



**FCC OET BULLETIN 65 SUPPLEMENT C 01-01
IEEE STD 1528:2003**

SAR EVALUATION REPORT

For
Cellular/PCS BC 10 CDMA and LTE Phone with Bluetooth and WLAN

**MODEL: LS840, LGLS840 and LG-LS840
FCC ID: ZNFLS840**

**REPORT NUMBER: 11U14124-5A
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Prepared for
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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	November 21, 2011	Initial Issue	--
A	December 2, 2011	Updated report based on reviewer's comments. 1. Sec. 5.8: Corrected typo and deleted duplicate item. 2. Sec. 10.1: Updated 1x advanced output power parameters setting.	Sunny Shih

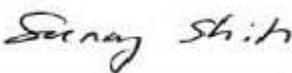
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1. Attestation of Test Results

Applicant:	LG ELECTRONICS MOBILECOMM U.S.A., INC.		
EUT description:	Cellular/PCS BC10 CDMA and LTE Band 25 Phone with Bluetooth and WLAN		
Model numbers:	LS840, LGLS840 and LG-LS840		
Device category:	Portable devices		
Exposure category:	General Population/Uncontrolled Exposure		
Date tested:	November 1 - 15, 2011		
FCC Rule Parts	Freq. Range [MHz]	Highest 1-g SAR (W/kg)	Limit (W/kg)
22	824-849	Head: 0.71 W/kg (Left Touch) Body: 0.76 W/kg (Rear w/ 10 mm distance) Hotspot: 0.67 W/kg (Rear w/ 10 mm distance)	1.6
90	817.9-823.1	Head: 0.62 W/kg (Left Touch) Body: 0.78 W/kg (Rear w/ 10 mm distance)	
24	1850-1910	Head: 1.05 W/kg (Left Touch) Body: 1.16 W/kg (Rear w/ 10 mm distance) Hotspot: 0.72 W/kg (Rear w/ 10 mm distance)	
24 (LTE Band 25)	1852.5-1912.5	Head: 0.80 W/kg (Left Touch) Body: 0.58 W/kg (Rear w/ 10 mm distance) Hotspot: 0.58 W/kg (Rear w/ 10 mm distance)	
15.247	2412-2462	Head: 0.22 W/kg (Left Touch) Body: 0.25 W/kg (Rear w/ 10 mm distance) Hotspot: 0.26 W/kg (Rear w/ 10 mm distance)	
Simultaneous transmission condition:		1.42 W/kg (p.78) (The highest SAR value from combined results)	
Applicable Standards			Test Results
FCC OET Bulletin 65 Supplement C 01-01, IEEE STD 1528:2003			Pass
<p>Compliance Certification Services, Inc. (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.</p> <p>Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government (NIST Handbook 150, Annex A). This report is written to support regulatory compliance of the applicable standards stated above.</p> <p>Approved & Released For UL CCS By: </p> <p>Tested By: </p>			
Sunny Shih Engineering Team Leader Compliance Certification Services (UL CCS)		Ray Su EMC Associate Engineer Compliance Certification Services (UL CCS)	

2. Test Methodology

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C Edition 01-01, IEEE STD 1528:2003 and the following KDB Procedures.

- 648474 D01 SAR Handsets Multi Xmitter and Ant, v01r05
- 248227 D01 SAR meas for 802 11abg v01r02
- 941225 D01 SAR test for 3G devices v02
- 941225 D05 SAR for LTE Devices v01
- 941225 D06 Hot Spot SAR v01

KDB inquiry #: 760669

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. Calibration and Uncertainty

4.1. Measuring Instrument Calibration

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due date		
				MM	DD	Year
Dielectronic Probe kit	HP	85070C	N/A	N/A		
Base Station Simulator	Agilent	8960	GB46160222	6	17	2012
Base Station Simulator	R & S	CMU 200	106291	6	24	2012
Base Station Simulator	Anritsu	MT8820C	6200985430	6	17	2012
ESA Series Network Analyzer	Agilent	E5071B	MY42100131	2	2	2012
Synthesized Signal Generator	HP	83732B	US34490599	7	14	2012
E-Field Probe	SPEAG	EX3DV4	3772	5	3	2012
E-Field Probe	SPEAG	EX3DV4	3773	5	3	2012
Thermometer	ERTCO	639-1S	1718	7	19	2012
Data Acquisition Electronics	SPEAG	DAE4	1258	5	2	2012
Data Acquisition Electronics	SPEAG	DAE4	1239	10	18	2012
System Validation Dipole	SPEAG	D835V2	4d117	4	15	2012
System Validation Dipole	SPEAG	D1900V2	5d140	4	18	2012
System Validation Dipole	SPEAG	*D2450V2	706	4	19	2012
Power Meter	Giga-tronics	8651A	8651404	5	13	2012
Power Sensor	Giga-tronics	80701A	1834588	5	13	2012
Power Meter	HP	437B	3125U16345	5	13	2012
Power Sensor	HP	8481A	2702A60780	5	13	2012
Amplifier	MITEQ	4D00400600-50-30P	1620606	N/A		
Directional coupler	Werlatone	C8060-102	2141	N/A		

Notes:

*Per KDB 450824 D02 requirements for dipole calibration, UL CCS has adopted two years calibration intervals. On annual basis, each measurement dipole has been evaluated and is in compliance with the following criteria:

1. There is no physical damage on the dipole
2. System validation with specific dipole is within 10% of calibrated value.
3. Return-loss is within 20% of calibrated measurement. (See Appendix O_Calibration Certificate for D2450V2 SN 706 incl. extended cal. data)
4. Impedance is within 5Ω of calibrated measurement (See Appendix O_Calibration Certificate for D2450V2 SN 706 incl. extended cal. data)

4.2. Measurement Uncertainty

Measurement uncertainty for 300 MHz to 3 GHz averaged over 1 gram					
Component	error, %	Probe Distribution	Divisor	Sensitivity	U (X _i), %
Measurement System					
Probe Calibration (k=1)	5.50	Normal	1	1	5.50
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	2.30	Rectangular	1.732	0.7071	0.94
Boundary Effect	0.90	Rectangular	1.732	1	0.52
Probe Linearity	3.45	Rectangular	1.732	1	1.99
System Detection Limits	1.00	Rectangular	1.732	1	0.58
Readout Electronics	0.30	Normal	1	1	0.30
Response Time	0.80	Rectangular	1.732	1	0.46
Integration Time	2.60	Rectangular	1.732	1	1.50
RF Ambient Conditions - Noise	3.00	Rectangular	1.732	1	1.73
RF Ambient Conditions - Reflections	3.00	Rectangular	1.732	1	1.73
Probe Positioner Mechanical Tolerance	0.40	Rectangular	1.732	1	0.23
Probe Positioning with respect to Phantom	2.90	Rectangular	1.732	1	1.67
Extrapolation, Interpolation and Integration	1.00	Rectangular	1.732	1	0.58
Test Sample Related					
Test Sample Positioning	2.90	Normal	1	1	2.90
Device Holder Uncertainty	3.60	Normal	1	1	3.60
Output Power Variation - SAR Drift	5.00	Rectangular	1.732	1	2.89
Phantom and Tissue Parameters					
Phantom Uncertainty (shape and thickness)	4.00	Rectangular	1.732	1	2.31
Liquid Conductivity - deviation from target	5.00	Rectangular	1.732	0.64	1.85
Liquid Conductivity - measurement	-4.92	Normal	1	0.64	-3.15
Liquid Permittivity - deviation from target	5.00	Rectangular	1.732	0.6	1.73
Liquid Permittivity - measurement uncertainty	-4.00	Normal	1	0.6	-2.40
Combined Standard Uncertainty U _c (y) =					10.24
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				20.47	%
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				1.62	dB

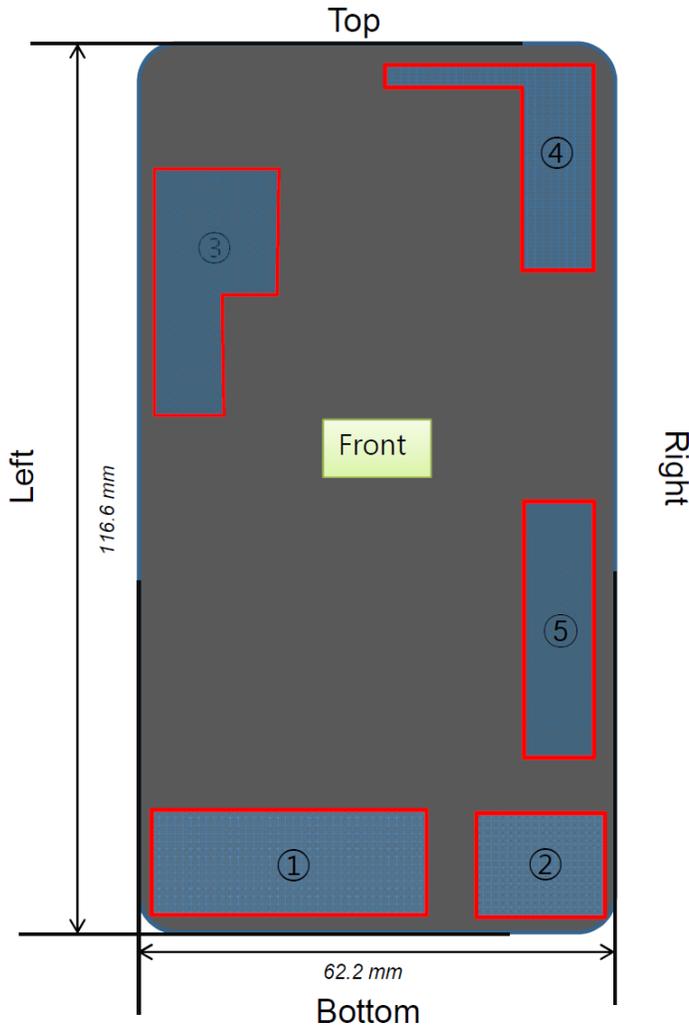
5. Equipment Under Test

Cellular/PCS BC10 CDMA and LTE Band 25 Phone with Bluetooth and WLAN MODEL: LS840, LGLS840 and LG-LS840	
Normal operation:	<ul style="list-style-type: none"> - Held to head, - Body (Rear and Front sides) with 10 mm separation distance. - Hotspot (wireless router) with 10 mm separation distance to all sides and edges.
Body Worn Accessory	Headset

5.1. Band and Air Interlaces

Tx Frequency Bands:	CDMA BC 0: 824 - 849 MHz CDMA BC 10: 817.9 - 823.1 MHz CDMA BC 1: 1850 - 1910 MHz LTE Band 25: 1852.5 – 1912.5 MHz 802.11b/g/n: 2412 - 2462MHz, HT20 Bluetooth: 2402 - 2480 MHz
Air Interfaces:	CDMA 1xRTT: BC 0, BC10 and BC 1 CDMA 1x Advanced: BC 0, BC10 and BC 1 EVDO: BC 0 and BC 1 (BC 10 does not support EVDO) LTE: Band 25 802.11b/g/n. Bluetooth

5.2. Antenna Description



① CDMA 1x BC0, BC1, BC10 Rx/Tx

MODE	BAND	TX(MHz)	RX(MHz)
CDMA	BC0	824 ~ 849	869 ~ 894
	BC1	1850 ~ 1910	1930 ~ 1990
	BC10	816 ~ 824	861 ~ 869

② LTE Band 25 2nd RX, EVDO BC1 Rx Diversity

MODE	BAND	TX(MHz)	RX(MHz)
LTE	B25	2 nd Rx	1930 ~ 1995
EVDO	BC1	Diversity	1930 ~ 1990

③ LTE Band 25 Rx/Tx , EVDO BC1 Rx/Tx

MODE	BAND	TX(MHz)	RX(MHz)
LTE	B25	1850 ~ 1915	1930 ~ 1995
EVDO	BC1	1850 ~ 1910	1930 ~ 1990

④ EVDO BC0 Rx/Tx , GPS

MODE	TX(MHz)	RX(MHz)
GPS	x	1575.42
EVDO BC0	824 ~ 849	869~894

⑤ BT/Wifi

MODE	TX(MHz)	RX(MHz)
BT & Wifi (802.11b/g/n)	BT : 2402 (1ch) ~ 2480 (79ch) Wifi : 2412(1ch) ~ 2462(11ch)	BT : 2402 (1ch) ~ 2480 (79ch) Wifi : 2412(1ch) ~ 2462(11ch)

5.3. Antenna Separation Distance

Antennas	Physical Separation Distance (mm)				
	ANT ①	ANT ②	ANT ③	ANT ④	ANT ⑤
ANT ①		4.7	61.1	68.1	20.0
ANT ②	4.7		73.5	68.5	13.2
ANT ③	61.1	73.5		21.0	55.5
ANT ④	68.1	68.5	21.0		27.8
ANT ⑤	20.0	13.2	55.5	27.8	

5.4. Head Exposure Condition

Mode	Band	Tx (MHz)	ANT ①	ANT ②	ANT ③	ANT ④	ANT ⑤
CDMA Voice (1xRTT/1xAdvanced)	BC0	835	Yes	No	No	No	No
CDMA Voice (1xRTT/1xAdvanced)	BC1	1900	Yes	No	No	No	No
CDMA Voice (1xRTT/1xAdvanced)	BC10	820	Yes	No	No	No	No
EVDO (VOIP)	BC0	835	No	No	No	Yes	No
EVDO (VOIP)	BC1	1900	No	No	Yes	No	No
EVDO (VOIP)	BC10	820	No	No	No	No	No
LTE Data	25	1900	No	No	Yes	No	No
SV-DO (Voice & Data)	BC0	835	Yes	No	No	Yes	No
SV-DO (Voice & Data)	BC1	1900	Yes	No	Yes	No	No
SV-LTE (Voice & Data)	BC0 & B25	835/1900	Yes	No	Yes	No	No
SV-LTE (Voice & Data)	BC1 & B25	1900/1900	Yes	No	Yes	No	No
SV-LTE (Voice & Data)	BC10 & B25	820/1900	Yes	No	Yes	No	No
Wi-Fi (VOIP)	2400	2400	No	No	No	No	Yes
BT	2400	2400	No	No	No	No	Yes

5.5. Body Exposure Condition

Separation Distance = 10 mm							
Mode	Band	Tx (MHz)	ANT ①	ANT ②	ANT ③	ANT ④	ANT ⑤
CDMA Voice (1xRTT/1xAdvanced)	BC0	835	Yes	No	No	No	No
CDMA Voice (1xRTT/1xAdvanced)	BC1	1900	Yes	No	No	No	No
CDMA Voice (1xRTT/1xAdvanced)	BC10	820	Yes	No	No	No	No
EVDO (VOIP)	BC0	835	No	No	No	Yes	No
EVDO (VOIP)	BC1	1900	No	No	Yes	No	No
EVDO (VOIP)	BC10	820	No	No	No	No	No
LTE Data	25	1900	No	No	Yes	No	No
SV-DO (Voice & Data)	BC0	835	Yes	No	No	Yes	No
SV-DO (Voice & Data)	BC1	1900	Yes	No	Yes	No	No
SV-LTE (Voice & Data)	BC0 & B25	835/1900	Yes	No	Yes	No	No
SV-LTE (Voice & Data)	BC1 & B25	1900/1900	Yes	No	Yes	No	No
SV-LTE (Voice & Data)	BC10 & B25	820/1900	Yes	No	Yes	No	No
Wi-Fi (VOIP)	2400	2400	No	No	No	No	Yes
BT	2400	2400	No	No	No	No	Yes

5.6. Hotspot (Wireless router) Exposure Condition

Separation Distance = 10 mm							
Mode	Band	Tx (MHz)	ANT ①	ANT ②	ANT ③	ANT ④	ANT ⑤
EVDO + WiFi	BC0	835/2400	No	No	No	Yes	Yes
EVDO + WiFi	BC1	1900/2400	No	No	Yes	No	Yes
LTE Data + WiFi	25	1900/2400	No	No	Yes	No	Yes
SV-DO (Voice & Data) + WiFi	BC0/BC1	835/835/2400	Yes	No	No	Yes	Yes
SV-DO (Voice & Data) + WiFi	BC0/BC1	835/1900/2400	Yes	No	Yes		Yes
SV-DO (Voice & Data) + WiFi	BC1/BC0	1900/835/2400	Yes	No		Yes	Yes
SV-DO (Voice & Data) + WiFi	BC1/BC1	1900/1900/2400	Yes	No	Yes		Yes
SV-LTE (Voice & Data) + WiFi	BC0 & B25	835/1900/2400	Yes	No	Yes		Yes
SV-LTE (Voice & Data) + WiFi	BC10 & B25	820/1900/2400	Yes	No	Yes		Yes
SV-LTE (Voice & Data) + WiFi	BC1 & B25	1900/1900/2400	Yes	No	Yes		Yes

5.7. KDB 941225 D05 SAR for LTE Devices v01

#	Description	Parameter																							
1	Identify the operating frequency range of each LTE transmission band used by the device	Band 25: 1852.5-1912.5 MHz																							
2	Identify the channel bandwidths used in each frequency band; 1.4, 3, 5, 10, 15, 20 MHz etc	Band 25: 5 MHz																							
3	Identify the high, middle and low (H, M, L) channel numbers and frequencies in each LTE frequency band	Please refer to section 10.2																							
4	Specify the UE category and uplink modulations used	The UE Category is 3 Uplink modulations: QPSK, 16QAM																							
5	Descriptions of the LTE transmitter and antenna implementation & identify whether it is a standalone transmitter operating independently of other wireless transmitters in the device or sharing hardware components and/or antenna(s) with other transmitters etc.	Please refer to the antenna description and distance at section 5.2 and 5.3.																							
6	Identify the LTE voice/data requirements in each operating mode and exposure condition with respect to head and body test configurations, antenna locations, handset flip-cover or slide positions, antenna diversity conditions, etc.	Please refer to Tables in section 5.4, 5.5, and 5.6.																							
7	Identify if Maximum Power Reduction (MPR) is optional or mandatory, i.e. built-in by design: a) only mandatory MPR may be considered during SAR testing, when the maximum output power is permanently limited by the MPR implemented within the UE; and only for the applicable RB (resource block) configurations specified in LTE standards b) A-MPR (additional MPR) must be disabled.	<table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="3">Channel bandwidth / Transmission bandwidth configuration (RB)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5.0 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>≤ 1</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth configuration (RB)			MPR (dB)	1.4 MHz	3.0 MHz	5.0 MHz	QPSK	> 5	> 4	> 8	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 1	16 QAM	> 5	> 4	> 8	≤ 1
Modulation	Channel bandwidth / Transmission bandwidth configuration (RB)			MPR (dB)																					
	1.4 MHz	3.0 MHz	5.0 MHz																						
QPSK	> 5	> 4	> 8	≤ 1																					
16 QAM	≤ 5	≤ 4	≤ 8	≤ 1																					
16 QAM	> 5	> 4	> 8	≤ 1																					
8	Include the maximum average conducted output power measured on the required test channels for each channel bandwidth and UL modulation used in each frequency band: a) with 1 RB allocated at the upper edge of a channel b) with 1 RB allocated at the lower edge of a channel c) using 50% RB allocation centered within a channel d) using 100% RB allocation	Refer to section 10.2 RF output power table																							

KDB 941225 D05 SAR for LTE Devices v01 (Continued)

#	Description	Parameter																
9	Identify all other U.S. wireless operating modes (3G, Wi-Fi, WiMax, Bluetooth etc), device/exposure configurations (head and body, antenna and handset flip-cover or slide positions, antenna diversity conditions etc.) and frequency bands used for these modes	Please refer to the tables in section 5.4, 5.5. and 5.6																
10	Include the maximum average conducted output power measured for the other wireless mode and frequency bands	See section 10 RF output power measurements																
11	Identify the simultaneous transmission conditions for the voice and data configurations supported by all wireless modes, device configurations and frequency bands, for the head and body exposure conditions and device operating configurations (handset flip or cover positions, antenna diversity conditions etc.)	Please refer to the table in section 5.8																
12	When power reduction is applied to certain wireless modes to satisfy SAR compliance for simultaneous transmission conditions, other equipment certification or operating requirements, include the maximum average conducted output power measured in each power reduction mode applicable to the simultaneous voice/data transmission configurations for such wireless configurations and frequency bands; and also include details of the power reduction implementation and measurement setup	<p>1. Power Reduction operation table for SVDO Mode</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>CDMA Current Voice Power for BC0, BC1 & BC10 CDMA voice Max Power: 24.3 dBm</th> <th>CDMA EVDO Max. Power for BC0 & BC1</th> </tr> </thead> <tbody> <tr> <td rowspan="2">SVDO</td> <td>P < 15.5 dBm</td> <td>23.8 dBm (Limited)</td> </tr> <tr> <td>P ≥ 15.5 dBm</td> <td>18.8 dBm (Limited)</td> </tr> </tbody> </table> <p>2. Power Reduction operation table for SVLTE Mode</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>CDMA Current Voice Power for BC0, BC1 & BC10</th> <th>LTE Max. Power for B25</th> </tr> </thead> <tbody> <tr> <td rowspan="2">SVLTE</td> <td>P < 18.5 dBm</td> <td>23.0 dBm (Limited)</td> </tr> <tr> <td>P ≥ 18.5 dBm</td> <td>19.0 dBm (Limited)</td> </tr> </tbody> </table>	Mode	CDMA Current Voice Power for BC0, BC1 & BC10 CDMA voice Max Power: 24.3 dBm	CDMA EVDO Max. Power for BC0 & BC1	SVDO	P < 15.5 dBm	23.8 dBm (Limited)	P ≥ 15.5 dBm	18.8 dBm (Limited)	Mode	CDMA Current Voice Power for BC0, BC1 & BC10	LTE Max. Power for B25	SVLTE	P < 18.5 dBm	23.0 dBm (Limited)	P ≥ 18.5 dBm	19.0 dBm (Limited)
Mode	CDMA Current Voice Power for BC0, BC1 & BC10 CDMA voice Max Power: 24.3 dBm	CDMA EVDO Max. Power for BC0 & BC1																
SVDO	P < 15.5 dBm	23.8 dBm (Limited)																
	P ≥ 15.5 dBm	18.8 dBm (Limited)																
Mode	CDMA Current Voice Power for BC0, BC1 & BC10	LTE Max. Power for B25																
SVLTE	P < 18.5 dBm	23.0 dBm (Limited)																
	P ≥ 18.5 dBm	19.0 dBm (Limited)																
13	Include descriptions of the test equipment, test software, built-in test firmware etc. required to support testing the device when power reduction is applied to one or more transmitters/antennas for simultaneous voice/data transmission	<p>* Power reduction is implemented on EVDO in SVDO mode</p> <p>* Power reduction is implemented on LTE in SVLTE mode</p>																
14	When appropriate, include a SAR test plan proposal with respect to the above	Not Applicable																
15	If applicable, include preliminary SAR test data and/or supporting information in laboratory testing inquiries to address specific issues and concerns or for requesting further test reduction considerations appropriate for the device; for example, simultaneous transmission configurations	Not applicable																

5.8. Simultaneous Transmission Conditions

Summary of Simultaneous

No.	Capable TX Configuration	Head SAR	Body SAR	Hotspot SAR	Power Reduction (CDMA EVDO)	Power Reduction (LTE)	Note
1	CDMA Voice	O	O	X	X	X	Stand-alone CDMA Voice
2	CDMA EVDO	O	O	X	X	X	Stand-alone CDMA EVDO
3	LTE	O	O	X	X	O	Stand-alone LTE
4	Wi-Fi	O	O	X	X	X	Stand-alone Wi-Fi
5	BT	X	X	X	X	X	
6	CDMA Voice + CDMA EVDO	O	O	X	O	X	SVDO
7	CDMA Voice + LTE	O	O	X	X	O	SVLTE
8	CDMA Voice + CDMA EVDO + WLAN	O	O	O	O	X	Wi-Fi Hotspot
9	CDMA Voice + LTE + WLAN	O	O	O	X	O	Wi-Fi Hotspot

* BT and WLAN are not simultaneous transmission.
 * CDMA EVDO and LTE are not simultaneous transmission.
 * CDMA BC10 EVDO is not supported
 * VOIP support (LTE, EVDO).
 * SVLTE, SVDO is supported
 * Power reduction is implemented on EVDO in SVDO mode
 * Power reduction is implemented on LTE in SVLTE mode.

