 2O1601

Communication System: CDMA2000; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: MSL_835_130406 Medium parameters used: f = 837 MHz; σ = 0.982 mho/m; ε_r = 54.458; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：21.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(8.98, 8.98, 8.98); Calibrated: 2012-6-20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2012-12-5
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch384/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.322 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.996 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.498 W/kg
SAR(1 g) = 1.060 mW/g; SAR(10 g) = 0.781 mW/g
Maximum value of SAR (measured) = 1.287 mW/g



0 dB = 1.290mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013-3-13

#99 CDMA2000 BC1_RTAP 153.6_Bottom Side 1cm_Ch600

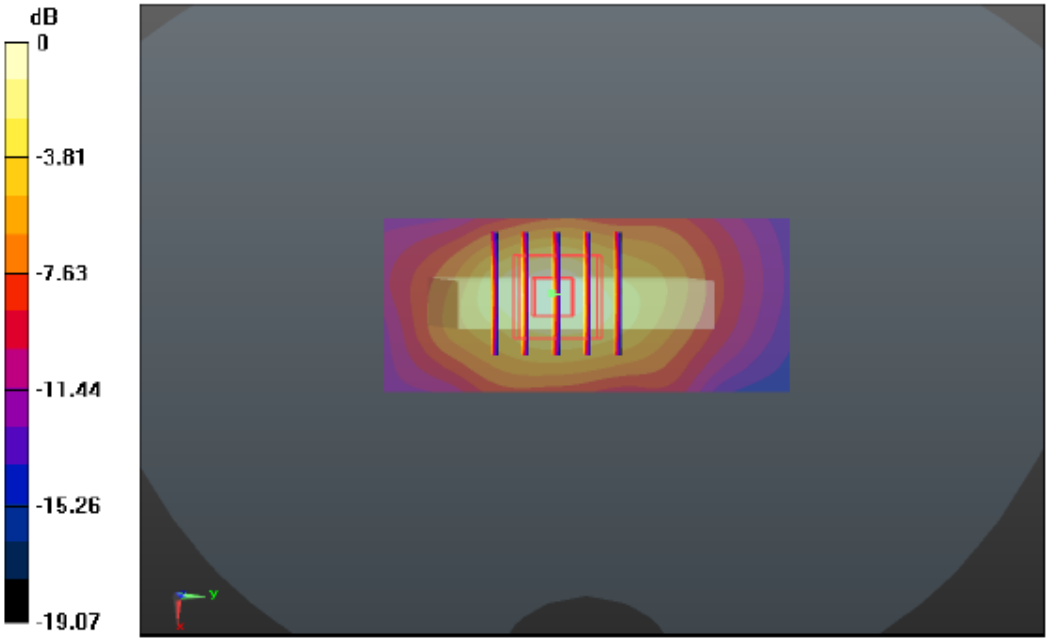
DUT: 2O1601

Communication System: CDMA2000; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130313 Medium parameters used: f = 1880 MHz; σ = 1.528 mho/m; ε_r = 53.377; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.35, 7.35, 7.35); Calibrated: 2012-6-20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2012-12-5
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch600/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.571 mW/g

Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.016 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.072 W/kg
SAR(1 g) = 1.080 mW/g; SAR(10 g) = 0.573 mW/g
Maximum value of SAR (measured) = 1.623 mW/g



0 dB = 1.620mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013-4-6

#117 CDMA2000 BC15_RTAP 153.6_Back 1cm_Ch425

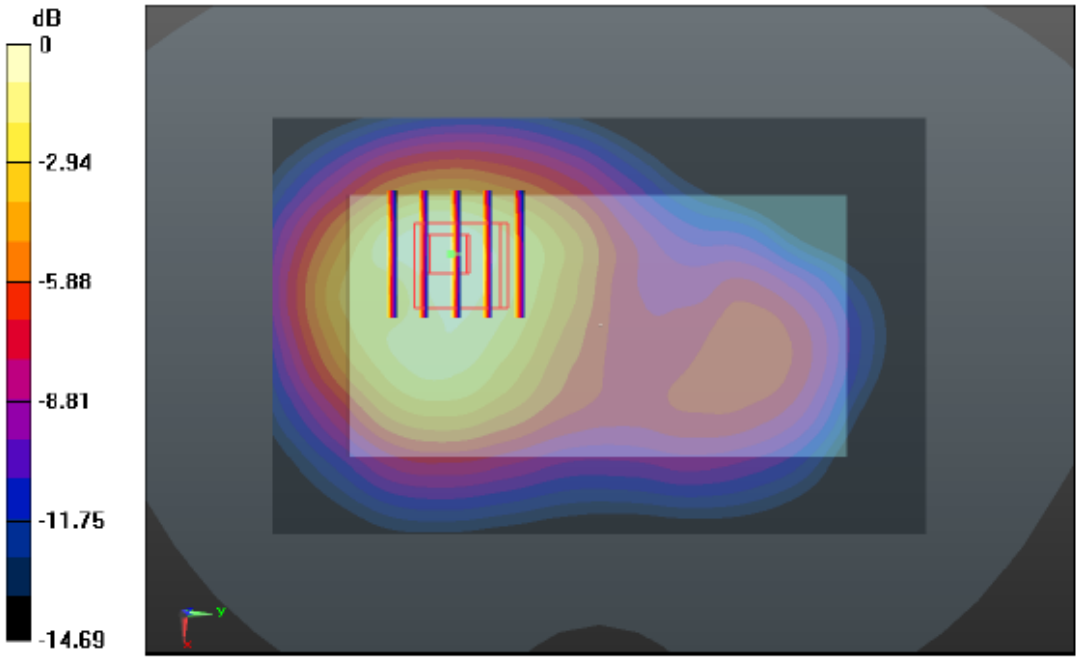
DUT: 2O1601

Communication System: CDMA2000; Frequency: 1731.25 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130406 Medium parameters used: f = 1731.25 MHz; σ = 1.489 mho/m; ε_r = 55.758; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.68, 7.68, 7.68); Calibrated: 2012-6-20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2012-12-5
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch425/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.789 mW/g

Ch425/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.162 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 2.133 W/kg
SAR(1 g) = 1.330 mW/g; SAR(10 g) = 0.803 mW/g
Maximum value of SAR (measured) = 1.752 mW/g



