



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

**SAR EVALUATION REPORT**

*For*

**Cellular/PCS/AWS CDMA and LTE Phone with Bluetooth and WLAN**

**MODEL: MS840, LGMS840 and LG-MS840  
FCC ID: ZNFMS840**

**REPORT NUMBER: 11U13993-5  
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*Prepared for*

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--	October 6, 2011	Initial Issue	--

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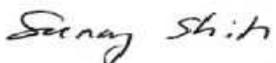
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# 1. Attestation of Test Results

Applicant:	LG ELECTRONICS MOBILECOMM U.S.A., INC.		
EUT description:	Cellular/PCS/AWS CDMA and LTE Band 2/4 Phone with Bluetooth and WLAN		
Model numbers:	MS840, LGMS840 and LG-MS840		
Device category:	Portable devices		
Exposure category:	General Population/Uncontrolled Exposure		
Date tested:	August 17 - September 15, 2011		
FCC Rule Parts	Freq. Range [MHz]	Highest 1-g SAR (W/kg)	Limit (W/kg)
22H	824 - 849	Head: <b>0.354</b> W/kg (Left Touch) Body-worn: <b>0.534</b> W/kg (Rear w/ 10mm distance)	1.6
24E	1850 - 1910	Head: <b>1.04</b> W/kg (Left Touch) Body-worn & -hotspot: <b>1.01</b> W/kg (Rear w/ 10 mm distance)	
27 (AWS)	1714 - 1754	Head: <b>0.935</b> W/kg (Left Touch) Body-worn & -hotspot: <b>0.847</b> W/kg (Rear w/ 10 mm distance)	
27 (LTE Band 4)	1710 - 1755	Head: <b>0.324</b> W/kg (Right Touch) Body-hotspot: <b>0.512</b> W/kg (Rear w/ 10 mm distance)	
27 (LTE Band 2)	1850 - 1910	Head: <b>0.523</b> W/kg (Right Touch) Body-hotspot: <b>0.584</b> W/kg (Rear w/ 10 mm distance)	
15.247	2412 - 2462	Head: <b>0.119</b> W/kg (Left Touch) Body-worn & -hotspot: <b>0.178</b> W/kg (Rear w/ 10 mm distance)	
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><b>Note:</b> 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 &amp; Released For UL CCS By: </p> <p>Tested By: </p>			
Sunny Shih Engineering Team Leader Compliance Certification Services (UL CCS)		Elijah Garcia Laboratory Technician I 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 #: 933906**

## 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		
ESA Series Network Analyzer	Agilent	E5071B	MY42100131	8	2	2011
Synthesized Signal Generator	HP	83732B	US34490599	7	14	2012
E-Field Probe	SPEAG	EX3DV4	3772	5	3	2012
E-Field Probe	SPEAG	EX3DV4	3686	1	24	2012
Thermometer	ERTCO	639-1S	1718	7	19	2012
Data Acquisition Electronics	SPEAG	DAE4	1257	5	3	2012
Data Acquisition Electronics	SPEAG	DAE4	1239	11	11	2011
System Validation Dipole	SPEAG	D1750V2	1053	5	27	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 Q\_Calibration Certificate for D2450V2 SN 706 incl. extended cal. data)
4. Impedance is within 5Ω of calibrated measurement (See Appendix Q\_Calibration Certificate for D2450V2 SN 706 incl. extended cal. data)

## 4.2. Measurement Uncertainty

Component	error, %	Probe Distribution	Divisor	Sensitivity	U (Xi), %
<b>Measurement System</b>					
Probe Calibration (k=1) @ 835, 1900 and 2450 MHz	5.50	Normal	1	1	5.50
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	9.20	Rectangular	1.732	0.7071	3.76
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
<b>Test Sample Related</b>					
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
<b>Phantom and Tissue Parameters</b>					
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 @ Head 1750 MHz	-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 @ Body 1900 MHz	-4.00	Normal	1	0.6	-2.40
Combined Standard Uncertainty $U_c(y)$ =					10.86
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				21.73	%
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				1.71	dB

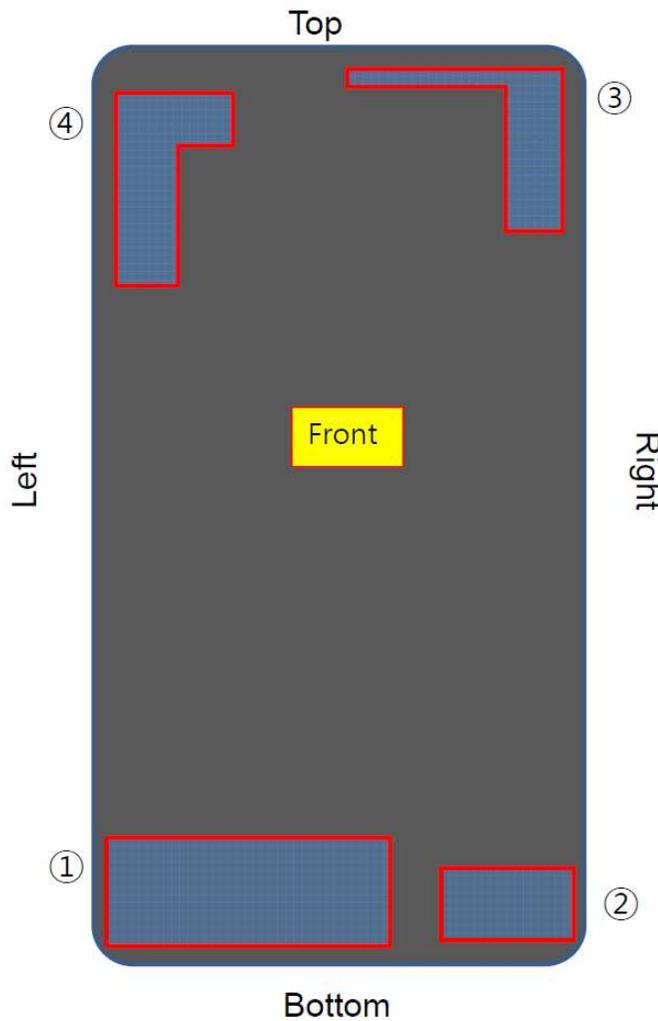
## 5. Equipment Under Test

Cellular/PCS/AWS CDMA and LTE Band 2/4 Phone with Bluetooth and WLAN	
MODEL: MS840, LGMS840 and LG-MS840	
Normal operation:	<ul style="list-style-type: none"> <li>- Held to head,</li> <li>- Body-worn (Rear and Front sides) with 10 mm separation distance.</li> <li>- Personal Hotspot with 10 mm separation distance to all sides and edges.</li> </ul>
Body Worn Accessory	Headset
Antenna-to-antenna and antenna-to-edges' separation distances:	Please refer to Section 5.2 & 5.3 Antenna Locations & Separation Distances" for details

### 5.1. Band and Air Interlaces

Tx Frequency Bands:	Cellular: 824 – 849 MHz AWS: 1714 – 1754 MHz PCS: 1850 – 1910 MHz 802.11b/g/n: 2412 – 2462MHz, HT20 Bluetooth: 2402-2480 MHz
Air Interfaces:	CDMA/EVDO: Cellular/AWS/PCS bands LTE: Band 2 and 4. 802.11b/g/n. Bluetooth
Uplink Modulations:	CDMA/EVDO: QPSK LTE: QPSK/16QAM 802.11b: DSS CCK 802.11g: OFDM 802.11n: OFDM Bluetooth: DQPSK, 8DPSK, GFSK

### 5.2. Antenna Description



① CDMA 1x BC0, BC1 and BC15 Rx/Tx

MODE	BAND	TX(MHz)	RX(MHz)
CDMA	BC0	824 ~ 849	869 ~ 894
	BC1	1850 ~ 1910	1930 ~ 1990
	BC15	1710 ~ 1755	2110 ~ 2155

② LTE Band 2 and 4 Rx/Tx

EVDO BC1 and BC15 Rx/Tx

\* BC0 doesn't support EVDO capability

MODE	BAND	TX(MHz)	RX(MHz)
LTE	B2	1850 ~ 1910	1930 ~ 1990
	B4	1710 ~ 1755	2110 ~ 2155
EVDO	BC1	1850 ~ 1910	1930 ~ 1990
	BC15	1710 ~ 1755	2110 ~ 2155

③ GPS & BT/WIFI

MODE	TX(MHz)	RX(MHz)
GPS	x	1575.42
BT/WiFi(802.11b/g/n)	2412~2462	2412~2462

④ LTE Band 2 and 4 2<sup>nd</sup> RX, EVDO BC1 and BC15 Diversity

MODE	BAND	TX(MHz)	RX(MHz)
LTE	B2	2 <sup>nd</sup> Rx	1930 ~ 1990
	B4	2 <sup>nd</sup> Rx	2110 ~ 2155
EVDO	BC1	Diversity(Rx)	1930 ~ 1990
	BC15	Diversity(Rx)	2110 ~ 2155

### 5.3. Antenna Separation Distance

Antennas	Physical Separation Distance (mm)			
	ANT ①	ANT ②	ANT ③	ANT ④
ANT ①		12.6	84.5	72.3
ANT ②	12.6		80.7	88.7
ANT ③	84.5	80.7		21.0
ANT ④	72.3	88.7	21.0	

### 5.4. Head Exposure Condition

Head Operation					
Mode	TX ( MHz)	ANT ①	ANT ②	ANT ③	ANT ④
CDMA Voice (1xRTT)	835	Yes	No	No	No
CDMA Voice (1xRTT)	1700	Yes	No	No	No
CDMA Voice (1xRTT)	1900	Yes	No	No	No
LTE Data	1900	No	Yes	No	No
LTE Data	1700	No	Yes	No	No
EVDO (VOIP)	1700	No	Yes	No	No
EVDO (VOIP)	1900	No	Yes	No	No
EVDO (VOIP)	1700	No	No	No	No
EVDO (VOIP)	1900	No	No	No	No
SVDO (Voice & Data)	1900	Yes	No	No	No
SVDO (Voice & Data)	1700	Yes	No	No	No
SVDO (Voice & Data)	1900	Yes	Yes	No	No
SVDO (Voice & Data)	1700	Yes	Yes	No	No
SVLTE (Voice & Data)	1900	Yes	Yes	No	No
SVLTE (Voice & Data)	1700	Yes	Yes	No	No
Wi-Fi (VOIP)	2400	No	No	Yes	No
BT	2400	No	No	No	No

### 5.5. Body-worn Exposure Condition

Body-worn Operation					
Separation Distance = 1 cm					
Mode	TX ( MHz)	ANT ①	ANT ②	ANT ③	ANT ④
CDMA Voice (1xRTT)	835	Yes	No	No	No
CDMA Voice (1xRTT)	1700	Yes	No	No	No
CDMA Voice (1xRTT)	1900	Yes	No	No	No
LTE Data	1900	No	Yes	No	No
LTE Data	1700	No	Yes	No	No
EVDO Data	1700	No	Yes	No	No
EVDO Data	1900	No	Yes	No	No
EVDO Data	1700	No	No	No	No
EVDO Data	1900	No	No	No	No
SVDO (Voice & Data)	1900	Yes	Yes	No	No
SVDO (Voice & Data)	1700	Yes	Yes	No	No
SVLTE (Voice & Data)	1900	Yes	Yes	No	No
SVLTE (Voice & Data)	1700	Yes	Yes	No	No
Wi-Fi (Data)	2400	No	No	Yes	No
BT	2400	No	No	Yes	No

### 5.6. Personal Hotspot Exposure Condition

The device is capable of personal hotspot mode. The hotspot mode can be enabled by the users. SAR measurements in the Personal hot spot function are performed with 1 cm separation distance to all sides and edges to the body phantom.