All Simultaneous case

No.	Capable TX Configuration	Head SAR	Body SAR	Hotspot SAR	Power Reduction (CDMA EVDO)	Power Reduction (LTE)	Note
1	CDMA BC0 Voice	O	O	X	X	X	Stand-alone CDMA BC0 Voice
2	CDMA BC1 Voice	O	O	X	X	X	Stand-alone CDMA BC1 Voice
3	CDMA BC10 Voice	O	O	X	X	X	Stand-alone CDMA BC10 Voice
4	CDMA BC0 EVDO	O	O	X	X	X	Stand-alone CDMA EVDO BC0
5	CDMA BC1 EVDO	O	O	X	X	X	Stand-alone CDMA EVDO BC1
6	LTE B25	O	O	X	X	X	Stand-alone LTE B25 data
7	Wi-Fi	O	O	X	X	X	Stand-alone Wi-Fi
8	BT	X	X	X	X	X	
9	CDMA BC0 Voice + Wi-Fi data	O	O	X	X	X	
10	CDMA BC1 Voice + Wi-Fi data	O	O	X	X	X	
11	CDMA BC10 Voice + Wi-Fi data	O	O	X	X	X	
12	CDMA BC0 EVDO+ Wi-Fi data	X	O	O	X	X	Wi-Fi Hotspot
13	CDMA BC1 EVDO+ Wi-Fi data	X	O	O	X	X	Wi-Fi Hotspot
14	LTE B25 + Wi-Fi data	X	O	O	X	X	Wi-Fi Hotspot
15	CDMA BC0 Voice + CDMA BC0EVDO	O	O	X	O	X	SVDO
16	CDMA BC0 Voice + CDMA BC1 EVDO	O	O	X	O	X	SVDO
17	CDMA BC0 Voice + LTE B25	O	O	X	X	O	SVLTE
18	CDMA BC1 Voice + CDMA BC0 EVDO	O	O	X	O	X	SVDO
19	CDMA BC1 Voice + CDMA BC1 EVDO	O	O	X	O	X	SVDO
20	CDMA BC1 Voice + LTE B25	O	O	X	X	O	SVLTE
21	CDMA BC10 Voice + CDMA BC0 EVDO	O	O	X	O	X	SVDO
22	CDMA BC10 Voice + CDMA BC1 EVDO	O	O	X	O	X	SVDO
23	CDMA BC0 Voice + CDMA BC0 EVDO + WLAN	O	O	O	O	X	Wi-Fi Hotspot
24	CDMA BC0 Voice + CDMA BC1 EVDO + WLAN	O	O	O	O	X	Wi-Fi Hotspot
25	CDMA BC0 Voice + LTE B25 + WLAN	O	O	O	X	O	Wi-Fi Hotspot
26	CDMA BC1 Voice + CDMA BC0 EVDO+ WLAN	O	O	O	O	X	Wi-Fi Hotspot
27	CDMA BC1 Voice + CDMA BC1 EVDO+ WLAN	O	O	O	O	X	Wi-Fi Hotspot
28	CDMA BC1 Voice + LTE B25+ WLAN	O	O	O	X	O	Wi-Fi Hotspot
29	CDMA BC10 Voice + CDMA BC1 EVDO+ WLAN	O	O	O	O	X	Wi-Fi Hotspot
30	CDMA BC10 Voice + CDMA BC1 EVDO+ WLAN	O	O	O	O	X	Wi-Fi Hotspot
31	CDMA BC10 Voice + LTE B25 + WLAN	O	O	O	X	O	Wi-Fi Hotspot

6. Composition of Ingredients for Tissue Simulating Liquids

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

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

Salt: 99+% Pure Sodium Chloride Sugar: 98+% Pure Sucrose
 Water: De-ionized, 16 MΩ+ resistivity HEC: Hydroxyethyl Cellulose
 DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
 Triton X-100 (ultra pure): Polyethylene glycol mono [4-(1,1, 3, 3-tetramethylbutyl)phenyl]ether

MSL/HSL750 (Body and Head liquids for 700 – 800 MHz)

Item	Head Tissue Simulation Liquids HSL750 Muscle (body) Tissue Simulation Liquids HSL750
Type No	SL AAH 075
Manufacturer	SPEAG
The item is composed of the following ingredients:	
H ² O	Water, 35 – 58%
Sucrose	Sugar, white, refined, 40-60%
NaCl	Sodium Chloride, 0-6%
Hydroxyethyl-cellulose	Medium Viscosity (CAS# 9004-62-0), <0.3%
Preventol-D7	Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone, 0.1-0.7%

MSL/HSL1750 (Body and Head liquids for 1700 – 1800 MHz)

Item	Head Tissue Simulation Liquids HSL1750 Muscle (body) Tissue Simulation Liquids HSL1750
Type No	SL AAM 175
Manufacturer	SPEAG
-The item is composed of the following ingredients:	
H ² O	Water, 52 – 75%
C8H18O3	Diethylene glycol monobutyl ether (DGBE), 25-48%
NaCl	Sodium Chloride, <1.0%

7. Liquid Parameters

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine if the dielectric parameters are within the tolerances of the specified target values. For frequencies in 300 MHz to just under 2 GHz, the measured conductivity and relative permittivity should be within $\pm 5\%$ of the target values. For frequencies in the range of 2–3 GHz and above the measured conductivity should be within $\pm 5\%$ of the target values. The measured relative permittivity tolerance can be relaxed to no more than $\pm 10\%$.

Reference Values of Tissue Dielectric Parameters for Head & Body Phantom

The body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in IEEE Standard 1528.

Target Frequency (MHz)	Head		Body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.8
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
750	41.96	0.89	55.6	0.96
835	41.5	0.9	55.2	0.97
900	41.5	0.97	55	1.05
915	41.5	0.98	55	1.06
1450	40.5	1.2	54	1.3
1610	40.3	1.29	53.8	1.4
1750	40.08	1.37	53.44	1.49
1800 – 2000	40	1.4	53.3	1.52
2450	39.2	1.8	52.7	1.95
3000	38.5	2.4	52	2.73

(ϵ_r = relative permittivity, σ = conductivity and $\rho = 1000 \text{ kg/m}^3$)

7.1. Liquid Check Results

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
10/31/2011	Body 1900	e'	51.6165	Relative Permittivity (ϵ_r):	51.62	53.30	-3.16	5
		e''	14.2825	Conductivity (σ):	1.51	1.52	-0.73	5
	Body 1850	e'	51.6836	Relative Permittivity (ϵ_r):	51.68	53.30	-3.03	5
		e''	14.0928	Conductivity (σ):	1.45	1.52	-4.63	5
	Body 1880	e'	51.6431	Relative Permittivity (ϵ_r):	51.64	53.30	-3.11	5
		e''	14.2180	Conductivity (σ):	1.49	1.52	-2.22	5
	Body 1910	e'	51.5816	Relative Permittivity (ϵ_r):	51.58	53.30	-3.22	5
		e''	14.3035	Conductivity (σ):	1.52	1.52	-0.06	5
11/1/2011	Body 1900	e'	52.1455	Relative Permittivity (ϵ_r):	52.15	53.30	-2.17	5
		e''	14.7080	Conductivity (σ):	1.55	1.52	2.23	5
	Body 1850	e'	52.3326	Relative Permittivity (ϵ_r):	52.33	53.30	-1.82	5
		e''	14.5097	Conductivity (σ):	1.49	1.52	-1.81	5
	Body 1880	e'	52.2240	Relative Permittivity (ϵ_r):	52.22	53.30	-2.02	5
		e''	14.6294	Conductivity (σ):	1.53	1.52	0.61	5
	Body 1910	e'	52.1097	Relative Permittivity (ϵ_r):	52.11	53.30	-2.23	5
		e''	14.7486	Conductivity (σ):	1.57	1.52	3.05	5
11/2/2011	Head 1900	e'	40.6240	Relative Permittivity (ϵ_r):	40.62	40.00	1.56	5
		e''	13.3388	Conductivity (σ):	1.41	1.40	0.66	5
	Head 1850	e'	40.8521	Relative Permittivity (ϵ_r):	40.85	40.00	2.13	5
		e''	13.1650	Conductivity (σ):	1.35	1.40	-3.27	5
	Head 1880	e'	40.7172	Relative Permittivity (ϵ_r):	40.72	40.00	1.79	5
		e''	13.2671	Conductivity (σ):	1.39	1.40	-0.94	5
	Head 1910	e'	40.5829	Relative Permittivity (ϵ_r):	40.58	40.00	1.46	5
		e''	13.3713	Conductivity (σ):	1.42	1.40	1.43	5
11/2/2011	Body 835	e'	55.2377	Relative Permittivity (ϵ_r):	55.24	55.20	0.07	5
		e''	21.1561	Conductivity (σ):	0.98	0.97	1.26	5
	Body 825	e'	55.3330	Relative Permittivity (ϵ_r):	55.33	55.26	0.14	5
		e''	21.2072	Conductivity (σ):	0.97	0.97	0.41	5
	Body 850	e'	55.1058	Relative Permittivity (ϵ_r):	55.11	55.16	-0.09	5
		e''	21.0893	Conductivity (σ):	1.00	0.99	0.97	5
11/3/2011	Head 835	e'	42.6696	Relative Permittivity (ϵ_r):	42.67	41.50	2.82	5
		e''	19.2094	Conductivity (σ):	0.89	0.90	-0.90	5
	Head 815	e'	42.9189	Relative Permittivity (ϵ_r):	42.92	41.63	3.10	5
		e''	19.2640	Conductivity (σ):	0.87	0.90	-2.79	5
	Head 820	e'	42.8536	Relative Permittivity (ϵ_r):	42.85	41.60	3.01	5
		e''	19.2469	Conductivity (σ):	0.88	0.90	-2.33	5
	Head 825	e'	42.7939	Relative Permittivity (ϵ_r):	42.79	41.58	2.93	5
		e''	19.2348	Conductivity (σ):	0.88	0.90	-1.84	5
11/3/2011	Body 835	e'	55.1875	Relative Permittivity (ϵ_r):	55.19	55.20	-0.02	5
		e''	21.1564	Conductivity (σ):	0.98	0.97	1.26	5
	Body 825	e'	55.2920	Relative Permittivity (ϵ_r):	55.29	55.26	0.06	5
		e''	21.1997	Conductivity (σ):	0.97	0.97	0.38	5
	Body 850	e'	55.0387	Relative Permittivity (ϵ_r):	55.04	55.16	-0.21	5
		e''	21.0967	Conductivity (σ):	1.00	0.99	1.01	5

Liquid Check Results (continued)

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
11/3/2011	Head 1900	e'	40.3942	Relative Permittivity (ϵ_r):	40.39	40.00	0.99	5
		e"	13.3884	Conductivity (σ):	1.41	1.40	1.03	5
	Head 1850	e'	40.5228	Relative Permittivity (ϵ_r):	40.52	40.00	1.31	5
		e"	13.2236	Conductivity (σ):	1.36	1.40	-2.84	5
	Head 1880	e'	40.4346	Relative Permittivity (ϵ_r):	40.43	40.00	1.09	5
		e"	13.3211	Conductivity (σ):	1.39	1.40	-0.54	5
	Head 1910	e'	40.3549	Relative Permittivity (ϵ_r):	40.35	40.00	0.89	5
		e"	13.4056	Conductivity (σ):	1.42	1.40	1.69	5
11/4/2011	Head 1900	e'	41.1261	Relative Permittivity (ϵ_r):	41.13	40.00	2.82	5
		e"	13.5228	Conductivity (σ):	1.43	1.40	2.04	5
	Head 1850	e'	41.3715	Relative Permittivity (ϵ_r):	41.37	40.00	3.43	5
		e"	13.3624	Conductivity (σ):	1.37	1.40	-1.82	5
	Head 1880	e'	41.1975	Relative Permittivity (ϵ_r):	41.20	40.00	2.99	5
		e"	13.4587	Conductivity (σ):	1.41	1.40	0.49	5
	Head 1910	e'	41.0905	Relative Permittivity (ϵ_r):	41.09	40.00	2.73	5
		e"	13.5507	Conductivity (σ):	1.44	1.40	2.79	5
11/5/2011	Body 835	e'	53.8553	Relative Permittivity (ϵ_r):	53.86	55.20	-2.44	5
		e"	21.0986	Conductivity (σ):	0.98	0.97	0.99	5
	Body 820	e'	54.0588	Relative Permittivity (ϵ_r):	54.06	55.28	-2.20	5
		e"	21.1496	Conductivity (σ):	0.96	0.97	-0.43	5
11/7/2011	Body 1900	e'	52.3101	Relative Permittivity (ϵ_r):	52.31	53.30	-1.86	5
		e"	14.0465	Conductivity (σ):	1.48	1.52	-2.37	5
	Body 1885	e'	52.3503	Relative Permittivity (ϵ_r):	52.35	53.30	-1.78	5
		e"	14.0092	Conductivity (σ):	1.47	1.52	-3.40	5
11/8/2011	Head 1900	e'	39.1757	Relative Permittivity (ϵ_r):	39.18	40.00	-2.06	5
		e"	13.3133	Conductivity (σ):	1.41	1.40	0.46	5
	Head 1885	e'	39.2295	Relative Permittivity (ϵ_r):	39.23	40.00	-1.93	5
		e"	13.2703	Conductivity (σ):	1.39	1.40	-0.65	5
11/8/2011	Body 1900	e'	52.7620	Relative Permittivity (ϵ_r):	52.76	53.30	-1.01	5
		e"	14.0984	Conductivity (σ):	1.49	1.52	-2.01	5
	Body 1885	e'	52.8147	Relative Permittivity (ϵ_r):	52.81	53.30	-0.91	5
		e"	14.0432	Conductivity (σ):	1.47	1.52	-3.16	5
11/9/2011	Head 1900	e'	40.8482	Relative Permittivity (ϵ_r):	40.85	40.00	2.12	5
		e"	13.0999	Conductivity (σ):	1.38	1.40	-1.15	5
	Head 1885	e'	40.8786	Relative Permittivity (ϵ_r):	40.88	40.00	2.20	5
		e"	13.0612	Conductivity (σ):	1.37	1.40	-2.22	5
11/10/2011	Head 1900	e'	39.4362	Relative Permittivity (ϵ_r):	39.44	40.00	-1.41	5
		e"	13.3585	Conductivity (σ):	1.41	1.40	0.81	5
	Head 1855	e'	39.6223	Relative Permittivity (ϵ_r):	39.62	40.00	-0.94	5
		e"	13.1966	Conductivity (σ):	1.36	1.40	-2.78	5
	Head 1885	e'	39.4965	Relative Permittivity (ϵ_r):	39.50	40.00	-1.26	5
		e"	13.3032	Conductivity (σ):	1.39	1.40	-0.40	5
	Head 1915	e'	39.3747	Relative Permittivity (ϵ_r):	39.37	40.00	-1.56	5
		e"	13.4088	Conductivity (σ):	1.43	1.40	1.98	5

Liquid Check Results (continued)

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)		
11/11/2011	Head 1900	e'	39.7791	Relative Permittivity (ϵ_r):	39.78	40.00	-0.55	5	
		e''	13.1612	Conductivity (σ):	1.39	1.40	-0.68	5	
	Head 1855	e'	39.9507	Relative Permittivity (ϵ_r):	39.95	40.00	-0.12	5	
		e''	13.0303	Conductivity (σ):	1.34	1.40	-4.00	5	
	Head 1885	e'	39.8343	Relative Permittivity (ϵ_r):	39.83	40.00	-0.41	5	
		e''	13.1190	Conductivity (σ):	1.38	1.40	-1.78	5	
	Head 1915	e'	39.7184	Relative Permittivity (ϵ_r):	39.72	40.00	-0.70	5	
		e''	13.1979	Conductivity (σ):	1.41	1.40	0.38	5	
	11/11/2011	Body 1900	e'	52.7620	Relative Permittivity (ϵ_r):	52.76	53.30	-1.01	5
			e''	14.0984	Conductivity (σ):	1.49	1.52	-2.01	5
Body 1885		e'	52.8147	Relative Permittivity (ϵ_r):	52.81	53.30	-0.91	5	
		e''	14.0432	Conductivity (σ):	1.47	1.52	-3.16	5	
Body 1915		e'	52.7143	Relative Permittivity (ϵ_r):	52.71	53.30	-1.10	5	
		e''	14.1508	Conductivity (σ):	1.51	1.52	-0.87	5	
11/12/2011	Body 1900	e'	51.8784	Relative Permittivity (ϵ_r):	51.88	53.30	-2.67	5	
		e''	14.0439	Conductivity (σ):	1.48	1.52	-2.39	5	
	Body 1885	e'	51.9206	Relative Permittivity (ϵ_r):	51.92	53.30	-2.59	5	
		e''	13.9987	Conductivity (σ):	1.47	1.52	-3.47	5	
	Body 1915	e'	51.8397	Relative Permittivity (ϵ_r):	51.84	53.30	-2.74	5	
		e''	14.0951	Conductivity (σ):	1.50	1.52	-1.26	5	
11/13/2011	Head 2450	e'	38.4936	Relative Permittivity (ϵ_r):	38.49	39.20	-1.80	5	
		e''	13.5473	Conductivity (σ):	1.85	1.80	2.53	5	
	Head 2410	e'	38.6715	Relative Permittivity (ϵ_r):	38.67	39.28	-1.55	5	
		e''	13.4514	Conductivity (σ):	1.80	1.76	2.39	5	
	Head 2435	e'	38.5624	Relative Permittivity (ϵ_r):	38.56	39.24	-1.71	5	
		e''	13.5042	Conductivity (σ):	1.83	1.78	2.58	5	
	Head 2460	e'	38.4515	Relative Permittivity (ϵ_r):	38.45	39.19	-1.88	5	
		e''	13.5773	Conductivity (σ):	1.86	1.81	2.56	5	
	11/14/2011	Body 2450	e'	51.5614	Relative Permittivity (ϵ_r):	51.56	52.70	-2.16	5
			e''	14.3398	Conductivity (σ):	1.95	1.95	0.18	5
Body 2410		e'	51.7535	Relative Permittivity (ϵ_r):	51.75	52.76	-1.91	5	
		e''	14.1977	Conductivity (σ):	1.90	1.91	-0.26	5	
Body 2435		e'	51.6268	Relative Permittivity (ϵ_r):	51.63	52.73	-2.09	5	
		e''	14.2735	Conductivity (σ):	1.93	1.93	0.07	5	
Body 2460		e'	51.5292	Relative Permittivity (ϵ_r):	51.53	52.69	-2.20	5	
		e''	14.3831	Conductivity (σ):	1.97	1.96	0.17	5	
11/14/2011	Body 1900	e'	51.1875	Relative Permittivity (ϵ_r):	51.19	53.30	-3.96	5	
		e''	14.1983	Conductivity (σ):	1.50	1.52	-1.32	5	
	Body 1850	e'	51.3015	Relative Permittivity (ϵ_r):	51.30	53.30	-3.75	5	
		e''	14.0492	Conductivity (σ):	1.45	1.52	-4.92	5	
	Body 1880	e'	51.2206	Relative Permittivity (ϵ_r):	51.22	53.30	-3.90	5	
		e''	14.1446	Conductivity (σ):	1.48	1.52	-2.72	5	
	Body 1910	e'	51.1700	Relative Permittivity (ϵ_r):	51.17	53.30	-4.00	5	
		e''	14.2283	Conductivity (σ):	1.51	1.52	-0.59	5	

8. System Verification

The system performance check is performed prior to any usage of the system in order to verify SAR system measurement accuracy. The system performance check verifies that the system operates within its specifications of $\pm 10\%$.

System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ± 0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The DASY system with an E-Field Probe EX3DV4 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 fine cube was chosen for cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

Reference SAR Values for HEAD & BODY-tissue from calibration certificate of SPEAG.

System validation dipole	Cal. certificate #	Cal. date	SAR Avg (mW/g)		
			Tissue:	Head	Body
D1900V2	D1900V2-5d140-Apr11	4/18/11	1g SAR:	41.60	41.20
			10g SAR:	21.50	21.60
D835V2	D835V2-4d117-Apr11	4/15/11	1g SAR:	9.64	10.10
			10g SAR:	6.28	6.60
D2450V2	D2450V2-706_Apr10	4/19/10	1g SAR:	51.6	52.4
			10g SAR:	24.4	24.5

8.1. System Check Results

System validation dipole	Date Tested	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
D1900V2 Body	11/01/11	1g SAR:	40.50	41.2	-1.70	±10
		10g SAR:	21.00	21.6	-2.78	
D835V2 Body	11/02/11	1g SAR:	9.98	10.10	-1.19	±10
		10g SAR:	6.57	6.60	-0.45	
D1900V2 Head	11/02/11	1g SAR:	44.00	41.6	5.77	±10
		10g SAR:	22.80	21.5	6.05	
D835V2 Head	11/03/11	1g SAR:	9.61	9.64	-0.31	±10
		10g SAR:	6.30	6.28	0.32	
D835V2 Body	11/03/11	1g SAR:	10.10	10.10	0.00	±10
		10g SAR:	6.64	6.60	0.61	
D1900V2 Head	11/03/11	1g SAR:	40.20	41.6	-3.37	±10
		10g SAR:	20.80	21.5	-3.26	
D1900V2 Head	11/04/11	1g SAR:	39.80	41.6	-4.33	±10
		10g SAR:	20.40	21.5	-5.12	
D835V2 Body	11/05/11	1g SAR:	10.30	10.10	1.98	±10
		10g SAR:	6.78	6.60	2.73	
D1900V2 Body	11/07/11	1g SAR:	39.70	41.2	-3.64	±10
		10g SAR:	20.30	21.6	-6.02	
D1900V2 Head	11/08/11	1g SAR:	41.20	41.6	-0.96	±10
		10g SAR:	21.40	21.5	-0.47	
D1900V2 Body	11/08/11	1g SAR:	41.20	41.2	0.00	±10
		10g SAR:	21.60	21.6	0.00	
D1900V2 Head	11/09/11	1g SAR:	41.20	41.6	-0.96	±10
		10g SAR:	21.40	21.5	-0.47	
D1900V2 Head	11/10/11	1g SAR:	41.40	41.6	-0.48	±10
		10g SAR:	21.60	21.5	0.47	
D1900V2 Head	11/11/11	1g SAR:	40.60	41.6	-2.40	±10
		10g SAR:	21.10	21.5	-1.86	
D1900V2 Body	11/11/11	1g SAR:	41.30	41.2	0.24	±10
		10g SAR:	21.50	21.6	-0.46	
D1900V2 Body	11/12/11	1g SAR:	39.90	41.2	-3.16	±10
		10g SAR:	20.70	21.6	-4.17	
D2450V2 HEAD	11/13/11	1g SAR:	54.70	51.6	6.01	±10
		10g SAR:	25.10	24.4	2.87	
D2450V2 BODY	11/14/11	1g SAR:	53.20	52.4	1.53	±10
		10g SAR:	24.80	24.5	1.22	
D1900V2 Body	11/14/11	1g SAR:	39.50	41.2	-4.13	±10
		10g SAR:	20.60	21.6	-4.63	

9. SAR Measurement Procedures

9.1. Normal SAR Measurement Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASYS software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures $\geq 7 \times 7 \times 9$ (above 4.5 GHz) or $5 \times 5 \times 7$ (below 3 GHz) points within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation, the extrapolated distance should not be larger than the step size in Z-direction.