0 dB = 1.750mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013-3-14

#36 LTE Band 2_20M QPSK 1RB 0offset_Left Cheek_Ch18700

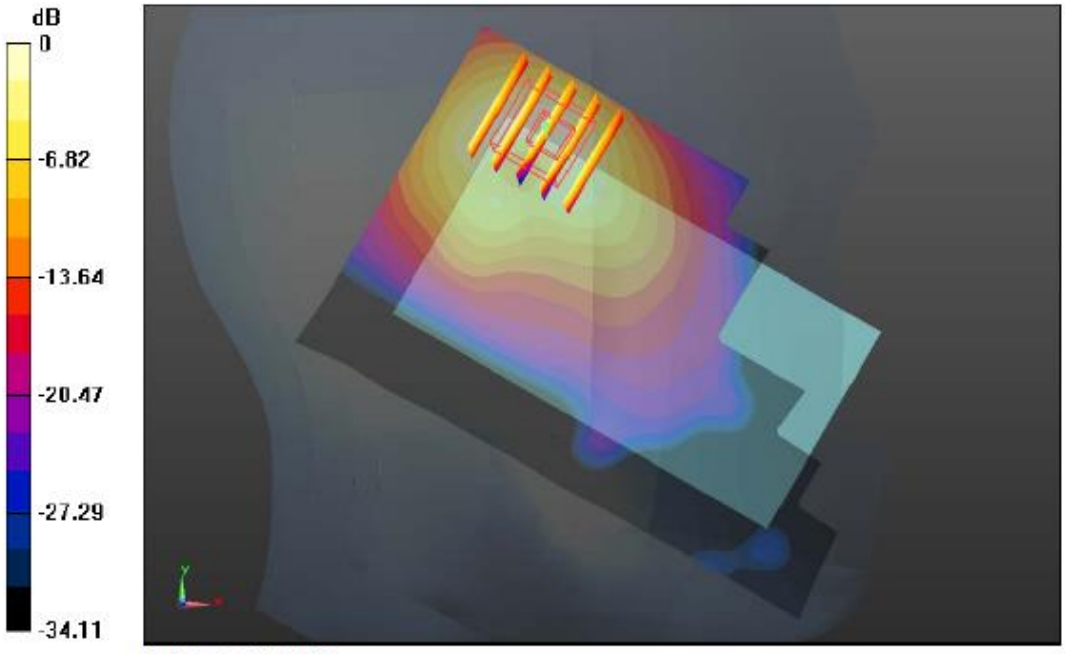
DUT: 2O1601

Communication System: LTE; Frequency: 1860 MHz;Duty Cycle: 1:1
Medium: HSL_1900_130314 Medium parameters used: f = 1860 MHz; σ = 1.411 mho/m; ε_r = 39.541; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：21.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.84, 7.84, 7.84); Calibrated: 2012-6-20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2012-12-5
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch18700/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.675 mW/g

Ch18700/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.987 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 2.430 W/kg
SAR(1 g) = 1.270 mW/g; SAR(10 g) = 0.627 mW/g
Maximum value of SAR (measured) = 1.847 mW/g



0 dB = 1.850mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013-3-14

#51 LTE Band 4_20M QPSK 1RB 0offset_Left Cheek_Ch20175

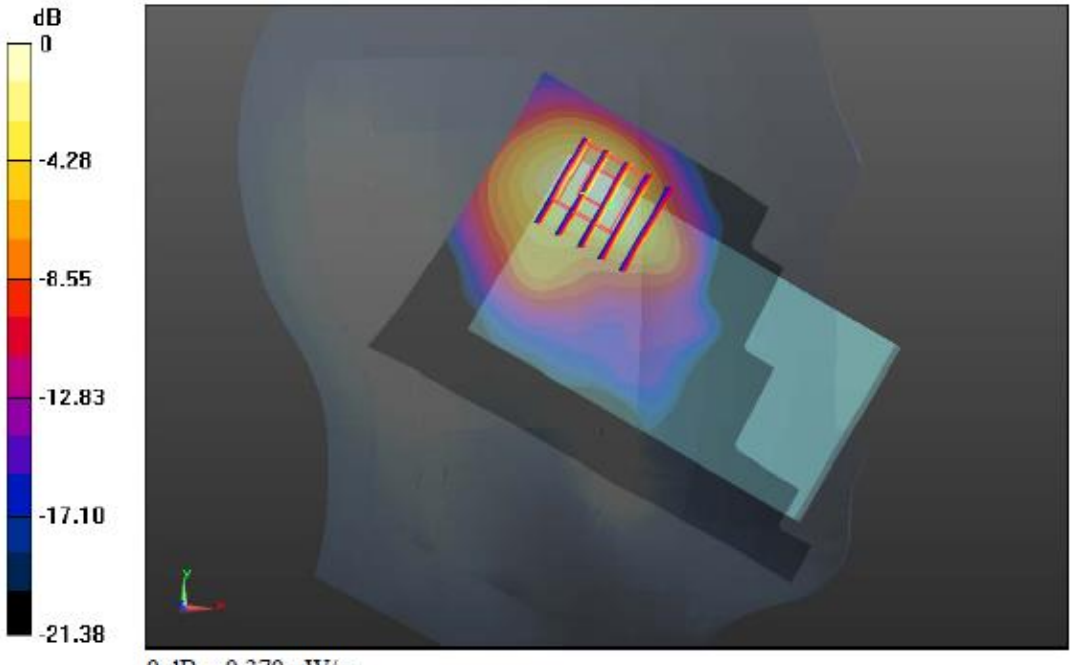
DUT: 2O1601

Communication System: LTE; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium: HSL_1750_130314 Medium parameters used: f = 1732.5 MHz; σ = 1.358 mho/m; ε_r = 41.634; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(8.14, 8.14, 8.14); Calibrated: 2012-6-20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2012-12-5
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch20175/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.308 mW/g

Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.896 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.570 W/kg
SAR(1 g) = 0.264 mW/g; SAR(10 g) = 0.121 mW/g
Maximum value of SAR (measured) = 0.374 mW/g



0 dB = 0.370mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013-4-5

#59 LTE Band 5_10M QPSK 1RB 0offset_Left Cheek_Ch20525

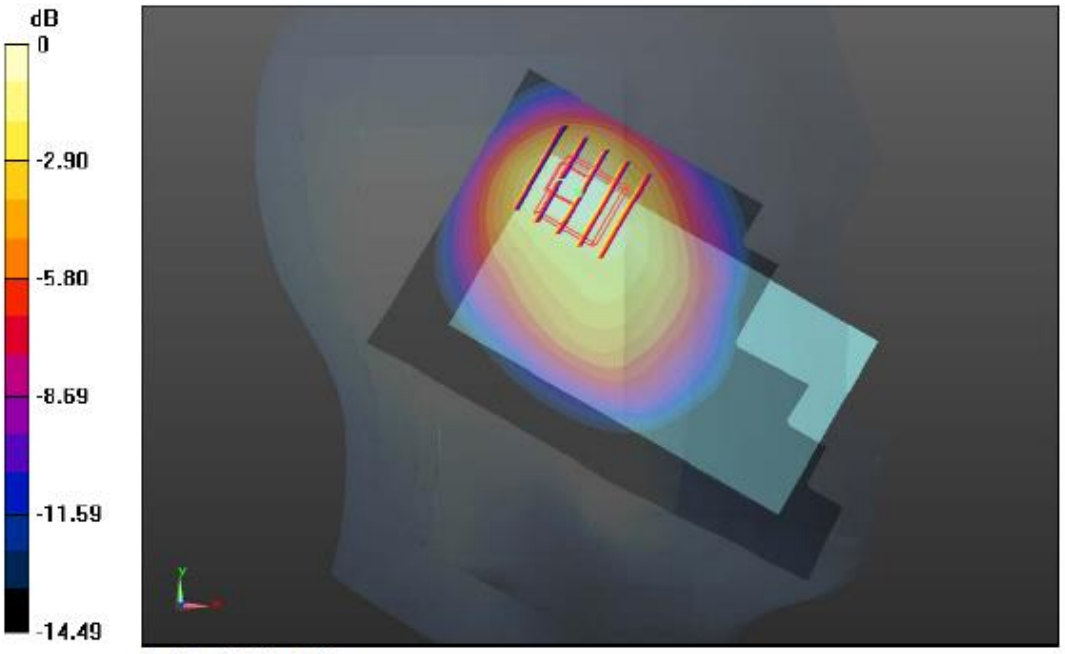
DUT: 2O1601

Communication System: LTE; Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium: HSL_835_130405 Medium parameters used: f = 836.5 MHz; σ = 0.882 mho/m; ε_r = 40.856; ρ = 1000 kg/m^3
Ambient Temperature : 23.4 ℃; Liquid Temperature : 21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(8.74, 8.74, 8.74); Calibrated: 2012-6-20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2012-12-5
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch20525/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.360 mW/g

