



FCC SAR Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : CDMA/LTE Digital Mobile Handset
BRAND NAME : ZTE
MODEL NAME : ZTE N9120
FCC ID : Q78-ZTEN9120
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 Aug. 20, 2012. 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:

Jones Tsai / Manager



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1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **ZTE CORPORATION** DUT: CDMA/LTE Digital Mobile Handset, Brand Name: ZTE, Model Name: ZTE N9120 are as follows.

<Highest 1-g SAR Summary>

Band	Position	SAR_{1g} (W/kg)	Scaled SAR_{1g} (W/kg)
CDMA2000 BC0	Head	0.664	0.740
CDMA2000 BC1	Head	1.07	1.133
CDMA2000 BC15	Head	1.12	1.277
LTE Band 2	Head	1.03	1.142
LTE Band 4	Head	1.05	1.125
WLAN 2.4G	Head	0.273	0.287
CDMA2000 BC1	Hotspot (1 cm Gap)	1.04	1.102
CDMA2000 BC15	Hotspot (1 cm Gap)	0.941	1.018
LTE Band 2	Hotspot (1 cm Gap)	1.03	1.142
LTE Band 4	Hotspot (1 cm Gap)	0.825	0.846
WLAN 2.4G	Hotspot (1 cm Gap)	0.229	0.241
CDMA2000 BC0	Body-worn (1 cm Gap)	1.03	1.156
CDMA2000 BC1	Body-worn (1 cm Gap)	1.45	1.460
CDMA2000 BC15	Body-worn (1 cm Gap)	1.29	1.464
LTE Band 2	Body-worn (1 cm Gap)	1.03	1.142
LTE Band 4	Body-worn (1 cm Gap)	0.946	0.970
WLAN 2.4G	Body-worn (1 cm Gap)	0.14	0.147

<Simultaneous transmission SAR>

Band	Position	Multi Band SAR_{1g} (W/kg)
CDMA 2000 BC15	Body-worn (1 cm Gap)	1.58
LTE Band 2		
WLAN 2.4G		

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	Jul. 27, 2012
Date of End during the Test	Aug. 20, 2012

3. General Information

3.1 Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT	CDMA/LTE Digital Mobile Handset
Brand Name	ZTE
Model Name	ZTE N9120
FCC ID	Q78-ZTEN9120
MEID	990000582543513
Tx Frequency	CDMA2000 BC0: 824.70 MHz ~ 848.31 MHz CDMA2000 BC1: 1851.25 MHz ~ 1908.75 MHz CDMA2000 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 WLAN 2.4G: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Rx Frequency	CDMA2000 BC0: 869.70 MHz ~ 893.31 MHz CDMA2000 BC1: 1931.25 MHz ~ 1988.75 MHz CDMA2000 BC15: 2111.25 ~ 2153.75 MHz LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2100.7 MHz ~ 2154.3 MHz WLAN 2.4G: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Maximum Output Power to Antenna	CDMA2000 BC0: 23.03 dBm CDMA2000 BC1: 23.49 dBm CDMA2000 BC15: 22.76 dBm LTE Band 2: 23.05 dBm LTE Band 4: 22.89 dBm 802.11b: 15.28 dBm 802.11g: 14.95 dBm 802.11n-HT20 (2.4GHz): 15.43 dBm Bluetooth: 1.69 dBm
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna
HW Version	N9120.H02
SW Version	N9120V1.0.0B03
Uplink Modulation	CDMA2000 1xRTT: QPSK CDMA2000 1xEV-DO: 8PSK LTE: QPSK / 16QAM 802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth 3.0 EDR : GFSK / $\pi/4$ -DQPSK / 8-DPSK
EUT Stage	Identical Prototype
Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	



The table below summarized necessary items addressed in KDB 941225 D05 v01.

FCC ID		Q78-ZTEN9120										
DUT Type		CDMA/LTE Digital Mobile Handset										
Operating Frequency Range of each LTE transmission band		Band 2: TX: 1850.7 MHz ~ 1909.3 MHz, RX: 1930.7 MHz ~ 1989.3 MHz Band 4: TX: 1710.7 MHz ~ 1754.3 MHz, RX: 2110.7 MHz ~ 2154.3 MHz										
Channel Bandwidth		Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz										
Transmission (H, M, L) channel numbers and frequencies in each LTE band												
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
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
UE category, uplink modulations used		Category 3, QPSK, and 16QAM										
LTE transmitter and antenna implementation (standalone or sharing hardware components / antennas)		LTE/DO Main Antenna: LTE share the antenna with EVDO.										
LTE Voice / Data requirements		Data only										
LTE MPR permanently built-in by design		Yes										
LTE A-MPR		Disabled during SAR testing. With CMW500, set NS value to NS_01 to disable A-MPR.										
LTE maximum averaged conducted output power		LTE Band 2: 23.05 dBm LTE Band 4: 22.89 dBm										
Other U.S. wireless operating modes / bands		CDMA2000 1xRTT		BC0: UL: 824.7~848.31MHz / DL: 869.7~893.31MHz BC1: UL: 1851.25~1908.75MHz / DL: 1931.25~1988.75MHz BC15: UL: 1711.25~1753.75MHz / DL: 2111.25 ~ 2153.75 MHz								
		1xEVDO		BC1: UL: 1851.25~1908.75MHz / DL: 1931.25~1988.75MHz BC15: UL: 1711.25~1753.75MHz / DL: 2111.25 ~ 2153.75 MHz								
		WLAN		2.4G: 2412 MHz ~ 2462 MHz								
		Bluetooth		2402 MHz ~ 2480 MHz								
Simultaneous transmission configurations		In Section 11.4										
Power reduction applied to satisfy SAR compliance		Yes, SVLTE/SVDO power reduction.										



The SVLTE / SVDO operating mode, which means CDMA 1xRTT(voice) and LTE(data) / CDMA 1xRTT(voice) and EVDO(data) transmitting simultaneously. The SVLTE and SVDO operating mode for all frequency bands, power reduction is needed for SAR compliance. 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 mode BC0	1xEVDO data mode BC1/BC15	LTE data mode Band 2	LTE data mode Band 4
P ≥ 17	15	18.5	18
P < 17	23	23.5	23

CDMA2000 1x voice mode BC1/BC15	1xEVDO data mode BC1/BC15	LTE data mode Band 2	LTE data mode Band 4
P ≥ 15	15	18.5	18
P < 15	23	23.5	23

Table 3.1-A: Power Reduction Implementation (Unit: dBm)

3.2 Product Photos

Please refer to Appendix D.



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 v04
- FCC KDB 648474 D01 v01r05
- FCC KDB 941225 D01 v02
- FCC KDB 941225 D05 v01
- FCC KDB 941225 D06 v01
- FCC KDB 248227 D01 v01r02

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 °C
Humidity	< 60 %

3.5.2 Test Configuration

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

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

The maximum rated power of WWAN is listed in "Tune-Up Procedure" exhibit, and the maximum rated power of WLAN is listed in "Operational Description" exhibit; The scaling factor is calculated according to the difference between measured output power and maximum tolerance power on this device.

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:

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

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

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

$$\text{SAR} = c \left(\frac{\delta T}{\delta t} \right)$$

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

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

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

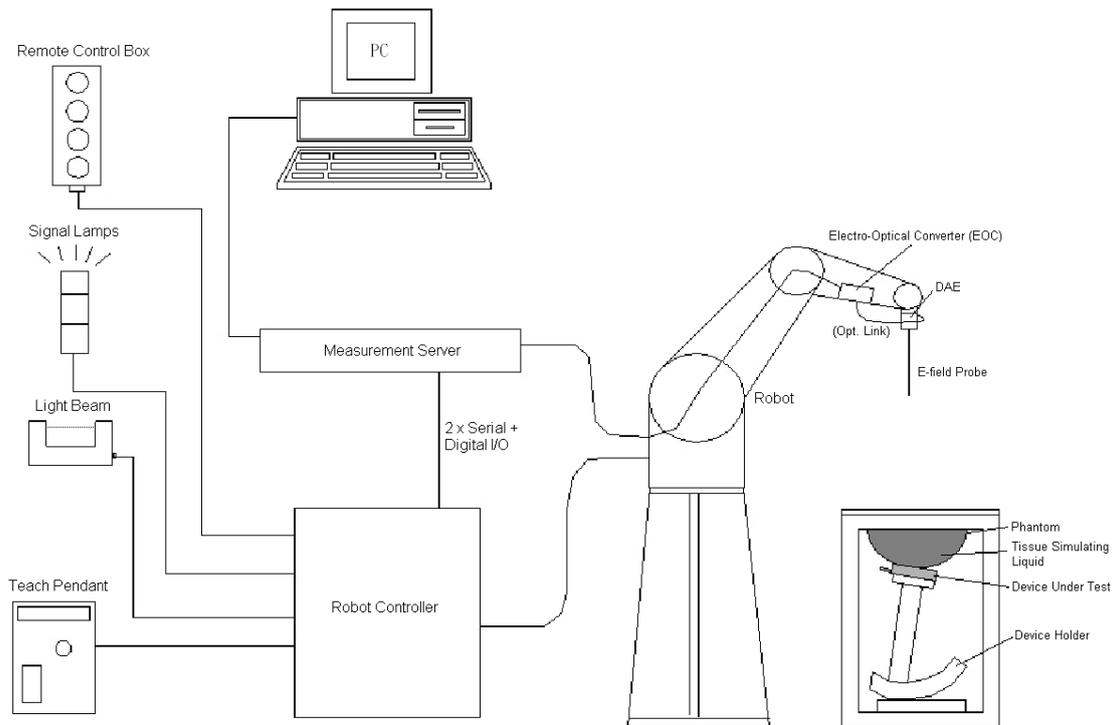


Fig 5.1 SPEAG DASY System Configurations

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
- Remote control with teach pendant and additional circuitry for robot safety such as warning 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>

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 μ W/g to 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 μ W/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

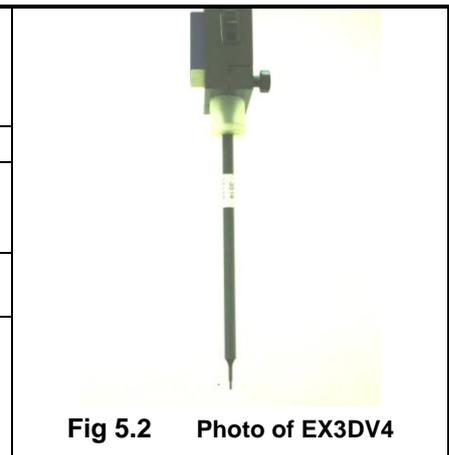


Fig 5.2 Photo of EX3DV4

5.1.2 E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than $\pm 10\%$. The spherical isotropy shall be evaluated and within ± 0.25 dB. 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

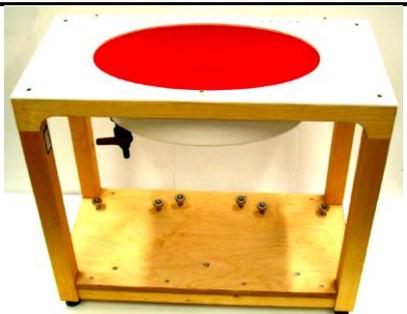
5.5 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	 <p>Fig 5.6 Photo of SAM Phantom</p>
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	

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

<ELI4 Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)	 <p>Fig 5.7 Photo of ELI4 Phantom</p>
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm	

The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

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 (EPR). 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 $\epsilon = 3$ and loss tangent $\delta = 0.02$. 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 5.8 Device Holder

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

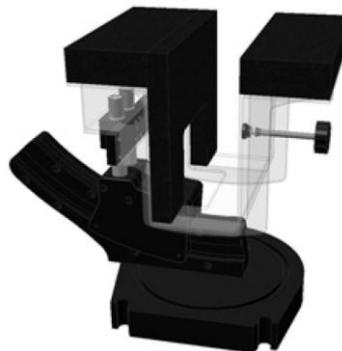


Fig 5.9 Laptop Extension Kit

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 :

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

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 :

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

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

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

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

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

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

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

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	835MHz System Validation Kit	D835V2	4d091	Nov. 18, 2011	Nov. 17, 2012
SPEAG	1750MHz System Validation Kit	D1750V2	1069	Jul. 13, 2012	Jul. 12, 2013
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2011	Nov. 20, 2012
SPEAG	2450MHz System Validation Kit	D2450V2	736	Jul. 25, 2011	Jul. 24, 2013
SPEAG	Data Acquisition Electronics	DAE4	1210	Nov. 18, 2011	Nov. 17, 2012
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. 30, 2011	Nov. 29, 2013
Agilent	Wireless Communication Test Set	E5515C	GB47050646	Aug. 18, 2011	Aug. 17, 2013
Agilent	Wireless Communication Test Set	E5515C	MY48367160	Oct. 26, 2011	Oct. 25, 2013
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	Apr. 13, 2012	Apr. 12, 2013
Agilent	Dielectric Probe Kit	85070E	MY44300475	NCR	NCR
R&S	Signal Generator	SMR40	100455	Dec. 30, 2011	Dec. 29, 2012
AR	Amplifier	551G4	333096	NCR	NCR
Agilent	Power Meter	E4416A	MY45101555	Aug. 23, 2011	Aug. 22, 2012
Agilent	Power Sensor	E9327A	MY44421198	Aug. 23, 2011	Aug. 22, 2012
ARRA	Power Divider	A3200-2	N/A	NA	NA
MCL	Attenuation	BW-S10W5	N/A	NA	NA
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 450824 D02, 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 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.

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.

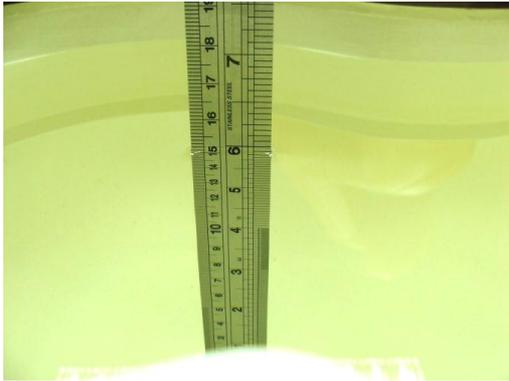


Fig 6.1 Photo of Liquid Height for Head SAR



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								
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
For Body								
835	50.8	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.

Freq. (MHz)	Liquid Type	Temp. (°C)	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
835	Head	21.1	0.903	43.168	0.9	41.5	0.33	4.02	±5	Jul. 30, 2012
835	Head	21.1	0.904	41.212	0.9	41.5	0.44	-0.69	±5	Aug. 11, 2012
835	Head	21.6	0.895	41.543	0.9	41.5	-0.56	0.10	±5	Aug. 18, 2012
835	Body	21.1	0.974	54.252	0.97	55.2	0.41	-1.72	±5	Jul. 30, 2012
835	Body	21.4	0.976	54.388	0.97	55.2	0.62	-1.47	±5	Aug. 11, 2012
835	Body	21.5	0.974	54.246	0.97	55.2	0.41	-1.73	±5	Aug. 20, 2012
1750	Head	21.4	1.433	40.638	1.37	40.1	4.60	1.34	±5	Jul. 28, 2012
1750	Head	21.6	1.435	40.64	1.37	40.1	4.74	1.35	±5	Aug. 03, 2012
1750	Head	21.3	1.431	40.892	1.37	40.1	4.45	1.98	±5	Aug. 11, 2012
1750	Head	21.3	1.399	40.26	1.37	40.1	2.12	0.40	±5	Aug. 19, 2012
1750	Body	21.5	1.505	52.347	1.49	53.4	1.01	-1.97	±5	Aug. 01, 2012
1750	Body	21.5	1.512	52.356	1.49	53.4	1.48	-1.96	±5	Aug. 02, 2012
1750	Body	21.3	1.515	54.222	1.49	53.4	1.68	1.54	±5	Aug. 12, 2012
1750	Body	21.2	1.519	54.941	1.49	53.4	1.95	2.89	±5	Aug. 16, 2012
1750	Body	21.4	1.512	55.585	1.49	53.4	1.48	4.09	±5	Aug. 18, 2012
1900	Head	21.2	1.446	39.09	1.4	40.0	3.29	-2.27	±5	Jul. 27, 2012
1900	Head	21.3	1.42	40.402	1.4	40.0	1.43	1.01	±5	Jul. 28, 2012
1900	Head	21.6	1.456	39.354	1.4	40.0	4.00	-1.62	±5	Aug. 12, 2012
1900	Body	21.5	1.547	53.803	1.52	53.3	1.78	0.94	±5	Jul. 29, 2012
1900	Body	21.5	1.535	54.579	1.52	53.3	0.99	2.40	±5	Jul. 31, 2012
1900	Body	21.6	1.531	54.671	1.52	53.3	0.72	2.57	±5	Aug. 12, 2012
1900	Body	21.3	1.512	53.903	1.52	53.3	-0.53	1.13	±5	Aug. 15, 2012
2450	Head	21.6	1.857	37.67	1.80	39.2	3.17	-3.90	±5	Aug. 10, 2012
2450	Head	21.3	1.807	37.921	1.80	39.2	0.39	-3.26	±5	Aug. 15, 2012
2450	Body	21.5	1.966	52.06	1.95	52.7	0.82	-1.21	±5	Aug. 10, 2012
2450	Body	21.2	1.949	53.894	1.95	52.7	-0.05	2.27	±5	Aug. 15, 2012

Table 6.2 Measuring Results for Simulating Liquid

7. SAR Measurement Evaluation

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:

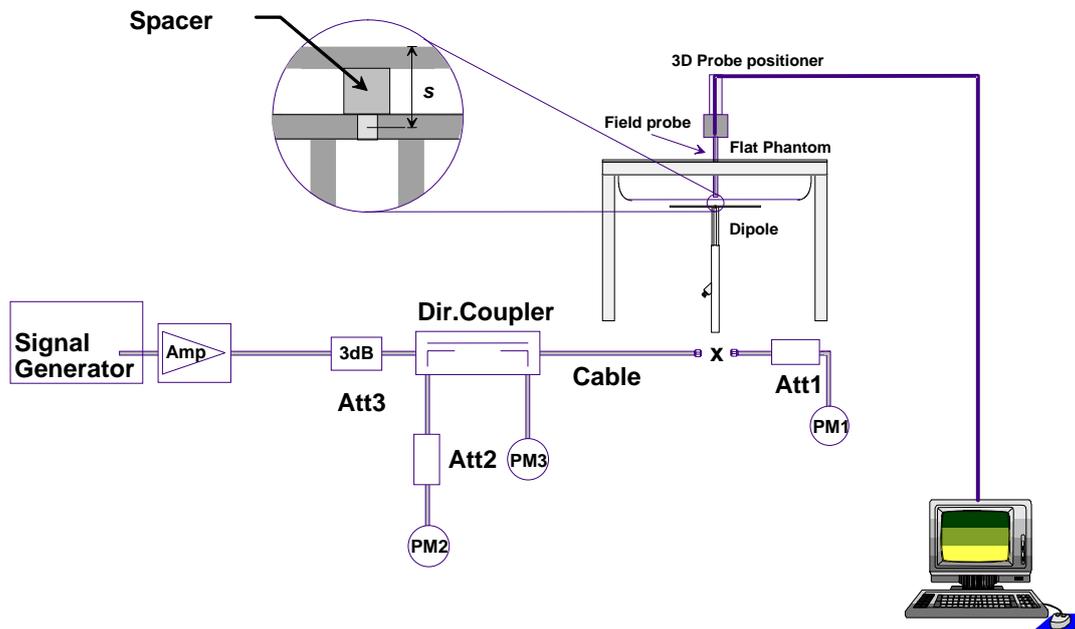


Fig 7.1 System Setup for System Evaluation

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

The output power on dipole port must be calibrated to 24 dBm (250 mW) before dipole is connected.



Fig 7.2 Photo of Dipole Setup

7.3 Validation Results

Comparing to the original SAR value provided by SPEAG, the validation 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.

Measurement Date	Frequency (MHz)	Liquid Type	Targeted SAR _{1g} (W/kg)	Measured SAR _{1g} (W/kg)	Normalized SAR _{1g} (W/kg)	Deviation (%)
Jul. 30, 2012	835	Head	9.4	2.25	9.00	-4.26
Aug. 11, 2012	835	Head	9.4	2.26	9.04	-3.83
Aug. 18, 2012	835	Head	9.4	2.23	8.92	-5.11
Jul. 30, 2012	835	Body	9.42	2.54	10.16	7.86
Aug. 11, 2012	835	Body	9.42	2.34	9.36	-0.64
Aug. 20, 2012	835	Body	9.42	2.35	9.40	-0.21
Jul. 28, 2012	1750	Head	36.4	8.51	34.04	-6.48
Aug. 03, 2012	1750	Head	36.4	9.2	36.80	1.10
Aug. 11, 2012	1750	Head	36.4	9.07	36.28	-0.33
Aug. 19, 2012	1750	Head	36.4	8.97	35.88	-1.43
Aug. 01, 2012	1750	Body	37.1	8.95	35.80	-3.50
Aug. 02, 2012	1750	Body	37.1	9.16	36.64	-1.24
Aug. 12, 2012	1750	Body	37.1	9.22	36.88	-0.59
Aug. 16, 2012	1750	Body	37.1	9.2	36.80	-0.81
Aug. 18, 2012	1750	Body	37.1	9.13	36.52	-1.56
Jul. 27, 2012	1900	Head	40.3	9.96	39.84	-1.14
Jul. 28, 2012	1900	Head	40.3	9.78	39.12	-2.93
Aug. 12, 2012	1900	Head	40.3	10	40.00	-0.74
Jul. 29, 2012	1900	Body	41.8	10.5	42.00	0.48
Jul. 31, 2012	1900	Body	41.8	10.4	41.60	-0.48
Aug. 12, 2012	1900	Body	41.8	10.3	41.20	-1.44
Aug. 15, 2012	1900	Body	41.8	10.2	40.80	-2.39
Aug. 10, 2012	2450	Head	54.8	14.2	56.80	3.65
Aug. 15, 2012	2450	Head	54.8	13.8	55.20	0.73
Aug. 10, 2012	2450	Body	52.3	12.8	51.20	-2.10
Aug. 15, 2012	2450	Body	52.3	12.7	50.80	-2.87

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 cheek-SAR in mouth area right tilted, left cheek, left tilted, Front of the EUT with phantom 1 cm gap, Back 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

- 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.
- 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.
- 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.