9.2. Volume Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures $\geq 7 \times 7 \times 9$ (above 4.5 GHz) or $5 \times 5 \times 7$ (below 3 GHz) points within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Step 4: Volume Scan

Volume Scans are used to assess peak SAR and averaged SAR measurements in largely extended 3-dimensional volumes within any phantom. This measurement does not need any previous area scan. The grid can be anchored to a user specific point or to the current probe location.

Step 5: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

10. RF Output Power Measurement

Maximum output power is verified on the Low, Middle and High channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E for 1xRTT, section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rel. 0 and section 4.3.4 of 3GPP2 C.S0033-A for Rev. A

10.1. CDMA

CDMA2000 1xRTT

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

Application Rev, License
 CDMA2000 Mobile Test B.19.07, L

- Protocol Rev > 6 (IS-2000-0)
- System ID: 7; NID: 1, Reg. Ch. #: 610 for BC0, 600 for BC1 & 500 for BC10
- Radio Config (RC) > RC1 or RC3
- Service Option (SO) Setup > SO55 or SO32
- Traffic Data Rate > Full
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

RF Output Power for BC0 1XRTT

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 1013/824.7 MHz	Ch. 384/836.52 MHz	Ch. 777/848.31 MHz
		Average	Average	Average
RC1	55 (Loopback)	25.20	25.17	25.00
RC3	55 (Loopback)	25.02	25.10	25.05
	32 (+ F-SCH)	25.08	25.05	25.05

RF Output Power for BC10 1XRTT

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 476/817.9 MHz	Ch. 580/820.5 MHz	Ch. 684/823.1 MHz
		Average	Average	Average
RC1	55 (Loopback)	25.17	25.27	25.24
RC3	55 (Loopback)	24.90	25.23	25.27
	32 (+ F-SCH)	24.90	25.23	25.28

RF Output Power for BC1 1X RTT

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 25/1851.25 MHz	Ch. 600/1880 MHz	Ch.1175/1908.75 MHz
		Average	Average	Average
RC1	55 (Loopback)	24.93	25.05	25.12
RC3	55 (Loopback)	24.93	25.02	25.05
	32 (+ F-SCH)	25.05	25.16	25.07

CDMA2000 1x Advanced

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

Application Rev. License
 CDMA2000 Mobile Test B.19.07, L

- Protocol Rev > 6 (IS-2000-0)
- System ID: 7; NID: 1, Reg. Ch. #: 610 for BC0, 600 for BC1 & 500 for BC10
- Radio Config (RC) > Fwd11,Rvs8
- Service Option (SO) Setup > SO75 (Loopback)
- Traffic Data Rate > Full
- Rvs Power Ctrl > All Up bits (Maximum TxPout)
- Reverse Power Control Mode: 00-200 to 400 bps
- Smart blanking was disabled.

RF Output Power for BC0 1X Advanced

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 1013/824.7 MHz	Ch. 384/836.52 MHz	Ch. 777/848.31 MHz
		Average	Average	Average
Fwd11/Rvs8	75 (Loopback)	25.11	25.15	24.94

RF Output Power for BC10 (Secondary 800) 1X Advanced

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 476/817.9 MHz	Ch. 580/820.5 MHz	Ch. 684/823.1 MHz
		Average	Average	Average
Fwd11/Rvs8	75 (Loopback)	25.10	25.25	25.08

RF Output Power for BC1 1X Advanced

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 25/1851.25 MHz	Ch. 600/1880 MHz	Ch.1175/1908.75 MHz
		Average	Average	Average
Fwd11/Rvs8	75 (Loopback)	25.00	25.13	25.12

1xEV-DO - Release 0 (Rel. 0)

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

<u>Application</u>	<u>Rev, License</u>
1xEV-DO Terminal Test	B.13.10, L

EVDO Release 0 - RTAPS

- Call Setup > Shift & Preset
- Call Control:
 - Access Network Info > Cell Parameters > Sector ID > 00000000 : 00000000 : 00000000 : 00000000 >
 - Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Params:
 - Cell Power > -93 dBm/1.23 MHz
 - System ID: 7; NID: 1, Reg. Ch. #: 610 for BC0, 600 for BC1 & 500 for BC10
 - Channel > (Enter channel number)
 - Application Config > Enhanced Test Application Protocol > RTAP
 - RTAP Rate > 153.6 kbps
 - Rvs Power Ctrl > Active bits
 - Protocol Rel > 0 (1xEV-DO)
- Press "Start Data Connection" when "Session Open" appear in "Active Cell"
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

EVDO Release 0 - FTAP

- Call Setup > Shift & Preset
- Call Control:
 - Access Network Info > Cell Parameters > Sector ID > 00000000 : 00000000 : 00000000 : 00000000 >
 - Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Params:
 - Cell Power > -93 dBm/1.23 MHz
 - Cell Band > (Select US Cellular or US PCS)
 - Channel > (Enter channel number)
 - Application Config > Enhanced Test Application Protocol > FTAP (default)
 - FTAP Rate > 307.2 kbps (2 Slot, QPSK)
 - Rvs Power Ctrl > Active bits
 - Protocol Rel > 0 (1xEV-DO)
- Press "Start Data Connection" when "Session Open" appear in "Active Cell"
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

Band	FTAP Rate	RTAP Rate	Channel	f (MHz)	Conducted power (dBm)	
					Average	Peak
BC0	307.2 kbps (2 slot, QPSK)	153.6 kbps	1013	824.70	24.23	
			384	836.52	24.4	
			777	848.31	24.55	
BC1	307.2 kbps (2 slot, QPSK)	153.6 kbps	25	1851.25	24.25	
			600	1880.00	24.20	
			1175	1908.75	24.34	

Note(s):

1. BC10 does not support 1xEVDO

1xEV-Do - Revision A (Rev. A)

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

Application Rev. License
 1xEV-DO Terminal Test B.13.10, L

EVDO Rev. A – RETAP

- Call Setup > Shift & Preset
- Cell Power > --93 and -96 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots
- Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Rev. A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -93, and -96 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
- PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots
- Rvs Power Ctrl > All Up bits (to get the maximum power)

Band	FETAP Traffic Format	RETAP Data Payload Size	Channel	f (MHz)	Conducted power (dBm)	
					Average	Peak
BC0	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	1013	824.70	24.37	
			384	836.52	24.31	
			777	848.31	24.50	
BC1	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	25	1851.25	24.35	
			600	1880.00	24.38	
			1175	1908.75	24.41	

Note(s):

1. BC10 does not support 1xEVDO

10.2. LTE

Output power for LTE Band 25

BW	UL Ch. #	Freq. (MHz)	Modulation	RB Size	RB Offset	MPR	Max Avg Power (dBm)
5 MHz	26065	1852.5	QPSK	1	0	0	23.35
				1	24	0	23.48
				12	6	1	22.48
				25	0	1	22.44
			16-QAM	1	0	1	22.41
				1	24	1	22.56
				12	6	2	21.29
				25	0	2	21.51
	26365	1882.5	QPSK	1	0	0	23.50
				1	24	0	23.51
				12	6	1	22.56
				25	0	1	22.49
			16-QAM	1	0	1	22.33
				1	24	1	22.45
				12	6	2	21.50
				25	0	2	21.62
	26665	1912.5	QPSK	1	0	0	23.70
				1	24	0	23.70
				12	6	1	22.59
				25	0	1	22.57
			16-QAM	1	0	1	22.51
				1	24	1	22.66
				12	6	2	21.60
				25	0	2	21.73

10.3. Wi-Fi

802.11b

Channel #	Freq. (MHz)	Conducted Avg Power	
		(dBm)	(mW)
1	2412	14.50	28.2
6	2437	14.60	28.8
11	2462	14.85	30.5

802.11g

1	2412	11.10	12.9
6	2437	11.25	13.3
11	2462	11.50	14.1

802.11n HT20

1	2412	9.90	9.8
6	2437	10.05	10.1
11	2462	10.25	10.6

Note(s):

KDB 248227 - SAR is not required for 802.11g/HT20 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11b channels.

10.4. Bluetooth

Mode	Channel #	Freq. (MHz)	Conducted Avg Power	
			(dBm)	(mW)
GFSK	0	2402	9.2	8.3
	39	2441	9.2	8.3
	78	2480	9.2	8.3
8PSK	0	2402	6.8	4.8
	39	2441	6.9	4.9
	78	2480	6.9	4.9

Note(s):

According to KDB 648474, Table 2, Unlicensed transmitters
 When there is simultaneous transmission, Stand-alone SAR not required due to

- Output $\leq 2 \cdot P_{Ref}$ (24 mW) and antenna is ≥ 5.0 cm from other antennas
- Output $\leq P_{Ref}$ (12 mW) and antenna is ≥ 2.5 cm from other antennas
- Output $\leq P_{Ref}$ (12 mW) and antenna is < 2.5 cm from other antennas

10.5. Power Reduction for SV-DO

SV-DO: CDMA 1xRTT (BC0) to 11xEVDO (BC0 & BC1)

CDMA BC0 850 1xRTT		BC0 850 1xEVDO			BC1 1900 1xEVDO		
		Output Power [dBm]			Output Power [dBm]		
Ch. #	Output Power [dBm]	Low_1013	Middle_384	High_777	Low_25	Middle_600	High_1175
Low_1013	11	24.4	24.3	24.3	24.2	24.0	24.0
	15	24.4	24.3	24.3	24.2	24.0	24.0
	16	19.1	19.3	19.2	19.2	19.0	19.2
	24	19.1	19.3	19.2	19.2	19.0	19.2
Middle_384	11	24.2	24.1	24.4	24.3	24.0	24.0
	15	24.2	24.1	24.4	24.3	24.0	24.0
	16	19.1	19.2	19.3	19.2	19.2	19.2
	24	19.1	19.2	19.3	19.2	19.2	19.2
High_777	11	24.1	24.1	24.2	24.2	24.1	24.0
	15	24.1	24.1	24.2	24.2	24.1	24.0
	16	19.2	19.2	19.0	19.1	19.3	19.3
	24	19.2	19.2	19.0	19.1	19.3	19.3

SV-DO: CDMA 1xRTT (BC1) to 1xEVDO (BC0 & BC1)

CDMA BC1 1900 1xRTT		BC0 850 1xEVDO			BC1 1900 1xEVDO		
		Output Power [dBm]			Output Power [dBm]		
Ch. #	Output Power [dBm]	Low_1013	Middle_384	High_777	Low_25	Middle_600	High_1175
Low_25	11	24.0	24.0	24.0	24.3	24.0	24.2
	15	24.0	24.0	24.0	24.3	24.0	24.2
	16	19.2	19.1	19.2	19.2	19.2	19.2
	24	19.2	19.1	19.2	19.2	19.2	19.2
Middle_600	11	24.0	24.0	24.1	24.1	24.0	24.0
	15	24.0	24.0	24.1	24.1	24.0	24.0
	16	19.1	19.0	19.2	19.1	19.1	19.2
	24	19.1	19.0	19.2	19.1	19.1	19.2
High_1175	11	24.4	24.1	24.0	24.1	24.0	24.2
	15	24.4	24.1	24.0	24.1	24.0	24.2
	16	19.1	19.1	19.1	19.1	19.2	19.2
	24	19.1	19.1	19.1	19.1	19.2	19.2

SV-DO: CDMA 1xRTT(BC10) to 1xEVDO (BC0 & BC1)

Secondary 800 BC10 1xRTT		BC0 850 1xEVDO			BC1 1900 1xEVDO		
		Output Power [dBm]			Output Power [dBm]		
Ch. #	Output Power [dBm]	Low_1013	Middle_384	High_777	Low_25	Middle_600	High_1175
Middle_580	11	24.0	24.1	24.2	24.2	24.0	24.0
	15	24.0	24.1	24.2	24.2	24.0	24.0
	16	18.9	18.9	18.9	19.1	19.0	19.1
	24	18.9	18.9	18.9	19.1	19.0	19.1

10.6. Power Reduction for SV-LTE Band 25

SV-LTE: CDMA 1xRTT (BC0) to SV-LTE Band 25 (QPSK, 16QAM)

CDMA BC0 850 1xRTT		QPSK				16QAM			
Ch. #	Output Power [dBm]	Output Power [dBm]				Output Power [dBm]			
		1RB, 0 offset	1RB 24 offset	12RB 6 offset	25RB	1RB, 0 offset	1RB 24 offset	12RB 6 offset	25RB
Low_1013	11	23.7	23.8	22.6	22.6	22.7	22.8	21.6	21.7
	18	23.7	23.8	22.6	22.6	22.7	22.8	21.6	21.7
	19	19.4	19.5	18.9	19.1	19.2	19.3	19.4	19.5
	24	19.4	19.5	18.9	19.1	19.2	19.3	19.4	19.5
Middle_384	11	23.9	24.0	22.7	22.6	22.6	22.6	21.8	21.9
	18	23.9	24.0	22.7	22.6	22.6	22.6	21.8	21.9
	19	19.1	19.1	19.3	19.0	19.3	19.3	19.4	19.5
	24	19.1	19.1	19.3	19.0	19.3	19.3	19.4	19.5
High_777	11	23.7	23.6	22.7	22.5	22.6	22.5	21.6	21.6
	18	23.7	23.6	22.7	22.5	22.6	22.5	21.6	21.6
	19	19.1	19.1	19.1	19.0	19.3	19.4	19.2	19.5
	24	19.1	19.1	19.1	19.0	19.3	19.4	19.2	19.5

SV-LTE: CDMA 1xRTT (BC1) to SV-LTE Band 25 (QPSK, 16QAM)

CDMA BC1 1900 1xRTT		QPSK				16QAM			
Ch. #	Output Power [dBm]	Output Power [dBm]				Output Power [dBm]			
		1RB, 0 offset	1RB, 24 offset	12RB, 6 offset	25RB	1RB, 0 offset	1RB, 24 offset	12RB, 6 offset	25RB
Low_25	11	23.8	23.6	22.4	22.4	22.6	22.7	21.6	21.8
	18	23.8	23.6	22.4	22.4	22.6	22.7	21.6	21.8
	19	19.2	19.4	18.9	19.0	19.3	19.3	19.4	19.4
	24	19.2	19.4	18.9	19.0	19.3	19.3	19.4	19.4
Middle_600	11	23.8	23.7	22.5	22.5	22.5	22.6	21.6	21.7
	18	23.8	23.7	22.5	22.5	22.5	22.6	21.6	21.7
	19	19.2	19.3	19.1	19.0	19.2	19.3	19.1	19.3
	24	19.2	19.3	19.1	19.0	19.2	19.3	19.1	19.3
High_1175	11	23.7	23.7	22.6	22.5	22.5	22.4	21.7	21.5
	18	23.7	23.7	22.6	22.5	22.5	22.4	21.7	21.5
	19	19.2	19.4	19.0	18.9	19.2	19.1	19.2	19.4
	24	19.2	19.4	19.0	18.9	19.2	19.1	19.2	19.4

SV-LTE: CDMA 1xRTT (BC10) to SV-LTE Band 25 (QPSK, 16QAM)

Secondary 800 BC10 1xRTT		QPSK				16QAM			
Ch. #	Output Power [dBm]	Output Power [dBm]				Output Power [dBm]			
		1RB, 0 offset	1RB, 24 offset	12RB, 6 offset	25RB	1RB, 0 offset	1RB, 24 offset	12RB, 6 offset	25RB
Middle_580	11	23.7	23.6	22.5	22.4	22.4	22.4	21.5	21.5
	18	23.7	23.6	22.5	22.4	22.4	22.4	21.5	21.5
	19	19.3	19.3	19.1	19.0	19.1	19.3	19.2	19.3
	24	19.3	19.3	19.1	19.0	19.1	19.3	19.2	19.3

11. Standalone SAR Test Results

The device also contains the NFC (Near-Field Communication) antenna. However, there is no additional SAR test because NFC antenna is built-in the back cover of the EUT when we performed the tests.

11.1. CDMA BC0

This device supports 1x Advanced. However, SAR is not required because the maximum output for 1x Advanced is no more than 0.25 dB higher than the maximum measured for 1xRTT. If the measured SAR on 1xRTT mode is greater than 1.2 W/kg, repeat the highest of those configurations above 1.2 W/kg for each exposure condition in 1x Advanced. All measured SAR in 1xRTT mode higher than 1.5 W/kg must be repeated for 1x Advanced, as Per KDB 760669.

Head SAR

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	1xRTT (RC3,SO55)	1013	824.70	25.02			1
		384	836.52	25.10	0.707	0.517	
		777	848.31	25.05			1
Left Tilt (15°)	1xRTT (RC3,SO55)	1013	824.70	25.02			1
		384	836.52	25.10	0.417	0.319	
		777	848.31	25.05			1
Right Touch	1xRTT (RC3,SO55)	1013	824.70	25.02			1
		384	836.52	25.10	0.562	0.418	
		777	848.31	25.05			1
Right Tilt (15°)	1xRTT (RC3,SO55)	1013	824.70	25.02			1
		384	836.52	25.10	0.314	0.245	
		777	848.31	25.05			1

Head SAR (VOIP mode operation)

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	1xEVDO (Rel. 0)	1013	824.70	24.23			1
		384	836.52	24.40	0.479	0.299	
		777	848.31	24.55			1
Left Tilt (15°)	1xEVDO (Rel. 0)	1013	824.70	24.23			1
		384	836.52	24.40	0.297	0.169	
		777	848.31	24.55			1
Right Touch	1xEVDO (Rel. 0)	1013	824.70	24.23			1
		384	836.52	24.40	0.387	0.258	
		777	848.31	24.55			1
Right Tilt (15°)	1xEVDO (Rel. 0)	1013	824.70	24.23			1
		384	836.52	24.40	0.232	0.152	
		777	848.31	24.55			1

Note(s):

- SAR test was performed in the middle channel only as the measured level was < 50% (0.8 mW/g) of the SAR limit as stated in FCC "Public Notice DA 02-1438" by the SCC-34/SC-2. Testing in the low and high channel is optional.

Body SAR with 10 mm separation distance

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	1xRTT (RC3, SO32)	1013	824.70	25.08			1
		384	836.52	25.05	0.757	0.533	
		777	848.31	25.05			1
		384	836.52	25.05	0.740	0.523	2
Front	1xRTT (RC3, SO32)	1013	824.70	25.08			1
		384	836.52	25.05	0.612	0.439	
		777	848.31	25.05			1

Hotspot SAR with 10 mm separation distance

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	1xEVDO (Rel. 0)	1013	824.70	24.23			1
		384	836.52	24.40	0.668	0.422	
		777	848.31	24.55			1
		384	836.52	24.40	0.462	0.283	2
Front	1xEVDO (Rel. 0)	1013	824.70	24.23			1
		384	836.52	24.40	0.177	0.107	
		777	848.31	24.55			1
Left	1xEVDO (Rel. 0)	1013	824.70	24.23			3
		384	836.52	24.40			3
		777	848.31	24.55			3
Right	1xEVDO (Rel. 0)	1013	824.70	24.23			1
		384	836.52	24.40	0.119	0.072	
		777	848.31	24.55			1
Bottom	1xEVDO (Rel. 0)	1013	824.70	24.23			3
		384	836.52	24.40			3
		777	848.31	24.55			3
Top	1xEVDO (Rel. 0)	1013	824.70	24.23			1
		384	836.52	24.40	0.038	0.018	
		777	848.31	24.55			1

Note(s):

1. SAR test was performed in the middle channel only as the measured level was < 50% of the SAR limit as stated in FCC "Public Notice DA 02-1438" by the SCC-34/SC-2. Testing in the low and high channel is optional.
2. With headset attached.
3. SAR is not required due to antenna-to-edge's distance is greater than 2.5 cm.

11.2. CDMA BC10

This device supports 1x Advanced. However, SAR is not required because the maximum output for 1x Advanced is no more than 0.25 dB higher than the maximum measured for 1xRTT. If the measured SAR on 1xRTT mode is greater than 1.2 W/kg, repeat the highest of those configurations above 1.2 W/kg for each exposure condition in 1x Advanced. All measured SAR in 1xRTT mode higher than 1.5 W/kg must be repeated for 1x Advanced, as Per KDB 760669.

Head SAR

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	1xRTT (RC3,SO55)	476	817.90	24.90			1
		580	820.50	25.23	0.615	0.455	
		684	823.10	25.27			1
Left Tilt (15°)	1xRTT (RC3,SO55)	476	817.90	24.90			1
		580	820.50	25.23	0.379	0.293	
		684	823.10	25.27			1
Right Touch	1xRTT (RC3,SO55)	476	817.90	24.90			1
		580	820.50	25.23	0.484	0.371	
		684	823.10	25.27			1
Right Tilt (15°)	1xRTT (RC3,SO55)	476	817.90	24.90			1
		580	820.50	25.23	0.295	0.228	
		684	823.10	25.27			1

Note(s):

- SAR test was performed in the middle channel only as the measured level was < 50% of the SAR limit as stated in FCC "Public Notice DA 02-1438" by the SCC-34/SC-2. Testing in the low and high channel is optional.

Head SAR (VOIP mode operation)

Not applicable. Due to the BC 10 does not support EVDO

Body SAR with 10 mm separation distance

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	1xRTT (RC3, SO32)	476	817.90	24.90			1
		580	820.50	25.23	0.781	0.558	
		684	823.10	25.28			1
		580	820.50	25.23	0.749	0.526	2
Front	1xRTT (RC3, SO32)	476	817.90	24.90			1
		580	820.50	25.23	0.578	0.417	
		684	823.10	25.28			1

Note(s):

2. SAR test was performed in the middle channel only as the measured level was < 50% of the SAR limit as stated in FCC "Public Notice DA 02-1438" by the SCC-34/SC-2. Testing in the low and high channel is optional.
3. With headset attached.

Hotspot SAR

Not applicable. Due to the BC 10 does not support EVDO

11.3. CDMA BC1

This device supports 1x Advanced. However, SAR is not required because the maximum output for 1x Advanced is no more than 0.25 dB higher than the maximum measured for 1xRTT. If the measured SAR on 1xRTT mode is greater than 1.2 W/kg, repeat the highest of those configurations above 1.2 W/kg for each exposure condition in 1x Advanced. All measured SAR in 1xRTT mode higher than 1.5 W/kg must be repeated for 1x Advanced as Per KDB 760669.

Head SAR

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	1xRTT (RC3,SO55)	25	1851.25	24.93	0.797	0.500	
		600	1880.00	25.02	0.957	0.591	
		1175	1908.75	25.05	1.050	0.619	
Left Tilt (15°)	1xRTT (RC3,SO55)	25	1851.25	24.93			1
		600	1880.00	25.02	0.327	0.211	
		1175	1908.75	25.05			1
Right Touch	1xRTT (RC3,SO55)	25	1851.25	24.93			1
		600	1880.00	25.02	0.686	0.420	
		1175	1908.75	25.05			1
Right Tilt (15°)	1xRTT (RC3,SO55)	25	1851.25	24.93			1
		600	1880.00	25.02	0.260	0.155	
		1175	1908.75	25.05			1

Head SAR (VOIP mode operation)

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	1xEVDO (Rel. 0)	25	1851.25	24.25			1
		600	1880.00	24.20	0.640	0.390	
		1175	1908.75	24.34			1
Left Tilt (15°)	1xEVDO (Rel. 0)	25	1851.25	24.25			1
		600	1880.00	24.20	0.761	0.449	
		1175	1908.75	24.34			1
Right Touch	1xEVDO (Rel. 0)	25	1851.25	24.25	0.782	0.468	
		600	1880.00	24.20	0.822	0.494	
		1175	1908.75	24.34	0.887	0.524	
Right Tilt (15°)	1xEVDO (Rel. 0)	25	1851.25	24.25	0.647	0.381	
		600	1880.00	24.20	0.945	0.527	
		1175	1908.75	24.34	0.732	0.436	

Note(s):

- SAR test was performed in the middle channel only as the measured level was < 50% (0.8 mW/g) of the SAR limit as stated in FCC "Public Notice DA 02-1438" by the SCC-34/SC-2. Testing in the low and high channel is optional.