Ch20525/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.570 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.492 W/kg
SAR(1 g) = 0.280 mW/g; SAR(10 g) = 0.177 mW/g
Maximum value of SAR (measured) = 0.376 mW/g



0 dB = 0.380mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013-4-5

#67 LTE Band 12_10M QPSK 1RB 0offset_Left Cheek_Ch23095

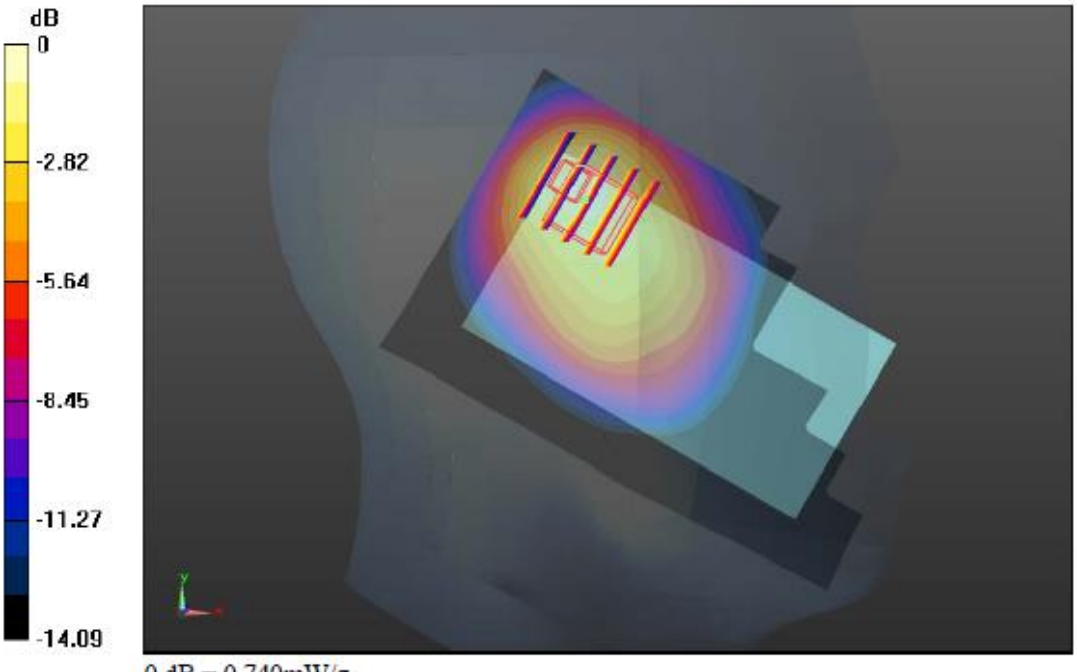
DUT: 2O1601

Communication System: LTE; Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: HSL_750_130405 Medium parameters used: f = 707.5 MHz; σ = 0.865 mho/m; ε_r = 41.644; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.25, 9.25, 9.25); Calibrated: 2012-6-20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2012-12-5
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch23095/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.648 mW/g

Ch23095/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.450 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.047 W/kg
SAR(1 g) = 0.527 mW/g; SAR(10 g) = 0.331 mW/g
Maximum value of SAR (measured) = 0.743 mW/g



0 dB = 0.740mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013-4-5

#67 LTE Band 12_10M QPSK 1RB 0offset_Left Cheek_Ch23095

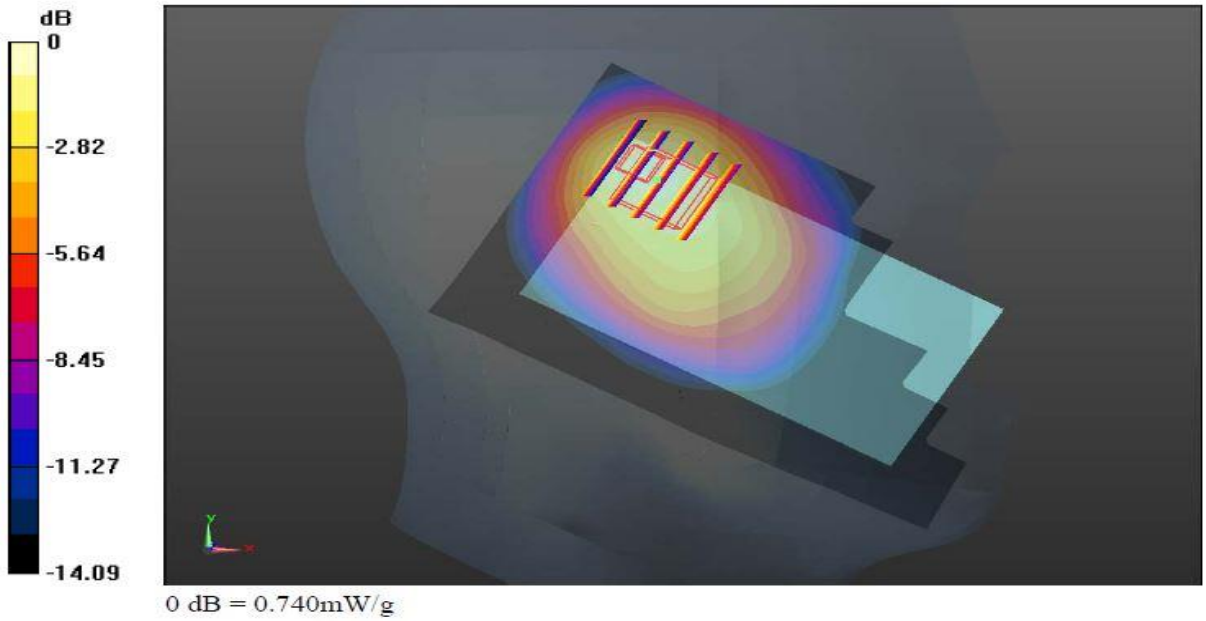
DUT: 2O1601

Communication System: LTE; Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: HSL_750_130405 Medium parameters used: f = 707.5 MHz; σ = 0.865 mho/m; ε_r = 41.644; ρ = 1000 kg/m^3
Ambient Temperature : 23.1 ℃; Liquid Temperature : 21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.25, 9.25, 9.25); Calibrated: 2012-6-20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2012-12-5
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch23095/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.648 mW/g

Ch23095/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.450 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.047 W/kg
SAR(1 g) = 0.482 mW/g; SAR(10 g) = 0.331 mW/g
Maximum value of SAR (measured) = 0.743 mW/g



0 dB = 0.740mW/g

12.6 Simultaneous Multi-band Transmission Analysis

	Position	Applicable Combination
Simultaneous Transmission	Head	1x CDMA (voice) + LTE (data) + WLAN 2.4GHz Band
		1x CDMA (voice) + LTE (data) + Bluetooth
	Hotspot	1x CDMA (data)/LTE(data) + WLAN 2.4GHz Band
		1x CDMA (data) /LTE(data) + Bluetooth
	Body-worn	1x CDMA (voice) + LTE (data) + WLAN 2.4GHz Band
		1x CDMA (voice) + LTE (data) + Bluetooth

Note:

1. WLAN 2.4GHz Band and Bluetooth share the same antenna, and cannot transmit simultaneously.
2. The Scaled SAR summation is calculated based on the same configuration and test position.
3. Simultaneous transmission analysis for hotspot mode 1cm separation to the body represents the compliance for hand-held and near-body use conditions. Simultaneous transmission of Hotspot mode for head and body-worn conditions was covered under simultaneous transmission analysis of head and body-worn positions, due to the possible WWAN voice call and data transmission SAR was considered in standalone SAR measurement for those exposure positions
4. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v05 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[$\sqrt{}$f(GHz)/*x*] W/kg for *test separation distances* ≤ 50 mm; where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
   ii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.