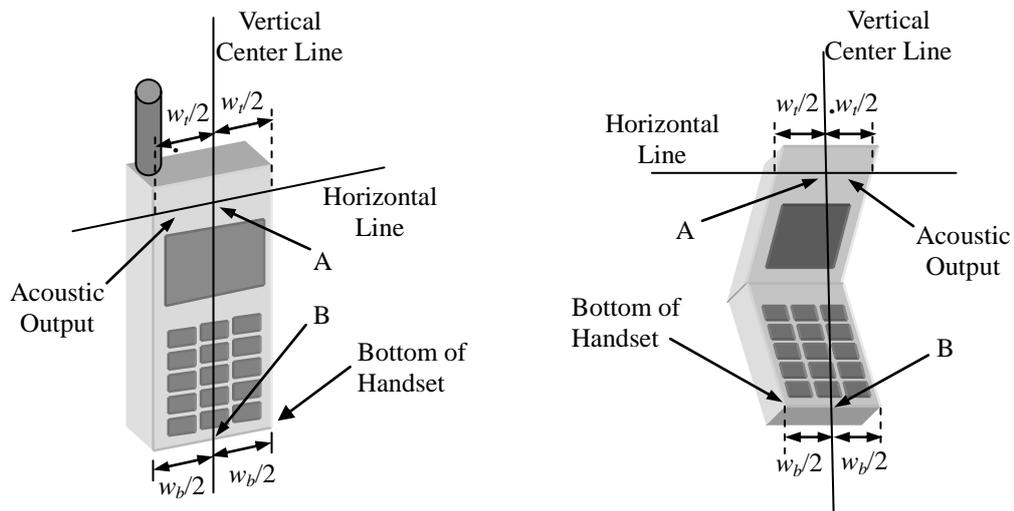


Fig 8.1 Illustration for Handset Vertical and Horizontal Reference Lines

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. 9.2).

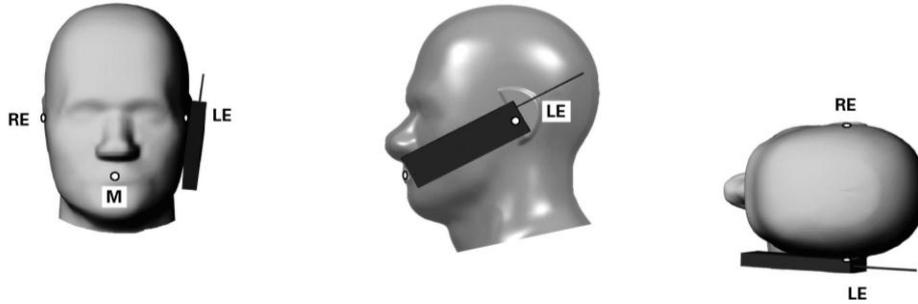


Fig 8.2 Illustration for Cheek Position

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. 9.3).

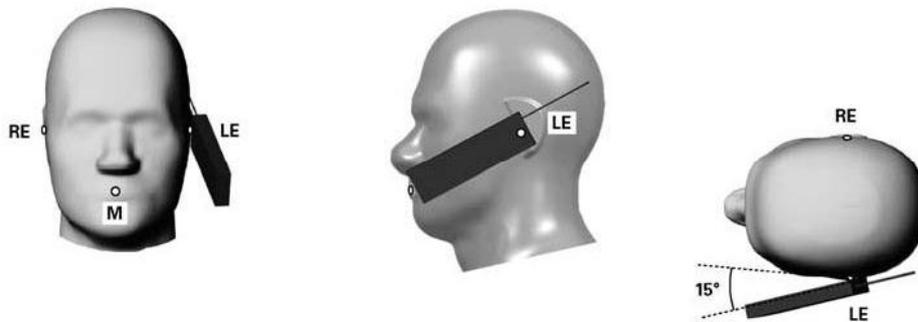


Fig 8.3 Illustration for Tilted Position

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.

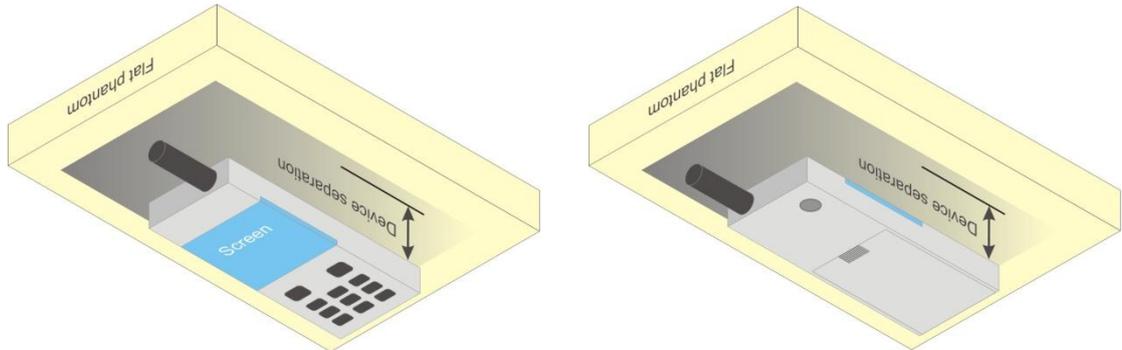


Fig 8.4 Illustration for Body Worn Position

<EUT Setup Photos>

Please refer to Appendix E for the test setup photos.

9. Measurement Procedures

The measurement procedures are as follows:

- (a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the highest power channel.
- (b) Keep EUT to radiate maximum output power or 100% duty factor (if applicable)
- (c) Measure output power through RF cable and power meter.
- (d) Place the EUT in the positions as Appendix E demonstrates.
- (e) Set scan area, grid size and other setting on the DASY software.
- (f) Measure SAR results for the highest power channel on each testing position.
- (g) Find out the largest SAR result on these testing positions of each band
- (h) Measure SAR results for other channels in worst SAR testing position if the 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 from 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 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 measures 5x5x7 points with step size 8, 8 and 5 mm for 300 MHz to 3 GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3 GHz to 6 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.



9.3 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 (step-size is 4, 4 and 2.5 mm). When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.4 SAR Averaged Methods

In DASYS, 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.

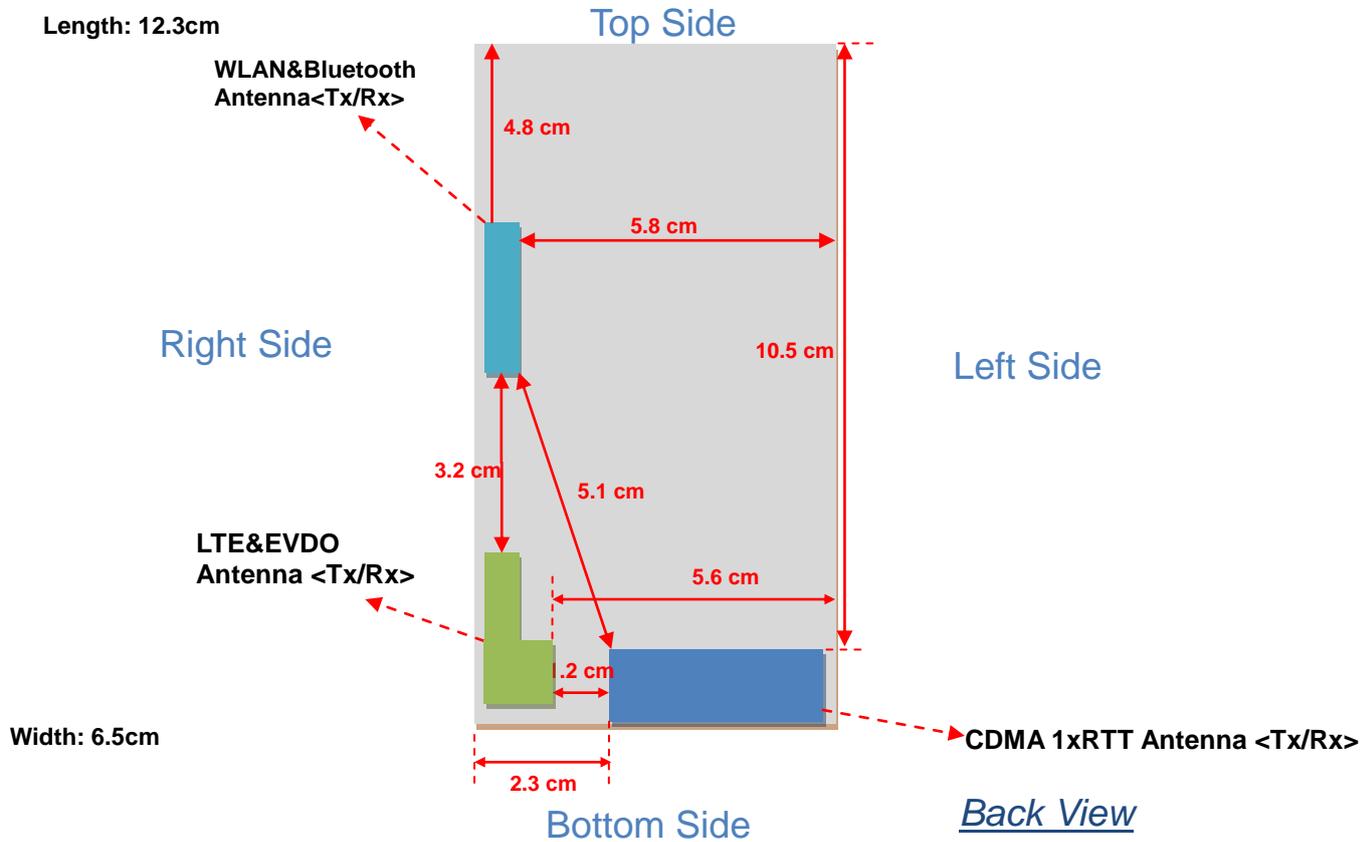
Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty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

9.5 Power Drift Monitoring

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

10. SAR Test Configurations

10.1 Exposure Positions Consideration



Antennas	Wireless Interface
LTE&EVDO Antenna (Tx / Rx)	LTE: band 2/4 CDMA2000 EVDO: BC 0/1/15
CDMA 1xRTT (Tx / Rx)	CDMA2000 1xRTT BC 0/1/15
WLAN&BT Antenna (Tx / Rx)	WLAN 2.4GHz Bluetooth

Sides for SAR tests; Hotspot mode Test distance: 10 mm						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
LTE&EVDO	YES	YES	NO	YES	YES	NO
CDMA 1xRTT	YES	YES	NO	YES	YES	YES
WLAN&BT	YES	YES	NO	NO	YES	NO

Note:

- Head/Body-worn/Hotspot mode SAR assessments are required.
- Referring to KDB 941225 D06, when the overall device length and width are $\geq 9\text{cm} \times 5\text{cm}$, 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.
- For LTE&EVDO antenna, SAR measurements at Top/Left sides are not required since the distance between EUT and flat phantom $> 25\text{mm}$.
- For CDMA 1xRTT antenna, SAR measurements at Top side are not required since the distance between EUT and flat phantom $> 25\text{mm}$.
- For BT&WLAN antenna, SAR measurements Top/Bottom/Left sides are not required since the distance between EUT and flat phantom $> 25\text{mm}$.
- Per KDB 648474 D01, Bluetooth output power (1.69dBm) $\leq P_{\text{Ref}}$ and the distance to other WWAN antennas $\geq 2.5\text{cm}$, therefore stand-alone SAR is not required. Bluetooth and WLAN share the same antenna and cannot transmit simultaneously.

10.2 Conducted RF Output Power (Unit: dBm)

CDMA2000 Setup Configuration

The EUT was tested according to the requirements of the FCC 3G procedures and the 3.1.2.3.4.

A Call is set up as following procedure:

1. The EUT was connected to System Simulator, Agilent 8960. Refer to the drawing of Setup Configuration.
2. The RF path losses were compensated into the measurements.
3. A call was established between EUT and System Simulator with following setting:
 - a. For 1xRTT, set the Radio Configuration and the Service Option
 - b. For 1xEV-DO, set the Protocol Release and Data Rate
 - c. Set the Power Control to All Up Bits
4. The transmitted maximum output power was recorded.

<1xRTT Results>

Band	CDMA2000 BC0			CDMA2000 BC1			CDMA2000 BC15		
	Channel	1013	384	777	25	600	1175	25	425
Frequency	824.7	836.52	848.31	1851.25	1880	1908.75	1711.25	1731.25	1753.75
1x Voice Mode	Full Power (23.5dBm)			Full Power (23.5dBm)			Full Power (22.5dBm)		
1xRTT RC1+SO55	23.00	22.83	22.56	23.47	23.38	23.41	21.81	22.07	21.89
1xRTT RC3+SO55	23.03	22.50	22.54	23.49	23.43	23.44	21.89	22.16	22.06
1xRTT RC3+SO32(+F-SCH)	23.00	22.79	22.53	23.47	23.36	23.46	21.95	22.10	22.05
1xRTT RC3+SO32(+SCH)	23.02	22.81	22.49	23.45	23.38	23.39	21.80	21.11	21.97
1x Voice Mode	Reduced Power (17dBm)			Reduced Power (15dBm)			Reduced Power (15dBm)		
1xRTT RC1+SO55	16.96	16.87	15.72	14.10	14.53	14.94	14.21	14.87	14.74
1xRTT RC3+SO55	16.90	16.77	15.85	14.18	14.66	14.96	14.15	14.88	14.75
1xRTT RC3+SO32(+F-SCH)	16.91	16.45	15.85	14.22	14.62	14.91	14.28	14.86	14.75
1xRTT RC3+SO32(+SCH)	16.92	16.86	15.96	14.08	14.58	14.93	14.15	14.82	14.80

Note:

1. According to KDB 941225 D01, Head SAR is measured on RC3+SO55. 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. The power measurements are based on the power reduction implementation configuration. Use RF engineering tool, with the pre-defined setting command, to measure reduced power.

<1xEVDO Results>

Band	CDMA2000 BC0			CDMA2000 BC1			CDMA2000 BC15		
	Channel	1013	384	777	25	600	1175	25	425
Frequency	824.7	836.52	848.31	1851.25	1880	1908.75	1711.25	1731.25	1753.75
EVDO data mode				Full Power (23dBm)			Full Power (23dBm)		
1xEVDO RTAP 9.6				22.72	22.76	22.68	22.58	22.49	22.68
1xEVDO RTAP 38.4				22.56	22.61	22.62	22.53	22.48	22.67
1xEVDO RTAP 153.6				22.75	22.80	22.65	22.52	22.43	22.76
1xEVDO RETAP 128				22.71	22.72	22.64	22.49	22.56	22.68
1xEVDO RETAP 512				22.68	22.73	22.68	22.47	22.46	22.64
1xEVDO RETAP 1024				22.52	22.71	22.66	22.51	22.49	22.68
1xEVDO RETAP 2048				22.48	22.68	22.64	22.61	22.47	22.74
1xEVDO RETAP 4096				22.49	22.75	22.55	22.50	22.45	22.67
EVDO data mode				Reduced Power (15dBm)			Reduced Power (15dBm)		
1xEVDO RTAP 9.6				14.18	14.60	14.50	14.36	14.82	14.96
1xEVDO RTAP 38.4				14.15	14.62	14.46	14.37	14.85	14.98
1xEVDO RTAP 153.6				14.00	14.63	14.34	14.39	14.78	15.00
1xEVDO RETAP 128				14.19	14.60	14.38	14.38	14.80	14.98
1xEVDO RETAP 512				14.16	14.59	14.35	14.37	14.80	13.97
1xEVDO RETAP 1024				14.14	14.58	14.34	14.36	14.79	14.96
1xEVDO RETAP 2048				14.13	14.58	14.33	14.36	14.77	14.95
1xEVDO RETAP 4096				14.13	14.57	14.32	14.35	14.78	14.94

Note:

1. Referring to KDB 941225 D01, in Hotspot mode SAR is tested with RTAP 153.6kbps (Ev-Do). If RETAP (4096 bits) power is less than 1/4dB higher than RTAP 153.6kbps, SAR tests with RETAP setting are not necessary.
2. The power measurements are based on the power reduction implementation configuration. Use RF engineering tool, with the pre-defined setting command, to measure reduced power.



LTE Setup Configuration

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification. All the measurements below were performed with A-MPR disabled, by using Network signaling Value of "NS_01"

A Call is set up as following procedure:

- a) Configure the Anritsu MT8820C to the correct LTE frequency band, and the largest bandwidth supported
- b) Network signaling value is set to NS_01 to disable A-MPR
- c) Establish the call between EUT and the call box
- d) Measure the conducted power of QPSK modulation, of 1RB (low end of the channel, high end of the channel), 50%RB (in the center of the channel), 100%RB.
- e) Repeat procedure d) with 16QAM modulation.
- f) Repeat procedure a) to e), for smaller bandwidth supported



<LTE Band 2 Results>

		Full Power (23.5dBm)							Reduced Power (18.5dBm)						
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		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	23.03	23.05	22.89	0	0.00	0.00	0.00	17.96	17.99	17.75	0	0.00	0.00	0.00
20	QPSK 1-99	23.01	23.02	22.85		0.02	0.03	0.04	17.93	17.95	17.69		0.03	0.04	0.06
20	QPSK 50-25	21.60	21.68	21.99		1.43	1.37	0.90	16.65	16.72	16.70		1.31	1.27	1.05
20	QPSK 100-0	21.55	21.65	21.65	≤ 1	1.48	1.40	1.24	16.75	16.70	16.90	≤ 1	1.21	1.29	0.85
20	16QAM 1-0	22.05	21.58	21.93		0.98	1.47	0.96	17.30	17.34	17.06		0.66	0.65	0.69
20	16QAM 1-99	22.04	21.62	21.88	≤ 1	0.99	1.43	1.01	17.24	16.92	16.86	≤ 1	0.72	1.07	0.89
20	16QAM 50-25	20.60	20.65	20.55		2.43	2.40	2.34	15.66	15.73	15.79		2.30	2.26	1.96
20	16QAM 100-0	20.58	20.62	20.56	≤ 2	2.45	2.43	2.33	15.83	15.86	15.83	≤ 2	2.13	2.13	1.92
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	22.87	23.01	23.01	0	0.00	0.00	0.00	17.84	17.97	17.91	0	0.00	0.00	0.00
15	QPSK 1-74	22.73	22.75	22.72		0.14	0.26	0.29	17.62	17.62	17.87		0.22	0.35	0.04
15	QPSK 36-18	21.43	21.62	21.51	≤ 1	1.44	1.39	1.50	16.67	16.72	16.95	≤ 1	1.17	1.25	0.96
15	QPSK 75-0	21.37	21.61	21.53		1.50	1.40	1.48	16.55	16.78	16.85		1.29	1.19	1.06
15	16QAM 1-0	22.32	22.26	22.20	≤ 1	0.55	0.75	0.81	17.06	17.16	17.19	≤ 1	0.78	0.81	0.72
15	16QAM 1-74	21.88	21.94	21.86		0.99	1.07	1.15	17.03	17.09	17.10		0.81	0.88	0.81
15	16QAM 36-18	20.47	20.62	20.54	≤ 2	2.40	2.39	2.47	15.70	16.02	16.13	≤ 2	2.14	1.95	1.78
15	16QAM 75-0	20.37	20.75	20.52		2.50	2.26	2.49	15.65	15.77	15.93		2.19	2.20	1.98
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	23.02	22.69	22.87	0	0.00	0.10	0.00	17.98	17.98	17.98	0	0.00	0.00	0.00
10	QPSK 1-49	22.70	22.79	22.68		0.32	0.00	0.19	17.98	17.95	17.95		0.00	0.03	0.03
10	QPSK 25-13	21.58	21.59	21.63	≤ 1	1.44	1.20	1.24	16.95	17.02	17.11	≤ 1	1.03	0.96	0.87
10	QPSK 50-0	21.64	21.39	21.46		1.38	1.40	1.41	16.87	16.77	16.92		1.11	1.21	1.06
10	16QAM 1-0	21.74	22.01	21.61	≤ 1	1.28	0.78	1.26	17.23	17.10	17.08	≤ 1	0.75	0.88	0.90
10	16QAM 1-49	21.68	22.03	21.71		1.34	0.76	1.16	17.18	17.15	17.01		0.80	0.83	0.97
10	16QAM 25-13	20.59	20.69	20.54	≤ 2	2.43	2.10	2.33	15.91	15.77	15.91	≤ 2	2.07	2.21	2.07
10	16QAM 50-0	20.60	20.40	20.37		2.42	2.39	2.50	15.86	15.64	15.75		2.12	2.34	2.23
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	22.80	22.66	22.80	0	0.00	0.04	0.00	17.92	17.92	17.94	0	0.05	0.00	0.00
5	QPSK 1-24	22.79	22.70	22.38		0.01	0.00	0.42	17.97	17.89	17.91		0.00	0.03	0.03
5	QPSK 12-6	21.69	21.63	21.65	≤ 1	1.11	1.07	1.15	17.05	16.80	17.19	≤ 1	0.92	1.12	0.75
5	QPSK 25-0	21.46	21.51	21.48		1.34	1.19	1.32	16.93	16.87	16.98		1.04	1.05	0.96
5	16QAM 1-0	21.81	21.70	21.91	≤ 1	0.99	1.00	0.89	17.11	16.96	17.23	≤ 1	0.86	0.96	0.71
5	16QAM 1-24	21.80	21.71	21.71		1.00	0.99	1.09	17.10	17.02	17.14		0.87	0.90	0.80
5	16QAM 12-6	20.75	20.77	20.71	≤ 2	2.05	1.93	2.09	16.20	16.14	16.07	≤ 2	1.77	1.78	1.87
5	16QAM 25-0	20.45	20.58	20.56		2.35	2.12	2.24	16.01	15.99	15.93		1.96	1.93	2.01
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	22.92	22.75	22.85	0	0.00	0.06	0.00	17.98	17.97	17.93	0	0.00	0.00	0.00
3	QPSK 1-14	22.51	22.81	22.50		0.41	0.00	0.35	17.96	17.93	17.92		0.02	0.04	0.01
3	QPSK 8-4	21.49	21.80	21.49	≤ 1	1.43	1.01	1.36	17.28	17.05	17.18	≤ 1	0.70	0.92	0.75
3	QPSK 15-0	21.43	21.64	21.44		1.49	1.17	1.41	17.15	17.01	17.14		0.83	0.96	0.79
3	16QAM 1-0	21.66	21.78	21.98	≤ 1	1.26	1.03	0.87	17.35	17.29	17.06	≤ 1	0.63	0.68	0.87
3	16QAM 1-14	21.86	21.86	21.64		1.06	0.95	1.21	17.24	17.07	17.05		0.74	0.90	0.88
3	16QAM 8-4	20.47	20.72	20.40	≤ 2	2.45	2.09	2.45	16.16	16.06	16.16	≤ 2	1.82	1.91	1.77
3	16QAM 15-0	20.46	20.57	20.48		2.46	2.24	2.37	16.15	15.92	16.10		1.83	2.05	1.83
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	22.56	22.78	22.88	0	0.00	0.10	0.00	17.99	17.98	17.95	0	0.00	0.00	0.00
1.4	QPSK 1-5	22.42	22.88	22.66		0.14	0.00	0.22	17.95	17.95	17.93		0.04	0.03	0.02
1.4	QPSK 3-2	22.39	22.72	22.63		0.17	0.16	0.25	17.85	17.90	17.82		0.14	0.08	0.13
1.4	QPSK 6-0	21.55	21.69	21.53	≤ 1	1.01	1.19	1.35	17.15	16.99	16.82	≤ 1	0.84	0.99	1.13
1.4	16QAM 1-0	21.54	21.85	21.68		1.02	1.03	1.20	17.07	17.38	17.06		0.92	0.60	0.89
1.4	16QAM 1-5	21.63	21.61	21.45	≤ 1	0.93	1.27	1.43	17.15	17.07	17.04	≤ 1	0.84	0.91	0.91
1.4	16QAM 3-2	21.39	21.73	21.77		1.17	1.15	1.11	16.99	16.97	16.80		1.00	1.01	1.15
1.4	16QAM 6-0	20.68	20.78	20.47	≤ 2	1.88	2.10	2.41	16.03	15.97	15.73	≤ 2	1.96	2.01	2.22

Note:

- Per KDB 941225, if the output power variation across the band < 0.5dB, test middle channel SAR first and determine further test reduction based on the SAR results.