Wireless Router / Hot Spot Operation					
Separation Distance = 1 cm					
Mode	TX ( MHz)	ANT ①	ANT ②	ANT ③	ANT ④
LTE Data + Wi-Fi	1900/2400	No	Yes	Yes	No
LTE Data + Wi-Fi	1700/2400	No	Yes	Yes	No
EVDO Data + Wi-Fi	1700/2400	No	Yes	Yes	No
EVDO Data + Wi-Fi	1900/2400	No	Yes	Yes	No
SVDO (Voice & Data) + Wi-Fi	835/1900/2400	Yes	Yes	Yes	No
SVDO (Voice & Data) + Wi-Fi	835/1700/2400	Yes	Yes	Yes	No
SVDO (Voice & Data) + Wi-Fi	1900/1900/2400	Yes	Yes	Yes	No
SVDO (Voice & Data) + Wi-Fi	1900/1700/2400	Yes	Yes	Yes	No
SVDO (Voice & Data) + Wi-Fi	1700/1900/2400	Yes	Yes	Yes	No
SVDO (Voice & Data) + Wi-Fi	1700/1700/2400	Yes	Yes	Yes	No
SVLTE (Voice & Data)+ Wi-Fi	835/1900/2400	Yes	Yes	Yes	No
SVLTE (Voice & Data)+ Wi-Fi	835/1700/2400	Yes	Yes	Yes	No
SVLTE (Voice & Data)+ Wi-Fi	1900/1900/2400	Yes	Yes	Yes	No
SVLTE (Voice & Data)+ Wi-Fi	1900/1700/2400	Yes	Yes	Yes	No
SVLTE (Voice & Data)+ Wi-Fi	1700/1900/2400	Yes	Yes	Yes	No
SVLTE (Voice & Data)+ Wi-Fi	1700/1700/2400	Yes	Yes	Yes	No

**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 2: 1850 to 1910 MHz Band 4: 1710 to 1755 MHz																							
2	Identify the channel bandwidths used in each frequency band; 1.4, 3, 5, 10, 15, 20 MHz etc	Band 2: 1.4MHz, 3MHz, 5MHz Band 4: 1.4MHz, 3MHz, 5MHz																							
3	Identify the high, middle and low (H, M, L) channel numbers and frequencies in each LTE frequency band	Please refer to section 11.2																							
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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 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 RF output power table																							

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 11 RF output power measurements in SAR report.																
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" data-bbox="704 802 1469 953"> <thead> <tr> <th>Mode</th> <th>CDMA Current Voice Power for BC0, BC1 &amp; BC15</th> <th>CDMA EVDO Max. Power for BC1 &amp; BC15</th> </tr> </thead> <tbody> <tr> <td rowspan="2">SVDO</td> <td>P &lt; 15.5 dBm</td> <td>24.0 dBm (Limited)</td> </tr> <tr> <td>P ≥ 15.5 dBm</td> <td>19.0 dBm (Limited)</td> </tr> </tbody> </table> <p>2. Power Reduction operation table for SVLTE Mode</p> <table border="1" data-bbox="704 991 1469 1146"> <thead> <tr> <th>Mode</th> <th>CDMA Current Voice Power for BC0, BC1 &amp; BC15</th> <th>LTE Max. Power for B2 &amp; B4</th> </tr> </thead> <tbody> <tr> <td rowspan="2">SVLTE</td> <td>P &lt; 18.5 dBm</td> <td>22.8 dBm (Limited)</td> </tr> <tr> <td>P ≥ 18.5 dBm</td> <td>17.8 dBm (Limited)</td> </tr> </tbody> </table> <p><b>Note:</b>                      CDMA BC0 = CDMA Cellular, CDMA BC1 = CDMA PCS,                      CDMA BC15 = CDMA AWS</p>	Mode	CDMA Current Voice Power for BC0, BC1 & BC15	CDMA EVDO Max. Power for BC1 & BC15	SVDO	P < 15.5 dBm	24.0 dBm (Limited)	P ≥ 15.5 dBm	19.0 dBm (Limited)	Mode	CDMA Current Voice Power for BC0, BC1 & BC15	LTE Max. Power for B2 & B4	SVLTE	P < 18.5 dBm	22.8 dBm (Limited)	P ≥ 18.5 dBm	17.8 dBm (Limited)
Mode	CDMA Current Voice Power for BC0, BC1 & BC15	CDMA EVDO Max. Power for BC1 & BC15																
SVDO	P < 15.5 dBm	24.0 dBm (Limited)																
	P ≥ 15.5 dBm	19.0 dBm (Limited)																
Mode	CDMA Current Voice Power for BC0, BC1 & BC15	LTE Max. Power for B2 & B4																
SVLTE	P < 18.5 dBm	22.8 dBm (Limited)																
	P ≥ 18.5 dBm	17.8 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	* Power reduction is implemented on EVDO in SVDO mode * Power reduction is implemented on LTE in SVLTE mode																
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

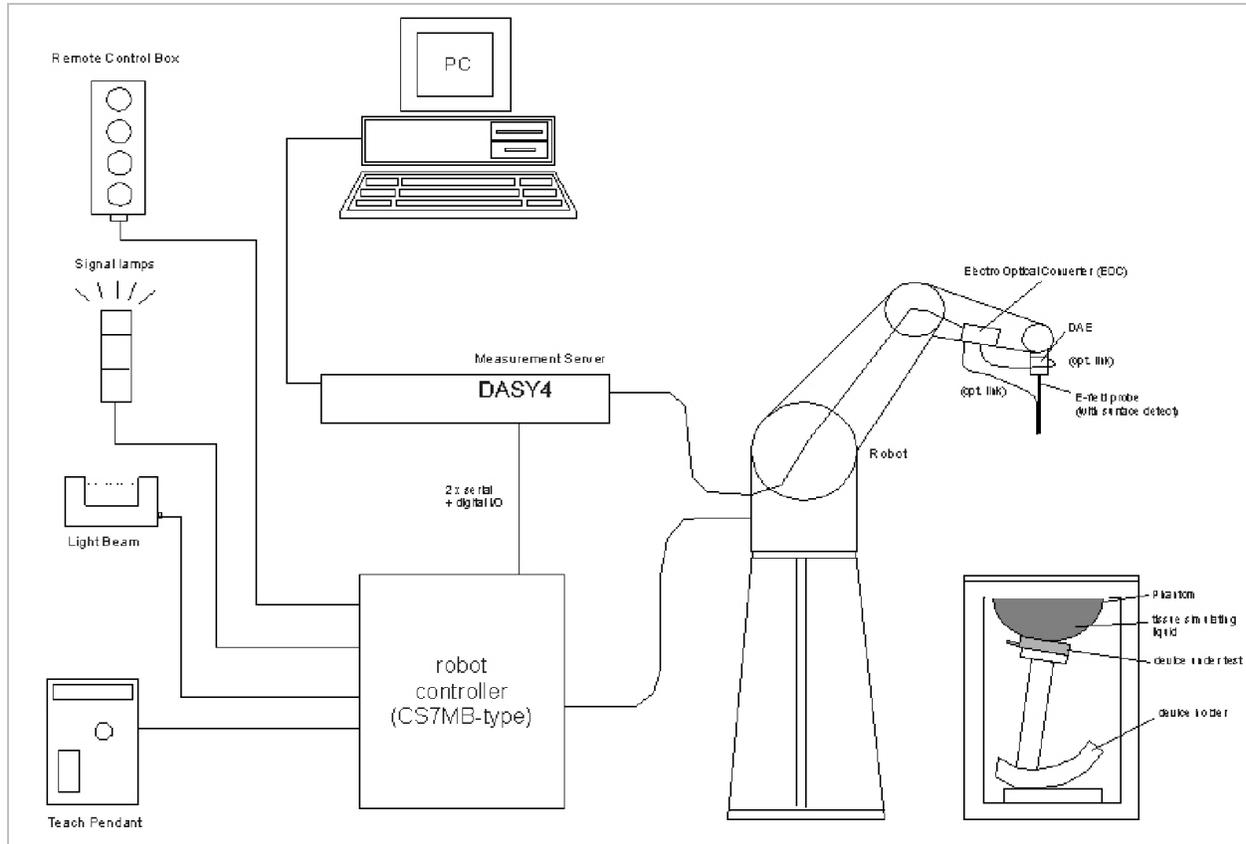
No.	Capable TX Configuration	Head SAR	Body SAR	Hotspot SAR	Power Reduction (CDMA EVDO)	Power Reduction (LTE)	Note
1	CDMA Voice	O	O	X	X	X	Stand-alone CDMA Voice
2	CDMA EVDO	O	O	X	X	X	Stand-alone CDMA EVDO
3	LTE	O	O	X	X	X	Stand-alone LTE
4	Wi-Fi	O	O	X	X	X	Stand-alone Wi-Fi
5	BT	X	X	X	X	X	
6	CDMA Voice + 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 BC0 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 AWS Voice	O	O	X	X	X	Stand-alone CDMA AWS Voice
4	CDMA BC1 EVDO	O	O	X	X	X	Stand-alone CDMA EVDO BC1
5	CDMA AWS EVDO	O	O	X	X	X	Stand-alone CDMA EVDO AWS
6	LTE B2	O	O	X	X	X	Stand-alone LTE B2 data
7	LTE B4	O	O	X	X	X	Stand-alone LTE B4 data
8	Wi-Fi	O	O	X	X	X	Stand-alone Wi-Fi
9	BT	X	X	X	X	X	Below SAR Power Threshold
10	CDMA BC0 Voice + Wi-Fi data	O	O	X	X	X	
11	CDMA BC1 Voice + Wi-Fi data	O	O	X	X	X	
12	CDMA AWS Voice + Wi-Fi data	O	O	X	X	X	
13	CDMA BC1 EVDO+ Wi-Fi data	X	O	O	X	X	Wi-Fi Hotspot
14	CDMA AWS EVDO+ Wi-Fi data	X	O	O	X	X	Wi-Fi Hotspot
15	LTE B2 + Wi-Fi data	X	O	O	X	X	Wi-Fi Hotspot
16	LTE B4 + Wi-Fi data	X	O	O	X	X	Wi-Fi Hotspot
17	CDMA BC0 Voice + CDMA BC1 EVDO	O	O	X	O	X	SVDO
18	CDMA BC0 Voice + CDMA AWS EVDO	O	O	X	O	X	SVDO
19	CDMA BC0 Voice + LTE B2	O	O	X	X	O	SVLTE
20	CDMA BC0 Voice + LTE B4	O	O	X	X	O	SVLTE
21	CDMA BC1 Voice + CDMA BC1 EVDO	O	O	X	O	X	SVDO
22	CDMA BC1 Voice + CDMA AWS EVDO	O	O	X	O	X	SVDO
23	CDMA BC1 Voice + LTE B2	O	O	X	X	O	SVLTE
24	CDMA BC1 Voice + LTE B4	O	O	X	X	O	SVLTE
25	CDMA AWS Voice + CDMA BC1 EVDO	O	O	X	O	X	SVDO
26	CDMA AWS Voice + CDMA AWS EVDO	O	O	X	O	X	SVDO
27	CDMA AWS Voice + LTE B2	O	O	X	X	O	SVLTE
28	CDMA AWS Voice + LTE B4	O	O	X	X	O	SVLTE
29	CDMA BC0 Voice + CDMA BC1 EVDO + WLAN	O	O	O	O	X	Wi-Fi Hotspot
30	CDMA BC0 Voice + CDMA AWS EVDO + WLAN	O	O	O	O	X	Wi-Fi Hotspot
31	CDMA BC0 Voice + LTE B2 + WLAN	O	O	O	X	O	Wi-Fi Hotspot
32	CDMA BC0 Voice + LTE B4+ WLAN	O	O	O	X	O	Wi-Fi Hotspot
33	CDMA BC1 Voice + CDMA BC1 EVDO+ WLAN	O	O	O	O	X	Wi-Fi Hotspot
34	CDMA BC1 Voice + CDMA AWS EVDO+ WLAN	O	O	O	O	X	Wi-Fi Hotspot
35	CDMA BC1 Voice + LTE B2+ WLAN	O	O	O	X	O	Wi-Fi Hotspot
36	CDMA BC1 Voice + LTE B4+WLAN	O	O	O	X	O	Wi-Fi Hotspot
37	CDMA AWS Voice + CDMA BC1 EVDO+ WLAN	O	O	O	O	X	Wi-Fi Hotspot
38	CDMA AWS Voice + CDMA AWS EVDO+ WLAN	O	O	O	O	X	Wi-Fi Hotspot
39	CDMA AWS Voice + LTE B2 + WLAN	O	O	O	X	O	Wi-Fi Hotspot
40	CDMA AWS Voice + LTE B4 + WLAN	O	O	O	X	O	Wi-Fi Hotspot

## 6. System Specifications



### The DASY system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.
- DASY software.
- Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing validating the proper functioning of the system.