Maximum Power	Exposure Position	Head	Hotspot	Body-worn
	Test separation	0 mm	10 mm	10 mm
2 dBm	Estimated SAR (W/kg)	0.067W/kg	0.033W/kg	0.033W/kg

5. Per KDB 447498 D01v05, simultaneous transmission SAR is compliant if,

(i) Scalar SAR summation < 1.6W/kg.

(ii) SPLSR = $(SAR1 + SAR2)^{1.5}$ / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan
If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary

(iii) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg

The implemented power combinations

SVLTE Mode				
Voice Mode	**Data Mode: Maximum power**	**Data Mode: Maximum power**	**Data Mode: Maximum power**	**Data Mode: Maximum power**
1xRTT BC0/BC1/BC15	**LTE Band 2 BW=1.4/3/5/10/15/20MHz QPSK 1RB**	**LTE Band 4 BW=1.4/3/5/10/15/20MHz QPSK 1RB**	**LTE Band 5 BW=1.4/3/5/10MHz QPSK 1RB**	**LTE Band 12 BW=1.4/3/5/10MHz QPSK 1RB**
≤17 dBm	22 dBm	22.5 dBm	25.5 dBm	25 dBm
>17 dBm	17 dBm	17 dBm	17 dBm	17 dBm

Alternative combinations (Unit: dBm) – For analysis purpose only

Power combination	CDMA2000 1x voice	LTE data mode
#1	**Full Power** BC0/BC1: 24 BC15: 23.5	**Full Power** LTE Band 2: 22 LTE Band 4: 22.5 LTE Band 5: 25.5 LTE Band 12: 25
#2	**Reduced Power** BC0/BC1: 17 BC15: 17	**Full Power** LTE Band 2: 22 LTE Band 4: 22.5 LTE Band 5: 25.5 LTE Band 12: 25
#3	**Full Power** BC0/BC1: 24 BC15: 23.5	**Reduced Power** LTE Band 2: 17 LTE Band 4: 17 LTE Band 5: 17 LTE Band 12: 17

Note:

1. For SVLTE mode which means LTE (data) and CDMA 1xRTT (voice) transmitting simultaneously, power reduction is implemented.
2. When EUT 1xRTT output power is > 17dBm, LTE maximum output power is limited to 17dBm regardless of the power control command from the base station.
3. The SAR summation represents the simultaneous transmission of, a WWAN voice call and WWAN data transmission and WLAN as hotspot router; 3 transmitters operating at the same time.
4. The analyses above will represent the compliance of the simultaneous transmission of a WWAN voice call and WWAN data transmission, since the possible WWAN output power configuration in SVLTE mode(2 transmitters) is exactly the same as the configuration in SVLTE+WLAN (3 transmitters).

Analysis Procedure:

Step1

1. Per KDB 941225 D05, maximum power standalone SAR of 1xRTT/EVDO/LTE is used for simultaneous transmission analysis.
2. Start analysis from full power combination (Alternative Power combination #1).
3. If 1g-SAR scalar summation < 1.6W/kg, simultaneous SAR measurement and further evaluations are not necessary.
4. If 1g-SAR summation >1.6W/kg, to used further step 2 analysis.

Step2

1. For the cases from step1, power combinations #2/#3 are used in further step2 analysis.
2. If 1g-SAR scalar summation < 1.6W/kg, simultaneous SAR measurement and further evaluations are not necessary.
3. If resulting SPLSR ≤ 0.04, further evaluation is not required.
4. If resulting SPLSR > 0.04, volume scan measurement is required.

Table 12.6-A1: Head SAR analysis

Position	Applicable Combination
Head	1x CDMA (voice) + LTE (data) + WLAN 2.4GHz Band
	1x CDMA (voice) + LTE (data) + Bluetooth