<LTE Band 4 Results>

BW [MHz]	Mod / RB (Size - Offset)	Full Power (23dBm)							Reduced Power (18dBm)						
		Average Power. (dBm)			3GPP	MPR Result (dB)			Average Power. (dBm)			3GPP	MPR Result (dB)		
		Low Ch	Mid Ch	High Ch		MPR	Low Ch	Mid Ch	High Ch	Low Ch	Mid Ch		High Ch	MPR	Low 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	22.86	22.89	22.45	0	0.00	0.00	0.10	17.41	17.50	17.27	0	0.00	0.00	0.00
20	QPSK 1-99	22.60	22.70	22.55	0	0.26	0.19	0.00	17.15	17.36	17.19	0	0.26	0.14	0.08
20	QPSK 50-25	21.39	21.41	21.17	≤ 1	1.47	1.48	1.38	16.39	16.08	16.18	≤ 1	1.02	1.42	1.09
20	QPSK 100-0	21.55	21.55	21.24	≤ 1	1.31	1.34	1.31	16.20	16.13	16.10	≤ 1	1.21	1.37	1.17
20	16QAM 1-0	21.97	21.78	21.70	≤ 1	0.89	1.11	0.85	16.36	16.51	16.41	≤ 1	1.05	0.99	0.86
20	16QAM 1-99	21.86	21.68	21.66	≤ 1	1.00	1.21	0.89	16.34	16.22	16.19	≤ 1	1.07	1.28	1.08
20	16QAM 50-25	20.41	20.50	20.21	≤ 2	2.45	2.39	2.34	15.14	15.10	15.18	≤ 2	2.27	2.40	2.09
20	16QAM 100-0	20.37	20.51	20.24	≤ 2	2.49	2.38	2.31	15.02	15.02	14.94	≤ 2	2.39	2.48	2.33
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	22.63	22.60	22.52	0	0.00	0.00	0.03	17.43	17.28	17.31	0	0.00	0.00	0.00
15	QPSK 1-74	22.60	22.39	22.55	0	0.03	0.21	0.00	17.23	17.18	17.19	0	0.20	0.10	0.12
15	QPSK 36-18	21.36	21.21	21.31	≤ 1	1.27	1.39	1.24	16.17	16.11	16.28	≤ 1	1.26	1.17	1.03
15	QPSK 75-0	21.45	21.20	21.18	≤ 1	1.18	1.40	1.37	16.03	16.03	16.12	≤ 1	1.40	1.25	1.19
15	16QAM 1-0	21.87	21.59	21.67	≤ 1	0.76	1.01	0.88	16.35	16.53	16.39	≤ 1	1.08	0.75	0.92
15	16QAM 1-74	21.72	21.61	21.53	≤ 1	0.91	0.99	1.02	16.28	16.47	16.27	≤ 1	1.15	0.81	1.04
15	16QAM 36-18	20.45	20.22	20.33	≤ 2	2.18	2.38	2.22	15.18	15.09	15.26	≤ 2	2.25	2.19	2.05
15	16QAM 75-0	20.31	20.21	20.13	≤ 2	2.32	2.39	2.42	15.01	14.98	14.98	≤ 2	2.42	2.30	2.33
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	22.62	22.58	22.48	0	0.00	0.00	0.07	17.33	17.28	17.43	0	0.00	0.00	0.00
10	QPSK 1-49	22.53	22.39	22.55	0	0.09	0.19	0.00	17.21	17.15	17.29	0	0.12	0.13	0.14
10	QPSK 25-13	21.51	21.26	21.36	≤ 1	1.11	1.32	1.19	16.19	16.09	16.26	≤ 1	1.14	1.19	1.17
10	QPSK 50-0	21.35	21.12	21.22	≤ 1	1.27	1.46	1.33	16.11	15.97	16.17	≤ 1	1.22	1.31	1.26
10	16QAM 1-0	21.96	21.80	21.72	≤ 1	0.66	0.78	0.83	16.54	16.56	16.36	≤ 1	0.79	0.72	1.07
10	16QAM 1-49	21.89	21.61	21.51	≤ 1	0.73	0.97	1.04	16.27	16.40	16.23	≤ 1	1.06	0.88	1.20
10	16QAM 25-13	20.49	20.27	20.38	≤ 2	2.13	2.31	2.17	15.23	15.08	15.34	≤ 2	2.10	2.20	2.09
10	16QAM 50-0	20.35	20.17	20.25	≤ 2	2.27	2.41	2.30	15.06	14.95	15.22	≤ 2	2.27	2.33	2.21
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	22.59	22.60	22.63	0	0.05	0.00	0.00	17.41	17.30	17.49	0	0.00	0.00	0.00
5	QPSK 1-24	22.64	22.43	22.53	0	0.00	0.17	0.10	17.33	17.23	17.37	0	0.08	0.07	0.12
5	QPSK 12-6	21.67	21.37	21.66	≤ 1	0.97	1.23	0.97	16.39	16.12	16.35	≤ 1	1.02	1.18	1.14
5	QPSK 25-0	21.47	21.25	21.40	≤ 1	1.17	1.35	1.23	16.23	15.94	16.24	≤ 1	1.18	1.36	1.25
5	16QAM 1-0	21.80	21.73	21.74	≤ 1	0.84	0.87	0.89	16.46	16.31	16.62	≤ 1	0.95	0.99	0.87
5	16QAM 1-24	21.58	21.62	21.52	≤ 1	1.06	0.98	1.11	16.23	16.12	16.52	≤ 1	1.18	1.18	0.97
5	16QAM 12-6	20.72	20.38	20.68	≤ 2	1.92	2.22	1.95	15.32	15.18	15.39	≤ 2	2.09	2.12	2.10
5	16QAM 25-0	20.36	20.30	20.44	≤ 2	2.28	2.30	2.19	15.15	14.97	15.09	≤ 2	2.26	2.33	2.40
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	22.69	22.46	22.72	0	0.03	0.12	0.00	17.31	17.29	17.39	0	0.00	0.00	0.00
3	QPSK 1-14	22.72	22.58	22.66	0	0.00	0.00	0.06	17.24	17.23	17.31	0	0.07	0.06	0.08
3	QPSK 8-4	21.68	21.49	21.67	≤ 1	1.04	1.09	1.05	16.42	16.24	16.26	≤ 1	0.89	1.05	1.13
3	QPSK 15-0	21.71	21.43	21.59	≤ 1	1.01	1.15	1.13	16.35	16.18	16.09	≤ 1	0.96	1.11	1.30
3	16QAM 1-0	21.65	21.56	21.57	≤ 1	1.07	1.02	1.15	16.28	16.47	16.65	≤ 1	1.03	0.82	0.74
3	16QAM 1-14	21.65	21.61	21.54	≤ 1	1.07	0.97	1.18	16.23	16.22	16.21	≤ 1	1.08	1.07	1.18
3	16QAM 8-4	20.79	20.52	20.57	≤ 2	1.93	2.06	2.15	15.43	15.24	15.45	≤ 2	1.88	2.05	1.94
3	16QAM 15-0	20.66	20.43	20.53	≤ 2	2.06	2.15	2.19	15.31	15.16	15.23	≤ 2	2.00	2.13	2.16
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	22.68	22.46	22.66	0	0.07	0.08	0.00	17.28	17.24	17.48	0	0.00	0.00	0.00
1.4	QPSK 1-5	22.75	22.54	22.61	0	0.00	0.00	0.05	17.26	17.15	17.36	0	0.02	0.09	0.12
1.4	QPSK 3-2	22.62	22.38	22.55	0	0.13	0.16	0.11	17.21	17.10	17.29	0	0.07	0.14	0.19
1.4	QPSK 6-0	21.65	21.47	21.57	≤ 1	1.10	1.07	1.09	16.38	16.21	16.37	≤ 1	0.90	1.03	1.11
1.4	16QAM 1-0	21.64	21.57	21.67	≤ 1	1.11	0.97	0.99	16.45	16.23	16.57	≤ 1	0.83	1.01	0.91
1.4	16QAM 1-5	21.54	21.67	21.68	≤ 1	1.21	0.87	0.98	16.40	16.07	16.37	≤ 1	0.88	1.17	1.11
1.4	16QAM 3-2	21.61	21.46	21.51	≤ 1	1.14	1.08	1.15	16.26	15.98	16.26	≤ 1	1.02	1.26	1.22
1.4	16QAM 6-0	20.85	20.46	20.66	≤ 2	1.90	2.08	2.00	15.38	15.21	15.11	≤ 2	1.90	2.03	2.37

Note: Per KDB 941225, if the output power variation across the band < 0.5dB, test middle channel SAR first and determine further test reduction based on the SAR results.



<WLAN 2.4G>

Mode	Channel	Frequency (MHz)	Average power (dBm)			
			Data Rate (bps)			
			1M	2M	5.5M	11M
802.11b	CH 01	2412	15.28	15.21	15.11	15.27
	CH 06	2437	14.56	14.41	13.77	14.06
	CH 11	2462	13.88	13.73	13.72	13.75

Mode	Channel	Frequency (MHz)	Average power (dBm)							
			Data Rate (bps)							
			6M	9M	12M	18M	24M	36M	48M	54M
802.11g	CH 01	2412	14.93	14.90	14.89	14.83	14.95	14.48	14.43	14.46
	CH 06	2437	14.65	14.15	13.94	13.96	14.09	13.89	13.84	13.72
	CH 11	2462	14.53	14.02	13.93	13.78	13.70	13.94	13.83	13.86

Mode	Channel	Frequency (MHz)	Average power (dBm)							
			MCS Index							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n HT20	CH 01	2412	15.43	15.05	15.02	15.02	14.69	15.12	14.61	14.66
	CH 06	2437	14.34	14.28	14.26	14.13	13.93	13.96	13.84	13.95
	CH 11	2462	14.01	13.77	13.82	13.81	13.95	13.87	13.97	13.82

Note:

- Per KDB 248227, choose the lowest data rate, highest output power channel to test SAR and determine further SAR exclusion; CH1 1Mbps was chosen
- Per KDB 248227, 11g and 11n-HT20 output power is less than 1/4 dB higher than 11b mode, thus the SAR can be excluded.
- 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 1/4 dB higher than those measured at the lowest data rate.

<Bluetooth>

Mode	Channel	Frequency (MHz)	Average Power (dBm)								
			Data Rate								
			DH1	DH3	DH5	2DH1	2DH3	2DH5	3DH1	3DH3	3DH5
Bluetooth	CH 00	2402	1.69	1.65	1.60	0.39	0.45	0.39	0.46	0.41	0.43
	CH 39	2441	1.35	1.58	1.62	0.55	0.60	0.49	0.56	0.52	0.55
	CH 78	2480	1.16	1.32	1.27	0.50	0.46	0.43	0.50	0.51	0.47



11. SAR Test Results

11.1 Test Records for Head SAR Test

<CDMA2000>

Plot No.	Antenna	Band	Mode	Test Position	Ch.	Output Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	SAR _{1g} (W/kg)	Scaled SAR _{1g} (W/kg)	Power Drift (dB)	Reduced Power (dB)
1	1xRTT	CDMA2000 BC0	RC3 SO55	Right Cheek	1013	23.03	23.5	1.114	0.539	0.601	-0.10	0
202	1xRTT	CDMA2000 BC0	RC3 SO55	Right Cheek	1013	16.90	17	1.023	0.137	0.140	-0.04	6.13
2	1xRTT	CDMA2000 BC0	RC3 SO55	Right Tilted	1013	23.03	23.5	1.114	0.387	0.431	0.17	0
3	1xRTT	CDMA2000 BC0	RC3 SO55	Left Cheek	1013	23.03	23.5	1.114	0.664	0.740	-0.16	0
209	1xRTT	CDMA2000 BC0	RC3 SO55	Left Cheek	1013	16.90	17	1.023	0.157	0.161	-0.07	6.13
4	1xRTT	CDMA2000 BC0	RC3 SO55	Left Tilted	1013	23.03	23.5	1.114	0.460	0.513	-0.07	0
7	1xRTT	CDMA2000 BC1	RC3 SO55	Right Cheek	25	23.49	23.5	1.002	0.427	0.428	0.05	0
203	1xRTT	CDMA2000 BC1	RC3 SO55	Right Cheek	1175	14.96	15	1.009	0.03	0.030	0.10	8.48
8	1xRTT	CDMA2000 BC1	RC3 SO55	Right Tilted	25	23.49	23.5	1.002	0.213	0.213	0.08	0
9	1xRTT	CDMA2000 BC1	RC3 SO55	Left Cheek	25	23.49	23.5	1.002	0.449	0.450	0.04	0
210	1xRTT	CDMA2000 BC1	RC3 SO55	Left Cheek	1175	14.96	15	1.009	0.065	0.066	0.03	8.48
10	1xRTT	CDMA2000 BC1	RC3 SO55	Left Tilted	25	23.49	23.5	1.002	0.256	0.257	-0.06	0
15	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Right Cheek	600	22.80	23	1.047	1.03	1.079	-0.06	0
19	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Right Cheek	25	22.75	23	1.059	1.07	1.133	-0.09	0
20	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Right Cheek	1175	22.65	23	1.084	0.949	1.029	-0.10	0
205	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Right Cheek	600	14.63	15	1.089	0.151	0.164	0.02	8.17
16	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Right Tilted	600	22.80	23	1.047	0.301	0.315	0.12	0
17	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Left Cheek	600	22.80	23	1.047	0.533	0.558	0.03	0
18	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Left Tilted	600	22.80	23	1.047	0.301	0.315	-0.13	0
11	1xRTT	CDMA2000 BC15	RC3 SO55	Right Cheek	425	22.16	22.5	1.081	0.348	0.376	-0.03	0
204	1xRTT	CDMA2000 BC15	RC3 SO55	Right Cheek	425	14.88	15	1.028	0.061	0.063	0.03	7.28
77	1xRTT	CDMA2000 BC15	RC3 SO55	Right Cheek-SAR in mouth area	425	22.16	22.5	1.081	0.258	0.279	-0.04	0
235	1xRTT	CDMA2000 BC15	RC3 SO55	Right Cheek-SAR in mouth area	425	14.88	15	1.028	0.046	0.047	-0.07	7.28
12	1xRTT	CDMA2000 BC15	RC3 SO55	Right Tilted	425	22.16	22.5	1.081	0.143	0.155	0.02	0
13	1xRTT	CDMA2000 BC15	RC3 SO55	Left Cheek	425	22.16	22.5	1.081	0.481	0.520	0.09	0
14	1xRTT	CDMA2000 BC15	RC3 SO55	Left Tilted	425	22.16	22.5	1.081	0.187	0.202	-0.03	0
21	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Right Cheek	875	22.76	23	1.057	1.11	1.173	0.01	0
25	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Right Cheek	25	22.52	23	1.117	1.02	1.139	0.0085	0
26	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Right Cheek	425	22.43	23	1.140	1.12	1.277	0.03	0
206	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Right Cheek	875	14.99	15	1.002	0.176	0.176	-0.06	7.77
22	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Right Tilted	875	22.76	23	1.057	0.422	0.446	0.03	0
23	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Left Cheek	875	22.76	23	1.057	0.614	0.649	-0.05	0
211	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Left Cheek	875	14.99	15	1.002	0.104	0.104	-0.05	7.77
24	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Left Tilted	875	22.76	23	1.057	0.373	0.394	-0.05	0

Note:

- Per KDB 648474, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.
- EVDO Head SAR is evaluated to account for hotspot mode configuration in head position.
- Reduced power SAR is repeated for simultaneous transmission analysis. The simultaneous transmission analysis starts from each wireless interface maximum power standalone SAR. Only the test cases which cannot pass 1g summation or SPLSR will be repeated with reduced power.
- In simultaneous transmission analysis, for Right Cheek position, choose SAR data of "Right Cheek" instead of "Right Cheek-SAR in mouth area" due to its higher SAR value.



<LTE>

Plot No.	Antenna	Band	Mode	BW (MHz)	RB Size	RB Offset	Test Position	Ch.	Output Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	SAR _{1g} (W/kg)	Scaled SAR _{1g} (W/kg)	Power Drift (dB)	Reduced Power (dB)
27	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Right Cheek	18900	21.68	22.5	1.208	0.773	0.934	-0.09	0
31	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Right Cheek	18900	23.05	23.5	1.109	1.03	1.142	-0.12	0
35	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Right Cheek	18900	23.02	23.5	1.117	0.977	1.091	0.09	0
39	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Right Cheek	18900	20.65	21.5	1.216	0.597	0.726	0.14	0
43	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Right Cheek	18700	22.05	22.5	1.109	0.840	0.932	0.08	0
47	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Right Cheek	18700	22.04	22.5	1.112	0.832	0.925	0.13	0
207	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Right Cheek	18900	17.99	18.5	1.125	0.331	0.372	-0.0081	4.06
28	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Right Tilted	18900	21.68	22.5	1.208	0.249	0.301	0.13	0
32	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Right Tilted	18900	23.05	23.5	1.109	0.369	0.409	0.04	0
36	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Right Tilted	18900	23.02	23.5	1.117	0.325	0.363	0.06	0
40	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Right Tilted	18900	20.65	21.5	1.216	0.197	0.240	-0.06	0
44	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Right Tilted	18700	22.05	22.5	1.109	0.316	0.350	0.07	0
48	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Right Tilted	18700	22.04	22.5	1.112	0.325	0.361	0.11	0
29	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Left Cheek	18900	21.68	22.5	1.208	0.484	0.585	-0.10	0
33	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Left Cheek	18900	23.05	23.5	1.109	0.676	0.750	-0.01	0
37	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Left Cheek	18900	23.02	23.5	1.117	0.621	0.694	-0.09	0
41	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Left Cheek	18900	20.65	21.5	1.216	0.381	0.463	0.03	0
45	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Left Cheek	18700	22.05	22.5	1.109	0.527	0.585	-0.11	0
49	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Left Cheek	18700	22.04	22.5	1.112	0.526	0.585	-0.08	0
212	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Left Cheek	18900	17.99	18.5	1.125	0.216	0.243	-0.19	4.06
30	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Left Tilted	18900	21.68	22.5	1.208	0.256	0.309	0.05	0
34	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Left Tilted	18900	23.05	23.5	1.109	0.366	0.406	0.02	0
38	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Left Tilted	18900	23.02	23.5	1.117	0.332	0.371	-0.03	0
42	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Left Tilted	18900	20.65	21.5	1.216	0.201	0.244	0.11	0
46	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Left Tilted	18700	22.05	22.5	1.109	0.297	0.329	-0.04	0
50	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Left Tilted	18700	22.04	22.5	1.112	0.295	0.328	0.009	0
51	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Right Cheek	20175	21.41	22	1.146	0.809	0.927	0.0043	0
55	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Right Cheek	20050	21.39	22	1.151	0.762	0.877	-0.02	0
56	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Right Cheek	20300	21.17	22	1.211	0.835	1.011	0.08	0
57	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Right Cheek	20175	22.89	23	1.026	0.984	1.009	0.01	0
61	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Right Cheek	20175	22.70	23	1.072	1.05	1.125	0.08	0
65	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Right Cheek	20300	20.21	21	1.199	0.659	0.790	0.09	0
69	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Right Cheek	20050	21.97	22	1.007	0.816	0.822	-0.12	0
73	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Right Cheek	20050	21.86	22	1.033	0.804	0.830	0.14	0
208	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Right Cheek	20175	17.36	18	1.300	0.295	0.384	0.10	5.34
52	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Right Tilted	20175	21.41	22	1.146	0.264	0.302	0.09	0
58	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Right Tilted	20175	22.89	23	1.026	0.345	0.354	-0.05	0
62	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Right Tilted	20175	22.70	23	1.072	0.377	0.404	-0.16	0
66	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Right Tilted	20300	20.21	21	1.199	0.236	0.283	0.02	0
70	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Right Tilted	20050	21.97	22	1.007	0.318	0.320	0.15	0
74	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Right Tilted	20050	21.86	22	1.033	0.295	0.305	0.04	0
53	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Left Cheek	20175	21.41	22	1.146	0.425	0.487	-0.05	0
59	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Left Cheek	20175	22.89	23	1.026	0.522	0.535	-0.0067	0
63	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Left Cheek	20175	22.70	23	1.072	0.596	0.639	-0.18	0
67	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Left Cheek	20300	20.21	21	1.199	0.357	0.428	-0.04	0
71	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Left Cheek	20050	21.97	22	1.007	0.437	0.440	-0.15	0
75	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Left Cheek	20050	21.86	22	1.033	0.424	0.438	0.08	0
213	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Left Cheek	20175	17.36	18	1.300	0.157	0.204	-0.09	5.34
54	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Left Tilted	20175	21.41	22	1.146	0.252	0.289	0.02	0
60	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Left Tilted	20175	22.89	23	1.026	0.334	0.343	-0.09	0
64	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Left Tilted	20175	22.70	23	1.072	0.393	0.421	-0.15	0
68	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Left Tilted	20300	20.21	21	1.199	0.233	0.279	-0.06	0
72	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Left Tilted	20050	21.97	22	1.007	0.294	0.296	-0.10	0
76	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Left Tilted	20050	21.86	22	1.033	0.241	0.249	-0.10	0



Note:

1. Considering the users may install 3rd party software to enable VOIP, LTE Head SAR is also evaluated. Because FCC has not published uniform procedures for VOIP in LTE, therefore all channels and modes and modulations required under the other KDB pub 941225 D05 FCC LTE procedures were used for the held-near-head testing.
2. Per KDB 941225 D05, for LTE, if the smaller bandwidth output power is within +/- 1/2dB of the largest bandwidth, and the maximum SAR of the largest bandwidth is ≤ 1.45 W/kg, SAR for smaller bandwidth can be excluded.
3. Per KDB 941225 D05, if the measured 50%-RB QPSK 1g-SAR for the middle or highest output power channel is ≤ 0.8W/kg, remaining 2 channels SAR tests can be excluded. Otherwise, 50% RB allocation of the remaining 2 channels SAR tests are necessary.
4. Per KDB 941225 D05, for LTE, if 50%-RB QPSK SAR ≤ 1.45 W/kg, 100%-RB QPSK SAR can be excluded; if 50%-RB 16QAM SAR ≤ 1.45 W/kg, 100%-RB 16QAM SAR can be excluded.
5. If SAR of 1 RB allocation is ≤ 1.45W/kg, SAR of 1 RB allocation of remaining channels can be excluded.
6. If the maximum average conducted output power for a 1 RB allocation is > 1/2 dB higher than the 50% RB allocation, instead of using the highest SAR channel measured for QPSK and 50% RB allocation, measure SAR on the highest output power channel for the 1 RB allocation.
7. If the maximum average conducted output power for a 1 RB allocation is > 1/2 dB higher than the 50% RB allocation, instead of using the highest SAR channel measured for 16QAM and 50% RB measure SAR on the highest output power channel for the 1 RB allocation.
8. Reduced power SAR is repeated for simultaneous transmission analysis. The simultaneous transmission analysis starts from each wireless interface maximum power standalone SAR. Only the test cases which cannot pass 1g summation or SPLSR will be repeated with reduced power.