## 7. 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 <sup>2</sup> 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 <sup>2</sup> O	Water, 52 – 75%
C8H18O3	Diethylene glycol monobutyl ether (DGBE), 25-48%
NaCl	Sodium Chloride, <1.0%

## 8. 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	
	$\epsilon_r$	$\sigma$ (S/m)	$\epsilon_r$	$\sigma$ (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

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

### 8.1. Liquid Check Results

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
08/17/2011	Body 1900	e'	51.1700	Relative Permittivity ( $\epsilon_r$ ):	51.17	53.30	-4.00	5
		e"	14.3072	Conductivity ( $\sigma$ ):	1.51	1.52	-0.56	5
08/17/2011	Head 1900	e'	39.4100	Relative Permittivity ( $\epsilon_r$ ):	39.41	40.00	-1.48	5
		e"	13.2254	Conductivity ( $\sigma$ ):	1.40	1.40	-0.20	5
08/18/2011	Body 1900	e'	51.6300	Relative Permittivity ( $\epsilon_r$ ):	51.63	53.30	-3.13	5
		e"	14.3113	Conductivity ( $\sigma$ ):	1.51	1.52	-0.53	5
08/18/2011	Head 1900	e'	38.7900	Relative Permittivity ( $\epsilon_r$ ):	38.79	40.00	-3.03	5
		e"	13.4916	Conductivity ( $\sigma$ ):	1.43	1.40	1.81	5
08/19/2011	Body 1750	e'	54.3000	Relative Permittivity ( $\epsilon_r$ ):	54.30	53.44	1.61	5
		e"	15.1800	Conductivity ( $\sigma$ ):	1.48	1.49	-0.61	5
08/19/2011	Head 1750	e'	40.6839	Relative Permittivity ( $\epsilon_r$ ):	40.68	40.08	1.50	5
		e"	13.6974	Conductivity ( $\sigma$ ):	1.33	1.37	-2.64	5
08/20/2011	Body 835	e'	55.1100	Relative Permittivity ( $\epsilon_r$ ):	55.11	55.20	-0.16	5
		e"	21.1755	Conductivity ( $\sigma$ ):	0.98	0.97	1.36	5
08/20/2011	Head 835	e'	42.6300	Relative Permittivity ( $\epsilon_r$ ):	42.63	41.50	2.72	5
		e"	19.1049	Conductivity ( $\sigma$ ):	0.89	0.90	-1.44	5
08/23/2011	Body 1900	e'	52.8300	Relative Permittivity ( $\epsilon_r$ ):	52.83	53.30	-0.88	5
		e"	14.1300	Conductivity ( $\sigma$ ):	1.49	1.52	-1.79	5
08/23/2011	Head 1900	e'	40.3700	Relative Permittivity ( $\epsilon_r$ ):	40.37	40.00	0.92	5
		e"	13.3735	Conductivity ( $\sigma$ ):	1.41	1.40	0.92	5
08/23/2011	Head 1750	e'	40.3341	Relative Permittivity ( $\epsilon_r$ ):	40.33	40.08	0.62	5
		e"	13.4030	Conductivity ( $\sigma$ ):	1.30	1.37	-4.73	5
08/24/2011	Body 1900	e'	53.6632	Relative Permittivity ( $\epsilon_r$ ):	53.66	53.30	0.68	5
		e"	14.2178	Conductivity ( $\sigma$ ):	1.50	1.52	-1.18	5
08/24/2011	Head 1900	e'	40.9971	Relative Permittivity ( $\epsilon_r$ ):	41.00	40.00	2.49	5
		e"	13.0214	Conductivity ( $\sigma$ ):	1.38	1.40	-1.74	5
08/24/2011	Head 1750	e'	40.6518	Relative Permittivity ( $\epsilon_r$ ):	40.65	40.08	1.41	5
		e"	13.6167	Conductivity ( $\sigma$ ):	1.32	1.37	-3.21	5
08/24/2011	Body 835	e'	55.2200	Relative Permittivity ( $\epsilon_r$ ):	55.22	55.20	0.04	5
		e"	21.2409	Conductivity ( $\sigma$ ):	0.99	0.97	1.67	5
08/25/2011	Body 1750	e'	53.5704	Relative Permittivity ( $\epsilon_r$ ):	53.57	53.44	0.24	5
		e"	14.6687	Conductivity ( $\sigma$ ):	1.43	1.49	-3.96	5
08/26/2011	Body 1750	e'	54.3100	Relative Permittivity ( $\epsilon_r$ ):	54.31	53.44	1.63	5
		e"	15.5176	Conductivity ( $\sigma$ ):	1.51	1.49	1.60	5
08/26/2011	Head 1750	e'	40.2717	Relative Permittivity ( $\epsilon_r$ ):	40.27	40.08	0.47	5
		e"	13.8338	Conductivity ( $\sigma$ ):	1.35	1.37	-1.67	5
08/27/2011	Body 1750	e'	53.5600	Relative Permittivity ( $\epsilon_r$ ):	53.56	53.44	0.22	5
		e"	15.0516	Conductivity ( $\sigma$ ):	1.46	1.49	-1.45	5
08/29/2011	Body 1750	e'	52.9800	Relative Permittivity ( $\epsilon_r$ ):	52.98	53.44	-0.86	5
		e"	15.3272	Conductivity ( $\sigma$ ):	1.49	1.49	0.35	5
08/30/2011	Body 1750	e'	52.5100	Relative Permittivity ( $\epsilon_r$ ):	52.51	53.44	-1.74	5
		e"	15.2325	Conductivity ( $\sigma$ ):	1.48	1.49	-0.27	5
08/31/2011	Body 1750	e'	51.8000	Relative Permittivity ( $\epsilon_r$ ):	51.80	53.44	-3.07	5
		e"	15.4111	Conductivity ( $\sigma$ ):	1.50	1.49	0.90	5
09/01/2011	Head 1750	e'	40.1969	Relative Permittivity ( $\epsilon_r$ ):	40.20	40.08	0.28	5
		e"	13.8452	Conductivity ( $\sigma$ ):	1.35	1.37	-1.59	5

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
9/2/2011	Head 1750	e'	39.4248	Relative Permittivity ( $\epsilon_r$ ):	39.42	40.08	-1.65	5
		e"	13.7664	Conductivity ( $\sigma$ ):	1.34	1.37	-2.15	5
9/3/2011	Head 1750	e'	40.7618	Relative Permittivity ( $\epsilon_r$ ):	40.76	40.08	1.69	5
		e"	13.4398	Conductivity ( $\sigma$ ):	1.31	1.37	-4.47	5
9/5/2011	Head 1750	e'	38.5134	Relative Permittivity ( $\epsilon_r$ ):	38.51	40.08	-3.92	5
		e"	13.5210	Conductivity ( $\sigma$ ):	1.32	1.37	-3.89	5
9/6/2011	Body 1900	e'	51.3800	Relative Permittivity ( $\epsilon_r$ ):	51.38	53.30	-3.60	5
		e"	14.5389	Conductivity ( $\sigma$ ):	1.54	1.52	1.05	5
9/7/2011	Body 1900	e'	51.2100	Relative Permittivity ( $\epsilon_r$ ):	51.21	53.30	-3.92	5
		e"	14.4510	Conductivity ( $\sigma$ ):	1.53	1.52	0.44	5
9/8/2011	Body 1900	e'	51.8400	Relative Permittivity ( $\epsilon_r$ ):	51.84	53.30	-2.74	5
		e"	14.7025	Conductivity ( $\sigma$ ):	1.55	1.52	2.19	5
9/9/2011	Body 1900	e'	51.9771	Relative Permittivity ( $\epsilon_r$ ):	51.98	53.30	-2.48	5
		e"	13.9439	Conductivity ( $\sigma$ ):	1.47	1.52	-3.08	5
9/9/2011	Head 1900	e'	40.9509	Relative Permittivity ( $\epsilon_r$ ):	40.95	40.00	2.38	5
		e"	12.7674	Conductivity ( $\sigma$ ):	1.35	1.40	-3.66	5
9/10/2011	Head 1900	e'	41.0517	Relative Permittivity ( $\epsilon_r$ ):	41.05	40.00	2.63	5
		e"	13.5779	Conductivity ( $\sigma$ ):	1.43	1.40	2.46	5
9/12/2011	Head 1900	e'	39.6937	Relative Permittivity ( $\epsilon_r$ ):	39.69	40.00	-0.77	5
		e"	12.6794	Conductivity ( $\sigma$ ):	1.34	1.40	-4.32	5
9/13/2011	Head 1900	e'	39.4746	Relative Permittivity ( $\epsilon_r$ ):	39.47	40.00	-1.31	5
		e"	13.3430	Conductivity ( $\sigma$ ):	1.41	1.40	0.69	5
9/13/2011	Head 2450	e'	39.0082	Relative Permittivity ( $\epsilon_r$ ):	39.01	39.20	-0.49	5
		e"	13.7251	Conductivity ( $\sigma$ ):	1.87	1.80	3.87	5
9/13/2011	Body 2450	e'	50.8255	Relative Permittivity ( $\epsilon_r$ ):	50.83	52.70	-3.56	5
		e"	14.1867	Conductivity ( $\sigma$ ):	1.93	1.95	-0.89	5
9/14/2011	Head 1900	e'	38.7031	Relative Permittivity ( $\epsilon_r$ ):	38.70	40.00	-3.24	5
		e"	12.6338	Conductivity ( $\sigma$ ):	1.33	1.40	-4.66	5
9/14/2011	Head 1750	e'	41.5022	Relative Permittivity ( $\epsilon_r$ ):	41.50	40.08	3.54	5
		e"	13.3762	Conductivity ( $\sigma$ ):	1.30	1.37	-4.92	5
9/15/2011	Body 1750	e'	51.8907	Relative Permittivity ( $\epsilon_r$ ):	51.89	53.44	-2.90	5
		e"	15.0387	Conductivity ( $\sigma$ ):	1.46	1.49	-1.53	5

## 9. 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 SAM twin phantom filled with Head or Body 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 5x5x7 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
D1750V2	D1750V2-1053-May11	5/27/11	1g SAR:	36.08	36.88
			10g SAR:	19.16	19.72
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

### 9.1. System Check Results

System validation dipole	Date Tested	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
D1900V2 Body	08/17/11	1g SAR:	41.80	41.2	1.46	±10
		10g SAR:	22.00	21.6	1.85	
D1900V2 Head	08/17/11	1g SAR:	40.70	41.6	-2.16	±10
		10g SAR:	21.10	21.5	-1.86	
D1900V2 Body	08/18/11	1g SAR:	43.10	41.2	4.61	±10
		10g SAR:	22.50	21.6	4.17	
D1900V2 Head	08/18/11	1g SAR:	40.70	41.6	-2.16	±10
		10g SAR:	21.10	21.5	-1.86	
D1750V2 Body	08/19/11	1g SAR:	38.80	36.88	5.21	±10
		10g SAR:	20.70	19.72	4.97	
D1750V2 Head	08/19/11	1g SAR:	36.60	36.08	1.44	±10
		10g SAR:	19.40	19.16	1.25	
D835V2 Body	08/20/11	1g SAR:	10.60	10.1	4.95	±10
		10g SAR:	6.98	6.6	5.76	
D835V2 Head	08/20/11	1g SAR:	10.50	9.64	8.92	±10
		10g SAR:	6.88	6.28	9.55	
D1900V2 Body	08/23/11	1g SAR:	41.60	41.2	0.97	±10
		10g SAR:	21.80	21.6	0.93	
D1900V2 Head	08/23/11	1g SAR:	40.90	41.6	-1.68	±10
		10g SAR:	21.10	21.5	-1.86	
D1750V2 Head	08/23/11	1g SAR:	36.00	36.08	-0.22	±10
		10g SAR:	19.10	19.16	-0.31	
D1900V2 Body	08/24/11	1g SAR:	42.80	41.2	3.88	±10
		10g SAR:	22.40	21.6	3.70	
D1750V2 Head	08/24/11	1g SAR:	36.00	36.08	-0.22	±10
		10g SAR:	19.10	19.16	-0.31	
D835V2 Body	08/24/11	1g SAR:	10.40	10.1	2.97	±10
		10g SAR:	6.84	6.6	3.64	
D1900V2 Head	08/24/11	1g SAR:	38.90	41.6	-6.49	±10
		10g SAR:	20.40	21.5	-5.12	
D1750V2 Body	08/25/11	1g SAR:	37.20	36.88	0.87	±10
		10g SAR:	19.80	19.72	0.41	

**System Check Results (Continued)**

System validation dipole	Date Tested	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
D1750V2 Body	08/26/11	1g SAR:	37.50	36.88	1.68	±10
		10g SAR:	20.00	19.72	1.42	
D1750V2 Head	08/26/11	1g SAR:	35.20	36.08	-2.44	±10
		10g SAR:	18.80	19.16	-1.88	
D1750V2 Body	08/27/11	1g SAR:	36.10	36.88	-2.11	±10
		10g SAR:	19.20	19.72	-2.64	
D1750V2 Body	08/29/11	1g SAR:	36.90	36.88	0.05	±10
		10g SAR:	19.60	19.72	-0.61	
D1750V2 Body	08/30/11	1g SAR:	38.80	36.88	5.21	±10
		10g SAR:	20.50	19.72	3.96	
D1750V2 Body	08/31/11	1g SAR:	39.70	36.88	7.65	±10
		10g SAR:	21.00	19.72	6.49	
D1750V2 Head	09/01/11	1g SAR:	37.50	36.08	3.94	±10
		10g SAR:	19.90	19.16	3.86	
D1750V2 Head	09/02/11	1g SAR:	37.00	36.08	2.55	±10
		10g SAR:	19.60	19.16	2.30	
D1750V2 Head	09/03/11	1g SAR:	36.10	36.08	0.06	±10
		10g SAR:	19.40	19.16	1.25	
D1750V2 Head	09/05/11	1g SAR:	36.50	36.08	1.16	±10
		10g SAR:	19.20	19.16	0.21	
D1900V2 Body	09/06/11	1g SAR:	41.50	41.2	0.73	±10
		10g SAR:	21.60	21.6	0.00	
D1900V2 Body	09/07/11	1g SAR:	41.50	41.2	0.73	±10
		10g SAR:	21.60	21.6	0.00	
D1900V2 Body	09/08/11	1g SAR:	42.50	41.2	3.16	±10
		10g SAR:	22.00	21.6	1.85	
D1900V2 Body	09/09/11	1g SAR:	40.30	41.2	-2.18	±10
		10g SAR:	21.00	21.6	-2.78	
D1900V2 Head	09/09/11	1g SAR:	39.50	41.6	-5.05	±10
		10g SAR:	20.60	21.5	-4.19	
D1900V2 Head	09/10/11	1g SAR:	42.60	41.6	2.40	±10
		10g SAR:	22.30	21.5	3.72	
D1900V2 Head	09/12/11	1g SAR:	39.60	41.6	-4.81	±10
		10g SAR:	20.50	21.5	-4.65	
D1900V2 Head	09/13/11	1g SAR:	40.20	41.6	-3.37	±10
		10g SAR:	20.80	21.5	-3.26	