	WWAN (voice)				WWAN (data)				WLAN 2.4GHz Band			WWAN + WLAN 2.4GHz Band (W/kg)	Step
Position	WWAN Band	Plot No	Average Power (dBm)	Max. WLAN SAR (W/kg)	WWAN Band	Plot No	Average Power (dBm)	Max. WWAN SAR (W/kg)	Plot No	Average Power (dBm)	Max. WLAN SAR (W/kg)		
Right Cheek	CDMA2000 BC0	11	23.57	0.958	LTE Band 2	32	21.9	0.541	73	16.53	0.028	**1.53**	
	CDMA2000 BC1	18	23.01	0.985	LTE Band 2	32	21.9	0.541	73	16.53	0.028	**1.55**	
	CDMA2000 BC15	21	23.36	0.803	LTE Band 2	32	21.9	0.541	73	16.53	0.028	**1.37**	
	CDMA2000 BC0	11	23.57	0.958	LTE Band 4	49	22.16	0.134	73	16.53	0.028	**1.12**	
	CDMA2000 BC1	18	23.01	0.985	LTE Band 4	49	22.16	0.134	73	16.53	0.028	**1.15**	
	CDMA2000 BC15	21	23.36	0.803	LTE Band 4	49	22.16	0.134	73	16.53	0.028	**0.97**	
	CDMA2000 BC0	11	23.57	0.958	LTE Band 5	57	24.88	0.23	73	16.53	0.028	**1.22**	
	CDMA2000 BC1	18	23.01	0.985	LTE Band 5	57	24.88	0.23	73	16.53	0.028	**1.24**	
	CDMA2000 BC15	21	23.36	0.803	LTE Band 5	57	24.88	0.23	73	16.53	0.028	**1.06**	
	CDMA2000 BC0	11	23.57	0.958	LTE Band 12	65	24.48	0.392	73	16.53	0.028	**1.38**	
	CDMA2000 BC1	18	23.01	0.985	LTE Band 12	65	24.48	0.392	73	16.53	0.028	**1.41**	
	CDMA2000 BC15	21	23.36	0.803	LTE Band 12	65	24.48	0.392	73	16.53	0.028	**1.22**	
Right Tilted	CDMA2000 BC0	2	23.66	0.55	LTE Band 2	33	21.9	0.379	74	16.53	0.014	**0.94**	
	CDMA2000 BC1	13	23.37	0.223	LTE Band 2	33	21.9	0.379	74	16.53	0.014	**0.62**	
	CDMA2000 BC15	22	23.36	0.312	LTE Band 2	33	21.9	0.379	74	16.53	0.014	**0.71**	
	CDMA2000 BC0	2	23.66	0.55	LTE Band 4	50	22.16	0.162	74	16.53	0.014	**0.73**	
	CDMA2000 BC1	13	23.37	0.223	LTE Band 4	50	22.16	0.162	74	16.53	0.014	**0.40**	
	CDMA2000 BC15	22	23.36	0.312	LTE Band 4	50	22.16	0.162	74	16.53	0.014	**0.49**	
	CDMA2000 BC0	2	23.66	0.55	LTE Band 5	58	24.88	0.159	74	16.53	0.014	**0.72**	
	CDMA2000 BC1	13	23.37	0.223	LTE Band 5	58	24.88	0.159	74	16.53	0.014	**0.40**	
	CDMA2000 BC15	22	23.36	0.312	LTE Band 5	58	24.88	0.159	74	16.53	0.014	**0.49**	
	CDMA2000 BC0	2	23.66	0.55	LTE Band 12	66	24.48	0.304	74	16.53	0.014	**0.87**	
	CDMA2000 BC1	13	23.37	0.223	LTE Band 12	66	24.48	0.304	74	16.53	0.014	**0.54**	
	CDMA2000 BC15	22	23.36	0.312	LTE Band 12	66	24.48	0.304	74	16.53	0.014	**0.63**	
Left Cheek	CDMA2000 BC0	8	23.65	0.83	LTE Band 2	36	21.9	1.3	75	16.53	0.058	**2.19**	Step 1
	CDMA2000 BC0	8	23.65	0.83	LTE Band 2	189	16.49	0.448	75	16.53	0.058	**1.34**	Step 2
	CDMA2000 BC0	186	16.84	0.185	LTE Band 2	36	21.9	1.3	75	16.53	0.058	**1.54**	
	CDMA2000 BC1	14	23.37	0.581	LTE Band 2	36	21.9	1.3	75	16.53	0.058	**1.94**	Step 1
	CDMA2000 BC1	14	23.37	0.581	LTE Band 2	189	16.49	0.448	75	16.53	0.058	**1.09**	Step 2
	CDMA2000 BC1	187	16.21	0.193	LTE Band 2	36	21.9	1.3	75	16.53	0.058	**1.55**	
	CDMA2000 BC15	23	23.36	0.97	LTE Band 2	36	21.9	1.3	75	16.53	0.058	**2.33**	Step 1
	CDMA2000 BC15	23	23.36	0.97	LTE Band 2	189	16.49	0.448	75	16.53	0.058	**1.48**	Step 2
	CDMA2000 BC15	188	16.75	0.193	LTE Band 2	36	21.9	1.3	75	16.53	0.058	**1.55**	
	CDMA2000 BC0	8	23.65	0.83	LTE Band 4	51	22.16	0.285	75	16.53	0.058	**1.17**	
	CDMA2000 BC1	14	23.37	0.581	LTE Band 4	51	22.16	0.285	75	16.53	0.058	**0.92**	
	CDMA2000 BC15	23	23.36	0.97	LTE Band 4	51	22.16	0.285	75	16.53	0.058	**1.31**	
	CDMA2000 BC0	8	23.65	0.83	LTE Band 5	59	24.88	0.323	75	16.53	0.058	**1.21**	
	CDMA2000 BC1	14	23.37	0.581	LTE Band 5	59	24.88	0.323	75	16.53	0.058	**0.96**	
	CDMA2000 BC15	23	23.36	0.97	LTE Band 5	59	24.88	0.323	75	16.53	0.058	**1.35**	
	CDMA2000 BC0	8	23.65	0.83	LTE Band 12	71	23.19	0.554	75	16.53	0.058	**1.44**	
	CDMA2000 BC1	14	23.37	0.581	LTE Band 12	71	23.19	0.554	75	16.53	0.058	**1.19**	
	CDMA2000 BC15	23	23.36	0.97	LTE Band 12	71	23.19	0.554	75	16.53	0.058	**1.58**	
Left Tilted	CDMA2000 BC0	4	23.66	0.466	LTE Band 2	35	21.9	0.734	76	16.53	0.026	**1.23**	
	CDMA2000 BC1	15	23.37	0.237	LTE Band 2	35	21.9	0.734	76	16.53	0.026	**1.00**	
	CDMA2000 BC15	24	23.36	0.272	LTE Band 2	35	21.9	0.734	76	16.53	0.026	**1.03**	
	CDMA2000 BC0	4	23.66	0.466	LTE Band 4	52	22.16	0.186	76	16.53	0.026	**0.68**	
	CDMA2000 BC1	15	23.37	0.237	LTE Band 4	52	22.16	0.186	76	16.53	0.026	**0.45**	
	CDMA2000 BC15	24	23.36	0.272	LTE Band 4	52	22.16	0.186	76	16.53	0.026	**0.48**	
	CDMA2000 BC0	4	23.66	0.466	LTE Band 5	60	24.88	0.236	76	16.53	0.026	**0.73**	
	CDMA2000 BC1	15	23.37	0.237	LTE Band 5	60	24.88	0.236	76	16.53	0.026	**0.50**	
	CDMA2000 BC15	24	23.36	0.272	LTE Band 5	60	24.88	0.236	76	16.53	0.026	**0.53**	
	CDMA2000 BC0	4	23.66	0.466	LTE Band 12	68	24.48	0.494	76	16.53	0.026	**0.99**	
	CDMA2000 BC1	15	23.37	0.237	LTE Band 12	68	24.48	0.494	76	16.53	0.026	**0.76**	
	CDMA2000 BC15	24	23.36	0.272	LTE Band 12	68	24.48	0.494	76	16.53	0.026	**0.79**	