Body SAR with 10 mm separation distance

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	1xRTT (RC3, SO32)	25	1851.25	25.05	0.998	0.551	
		600	1880.0	25.16	1.160	0.648	
		1175	1908.75	25.07	1.06	0.609	
		600	1880.0	25.16	0.92	0.517	2
Front	1xRTT (RC3, SO32)	25	1851.25	25.05	0.911	0.550	
		600	1880.0	25.16	1.160	0.704	
		1175	1908.75	25.07	1.140	0.696	

Hotspot SAR with 10 mm separation distance

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	1xEVDO (Rel. 0)	25	1851.25	24.25			1
		600	1880.0	24.20	0.718	0.427	
		1175	1908.75	24.34			1
		600	1880.0	24.20	0.693	0.405	2
Front	1xEVDO (Rel. 0)	25	1851.25	24.25			1
		600	1880.0	24.20	0.311	0.194	
		1175	1908.75	24.34			1
Left	1xEVDO (Rel. 0)	25	1851.25	24.25			1
		600	1880.0	24.20	0.316	0.186	
		1175	1908.75	24.34			1
Right	1xEVDO (Rel. 0)	25	1851.25	24.25			3
		600	1880.0	24.20			3
		1175	1908.75	24.34			3
Bottom	1xEVDO (Rel. 0)	25	1851.25	24.25			3
		600	1880.0	24.20			3
		1175	1908.75	24.34			3
Top	1xEVDO (Rel. 0)	25	1851.25	24.25			1
		600	1880.0	24.20	0.202	0.125	
		1175	1908.75	24.34			1

Note(s):

- SAR test was performed in the middle channel only as the measured level was < 50% of the SAR limit as stated in FCC "Public Notice DA 02-1438" by the SCC-34/SC-2. Testing in the low and high channel is optional.
- With headset attached.
- SAR is not required due to antenna-to-edge's distance is greater than 2.5 cm.

11.4. LTE Band 25

(1) Head SAR

Left Hand Side (LHS): 5 MHz BW

Test Position	UL Ch #.	Freq. (MHz)	Mode	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Left Touch	26065	1852.5	QPSK	1	0	23.35	0			1
				1	24	23.48	0			1
				12	6	22.48	1			1
				25	0	22.44	1			1
			16QAM	1	0	22.41	1			1
				1	24	22.56	1			1
				12	6	21.29	2			1
				25	0	21.51	2			1
	26365	1882.5	QPSK	1	0	23.50	0	0.564	0.347	
				1	24	23.51	0	0.537	0.328	
				12	6	22.56	1	0.400	0.244	
				25	0	22.49	1			1
			16QAM	1	0	22.33	1	0.461	0.284	
				1	24	22.45	1	0.435	0.267	
				12	6	21.50	2	0.313	0.191	
				25	0	21.62	2			1
	26665	1912.5	QPSK	1	0	23.70	0	0.602	0.369	
				1	24	23.70	0	0.577	0.352	
				12	6	22.59	1			1
				25	0	22.57	1			1
			16QAM	1	0	22.51	1	0.494	0.298	
				1	24	22.66	1	0.493	0.301	
				12	6	21.60	2			1
				25	0	21.73	2			1
Left Tilt	26065	1852.5	QPSK	1	0	23.35	0			1
				1	24	23.48	0			
				12	6	22.48	1			1
				25	0	22.44	1			1
			16QAM	1	0	22.41	1			1
				1	24	22.56	1			1
				12	6	21.29	2			1
				25	0	21.51	2			1
	26365	1882.5	QPSK	1	0	23.50	0	0.698	0.414	
				1	24	23.51	0	0.666	0.392	
				12	6	22.56	1	0.495	0.293	
				25	0	22.49	1			1
			16QAM	1	0	22.33	1	0.543	0.323	
				1	24	22.45	1	0.486	0.288	
				12	6	21.50	2	0.372	0.220	
				25	0	21.62	2			1
	26665	1912.5	QPSK	1	0	23.70	0	0.748	0.439	
				1	24	23.70	0	0.722	0.422	
				12	6	22.59	1			1
				25	0	22.57	1			1
			16QAM	1	0	22.51	1	0.633	0.371	
				1	24	22.66	1	0.647	0.379	
				12	6	21.60	2			1
				25	0	21.73	2			1

Note(s):

- The test reduction for LTE SAR are based on KDB 941225 D05 SAR for LTE Devices v01

Right Hand Side (RHS): 5 MHz BW

Test Position	UL Ch #.	Freq. (MHz)	Mode	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note		
								1-g	10-g			
RightTouch	26065	1852.5	QPSK	1	0	23.35	0			1		
				1	24	23.48	0			1		
				12	6	22.48	1			1		
				25	0	22.44	1			1		
			16QAM	1	0	22.41	1			1		
				1	24	22.56	1			1		
				12	6	21.29	2			1		
				25	0	21.51	2			1		
			26365	1882.5	QPSK	1	0	23.50	0	0.778	0.454	
						1	24	23.51	0	0.798	0.459	
						12	6	22.56	1	0.629	0.373	
						25	0	22.49	1			1
	16QAM	1			0	22.33	1	0.617	0.367			
		1			24	22.45	1	0.671	0.398			
		12			6	21.50	2	0.483	0.287			
		25			0	21.62	2			1		
	26665	1912.5			QPSK	1	0	23.70	0	0.745	0.450	
						1	24	23.70	0	0.757	0.455	
						12	6	22.59	1			1
						25	0	22.57	1			1
			16QAM	1	0	22.51	1	0.622	0.372			
				1	24	22.66	1	0.740	0.437			
				12	6	21.60	2			1		
				25	0	21.73	2			1		
RightTilt			26065	1852.5	QPSK	1	0	23.35	0			1
						1	24	23.48	0			1
						12	6	22.48	1			1
						25	0	22.44	1			1
	16QAM	1			0	22.41	1			1		
		1			24	22.56	1			1		
		12			6	21.29	2			1		
		25			0	21.51	2			1		
	26365	1882.5			QPSK	1	0	23.50	0	0.700	0.419	
						1	24	23.51	0	0.667	0.401	
						12	6	22.56	1	0.504	0.302	
						25	0	22.49	1			1
			16QAM	1	0	22.33	1	0.567	0.340			
				1	24	22.45	1	0.543	0.327			
				12	6	21.50	2	0.401	0.241			
				25	0	21.62	2			1		
			26665	1912.5	QPSK	1	0	23.70	0	0.681	0.410	
						1	24	23.70	0	0.659	0.398	
						12	6	22.59	1			1
						25	0	22.57	1			1
	16QAM	1			0	22.51	1	0.571	0.344			
		1			24	22.66	1	0.580	0.346			
		12			6	21.60	2			1		
		25			0	21.73	2			1		

Note(s):

- The test reduction for LTE SAR is based on KDB 941225 D05 SAR for LTE Devices v01

(2) Body & Hotspot SAR 5 MHz BW

Test Position	UL Ch #.	Freq. (MHz)	Mode	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Rear	26065	1852.5	QPSK	1	0	23.35	0			1
				1	24	23.48	0			1
				12	6	22.48	1			1
				25	0	22.44	1			1
			16QAM	1	0	22.41	1			1
				1	24	22.56	1			1
				12	6	21.29	2			1
				25	0	21.51	2			1
	26365	1882.5	QPSK	1	0	23.50	0	0.490	0.296	
				1	24	23.51	0	0.580	0.345	
				1	24	23.51	0	0.534	0.312	2
				12	6	22.56	1	0.460	0.274	
			16QAM	25	0	22.49	1			1
				1	0	22.33	1	0.401	0.246	
				1	24	22.45	1	0.439	0.261	
				12	6	21.50	2	0.320	0.191	
	26665	1912.5	QPSK	25	0	21.62	2			1
				1	0	23.70	0	0.353	0.210	1
				1	24	23.70	0	0.336	0.197	
				12	6	22.59	1			1
			16QAM	25	0	22.57	1			1
				1	0	22.51	1	0.284	0.169	
				1	24	22.66	1	0.364	0.212	
				12	6	21.60	2			1
Front	26065	1852.5	QPSK	1	0	23.35	0			1
				1	24	23.48	0			1
				12	6	22.48	1			1
				25	0	22.44	1			1
			16QAM	1	0	22.41	1			1
				1	24	22.56	1			1
				12	6	21.29	2			1
				25	0	21.51	2			1
	26365	1882.5	QPSK	1	0	23.50	0	0.290	0.180	
				1	24	23.51	0	0.330	0.205	
				12	6	22.56	1	0.263	0.162	
				25	0	22.49	1			1
			16QAM	1	0	22.33	1	0.238	0.147	
				1	24	22.45	1	0.261	0.162	
				12	6	21.50	2	0.196	0.121	
				25	0	21.62	2			1
	26665	1912.5	QPSK	1	0	23.70	0	0.275	0.168	
				1	24	23.70	0	0.257	0.156	
				12	6	22.59	1			1
				25	0	22.57	1			1
			16QAM	1	0	22.51	1	0.224	0.137	
				1	24	22.66	1	0.233	0.144	
				12	6	21.60	2			1
				25	0	21.73	2			1

Note(s):

1. The test reduction for LTE SAR is based on KDB 941225 D05 SAR for LTE Devices v01.
2. With headset attached.

(3) Hotspot SAR 5 MHz BW

Test Position	UL Ch #.	Freq. (MHz)	Mode	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note		
								1-g	10-g			
Left	26065	1852.5	QPSK	1	0	23.35	0			1		
				1	24	23.48	0			1		
				12	6	22.48	1			1		
				25	0	22.44	1			1		
			16QAM	1	0	22.41	1			1		
				1	24	22.56	1			1		
				12	6	21.29	2			1		
				25	0	21.51	2			1		
			26365	1882.5	QPSK	1	0	23.50	0	0.298	0.174	
						1	24	23.51	0	0.320	0.185	
						12	6	22.56	1	0.243	0.141	
						25	0	22.49	1			1
	16QAM	1			0	22.33	1	0.245	0.142			
		1			24	22.45	1	0.262	0.151			
		12			6	21.50	2	0.192	0.112			
		25			0	21.62	2			1		
	26665	1912.5			QPSK	1	0	23.70	0	0.331	0.189	
						1	24	23.70	0	0.354	0.200	
						12	6	22.59	1			1
						25	0	22.57	1			1
			16QAM	1	0	22.51	1	0.277	0.157			
				1	24	22.66	1	0.295	0.166			
				12	6	21.60	2			1		
				25	0	21.73	2			1		
Top			26065	1852.5	QPSK	1	0	23.35	0			1
						1	24	23.48	0			1
						12	6	22.48	1			1
						25	0	22.44	1			1
	16QAM	1			0	22.41	1			1		
		1			24	22.56	1			1		
		12			6	21.29	2			1		
		25			0	21.51	2			1		
	26365	1882.5			QPSK	1	0	23.50	0	0.231	0.142	
						1	24	23.51	0	0.221	0.137	
						12	6	22.56	1	0.165	0.102	
						25	0	22.49	1			1
			16QAM	1	0	22.33	1	0.190	0.116			
				1	24	22.45	1	0.180	0.112			
				12	6	21.50	2	0.130	0.080			
				25	0	21.62	2			1		
			26665	1912.5	QPSK	1	0	23.70	0	0.206	0.128	
						1	24	23.70	0	0.184	0.115	
						12	6	22.59	1			1
						25	0	22.57	1			1
	16QAM	1			0	22.51	1	0.173	0.107			
		1			24	22.66	1	0.163	0.101			
		12			6	21.60	2			1		
		25			0	21.73	2			1		

Note(s):

- The test reduction for LTE SAR is based on KDB 941225 D05 SAR for LTE Devices v01.

11.5. Wi-Fi

Head SAR

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	802.11b	1	2412	14.50			1
		6	2437	14.60			1
		11	2462	14.85	0.115	0.058	
Left Tilt	802.11b	1	2412	14.50			1
		6	2437	14.60			1
		11	2462	14.85	0.034	0.016	
Right Touch	802.11b	1	2412	14.50			1
		6	2437	14.60			
		11	2462	14.85	0.218	0.104	
Right Tilt	802.11b	1	2412	14.50			1
		6	2437	14.60			1
		11	2462	14.85	0.026	0.012	

Body SAR with 10 mm separation distance

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	802.11b	1	2412	14.50			1
		6	2437	14.60			
		11	2462	14.85	0.245	0.112	
Front	802.11b	1	2412	14.50			1
		6	2437	14.60			
		11	2462	14.85	0.067	0.033	

Hotspot SAR with 10 mm separation distance

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	802.11b	1	2412	14.50			1
		6	2437	14.60			
		11	2462	14.85	0.245	0.112	
Front	802.11b	1	2412	14.50			1
		6	2437	14.60			
		11	2462	14.85	0.067	0.033	
Left	802.11b	1	2412	14.5			3
		6	2437	14.6			3
		11	2462	14.9			3
Right	802.11b	1	2412	14.5			1
		6	2437	14.6			
		11	2462	14.9	0.257	0.118	
Bottom	802.11b	1	2412	14.5			3
		6	2437	14.6			3
		11	2462	14.9			3
Top	802.11b	1	2412	14.5			3
		6	2437	14.6			3
		11	2462	14.9			3

Note(s):

1. Testing was performed on the channel with the highest output power only as the SAR was ≤ 0.8 W/kg with the operating frequency band having a range of < 100 MHz. Per KDB 447498 1) e) i)
2. With headset attached.
3. SAR is not required as the antenna-to-edge distance is greater than 2.5 cm.

12. Summary of Highest 1-g SAR

The test configuration for each body exposure condition (head, body and Hotspot) is dependent on the applicable voice or data modes, and antenna selected.

FCC rule part	Technology/Band	Test configuration	Mode	Separation distance (mm)	Highest 1g SAR (W/kg)
22	CDMA BC0 (835)	Head: Left Touch	1xRTT (RC3, SO55)	--	0.707
		Body: Rear	1xRTT (RC3, SO32)	10	0.757
		Hotspot: Rear	1xEVDO (Rel. 0)	10	0.668
90	CDMA BC10 (820)	Head: Left Touch	1xRTT (RC3, SO55)	--	0.615
		Body: Rear	1xRTT (RC3, SO32)	10	0.781
		Hotspot: Rear	See note 1	--	--
24	CDMA BC1 (1900)	Head: Left Touch	1xRTT (RC3, SO55)	--	1.05
		Body: Rear	1xRTT (RC3, SO32)	10	1.16
		Hotspot: Rear	1xEVDO (Rel. 0)	10	0.718
24	LTE Band 25 (1900)	Head: Right Touch	5 MHz (QPSK) RB# 1 RB# 24	--	0.798
		Body & -hotspot: Rear	5 MHz (QPSK) RB# 1 RB# 24	10	0.580
15.247	Wi-Fi 2.4 GHz	Head: Right touch	802.11b, 1 kbps	--	0.218
		Body: Rear	802.11b, 1 kbps	10	0.245
		Hotspot: Right	802.11b, 1 kbps	10	0.257

Note(s):

1. Not applicable. Due to the BC 10 does not support EVDO

13. Worst-case SAR Plots

Date: 11/3/2011

Test Laboratory: UL CCS SAR Lab C

CDMA BC0(850) Measure_Head

Communication System: CDMA2000; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.52$ MHz; $\sigma = 0.875$ mho/m; $\epsilon_r = 41.634$; $\rho = 1000$ kg/m³
Phantom section: Left Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

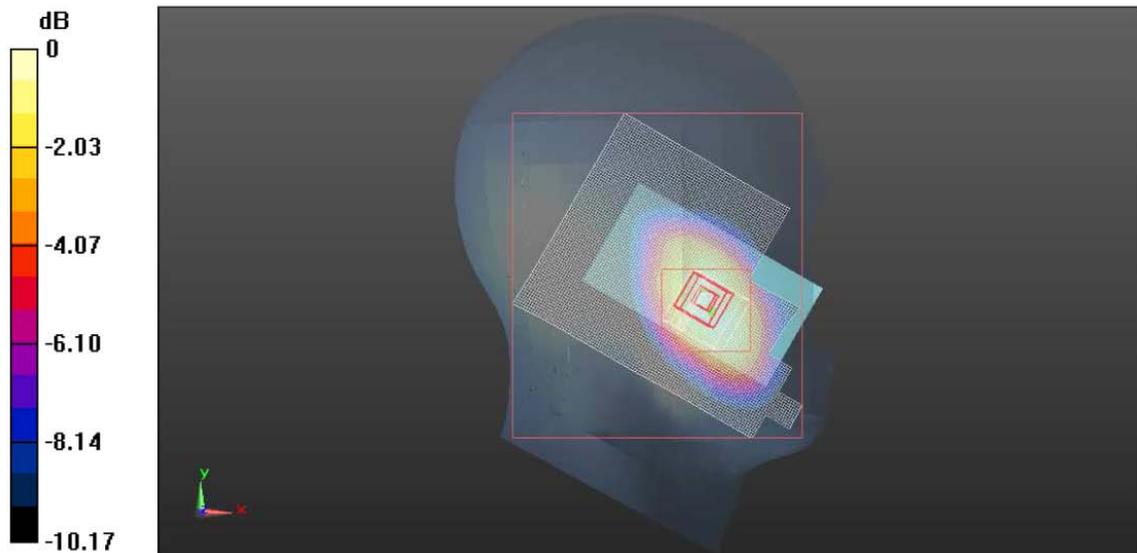
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3772; ConvF(8.52, 8.52, 8.52); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 10/18/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP1632
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

LHS_CDMA BC0(850)_1xRTT_RC3, SO55/Touch_Mid-Ch/Area Scan (81x111x1):

Measurement grid: dx=15mm, dy=15mm
[Info: Interpolated medium parameters used for SAR evaluation.](#)
Maximum value of SAR (interpolated) = 0.769 mW/g

LHS_CDMA BC0(850)_1xRTT_RC3, SO55/Touch_Mid-Ch/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.638 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.905 W/kg
SAR(1 g) = 0.707 mW/g; SAR(10 g) = 0.517 mW/g
[Info: Interpolated medium parameters used for SAR evaluation.](#)
Maximum value of SAR (measured) = 0.798 mW/g



0 dB = 0.800mW/g

Date: 11/3/2011

Test Laboratory: UL CCS SAR Lab C

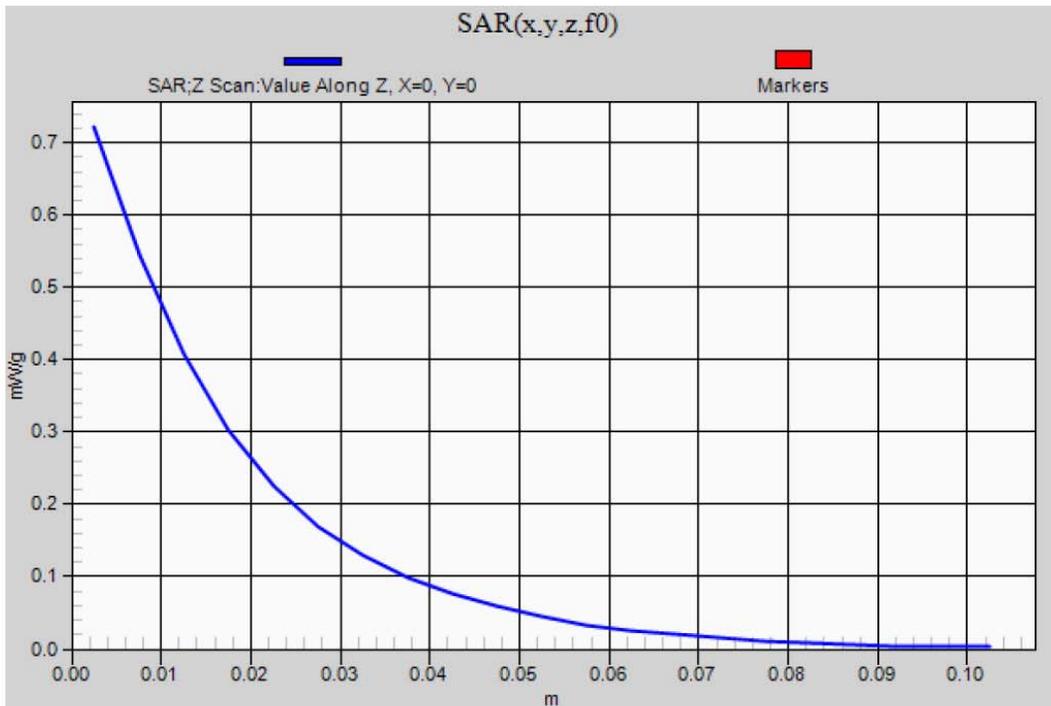
CDMA BC0(850) Measure_Head

Communication System: CDMA2000; Frequency: 836.52 MHz; Duty Cycle: 1:1

LHS_CDMA BC0(850)_1xRTT_RC3, SO55/Touch_Mid-Ch/Z Scan (1x1x21): Measurement grid:
dx=20mm, dy=20mm, dz=5mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.721 mW/g



Date: 11/2/2011

Test Laboratory: UL CCS SAR Lab C

CDMA BC0(850) measure_Body_1xRTT RC3, SO32

Communication System: CDMA2000; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.52$ MHz; $\sigma = 0.987$ mho/m; $\epsilon_r = 54.646$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3772; ConvF(8.57, 8.57, 8.57); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 10/18/2011
- Phantom: ELI v4.0 (B); Type: QDOVA001BB; Serial: 1121
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Rear/Mid-Ch/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.864 mW/g

Rear/Mid-Ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

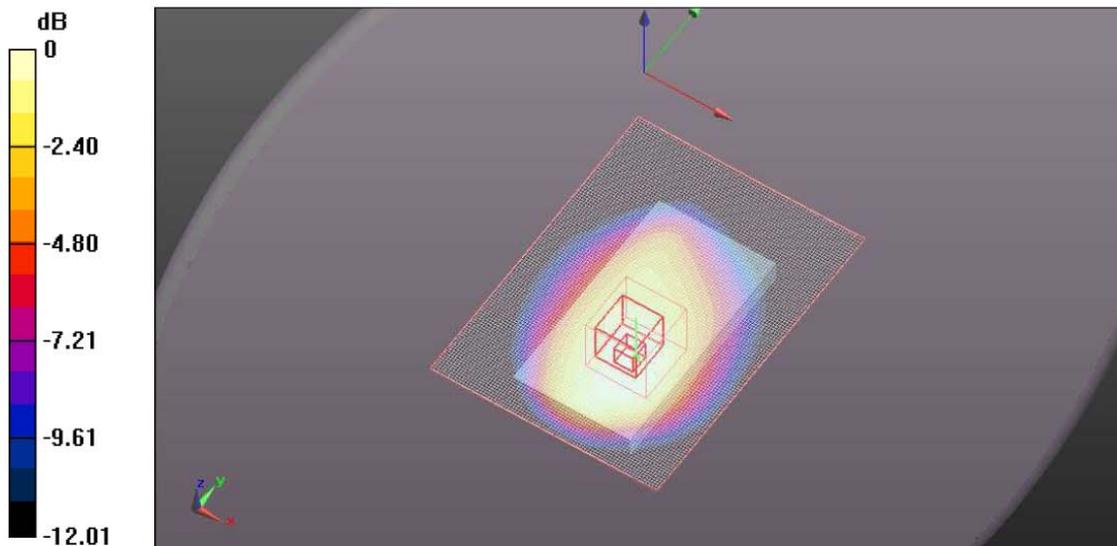
Reference Value = 29.570 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.112 W/kg