<WLAN>

Plot No.	Antenna	Band	Mode	Test Position	Ch.	Output Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	SAR _{1g} (W/kg)	Scaled SAR _{1g} (W/kg)	Power Drift (dB)	Reduced Power (dB)
194	WLAN/BT	WLAN 2.4G	802.11b	Right Cheek	1	15.28	15.5	1.052	0.273	0.287	-0.06	0
195	WLAN/BT	WLAN 2.4G	802.11b	Right Tilted	1	15.28	15.5	1.052	0.060	0.063	-0.08	0
196	WLAN/BT	WLAN 2.4G	802.11b	Left Cheek	1	15.28	15.5	1.052	0.248	0.261	-0.08	0
197	WLAN/BT	WLAN 2.4G	802.11b	Left Tilted	1	15.28	15.5	1.052	0.056	0.059	0.02	0

Note: Per KDB 248227, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.



11.2 Test Records for Hotspot SAR Test

<CDMA2000>

Plot No.	Antenna	Band	Mode	Test Position	Gap (cm)	Ch.	Output Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	SAR _{1g} (W/kg)	Scaled SAR _{1g} (W/kg)	Power Drift (dB)	Reduced Power (dB)
93	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Front	1	600	22.80	23	1.047	0.739	0.774	-0.10	0
217	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Front	1	600	14.63	15	1.089	0.098	0.107	-0.10	8.17
94	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	600	22.80	23	1.047	1.02	1.068	0.10	0
97	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	25	22.75	23	1.059	1.04	1.102	0.09	0
98	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	1175	22.65	23	1.084	1.01	1.095	0.08	0
224	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	600	14.63	15	1.089	0.148	0.161	0.09	8.17
95	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Right Side	1	600	22.80	23	1.047	0.658	0.689	-0.10	0
96	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Bottom Side	1	600	22.80	23	1.047	0.09	0.094	-0.07	0
116	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Front	1	875	22.76	23	1.057	0.878	0.928	-0.10	0
120	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Front	1	25	22.52	23	1.117	0.77	0.860	0.0097	0
188	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Front	1	425	22.43	23	1.140	0.825	0.941	-0.12	0
218	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Front	1	875	14.99	15	1.002	0.148	0.148	-0.03	7.77
117	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	875	22.76	23	1.057	0.941	0.994	-0.05	0
189	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	25	22.52	23	1.117	0.832	0.929	0.08	0
190	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	425	22.43	23	1.140	0.893	1.018	0.16	0
225	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	875	14.99	15	1.002	0.172	0.172	0.09	7.77
118	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Right Side	1	875	22.76	23	1.057	0.535	0.565	-0.08	0
119	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Bottom Side	1	875	22.76	23	1.057	0.145	0.153	-0.11	0

Note:

- Per KDB 941225 D06, for EUT dimension ≥ 9cm*5cm, the test distance is 1cm. SAR must be measured for all surfaces and sides with a transmitting antenna located within 2.5cm from that surface or edge.
- As in (1), SAR for Front / Back / Bottom Side / Right Side / Left Side is necessary for 1xRTT, Front / Back / Bottom Side / Right Side is necessary for EVDO/LTE.
- Per KDB 447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.
- Reduced power SAR is repeated for simultaneous transmission analysis. The simultaneous transmission analysis starts from each wireless interface maximum power standalone SAR. Only the test cases which cannot pass 1g summation or SPLSR will be repeated with reduced power.



<LTE>

Plot No.	Antenna	Band	Mode	BW (MHz)	RB Size	RB Offset	Test Position	Gap (cm)	Ch.	Output Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	SAR _{1g} (W/kg)	Scaled SAR _{1g} (W/kg)	Power Drift (dB)	Reduced Power (dB)
121	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Front	1	18900	21.68	22.5	1.208	0.556	0.672	-0.09	0
126	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Front	1	18900	23.05	23.5	1.109	0.74	0.821	-0.07	0
131	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Front	1	18900	23.02	23.5	1.117	0.704	0.786	0.07	0
136	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Front	1	18900	20.65	21.5	1.216	0.421	0.512	-0.01	0
141	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Front	1	18700	22.05	22.5	1.109	0.616	0.683	-0.06	0
146	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Front	1	18700	22.04	22.5	1.112	0.617	0.686	-0.16	0
219	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Front	1	18900	17.99	18.5	1.125	0.232	0.261	-0.11	5.06
122	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Back	1	18900	21.68	22.5	1.208	0.794	0.959	0.01	0
127	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Back	1	18900	23.05	23.5	1.109	1.03	1.142	0.16	0
132	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Back	1	18900	23.02	23.5	1.117	0.965	1.078	0.00071	0
137	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Back	1	18900	20.65	21.5	1.216	0.609	0.741	0.05	0
142	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Back	1	18700	22.05	22.5	1.109	0.804	0.892	-0.00053	0
147	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Back	1	18700	22.04	22.5	1.112	0.788	0.876	0.12	0
226	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Back	1	18900	17.99	18.5	1.125	0.346	0.389	-0.1	5.06
123	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Right Side	1	18900	21.68	22.5	1.208	0.423	0.511	0.05	0
128	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Right Side	1	18900	23.05	23.5	1.109	0.521	0.578	0.03	0
133	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Right Side	1	18900	23.02	23.5	1.117	0.538	0.601	0.02	0
138	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Right Side	1	18900	20.65	21.5	1.216	0.331	0.403	0.03	0
143	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Right Side	1	18700	22.05	22.5	1.109	0.424	0.470	-0.12	0
148	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Right Side	1	18700	22.04	22.5	1.112	0.441	0.490	0.0094	0
124	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Bottom Side	1	18900	21.68	22.5	1.208	0.085	0.103	-0.14	0
129	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Bottom Side	1	18900	23.05	23.5	1.109	0.12	0.133	-0.07	0
134	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Bottom Side	1	18900	23.02	23.5	1.117	0.127	0.142	-0.05	0
139	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Bottom Side	1	18900	20.65	21.5	1.216	0.068	0.083	-0.1	0
144	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Bottom Side	1	18700	22.05	22.5	1.109	0.053	0.059	-0.01	0
149	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Bottom Side	1	18700	22.04	22.5	1.112	0.067	0.074	-0.05	0
151	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Front	1	20175	21.41	22	1.146	0.602	0.690	-0.1	0
156	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Front	1	20175	22.89	23	1.026	0.795	0.815	0.14	0
161	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Front	1	20175	22.70	23	1.072	0.756	0.810	-0.11	0
166	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Front	1	20175	20.50	21	1.122	0.517	0.580	0.02	0
171	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Front	1	20050	21.97	22	1.007	0.602	0.606	0.12	0
176	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Front	1	20050	21.86	22	1.033	0.635	0.656	0.05	0
220	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Front	1	20175	17.50	18	1.122	0.17	0.191	0.01	5.39
152	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Back	1	20175	21.41	22	1.146	0.602	0.690	-0.07	0
157	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Back	1	20175	22.89	23	1.026	0.825	0.846	0.05	0
162	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Back	1	20175	22.70	23	1.072	0.79	0.847	0.02	0
167	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Back	1	20175	20.50	21	1.122	0.56	0.628	0.02	0
172	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Back	1	20050	21.97	22	1.007	0.634	0.638	0.02	0
177	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Back	1	20050	21.86	22	1.033	0.651	0.672	0.02	0
227	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Back	1	20175	17.50	18	1.122	0.193	0.217	0.06	5.39
153	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Right Side	1	20175	21.41	22	1.146	0.359	0.411	-0.05	0
158	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Right Side	1	20175	22.89	23	1.026	0.486	0.498	0.09	0
163	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Right Side	1	20175	22.70	23	1.072	0.527	0.565	-0.06	0
168	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Right Side	1	20175	20.50	21	1.122	0.283	0.318	0.14	0
173	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Right Side	1	20050	21.97	22	1.007	0.376	0.379	0.04	0
178	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Right Side	1	20050	21.86	22	1.033	0.376	0.388	-0.15	0
154	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Bottom Side	1	20175	21.41	22	1.146	0.068	0.078	-0.14	0
159	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Bottom Side	1	20175	22.89	23	1.026	0.158	0.162	-0.07	0
164	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Bottom Side	1	20175	22.70	23	1.072	0.09	0.096	0.05	0
169	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Bottom Side	1	20175	20.50	21	1.122	0.042	0.047	0.08	0
174	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Bottom Side	1	20050	21.97	22	1.007	0.075	0.076	-0.06	0
179	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Bottom Side	1	20050	21.86	22	1.033	0.07	0.072	0.02	0

Note:

- Per KDB 941225 D06, for DUT dimension ≥ 9cm*5cm, the test distance is 1cm. SAR must be measured for all surfaces and sides with a transmitting antenna located within 2.5cm from that surface or edge.
- As in (1), SAR for Front / Back/ Bottom Side / Right Side is necessary for LTE Band 2 and LTE Band 4.
- Per KDB 941225 D05, for LTE, if the smaller bandwidth output power is within +/- ½ dB of the largest bandwidth, and the maximum SAR of the largest bandwidth is < 1.45 W/kg, SAR for smaller bandwidth can be excluded. Therefore LTE 5MHz bandwidth SAR tests are excluded.
- Per KDB 941225 D05, if the measured 50%-RB 1g-SAR for the middle or highest output power channel is ≤ 0.8W/kg, remaining 2 channels SAR tests can be excluded. Otherwise, 50% RB allocation of the remaining 2 channels SAR tests are necessary.
- Per KDB 941225 D05, for LTE, if 50%-RB QPSK SAR ≤ 1.45 W/kg, 100%-RB QPSK SAR can be excluded; if 50%-RB 16QAM SAR ≤ 1.45 W/kg, 100%-RB 16QAM SAR can be excluded. If SAR of 1 RB allocation is ≤ 1.45W/kg, SAR of 1 RB allocation of remaining channels can be excluded.
- Reduced power SAR is repeated for simultaneous transmission analysis. The simultaneous transmission analysis starts from each wireless interface maximum power standalone SAR. Only the test cases which cannot pass 1g summation or SPLSR will be repeated with reduced power.



<WLAN>

Plot No.	Antenna	Band	Mode	Test Position	Gap (cm)	Ch.	Output Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	SAR _{1g} (W/kg)	Scaled SAR _{1g} (W/kg)	Power Drift (dB)	Reduced Power (dB)
198	WLAN/BT	WLAN 2.4G	802.11b	Front	1	1	15.28	15.5	1.052	0.062	0.065	-0.07	0
199	WLAN/BT	WLAN 2.4G	802.11b	Back	1	1	15.28	15.5	1.052	0.122	0.128	0.03	0
200	WLAN/BT	WLAN 2.4G	802.11b	Right Side	1	1	15.28	15.5	1.052	0.229	0.241	-0.07	0

Note:

1. Per KDB 941225 D06, for EUT dimension $\geq 9\text{cm} \times 5\text{cm}$, the test distance is 1cm. SAR must be measured for all surfaces and sides with a transmitting antenna located within 2.5cm from that surface or edge.
2. As in (1), SAR for Front / Back / Right Side is necessary.
3. Per KDB 248227, if the highest output channel SAR for each exposure position $\leq 0.8\text{ W/kg}$ other channels SAR tests are not necessary.



11.3 Test Records for Body-worn SAR Test

<CDMA2000>

Plot No.	Antenna	Band	Mode	Test Position	Gap (cm)	Ch.	Headset	Output Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	SAR _{1g} (W/kg)	Scaled SAR _{1g} (W/kg)	Power Drift (dB)	Reduced Power (dB)
102	1xRTT	CDMA2000 BC0	RC3 SO32	Front	1	1013	-	23.00	23.5	1.122	0.750	0.842	-0.06	0
214	1xRTT	CDMA2000 BC0	RC3 SO32	Front	1	1013	-	16.91	17	1.021	0.175	0.179	-0.14	6.09
103	1xRTT	CDMA2000 BC0	RC3 SO32	Back	1	1013	-	23.00	23.5	1.122	1.03	1.156	0.11	0
109	1xRTT	CDMA2000 BC0	RC3 SO32	Back	1	384	-	22.79	23.5	1.178	0.886	1.043	-0.04	0
110	1xRTT	CDMA2000 BC0	RC3 SO32	Back	1	777	-	22.53	23.5	1.250	0.806	1.008	-0.009	0
221	1xRTT	CDMA2000 BC0	RC3 SO32	Back	1	1013	-	16.91	17	1.021	0.241	0.246	0.08	6.09
78	1xRTT	CDMA2000 BC0	RC3 SO32	Back	1	1013	V	23.00	23.5	1.122	0.779	0.874	-0.02	0
228	1xRTT	CDMA2000 BC0	RC3 SO32	Back	1	1013	V	16.91	17	1.021	0.147	0.150	0.00063	6.09
79	1xRTT	CDMA2000 BC1	RC3 SO32	Front	1	25	-	23.47	23.5	1.007	1.09	1.098	-0.05	0
84	1xRTT	CDMA2000 BC1	RC3 SO32	Front	1	600	-	23.36	23.5	1.033	0.963	0.995	0.04	0
85	1xRTT	CDMA2000 BC1	RC3 SO32	Front	1	1175	-	23.46	23.5	1.009	0.832	0.840	0.13	0
215	1xRTT	CDMA2000 BC1	RC3 SO32	Front	1	25	-	14.22	15	1.197	0.124	0.148	0.1	9.25
80	1xRTT	CDMA2000 BC1	RC3 SO32	Back	1	25	-	23.47	23.5	1.007	1.4	1.410	-0.08	0
86	1xRTT	CDMA2000 BC1	RC3 SO32	Back	1	600	-	23.36	23.5	1.033	1.35	1.394	0.07	0
87	1xRTT	CDMA2000 BC1	RC3 SO32	Back	1	1175	-	23.46	23.5	1.009	1.17	1.181	-0.01	0
222	1xRTT	CDMA2000 BC1	RC3 SO32	Back	1	1175	-	14.91	15	1.021	0.161	0.164	-0.06	8.55
88	1xRTT	CDMA2000 BC1	RC3 SO32	Back	1	25	V	23.47	23.5	1.007	1.45	1.460	-0.04	0
89	1xRTT	CDMA2000 BC1	RC3 SO32	Back	1	600	V	23.36	23.5	1.033	1.34	1.384	-0.1	0
90	1xRTT	CDMA2000 BC1	RC3 SO32	Back	1	1175	V	23.46	23.5	1.009	1.16	1.171	-0.1	0
229	1xRTT	CDMA2000 BC1	RC3 SO32	Back	1	1175	V	14.91	15	1.021	0.166	0.169	-0.13	0
93	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Front	1	600	-	22.80	23	1.047	0.739	0.774	-0.1	0
217	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Front	1	600	-	14.63	15	1.089	0.098	0.107	-0.1	8.17
94	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	600	-	22.80	23	1.047	1.02	1.068	0.1	0
97	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	25	-	22.75	23	1.059	1.04	1.102	0.09	0
98	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	1175	-	22.65	23	1.084	1.01	1.095	0.08	0
224	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	600	-	14.63	15	1.089	0.148	0.161	0.09	8.17
99	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	25	V	22.75	23	1.059	0.997	1.056	0.12	0
100	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	600	V	22.65	23	1.084	0.97	1.051	0.06	0
101	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	1175	V	22.80	23	1.047	0.964	1.009	0.08	0
231	EVDO/LTE	CDMA2000 BC1	RTAP 153.6	Back	1	25	V	14.00	15	1.259	0.126	0.159	0.05	8.75
111	1xRTT	CDMA2000 BC15	RC3 SO32	Front	1	425	-	22.10	22.5	1.096	0.878	0.963	-0.07	0
186	1xRTT	CDMA2000 BC15	RC3 SO32	Front	1	25	-	21.95	22.5	1.135	0.882	1.001	0.11	0
187	1xRTT	CDMA2000 BC15	RC3 SO32	Front	1	875	-	22.05	22.5	1.109	0.901	0.999	0.03	0
216	1xRTT	CDMA2000 BC15	RC3 SO32	Front	1	875	-	14.75	15	1.059	0.217	0.230	0.17	7.30
112	1xRTT	CDMA2000 BC15	RC3 SO32	Back	1	425	-	22.10	22.5	1.096	1.27	1.393	-0.08	0
181	1xRTT	CDMA2000 BC15	RC3 SO32	Back	1	25	-	21.95	22.5	1.135	1.29	1.464	-0.05	0
182	1xRTT	CDMA2000 BC15	RC3 SO32	Back	1	875	-	22.05	22.5	1.109	1.24	1.375	0.12	0
223	1xRTT	CDMA2000 BC15	RC3 SO32	Back	1	25	-	14.28	15	1.180	0.228	0.269	0.02	7.67
183	1xRTT	CDMA2000 BC15	RC3 SO32	Back	1	25	V	21.95	22.5	1.135	1.22	1.385	-0.0036	0
184	1xRTT	CDMA2000 BC15	RC3 SO32	Back	1	425	V	22.10	22.5	1.096	1.19	1.305	0.08	0
185	1xRTT	CDMA2000 BC15	RC3 SO32	Back	1	875	V	22.05	22.5	1.109	1.25	1.386	-0.03	0
230	1xRTT	CDMA2000 BC15	RC3 SO32	Back	1	875	V	14.75	15	1.059	0.252	0.267	0.14	7.30
116	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Front	1	875	-	22.76	23	1.057	0.878	0.928	-0.1	0
120	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Front	1	25	-	22.52	23	1.117	0.77	0.860	0.0097	0
188	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Front	1	425	-	22.43	23	1.140	0.825	0.941	-0.12	0
218	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Front	1	875	-	14.99	15	1.002	0.148	0.148	-0.03	7.86
117	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	875	-	22.76	23	1.057	0.941	0.994	-0.05	0
189	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	25	-	22.52	23	1.117	0.832	0.929	0.08	0
190	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	425	-	22.43	23	1.140	0.893	1.018	0.16	0
225	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	875	-	14.99	15	1.002	0.172	0.172	0.09	7.86
191	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	875	V	22.76	23	1.057	0.876	0.926	0.04	0
192	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	25	V	22.52	23	1.117	0.787	0.879	-0.02	0
193	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	425	V	22.43	23	1.140	0.868	0.990	0.09	0
232	EVDO/LTE	CDMA2000 BC15	RTAP 153.6	Back	1	875	V	14.99	15	1.002	0.158	0.158	0.05	7.86

Note:

1. Per KDB 447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.
2. "V" in the headset column means the headset is plugged during SAR testing.
3. Reduced power SAR is repeated for simultaneous transmission analysis. The simultaneous transmission analysis starts from each wireless interface maximum power standalone SAR. Only the test cases which cannot pass 1g summation or SPLSR will be repeated with reduced power.