	WWAN (voice)				WWAN (data)				Bluetooth		WWAN + Bluetooth (W/kg)	Step
Position	WWAN Band	Plot No	Average Power (dBm)	Max. WLAN SAR (W/kg)	WWAN Band	Plot No	Average Power (dBm)	Max. WWAN SAR (W/kg)	Average Power (dBm)	Estimated SAR (W/kg)		
Right Cheek	CDMA2000 BC0	11	23.57	0.958	LTE Band 2	32	21.9	0.541	1.71	0.067	1.57	
	CDMA2000 BC1	18	23.01	0.985	LTE Band 2	32	21.9	0.541	1.71	0.067	1.59	
	CDMA2000 BC15	21	23.36	0.803	LTE Band 2	32	21.9	0.541	1.71	0.067	1.41	
	CDMA2000 BC0	11	23.57	0.958	LTE Band 4	49	22.16	0.134	1.71	0.067	1.16	
	CDMA2000 BC1	18	23.01	0.985	LTE Band 4	49	22.16	0.134	1.71	0.067	1.19	
	CDMA2000 BC15	21	23.36	0.803	LTE Band 4	49	22.16	0.134	1.71	0.067	1.00	
	CDMA2000 BC0	11	23.57	0.958	LTE Band 5	57	24.88	0.23	1.71	0.067	1.26	
	CDMA2000 BC1	18	23.01	0.985	LTE Band 5	57	24.88	0.23	1.71	0.067	1.28	
	CDMA2000 BC15	21	23.36	0.803	LTE Band 5	57	24.88	0.23	1.71	0.067	1.10	
	CDMA2000 BC0	11	23.57	0.958	LTE Band 12	65	24.48	0.392	1.71	0.067	1.42	
	CDMA2000 BC1	18	23.01	0.985	LTE Band 12	65	24.48	0.392	1.71	0.067	1.44	
	CDMA2000 BC15	21	23.36	0.803	LTE Band 12	65	24.48	0.392	1.71	0.067	1.26	
Right Tilted	CDMA2000 BC0	2	23.66	0.55	LTE Band 2	33	21.9	0.379	1.71	0.067	1.00	
	CDMA2000 BC1	13	23.37	0.223	LTE Band 2	33	21.9	0.379	1.71	0.067	0.67	
	CDMA2000 BC15	22	23.36	0.312	LTE Band 2	33	21.9	0.379	1.71	0.067	0.76	
	CDMA2000 BC0	2	23.66	0.55	LTE Band 4	50	22.16	0.162	1.71	0.067	0.78	
	CDMA2000 BC1	13	23.37	0.223	LTE Band 4	50	22.16	0.162	1.71	0.067	0.45	
	CDMA2000 BC15	22	23.36	0.312	LTE Band 4	50	22.16	0.162	1.71	0.067	0.54	
	CDMA2000 BC0	2	23.66	0.55	LTE Band 5	58	24.88	0.159	1.71	0.067	0.78	
	CDMA2000 BC1	13	23.37	0.223	LTE Band 5	58	24.88	0.159	1.71	0.067	0.45	
	CDMA2000 BC15	22	23.36	0.312	LTE Band 5	58	24.88	0.159	1.71	0.067	0.54	
	CDMA2000 BC0	2	23.66	0.55	LTE Band 12	66	24.48	0.304	1.71	0.067	0.92	
	CDMA2000 BC1	13	23.37	0.223	LTE Band 12	66	24.48	0.304	1.71	0.067	0.59	
	CDMA2000 BC15	22	23.36	0.312	LTE Band 12	66	24.48	0.304	1.71	0.067	0.68	
Left Cheek	CDMA2000 BC0	8	23.65	0.83	LTE Band 2	36	21.9	1.3	1.71	0.067	2.20	Step 1
	CDMA2000 BC0	8	23.65	0.83	LTE Band 2	189	16.49	0.448	1.71	0.067	1.35	Step 2
	CDMA2000 BC0	186	16.84	0.185	LTE Band 2	36	21.9	1.3	1.71	0.067	1.55	
	CDMA2000 BC1	14	23.37	0.581	LTE Band 2	36	21.9	1.3	1.71	0.067	1.95	Step 1
	CDMA2000 BC1	14	23.37	0.581	LTE Band 2	189	16.49	0.448	1.71	0.067	1.10	Step 2
	CDMA2000 BC1	187	16.21	0.193	LTE Band 2	36	21.9	1.3	1.71	0.067	1.56	
	CDMA2000 BC15	23	23.36	0.97	LTE Band 2	36	21.9	1.3	1.71	0.067	2.34	Step 1
	CDMA2000 BC15	23	23.36	0.97	LTE Band 2	189	16.49	0.448	1.71	0.067	1.49	Step 2
	CDMA2000 BC15	188	16.75	0.193	LTE Band 2	36	21.9	1.3	1.71	0.067	1.56	
	CDMA2000 BC0	8	23.65	0.83	LTE Band 4	51	22.16	0.285	1.71	0.067	1.18	
	CDMA2000 BC1	14	23.37	0.581	LTE Band 4	51	22.16	0.285	1.71	0.067	0.93	
	CDMA2000 BC15	23	23.36	0.97	LTE Band 4	51	22.16	0.285	1.71	0.067	1.32	
	CDMA2000 BC0	8	23.65	0.83	LTE Band 5	59	24.88	0.323	1.71	0.067	1.22	
	CDMA2000 BC1	14	23.37	0.581	LTE Band 5	59	24.88	0.323	1.71	0.067	0.97	
	CDMA2000 BC15	23	23.36	0.97	LTE Band 5	59	24.88	0.323	1.71	0.067	1.36	
	CDMA2000 BC0	8	23.65	0.83	LTE Band 12	71	23.19	0.554	1.71	0.067	1.45	
	CDMA2000 BC1	14	23.37	0.581	LTE Band 12	71	23.19	0.554	1.71	0.067	1.20	
	CDMA2000 BC15	23	23.36	0.97	LTE Band 12	71	23.19	0.554	1.71	0.067	1.59	
Left Tilted	CDMA2000 BC0	4	23.66	0.466	LTE Band 2	35	21.9	0.734	1.71	0.067	1.27	
	CDMA2000 BC1	15	23.37	0.237	LTE Band 2	35	21.9	0.734	1.71	0.067	1.04	
	CDMA2000 BC15	24	23.36	0.272	LTE Band 2	35	21.9	0.734	1.71	0.067	1.07	
	CDMA2000 BC0	4	23.66	0.466	LTE Band 4	52	22.16	0.186	1.71	0.067	0.72	
	CDMA2000 BC1	15	23.37	0.237	LTE Band 4	52	22.16	0.186	1.71	0.067	0.49	
	CDMA2000 BC15	24	23.36	0.272	LTE Band 4	52	22.16	0.186	1.71	0.067	0.53	
	CDMA2000 BC0	4	23.66	0.466	LTE Band 5	60	24.88	0.236	1.71	0.067	0.77	
	CDMA2000 BC1	15	23.37	0.237	LTE Band 5	60	24.88	0.236	1.71	0.067	0.54	
	CDMA2000 BC15	24	23.36	0.272	LTE Band 5	60	24.88	0.236	1.71	0.067	0.58	
	CDMA2000 BC0	4	23.66	0.466	LTE Band 12	68	24.48	0.494	1.71	0.067	1.03	
	CDMA2000 BC1	15	23.37	0.237	LTE Band 12	68	24.48	0.494	1.71	0.067	0.80	
	CDMA2000 BC15	24	23.36	0.272	LTE Band 12	68	24.48	0.494	1.71	0.067	0.83	

Table 12.6-B1: Hotspot mode SAR analysis

Refer to Exposure Positions Consideration in section 11

Positions for SAR tests; Hotspot mode Test distance: 10 mm						
Antennas	**Front**	**Back**	**Top Side**	**Bottom Side**	**Right Side**	**Left Side**
CDMA 1xRTT / EVDO	Yes	Yes	NO	Yes	Yes	Yes
LTE	Yes	Yes	Yes	NO	Yes	NO
WLAN & Bluetooth	Yes	Yes	Yes	NO	Yes	NO

	Position	**Applicable Combination**
Simultaneous Transmission	**Hotspot**	1x CDMA (data) + WLAN 2.4GHz Band
		LTE (data) + WLAN 2.4GHz Band
		1x CDMA (data) + Bluetooth
		LTE (data) + Bluetooth