SAR(1 g) = 0.757 mW/g; SAR(10 g) = 0.533 mW/g

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.888 mW/g



Date: 11/2/2011

Test Laboratory: UL CCS SAR Lab C

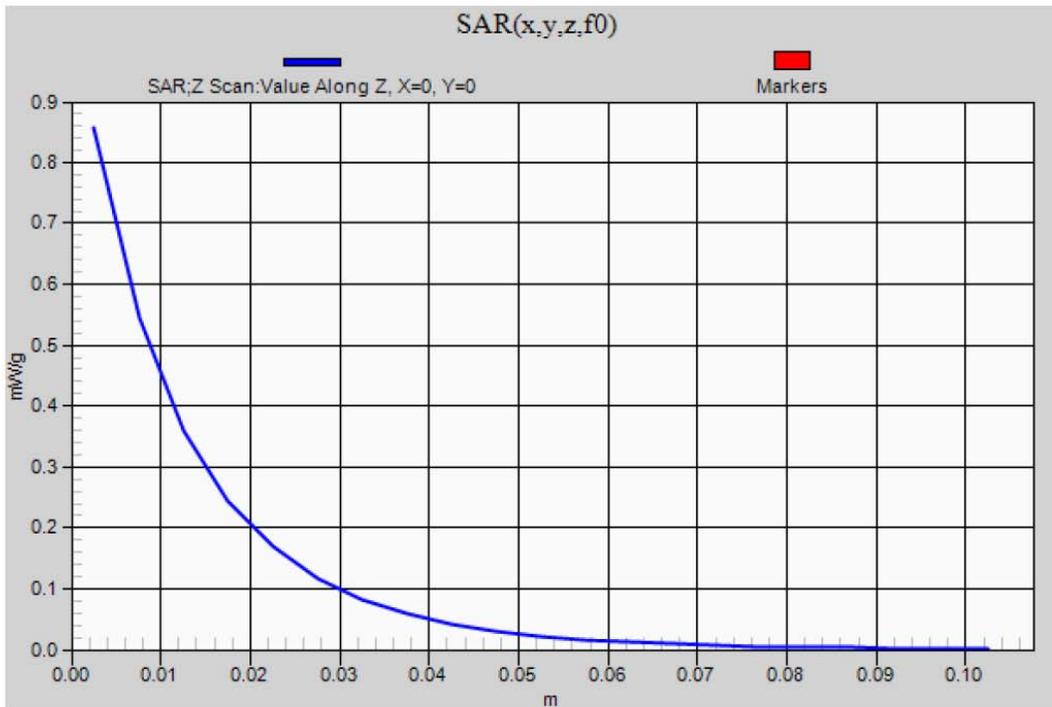
CDMA BC0(850) measure_Body_1xRTT RC3, SO32

Communication System: CDMA2000; Frequency: 836.52 MHz; Duty Cycle: 1:1

Rear/Mid-Ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.857 mW/g



Date: 11/2/2011

Test Laboratory: UL CCS SAR Lab C

CDMA BC0(850) measure_Hotspot_1xEVDO Rel.0

Communication System: CDMA2000; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.52$ MHz; $\sigma = 0.987$ mho/m; $\epsilon_r = 54.646$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3772; ConvF(8.57, 8.57, 8.57); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 10/18/2011
- Phantom: ELI v4.0 (B); Type: QDOVA001BB; Serial: 1121
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Rear/Mid-Ch/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.754 mW/g

Rear/Mid-Ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

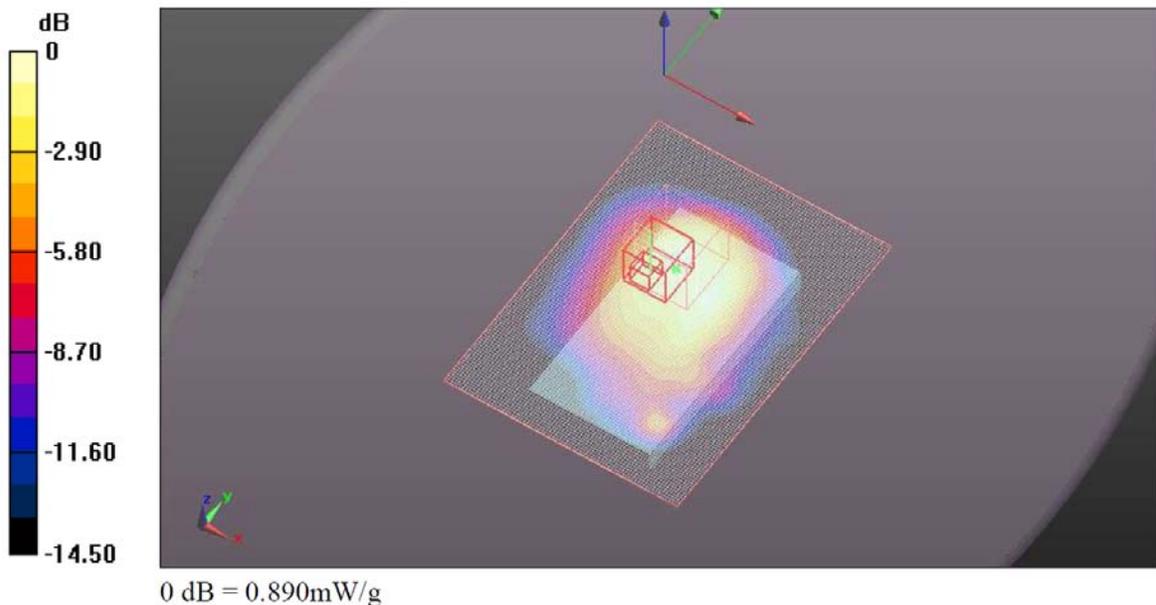
Reference Value = 25.174 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.175 W/kg

SAR(1 g) = 0.668 mW/g; SAR(10 g) = 0.422 mW/g

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.886 mW/g



Date: 11/2/2011

Test Laboratory: UL CCS SAR Lab C

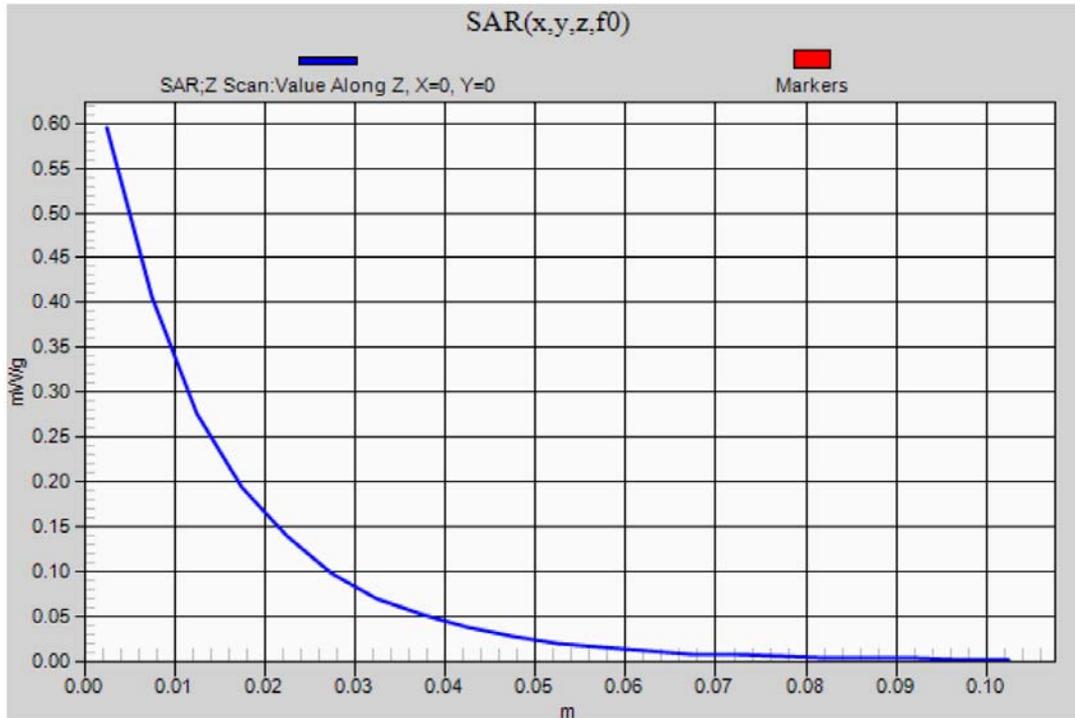
CDMA BC0(850) measure_Hotspot_1xEVDO Rel.0

Communication System: CDMA2000; Frequency: 836.52 MHz; Duty Cycle: 1:1

Rear/Mid-Ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.595 mW/g



Date: 11/3/2011

Test Laboratory: UL CCS SAR Lab C

CDMA BC10(800)_Head_1xRTT RC3, SO55

Communication System: CDMA2000; Frequency: 820.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 820.5$ MHz; $\sigma = 0.878$ mho/m; $\epsilon_r = 42.848$; $\rho = 1000$ kg/m³
Phantom section: Left Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3772; ConvF(8.52, 8.52, 8.52); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 10/18/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP1632
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

LHS/Touch_Mid-Ch/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.744 mW/g

LHS/Touch_Mid-Ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

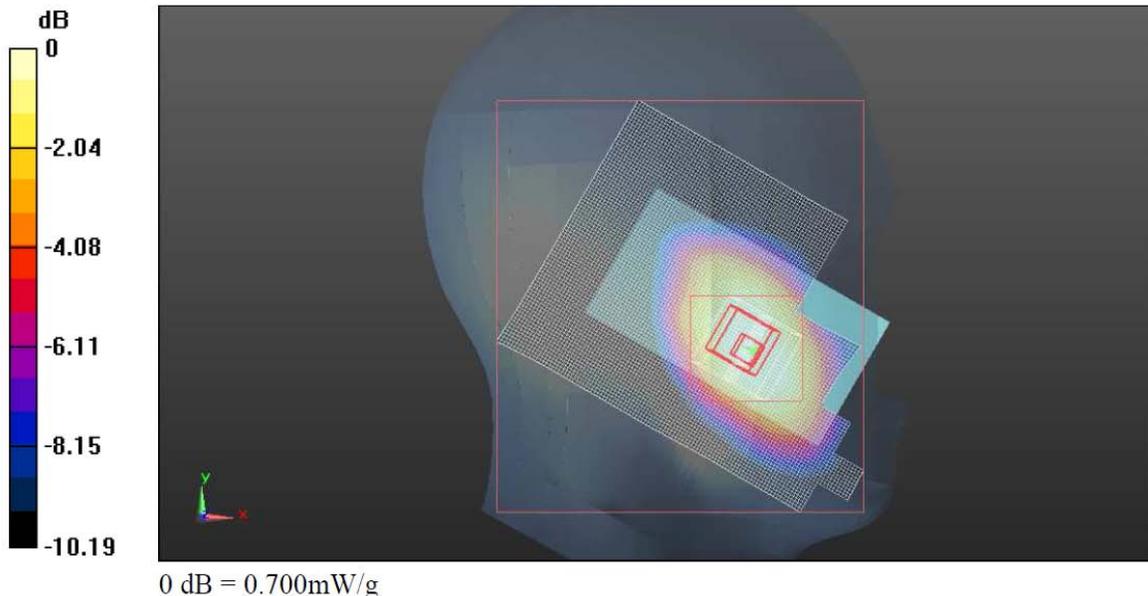
Reference Value = 27.963 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.805 W/kg

SAR(1 g) = 0.615 mW/g; SAR(10 g) = 0.455 mW/g

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.700 mW/g



Date: 11/3/2011

Test Laboratory: UL CCS SAR Lab C

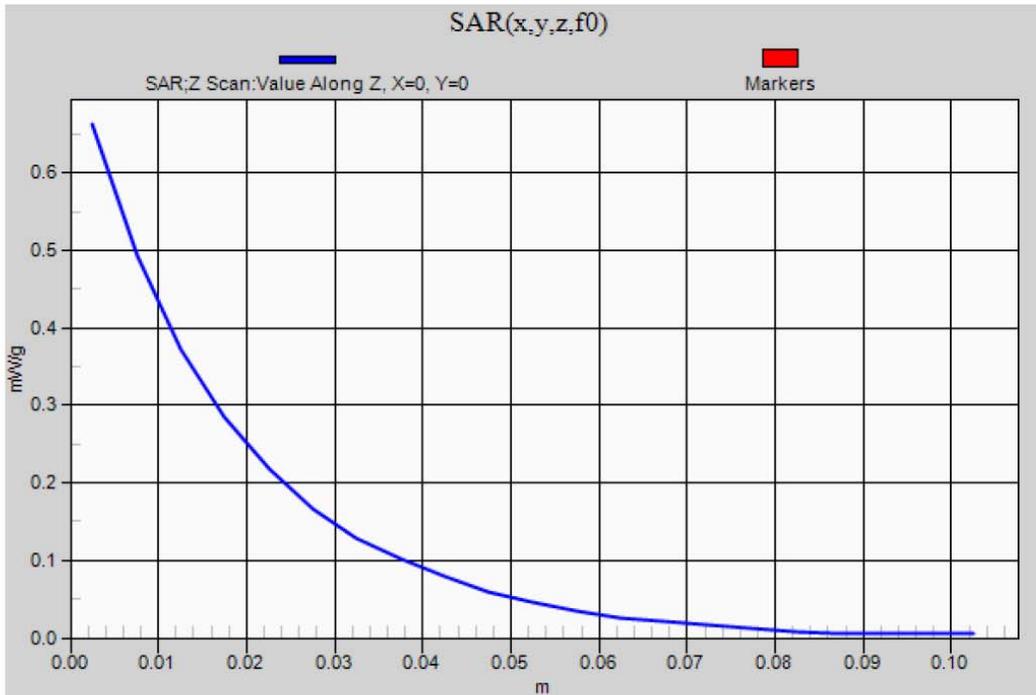
CDMA BC10(800)_Head_1xRTT RC3, SO55

Communication System: CDMA2000; Frequency: 820.5 MHz; Duty Cycle: 1:1

LHS/Touch_Mid-Ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.662 mW/g



Date: 11/3/2011

Test Laboratory: UL CCS SAR Lab C

CDMA BC10(800)_Body worn_1xRTT RC3, SO32

Communication System: CDMA2000; Frequency: 820.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 820.5$ MHz; $\sigma = 0.968$ mho/m; $\epsilon_r = 55.339$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3772; ConvF(8.57, 8.57, 8.57); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 10/18/2011
- Phantom: ELI v4.0 (B); Type: QDOVA001BB; Serial: 1121
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Rear/Mid-Ch/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.903 mW/g

Rear/Mid-Ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

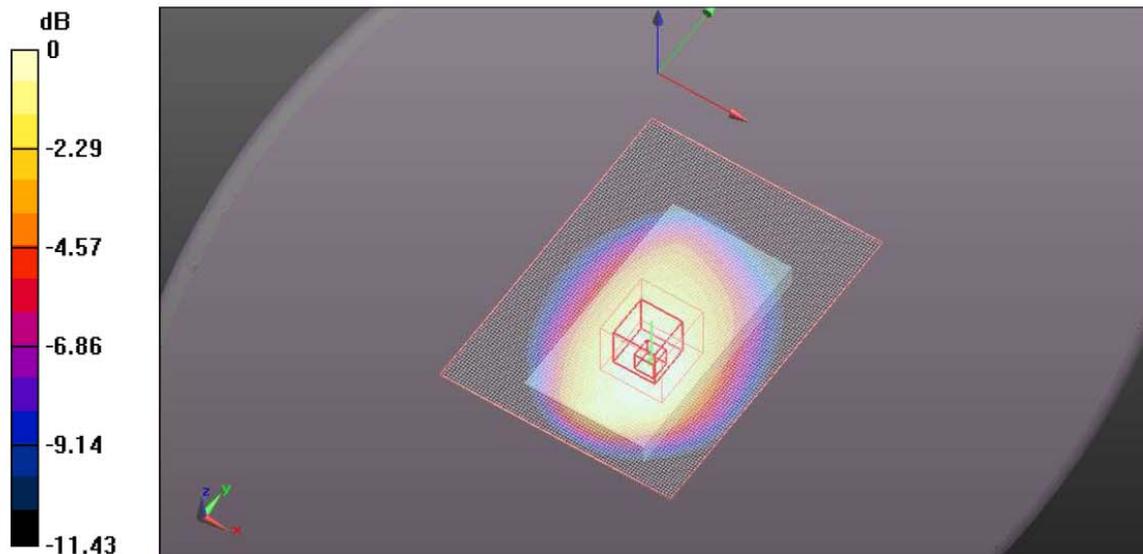
Reference Value = 30.498 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.111 W/kg

SAR(1 g) = 0.781 mW/g; SAR(10 g) = 0.558 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.910 mW/g



0 dB = 0.910mW/g

Date: 11/3/2011

Test Laboratory: UL CCS SAR Lab C

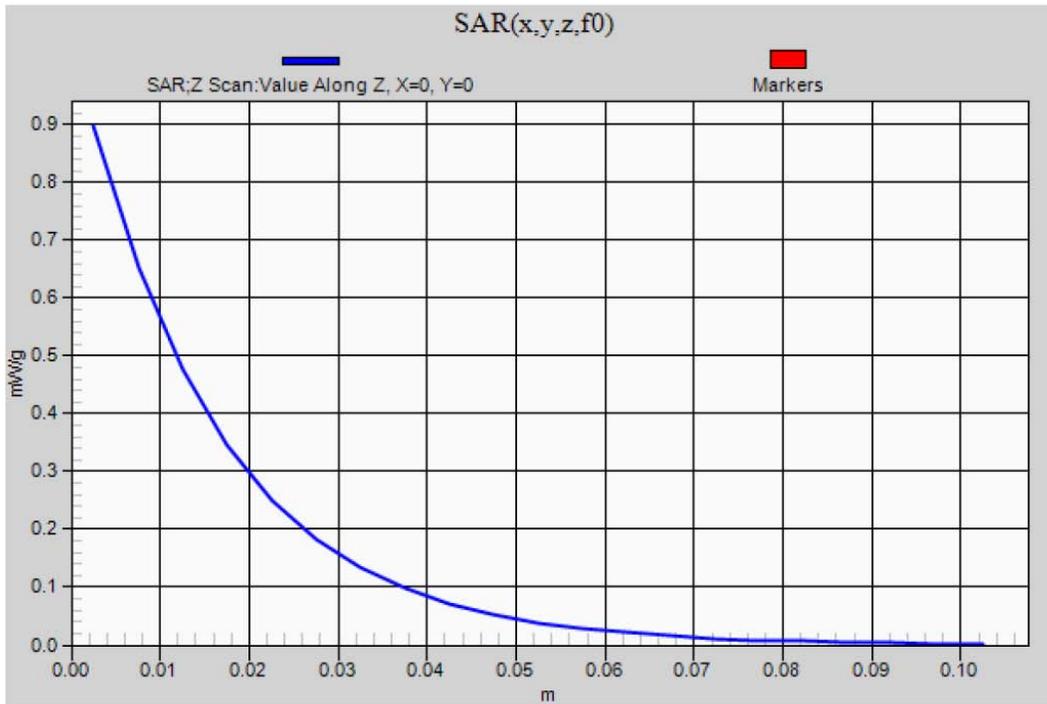
CDMA BC10(800)_Body worn_1xRTT RC3, SO32

Communication System: CDMA2000; Frequency: 820.5 MHz; Duty Cycle: 1:1

Rear/Mid-Ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.897 mW/g



Date: 11/3/2011

Test Laboratory: UL CCS SAR Lab B

CDMA BC1_Head_1xRTT RC3 SO55

Communication System: CDMA2000; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1908.75$ MHz; $\sigma = 1.423$ mho/m; $\epsilon_r = 40.36$; $\rho = 1000$ kg/m³
Phantom section: Left Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3773; ConvF(7.3, 7.3, 7.3); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1258; Calibrated: 5/2/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP1632
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

LHS/Touch_H ch /Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.253 mW/g

LHS/Touch_H ch /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

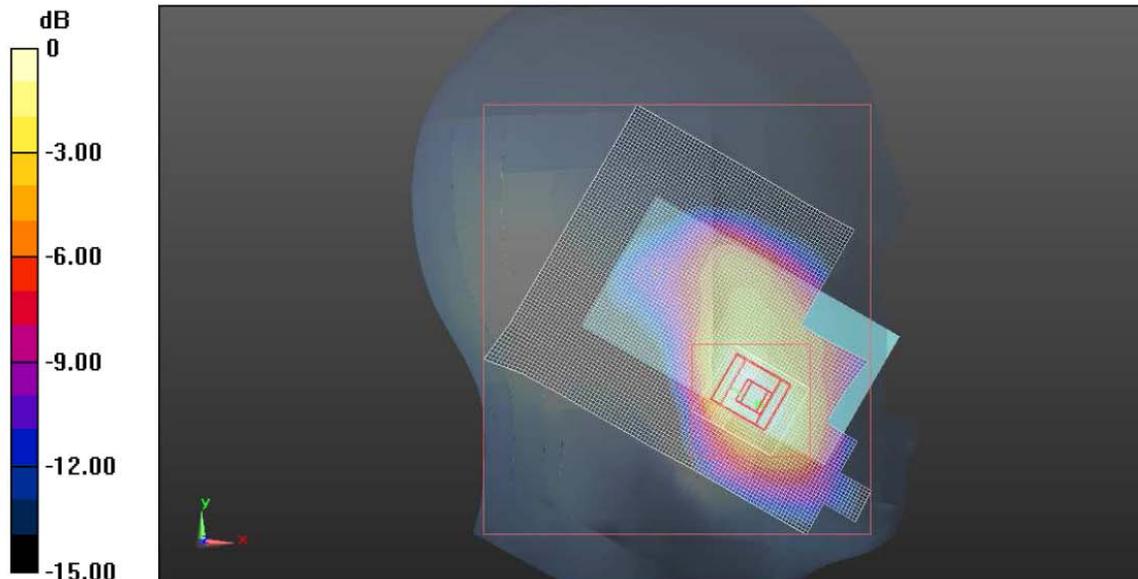
Reference Value = 27.816 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 1.676 W/kg

SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.619 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.305 mW/g