**System Check Results (Continued)**

System validation dipole	Date Tested	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
D2450V2 Body	09/13/11	1g SAR:	55.00	52.4	4.96	±10
		10g SAR:	25.60	24.5	4.49	
D2450V2 Head	09/13/11	1g SAR:	53.00	51.6	2.71	±10
		10g SAR:	24.20	24.4	-0.82	
D1900V2 Body	09/14/11	1g SAR:	40.10	41.2	-2.67	±10
		10g SAR:	20.80	21.6	-3.70	
D1750V2 Body	09/14/11	1g SAR:	36.10	36.88	-2.11	±10
		10g SAR:	19.10	19.72	-3.14	
D1750V2 Head	09/15/11	1g SAR:	35.30	36.08	-2.16	±10
		10g SAR:	18.80	19.16	-1.88	
D1900V2 Head	09/14/11	1g SAR:	40.10	41.6	-3.61	±10
		10g SAR:	20.50	21.5	-4.65	
D2450V2 Head	09/15/11	1g SAR:	51.90	51.6	0.58	±10
		10g SAR:	23.80	24.4	-2.46	
D2450V2 Body	09/15/11	1g SAR:	50.50	52.4	-3.63	±10
		10g SAR:	23.40	24.5	-4.49	

## 10. 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.

## 11. 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

### 11.1. CDMA2000

#### 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.15.18, L

- Protocol Rev > 6 (IS-2000-0)
- System ID: 7; NID: 1, Reg. Ch. #: 610 for Cell, 600 for PCS & 450 for AWS
- 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 Cellular Band (850)

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)	24.75	24.61	24.67
RC3	55 (Loopback)	24.45	24.45	24.67
	32 (+ F-SCH)	24.48	24.44	24.43

#### RF Output Power for AWS Band (1700)

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 25/1711.25 MHz	Ch. 450/1732.5 MHz	Ch. 875/1753.75 MHz
		Average	Average	Average
RC1	55 (Loopback)	24.68	24.58	24.51
RC3	55 (Loopback)	24.49	24.40	24.51
	32 (+ F-SCH)	24.37	24.41	24.40

#### RF Output Power for PCS Band (1900)

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)	24.69	24.65	24.41
RC3	55 (Loopback)	24.47	24.42	24.30
	32 (+ F-SCH)	24.45	24.44	24.34

**1xEV-Do - Release 0 (Rel. 0)**

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

**EVDO Release 0 - RTAP**

- 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 Parm:
  - Cell Power > -105.5 dBm/1.23 MHz
  - System ID: 7; NID: 1, Reg. Ch. #: 610 for Cell, 600 for PCS & 450 for AWS
  - 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 Parm:
  - Cell Power > -105.5 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
AWS	307.2 kbps (2 slot, QPSK)	153.6 kbps	25	1711.25	24.39	
			450	1732.50	24.55	
			875	1753.75	24.61	
PCS	307.2 kbps (2 slot, QPSK)	153.6 kbps	25	1851.25	24.52	
			600	1880.00	24.50	
			1175	1908.75	24.47	

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

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	A.09.13

**EVDO Rev. A – RETAP**

- Call Setup > Shift & Preset
- Cell Power > -60 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
- > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000: 00000000: 00000000: 00000000  
> Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots  
> ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

**EVDO Rev. A - FETAP**

- Call Setup > Shift & Preset
- Cell Power > -60 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)
- Access Network Info > Cell Parameters > Sector ID > 00000000: 00000000: 00000000: 00000000  
> Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots  
> ACK R-Data After > Subpacket 0 (All ACK)
- 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
AWS	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	25	1711.25	24.44	
			450	1732.50	24.52	
			875	1753.75	24.56	
PCS	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	25	1851.25	24.44	
			600	1880.00	24.47	
			1175	1908.75	24.48	

## 11.2. LTE

### Output power for LTE band 2

BW	UL Ch. #	Freq. (MHz)	Modulation	RB Size	RB Offset	MPR	Max Avg Power (dBm)
1.4 MHz	18607	1850.7	QPSK	1	0	0	23.21
				1	5	0	23.12
				3	2	0	23.23
			16-QAM	6	0	0	23.21
				1	0	0	23.23
				1	5	0	23.11
	18900	1880.0	QPSK	3	2	0	23.41
				6	0	0	23.44
				1	0	0	23.31
			16-QAM	1	5	0	23.40
				3	2	0	23.30
				6	0	0	23.40
	19193	1909.3	QPSK	1	0	0	23.43
				1	5	0	23.44
				3	2	0	23.21
			16-QAM	6	0	0	23.40
				1	0	0	23.46
				1	5	0	23.36
			QPSK	3	2	0	23.44
				6	0	0	23.44
				1	0	0	23.41
			16-QAM	1	5	0	23.38
				3	2	0	23.40
				6	0	0	23.45

BW	UL Ch. #	Freq. (MHz)	Modulation	RB Size	RB Offset	MPR	Max Avg Power (dBm)
3 MHz	18615	1851.5	QPSK	1	0	0	23.32
				1	14	0	23.21
				8	4	0	23.23
			16-QAM	15	0	0	23.23
				1	0	0	23.34
				1	14	0	23.31
	18900	1880	QPSK	8	4	0	23.17
				15	0	0	23.15
				1	0	0	23.32
			16-QAM	1	14	0	23.14
				8	4	0	23.47
				15	0	0	23.44
	19185	1908.5	QPSK	1	0	0	23.36
				1	14	0	23.31
				8	4	0	23.21
			16-QAM	15	0	0	23.22
				1	0	0	23.21
				1	14	0	23.14
			QPSK	8	4	0	23.38
				15	0	0	23.16
				1	0	0	23.24
			16-QAM	1	14	0	23.26
				8	4	0	23.29
				15	0	0	23.30

**Output power for LTE band 2 (continued)**

BW	UL Ch. #	Freq. (MHz)	Modulation	RB Size	RB Offset	MPR	Max Avg Power (dBm)
5 MHz	18625	1852.5	QPSK	1	0	0	23.21
				1	24	0	23.15
				12	6	0	23.25
			16-QAM	25	0	0	23.22
				1	0	0	23.23
				1	24	0	23.20
	18900	1880.0	QPSK	12	6	0	23.21
				25	0	0	23.46
				1	0	0	23.21
			16-QAM	1	24	0	23.22
				12	6	0	23.41
				25	0	0	23.38
	19175	1907.5	QPSK	1	0	0	23.31
				1	24	0	23.31
				12	6	0	23.21
			16-QAM	25	0	0	23.22
				1	0	0	23.21
				1	24	0	23.14
	16-QAM	12	6	0	23.35		
		25	0	0	23.37		
		1	0	0	23.34		
16-QAM	1	24	0	23.33			
	12	6	0	23.39			
	25	0	0	23.24			

**Output power for LTE Band 4**

BW	UL Ch. #	Freq. (MHz)	Modulation	RB Size	RB Offset	MPR	Max Avg Power (dBm)			
1.4 MHz	19957	1710.7	QPSK	1	0	0	23.29			
				1	5	0	23.25			
				3	2	0	23.39			
				6	0	0	23.42			
			16-QAM	1	0	0	23.31			
				1	5	0	23.31			
	3	2		0	23.32					
	20175	1732.5	QPSK	6	0	0	23.21			
				1	0	0	23.15			
				1	5	0	23.22			
				3	2	0	23.31			
				6	0	0	23.32			
				6	0	0	23.32			
			16-QAM	1	0	0	23.22			
				1	5	0	23.39			
				3	2	0	23.32			
				6	0	0	23.31			
				20393	1754.3	QPSK	1	0	0	23.17
							1	5	0	23.22
	3	2	0				23.21			
	6	0	0				23.22			
	16-QAM	1	0			0	23.17			
		1	5			0	23.30			
		3	2	0	23.29					
				6	0	0	23.32			

BW	UL Ch. #	Freq. (MHz)	Modulation	RB Size	RB Offset	MPR	Max Avg Power (dBm)			
3 MHz	19965	1711.5	QPSK	1	0	0	23.40			
				1	14	0	23.16			
				8	4	0	23.21			
				15	0	0	23.22			
			16-QAM	1	0	0	23.21			
				1	14	0	23.31			
	8	4		0	23.23					
	20175	1732.5	QPSK	15	0	0	23.21			
				1	0	0	23.22			
				1	14	0	23.15			
				8	4	0	23.44			
				15	0	0	23.40			
				15	0	0	23.40			
			16-QAM	1	0	0	23.31			
				1	14	0	23.24			
				8	4	0	23.33			
				15	0	0	23.32			
				20385	1753.5	QPSK	1	0	0	23.24
							1	14	0	23.42
	8	4	0				23.45			
	15	0	0				23.39			
	16-QAM	1	0			0	23.31			
		1	14			0	23.22			
		8	4	0	23.23					
				15	0	0	23.17			

**Output power for LTE Band 4 (Continued)**

BW	UL Ch. #	Freq. (MHz)	Modulation	RB Size	RB Offset	MPR	Max Avg Power (dBm)
5 MHz	19975	1712.5	QPSK	1	0	0	23.33
				1	24	0	23.18
				12	6	0	23.22
				25	0	0	23.46
			16-QAM	1	0	0	23.24
				1	24	0	23.32
				12	6	0	23.31
				25	0	0	23.29
				0	0	0	23.25
	20175	1732.5	QPSK	1	0	0	23.25
				1	24	0	23.21
				12	6	0	23.43
				25	0	0	23.40
			16-QAM	1	0	0	23.26
				1	24	0	23.19
				12	6	0	23.31
				25	0	0	23.36
				0	0	0	23.31
	20375	1752.5	QPSK	1	0	0	23.31
				1	24	0	23.30
				12	6	0	23.31
				25	0	0	23.21
			16-QAM	1	0	0	23.19
				1	24	0	23.23
12				6	0	23.18	
25				0	0	23.18	
0				0	0	23.25	

### 11.3. Wi-Fi

802.11b

Channel #	Freq. (MHz)	Conducted Avg Power	
		(dBm)	(mW)
1	2412	12.7	18.6
6	2437	13.9	24.5
11	2462	13.9	24.5

802.11g

1	2412	10.8	12.0
6	2437	11.6	14.5
11	2462	11.9	15.5

802.11n HT20

1	2412	9.30	8.5
6	2437	10.0	10.0
11	2462	10.4	11.0

**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.

### 11.4. Bluetooth

Mode	Channel #	Freq. (MHz)	Conducted Avg Power	
			(dBm)	(mW)
GFSK	0	2402	9.2	8.3
	39	2441	9.5	8.9
	78	2480	9.2	8.3
8PSK	0	2402	7.1	5.1
	39	2441	7.4	5.5
	78	2480	7.1	5.1

**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  $\geq 5.0$  cm from other antennas
- Output  $\leq P_{Ref}$  (12 mW) and antenna is  $\geq 2.5$  cm from other antennas
- Output  $\leq P_{Ref}$  (12 mW) and antenna is  $< 2.5$  cm from other antennas

### 11.5. Power Reduction for SV-DO

#### SV-DO: CDMA850 1xRTT to 1xEVDO 1900 & 1xEVDO 1700

CDMA850 1xRTT		1xEVDO 1900			1xEVDO 1700		
		Output Power [dBm]			Output Power [dBm]		
Ch. #	Output Power [dBm]	Low 25	Middle 600	High 1175	Low 25	Middle 450	High 875
Low_1013	11	24.62	24.53	24.7	24.4	24.4	24.3
	12	24.62	24.53	24.7	24.4	24.4	24.3
	13	24.62	24.53	24.7	24.4	24.4	24.3
	14	24.62	24.53	24.7	24.4	24.4	24.3
	15	24.62	24.53	24.7	24.4	24.4	24.3
	16	19.4	19.8	19.6	19.6	19.4	19.3
	17	19.4	19.8	19.6	19.6	19.4	19.3
	18	19.4	19.8	19.6	19.6	19.4	19.3
	19	19.4	19.8	19.6	19.6	19.4	19.3
	20	19.4	19.8	19.6	19.6	19.4	19.3
	21	19.4	19.8	19.6	19.6	19.4	19.3
	22	19.4	19.8	19.6	19.6	19.4	19.3
Middle_384	11	24.7	24.7	24.8	24.7	24.5	24.5
	12	24.7	24.7	24.8	24.7	24.5	24.5
	13	24.7	24.7	24.8	24.7	24.5	24.5
	14	24.7	24.7	24.8	24.7	24.5	24.5
	15	24.7	24.7	24.8	24.7	24.5	24.5
	16	19.7	19.8	19.6	19.6	19.4	19.3
	17	19.7	19.8	19.6	19.6	19.4	19.3
	18	19.7	19.8	19.6	19.6	19.4	19.3
	19	19.7	19.8	19.6	19.6	19.4	19.3
	20	19.7	19.8	19.6	19.6	19.4	19.3
	21	19.7	19.8	19.6	19.6	19.4	19.3
	22	19.7	19.8	19.6	19.6	19.4	19.3
23	19.7	19.8	19.6	19.6	19.4	19.3	
24	19.7	19.8	19.6	19.6	19.4	19.3	
High_777	11	24.7	24.7	24.6	24.7	24.5	24.3
	12	24.7	24.7	24.6	24.7	24.5	24.3
	13	24.7	24.7	24.6	24.7	24.5	24.3
	14	24.7	24.7	24.6	24.7	24.5	24.3
	15	24.7	24.7	24.6	24.7	24.5	24.3
	16	19.7	19.8	19.9	19.6	19.3	19.3
	17	19.7	19.8	19.9	19.6	19.3	19.3
	18	19.7	19.8	19.9	19.6	19.3	19.3
	19	19.7	19.8	19.9	19.6	19.3	19.3
	20	19.7	19.8	19.9	19.6	19.3	19.3
	21	19.7	19.8	19.9	19.6	19.3	19.3
	22	19.7	19.8	19.9	19.6	19.3	19.3
23	19.7	19.8	19.9	19.6	19.3	19.3	
24	19.7	19.8	19.9	19.6	19.3	19.3	