	WWAN (data)				**WLAN 2.4GHz Band**			**WWAN + WLAN 2.4GHz Band (W/kg)**
Position	**WWAN Band**	**Plot No**	**Average Power (dBm)**	**Max. WWAN SAR (W/kg)**	**Plot No**	**Average Power (dBm)**	**Max. WLAN SAR (W/kg)**	
Front	CDMA2000 BC0	77	23.64	0.990	180	16.53	0.007	**1.00**
	CDMA2000 BC1	95	23.22	1.117	180	16.53	0.007	**1.12**
	CDMA2000 BC15	116	23.30	1.131	180	16.53	0.007	**1.14**
	LTE Band 2	137	21.90	0.277	180	16.53	0.007	**0.28**
	LTE Band 4	156	22.16	0.102	180	16.53	0.007	**0.11**
	LTE Band 5	164	24.88	0.134	180	16.53	0.007	**0.14**
	LTE Band 12	172	24.48	0.260	180	16.53	0.007	**0.27**
Back	CDMA2000 BC0	78	23.64	1.108	185	16.53	0.031	**1.14**
	CDMA2000 BC1	103	23.00	1.284	185	16.53	0.031	**1.32**
	CDMA2000 BC15	117	23.30	1.393	185	16.53	0.031	**1.42**
	LTE Band 2	142	21.88	1.131	185	16.53	0.031	**1.16**
	LTE Band 4	161	20.65	0.198	185	16.53	0.031	**0.23**
	LTE Band 5	165	24.88	0.216	185	16.53	0.031	**0.25**
	LTE Band 12	173	24.48	0.471	185	16.53	0.031	**0.50**
Left Side	CDMA2000 BC0	79	23.64	0.774	-	-	-	**0.77**
	CDMA2000 BC1	97	23.22	0.238	-	-	-	**0.24**
	CDMA2000 BC15	119	23.30	0.232	-	-	-	**0.23**
Right Side	CDMA2000 BC0	80	23.64	0.839	182	16.53	0.021	**0.86**
	CDMA2000 BC1	98	23.22	0.357	182	16.53	0.021	**0.38**
	CDMA2000 BC15	120	23.30	0.277	182	16.53	0.021	**0.30**
	LTE Band 2	139	21.90	0.708	182	16.53	0.021	**0.73**
	LTE Band 4	158	22.16	0.116	182	16.53	0.021	**0.14**
	LTE Band 5	166	24.88	0.186	182	16.53	0.021	**0.21**
	LTE Band 12	174	24.48	0.402	182	16.53	0.021	**0.42**
Top Side	LTE Band 2	140	21.90	0.378	184	16.53	0.005	**0.38**
	LTE Band 4	159	22.16	0.141	184	16.53	0.005	**0.15**
	LTE Band 5	167	24.88	0.158	184	16.53	0.005	**0.16**
	LTE Band 12	175	24.48	0.109	184	16.53	0.005	**0.11**
Bottom Side	CDMA2000 BC0	81	23.64	0.275	-	-	-	**0.28**
	CDMA2000 BC1	99	23.22	1.292	-	-	-	**1.29**
	CDMA2000 BC15	121	23.30	1.131	-	-	-	**1.13**

Position	WWAN (data)				Bluetooth		WWAN + Bluetooth (W/kg)
	WWAN Band	Plot No	Average Power (dBm)	Max. WWAN SAR (W/kg)	Average Power (dBm)	Estimated Bluetooth SAR (W/kg)	
Front	CDMA2000 BC0	77	23.64	0.990	1.71	0.033	**1.02**
	CDMA2000 BC1	95	23.22	1.117	1.71	0.033	**1.15**
	CDMA2000 BC15	116	23.30	1.131	1.71	0.033	**1.16**
	LTE Band 2	137	21.90	0.277	1.71	0.033	**0.31**
	LTE Band 4	156	22.16	0.102	1.71	0.033	**0.14**
	LTE Band 5	164	24.88	0.134	1.71	0.033	**0.17**
	LTE Band 12	172	24.48	0.260	1.71	0.033	**0.29**
Back	CDMA2000 BC0	78	23.64	1.108	1.71	0.033	**1.14**
	CDMA2000 BC1	103	23.00	1.284	1.71	0.033	**1.32**
	CDMA2000 BC15	117	23.30	1.393	1.71	0.033	**1.43**
	LTE Band 2	142	21.88	1.131	1.71	0.033	**1.16**
	LTE Band 4	161	20.65	0.198	1.71	0.033	**0.23**
	LTE Band 5	165	24.88	0.216	1.71	0.033	**0.25**
	LTE Band 12	173	24.48	0.471	1.71	0.033	**0.50**
Left Side	CDMA2000 BC0	79	23.64	0.774	-	-	**0.77**
	CDMA2000 BC1	97	23.22	0.238	-	-	**0.24**
	CDMA2000 BC15	119	23.30	0.232	-	-	**0.23**
Right Side	CDMA2000 BC0	80	23.64	0.839	1.71	0.033	**0.87**
	CDMA2000 BC1	98	23.22	0.357	1.71	0.033	**0.39**
	CDMA2000 BC15	120	23.30	0.277	1.71	0.033	**0.31**
	LTE Band 2	139	21.90	0.708	1.71	0.033	**0.74**
	LTE Band 4	158	22.16	0.116	1.71	0.033	**0.15**
	LTE Band 5	166	24.88	0.186	1.71	0.033	**0.22**
	LTE Band 12	174	24.48	0.402	1.71	0.033	**0.44**
Top Side	LTE Band 2	140	21.90	0.378	1.71	0.033	**0.41**
	LTE Band 4	159	22.16	0.141	1.71	0.033	**0.17**
	LTE Band 5	167	24.88	0.158	1.71	0.033	**0.19**
	LTE Band 12	175	24.48	0.109	1.71	0.033	**0.14**
Bottom Side	CDMA2000 BC0	81	23.64	0.275	-	-	**0.28**
	CDMA2000 BC1	99	23.22	1.292	-	-	**1.29**
	CDMA2000 BC15	121	23.30	1.131	-	-	**1.13**

Table 12.6-C1: Body-worn mode SAR analysis

	Position	Applicable Combination
Simultaneous Transmission	Body-worn	1x CDMA (voice) + LTE (data) + WLAN 2.4GHz Band
		1x CDMA (voice) + LTE (data) + Bluetooth