<LTE>

Plot No.	Antenna	Band	Mode	BW (MHz)	RB Size	RB Offset	Test Position	Gap (cm)	Ch.	Headset	Output Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	SAR _{1g} (W/kg)	Scaled SAR _{1g} (W/kg)	Power Drift (dB)	Reduced Power (dB)
121	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Front	1	18900	-	21.68	22.5	1.208	0.556	0.672	-0.09	0
126	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Front	1	18900	-	23.05	23.5	1.109	0.74	0.821	-0.07	0
131	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Front	1	18900	-	23.02	23.5	1.117	0.704	0.786	0.07	0
136	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Front	1	18900	-	20.65	21.5	1.216	0.421	0.512	-0.01	0
141	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Front	1	18700	-	22.05	22.5	1.109	0.616	0.683	-0.06	0
146	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Front	1	18700	-	22.04	22.5	1.112	0.617	0.686	-0.16	0
219	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Front	1	18900	-	17.99	18.5	1.125	0.232	0.261	-0.11	5.06
122	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Back	1	18900	-	21.68	22.5	1.208	0.794	0.959	0.01	0
127	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Back	1	18900	-	23.05	23.5	1.109	1.03	1.142	0.16	0
132	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Back	1	18900	-	23.02	23.5	1.117	0.965	1.078	0.00071	0
137	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Back	1	18900	-	20.65	21.5	1.216	0.609	0.741	0.05	0
142	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Back	1	18700	-	22.05	22.5	1.109	0.804	0.892	-0.00053	0
147	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Back	1	18700	-	22.04	22.5	1.112	0.788	0.876	0.12	0
226	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Back	1	18900	-	17.99	18.5	1.125	0.346	0.389	-0.1	5.06
125	EVDO/LTE	LTE Band 2	QPSK	20	50	25	Back	1	18900	V	21.68	22.5	1.208	0.726	0.877	-0.07	0
130	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Back	1	18900	V	23.05	23.5	1.109	0.975	1.081	0.08	0
135	EVDO/LTE	LTE Band 2	QPSK	20	1	99	Back	1	18900	V	23.02	23.5	1.117	0.905	1.011	-0.01	0
140	EVDO/LTE	LTE Band 2	16QAM	20	50	25	Back	1	18900	V	20.65	21.5	1.216	0.573	0.697	0.06	0
145	EVDO/LTE	LTE Band 2	16QAM	20	1	0	Back	1	18700	V	22.05	22.5	1.109	0.775	0.860	0.05	0
150	EVDO/LTE	LTE Band 2	16QAM	20	1	99	Back	1	18700	V	22.04	22.5	1.112	0.776	0.863	0.13	0
233	EVDO/LTE	LTE Band 2	QPSK	20	1	0	Back	1	18900	V	17.99	18.5	1.125	0.323	0.363	0.06	5.06
151	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Front	1	20175	-	21.41	22	1.146	0.602	0.690	-0.1	0
156	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Front	1	20175	-	22.89	23	1.026	0.795	0.815	0.14	0
161	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Front	1	20175	-	22.70	23	1.072	0.756	0.810	-0.11	0
166	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Front	1	20175	-	20.50	21	1.122	0.517	0.580	0.02	0
171	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Front	1	20050	-	21.97	22	1.007	0.602	0.606	0.12	0
176	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Front	1	20050	-	21.86	22	1.033	0.635	0.656	0.05	0
220	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Front	1	20175	-	17.50	18	1.122	0.17	0.191	0.01	5.39
152	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Back	1	20175	-	21.41	22	1.146	0.602	0.690	-0.07	0
157	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Back	1	20175	-	22.89	23	1.026	0.825	0.846	0.05	0
162	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Back	1	20175	-	22.70	23	1.072	0.79	0.847	0.02	0
167	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Back	1	20175	-	20.50	21	1.122	0.56	0.628	0.02	0
172	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Back	1	20050	-	21.97	22	1.007	0.634	0.638	0.02	0
177	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Back	1	20050	-	21.86	22	1.033	0.651	0.672	0.02	0
227	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Back	1	20175	-	17.50	18	1.122	0.193	0.217	0.06	5.39
155	EVDO/LTE	LTE Band 4	QPSK	20	50	25	Back	1	20175	V	21.41	22	1.146	0.687	0.787	0.15	0
160	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Back	1	20175	V	22.89	23	1.026	0.946	0.970	0.13	0
165	EVDO/LTE	LTE Band 4	QPSK	20	1	99	Back	1	20175	V	22.70	23	1.072	0.909	0.974	0.08	0
170	EVDO/LTE	LTE Band 4	16QAM	20	50	25	Back	1	20175	V	20.50	21	1.122	0.539	0.605	-0.02	0
175	EVDO/LTE	LTE Band 4	16QAM	20	1	0	Back	1	20050	V	21.97	22	1.007	0.737	0.742	0.09	0
180	EVDO/LTE	LTE Band 4	16QAM	20	1	99	Back	1	20050	V	21.86	22	1.033	0.769	0.794	0.09	0
234	EVDO/LTE	LTE Band 4	QPSK	20	1	0	Back	1	20175	V	17.50	18	1.122	0.184	0.206	0.04	5.39

Note:

- "V" in the headset column means the headset is plugged during SAR testing.
- Per KDB 941225 D05, for LTE, if the smaller bandwidth output power is within +/- 1/2 dB of the largest bandwidth, and the maximum SAR of the largest bandwidth is ≤ 1.45 W/kg, SAR for smaller bandwidth can be excluded.
- Per KDB 941225 D05, if the measured 50%-RB 1g-SAR for the middle or highest output power channel is ≤ 0.8W/kg, remaining 2 channels SAR tests can be excluded. Otherwise, 50% RB allocation of the remaining 2 channels SAR tests are necessary.
- Per KDB 941225 D05, for LTE, if 50%-RB QPSK SAR ≤ 1.45 W/kg, 100%-RB QPSK SAR can be excluded; if 50%-RB 16QAM SAR ≤ 1.45 W/kg, 100%-RB 16QAM SAR can be excluded.
- If SAR of 1 RB allocation is ≤ 1.45W/kg, SAR of 1 RB allocation of remaining channels can be excluded.
- Reduced power SAR is repeated for simultaneous transmission analysis. The simultaneous transmission analysis starts from each wireless interface maximum power standalone SAR. Only the test cases which cannot pass 1g summation or SPLSR will be repeated with reduced power.

<WLAN>

Plot No.	Antenna	Band	Mode	Test Position	Gap (cm)	Ch.	Headset	Output Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	SAR _{1g} (W/kg)	Scaled SAR _{1g} (W/kg)	Power Drift (dB)	Reduced Power (dB)
198	WLAN/BT	WLAN 2.4G	802.11b	Front	1	1	-	15.28	15.5	1.052	0.062	0.065	-0.07	0
199	WLAN/BT	WLAN 2.4G	802.11b	Back	1	1	-	15.28	15.5	1.052	0.122	0.128	0.03	0
201	WLAN/BT	WLAN 2.4G	802.11b	Back	1	1	V	15.28	15.5	1.052	0.14	0.147	0.05	0

Note:

- Per KDB 248227, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.
- "V" in the headset column means the headset is plugged during SAR testing.

11.4 Simultaneous Multi-band Transmission Analysis

	Position	Applicable Combination
Simultaneous Transmission	Head	1x CDMA (voice) + 1x EVDO (data) + WLAN (router)
		1x CDMA (voice) + LTE (data) + WLAN (router)
		1x CDMA (voice) + WLAN
		1x CDMA (voice) + 1x EVDO (data) + BT
		1x CDMA (voice) + LTE (data) + BT
		1x CDMA (voice) + BT
	Hotspot	1x EVDO (data) + WLAN (router)
		LTE (data) + WLAN (router)
	Body-worn	1x CDMA (voice) + 1x EVDO (data) + WLAN (router)
		1x CDMA (voice) + LTE (data) + WLAN (router)
		1x CDMA (voice) + WLAN
		1x CDMA (voice) + 1x EVDO (data) + BT
		1x CDMA (voice) + LTE (data) + BT
		1x CDMA (voice) + BT

Note:

1. WLAN2.4G and BT share the same antenna, and cannot transmit simultaneously.
2. WLAN2.4G/BT share the same antenna and operates at the same frequency band, where BT output power (1.69dBm < 60/f) is far less than 802.11b output power (max:15.28dBm; min 13.72dBm), the RF exposure compliance of WLAN represent that of Bluetooth.
3. 1x EVDO and LTE share the same antenna, and cannot transmit simultaneously.
4. The maximum SAR summation is calculated based on the same configuration and test position.
5. When stand-alone 1-g SAR is not required for a transmitter or antenna, its SAR is considered zero in the 1-g SAR summing process to determine simultaneous transmission SAR evaluation requirements
6. If 1g-SAR summation < 1.6W/kg, simultaneous SAR measurement is not necessary.
7. If 1g-SAR summation ≥ 1.6W/kg, SPLSR calculation is necessary.

The implemented power combinations (Unit: dBm)

SVDO Mode		Data Mode	
Voice Mode		1x EVDO BC1	1x EVDO BC15
1x CDMA BC0	17	23	23
	23.5	15	15
1x CDMA BC1	15	23	23
	23.5	15	15
1x CDMA BC15	15	23	23
	22.5	15	15
SVLTE Mode		Data Mode	
Voice		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
1x CDMA BC0	17	23.5	23
	23.5	18.5	18
1x CDMA BC1	15	23.5	23
	23.5	18.5	18
1x CDMA BC15	15	23.5	23
	22.5	18.5	18

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

Power combination	CDMA2000 1x voice mode	1x EVDO data mode
#1	Full Power BC0/BC1: 23.5 BC15: 22.5	Full Power 23
#2	Reduced Power BC0: 17 BC1/BC15: 15	Full Power 23
#3	Full Power BC0/BC1: 23.5 BC15: 22.5	Reduced Power 15
Power combination	CDMA2000 1x voice mode	LTE data mode
#5	Full Power BC0/BC1: 23.5 BC15: 22.5	Full Power Band2: 23.5 Band4: 23
#6	Reduced Power BC0: 17 BC1/BC15: 15	Full Power Band2: 23.5 Band4: 23
#7	Full Power BC0/BC1: 23.5 BC15: 22.5	Reduced Power Band2: 18.5 Band4: 18

Note:

- For SVDO mode which means EVDO(data) and CDMA 1xRTT(voice) transmitting simultaneously, power reduction is implemented.
- When EUT 1xRTT output power is > 17dBm for BC0 and >15dBm for BC1&BC15, EVDO maximum output power is limited to 15dBm regardless of the power control command from the base station.
- For SVLTE mode which means LTE(data) and CDMA 1xRTT(voice) transmitting simultaneously, power reduction is implemented.
- When EUT 1xRTT output power is > 17dBm (for BC0) and >15dBm (for BC1&BC15), LTE maximum output power is limited to 18.5dBm (for Band 2) and 18dBm (for Band 4) regardless of the power control command from the base station.

Analysis Procedure:

Step1

- Per KDB 941225 D05, maximum power standalone SAR of 1xRTT/EVDO/LTE is used for simultaneous transmission analysis.
- Start analysis from full power combination (Alternative Power combination #1/#5).
- If 1g-SAR scalar summation < 1.6W/kg, simultaneous SAR measurement and further evaluations are not necessary.
- If 1g-SAR summation ≥ 1.6W/kg, step2 analysis is required.

Step2

- For the cases from step1, power combination #2/#3/#6/#7 are used in further step2 analysis.
- If 1g-SAR scalar summation < 1.6W/kg, simultaneous SAR measurement and further evaluations are not necessary.
- If 1g-SAR summation ≥ 1.6W/kg, SPLSR calculation is necessary.
- If resulting SPLSR < 0.3, further evaluation is not required.
- If resulting SPLSR ≥ 0.3, volume scan measurement is required.

For combinations of WWAN (1 transmitters) + WLAN, proceed SPLSR calculation directly if 1g-SAR summation ≥ 1.6W/kg.



Table 11.4-A1: Head SAR analysis <Step1>

	Position	Applicable Combination
Simultaneous Transmission	Head	1x CDMA (voice) + 1x EVDO (data) + WLAN (router)
		1x CDMA (voice) + LTE (data) + WLAN (router)
		1x CDMA (voice) + WLAN
		1x CDMA (voice) + 1x EVDO (data) + BT
		1x CDMA (voice) + LTE (data) + BT
		1x CDMA (voice) + BT

Position	Scaled WWAN (voice)				Scaled WWAN (data)				Scaled WLAN			Scaled WWAN + Scaled WLAN	Case No
	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	Plot No	Output Power (dBm)	Scaled WLAN (W/kg)		
Right Cheek	CDMA BC0	1	23.03	0.601	EVDO BC1	19	22.75	1.133	194	15.28	0.287	2.02	#A1-1
	CDMA BC0	1	23.03	0.601	EVDO BC15	26	22.43	1.277	194	15.28	0.287	2.17	#A1-2
	CDMA BC1	7	23.49	0.428	EVDO BC1	19	22.75	1.133	194	15.28	0.287	1.85	#A1-3
	CDMA BC1	7	23.49	0.428	EVDO BC15	26	22.43	1.277	194	15.28	0.287	1.99	#A1-4
	CDMA BC15	11	22.16	0.376	EVDO BC1	19	22.75	1.133	194	15.28	0.287	1.80	#A1-5
	CDMA BC15	11	22.16	0.376	EVDO BC15	26	22.43	1.277	194	15.28	0.287	1.94	#A1-6
	CDMA BC0	1	23.03	0.601	LTE Band 2	31	23.05	1.142	194	15.28	0.287	2.03	#A1-7
	CDMA BC0	1	23.03	0.601	LTE Band 4	61	22.70	1.125	194	15.28	0.287	2.01	#A1-8
	CDMA BC1	7	23.49	0.428	LTE Band 2	31	23.05	1.142	194	15.28	0.287	1.86	#A1-9
	CDMA BC1	7	23.49	0.428	LTE Band 4	61	22.70	1.125	194	15.28	0.287	1.84	#A1-10
	CDMA BC15	11	22.16	0.376	LTE Band 2	31	23.05	1.142	194	15.28	0.287	1.81	#A1-11
	CDMA BC15	11	22.16	0.376	LTE Band 4	61	22.70	1.125	194	15.28	0.287	1.79	#A1-12
Right Tilted	CDMA BC0	2	23.03	0.431	EVDO BC1	16	22.80	0.315	195	15.28	0.063	0.81	-
	CDMA BC0	2	23.03	0.431	EVDO BC15	22	22.76	0.446	195	15.28	0.063	0.94	-
	CDMA BC1	8	23.49	0.213	EVDO BC1	16	22.80	0.315	195	15.28	0.063	0.59	-
	CDMA BC1	8	23.49	0.213	EVDO BC15	22	22.76	0.446	195	15.28	0.063	0.72	-
	CDMA BC15	12	22.16	0.155	EVDO BC1	16	22.80	0.315	195	15.28	0.063	0.53	-
	CDMA BC15	12	22.16	0.155	EVDO BC15	22	22.76	0.446	195	15.28	0.063	0.66	-
	CDMA BC0	2	23.03	0.431	LTE Band 2	32	23.05	0.409	195	15.28	0.063	0.90	-
	CDMA BC0	2	23.03	0.431	LTE Band 4	62	22.70	0.404	195	15.28	0.063	0.90	-
	CDMA BC1	8	23.49	0.213	LTE Band 2	32	23.05	0.409	195	15.28	0.063	0.69	-
	CDMA BC1	8	23.49	0.213	LTE Band 4	62	22.70	0.404	195	15.28	0.063	0.68	-
	CDMA BC15	12	22.16	0.155	LTE Band 2	32	23.05	0.409	195	15.28	0.063	0.63	-
	CDMA BC15	12	22.16	0.155	LTE Band 4	62	22.70	0.404	195	15.28	0.063	0.62	-
Left Cheek	CDMA BC0	3	23.03	0.740	EVDO BC1	17	22.80	0.558	196	15.28	0.261	1.56	-
	CDMA BC0	3	23.03	0.740	EVDO BC15	23	22.76	0.649	196	15.28	0.261	1.65	#A1-13
	CDMA BC1	9	23.49	0.450	EVDO BC1	17	22.80	0.558	196	15.28	0.261	1.27	-
	CDMA BC1	9	23.49	0.450	EVDO BC15	23	22.76	0.649	196	15.28	0.261	1.36	-
	CDMA BC15	13	22.16	0.520	EVDO BC1	17	22.80	0.558	196	15.28	0.261	1.34	-
	CDMA BC15	13	22.16	0.520	EVDO BC15	23	22.76	0.649	196	15.28	0.261	1.43	-
	CDMA BC0	3	23.03	0.740	LTE Band 2	33	23.05	0.750	196	15.28	0.261	1.75	#A1-14
	CDMA BC0	3	23.03	0.740	LTE Band 4	63	22.70	0.639	196	15.28	0.261	1.64	#A1-15
	CDMA BC1	9	23.49	0.450	LTE Band 2	33	23.05	0.750	196	15.28	0.261	1.46	-
	CDMA BC1	9	23.49	0.450	LTE Band 4	63	22.70	0.639	196	15.28	0.261	1.35	-
	CDMA BC15	13	22.16	0.520	LTE Band 2	33	23.05	0.750	196	15.28	0.261	1.53	-
	CDMA BC15	13	22.16	0.520	LTE Band 4	63	22.70	0.639	196	15.28	0.261	1.42	-
Left Tilted	CDMA BC0	4	23.03	0.513	EVDO BC1	18	22.80	0.315	197	15.28	0.059	0.89	-
	CDMA BC0	4	23.03	0.513	EVDO BC15	24	22.76	0.394	197	15.28	0.059	0.97	-
	CDMA BC1	10	23.49	0.257	EVDO BC1	18	22.80	0.315	197	15.28	0.059	0.63	-
	CDMA BC1	10	23.49	0.257	EVDO BC15	24	22.76	0.394	197	15.28	0.059	0.71	-
	CDMA BC15	14	22.16	0.202	EVDO BC1	18	22.80	0.315	197	15.28	0.059	0.58	-
	CDMA BC15	14	22.16	0.202	EVDO BC15	24	22.76	0.394	197	15.28	0.059	0.66	-
	CDMA BC0	4	23.03	0.513	LTE Band 2	34	23.05	0.373	197	15.28	0.059	0.95	-
	CDMA BC0	4	23.03	0.513	LTE Band 4	64	22.70	0.421	197	15.28	0.059	0.99	-
	CDMA BC1	10	23.49	0.257	LTE Band 2	34	23.05	0.373	197	15.28	0.059	0.69	-
	CDMA BC1	10	23.49	0.257	LTE Band 4	64	22.70	0.421	197	15.28	0.059	0.74	-
	CDMA BC15	14	22.16	0.202	LTE Band 2	34	23.05	0.373	197	15.28	0.059	0.63	-
	CDMA BC15	14	22.16	0.202	LTE Band 4	64	22.70	0.421	197	15.28	0.059	0.68	-

Remark:

- 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.
- The analysis 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 SVDO/SVLTE mode(2 transmitters) is exactly the same as the configuration in SVDO/SVLTE+WLAN hotspot (3 transmitters).



Position	Scaled WWAN (voice)				Scaled WLAN			Scaled WWAN + Scaled WLAN	Case No
	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	Plot No	Output Power (dBm)	Scaled WLAN (W/kg)		
Right Cheek	CDMA BC0	1	23.03	0.601	194	15.28	0.287	0.888	
	CDMA BC1	7	23.49	0.428	194	15.28	0.287	0.715	
	CDMA BC15	11	22.16	0.376	194	15.28	0.287	0.663	
Right Tilted	CDMA BC0	2	23.03	0.431	195	15.28	0.063	0.494	
	CDMA BC1	8	23.49	0.213	195	15.28	0.063	0.276	
	CDMA BC15	12	22.16	0.155	195	15.28	0.063	0.218	
Left Cheek	CDMA BC0	3	23.03	0.740	196	15.28	0.261	1.001	
	CDMA BC1	9	23.49	0.450	196	15.28	0.261	0.711	
	CDMA BC15	13	22.16	0.520	196	15.28	0.261	0.781	
Left Tilted	CDMA BC0	4	23.03	0.513	197	15.28	0.059	0.572	
	CDMA BC1	10	23.49	0.257	197	15.28	0.059	0.316	
	CDMA BC15	14	22.16	0.202	197	15.28	0.059	0.261	

Remark:

The SAR summation represents the simultaneous transmission of a WWAN voice call and WLAN data transmission.