0 dB = 1.310mW/g

Date: 11/3/2011

Test Laboratory: UL CCS SAR Lab B

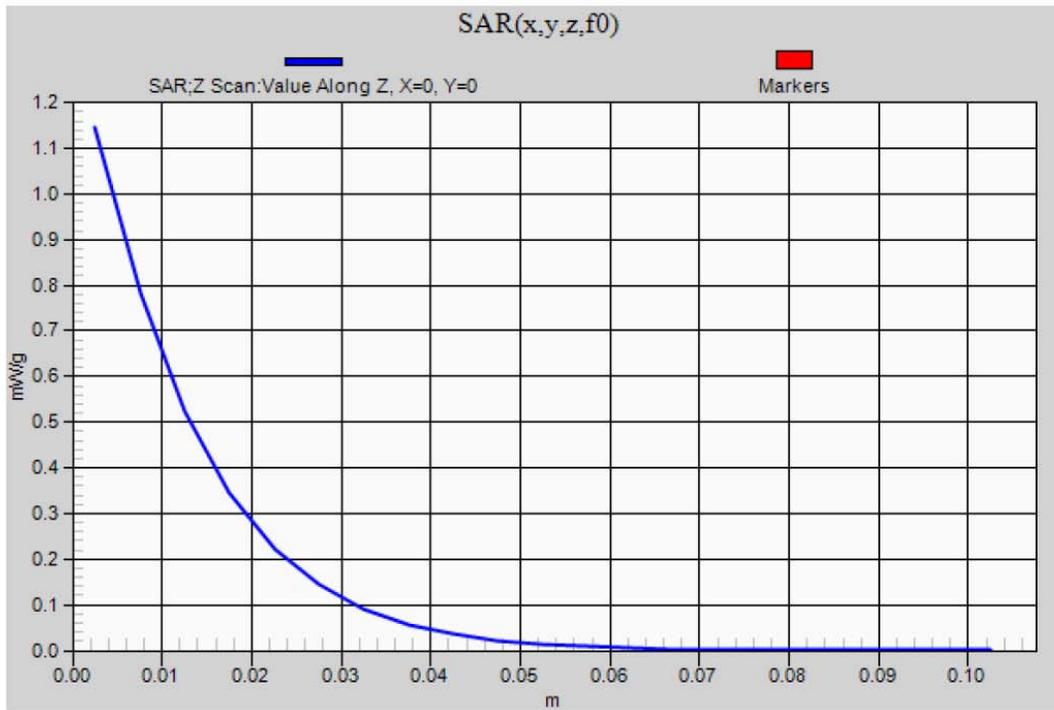
CDMA BC1_Head_1xRTT RC3 SO55

Communication System: CDMA2000; Frequency: 1908.75 MHz; Duty Cycle: 1:1

LHS/Touch_H ch /Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.145 mW/g



Date: 11/15/2011

Test Laboratory: UL CCS SAR Lab A

CDMA BC1_Body worn

Communication System: CDMA2000; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.479$ mho/m; $\epsilon_r = 51.221$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

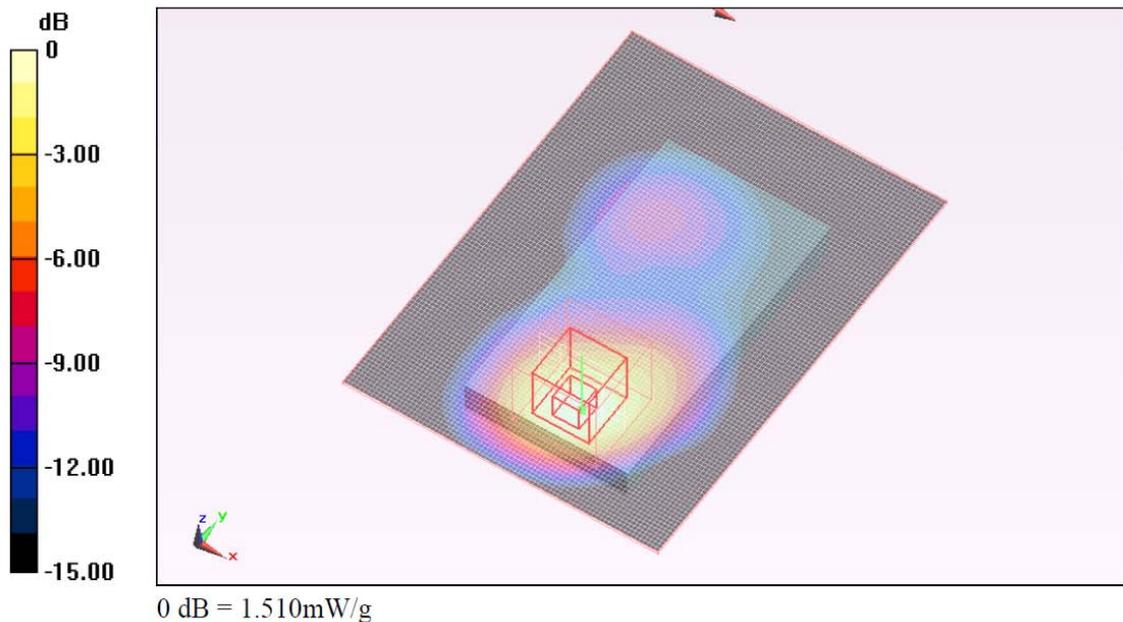
Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3772; ConvF(6.76, 6.76, 6.76); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 10/18/2011
- Phantom: ELI v4.0 (A); Type: QDOVA001BB; Serial: 1117
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Rear/1xRTT_M-Ch/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.451 mW/g

Rear/1xRTT_M-Ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.114 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 2.063 W/kg
SAR(1 g) = 1.16 mW/g; SAR(10 g) = 0.648 mW/g
Maximum value of SAR (measured) = 1.507 mW/g



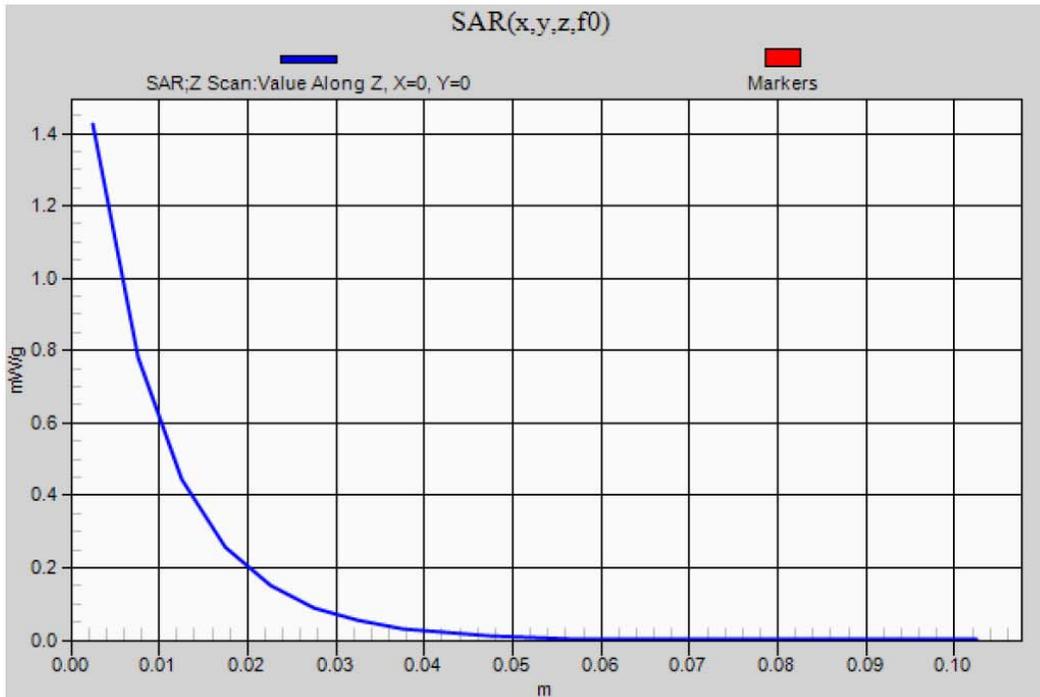
Date: 11/15/2011

Test Laboratory: UL CCS SAR Lab A

CDMA BC1_Body worn

Communication System: CDMA2000; Frequency: 1880 MHz; Duty Cycle: 1:1

Rear/1xRTT_M-Ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.425 mW/g



Date: 11/2/2011

Test Laboratory: UL CCS SAR Lab B

CDMA BC1_Hotspot

Communication System: CDMA2000; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.224$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3773; ConvF(7.37, 7.37, 7.37); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1258; Calibrated: 5/2/2011
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

Rear/1xEvDo_M-Ch/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.819 mW/g

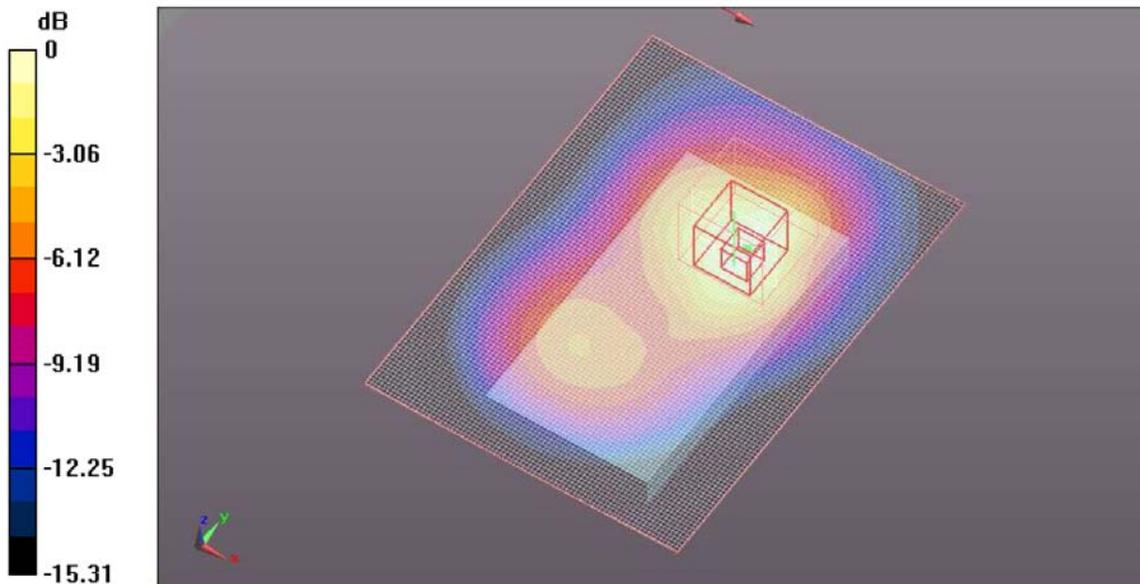
Rear/1xEvDo_M-Ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.889 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 1.246 W/kg

SAR(1 g) = 0.718 mW/g; SAR(10 g) = 0.427 mW/g

Maximum value of SAR (measured) = 0.905 mW/g



0 dB = 0.900mW/g

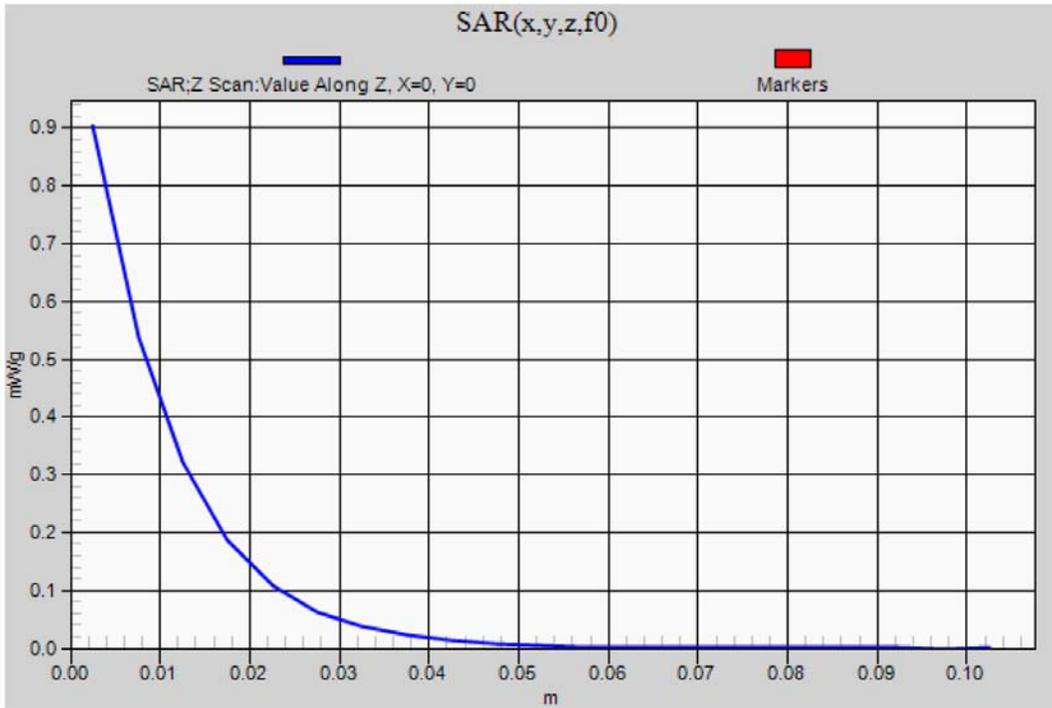
Date: 11/2/2011

Test Laboratory: UL CCS SAR Lab B

CDMA BC1_Hotspot

Communication System: CDMA2000; Frequency: 1880 MHz; Duty Cycle: 1:1

Rear/1xEvDo_M-Ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.903 mW/g



Date: 11/11/2011

Test Laboratory: UL CCS SAR Lab B

LTE Band 25_Head

Communication System: LTE; Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1882.5$ MHz; $\sigma = 1.373$ mho/m; $\epsilon_r = 39.844$; $\rho = 1000$ kg/m³
Phantom section: Right Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3773; ConvF(7.3, 7.3, 7.3); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1258; Calibrated: 5/2/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP1632
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

RHS/Touch_QPSK_5MHz_RB1_RB24_M-Ch_Vol. Scan/Area Scan (81x111x1): Measurement

grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.099 mW/g

RHS/Touch_QPSK_5MHz_RB1_RB24_M-Ch_Vol. Scan/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

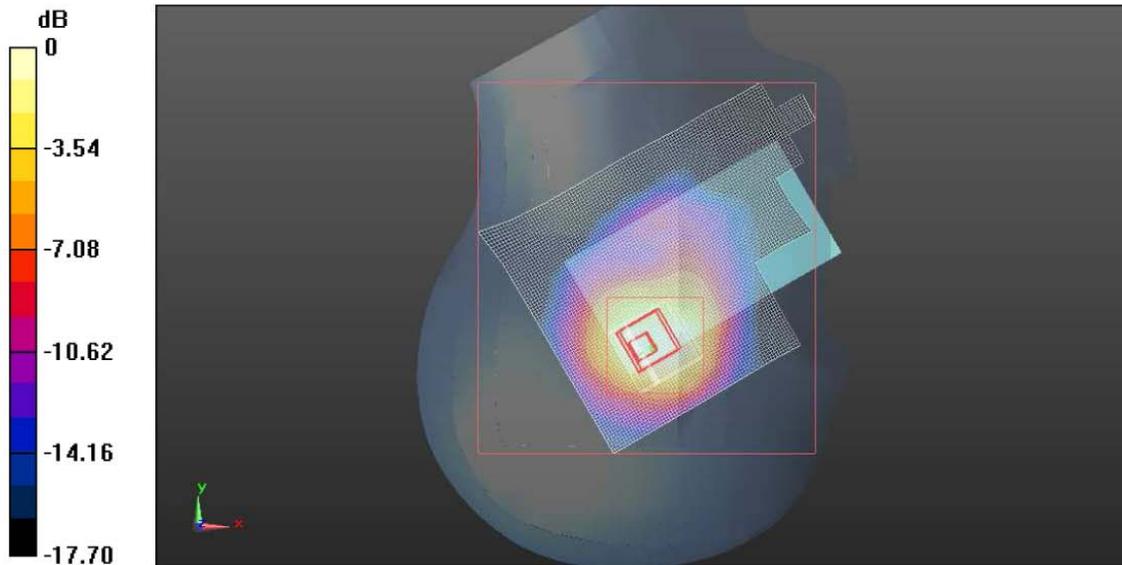
Reference Value = 27.112 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 1.427 W/kg

SAR(1 g) = 0.798 mW/g; SAR(10 g) = 0.459 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.020 mW/g



0 dB = 1.020mW/g

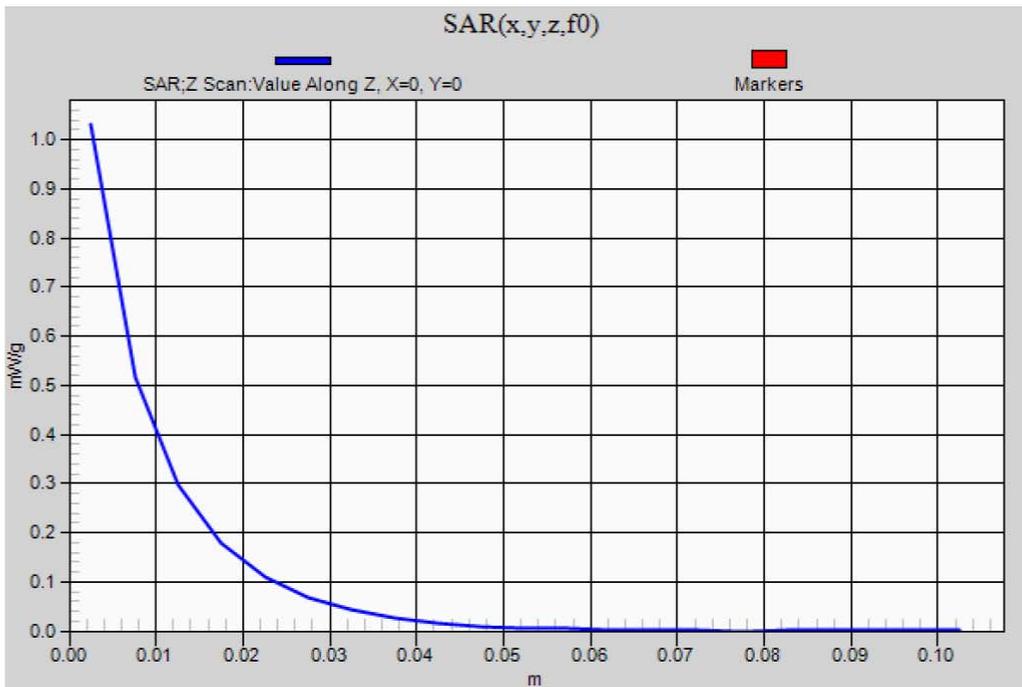
Date: 11/9/2011

Test Laboratory: UL CCS SAR Lab B

LTE Band 25_Head

Communication System: LTE; Frequency: 1882.5 MHz; Duty Cycle: 1:1

RHS/Touch_QPSK_5MHz_RB1_RB24_M-Ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Info: [Interpolated medium parameters used for SAR evaluation.](#)
Maximum value of SAR (measured) = 1.031 mW/g



Date: 11/7/2011

Test Laboratory: UL CCS SAR Lab B

LTE Band 25_Body

Communication System: LTE; Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1882.5$ MHz; $\sigma = 1.466$ mho/m; $\epsilon_r = 52.356$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3773; ConvF(7.37, 7.37, 7.37); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1258; Calibrated: 5/2/2011
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

Rear/QPSK_5MHz_RB1_RB24_M-Ch/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.783 mW/g

Rear/QPSK_5MHz_RB1_RB24_M-Ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

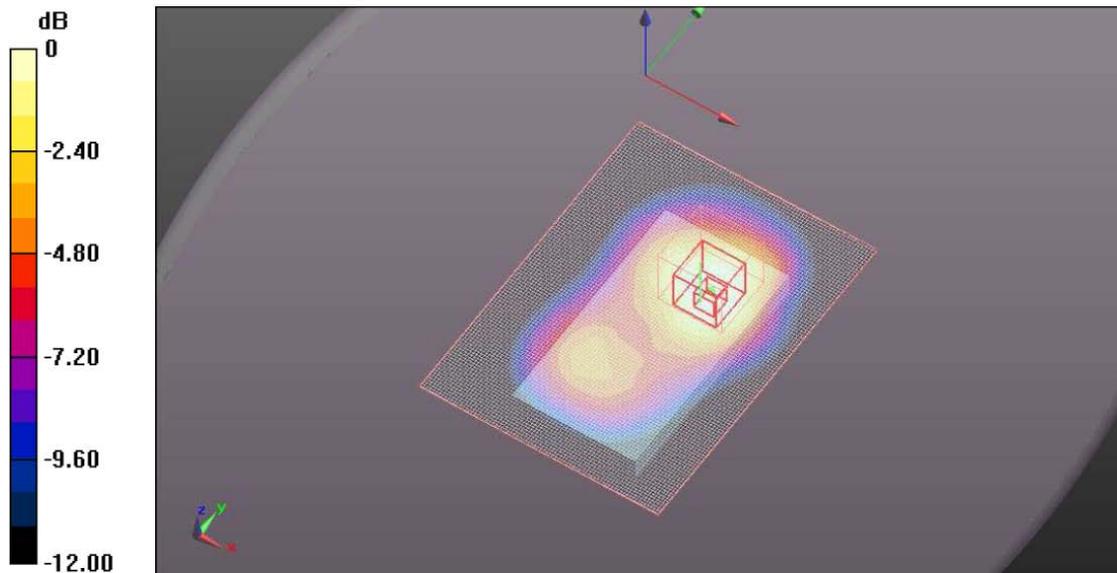
Reference Value = 22.742 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.987 W/kg

SAR(1 g) = 0.580 mW/g; SAR(10 g) = 0.345 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.719 mW/g



0 dB = 0.720mW/g

Date: 11/7/2011

Test Laboratory: UL CCS SAR Lab B

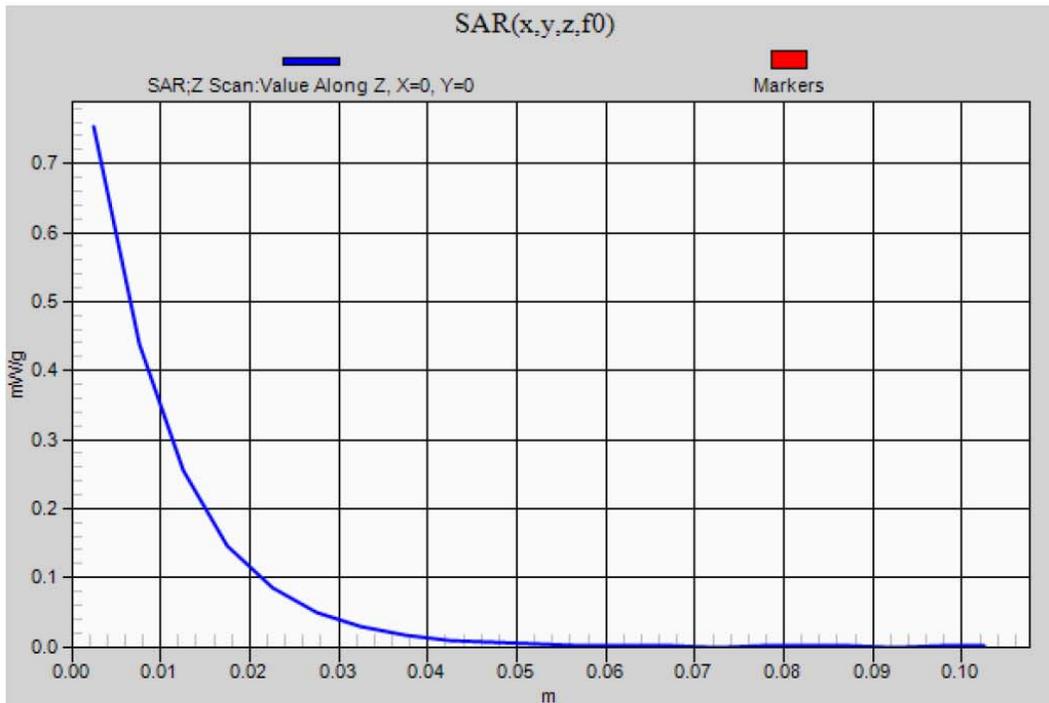
LTE Band 25_Body

Communication System: LTE; Frequency: 1882.5 MHz; Duty Cycle: 1:1

Rear/QPSK_5MHz_RB1_RB24_M-Ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.753 mW/g



Date: 11/13/2011, Date: 11/14/2011

Test Laboratory: UL CCS SAR Lab B

WiFi_2.4GHz_Head

Communication System: WLAN_2.4GHz; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.861$ mho/m; $\epsilon_r = 38.443$; $\rho = 1000$ kg/m³
Phantom section: Right Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3773; ConvF(6.56, 6.56, 6.56); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1258; Calibrated: 5/2/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP1632
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