**SV-DO: CDMA1700 1xRTT to 1xEVDO 1900, 1xEVDO 1700**

CDMA1700 1xRTT		1xEVDO 1900			1xEVDO 1700		
		Output Power [dBm]			Output Power [dBm]		
Ch. #	Output Power [dBm]	Low 25	Middle 600	High 1175	Low 25	Middle 450	High 875
Low_25	11	24.5	24.5	24.6	24.6	24.7	24.4
	12	24.5	24.5	24.6	24.6	24.7	24.4
	13	24.5	24.5	24.6	24.6	24.7	24.4
	14	24.5	24.5	24.6	24.6	24.7	24.4
	15	24.5	24.5	24.6	24.6	24.7	24.4
	16	19.5	19.6	19.7	19.4	19.4	19.3
	17	19.5	19.6	19.7	19.4	19.4	19.3
	18	19.5	19.6	19.7	19.4	19.4	19.3
	19	19.5	19.6	19.7	19.4	19.4	19.3
	20	19.5	19.6	19.7	19.4	19.4	19.3
	21	19.5	19.6	19.7	19.4	19.4	19.3
	22	19.5	19.6	19.7	19.4	19.4	19.3
Middle_450	11	24.6	24.6	24.6	24.5	24.7	24.7
	12	24.6	24.6	24.6	24.5	24.7	24.7
	13	24.6	24.6	24.6	24.5	24.7	24.7
	14	24.6	24.6	24.6	24.5	24.7	24.7
	15	24.6	24.6	24.6	24.5	24.7	24.7
	16	19.4	19.6	19.7	19.3	19.4	19.4
	17	19.4	19.6	19.7	19.3	19.4	19.4
	18	19.4	19.6	19.7	19.3	19.4	19.4
	19	19.4	19.6	19.7	19.3	19.4	19.4
	20	19.4	19.6	19.7	19.3	19.4	19.4
	21	19.4	19.6	19.7	19.3	19.4	19.4
	22	19.4	19.6	19.7	19.3	19.4	19.4
High_875	11	24.6	24.5	24.5	24.5	24.6	24.3
	12	24.6	24.5	24.5	24.5	24.6	24.3
	13	24.6	24.5	24.5	24.5	24.6	24.3
	14	24.6	24.5	24.5	24.5	24.6	24.3
	15	24.6	24.5	24.5	24.5	24.6	24.3
	16	19.5	19.5	19.7	19.4	19.4	19.3
	17	19.5	19.5	19.7	19.4	19.4	19.3
	18	19.5	19.5	19.7	19.4	19.4	19.3
	19	19.5	19.5	19.7	19.4	19.4	19.3
	20	19.5	19.5	19.7	19.4	19.4	19.3
	21	19.5	19.5	19.7	19.4	19.4	19.3
	22	19.5	19.5	19.7	19.4	19.4	19.3
23	19.5	19.5	19.7	19.4	19.4	19.3	
24	19.5	19.5	19.7	19.4	19.4	19.3	

**SV-DO: CDMA1900 1xRTT to 1xEVDO 1900, 1xEVDO 1700**

CDMA1900 1xRTT		1xEVDO 1900			1xEVDO 1700		
		Output Power [dBm]			Output Power [dBm]		
Ch. #	Output Power [dBm]	Low 25	Middle 600	High 1175	Low 25	Middle 450	High 875
Low_25	11	24.5	24.6	24.5	24.6	24.4	24.4
	12	24.5	24.6	24.5	24.6	24.4	24.4
	13	24.5	24.6	24.5	24.6	24.4	24.4
	14	24.5	24.6	24.5	24.6	24.4	24.4
	15	24.5	24.6	24.5	24.6	24.4	24.4
	16	19.5	19.6	19.7	19.4	19	19
	17	19.5	19.6	19.7	19.4	19	19
	18	19.5	19.6	19.7	19.4	19	19
	19	19.5	19.6	19.7	19.4	19	19
	20	19.5	19.6	19.7	19.4	19	19
	21	19.5	19.6	19.7	19.4	19	19
	22	19.5	19.6	19.7	19.4	19	19
Middle_600	11	24.8	24.8	24.6	24.4	24.7	24.7
	12	24.8	24.8	24.6	24.4	24.7	24.7
	13	24.8	24.8	24.6	24.4	24.7	24.7
	14	24.8	24.8	24.6	24.4	24.7	24.7
	15	24.8	24.8	24.6	24.4	24.7	24.7
	16	19.5	19.6	19.6	19.4	19.3	19.2
	17	19.5	19.6	19.6	19.4	19.3	19.2
	18	19.5	19.6	19.6	19.4	19.3	19.2
	19	19.5	19.6	19.6	19.4	19.3	19.2
	20	19.5	19.6	19.6	19.4	19.3	19.2
	21	19.5	19.6	19.6	19.4	19.3	19.2
	22	19.5	19.6	19.6	19.4	19.3	19.2
High_1175	11	24.5	24.7	24.7	24.6	24.6	24.7
	12	24.5	24.7	24.7	24.6	24.6	24.7
	13	24.5	24.7	24.7	24.6	24.6	24.7
	14	24.5	24.7	24.7	24.6	24.6	24.7
	15	24.5	24.7	24.7	24.6	24.6	24.7
	16	19.5	19.5	19.5	19.5	19.6	19.6
	17	19.5	19.5	19.5	19.5	19.6	19.6
	18	19.5	19.5	19.5	19.5	19.6	19.6
	19	19.5	19.5	19.5	19.5	19.6	19.6
	20	19.5	19.5	19.5	19.5	19.6	19.6
	21	19.5	19.5	19.5	19.5	19.6	19.6
	22	19.5	19.5	19.5	19.5	19.6	19.6
23	19.5	19.5	19.5	19.5	19.6	19.6	
24	19.5	19.5	19.5	19.5	19.6	19.6	

### 11.6. Power Reduction for SV-LTE Band 2

#### SV-LTE: CDMA850 1xRTT to SV-LTE Band 2 (5MHz), (QPSK, 16QAM)

CDMA850 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	23.1	23	23	23	23	23.1	23	23.4
	12	23.1	23	23	23	23	23.1	23	23.4
	13	23.1	23	23	23	23	23.1	23	23.4
	14	23.1	23	23	23	23	23.1	23	23.4
	15	23.1	23	23	23	23	23.1	23	23.4
	16	23.1	23	23	23	23	23.1	23	23.4
	17	23.1	23	23	23	23	23.1	23	23.4
	18	23.1	23	23	23	23	23.1	23	23.4
	19	18.1	18	17.9	17.8	18.1	17.8	18.4	18.2
	20	18.1	18	17.9	17.8	18.1	17.8	18.4	18.2
	21	18.1	18	17.9	17.8	18.1	17.8	18.4	18.2
	22	18.1	18	17.9	17.8	18.1	17.8	18.4	18.2
Middle_384	11	23.1	23	22.9	23	23	23.1	22.8	23.4
	12	23.1	23	22.9	23	23	23.1	22.8	23.4
	13	23.1	23	22.9	23	23	23.1	22.8	23.4
	14	23.1	23	22.9	23	23	23.1	22.8	23.4
	15	23.1	23	22.9	23	23	23.1	22.8	23.4
	16	23.1	23	22.9	23	23	23.1	22.8	23.4
	17	23.1	23	22.9	23	23	23.1	22.8	23.4
	18	23.1	23	22.9	23	23	23.1	22.8	23.4
	19	18.1	18	17.8	17.7	18.2	17.8	18.3	18.2
	20	18.1	18	17.8	17.7	18.2	17.8	18.3	18.2
	21	18.1	18	17.8	17.7	18.2	17.8	18.3	18.2
	22	18.1	18	17.8	17.7	18.2	17.8	18.3	18.2
High_777	11	23.1	22.9	22.9	23	23	22.8	22.8	23.2
	12	23.1	22.9	22.9	23	23	22.8	22.8	23.2
	13	23.1	22.9	22.9	23	23	22.8	22.8	23.2
	14	23.1	22.9	22.9	23	23	22.8	22.8	23.2
	15	23.1	22.9	22.9	23	23	22.8	22.8	23.2
	16	23.1	22.9	22.9	23	23	22.8	22.8	23.2
	17	23.1	22.9	22.9	23	23	22.8	22.8	23.2
	18	23.1	22.9	22.9	23	23	22.8	22.8	23.2
	19	18	17.9	17.9	17.9	18.3	18.1	18.4	18.2
	20	18	17.9	17.9	17.9	18.3	18.1	18.4	18.2
	21	18	17.9	17.9	17.9	18.3	18.1	18.4	18.2
	22	18	17.9	17.9	17.9	18.3	18.1	18.4	18.2
23	18	17.9	17.9	17.9	18.3	18.1	18.4	18.2	
24	18	17.9	17.9	17.9	18.3	18.1	18.4	18.2	

**SV-LTE: CDMA1900 1xRTT to SV-LTE Band 2 (5MHz), (QPSK, 16QAM)**

CDMA1900 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	23.1	23	23	23.1	23.2	22.9	22.8	23.4
	12	23.1	23	23	23.1	23.2	22.9	22.8	23.4
	13	23.1	23	23	23.1	23.2	22.9	22.8	23.4
	14	23.1	23	23	23.1	23.2	22.9	22.8	23.4
	15	23.1	23	23	23.1	23.2	22.9	22.8	23.4
	16	23.1	23	23	23.1	23.2	22.9	22.8	23.4
	17	23.1	23	23	23.1	23.2	22.9	22.8	23.4
	18	23.1	23	23	23.1	23.2	22.9	22.8	23.4
	19	18.1	17.9	18	18.3	18.4	18.2	18.4	18.3
	20	18.1	17.9	18	18.3	18.4	18.2	18.4	18.3
	21	18.1	17.9	18	18.3	18.4	18.2	18.4	18.3
	22	18.1	17.9	18	18.3	18.4	18.2	18.4	18.3
	23	18.1	17.9	18	18.3	18.4	18.2	18.4	18.3
	24	18.1	17.9	18	18.3	18.4	18.2	18.4	18.3
Middle_600	11	23	23	23	23	23.3	23	22.8	23.3
	12	23	23	23	23	23.3	23	22.8	23.3
	13	23	23	23	23	23.3	23	22.8	23.3
	14	23	23	23	23	23.3	23	22.8	23.3
	15	23	23	23	23	23.3	23	22.8	23.3
	16	23	23	23	23	23.3	23	22.8	23.3
	17	23	23	23	23	23.3	23	22.8	23.3
	18	23	23	23	23	23.3	23	22.8	23.3
	19	18.3	17.9	17.9	18.2	18.5	18.2	18.2	18.2
	20	18.3	17.9	17.9	18.2	18.5	18.2	18.2	18.2
	21	18.3	17.9	17.9	18.2	18.5	18.2	18.2	18.2
	22	18.3	17.9	17.9	18.2	18.5	18.2	18.2	18.2
	23	18.3	17.9	17.9	18.2	18.5	18.2	18.2	18.2
	24	18.3	17.9	17.9	18.2	18.5	18.2	18.2	18.2
High_1175	11	23	23	23	23	23.2	23	22.8	23.3
	12	23	23	23	23	23.2	23	22.8	23.3
	13	23	23	23	23	23.2	23	22.8	23.3
	14	23	23	23	23	23.2	23	22.8	23.3
	15	23	23	23	23	23.2	23	22.8	23.3
	16	23	23	23	23	23.2	23	22.8	23.3
	17	23	23	23	23	23.2	23	22.8	23.3
	18	23	23	23	23	23.2	23	22.8	23.3
	19	18.1	18	17.9	17.9	18.5	18.2	18.1	18.3
	20	18.1	18	17.9	17.9	18.5	18.2	18.1	18.3
	21	18.1	18	17.9	17.9	18.5	18.2	18.1	18.3
	22	18.1	18	17.9	17.9	18.5	18.2	18.1	18.3
	23	18.1	18	17.9	17.9	18.5	18.2	18.1	18.3
	24	18.1	18	17.9	17.9	18.5	18.2	18.1	18.3