Table 11.4-A2: Head SAR analysis <Step2>

Position	Scaled WWAN (voice)				Scaled WWAN (data)				Scaled WLAN			Scaled WWAN + Scaled WLAN	Case No
	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	Plot No	Output Power (dBm)	Scaled WLAN (W/kg)		
Right Cheek	CDMA BC0	1	23.03	0.601	EVDO BC1	19	22.75	1.133	194	15.28	0.287	2.02	#A1-1
	CDMA BC0	202	16.90	0.140	EVDO BC1	19	22.75	1.133	194	15.28	0.287	1.56	-
	CDMA BC0	1	23.03	0.601	EVDO BC1	205	14.63	0.164	194	15.28	0.287	1.05	-
	CDMA BC0	1	23.03	0.601	EVDO BC15	26	22.43	1.277	194	15.28	0.287	2.17	#A1-2
	CDMA BC0	202	16.90	0.140	EVDO BC15	26	22.43	1.277	194	15.28	0.287	1.70	#A2-1
	CDMA BC0	1	23.03	0.601	EVDO BC15	206	14.99	0.176	194	15.28	0.287	1.06	-
	CDMA BC1	7	23.49	0.428	EVDO BC1	19	22.75	1.133	194	15.28	0.287	1.85	#A1-3
	CDMA BC1	203	14.96	0.030	EVDO BC1	19	22.75	1.133	194	15.28	0.287	1.45	-
	CDMA BC1	7	23.49	0.428	EVDO BC1	205	14.63	0.164	194	15.28	0.287	0.88	-
	CDMA BC1	7	23.49	0.428	EVDO BC15	26	22.43	1.277	194	15.28	0.287	1.99	#A1-4
	CDMA BC1	203	14.96	0.030	EVDO BC15	26	22.43	1.277	194	15.28	0.287	1.59	-
	CDMA BC1	7	23.49	0.428	EVDO BC15	206	14.99	0.176	194	15.28	0.287	0.89	-
	CDMA BC15	11	22.16	0.376	EVDO BC1	19	22.75	1.133	194	15.28	0.287	1.80	#A1-5
	CDMA BC15	204	14.88	0.063	EVDO BC1	19	22.75	1.133	194	15.28	0.287	1.48	-
	CDMA BC15	11	22.16	0.376	EVDO BC1	205	14.63	0.164	194	15.28	0.287	0.83	-
	CDMA BC15	11	22.16	0.376	EVDO BC15	26	22.43	1.277	194	15.28	0.287	1.94	#A1-6
	CDMA BC15	204	14.88	0.063	EVDO BC15	26	22.43	1.277	194	15.28	0.287	1.63	#A2-2
	CDMA BC15	11	22.16	0.376	EVDO BC15	206	14.99	0.176	194	15.28	0.287	0.84	-
	CDMA BC0	1	23.03	0.601	LTE Band 2	31	23.05	1.142	194	15.28	0.287	2.03	#A1-7
	CDMA BC0	202	16.90	0.140	LTE Band 2	31	23.05	1.142	194	15.28	0.287	1.57	-
	CDMA BC0	1	23.03	0.601	LTE Band 2	207	17.99	0.372	194	15.28	0.287	1.26	-
	CDMA BC0	1	23.03	0.601	LTE Band 4	61	22.70	1.125	194	15.28	0.287	2.01	#A1-8
	CDMA BC0	202	16.90	0.140	LTE Band 4	61	22.70	1.125	194	15.28	0.287	1.55	-
	CDMA BC0	1	23.03	0.601	LTE Band 4	208	17.36	0.384	194	15.28	0.287	1.27	-
	CDMA BC1	7	23.49	0.428	LTE Band 2	31	23.05	1.142	194	15.28	0.287	1.86	#A1-9
	CDMA BC1	203	14.96	0.030	LTE Band 2	31	23.05	1.142	194	15.28	0.287	1.46	-
	CDMA BC1	7	23.49	0.428	LTE Band 2	207	17.99	0.372	194	15.28	0.287	1.09	-
	CDMA BC1	7	23.49	0.428	LTE Band 4	61	22.70	1.125	194	15.28	0.287	1.84	#A1-10
	CDMA BC1	203	14.96	0.030	LTE Band 4	61	22.70	1.125	194	15.28	0.287	1.44	-
	CDMA BC1	7	23.49	0.428	LTE Band 4	208	17.36	0.384	194	15.28	0.287	1.10	-
CDMA BC15	11	22.16	0.376	LTE Band 2	31	23.05	1.142	194	15.28	0.287	1.81	#A1-11	
CDMA BC15	204	14.88	0.063	LTE Band 2	31	23.05	1.142	194	15.28	0.287	1.49	-	
CDMA BC15	11	22.16	0.376	LTE Band 2	207	17.99	0.372	194	15.28	0.287	1.04	-	
CDMA BC15	11	22.16	0.376	LTE Band 4	61	22.70	1.125	194	15.28	0.287	1.79	#A1-12	
CDMA BC15	204	14.88	0.063	LTE Band 4	61	22.70	1.125	194	15.28	0.287	1.48	-	
CDMA BC15	11	22.16	0.376	LTE Band 4	208	17.36	0.384	194	15.28	0.287	1.05	-	
Left Cheek	CDMA BC0	3	23.03	0.740	EVDO BC15	23	22.76	0.649	196	15.28	0.261	1.65	#A1-13
	CDMA BC0	209	16.90	0.161	EVDO BC15	23	22.76	0.649	196	15.28	0.261	1.07	-
	CDMA BC0	3	23.03	0.740	EVDO BC15	211	14.99	0.104	196	15.28	0.261	1.11	-
	CDMA BC0	3	23.03	0.740	LTE Band 2	33	23.05	0.750	196	15.28	0.261	1.75	#A1-14
	CDMA BC0	209	16.90	0.161	LTE Band 2	33	23.05	0.750	196	15.28	0.261	1.17	-
	CDMA BC0	3	23.03	0.740	LTE Band 2	212	17.99	0.243	196	15.28	0.261	1.24	-
	CDMA BC0	3	23.03	0.740	LTE Band 4	63	22.70	0.639	196	15.28	0.261	1.64	#A1-15
	CDMA BC0	209	16.90	0.161	LTE Band 4	63	22.70	0.639	196	15.28	0.261	1.06	-
CDMA BC0	3	23.03	0.740	LTE Band 4	213	17.36	0.204	196	15.28	0.261	1.21	-	

Note:

1. Row number xx1, i.e. #A1-2, is sum-SAR with CDMA and LTE both full power. Sum-SAR > 1.6 W/kg, but not normal operating mode.
2. Row number xx2, i.e. #A2-1, is sum-SAR with CDMA reduced power and EVDO full power. Sum-SAR > 1.6 W/kg means do SPLSR (see page 54).
3. Row number xx3, i.e. #Ax-x, is sum-SAR with CDMA full power and EVDO reduced power. Sum-SAR < 1.6 W/kg means excluded.



Table 11.4-B1: Hotspot mode SAR analysis <Step1>

Refer to Exposure Positions Consideration in section 10.1

Sides for SAR tests; Hotspot mode						
Test distance: 10 mm						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
LTE&EVDO	YES	YES	NO	YES	YES	NO
CDMA 1xRTT	YES	YES	NO	YES	YES	YES
WLAN&BT	YES	YES	NO	NO	YES	NO

Simultaneous Transmission	Position	Applicable Combination
	Hotspot	1x EVDO (data) + WLAN (router) LTE (data) + WLAN (router)

Position	Scaled WWAN (data)				Scaled WLAN			Scaled WWAN + Scaled WLAN	Case No
	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	Plot No	Output Power (dBm)	Scaled WLAN (W/kg)		
Front	EVDO BC1	93	22.80	0.774	198	15.28	0.066	0.84	-
	EVDO BC15	116	22.76	0.928	198	15.28	0.066	0.99	-
	LTE Band 2	126	23.05	0.821	198	15.28	0.066	0.89	-
	LTE Band 4	156	22.89	0.815	198	15.28	0.066	0.88	-
Back	EVDO BC1	97	22.75	1.102	199	15.28	0.128	1.23	-
	EVDO BC15	117	22.76	0.994	199	15.28	0.128	1.12	-
	LTE Band 2	127	23.05	1.142	199	15.28	0.128	1.27	-
	LTE Band 4	157	22.89	0.846	199	15.28	0.128	0.97	-
Right Side	EVDO BC1	95	22.80	0.689	200	15.28	0.241	0.93	-
	EVDO BC15	118	22.76	0.565	200	15.28	0.241	0.81	-
	LTE Band 2	133	23.02	0.601	200	15.28	0.241	0.84	-
	LTE Band 4	163	22.70	0.565	200	15.28	0.241	0.81	-

Remark:

The SAR summation represents the simultaneous transmission of a WWAN data transmission and WLAN as hotspot router.

Table 11.4-C1: Body-worn SAR analysis <Step1>

	Position	Applicable Combination
	Simultaneous Transmission	Body-worn

Position	Scaled WWAN (voice)			Scaled WWAN (data)				Scaled WLAN			Scaled WWAN + Scaled WLAN	Case No	
	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	Plot No	Output Power (dBm)			Scaled WLAN (W/kg)
Front	CDMA BC0	102	23.00	0.842	EVDO BC1	93	22.80	0.774	198	15.28	0.066	1.68	#C1-1
	CDMA BC0	102	23.00	0.842	EVDO BC15	116	22.76	0.928	198	15.28	0.066	1.84	#C1-2
	CDMA BC1	79	23.47	1.098	EVDO BC1	93	22.80	0.774	198	15.28	0.066	1.94	#C1-3
	CDMA BC1	79	23.47	1.098	EVDO BC15	116	22.76	0.928	198	15.28	0.066	2.09	#C1-4
	CDMA BC15	187	22.05	0.999	EVDO BC1	93	22.80	0.774	198	15.28	0.066	1.84	#C1-5
	CDMA BC15	187	22.05	0.999	EVDO BC15	116	22.76	0.928	198	15.28	0.066	1.99	#C1-6
	CDMA BC0	102	23.00	0.842	LTE Band 2	126	23.05	0.821	198	15.28	0.066	1.73	#C1-7
	CDMA BC0	102	23.00	0.842	LTE Band 4	156	22.89	0.815	198	15.28	0.066	1.72	#C1-8
	CDMA BC1	79	23.47	1.098	LTE Band 2	126	23.05	0.821	198	15.28	0.066	1.99	#C1-9
	CDMA BC1	79	23.47	1.098	LTE Band 4	156	22.89	0.815	198	15.28	0.066	1.98	#C1-10
	CDMA BC15	187	22.05	0.999	LTE Band 2	126	23.05	0.821	198	15.28	0.066	1.89	#C1-11
	CDMA BC15	187	22.05	0.999	LTE Band 4	156	22.89	0.815	198	15.28	0.066	1.88	#C1-12
Back	CDMA BC0	103	23.00	1.156	EVDO BC1	97	22.75	1.102	199	15.28	0.128	2.39	#C1-13
	CDMA BC0	103	23.00	1.156	EVDO BC15	117	22.76	0.994	199	15.28	0.128	2.28	#C1-14
	CDMA BC1	80	23.47	1.410	EVDO BC1	97	22.75	1.102	199	15.28	0.128	2.64	#C1-15
	CDMA BC1	80	23.47	1.410	EVDO BC15	117	22.76	0.994	199	15.28	0.128	2.53	#C1-16
	CDMA BC15	181	21.95	1.464	EVDO BC1	97	22.75	1.102	199	15.28	0.128	2.69	#C1-17
	CDMA BC15	181	21.95	1.464	EVDO BC15	117	22.76	0.994	199	15.28	0.128	2.59	#C1-18
	CDMA BC0	103	23.00	1.156	LTE Band 2	127	23.05	1.142	199	15.28	0.128	2.43	#C1-19
	CDMA BC0	103	23.00	1.156	LTE Band 4	157	22.89	0.846	199	15.28	0.128	2.13	#C1-20
	CDMA BC1	80	23.47	1.410	LTE Band 2	127	23.05	1.142	199	15.28	0.128	2.68	#C1-21
	CDMA BC1	80	23.47	1.410	LTE Band 4	157	22.89	0.846	199	15.28	0.128	2.38	#C1-22
	CDMA BC15	181	21.95	1.464	LTE Band 2	127	23.05	1.142	199	15.28	0.128	2.73	#C1-23
	CDMA BC15	181	21.95	1.464	LTE Band 4	157	22.89	0.846	199	15.28	0.128	2.44	#C1-24
Back (w/ headset)	CDMA BC0	78	23.00	0.874	EVDO BC1	99	22.75	1.056	201	15.28	0.147	2.08	#C1-25
	CDMA BC0	78	23.00	0.874	EVDO BC15	191	22.76	0.926	201	15.28	0.147	1.95	#C1-26
	CDMA BC1	88	23.47	1.460	EVDO BC1	99	22.75	1.056	201	15.28	0.147	2.66	#C1-27
	CDMA BC1	88	23.47	1.460	EVDO BC15	191	22.76	0.926	201	15.28	0.147	2.53	#C1-28
	CDMA BC15	185	22.05	1.386	EVDO BC1	99	22.75	1.056	201	15.28	0.147	2.59	#C1-29
	CDMA BC15	185	22.05	1.386	EVDO BC15	191	22.76	0.926	201	15.28	0.147	2.46	#C1-30
	CDMA BC0	78	23.00	0.874	LTE Band 2	130	23.05	1.081	201	15.28	0.147	2.10	#C1-31
	CDMA BC0	78	23.00	0.874	LTE Band 4	160	22.89	0.970	201	15.28	0.147	1.99	#C1-32
	CDMA BC1	88	23.47	1.460	LTE Band 2	130	23.05	1.081	201	15.28	0.147	2.69	#C1-33
	CDMA BC1	88	23.47	1.460	LTE Band 4	160	22.89	0.970	201	15.28	0.147	2.58	#C1-34
	CDMA BC15	185	22.05	1.386	LTE Band 2	130	23.05	1.081	201	15.28	0.147	2.61	#C1-35
	CDMA BC15	185	22.05	1.386	LTE Band 4	160	22.89	0.970	201	15.28	0.147	2.50	#C1-36

Remark:

- 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.
- The analysis 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 SVDO/SVLTE mode(2 transmitters) is exactly the same as the configuration in SVDO/SVLTE+WLAN hotspot (3 transmitters).



Position	Scaled WWAN (voice)				Scaled WLAN			Scaled WWAN + Scaled WLAN	Case No
	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	Plot No	Output Power (dBm)	Scaled WLAN (W/kg)		
Front	CDMA BC0	102	23.00	0.842	198	15.28	0.066	0.908	
	CDMA BC1	79	23.47	1.098	198	15.28	0.066	1.164	
	CDMA BC15	187	22.05	0.999	198	15.28	0.066	1.065	
Back	CDMA BC0	103	23.00	1.156	199	15.28	0.128	1.284	
	CDMA BC1	80	23.47	1.410	199	15.28	0.128	1.538	
	CDMA BC15	181	21.95	1.464	199	15.28	0.128	1.592	
Back (w/ headset)	CDMA BC0	78	23.00	0.874	201	15.28	0.147	1.021	
	CDMA BC1	88	23.47	1.460	201	15.28	0.147	1.607	#C1-37
	CDMA BC15	185	22.05	1.386	201	15.28	0.147	1.533	

Remark:

1. The SAR summation represents the simultaneous transmission of a WWAN voice call and WLAN data transmission.
2. For 1x CDMA (voice) + WLAN (case #C1-37), proceed SPLSR calculation assessment directly since no power reduction apply to this combination



Table 11.4-C2: Body-worn SAR analysis <Step2>

Position	Scaled WWAN (voice)				Scaled WWAN (data)				Scaled WLAN			Scaled WWAN + Scaled WLAN	Case No
	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	Plot No	Output Power (dBm)	Scaled WLAN (W/kg)		
Front	CDMA BC0	102	23.00	0.842	EVDO BC1	93	22.80	0.774	198	15.28	0.066	1.68	#C1-1
	CDMA BC0	214	16.91	0.179	EVDO BC1	93	22.80	0.774	198	15.28	0.066	1.02	-
	CDMA BC0	102	23.00	0.842	EVDO BC1	217	14.63	0.106	198	15.28	0.066	1.01	-
	CDMA BC0	102	23.00	0.842	EVDO BC15	116	22.76	0.928	198	15.28	0.066	1.84	#C1-2
	CDMA BC0	214	16.91	0.179	EVDO BC15	116	22.76	0.928	198	15.28	0.066	1.17	-
	CDMA BC0	102	23.00	0.842	EVDO BC15	218	14.99	0.148	198	15.28	0.066	1.06	-
	CDMA BC1	79	23.47	1.098	EVDO BC1	93	22.80	0.774	198	15.28	0.066	1.94	#C1-3
	CDMA BC1	215	14.22	0.148	EVDO BC1	93	22.80	0.774	198	15.28	0.066	0.99	-
	CDMA BC1	79	23.47	1.098	EVDO BC1	217	14.63	0.106	198	15.28	0.066	1.27	-
	CDMA BC1	79	23.47	1.098	EVDO BC15	116	22.76	0.928	198	15.28	0.066	2.09	#C1-4
	CDMA BC1	215	14.22	0.148	EVDO BC15	116	22.76	0.928	198	15.28	0.066	1.14	-
	CDMA BC1	79	23.47	1.098	EVDO BC15	218	14.99	0.148	198	15.28	0.066	1.31	-
	CDMA BC15	187	22.05	0.999	EVDO BC1	93	22.80	0.774	198	15.28	0.066	1.84	#C1-5
	CDMA BC15	216	14.75	0.230	EVDO BC1	93	22.80	0.774	198	15.28	0.066	1.07	-
	CDMA BC15	187	22.05	0.999	EVDO BC1	217	14.63	0.106	198	15.28	0.066	1.17	-
	CDMA BC15	187	22.05	0.999	EVDO BC15	116	22.76	0.928	198	15.28	0.066	1.99	#C1-6
	CDMA BC15	216	14.75	0.230	EVDO BC15	116	22.76	0.928	198	15.28	0.066	1.22	-
	CDMA BC15	187	22.05	0.999	EVDO BC15	218	14.99	0.148	198	15.28	0.066	1.21	-
	CDMA BC0	102	23.00	0.842	LTE Band 2	126	23.05	0.821	198	15.28	0.066	1.73	#C1-7
	CDMA BC0	214	16.91	0.179	LTE Band 2	126	23.05	0.821	198	15.28	0.066	1.07	-
	CDMA BC0	102	23.00	0.842	LTE Band 2	219	17.99	0.261	198	15.28	0.066	1.17	-
	CDMA BC0	102	23.00	0.842	LTE Band 4	156	22.89	0.815	198	15.28	0.066	1.72	#C1-8
	CDMA BC0	214	16.91	0.179	LTE Band 4	156	22.89	0.815	198	15.28	0.066	1.06	-
	CDMA BC0	102	23.00	0.842	LTE Band 4	220	17.50	0.214	198	15.28	0.066	1.12	-
	CDMA BC1	79	23.47	1.098	LTE Band 2	126	23.05	0.821	198	15.28	0.066	1.99	#C1-9
	CDMA BC1	215	14.22	0.148	LTE Band 2	126	23.05	0.821	198	15.28	0.066	1.04	-
	CDMA BC1	79	23.47	1.098	LTE Band 2	219	17.99	0.261	198	15.28	0.066	1.43	-
	CDMA BC1	79	23.47	1.098	LTE Band 4	156	22.89	0.815	198	15.28	0.066	1.98	#C1-10
	CDMA BC1	215	14.22	0.148	LTE Band 4	156	22.89	0.815	198	15.28	0.066	1.03	-
	CDMA BC1	79	23.47	1.098	LTE Band 4	220	17.50	0.214	198	15.28	0.066	1.38	-
CDMA BC15	187	22.05	0.999	LTE Band 2	126	23.05	0.821	198	15.28	0.066	1.89	#C1-11	
CDMA BC15	216	14.75	0.230	LTE Band 2	126	23.05	0.821	198	15.28	0.066	1.12	-	
CDMA BC15	187	22.05	0.999	LTE Band 2	219	17.99	0.261	198	15.28	0.066	1.33	-	
CDMA BC15	187	22.05	0.999	LTE Band 4	156	22.89	0.815	198	15.28	0.066	1.88	#C1-12	
CDMA BC15	216	14.75	0.230	LTE Band 4	156	22.89	0.815	198	15.28	0.066	1.11	-	
CDMA BC15	187	22.05	0.999	LTE Band 4	220	17.50	0.214	198	15.28	0.066	1.28	-	



Table 11.4-C2: Body-worn SAR analysis <Step2>

Position	Scaled WWAN (voice)				Scaled WWAN (data)				Scaled WLAN			Scaled WWAN + Scaled WLAN	Case No
	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	Plot No	Output Power (dBm)	Scaled WLAN (W/kg)		
Back	CDMA BC0	103	23.00	1.156	EVDO BC1	97	22.75	1.102	199	15.28	0.128	2.39	#C1-13
	CDMA BC0	221	16.91	0.246	EVDO BC1	97	22.75	1.102	199	15.28	0.128	1.48	-
	CDMA BC0	103	23.00	1.156	EVDO BC1	224	14.63	0.161	199	15.28	0.128	1.45	-
	CDMA BC0	103	23.00	1.156	EVDO BC15	117	22.76	0.994	199	15.28	0.128	2.28	#C1-14
	CDMA BC0	221	16.91	0.246	EVDO BC15	117	22.76	0.994	199	15.28	0.128	1.37	-
	CDMA BC0	103	23.00	1.156	EVDO BC15	225	14.99	0.172	199	15.28	0.128	1.46	-
	CDMA BC1	80	23.47	1.410	EVDO BC1	97	22.75	1.102	199	15.28	0.128	2.64	#C1-15
	CDMA BC1	222	14.91	0.164	EVDO BC1	97	22.75	1.102	199	15.28	0.128	1.39	-
	CDMA BC1	80	23.47	1.410	EVDO BC1	224	14.63	0.161	199	15.28	0.128	1.70	#C2-1
	CDMA BC1	80	23.47	1.410	EVDO BC15	117	22.76	0.994	199	15.28	0.128	2.53	#C1-16
	CDMA BC1	222	14.91	0.164	EVDO BC15	117	22.76	0.994	199	15.28	0.128	1.29	-
	CDMA BC1	222	23.47	1.410	EVDO BC15	225	14.99	0.172	199	15.28	0.128	1.71	#C2-2
	CDMA BC15	181	21.95	1.464	EVDO BC1	97	22.75	1.102	199	15.28	0.128	2.69	#C1-17
	CDMA BC15	223	14.28	0.269	EVDO BC1	97	22.75	1.102	199	15.28	0.128	1.50	-
	CDMA BC15	181	21.95	1.464	EVDO BC1	224	14.63	0.161	199	15.28	0.128	1.75	#C2-3
	CDMA BC15	181	21.95	1.464	EVDO BC15	117	22.76	0.994	199	15.28	0.128	2.59	#C1-18
	CDMA BC15	223	14.28	0.269	EVDO BC15	117	22.76	0.994	199	15.28	0.128	1.39	-
	CDMA BC15	181	21.95	1.464	EVDO BC15	225	14.99	0.172	199	15.28	0.128	1.76	#C2-4
	CDMA BC0	103	23.00	1.156	LTE Band 2	127	23.05	1.142	199	15.28	0.128	2.43	#C1-19
	CDMA BC0	221	16.91	0.246	LTE Band 2	127	23.05	1.142	199	15.28	0.128	1.52	-
	CDMA BC0	103	23.00	1.156	LTE Band 2	226	17.99	0.389	199	15.28	0.128	1.67	#C2-5
	CDMA BC0	103	23.00	1.156	LTE Band 4	157	22.89	0.846	199	15.28	0.128	2.13	#C1-20
	CDMA BC0	221	16.91	0.246	LTE Band 4	157	22.89	0.846	199	15.28	0.128	1.22	-
	CDMA BC0	103	23.00	1.156	LTE Band 4	227	17.50	0.243	199	15.28	0.128	1.53	-
	CDMA BC1	80	23.47	1.410	LTE Band 2	127	23.05	1.142	199	15.28	0.128	2.68	#C1-21
	CDMA BC1	222	14.91	0.164	LTE Band 2	127	23.05	1.142	199	15.28	0.128	1.43	-
	CDMA BC1	80	23.47	1.410	LTE Band 2	226	17.99	0.389	199	15.28	0.128	1.93	#C2-6
	CDMA BC1	80	23.47	1.410	LTE Band 4	157	22.89	0.846	199	15.28	0.128	2.38	#C1-22
	CDMA BC1	222	14.91	0.164	LTE Band 4	157	22.89	0.846	199	15.28	0.128	1.14	-
	CDMA BC1	80	23.47	1.410	LTE Band 4	227	17.50	0.243	199	15.28	0.128	1.78	#C2-7
CDMA BC15	181	21.95	1.464	LTE Band 2	127	23.05	1.142	199	15.28	0.128	2.73	#C1-23	
CDMA BC15	223	14.28	0.269	LTE Band 2	127	23.05	1.142	199	15.28	0.128	1.54	-	
CDMA BC15	181	21.95	1.464	LTE Band 2	226	17.99	0.389	199	15.28	0.128	1.98	#C2-8	
CDMA BC15	181	21.95	1.464	LTE Band 4	157	22.89	0.846	199	15.28	0.128	2.44	#C1-24	
CDMA BC15	223	14.28	0.269	LTE Band 4	157	22.89	0.846	199	15.28	0.128	1.24	-	
CDMA BC15	181	21.95	1.464	LTE Band 4	227	17.50	0.243	199	15.28	0.128	1.84	#C2-9	