RHS/Touch_H ch/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.342 mW/g

RHS/Touch_H ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

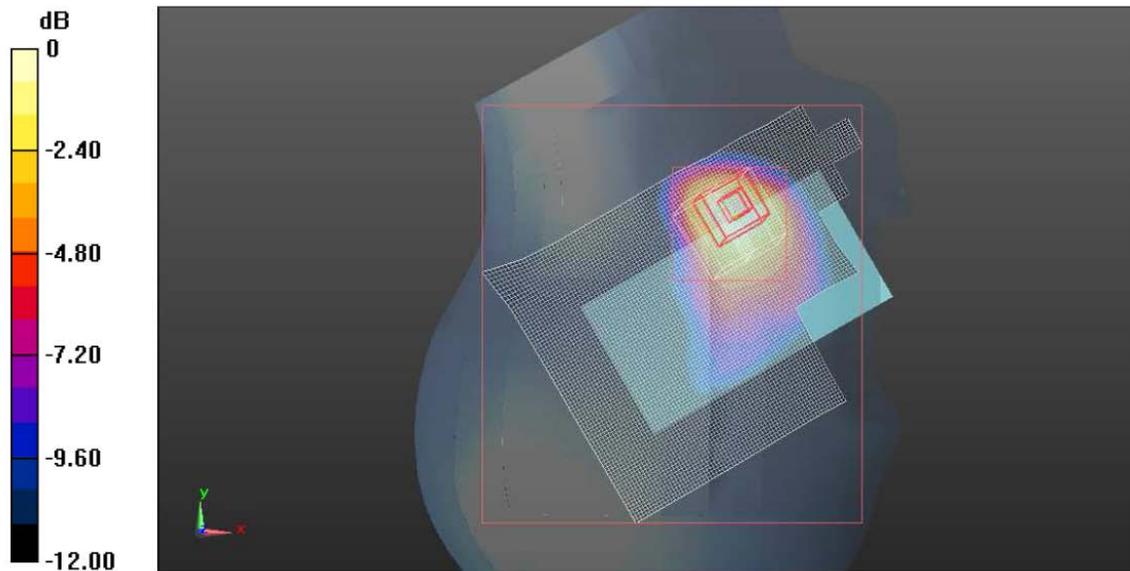
Reference Value = 12.661 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.463 W/kg

SAR(1 g) = 0.218 mW/g; SAR(10 g) = 0.104 mW/g

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.299 mW/g



0 dB = 0.300mW/g

Date: 11/14/2011

Test Laboratory: UL CCS SAR Lab B

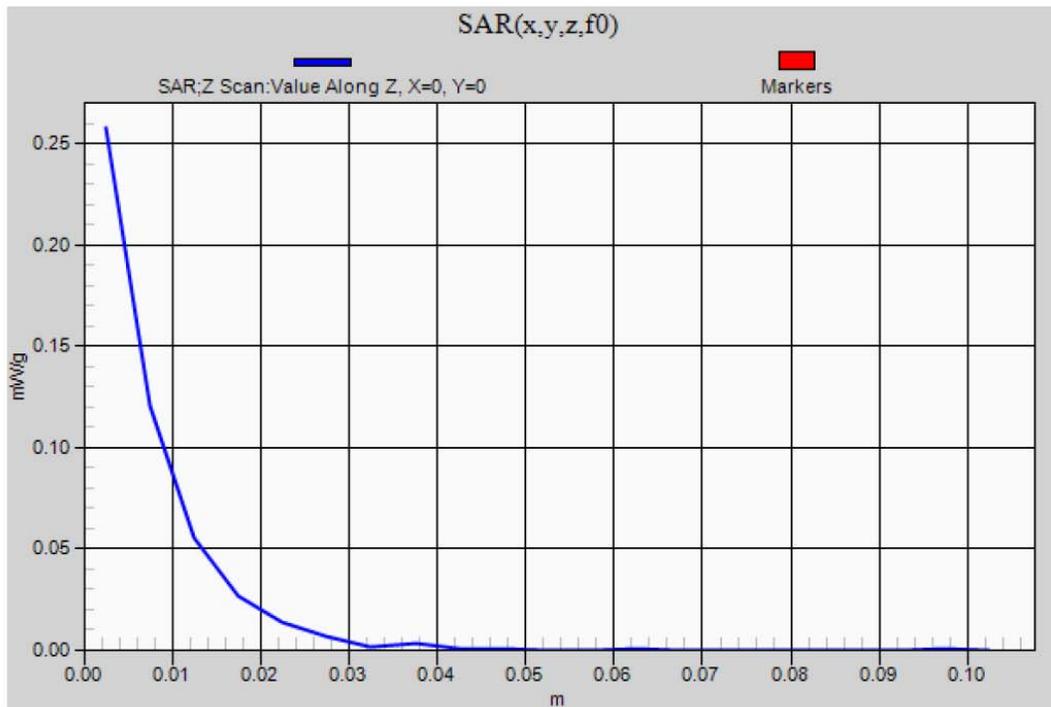
WiFi_2.4GHz_Head

Communication System: WLAN_2.4GHz; Frequency: 2462 MHz; Duty Cycle: 1:1

RHS/Touch_H ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.258 mW/g



Date: 11/14/2011

Test Laboratory: UL CCS SAR Lab B

WiFi_Body

Communication System: WLAN_2.4GHz; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.971$ mho/m; $\epsilon_r = 51.524$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3773; ConvF(6.87, 6.87, 6.87); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1258; Calibrated: 5/2/2011
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

802.11b_Ant 3/Rear Side_H ch/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.286 mW/g

802.11b_Ant 3/Rear Side_H ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

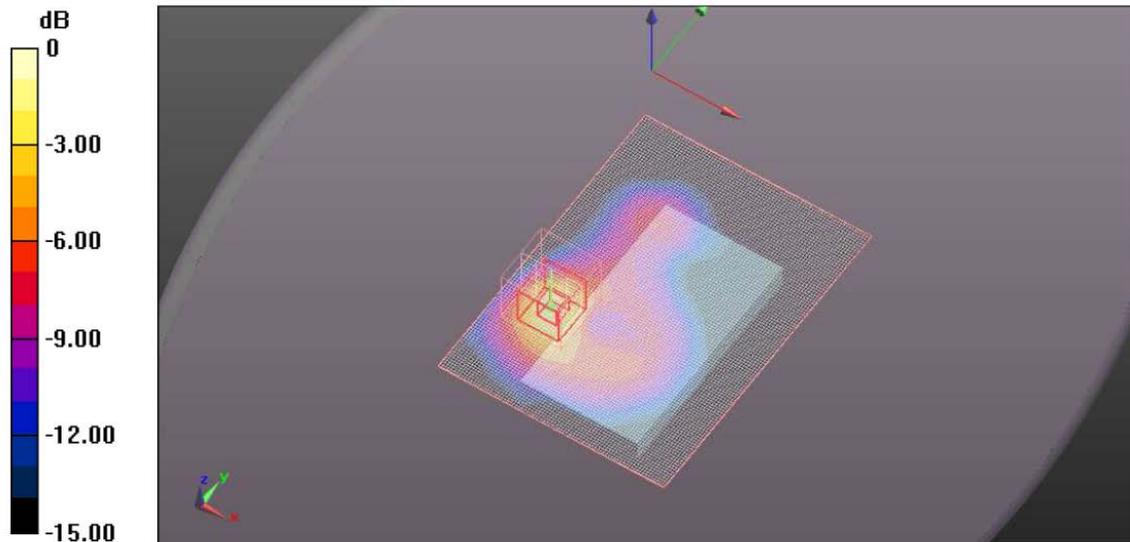
Reference Value = 11.007 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.533 W/kg

SAR(1 g) = 0.245 mW/g; SAR(10 g) = 0.112 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.355 mW/g



0 dB = 0.350mW/g

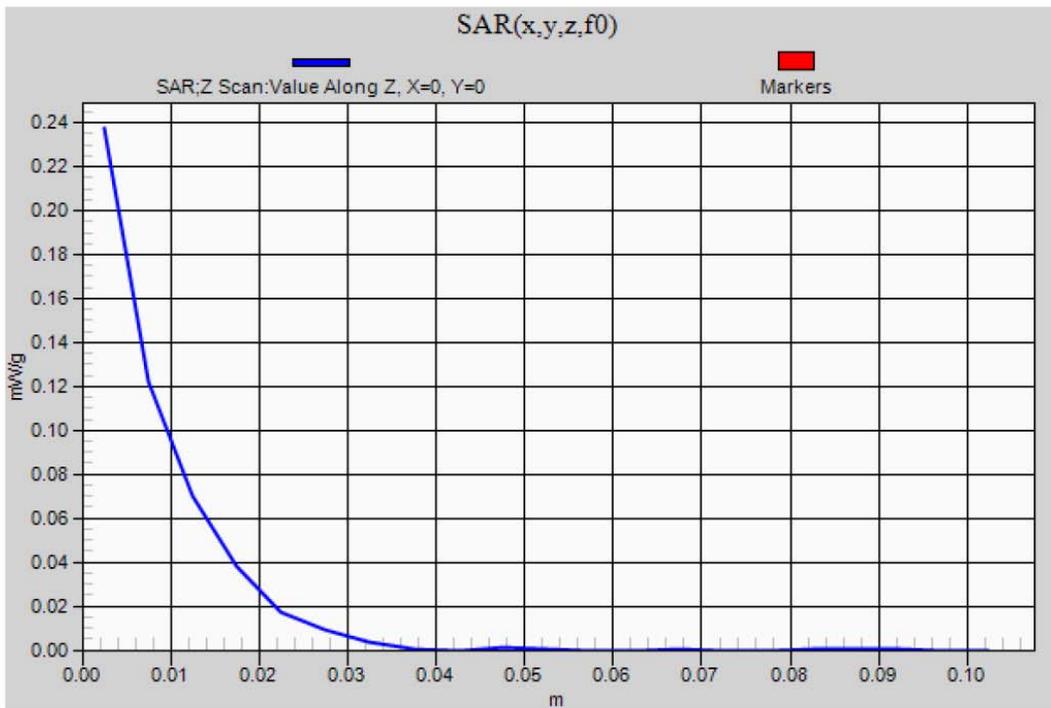
Date: 11/14/2011

Test Laboratory: UL CCS SAR Lab B

WiFi_Body

Communication System: WLAN_2.4GHz; Frequency: 2462 MHz; Duty Cycle: 1:1

802.11b_Ant 3/Rear Side_H ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Info: [Interpolated medium parameters used for SAR evaluation.](#)
Maximum value of SAR (measured) = 0.238 mW/g



Date: 11/14/2011

Test Laboratory: UL CCS SAR Lab B

WiFi_Body

Communication System: WLAN_2.4GHz; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.971$ mho/m; $\epsilon_r = 51.524$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3773; ConvF(6.87, 6.87, 6.87); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1258; Calibrated: 5/2/2011
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

802.11b_Ant 3/Right Side_H ch/Area Scan (81x111x1):

Measurement grid: dx=15mm, dy=15mm
Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.357 mW/g

802.11b_Ant 3/Right Side_H ch/Zoom Scan (5x5x7)/Cube 0:

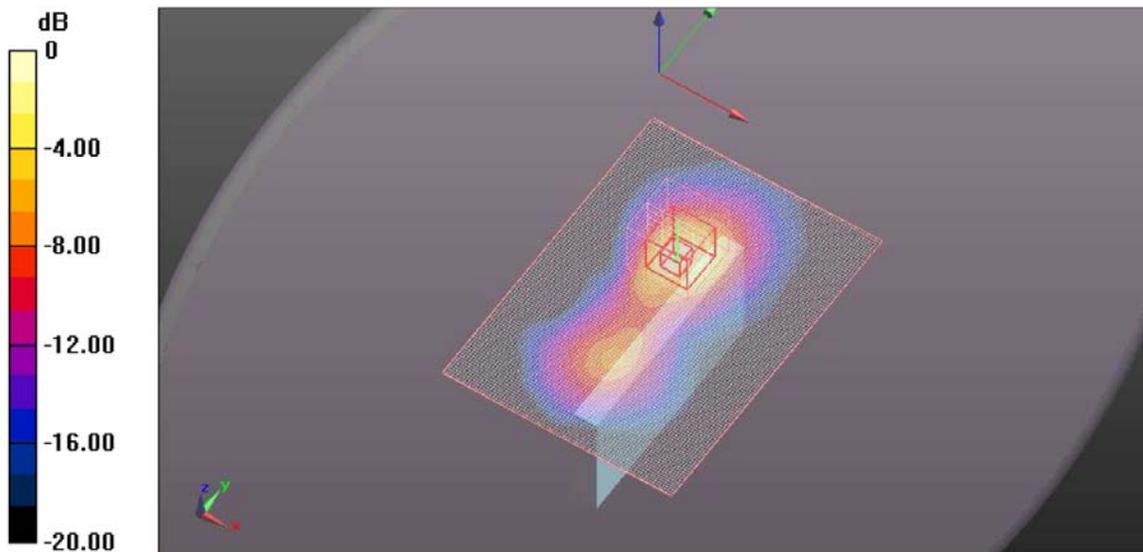
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.834 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.543 W/kg

SAR(1 g) = 0.257 mW/g; SAR(10 g) = 0.118 mW/g

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.368 mW/g



0 dB = 0.370mW/g

14. Simultaneous Transmission SAR Analysis (KDB 648474)

14.1. SV-DO Head Exposure Condition

Test Position	Voice			Data				Σ 1g SAR (mW/g)
	(1) CDMA BC0 1xRTT	(2) CDMA BC10 1xRTT	(3) CDMA BC1 1xRtt	(4) CDMA BC0 1xEVDO	(5) CDMA BC10 1xEVDO (not supported)	(6) CDMA BC1 1xEVDO	(7) WiFi	
Left touch	0.707			0.479			0.115	1.301
Left tilt	0.417			0.297			0.034	0.748
Right touch	0.561			0.387			0.218	1.166
Right tilt	0.314			0.232			0.026	0.572
Left touch	0.707					0.640	0.115	1.462
Left tilt	0.417					0.761	0.034	1.212
Right touch	0.561					0.887	0.218	1.666
Right tilt	0.314					0.945	0.026	1.285
Left touch		0.615		0.479			0.115	1.209
Left tilt		0.379		0.297			0.034	0.710
Right touch		0.484		0.387			0.218	1.089
Right tilt		0.295		0.232			0.026	0.553
Left touch		0.615				0.640	0.115	1.370
Left tilt		0.379				0.761	0.034	1.174
Right touch		0.484				0.887	0.218	1.589
Right tilt		0.295				0.945	0.026	1.266
Left touch			1.050	0.479			0.115	1.644
Left tilt			0.327	0.297			0.034	0.658
Right touch			0.686	0.387			0.218	1.291
Right tilt			0.260	0.232			0.026	0.518
Left touch			1.050			0.640	0.115	1.805
Left tilt			0.327			0.761	0.034	1.122
Right touch			0.686			0.887	0.218	1.791
Right tilt			0.260			0.945	0.026	1.231

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(1) CDMA BC0 1xRTT	(6) CDMA BC1 1xEVDO	(7) WiFi			
Right touch	0.561	0.887	0.218	1.666	n/a	n/a
	0.561	0.887		1.448	n/a	n/a
	0.561		0.218	0.779	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA BC1 1xRTT	(4) CDMA BC0 1xEVDO	(7) WiFi			
Left touch	1.050	0.479	0.115	1.644	n/a	n/a
	1.050	0.479		1.529	n/a	n/a
	1.050		0.115	1.165	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA BC1 1xRTT	(6) CDMA BC1 1xEVDO	(7) WiFi			
Left touch	1.050	0.640	0.115	1.805	n/a	n/a
	1.050	0.640		1.690	6.97	0.243
	1.050		0.115	1.165	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA BC1 1xRTT	(6) CDMA BC1 1xEVDO	(7) WiFi			
Right touch	0.686	0.887	0.218	1.791	n/a	n/a
	0.686	0.887		1.573	n/a	n/a
	0.686		0.218	0.904	n/a	n/a

Conclusions:

Volume scan SAR is required because the sum of the 1-g SAR is > 1.6 W/kg

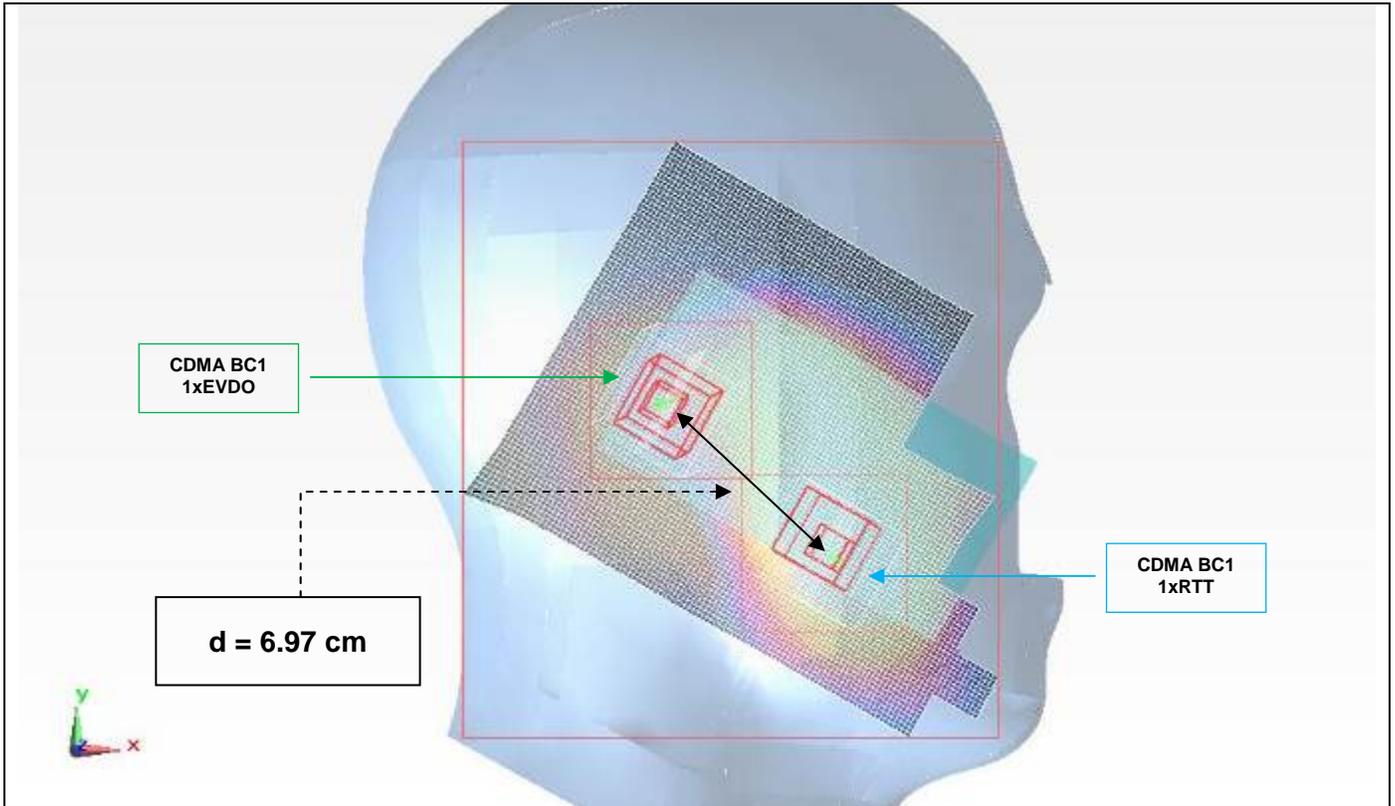
Note(s):

With 3 simultaneously transmitting antennas, it is not possible to calculate the 3D distance.

SAR to Peak Location Separation Ratio (SPLSR)

Left Touch

"(3) CDMA BC1 1xRTT" to "(6) CDMA BC1 1xEVDO"



CDMABC1 1xRTT:
 CDMABC1 1xEVDO:
 m

Value of SAR	X	Y	Z
mW/g	m	m	m
1.2	0.0675	0.251	-0.171
0.802	0.0152	0.297	-0.17

Separation distance (d) =	0.0697	6.97	
	SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)		

14.1.1. SV-DO Head Volume Scans & Combined Results

Test position	Combination	Test Results (mW/g)			
		Zoom Scan	Volume scan	Combined results	
Right Touch	(1) CDMA BC0 1xRTT	0.561	0.554	0.821	0.832
	(6) CDMA BC1 1xEvDO	0.887	0.794		
	(7) WiFi 2.4GHz	0.218	0.235		
Left Touch	(3) CDMA BC1 1xRTT	1.050	1.04	1.07	1.15
	(4) CDMA BC0 1xEvDO	0.479	0.455		
	(7) WiFi 2.4GHz	0.115	0.109		
Left Touch	(3) CDMA BC1 1xRTT	1.050	1.04	1.11	1.19
	(6) CDMA BC1 1xEvDO	0.640	0.590		
	(7) WiFi 2.4GHz	0.115	0.109		
Right Touch	(3) CDMA BC1 1xRTT	0.686	0.694	0.852	0.864
	(6) CDMA BC1 1xEvDO	0.887	0.794		
	(7) WiFi 2.4GHz	0.218	0.235		

Note(s):

1. See Appendix G_SAR test plots for SV-DO volume scans.
2. See Appendix H_SAR test plots for SV-DO Multi band results

14.2. SV-DO Body and Hotspot exposure condition

Test Position	Voice			Data				Σ 1g SAR (mW/g)
	(1) CDMA BC0 1xRTT	(2) CDMA BC10 1xRTT	(3) CDMA BC1 1xRTT	(4) CDMA BC0 1xEVDO	(5) CDMA BC10 1xEVDO (Not supported)	(6) CDMA BC1 1xEVDO	(7) WiFi	
Rear	0.757			0.668			0.245	1.670
	0.757					0.718	0.245	1.720
Front	0.612			0.177			0.073	0.862
	0.612					0.311	0.073	0.996
Rear		0.781		0.668			0.245	1.694
		0.781				0.718	0.245	1.744
Front		0.578		0.177			0.073	0.828
		0.578				0.311	0.073	0.962
Rear			1.160	0.668			0.245	2.073
			1.160			0.718	0.245	2.123
Front			1.160	0.177			0.073	1.410
			1.160			0.311	0.073	1.544

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(1) CDMA BC0 1xRTT	(4) CDMA BC0 1xEVDO	(7) WiFi			
Rear	0.757	0.668	0.245	1.670	n/a	n/a
	0.757	0.668		1.425	n/a	n/a
	0.757		0.245	1.002	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(1) CDMA BC0 1xRTT	(6) CDMA BC1 1xEVDO	(7) WiFi			
Rear	0.757	0.718	0.245	1.720	n/a	n/a
	0.757	0.718		1.475	n/a	n/a
	0.757		0.245	1.002	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(2) CDMA BC10 1xRTT	(4) CDMA BC0 1xEVDO	(7) WiFi			
Rear	0.781	0.668	0.245	1.694	n/a	n/a
	0.781	0.668		1.449	n/a	n/a
	0.781		0.245	1.026	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(2) CDMA BC10 1xRTT	(6) CDMA BC0 1xEVDO	(7) WiFi			
Rear	0.781	0.718	0.245	1.744	n/a	n/a
	0.781	0.718		1.499	n/a	n/a
	0.781		0.245	1.026	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA BC1 1xRTT	(4) CDMA BC0 1xEVDO	(7) WiFi			
Rear	1.160	0.668	0.245	2.073	n/a	n/a
	1.160	0.668		1.828	7.46	0.245
	1.160		0.245	1.405	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA BC1 1xRTT	(6) CDMA BC1 1xEVDO	(7) WiFi			
Rear	1.160	0.718	0.245	2.123	n/a	n/a
	1.160	0.718		1.878	7.81	0.240
	1.160		0.245	1.405	n/a	n/a