	WWAN (voice)				WWAN (data)				WLAN 2.4GHz Band			WWAN + WLAN 2.4GHz Band (W/kg)	Step
Position	WWAN Band	Plot No	Average Power (dBm)	Max. WLAN SAR (W/kg)	WWAN Band	Plot No	Average Power (dBm)	Max. WWAN SAR (W/kg)	Plot No	Average Power (dBm)	Max. WLAN SAR (W/kg)		
Back	CDMA2000 BC0	88	23.65	1.149	LTE Band 2	142	21.88	1.131	181	16.53	0.03	**2.31**	Step 1
	CDMA2000 BC0	88	23.65	1.149	LTE Band 2	196	16.08	0.346	181	16.53	0.03	**1.53**	Step 2
	CDMA2000 BC0	191	16.75	0.225	LTE Band 2	142	21.88	1.131	181	16.53	0.03	**1.39**	
	CDMA2000 BC1	108	23.06	1.183	LTE Band 2	142	21.88	1.131	181	16.53	0.03	**2.34**	Step 1
	CDMA2000 BC1	108	23.06	1.183	LTE Band 2	196	16.84	0.346	181	16.53	0.03	**1.56**	Step 2
	CDMA2000 BC1	192	16.4	0.265	LTE Band 2	142	21.88	1.131	181	16.53	0.03	**1.43**	
	CDMA2000 BC15	128	23.34	1.193	LTE Band 2	142	21.88	1.131	181	16.53	0.03	**2.35**	Step 1
	CDMA2000 BC15	128	23.34	1.193	LTE Band 2	196	16.84	0.346	181	16.53	0.03	**1.57**	Step 2
	CDMA2000 BC15	194	16.85	0.283	LTE Band 2	142	21.88	1.131	181	16.53	0.03	**1.44**	
	CDMA2000 BC0	88	23.65	1.149	LTE Band 12	173	24.48	0.471	181	16.53	0.03	**1.65**	Step 1
	CDMA2000 BC0	88	23.56	1.149	LTE Band 12	200	16.41	0.07	181	16.53	0.03	**1.25**	Step 2
	CDMA2000 BC0	191	16.75	0.225	LTE Band 12	173	24.48	0.471	181	16.53	0.03	**0.73**	
	CDMA2000 BC0	88	23.65	1.149	LTE Band 4	161	20.65	0.198	181	16.53	0.03	**1.38**	
	CDMA2000 BC1	108	23.06	1.183	LTE Band 4	161	20.65	0.198	181	16.53	0.03	**1.41**	
	CDMA2000 BC15	128	23.34	1.193	LTE Band 4	161	20.65	0.198	181	16.53	0.03	**1.42**	
	CDMA2000 BC0	88	23.65	1.149	LTE Band 5	165	24.88	0.216	181	16.53	0.03	**1.4**	
	CDMA2000 BC1	108	23.06	1.183	LTE Band 5	165	24.88	0.216	181	16.53	0.03	**1.43**	
	CDMA2000 BC15	128	23.34	1.193	LTE Band 5	165	24.88	0.216	181	16.53	0.03	**1.44**	
	CDMA2000 BC0	88	23.65	1.149	LTE Band 12	173	24.48	0.471	181	16.53	0.03	**1.65**	Step 1
	CDMA2000 BC0	88	23.65	1.149	LTE Band 12	200	16.41	0.07	181	16.53	0.03	**1.25**	Step 2
	CDMA2000 BC0	191	16.75	0.225	LTE Band 12	173	24.48	0.471	181	16.53	0.03	**0.73**	
	CDMA2000 BC1	108	23.06	1.183	LTE Band 12	173	24.48	0.471	181	16.53	0.03	**1.68**	Step 1
	CDMA2000 BC1	108	23.06	1.183	LTE Band 12	200	16.41	0.07	181	16.53	0.03	**1.28**	Step 2
	CDMA2000 BC1	192	16.4	0.282	LTE Band 12	173	24.48	0.471	181	16.53	0.03	**0.78**	
	CDMA2000 BC15	128	23.34	1.193	LTE Band 12	173	24.48	0.471	181	16.53	0.03	**1.69**	Step 1
	CDMA2000 BC15	128	23.34	1.193	LTE Band 12	200	16.41	0.07	181	16.53	0.03	**1.29**	Step 2
	CDMA2000 BC0	88	23.65	0.283	LTE Band 12	173	24.48	0.471	181	16.53	0.03	**0.78**	

Position	WWAN (voice)				WWAN (data)				Bluetooth		WWAN + Bluetooth (W/kg)	Step
	WWAN Band	Plot No	Average Power (dBm)	Max. WLAN SAR (W/kg)	WWAN Band	Plot No	Average Power (dBm)	Max. WWAN SAR (W/kg)	Average Power (dBm)	Estimated SAR (W/kg)		
Back	CDMA2000 BC0	88	23.65	1.149	LTE Band 2	142	21.88	1.131	1.71	0.033	**2.31**	Step 1
	CDMA2000 BC0	88	23.65	1.149	LTE Band 2	196	16.08	0.346	1.71	0.033	**1.53**	Step 2
	CDMA2000 BC0	191	16.75	0.225	LTE Band 2	142	21.88	1.131	1.71	0.033	**1.39**	
	CDMA2000 BC1	108	23.06	1.183	LTE Band 2	142	21.88	1.131	1.71	0.033	**2.35**	Step 1
	CDMA2000 BC1	108	23.06	1.183	LTE Band 2	196	16.84	0.346	1.71	0.033	**1.56**	Step 2
	CDMA2000 BC1	192	16.4	0.265	LTE Band 2	142	21.88	1.131	1.71	0.033	**1.43**	
	CDMA2000 BC15	128	23.34	1.193	LTE Band 2	142	21.88	1.131	1.71	0.033	**2.36**	Step 1
	CDMA2000 BC15	128	23.34	1.193	LTE Band 2	196	16.84	0.346	1.71	0.033	**1.57**	Step 2
	CDMA2000 BC15	194	16.85	0.283	LTE Band 2	142	21.88	1.131	1.71	0.033	**1.45**	
	CDMA2000 BC0	88	23.65	1.149	LTE Band 4	161	20.65	0.198	1.71	0.033	**1.38**	
	CDMA2000 BC1	108	23.06	1.183	LTE Band 4	161	20.65	0.198	1.71	0.033	**1.41**	
	CDMA2000 BC15	128	23.34	1.193	LTE Band 4	161	20.65	0.198	1.71	0.033	**1.42**	
	CDMA2000 BC0	88	23.65	1.149	LTE Band 5	165	24.88	0.216	1.71	0.033	**1.4**	
	CDMA2000 BC1	108	23.06	1.183	LTE Band 5	165	24.88	0.216	1.71	0.033	**1.43**	
	CDMA2000 BC15	128	23.34	1.193	LTE Band 5	165	24.88	0.216	1.71	0.033	**1.44**	
	CDMA2000 BC0	88	23.65	1.149	LTE Band 12	173	24.48	0.471	1.71	0.033	**1.65**	Step 1
	CDMA2000 BC0	88	23.65	1.149	LTE Band 12	200	16.41	0.07	1.71	0.033	**1.25**	Step 2
	CDMA2000 BC0	191	16.75	0.225	LTE Band 12	173	24.48	0.471	1.71	0.033	**0.73**	
	CDMA2000 BC1	108	23.06	1.183	LTE Band 12	173	24.48	0.471	1.71	0.033	**1.69**	Step 1
	CDMA2000 BC1	108	23.06	1.183	LTE Band 12	200	16.41	0.07	1.71	0.033	**1.29**	Step 2
	CDMA2000 BC1	192	16.4	0.282	LTE Band 12	173	24.48	0.471	1.71	0.033	**0.79**	
	CDMA2000 BC15	128	23.34	1.193	LTE Band 12	173	24.48	0.471	1.71	0.033	**1.7**	Step 1
	CDMA2000 BC15	128	23.34	1.193	LTE Band 12	200	16.41	0.07	1.71	0.033	**1.3**	Step 2
	CDMA2000 BC0	88	23.65	0.283	LTE Band 12	173	24.48	0.471	1.71	0.033	**0.79**	

Test Engineer： Fulu Hu

13. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in Table 12.1

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[(a)]	1/k[(b)]	1/√3	1/√6	1/√2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 13.1 Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 22.0 %**	**± 21.5 %**

Table 13.2 Uncertainty Budget of DASY for frequency range 300 MHz to 3 GHz from IEEE Std 1528™-2003

14. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, December 2003

[4] FCC OET Bulletin 65 (Edition 97-01) Supplement C (Edition 01-01), “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”, June 2001

[5] SPEAG DASY System Handbook

[6] FCC KDB 248227 D01 v01r02, “SAR Measurement Procedures for 802.11 a/b/g Transmitters”, May 2007

[7] FCC KDB 447498 D01 v05, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, October 2012

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