Table 11.4-C2: Body-worn SAR analysis <Step2>

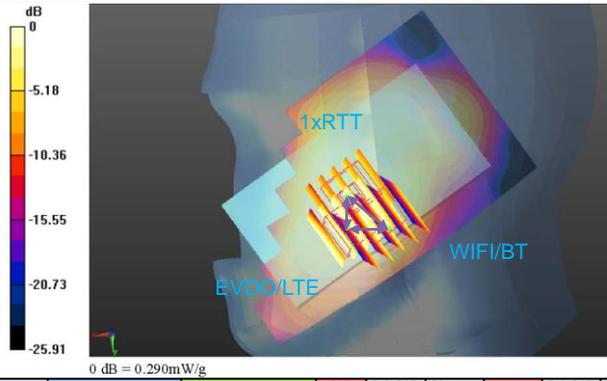
Position	Scaled WWAN (voice)			Scaled WWAN (data)				Scaled WLAN			Scaled WWAN + Scaled WLAN	Case No	
	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	WWAN Band	Plot No	Output Power (dBm)	Scaled WWAN (W/kg)	Plot No	Output Power (dBm)			Scaled WLAN (W/kg)
Back (w/ headset)	CDMA BC0	78	23.00	0.874	EVDO BC1	99	22.75	1.056	201	15.28	0.147	2.08	#C1-25
	CDMA BC0	228	16.91	0.150	EVDO BC1	99	22.75	1.056	201	15.28	0.147	1.35	-
	CDMA BC0	78	23.00	0.874	EVDO BC1	231	14.00	0.159	201	15.28	0.147	1.18	-
	CDMA BC0	78	23.00	0.874	EVDO BC15	191	22.76	0.926	201	15.28	0.147	1.95	#C1-26
	CDMA BC0	228	16.91	0.150	EVDO BC15	191	22.76	0.926	201	15.28	0.147	1.22	-
	CDMA BC0	78	23.00	0.874	EVDO BC15	232	14.99	0.158	201	15.28	0.147	1.18	-
	CDMA BC1	88	23.47	1.460	EVDO BC1	99	22.75	1.056	201	15.28	0.147	2.66	#C1-27
	CDMA BC1	229	14.91	0.169	EVDO BC1	99	22.75	1.056	201	15.28	0.147	1.37	-
	CDMA BC1	88	23.47	1.460	EVDO BC1	231	14.00	0.159	201	15.28	0.147	1.77	#C2-10
	CDMA BC1	88	23.47	1.460	EVDO BC15	191	22.76	0.926	201	15.28	0.147	2.53	#C1-28
	CDMA BC1	229	14.91	0.169	EVDO BC15	191	22.76	0.926	201	15.28	0.147	1.24	-
	CDMA BC1	88	23.47	1.460	EVDO BC15	232	14.99	0.158	201	15.28	0.147	1.77	#C1-11
	CDMA BC15	185	22.05	1.386	EVDO BC1	99	22.75	1.056	201	15.28	0.147	2.59	#C1-29
	CDMA BC15	230	14.75	0.267	EVDO BC1	99	22.75	1.056	201	15.28	0.147	1.47	-
	CDMA BC15	185	22.05	1.386	EVDO BC1	231	14.00	0.159	201	15.28	0.147	1.69	#C2-12
	CDMA BC15	185	22.05	1.386	EVDO BC15	191	22.76	0.926	201	15.28	0.147	2.46	#C1-30
	CDMA BC15	230	14.75	0.267	EVDO BC15	191	22.76	0.926	201	15.28	0.147	1.34	-
	CDMA BC15	185	22.05	1.386	EVDO BC15	232	14.99	0.158	201	15.28	0.147	1.69	#C2-13
	CDMA BC0	78	23.00	0.874	LTE Band 2	130	23.05	1.081	201	15.28	0.147	2.10	#C1-31
	CDMA BC0	228	16.91	0.150	LTE Band 2	130	23.05	1.081	201	15.28	0.147	1.38	-
	CDMA BC0	78	23.00	0.874	LTE Band 2	233	17.99	0.363	201	15.28	0.147	1.38	-
	CDMA BC0	78	23.00	0.874	LTE Band 4	160	22.89	0.970	201	15.28	0.147	1.99	#C1-32
	CDMA BC0	228	16.91	0.150	LTE Band 4	160	22.89	0.970	201	15.28	0.147	1.27	-
	CDMA BC0	78	23.00	0.874	LTE Band 4	234	17.50	0.232	201	15.28	0.147	1.25	-
	CDMA BC1	88	23.47	1.460	LTE Band 2	130	23.05	1.081	201	15.28	0.147	2.69	#C1-33
	CDMA BC1	229	14.91	0.169	LTE Band 2	130	23.05	1.081	201	15.28	0.147	1.40	-
	CDMA BC1	88	23.47	1.460	LTE Band 2	233	17.99	0.363	201	15.28	0.147	1.97	#C2-14
	CDMA BC1	88	23.47	1.460	LTE Band 4	160	22.89	0.970	201	15.28	0.147	2.58	#C1-34
	CDMA BC1	229	14.91	0.169	LTE Band 4	160	22.89	0.970	201	15.28	0.147	1.29	-
	CDMA BC1	88	23.47	1.460	LTE Band 4	234	17.50	0.232	201	15.28	0.147	1.84	#C2-15
	CDMA BC15	185	22.05	1.386	LTE Band 2	130	23.05	1.081	201	15.28	0.147	2.61	#C1-35
	CDMA BC15	230	14.75	0.267	LTE Band 2	130	23.05	1.081	201	15.28	0.147	1.50	-
CDMA BC15	185	22.05	1.386	LTE Band 2	233	17.99	0.363	201	15.28	0.147	1.90	#C2-16	
CDMA BC15	185	22.05	1.386	LTE Band 4	160	22.89	0.970	201	15.28	0.147	2.50	#C1-36	
CDMA BC15	230	14.75	0.267	LTE Band 4	160	22.89	0.970	201	15.28	0.147	1.38	-	
CDMA BC15	185	22.05	1.386	LTE Band 4	234	17.50	0.232	201	15.28	0.147	1.77	#C2-17	

Note:

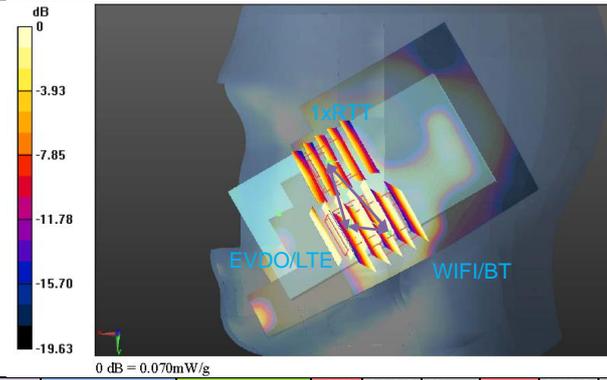
1. Row number xx1, i.e. #C1-27, is sum-SAR with CDMA and EVDO both full power. Sum-SAR > 1.6 W/kg, but not normal operating mode.
2. Row number xx2, i.e. #Cx-x, is sum-SAR with CDMA reduced power and EVDO full power. Sum-SAR < 1.6 W/kg means excluded.
3. Row number xx3, i.e. #C2-10, is sum-SAR with CDMA full power and EVDO reduced power. Sum-SAR > 1.6 W/kg means do SPLSR (see page 57).

11.5 Simultaneous analysis - SPLSR calculation

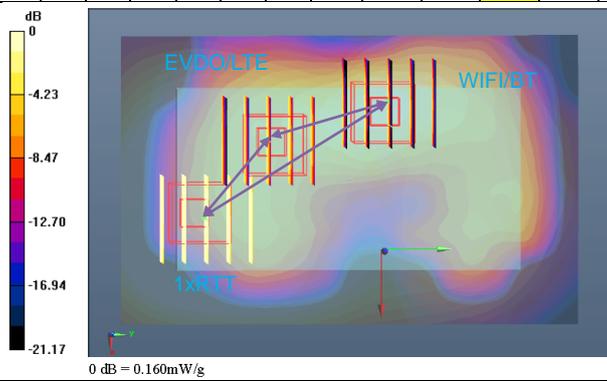
Case No	Position	SVDO/SVLTE	CDMA BC0	EVDO BC15	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#202	#26	#194	Sum	CDMA+EVDO	CDMA+EVDO	CDMA+EVDO	CDMA+WIFI	CDMA+WIFI	CDMA+WIFI	EVDO+WIFI	EVDO+WIFI	EVDO+WIFI	
#A2-1	Right Cheek	1xRTT (17dbm)	0.14 W/kg	1.277 W/kg	0.287 W/kg	1.70	1.42	1.6	0.88	0.43	2.7	0.16	1.56	2.1	0.74	Required
		EVDO (23dbm)														
		peak ordinate (m)	0.0669	-0.275	-0.171	0.0679	-0.259	-0.169	0.0469	-0.257	-0.171					



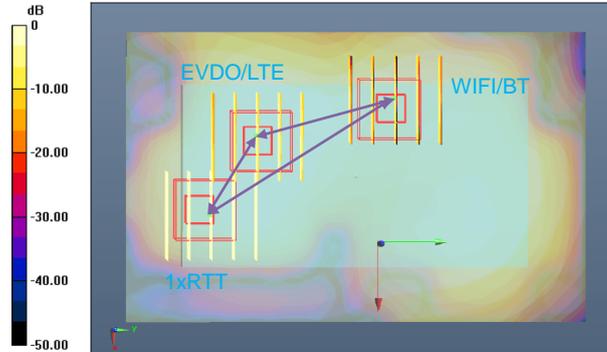
Case No	Position	SVDO/SVLTE	CDMA BC15	EVDO BC15	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#204	#26	#194	Sum	CDMA+EVDO	CDMA+EVDO	EVDO+CDMA	CDMA+WIFI	CDMA+WIFI	CDMA+WIFI	EVDO+WIFI	EVDO+WIFI	EVDO+WIFI	
#A2-2	Right Cheek	1xRTT (15dbm)	0.063 W/kg	1.277 W/kg	0.287 W/kg	1.63	1.34	3.7	0.37	0.35	4.9	0.07	1.56	2.1	0.74	Required
		EVDO (23dbm)														
		peak ordinate (m)	0.0787	-0.294	-0.167	0.0679	-0.259	-0.169	0.0469	-0.257	-0.171					



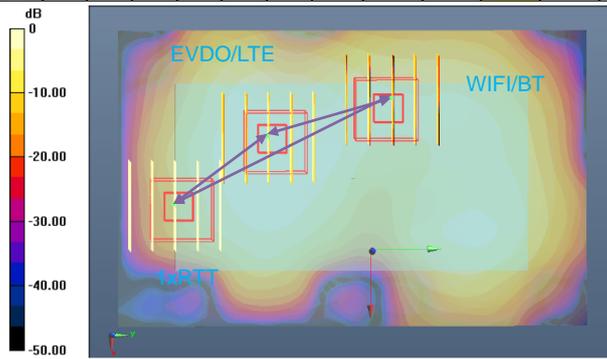
Case No	Position	SVDO/SVLTE	CDMA BC1	EVDO BC1	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#80	#224	#199	Sum	CDMA+EVDO	CDMA+EVDO	CDMA+EVDO	CDMA+WIFI	CDMA+WIFI	CDMA+WIFI	EVDO+WIFI	EVDO+WIFI	EVDO+WIFI	
#C2-1	Back	1xRTT (23.5dbm)	1.41 W/kg	0.161 W/kg	0.128 W/kg	1.70	1.57	3.6	0.43	1.54	7.4	0.21	0.29	4.4	0.07	Required
		EVDO (15dbm)														
		peak ordinate (m)	-0.0035	-0.0525	-0.202	-0.032	-0.03	-0.202	-0.0375	0.0135	-0.202					



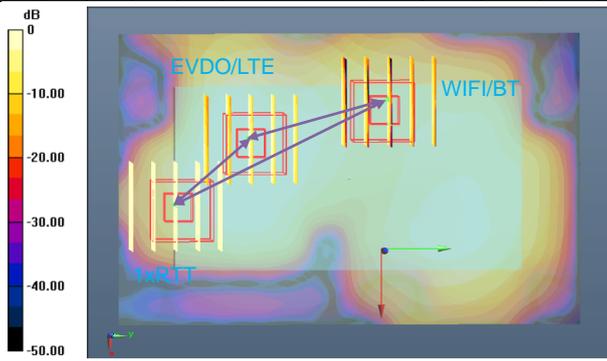
Case No	Position	SVDO/SVLTE	CDMA BC1	EVDO BC15	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#80	#225	#199	Sum	CDMA+EVDO	CDMA+EVDO	EVDO+CDMA	CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	EVDO+Wifi	EVDO+Wifi	EVDO+Wifi	
#C2-2	Back	1xRTT (23.5dbm) EVDO (15dbm)	1.41 W/kg	0.172 W/kg	0.128 W/kg	1.71	1.58	3.3	0.48	1.54	7.4	0.21	0.30	5.0	0.06	Required
		peak ordinate (m)	-0.0035	-0.0525	-0.202	-0.032	-0.036	-0.202	-0.0375	0.0135	-0.202					



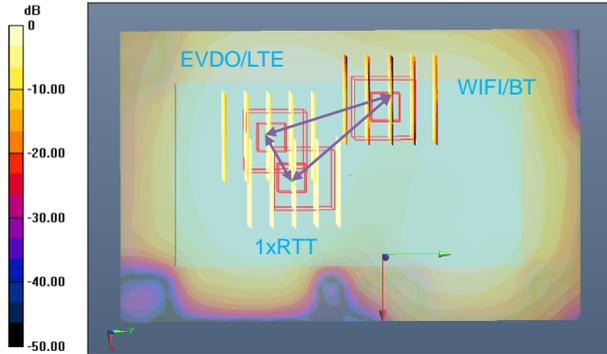
Case No	Position	SVDO/SVLTE	CDMA BC15	EVDO BC1	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#181	#224	#199	Sum	CDMA+EVDO	CDMA+EVDO	CDMA+CDMA	CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	EVDO+Wifi	EVDO+Wifi	EVDO+Wifi	
#C2-3	Back	1xRTT (22.5dbm) EVDO (15dbm)	1.464 W/kg	0.161 W/kg	0.128 W/kg	1.75	1.63	4.1	0.40	1.59	8.2	0.19	0.29	4.4	0.07	Required
		peak ordinate (m)	-0.008	-0.063	-0.202	-0.032	-0.03	-0.202	-0.0375	0.0135	-0.202					



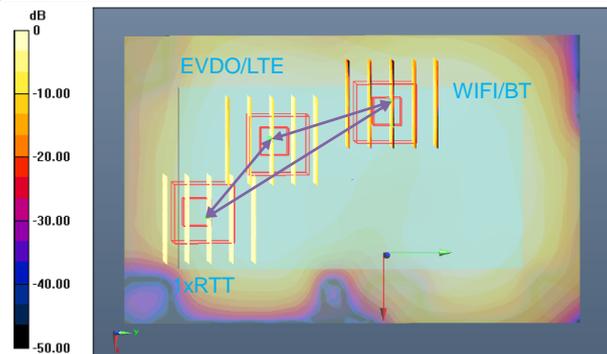
Case No	Position	SVDO/SVLTE	CDMA BC15	EVDO BC15	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#181	#225	#199	Sum	CDMA+EVDO	CDMA+EVDO	EVDO+CDMA	CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	EVDO+Wifi	EVDO+Wifi	EVDO+Wifi	
#C2-4	Back	1xRTT (22.5dbm) EVDO (15dbm)	1.464 W/kg	0.172 W/kg	0.128 W/kg	1.76	1.64	3.6	0.45	1.59	8.2	0.19	0.30	5.0	0.06	Required
		peak ordinate (m)	-0.008	-0.063	-0.202	-0.032	-0.036	-0.202	-0.0375	0.0135	-0.202					



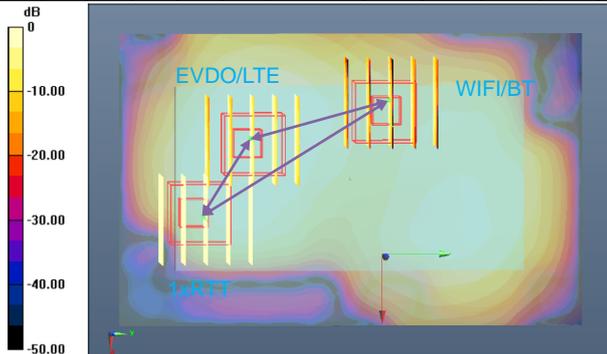
Case No	Position	SVDO/SVLTE	CDMA BC0	LTE Band 2	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan						
		Power setting	#103	#226	#199	Sum	CDMA+LTE	CDMA+LTE	CDMA+LTE	CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	LTE+Wifi	LTE+Wifi								
#C2-5	Back	1XRTT (23.5dbm)	1.156 W/kg			0.389 W/kg			0.128 W/kg			1.67	1.55	1.9	0.82	1.28	4.1	0.31	0.52	4.4	0.12	Required
		LTE (18.5dbm)																				
		peak ordinate (m)	-0.0155	-0.021	-0.203	-0.032	-0.03	-0.202	-0.0375	0.0135	-0.202											



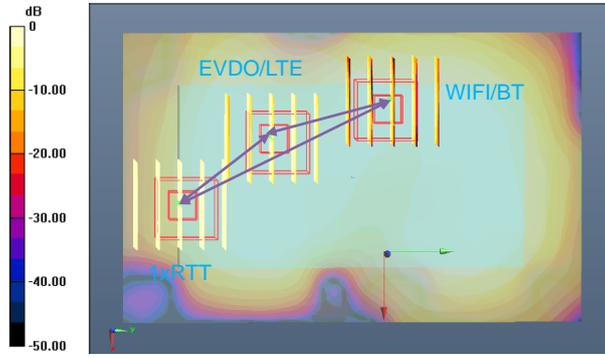
Case No	Position	SVDO/SVLTE	CDMA BC1	LTE Band 2	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan						
		Power setting	#80	#226	#199	Sum	CDMA+LTE	CDMA+LTE	CDMA+LTE	CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	LTE+Wifi	LTE+Wifi								
#C2-6	Back	1XRTT (23.5dbm)	1.41 W/kg			0.389 W/kg			0.128 W/kg			1.93	1.8	3.6	0.50	1.54	7.4	0.21	0.52	4.4	0.12	Required
		LTE (18.5dbm)																				
		peak ordinate (m)	-0.0035	-0.0525	-0.202	-0.032	-0.03	-0.202	-0.0375	0.0135	-0.202											



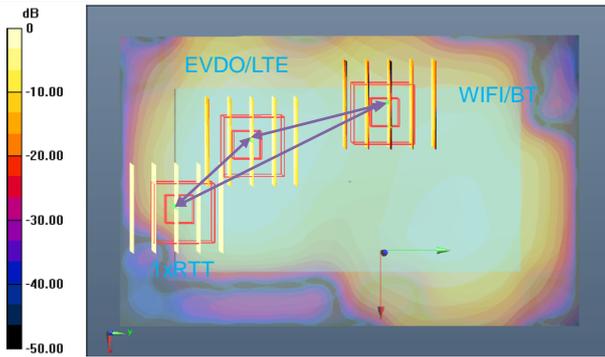
Case No	Position	SVDO/SVLTE	CDMA BC1	LTE Band 4	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan						
		Power setting	#80	#227	#199	Sum	CDMA+LTE	CDMA+LTE	CDMA+LTE	CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	LTE+Wifi	LTE+Wifi								
#C2-7	Back	1XRTT (23.5dbm)	1.41 W/kg			0.243 W/kg			0.128 W/kg			1.78	1.65	3.3	0.50	1.54	7.4	0.21	0.37	5.0	0.07	Required
		LTE (18dbm)																				
		peak ordinate (m)	-0.0035	-0.0525	-0.202	-0.032	-0.036	-0.202	-0.0375	0.0135	-0.202											



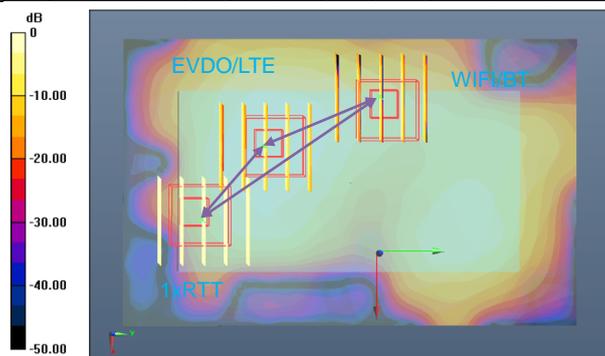
Case No	Position	SVDO/SVLTE	CDMA BC15	LTE Band 2	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#181	#226	#199	Sum	CDMA+LTE	CDMA+LTE	CDMA+LTE	CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	LTE+Wifi	LTE+Wifi	LTE+Wifi	
#C2-8	Back	1XRTT (22.5dbm) LTE (18.5dbm)	1.464 W/kg	0.389 W/kg	0.128 W/kg	1.98	1.85	4.1	0.45	1.59	8.2	0.19	0.52	4.4	0.12	Required
		peak ordinate (m)	-0.008	-0.063	-0.202	-0.032	-0.03	-0.202	-0.0375	0.0135	-0.202					