Conclusions:

Volume scan SAR is required because the sum of the 1-g SAR is > 1.6 W/kg

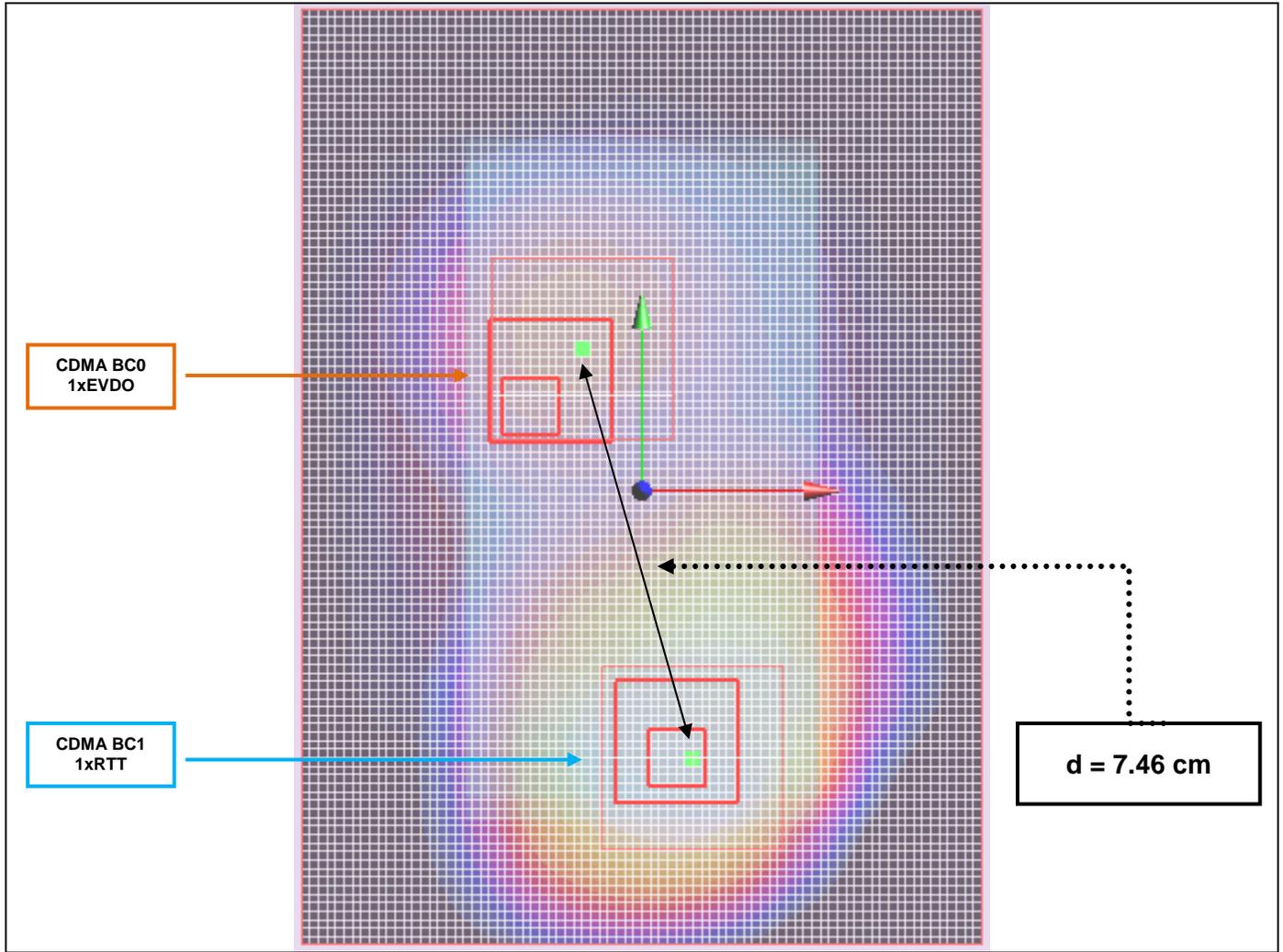
Note:

With 3 simultaneously transmitting antennas, it is not possible to calculate the 3D distance.

SAR to Peak Location Separation Ratio (SPLSR)

Rear

"(3) CDMA BC1 1xRTT" to "(4) CDMA BC0 1xEVDO"



CDMA BC1 1xRTT:
 CDMA BC0 1xEVDO:
 m

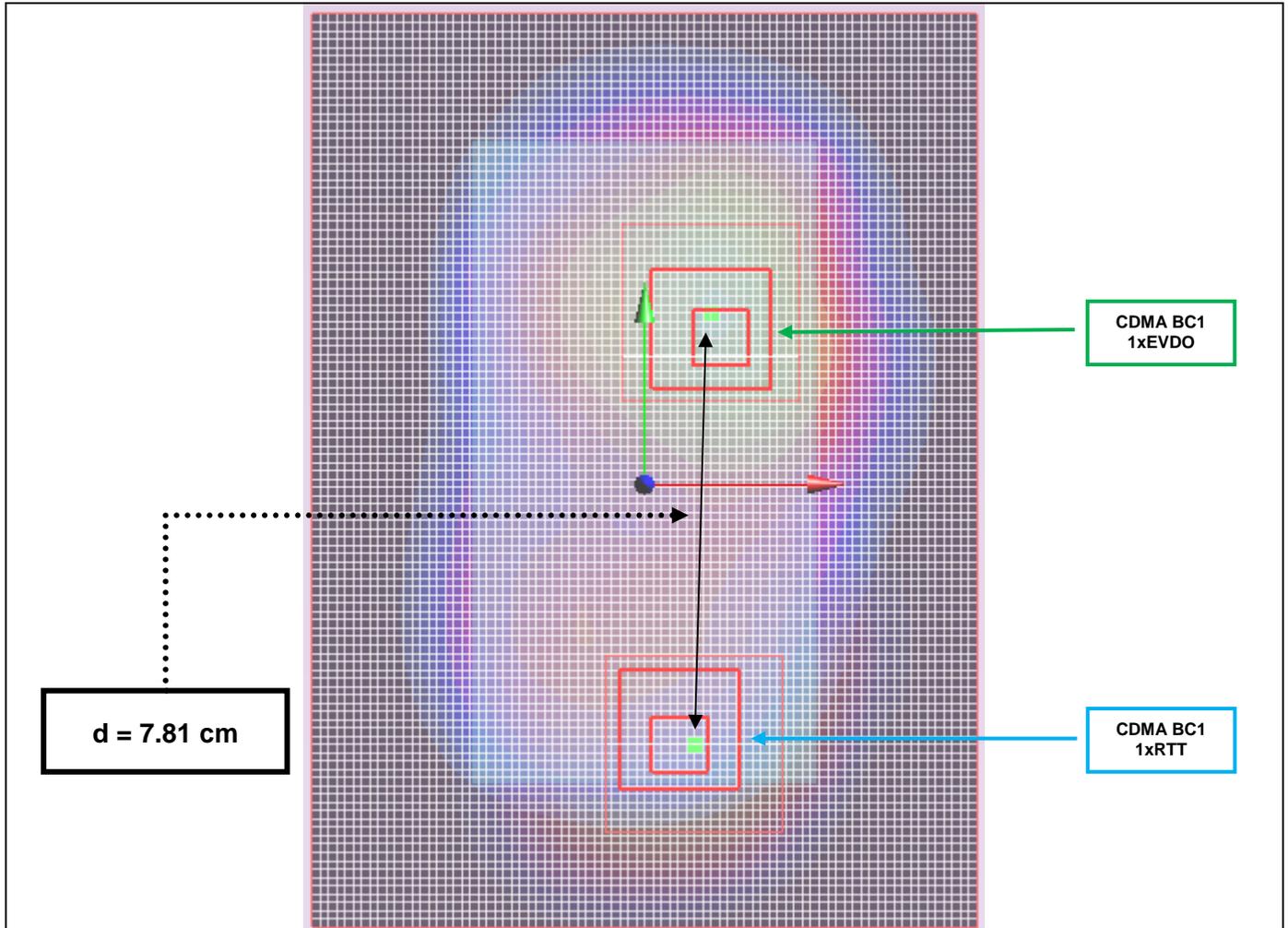
Value of SAR	X	Y	Z
mW/g	m	m	m
1.45	0.009	-0.047	-0.182
0.754	-0.0105	0.025	-0.184

Separation distance (d) =	0.0746	7.46	
	SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)		

SAR to Peak Location Separation Ratio (SPLSR)

Rear

"(3) CDMA1900 1xRTT" to "(6) CDMA BC1 1xEVDO"



CDMA BC1 1xRTT:
 CDMA BC1 1xEVDO:

Value of SAR	X	Y	Z
mW/g	m	m	m
1.45	0.009	-0.047	-0.182
0.989	0.012	0.031	-0.183

Separation distance (d) =	m	cm	
	0.0781	7.81	
$\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$			

14.2.1. SV-DO Body Volume Scans & Combined Results

Test position	Combination	Test Results (mW/g)				
		Zoom Scan	Volume scan	Combined results		
Rear	(1) CDMA BC0 1xRTT	0.757	0.787	1.02	1.04	
	(4) CDMA BC0 1xEvDO	0.668	0.721			
	(7) WiFi 2.4GHz	0.245	0.252			
	Rear	(1) CDMA BC0 1xRTT	0.757	0.787	1.03	1.06
		(6) CDMA BC1 1xEvDO	0.718	0.726		
		(7) WiFi 2.4GHz	0.245	0.252		
Rear	(2) CDMA BC10 1xRTT	0.781	0.842	1.13	1.15	
	(4) CDMA BC0 1xEvDO	0.668	0.721			
	(7) WiFi 2.4GHz	0.245	0.252			
	Rear	(2) CDMA BC10 1xRTT	0.781	0.842	1.1	1.12
		(6) CDMA BC1 1xEvDO	0.718	0.726		
		(7) WiFi 2.4GHz	0.245	0.252		
Rear	(3) CDMA BC1 1xRTT	1.160	1.160	1.29	1.36	
	(4) CDMA BC0 1xEvDO	0.668	0.721			
	(7) WiFi 2.4GHz	0.245	0.252			
	Rear	(3) CDMA BC1 1xRTT	1.160	1.160	1.36	1.42
		(6) CDMA BC1 1xEvDO	0.718	0.726		
		(7) WiFi 2.4GHz	0.245	0.252		

Note(s):

1. See Appendix F_SAR test plots for SV-DO volume scans.
2. See Appendix G_SAR test plots for SV-DO Multi band results

14.3. SV-LTE Band 25 Head Exposure Condition

Test Position	Voice			Data		Σ 1g SAR (mW/g)
	(1) CDMA BC0 1xRTT	(2) CDMA BC10 1xRTT	(3) CDMA BC1 1xRTT	(4) LTE Band 25	(5) WiFi	
Left touch	0.707			0.602	0.115	1.424
Left tilt	0.417			0.748	0.034	1.199
Right touch	0.561			0.798	0.218	1.577
Right tilt	0.314			0.700	0.026	1.040
Left touch		0.615		0.602	0.115	1.332
Left tilt		0.379		0.748	0.034	1.161
Right touch		0.484		0.798	0.218	1.500
Right tilt		0.295		0.700	0.026	1.021
Left touch			1.05	0.602	0.115	1.767
Left tilt			0.327	0.748	0.034	1.109
Right touch			0.686	0.798	0.218	1.702
Right tilt			0.260	0.700	0.026	0.986

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA BC1 1xRTT	(4) LTE Band 25	(5) WiFi			
Left Touch	1.050	0.602	0.115	1.767		
	1.050	0.602		1.652	6.5	0.254
	1.050		0.115	1.165	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA BC1 1xRTT	(4) LTE Band 25	(5) WiFi			
Right Touch	0.686	0.798	0.218	1.702		
	0.686	0.798		1.484	n/a	n/a
	0.686		0.218	0.904	n/a	n/a

Conclusions:

Volume scan SAR is required because the sum of the 1-g SAR is > 1.6 W/kg

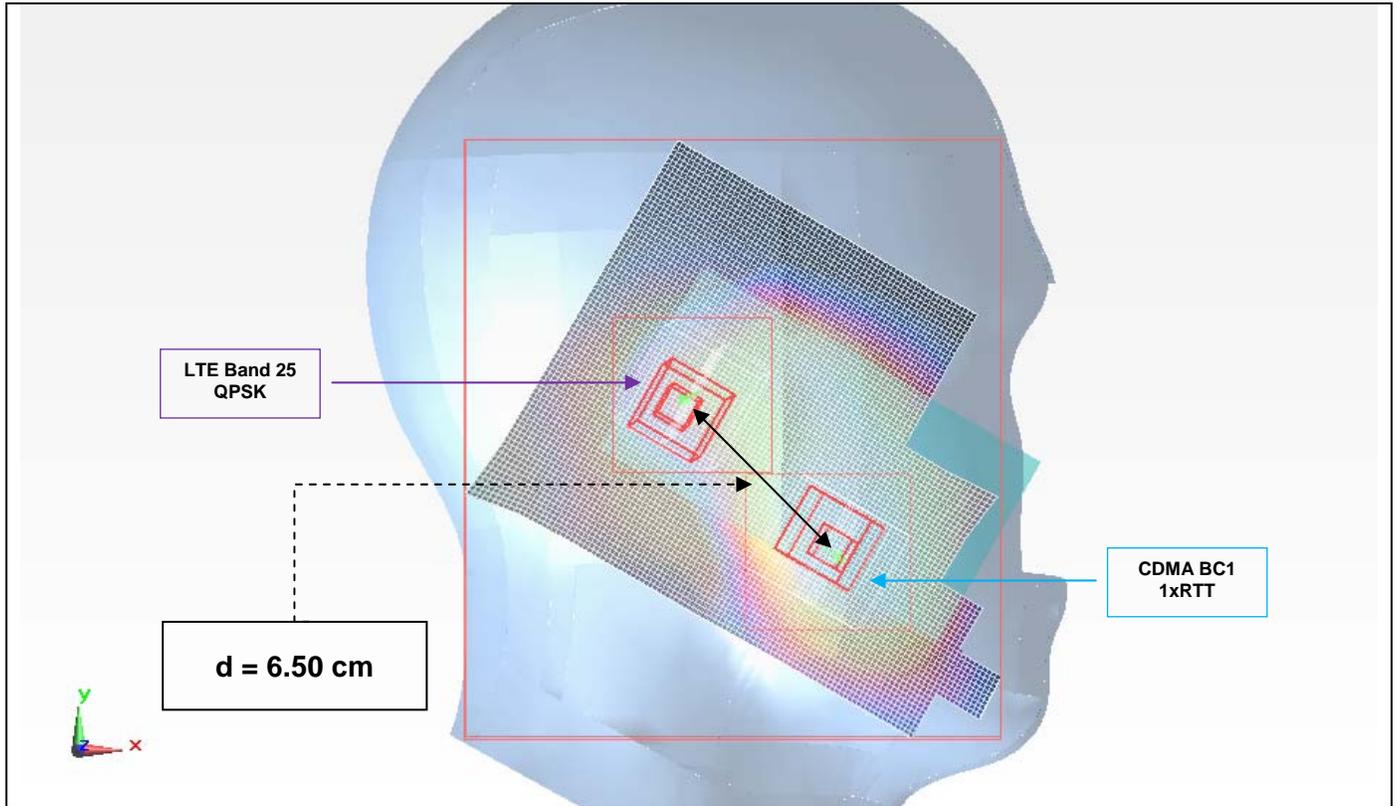
Note(s):

With 3 simultaneously transmitting antennas, it is not possible to calculate the 3D distance.

SAR to Peak Location Separation Ratio (SPLSR)

Left Touch

"(3) CDMA1900 1xRTT" to "(4) LTE Band 25 QPSK"



CDMA BC1 1xRTT:
 LTE Band 25 QPSK:
 m

Value of SAR	X	Y	Z
mW/g	m	m	m
1.2	0.0675	0.251	-0.171
0.766	0.0226	0.298	-0.172

Separation distance (d) =	m	cm	
	0.0650	6.50	
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)			

14.3.1. SV-LTE Band 25 Head Volume Scans & Combined Results

Test position	Multi-band	Test Results (mW/g)			
		Zoom Scan	Volume scan	Combined results	
Left Touch	(3) CDMA BC1 1xRTT	1.050	1.04	1.1	1.17
	(4) LTE Band 25	0.602	0.597		
	(5) WiFi 2.4GHz	0.115	0.109		
Right Touch	(3) CDMA BC1 1xRTT	0.686	0.694	0.792	0.855
	(4) LTE Band 25	0.798	0.754		
	(5) WiFi 2.4GHz	0.218	0.235		

14.4. SV-LTE Band 25 Body &-hotspot exposure condition

Test Position	Voice			(4) LTE Band 25	(5) WiFi	Σ 1g SAR (mW/g)
	(1) CDMA BC0 1xRTT	(2) CDMA BC10 1xRTT	(3) CDMA BC1 1xRTT			
Rear	0.757			0.580	0.245	1.582
Front	0.612			0.330	0.073	1.015
Rear		0.781		0.580	0.245	1.606
Front		0.578		0.330	0.073	0.981
Rear			1.160	0.580	0.245	1.985
Front			1.160	0.330	0.073	1.563

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(2) CDMA BC10 1xRTT	(4) LTE Band 25	(5) WiFi			
Rear	0.781	0.580	0.245	1.606		
	0.781	0.580		1.361	n/a	n/a
	0.781		0.245	1.026	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA BC1 1xRTT	(4) LTE Band 25	(5) WiFi			
Rear	1.160	0.580	0.245	1.985		
	1.160	0.580		1.740	7.66	0.227
	1.160		0.245	1.405	n/a	n/a

Conclusions:

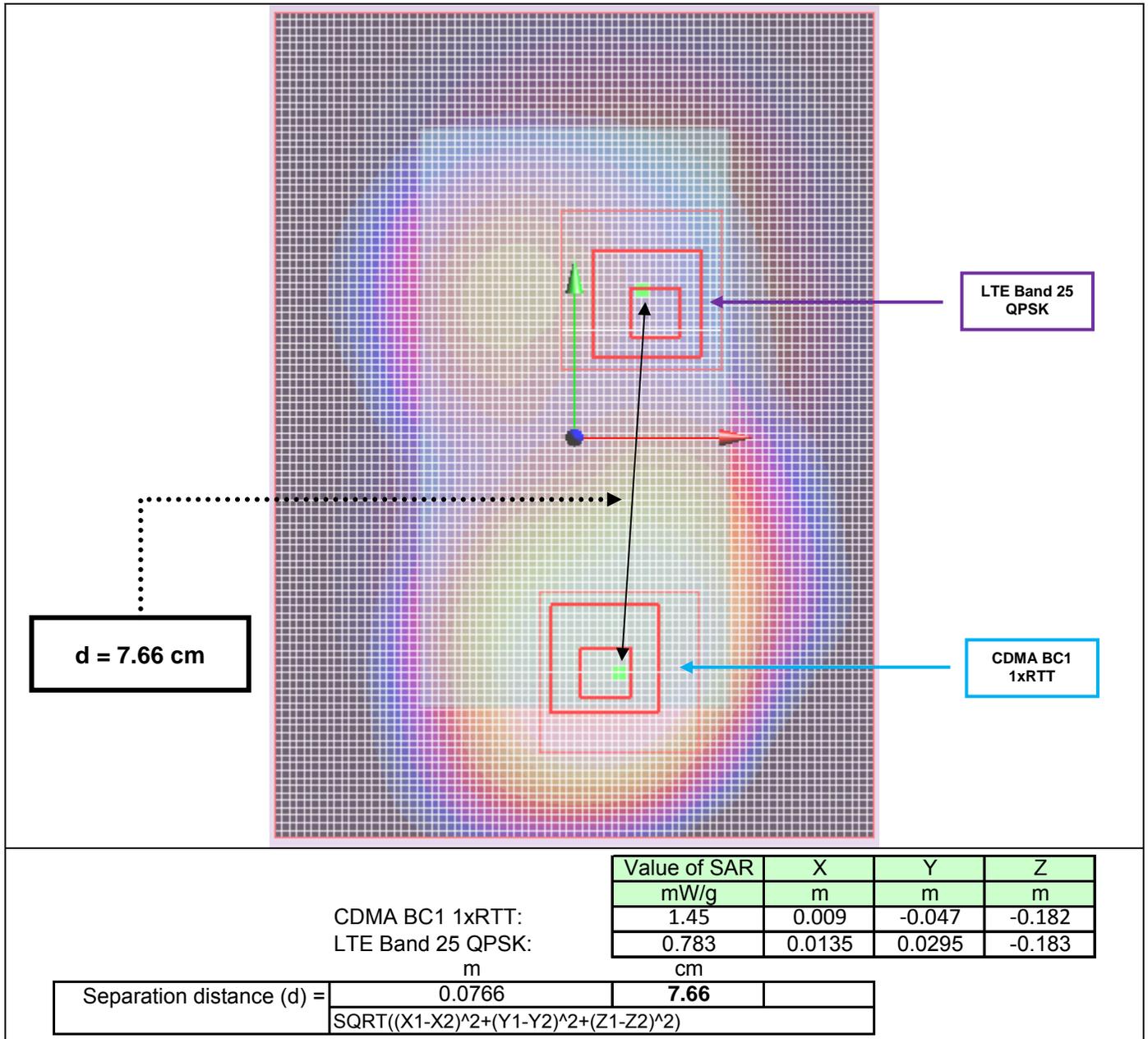
Volume scan SAR is not required because the sum of the 1-g SAR is > 1.6 W/kg

Note:

With 3 simultaneously transmitting antennas, it is not possible to calculate the 3D distance.

SAR to Peak Location Separation Ratio (SPLSR)

"(3) CDMA1900 1xRTT" to "(4) LTE Band 25 QPSK"



14.4.1. SV-LTE Band 25 Body Volume Scans & Combined Results

Test position	Multi-band	Test Results (mW/g)			
		Zoom Scan	Volume scan	Combined results	
Rear	(2) CDMA BC10 1xRTT	0.781	0.842	1.01	1.07
	(4) LTE Band 25	0.580	0.584		
	(5) WiFi 2.4GHz	0.245	0.252		
Rear	(3) CDMA BC1 1xRTT	1.160	1.160	1.21	1.28
	(4) LTE Band 25	0.580	0.584		
	(5) WiFi 2.4GHz	0.245	0.252		

15. Appendixes

Refer to separated files for the following appendixes.

- 15.1. Appendix A: System check plots
- 15.2. Appendix B: SAR Test plots for CDMA BC10
- 15.3. Appendix C: SAR test plots for CDMA BC0
- 15.4. Appendix D: SAR test plots for CDMA BC1
- 15.5. Appendix E: SAR test plots for LTE Band 25
- 15.6. Appendix F: SAR test plots for WiFi
- 15.7. Appendix G: SAR test plots for SV-DO Volume scans
- 15.8. Appendix H: SAR test plots for SV-DO Combined results
- 15.9. Appendix I: SAR test plots for SV-LTE volume scans
- 15.10. Appendix J: SAR test plots for SV-LTE Combined results
- 15.11. Appendix K: Calibration certificate for E-Field Probe EX3DV4 SN 3772
- 15.12. Appendix L: Calibration certificate for E-Field Probe EX3DV4 SN 3773
- 15.13. Appendix M: Calibration Certificate for D835V2 - SN 4d117
- 15.14. Appendix N: Calibration certificate for D1900V2 SN 5d140
- 15.15. Appendix O: Calibration certificate for D2450V2 SN: 706 w/ extended cal. data