**SV-LTE: CDMA AWS Band 1700 1xRTT to SV-LTE Band 2 (5MHz) (QPSK, 16QAM)**

CDMA1700 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	23.1	23.1	23	23.1	23	23	22.9	23.5
	12	23.1	23.1	23	23.1	23	23	22.9	23.5
	13	23.1	23.1	23	23.1	23	23	22.9	23.5
	14	23.1	23.1	23	23.1	23	23	22.9	23.5
	15	23.1	23.1	23	23.1	23	23	22.9	23.5
	16	23.1	23.1	23	23.1	23	23	22.9	23.5
	17	23.1	23.1	23	23.1	23	23	22.9	23.5
	18	23.1	23.1	23	23.1	23	23	22.9	23.5
	19	17.9	18	18.4	18.1	18.3	18.1	18.3	18.2
	20	17.9	18	18.4	18.1	18.3	18.1	18.3	18.2
	21	17.9	18	18.4	18.1	18.3	18.1	18.3	18.2
	22	17.9	18	18.4	18.1	18.3	18.1	18.3	18.2
Middle_450	11	23.1	23.1	23	23.1	23	23.1	22.9	23.5
	12	23.1	23.1	23	23.1	23	23.1	22.9	23.5
	13	23.1	23.1	23	23.1	23	23.1	22.9	23.5
	14	23.1	23.1	23	23.1	23	23.1	22.9	23.5
	15	23.1	23.1	23	23.1	23	23.1	22.9	23.5
	16	23.1	23.1	23	23.1	23	23.1	22.9	23.5
	17	23.1	23.1	23	23.1	23	23.1	22.9	23.5
	18	23.1	23.1	23	23.1	23	23.1	22.9	23.5
	19	17.8	18	18.4	18.1	18.3	18.1	18.3	18.3
	20	17.8	18	18.4	18.1	18.3	18.1	18.3	18.3
	21	17.8	18	18.4	18.1	18.3	18.1	18.3	18.3
	22	17.8	18	18.4	18.1	18.3	18.1	18.3	18.3
High_875	11	23	23.1	23	23	23	22.9	22.9	23.5
	12	23	23.1	23	23	23	22.9	22.9	23.5
	13	23	23.1	23	23	23	22.9	22.9	23.5
	14	23	23.1	23	23	23	22.9	22.9	23.5
	15	23	23.1	23	23	23	22.9	22.9	23.5
	16	23	23.1	23	23	23	22.9	22.9	23.5
	17	23	23.1	23	23	23	22.9	22.9	23.5
	18	23	23.1	23	23	23	22.9	22.9	23.5
	19	17.8	18	18.3	18	18.3	18.1	18.3	18.3
	20	17.8	18	18.3	18	18.3	18.1	18.3	18.3
	21	17.8	18	18.3	18	18.3	18.1	18.3	18.3
	22	17.8	18	18.3	18	18.3	18.1	18.3	18.3
23	17.8	18	18.3	18	18.3	18.1	18.3	18.3	
24	17.8	18	18.3	18	18.3	18.1	18.3	18.3	

### 11.7. Power Reduction for SV-LTE Band 4

#### SV-LTE: CDMA 850 1xRTT to SV-LTE Band 4 (5MHz) (QPSK, 16QAM)

CDMA850 1xRTT		QPSK				16QAM			
Ch. #	Output Power [dBm]	Output Power [dBm]				Output Power [dBm]			
		1RB, 0offset	1RB, 24 offset	12RB, 6 offset	25RB	1RB, 0 offset	1RB, 24 offset	12RB, 6 offset	25RB
Low_1013	11	23.2	23.2	23	23.1	23.2	23.2	23.1	23.5
Low_1013	12	23.2	23.2	23	23.1	23.2	23.2	23.1	23.5
Low_1013	13	23.2	23.2	23	23.1	23.2	23.2	23.1	23.5
Low_1013	14	23.2	23.2	23	23.1	23.2	23.2	23.1	23.5
Low_1013	15	23.2	23.2	23	23.1	23.2	23.2	23.1	23.5
Low_1013	16	23.2	23.2	23	23.1	23.2	23.2	23.1	23.5
Low_1013	17	23.2	23.2	23	23.1	23.2	23.2	23.1	23.5
Low_1013	18	23.2	23.2	23	23.1	23.2	23.2	23.1	23.5
Low_1013	19	18.2	17.8	18	17.8	18.5	18.1	18.6	18.5
Low_1013	20	18.2	17.8	18	17.8	18.5	18.1	18.6	18.5
Low_1013	21	18.2	17.8	18	17.8	18.5	18.1	18.6	18.5
Low_1013	22	18.2	17.8	18	17.8	18.5	18.1	18.6	18.5
Low_1013	23	18.2	17.8	18	17.8	18.5	18.1	18.6	18.5
Low_1013	24	18.2	17.8	18	17.8	18.5	18.1	18.6	18.5
Middle_384	11	23.2	23.2	23	23.1	23.2	23.2	23	23.5
Middle_384	12	23.2	23.2	23	23.1	23.2	23.2	23	23.5
Middle_384	13	23.2	23.2	23	23.1	23.2	23.2	23	23.5
Middle_384	14	23.2	23.2	23	23.1	23.2	23.2	23	23.5
Middle_384	15	23.2	23.2	23	23.1	23.2	23.2	23	23.5
Middle_384	16	23.2	23.2	23	23.1	23.2	23.2	23	23.5
Middle_384	17	23.2	23.2	23	23.1	23.2	23.2	23	23.5
Middle_384	18	23.2	23.2	23	23.1	23.2	23.2	23	23.5
Middle_384	19	18.1	17.8	17.9	17.9	18.4	18.2	18.6	18.5
Middle_384	20	18.1	17.8	17.9	17.9	18.4	18.2	18.6	18.5
Middle_384	21	18.1	17.8	17.9	17.9	18.4	18.2	18.6	18.5
Middle_384	22	18.1	17.8	17.9	17.9	18.4	18.2	18.6	18.5
Middle_384	23	18.1	17.8	17.9	17.9	18.4	18.2	18.6	18.5
Middle_384	24	18.1	17.8	17.9	17.9	18.4	18.2	18.6	18.5
High_777	11	23.2	23.2	23	23.1	23.1	23.2	22.9	23.5
High_777	12	23.2	23.2	23	23.1	23.1	23.2	22.9	23.5
High_777	13	23.2	23.2	23	23.1	23.1	23.2	22.9	23.5
High_777	14	23.2	23.2	23	23.1	23.1	23.2	22.9	23.5
High_777	15	23.2	23.2	23	23.1	23.1	23.2	22.9	23.5
High_777	16	23.2	23.2	23	23.1	23.1	23.2	22.9	23.5
High_777	17	23.2	23.2	23	23.1	23.1	23.2	22.9	23.5
High_777	18	23.2	23.2	23	23.1	23.1	23.2	22.9	23.5
High_777	19	18	17.8	17.9	17.8	18.4	18.2	18.6	18.5
High_777	20	18	17.8	17.9	17.8	18.4	18.2	18.6	18.5
High_777	21	18	17.8	17.9	17.8	18.4	18.2	18.6	18.5
High_777	22	18	17.8	17.9	17.8	18.4	18.2	18.6	18.5
High_777	23	18	17.8	17.9	17.8	18.4	18.2	18.6	18.5
High_777	24	18	17.8	17.9	17.8	18.4	18.2	18.6	18.5

**SV-LTE: CDMA1900 1xRTT to SV-LTE Band 4 (5MHz) (QPSK, 16QAM)**

CDMA1900 1xRTT		QPSK				16QAM			
		Output Power [dBm]				Output Power [dBm]			
Ch. #	Output Power [dBm]	1RB, 0 offset	1RB, 24 offset	12RB, 6 offset	25RB	1RB, 0 offset	1RB, 24offset	12RB, 6 offset	25RB
Low_25	11	23.2	23.2	23	23.1	23.4	23.3	23.1	23.5
Low_25	12	23.2	23.2	23	23.1	23.4	23.3	23.1	23.5
Low_25	13	23.2	23.2	23	23.1	23.4	23.3	23.1	23.5
Low_25	14	23.2	23.2	23	23.1	23.4	23.3	23.1	23.5
Low_25	15	23.2	23.2	23	23.1	23.4	23.3	23.1	23.5
Low_25	16	23.2	23.2	23	23.1	23.4	23.3	23.1	23.5
Low_25	17	23.2	23.2	23	23.1	23.4	23.3	23.1	23.5
Low_25	18	23.2	23.2	23	23.1	23.4	23.3	23.1	23.5
Low_25	19	17.8	17.7	17.7	17.7	18.7	18.6	18.4	18.6
Low_25	20	17.8	17.7	17.7	17.7	18.7	18.6	18.4	18.6
Low_25	21	17.8	17.7	17.7	17.7	18.7	18.6	18.4	18.6
Low_25	22	17.8	17.7	17.7	17.7	18.7	18.6	18.4	18.6
Low_25	23	17.8	17.7	17.7	17.7	18.7	18.6	18.4	18.6
Low_25	24	17.8	17.7	17.7	17.7	18.7	18.6	18.4	18.6
Middle_600	11	23.2	23.2	23	23.1	23.4	23.3	23	23.5
Middle_600	12	23.2	23.2	23	23.1	23.4	23.3	23	23.5
Middle_600	13	23.2	23.2	23	23.1	23.4	23.3	23	23.5
Middle_600	14	23.2	23.2	23	23.1	23.4	23.3	23	23.5
Middle_600	15	23.2	23.2	23	23.1	23.4	23.3	23	23.5
Middle_600	16	23.2	23.2	23	23.1	23.4	23.3	23	23.5
Middle_600	17	23.2	23.2	23	23.1	23.4	23.3	23	23.5
Middle_600	18	23.2	23.2	23	23.1	23.4	23.3	23	23.5
Middle_600	19	17.9	17.7	17.7	17.7	18.6	18.6	18.5	18.3
Middle_600	20	17.9	17.7	17.7	17.7	18.6	18.6	18.5	18.3
Middle_600	21	17.9	17.7	17.7	17.7	18.6	18.6	18.5	18.3
Middle_600	22	17.9	17.7	17.7	17.7	18.6	18.6	18.5	18.3
Middle_600	23	17.9	17.7	17.7	17.7	18.6	18.6	18.5	18.3
Middle_600	24	17.9	17.7	17.7	17.7	18.6	18.6	18.5	18.3
High_1175	11	23.2	23.1	23	23.1	23.4	23.1	23	23.5
High_1175	12	23.2	23.1	23	23.1	23.4	23.1	23	23.5
High_1175	13	23.2	23.1	23	23.1	23.4	23.1	23	23.5
High_1175	14	23.2	23.1	23	23.1	23.4	23.1	23	23.5
High_1175	15	23.2	23.1	23	23.1	23.4	23.1	23	23.5
High_1175	16	23.2	23.1	23	23.1	23.4	23.1	23	23.5
High_1175	17	23.2	23.1	23	23.1	23.4	23.1	23	23.5
High_1175	18	23.2	23.1	23	23.1	23.4	23.1	23	23.5
High_1175	19	17.9	17.7	17.7	17.7	18.6	18.6	18.6	18.6
High_1175	20	17.9	17.7	17.7	17.7	18.6	18.6	18.6	18.6
High_1175	21	17.9	17.7	17.7	17.7	18.6	18.6	18.6	18.6
High_1175	22	17.9	17.7	17.7	17.7	18.6	18.6	18.6	18.6
High_1175	23	17.9	17.7	17.7	17.7	18.6	18.6	18.6	18.6
High_1175	24	17.9	17.7	17.7	17.7	18.6	18.6	18.6	18.6