Case No	Position	SVDO/SVLTE	CDMA BC15	LTE Band 4	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#181	#227	#199	Sum	CDMA+LTE	CDMA+LTE	CDMA+LTE	CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	LTE+Wifi	LTE+Wifi	LTE+Wifi	
#C2-9	Back	1XRTT (22.5dbm) LTE (18dbm)	1.464 W/kg	0.243 W/kg	0.128 W/kg	1.84	1.71	3.6	0.47	1.59	8.2	0.19	0.37	5.0	0.07	Required
		peak ordinate (m)	-0.008	-0.063	-0.202	-0.032	-0.036	-0.202	-0.0375	0.0135	-0.202					

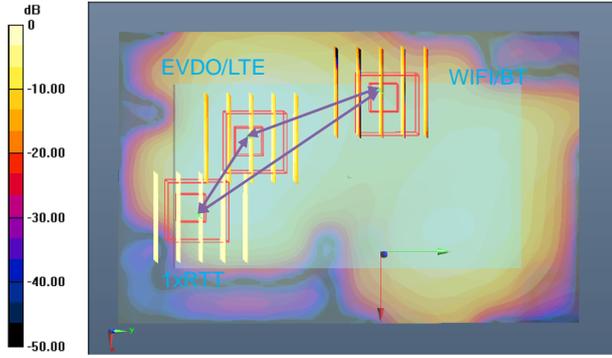


Case No	Position	SVDO/SVLTE	CDMA BC1	EVDO BC1	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#88	#231	#201	Sum	CDMA+EVDO	CDMA+EVDO	CDMA+EVDO	CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	EVDO+Wifi	EVDO+Wifi	EVDO+Wifi	
#C2-10	Back (w/ headset)	1XRTT (23.5dbm) EVDO (15dbm)	1.46 W/kg	0.159 W/kg	0.147 W/kg	1.77	1.62	3.5	0.46	1.61	7.9	0.20	0.31	4.6	0.07	Required
		peak ordinate (m)	-0.0035	-0.054	-0.202	-0.0305	-0.0315	-0.202	-0.0485	0.0105	-0.202					

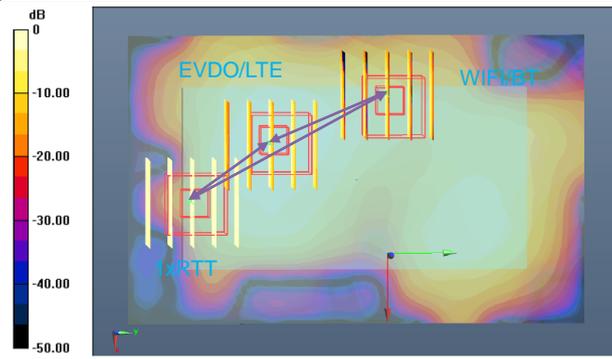




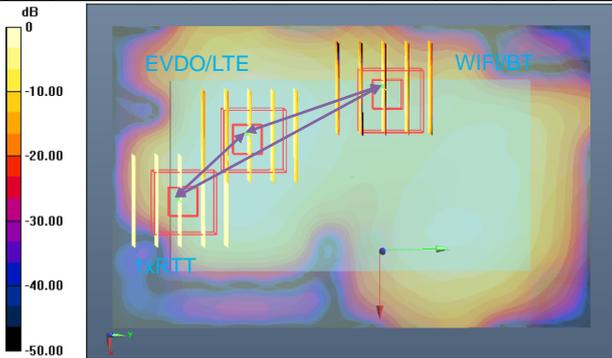
Case No	Position	SVDO/SVLTE	CDMA BC1			EVDO BC15			WLAN 2.4G			SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#88			#232			#201			Sum	CDMA+ EVDO	CDMA+ EVDO	CDMA+ EVDO	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi		
#C2-11	Back (w/ headset)	1XRTT (23.5dbm)	1.46 W/kg			0.158 W/kg			0.147 W/kg			1.77	1.62	3.4	0.48	1.61	7.9	0.20	0.30	4.9	0.06	Required
		EVDO (15dbm)																				
		peak ordinate (m)	-0.0035	-0.054	-0.202	-0.032	-0.036	-0.202	-0.0485	0.0105	-0.202											



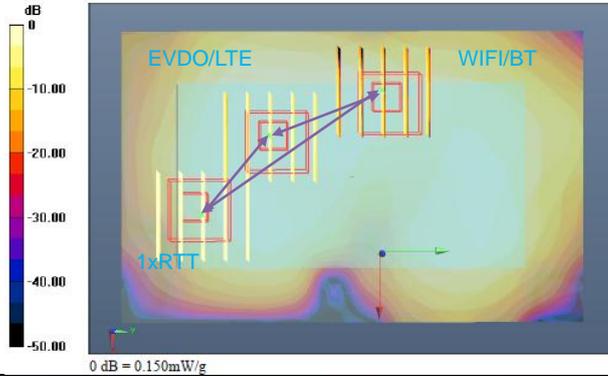
Case No	Position	SVDO/SVLTE	CDMA BC15			EVDO BC1			WLAN 2.4G			SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#185			#231			#201			Sum	CDMA+ EVDO	CDMA+ EVDO	CDMA+ EVDO	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi		
#C2-12	Back (w/ headset)	1XRTT (22.5dbm)	1.386 W/kg			0.159 W/kg			0.147 W/kg			1.69	1.55	3.5	0.44	1.53	8.1	0.19	0.31	4.6	0.07	Required
		EVDO (15dbm)																				
		peak ordinate (m)	-0.0095	-0.06	-0.202	-0.035	-0.0315	-0.202	-0.0485	0.0105	-0.202											



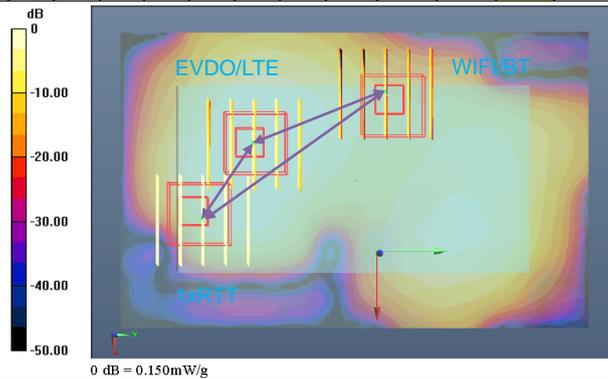
Case No	Position	SVDO/SVLTE	CDMA BC15			EVDO BC15			WLAN 2.4G			SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#185			#232			#201			Sum	CDMA+ EVDO	CDMA+ EVDO	CDMA+ EVDO	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi		
#C2-13	Back (w/ headset)	1XRTT (22.5dbm)	1.386 W/kg			0.158 W/kg			0.147 W/kg			1.69	1.54	3.3	0.47	1.53	8.1	0.19	0.31	4.9	0.06	Required
		EVDO (15dbm)																				
		peak ordinate (m)	-0.0095	-0.06	-0.202	-0.032	-0.036	-0.202	-0.0485	0.0105	-0.202											



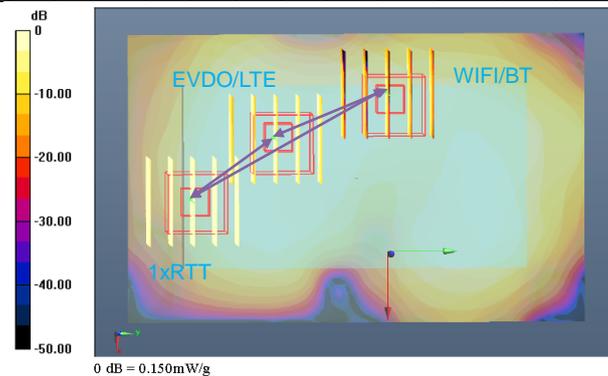
Case No	Position	SVDO/SVLTE	CDMA BC1	LTE Band 2	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan		
		Power setting	#88	#233	#201	Sum	CDMA+ EVDO	CDMA+ EVDO	CDMA+ EVDO	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi		
#C2-14	Back (w/ headset)	1XRTT (23.5dbm)	1.46 W/kg			0.363 W/kg	0.147 W/kg	1.97	1.82	3.7	0.49	1.61	7.9	0.20	0.51	4.4	0.12	Required
		EVDO (18.5dbm)																
		peak ordinate (m)	-0.0035	-0.054	-0.202	-0.032	-0.03	-0.202	-0.0485	0.0105	-0.202							



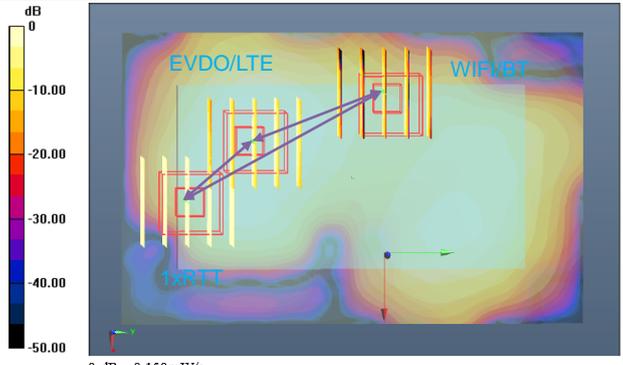
Case No	Position	SVDO/SVLTE	CDMA BC1	LTE Band 4	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan		
		Power setting	#88	#234	#201	Sum	CDMA+ LTE	CDMA+ LTE	CDMA+ LTE	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	LTE + Wifi	LTE + Wifi	LTE + Wifi			
#C2-15	Back (w/ headset)	1XRTT (23.5dbm)	1.46 W/kg			0.232 W/kg	0.147 W/kg	1.84	1.69	3.2	0.53	1.61	7.9	0.20	0.38	5.0	0.08	Required
		LTE (18.5dbm)																
		peak ordinate (m)	-0.0035	-0.054	-0.202	-0.0305	-0.036	-0.202	-0.0485	0.0105	-0.202							



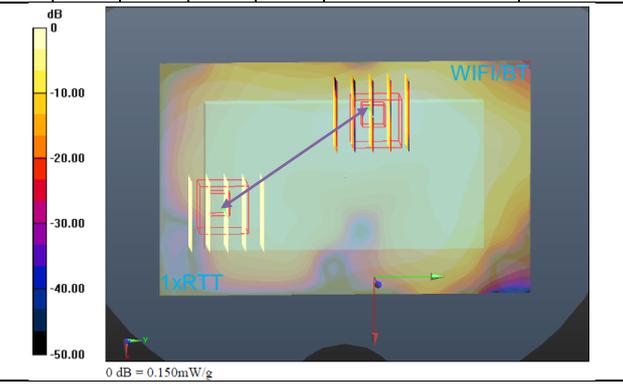
Case No	Position	SVDO/SVLTE	CDMA BC15	LTE Band 2	WLAN 2.4G	SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan		
		Power setting	#185	#233	#201	Sum	CDMA+ LTE	CDMA+ LTE	CDMA+ LTE	CDMA+ Wifi	CDMA+ Wifi	CDMA+ Wifi	LTE + Wifi	LTE + Wifi	LTE + Wifi			
#C2-16	Back (w/ headset)	1XRTT (22.5dbm)	1.386 W/kg			0.363 W/kg	0.147 W/kg	1.90	1.75	3.8	0.47	1.53	8.1	0.19	0.51	4.4	0.12	Required
		LTE (18.5dbm)																
		peak ordinate (m)	-0.0095	-0.06	-0.202	-0.032	-0.03	-0.202	-0.0485	0.0105	-0.202							



Case No	Position	SVDO/SVLTE	CDMA BC15			LTE Band 4			WLAN 2.4G			SAR (W/kg)	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#185			#234			#201			Sum	CDMA+LTE	CDMA+LTE	CDMA+LTE	CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	LTE+Wifi	LTE+Wifi	LTE+Wifi	
#C2-17	Back (w/ headset)	1XRTT (22.5dbm)	1.386 W/kg			0.232 W/kg			0.147 W/kg			1.77	1.62	3.2	0.51	1.53	8.1	0.19	0.38	5.0	0.08	Required
		LTE (18dbm)																				
		peak ordinate (m)	-0.0095	-0.06	-0.202	-0.0305	-0.036	-0.202	-0.0485	0.0105	-0.202											



Case No	Position	CDMA	CDMA BC1			WLAN 2.4G			Pair SAR (W/kg)	Distance (cm)	SPLSR	Volume Scan
		Power setting	#88			#201			CDMA+Wifi	CDMA+Wifi	CDMA+Wifi	
#C1-37	Back (w/ headset)	1XRTT (23.5dbm)	1.46 W/kg			0.147 W/kg			1.61	7.9	0.20	Not Required
		LTE (18dbm)										
		peak ordinate (m)	-0.0035	-0.054	-0.202	-0.0485	0.0105	-0.202				



Note:

1. Per KDB 447498, if SPLSR < 0.3, volume scan is not necessary.
2. Per KDB 447498, if SPLSR > 0.3, volume scan is necessary.
3. The sum values based on the measured SAR values scaled to account for tune-up tolerances were used.



11.6 Volume scan test results

Case No	Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Headset	Output Power (dBm)	Tune-up Limit (dBm)	SAR _{1g} (W/kg)	Scaling Factor	Scaled SAR _{1g} (W/kg)	Multi Band SAR _{1g} (W/kg)	Remark
#A2-1	202	CDMA BC0	RC3 SO55	Right Cheek	-	1013	-	16.9	17	0.113	1.023	0.116	1.49	Pass
	26	CDMA BC15	RTAP 153.6		-	425	-	22.43	23	1.13	1.140	1.288		
	194	WLAN 2.4G	802.11b		-	425	-	15.28	15.5	0.299	1.052	0.315		
#A2-1	204	CDMA BC15	RC3 SO55	Right Cheek	-	425	-	14.88	15	0.14	1.028	0.144	1.46	Pass
	26	CDMA BC15	RTAP 153.6		-	1	-	22.43	23	1.13	1.140	1.288		
	194	WLAN 2.4G	802.11b		-	425	-	15.28	15.5	0.299	1.052	0.315		
#C2-1	80	CDMA BC1	RC3 SO32	Back	1	25	-	23.47	23.5	1.31	1.007	1.319	1.42	Pass
	224	CDMA BC1	RTAP 153.6		1	600	-	14.63	15	0.143	1.089	0.156		
	199	WLAN 2.4G	802.11b		1	1	-	15.28	15.5	0.149	1.052	0.157		
#C2-2	80	CDMA BC1	RC3 SO32	Back	1	25	-	23.47	23.5	1.31	1.007	1.319	1.42	Pass
	225	CDMA BC15	RTAP 153.6		1	875	-	14.99	15	0.163	1.002	0.163		
	199	WLAN 2.4G	802.11b		1	1	-	15.28	15.5	0.149	1.052	0.157		
#C2-3	80	CDMA BC1	RC3 SO32	Back	1	25	-	23.47	23.5	1.31	1.007	1.319	1.45	Pass
	226	LTE Band 2	1RB, 0 offset		1	18900	-	17.99	18.5	0.373	1.125	0.419		
	199	WLAN 2.4G	802.11b		1	1	-	15.28	15.5	0.149	1.052	0.157		
#C2-4	80	CDMA BC1	RC3 SO32	Back	1	25	-	23.47	23.5	1.31	1.007	1.319	1.4	Pass
	227	LTE Band 4	1RB, 0 offset		1	20175	-	17.5	18	0.176	1.122	0.197		
	199	WLAN 2.4G	802.11b		1	1	-	15.28	15.5	0.149	1.052	0.157		
#C2-5	88	CDMA BC1	RC3 SO32	Back	1	25	V	23.47	23.5	1.31	1.007	1.319	1.39	Pass
	231	CDMA BC1	RTAP 153.6		1	25	V	14	15	0.134	1.259	0.169		
	201	WLAN 2.4G	802.11b		1	1	V	15.28	15.5	0.169	1.052	0.178		
#C2-6	88	CDMA BC1	RC3 SO32	Back	1	25	V	23.47	23.5	1.31	1.007	1.319	1.38	Pass
	232	CDMA BC15	RTAP 153.6		1	875	V	14.99	15	0.151	1.002	0.151		
	201	WLAN 2.4G	802.11b		1	1	V	15.28	15.5	0.169	1.052	0.178		
#C2-7	88	CDMA BC1	RC3 SO32	Back	1	25	V	23.47	23.5	1.31	1.007	1.319	1.41	Pass
	233	LTE Band 2	1RB, 0 offset		1	18900	V	17.99	18.5	0.339	1.125	0.381		
	201	WLAN 2.4G	802.11b		1	1	V	15.28	15.5	0.169	1.052	0.178		
#C2-8	88	CDMA BC1	RC3 SO32	Back	1	25	V	23.47	23.5	1.31	1.007	1.319	1.37	Pass
	234	LTE Band 4	1RB, 0 offset		1	20175	V	17.5	18	0.175	1.122	0.196		
	201	WLAN 2.4G	802.11b		1	1	V	15.28	15.5	0.169	1.052	0.178		
#C2-9	103	CDMA BC0	RC3 SO32	Back	1	1013	-	23	23.5	1.05	1.122	1.178	1.54	Pass
	226	LTE Band 2	1RB, 0 offset		1	18900	-	17.99	18.5	0.373	1.125	0.419		
	199	WLAN 2.4G	802.11b		1	1	-	15.28	15.5	0.149	1.052	0.157		
#C2-10	181	CDMA BC15	RC3 SO32	Back	1	25	-	21.95	22.5	1.31	1.135	1.487	1.56	Pass
	224	CDMA BC1	RTAP 153.6		1	600	-	14.63	15	0.143	1.089	0.156		
	199	WLAN 2.4G	802.11b		1	1	-	15.28	15.5	0.149	1.052	0.157		
#C2-11	181	CDMA BC15	RC3 SO32	Back	1	25	-	21.95	22.5	1.31	1.135	1.487	1.56	Pass
	225	CDMA BC15	RTAP 153.6		1	875	-	14.99	15	0.163	1.002	0.163		
	199	WLAN 2.4G	802.11b		1	1	-	15.28	15.5	0.149	1.052	0.157		
#C2-12	181	CDMA BC15	RC3 SO32	Back	1	25	-	21.95	22.5	1.31	1.135	1.487	1.58	Pass
	226	LTE Band 2	1RB, 0 offset		1	18900	-	17.99	18.5	0.373	1.125	0.419		
	199	WLAN 2.4G	802.11b		1	1	-	15.28	15.5	0.149	1.052	0.157		
#C2-13	181	CDMA BC15	RC3 SO32	Back	1	25	-	21.95	22.5	1.31	1.135	1.487	1.54	Pass
	227	LTE Band 4	1RB, 0 offset		1	20175	-	17.5	18	0.176	1.122	0.197		
	199	WLAN 2.4G	802.11b		1	1	-	15.28	15.5	0.149	1.052	0.157		
#C2-14	185	CDMA BC15	RC3 SO32	Back	1	875	V	22.05	22.5	1.3	1.109	1.442	1.49	Pass
	231	CDMA BC1	RTAP 153.6		1	25	V	14	15	0.134	1.259	0.169		
	201	WLAN 2.4G	802.11b		1	1	V	15.28	15.5	0.169	1.052	0.178		
#C2-15	185	CDMA BC15	RC3 SO32	Back	1	875	V	22.05	22.5	1.3	1.109	1.442	1.49	Pass
	232	CDMA BC15	RTAP 153.6		1	875	V	14.99	15	0.151	1.002	0.151		
	201	WLAN 2.4G	802.11b		1	1	V	15.28	15.5	0.169	1.052	0.178		
#C2-16	185	CDMA BC15	RC3 SO32	Back	1	875	V	22.05	22.5	1.3	1.109	1.442	1.51	Pass
	233	LTE Band 2	1RB, 0 offset		1	18900	V	17.99	18.5	0.339	1.125	0.381		
	201	WLAN 2.4G	802.11b		1	1	V	15.28	15.5	0.169	1.052	0.178		
#C2-17	185	CDMA BC15	RC3 SO32	Back	1	875	V	22.05	22.5	1.3	1.109	1.442	1.48	Pass
	234	LTE Band 4	1RB, 0 offset		1	20175	V	17.5	18	0.175	1.122	0.196		
	201	WLAN 2.4G	802.11b		1	1	V	15.28	15.5	0.169	1.052	0.178		

Note:

1. The worst configuration on each position is used for the volume scan.
2. "V" in the headset column means the headset is plugged during SAR testing.
3. The scaling factor is applied in SEMCAD software in multi-band SAR combination procedure.
4. The extended volumes of volume scan are all 104mm*160mm*30mm for each plot, where the EUT projection area is 65.6mm*124mm. The scanning area enclosed the entire EUT projection onto the phantom.

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12. Uncertainty Assessment

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A 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 12.1 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 12.2 Uncertainty Budget of DASY for frequency range 300 MHz to 3 GHz



13. 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 v04, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", November 2009
- [8] FCC KDB 447498 D02 v02, "SAR Measurement Procedures for USB Dongle Transmitters", November 2009
- [9] FCC KDB 616217 D01 v01r01, "SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens", November 2009
- [10] FCC KDB 616217 D03 v01, "SAR Evaluation Considerations for Laptop/Notebook/Netbook and Tablet Computers", November 2009
- [11] FCC KDB 648474 D01 v01r05, "SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas", September 2008
- [12] FCC KDB 941225 D01 v02, "SAR Measurement Procedures for 3G Devices – CDMA 2000 / Ev-Do / WCDMA / HSDPA / HSPA", October 2007
- [13] FCC KDB 941225 D02 v02 "3GPP R6 HSPA and R7 HSPA+ SAR Guidance", December 2009.
- [14] FCC KDB 941225 D03 v01, "Recommended SAR Test Reduction Procedures for GSM / GPRS / EDGE", December 2008
- [15] FCC KDB 941225 D04 v01, "Evaluating SAR for GSM/(E)GPRS Dual Transfer Mode", January 27 2010
- [16] FCC KDB 941225 D05 v01, "SAR Test Considerations for LTE Handsets and Data Modems", December 15 2010
- [17] FCC KDB 941225 D06 v01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", April 2011
- [18] FCC KDB 388624 D02, "Permit But Ask List", December 2011



Appendix A. Plots of System Performance Check

The plots are shown as follows.



Appendix B. Plots of SAR Measurement

The plots are shown as follows.



Appendix C. DASYS Calibration Certificate

The DASYS calibration certificates are shown as follows.