**SV-LTE: CDMA1700 1xRTT to SV-LTE Band 4 (5MHz) (QPSK, 16QAM)**

CDMA1700 1xRTT		QPSK				16QAM			
		Output Power [dBm]				Output Power [dBm]			
Ch. #	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	23.3	23.3	23.1	23.2	23.1	23.2	23.1	23.5
Low_25	12	23.3	23.3	23.1	23.2	23.1	23.2	23.1	23.5
Low_25	13	23.3	23.3	23.1	23.2	23.1	23.2	23.1	23.5
Low_25	14	23.3	23.3	23.1	23.2	23.1	23.2	23.1	23.5
Low_25	15	23.3	23.3	23.1	23.2	23.1	23.2	23.1	23.5
Low_25	16	23.3	23.3	23.1	23.2	23.1	23.2	23.1	23.5
Low_25	17	23.3	23.3	23.1	23.2	23.1	23.2	23.1	23.5
Low_25	18	23.3	23.3	23.1	23.2	23.1	23.2	23.1	23.5
Low_25	19	18.3	18.3	18.1	18.1	18.6	18.6	18.6	18.5
Low_25	20	18.3	18.3	18.1	18.1	18.6	18.6	18.6	18.5
Low_25	21	18.3	18.3	18.1	18.1	18.6	18.6	18.6	18.5
Low_25	22	18.3	18.3	18.1	18.1	18.6	18.6	18.6	18.5
Low_25	23	18.3	18.3	18.1	18.1	18.6	18.6	18.6	18.5
Low_25	24	18.3	18.3	18.1	18.1	18.6	18.6	18.6	18.5
Middle_450	11	23.3	23.3	23.1	23.1	23.2	23.2	23.1	23.5
Middle_450	12	23.3	23.3	23.1	23.1	23.2	23.2	23.1	23.5
Middle_450	13	23.3	23.3	23.1	23.1	23.2	23.2	23.1	23.5
Middle_450	14	23.3	23.3	23.1	23.1	23.2	23.2	23.1	23.5
Middle_450	15	23.3	23.3	23.1	23.1	23.2	23.2	23.1	23.5
Middle_450	16	23.3	23.3	23.1	23.1	23.2	23.2	23.1	23.5
Middle_450	17	23.3	23.3	23.1	23.1	23.2	23.2	23.1	23.5
Middle_450	18	23.3	23.3	23.1	23.1	23.2	23.2	23.1	23.5
Middle_450	19	18.3	18.3	18.3	17.9	18.6	18.6	18.6	18.5
Middle_450	20	18.3	18.3	18.3	17.9	18.6	18.6	18.6	18.5
Middle_450	21	18.3	18.3	18.3	17.9	18.6	18.6	18.6	18.5
Middle_450	22	18.3	18.3	18.3	17.9	18.6	18.6	18.6	18.5
Middle_450	23	18.3	18.3	18.3	17.9	18.6	18.6	18.6	18.5
Middle_450	24	18.3	18.3	18.3	17.9	18.6	18.6	18.6	18.5
High_875	11	23.2	23.3	23.1	23.1	23.1	23.2	23	23.5
High_875	12	23.2	23.3	23.1	23.1	23.1	23.2	23	23.5
High_875	13	23.2	23.3	23.1	23.1	23.1	23.2	23	23.5
High_875	14	23.2	23.3	23.1	23.1	23.1	23.2	23	23.5
High_875	15	23.2	23.3	23.1	23.1	23.1	23.2	23	23.5
High_875	16	23.2	23.3	23.1	23.1	23.1	23.2	23	23.5
High_875	17	23.2	23.3	23.1	23.1	23.1	23.2	23	23.5
High_875	18	23.2	23.3	23.1	23.1	23.1	23.2	23	23.5
High_875	19	18.4	18.3	18.3	17.9	18.6	18.6	18.6	18.5
High_875	20	18.4	18.3	18.3	17.9	18.6	18.6	18.6	18.5
High_875	21	18.4	18.3	18.3	17.9	18.6	18.6	18.6	18.5
High_875	22	18.4	18.3	18.3	17.9	18.6	18.6	18.6	18.5
High_875	23	18.4	18.3	18.3	17.9	18.6	18.6	18.6	18.5
High_875	24	18.4	18.3	18.3	17.9	18.6	18.6	18.6	18.5

## 12. Standalone SAR Test Results

### 12.1. CDMA Cell Band (850)

#### 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	24.45			1
		<b>384</b>	<b>836.52</b>	<b>24.45</b>	<b>0.354</b>	<b>0.266</b>	
		777	848.31	24.67			1
Left Tilt (15°)	1xRTT (RC3,SO55)	1013	824.70	24.45			1
		384	836.52	24.45	0.209	0.160	
		777	848.31	24.67			1
Right Touch	1xRTT (RC3,SO55)	1013	824.70	24.45			1
		384	836.52	24.45	0.292	0.222	
		777	848.31	24.67			1
Right Tilt (15°)	1xRTT (RC3,SO55)	1013	824.70	24.45			1
		384	836.52	24.45	0.191	0.147	
		777	848.31	24.67			1

#### Body-worn 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	24.48			1
		<b>384</b>	<b>836.52</b>	<b>24.44</b>	<b>0.534</b>	<b>0.384</b>	
		777	848.31	24.43			1
		384	836.52	24.44	0.416	0.274	2
Front	1xRTT (RC3, SO32)	1013	824.70	24.48			1
		384	836.52	24.44	0.248	0.181	
		777	848.31	24.43			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.

#### Body-hotspot SAR

N/A

#### Note(s):

1xEVDO is not supported

## 12.2. CDMA AWS Band (1700)

### 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	1711.25	24.49	0.719	0.455	
		450	1732.50	24.40	0.929	0.583	
		<b>875</b>	<b>1753.75</b>	<b>24.51</b>	<b>0.935</b>	<b>0.581</b>	
Left Tilt (15°)	1xRTT (RC3,SO55)	25	1711.25	24.49			1
		450	1732.50	24.40	0.178	0.122	
		875	1753.75	24.51			1
Right Touch	1xRTT (RC3,SO55)	25	1711.25	24.49			1
		450	1732.50	24.40	0.563	0.379	
		875	1753.75	24.51			1
Right Tilt (15°)	1xRTT (RC3,SO55)	25	1711.25	24.49			1
		450	1732.50	24.40	0.182	0.112	
		875	1753.75	24.51			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	1711.25	24.39			1
		450	1732.50	24.55	0.371	0.245	
		875	1753.75	24.61			1
Left Tilt (15°)	1xEVDO (Rel. 0)	25	1711.25	24.39			1
		450	1732.50	24.55	0.239	0.145	
		875	1753.75	24.61			1
Right Touch	1xEVDO (Rel. 0)	25	1711.25	24.39			1
		450	1732.50	24.55	0.793	0.490	
		875	1753.75	24.61			1
Right Tilt (15°)	1xEVDO (Rel. 0)	25	1711.25	24.39			1
		450	1732.50	24.55	0.257	0.164	
		875	1753.75	24.61			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-worn 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	1711.25	24.37	0.753	0.462	
		<b>450</b>	<b>1732.50</b>	<b>24.41</b>	<b>0.847</b>	<b>0.526</b>	
		875	1753.75	24.40	0.842	0.521	
		450	1732.50	24.41	0.821	0.510	2
Front	1xRTT (RC3, SO32)	25	1711.25				1
		450	1732.50	24.41	0.665	0.427	
		875	1753.75				1

**Body-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	1711.25				1
		<b>450</b>	<b>1732.50</b>	<b>24.55</b>	<b>0.613</b>	<b>0.355</b>	
		875	1753.75				1
		450	1732.50	24.55	0.605	0.331	2
Front	1xEVDO (Rel. 0)	25	1711.25				1
		450	1732.50	24.55	0.568	0.357	
		875	1753.75				1
Left	1xEVDO (Rel. 0)	25	1711.25				1
		450	1732.50	24.55	0.060	0.036	
		875	1753.75				1
Right	1xEVDO (Rel. 0)	25	1711.25				1
		450	1732.50	24.55	0.254	0.152	
		875	1753.75				1
Bottom	1xEVDO (Rel. 0)	25	1711.25				1
		450	1732.50	24.55	0.282	0.169	
		875	1753.75				1
Top	1xEVDO (Rel. 0)						3
							3
							3

**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-top edge's distance is greater than 2.5 cm.

### 12.3. CDMA PCS Band (1900)

#### 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	24.47	1.030	0.630	
		600	1880.00	24.42	1.030	0.625	
		<b>1175</b>	<b>1908.75</b>	<b>24.30</b>	<b>1.040</b>	<b>0.625</b>	
Left Tilt (15°)	1xRTT (RC3,SO55)	25	1851.25	24.47			1
		600	1880.00	24.42	0.273	0.176	
		1175	1908.75	24.30			1
Right Touch	1xRTT (RC3,SO55)	25	1851.25	24.47			1
		600	1880.00	24.42	0.654	0.426	
		1175	1908.75	24.30			1
Right Tilt (15°)	1xRTT (RC3,SO55)	25	1851.25	24.47			1
		600	1880.00	24.42	0.284	0.176	
		1175	1908.75	24.30			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	24.52			1
		600	1880.00	24.50	0.298	0.194	
		1175	1908.75	24.47			1
Left Tilt (15°)	1xEVDO (Rel. 0)	25	1851.25	24.52			1
		600	1880.00	24.50	0.273	0.158	
		1175	1908.75	24.47			1
Right Touch	1xEVDO (Rel. 0)	25	1851.25	24.52			1
		600	1880.00	24.50	0.718	0.431	
		1175	1908.75	24.47			1
Right Tilt (15°)	1xEVDO (Rel. 0)	25	1851.25	24.52			1
		600	1880.00	24.50	0.256	0.158	
		1175	1908.75	24.47			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-worn 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	24.45	0.873	0.545	
		<b>600</b>	<b>1880.0</b>	<b>24.44</b>	<b>1.010</b>	<b>0.619</b>	
		1175	1908.75	24.34	0.845	0.502	
		600	1880.0	24.44	0.850	0.519	2
Front	1xRTT (RC3, SO32)	25	1851.25	24.45			1
		600	1880.0	24.44	0.703	0.446	
		1175	1908.75	24.34			1

**Body-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	24.52			1
		<b>600</b>	<b>1880.0</b>	<b>24.50</b>	<b>0.541</b>	<b>0.600</b>	
		600	1880.0	24.50	0.578	0.334	2
		1175	1908.75	24.47			1
Front	1xEVDO (Rel. 0)	25	1851.25	24.52			1
		600	1880.0	24.50	0.475	0.296	
		1175	1908.75	24.47			1
Left	1xEVDO (Rel. 0)	25	1851.25	24.52			1
		600	1880.0	24.50	0.076	0.046	
		1175	1908.75	24.47			1
Right	1xEVDO (Rel. 0)	25	1851.25	24.52			1
		600	1880.0	24.50	0.338	0.197	
		1175	1908.75	24.47			1
Bottom	1xEVDO (Rel. 0)	25	1851.25	24.52			1
		600	1880.0	24.50	0.336	0.195	
		1175	1908.75	24.47			1
Top	1xEVDO (Rel. 0)	25	1851.25				3
		600	1880.0				3
		1175	1908.75				3

**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-top edge's distance is greater than 2.5 cm.

### 12.4. LTE Band 4

**(1) Head SAR**

**Left Hand Side (LHS): 1.4 MHz BW - Middle Ch.**

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Left Touch	QPSK	20175	1732.5	1	0	23.15	0	0.155	0.107	
				1	5	23.22	0	0.156	0.108	
				3	2	23.31	0	0.119	0.082	
				6	0	23.32	0	0.148	0.103	
	16QAM	20175	1732.5	1	0	23.22	0	0.151	0.099	
				1	5	23.39	0	0.102	0.073	
				3	2	23.32	0	0.118	0.083	
				6	0	23.31	0	0.138	0.096	
Left Tilt	QPSK	20175	1732.5	1	0	23.15	0	0.118	0.069	
				1	5	23.22	0	0.098	0.062	
				3	2	23.31	0	0.121	0.075	
				6	0	23.32	0	0.095	0.060	
	16QAM	20175	1732.5	1	0	23.22	0	0.102	0.067	
				1	5	23.39	0	0.106	0.066	
				3	2	23.32	0	0.116	0.070	
				6	0	23.31	0	0.100	0.062	

**Left Hand Side (LHS): 3 MHz BW - Middle Ch.**

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Left Touch	QPSK	20175	1732.5	1	0	23.22	0	0.172	0.117	
				1	14	23.15	0	0.180	0.121	
				8	4	23.44	0	0.173	0.117	
				15	0	23.40	0	0.173	0.117	
	16QAM	20175	1732.5	1	0	23.31	0	0.174	0.118	
				1	14	23.24	0	0.187	0.126	
				8	4	23.33	0	0.178	0.120	
				15	0	23.32	0	0.184	0.125	
Left Tilt	QPSK	20175	1732.5	1	0	23.22	0	0.122	0.075	
				1	14	23.15	0	0.129	0.079	
				8	4	23.44	0	0.122	0.075	
				15	0	23.40	0	0.120	0.074	
	16QAM	20175	1732.5	1	0	23.31	0	0.123	0.076	
				1	14	23.24	0	0.122	0.075	
				8	4	23.33	0	0.121	0.074	
				15	0	23.32	0	0.126	0.077	

**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.

**Left Hand Side (LHS): 5 MHz BW - Middle Ch.**

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Left Touch	QPSK	20175	1732.5	1	0	23.25	0	0.161	0.111	
				1	24	23.21	0	0.179	0.123	
				12	6	23.43	0	0.168	0.116	
				25	0	23.40	0	0.169	0.115	
	16QAM	20175	1732.5	1	0	23.26	0	0.166	0.114	
				1	24	23.19	0	0.166	0.113	
				12	6	23.31	0	0.164	0.112	
				25	0	23.36	0	0.165	0.113	
Left Tilt	QPSK	20175	1732.5	1	0	23.25	0	0.122	0.075	
				1	24	23.21	0	0.136	0.083	
				12	6	23.43	0	0.128	0.079	
				25	0	23.40	0	0.128	0.079	
	16QAM	20175	1732.5	1	0	23.26	0	0.126	0.078	
				1	24	23.19	0	0.130	0.080	
				12	6	23.31	0	0.129	0.080	
				25	0	23.36	0	0.130	0.080	

**Right Hand Side (RHS): 1.4 MHz BW - Middle Ch.**

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Right Touch	QPSK	20175	1732.5	1	0	23.15	0	0.316	0.193	
				1	5	23.22	0	0.305	0.190	
				3	2	23.31	0	0.310	0.192	
				6	0	23.32	0	0.309	0.191	
	16QAM	20175	1732.5	1	0	23.22	0	0.313	0.193	
				1	5	23.39	0	0.224	0.139	
3				2	23.32	0	0.216	0.136		
				6	0	23.31	0	<b>0.324</b>	<b>0.201</b>	
Right Tilt	QPSK	20175	1732.5	1	0	23.15	0	0.131	0.088	
				1	5	23.22	0	<b>0.132</b>	<b>0.088</b>	
				3	2	23.31	0	0.131	0.087	
				6	0	23.32	0	0.130	0.086	
	16QAM	20175	1732.5	1	0	23.22	0	0.124	0.081	
				1	5	23.39	0	0.130	0.086	
				3	2	23.32	0	0.123	0.082	
				6	0	23.31	0	0.130	0.087	

**Right Hand Side (RHS): 3 MHz BW - Middle Ch.**

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Right Touch	QPSK	20175	1732.5	1	0	23.22	0	0.294	0.185	
				1	14	23.15	0	<b>0.302</b>	<b>0.189</b>	
				8	4	23.44	0	0.294	0.185	
				15	0	23.40	0	0.292	0.183	
	16QAM	20175	1732.5	1	0	23.31	0	0.299	0.187	
				1	14	23.24	0	0.291	0.182	
				8	4	23.33	0	0.298	0.186	
				15	0	23.32	0	0.286	0.179	
Right Tilt	QPSK	20175	1732.5	1	0	23.22	0	0.132	0.087	
				1	14	23.15	0	0.132	0.088	
				8	4	23.44	0	0.129	0.086	
				15	0	23.40	0	0.128	0.085	
	16QAM	20175	1732.5	1	0	23.31	0	0.128	0.080	
				1	14	23.24	0	<b>0.134</b>	<b>0.089</b>	
				8	4	23.33	0	0.128	0.085	
				15	0	23.32	0	0.129	0.086	

**Right Hand Side (RHS): 5 MHz BW - Middle Ch.**

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Right Touch	QPSK	20175	1732.5	1	0	23.25	0	0.298	0.186	
				1	24	23.21	0	0.321	0.201	
				12	6	23.43	0	0.295	0.182	
				25	0	23.40	0	0.297	0.183	
	16QAM	20175	1732.5	1	0	23.26	0	0.301	0.186	
				1	24	23.19	0	0.310	0.192	
				12	6	23.31	0	0.297	0.183	
Right Tilt	QPSK	20175	1732.5	1	0	23.25	0	0.122	0.081	
				1	24	23.21	0	0.132	0.088	
				12	6	23.43	0	0.128	0.084	
				25	0	23.40	0	0.128	0.085	
	16QAM	20175	1732.5	1	0	23.26	0	0.130	0.086	
				1	24	23.19	0	0.130	0.086	
				12	6	23.31	0	0.128	0.085	
				25	0	23.36	0	0.133	0.089	

**Note(s):**

1. 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.

**(2) Body-worn & Body-hotspot SAR**

**Rear: 1.4 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.15	0	10	0.487	0.283	
			1	5	23.22	0	10	0.488	0.284	
			3	2	23.31	0	10	0.366	0.214	
			6	0	23.32	0	10	0.476	0.277	
16QAM	20175	1732.5	1	0	23.22	0	10	0.482	0.272	
			1	5	23.39	0	10	0.491	0.286	
			3	2	23.32	0	10	0.476	0.278	
			6	0	23.31	0	10	0.512	0.296	
			6	0	23.31	0	10	0.437	0.254	2

**Rear: 3 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.22	0	10	0.448	0.261	
			1	14	23.15	0	10	0.460	0.268	
			8	4	23.44	0	10	0.493	0.286	
			8	4	23.44	0	10	0.414	0.240	2
			15	0	23.40	0	10	0.477	0.278	
16QAM	20175	1732.5	1	0	23.31	0	10	0.490	0.284	
			1	14	23.24	0	10	0.488	0.285	
			8	4	23.33	0	10	0.471	0.274	
			15	0	23.32	0	10	0.489	0.285	

**Rear: 5 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.25	0	10	0.432	0.251	
			1	24	23.21	0	10	0.465	0.271	
			12	6	23.43	0	10	0.432	0.251	
			25	0	23.40	0	10	0.428	0.249	
16QAM	20175	1732.5	1	0	23.26	0	10	0.438	0.254	
			1	24	23.19	0	10	0.475	0.275	
			1	24	23.19	0	10	0.389	0.226	2
			12	6	23.31	0	10	0.430	0.251	
			25	0	23.36	0	10	0.432	0.252	

**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.
- With headset attached.

**Front: 1.4 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.15	0	10	0.230	0.143	
			1	5	23.22	0	10	0.175	0.109	
			3	2	23.31	0	10	0.182	0.114	
			6	0	23.32	0	10	0.229	0.144	
16QAM	20175	1732.5	1	0	23.22	0	10	0.239	0.150	
			1	0	23.22	0	10	0.212	0.136	2
			1	5	23.39	0	10	0.216	0.137	
			3	2	23.32	0	10	0.202	0.128	
			6	0	23.31	0	10	0.207	0.131	

**Front: 3 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.22	0	10	0.216	0.136	
			1	14	23.15	0	10	0.227	0.143	
			1	14	23.15	0	10	0.206	0.130	2
			8	4	23.44	0	10	0.220	0.138	
			15	0	23.40	0	10	0.219	0.138	
16QAM	20175	1732.5	1	0	23.31	0	10	0.217	0.137	
			1	14	23.24	0	10	0.214	0.133	
			8	4	23.33	0	10	0.217	0.137	
			15	0	23.32	0	10	0.222	0.140	

**Front: 5 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.25	0	10	0.246	0.155	
			1	24	23.21	0	10	0.236	0.148	
			12	6	23.43	0	10	0.248	0.156	
			12	6	23.43	0	10	0.215	0.137	2
			25	0	23.40	0	10	0.243	0.153	
16QAM	20175	1732.5	1	0	23.26	0	10	0.209	0.132	
			1	24	23.19	0	10	0.232	0.146	
			12	6	23.31	0	10	0.221	0.139	
			25	0	23.36	0	10	0.209	0.132	

**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.
- With headset attached.

**Right: 1.4 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.15	0	10	0.153	0.090	
			1	5	23.22	0	10	0.158	0.093	
			3	2	23.31	0	10	0.161	0.095	
			3	2	23.31	0	10	0.121	0.073	2
			6	0	23.32	0	10	0.159	0.094	
16QAM	20175	1732.5	1	0	23.22	0	10	0.155	0.092	
			1	5	23.39	0	10	0.161	0.095	
			3	2	23.32	0	10	0.120	0.071	
			6	0	23.31	0	10	0.120	0.072	

**Right: 3 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.22	0	10	0.153	0.091	
			1	14	23.15	0	10	0.163	0.096	
			1	14	23.15	0	10	0.145	0.087	2
			8	4	23.44	0	10	0.155	0.092	
			15	0	23.40	0	10	0.156	0.092	
16QAM	20175	1732.5	1	0	23.31	0	10	0.159	0.094	
			1	14	23.24	0	10	0.159	0.094	
			8	4	23.33	0	10	0.151	0.090	
			15	0	23.32	0	10	0.156	0.092	

**Right: 5 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.25	0	10	0.168	0.100	
			1	24	23.21	0	10	0.182	0.108	
			1	24	23.21	0	10	0.148	0.089	2
			12	6	23.43	0	10	0.173	0.102	
			25	0	23.40	0	10	0.173	0.103	
16QAM	20175	1732.5	1	0	23.26	0	10	0.161	0.096	
			1	24	23.19	0	10	0.150	0.089	
			12	6	23.31	0	10	0.151	0.092	
			25	0	23.36	0	10	0.152	0.091	

**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.
- With headset attached.

**Bottom: 1.4 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.15	0	10	0.197	0.120	
			1	5	23.22	0	10	0.197	0.119	
			3	2	23.31	0	10	0.198	0.119	
			6	0	23.32	0	10	0.196	0.119	
16QAM	20175	1732.5	1	0	23.22	0	10	0.144	0.083	
			1	5	23.39	0	10	0.206	0.124	
			3	2	23.32	0	10	0.214	0.128	
			6	0	23.31	0	10	0.221	0.130	
			6	0	23.31	0	10	0.148	0.088	2

**Bottom: 3 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.22	0	10	0.193	0.115	
			1	14	23.15	0	10	0.201	0.120	
			1	14	23.15	0	10	0.161	0.096	2
			8	4	23.44	0	10	0.196	0.116	
			15	0	23.40	0	10	0.194	0.116	
16QAM	20175	1732.5	1	0	23.31	0	10	0.199	0.119	
			1	14	23.24	0	10	0.200	0.118	
			8	4	23.33	0	10	0.189	0.112	
			15	0	23.32	0	10	0.198	0.118	

**Bottom: 5 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.25	0	10	0.196	0.116	
			1	24	23.21	0	10	0.214	0.126	
			1	24	23.21	0	10	0.190	0.113	2
			12	6	23.43	0	10	0.204	0.121	
			25	0	23.40	0	10	0.204	0.118	
16QAM	20175	1732.5	1	0	23.26	0	10	0.197	0.118	
			1	24	23.19	0	10	0.195	0.117	
			12	6	23.31	0	10	0.201	0.120	
			25	0	23.36	0	10	0.199	0.119	

**Note(s):**

1. 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.
2. With headset attached.

## 12.5. LTE Band 2

### (1) Head SAR

#### Left Hand Side (LHS): 1.4 MHz BW - Middle Ch.

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Left Touch	QPSK	18900	1880.0	1	0	23.31	0	0.221	0.147	
				1	5	23.40	0	0.227	0.149	
				3	2	23.30	0	0.222	0.146	
				6	0	23.40	0	0.217	0.142	
	16QAM	18900	1880.0	1	0	23.43	0	0.228	0.160	
				1	5	23.44	0	0.232	0.162	
				3	2	23.21	0	0.230	0.161	
				6	0	23.40	0	0.219	0.154	
Left Tilt	QPSK	18900	1880.0	1	0	23.31	0	0.222	0.134	
				1	5	23.40	0	0.223	0.134	
				3	2	23.30	0	0.220	0.133	
				6	0	23.40	0	0.213	0.129	
	16QAM	18900	1880.0	1	0	23.43	0	0.213	0.129	
				1	5	23.44	0	0.215	0.129	
				3	2	23.21	0	0.230	0.161	
				6	0	23.40	0	0.213	0.128	

#### Left Hand Side (LHS): 3 MHz BW - Middle Ch.

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Left Touch	QPSK	18900	1880.0	1	0	23.32	0	0.217	0.150	
				1	14	23.14	0	0.217	0.150	
				8	4	23.47	0	0.209	0.145	
				15	0	23.44	0	0.210	0.145	
	16QAM	18900	1880.0	1	0	23.36	0	0.263	0.175	
				1	14	23.31	0	0.265	0.176	
				8	4	23.21	0	0.259	0.173	
				15	0	23.22	0	0.246	0.165	
Left Tilt	QPSK	18900	1880.0	1	0	23.32	0	0.251	0.169	
				1	14	23.14	0	0.253	0.169	
				8	4	23.47	0	0.242	0.163	
				15	0	23.44	0	0.243	0.163	
	16QAM	18900	1880.0	1	0	23.36	0	0.259	0.172	
				1	14	23.31	0	0.255	0.171	
				8	4	23.21	0	0.250	0.167	
				15	0	23.22	0	0.237	0.159	

#### 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.

**Left Hand Side (LHS): 5 MHz BW - Middle Ch.**

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Left Touch	QPSK	18900	1880.0	1	0	23.21	0	0.255	0.166	
				1	24	23.22	0	0.248	0.162	
				12	6	23.41	0	0.236	0.154	
				25	0	23.38	0	0.235	0.154	
	16QAM	18900	1880.0	1	0	23.31	0	0.208	0.141	
				1	24	23.31	0	0.211	0.142	
				12	6	23.21	0	0.196	0.132	
				25	0	23.22	0	0.220	0.148	
Left Tilt	QPSK	18900	1880.0	1	0	23.21	0	0.193	0.113	
				1	24	23.22	0	0.195	0.114	
				12	6	23.41	0	0.184	0.109	
				25	0	23.38	0	0.185	0.109	
	16QAM	18900	1880.0	1	0	23.31	0	0.190	0.112	
				1	24	23.31	0	0.192	0.113	
				12	6	23.21	0	0.177	0.105	
				25	0	23.22	0	0.198	0.116	

**Note(s):**

1. 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.

**Right Hand Side (RHS): 1.4 MHz BW - Middle Ch.**

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note			
								1-g	10-g				
Right Touch	QPSK	18900	1880.0	1	0	23.31	0	0.400	0.243				
				1	5	23.40	0	0.408	0.247				
				3	2	23.30	0	0.405	0.246				
				6	0	23.40	0	0.402	0.244				
	16QAM	18900	1880.0	1	0	23.43	0	0.439	0.266				
				1	5	23.44	0	0.434	0.263				
3				2	23.21	0	0.451	0.278					
				6	0	23.40	0	0.483	0.296				
Right Tilt	QPSK	18900	1880.0	1	0	23.31	0	0.187	0.117				
				1	5	23.40	0	0.186	0.117				
				3	2	23.30	0	0.184	0.116				
				6	0	23.40	0	0.188	0.117				
				16QAM	18900	1880.0	1	0	23.43	0	0.191	0.119	
							1	5	23.44	0	0.194	0.121	
	3	2	23.21				0	0.184	0.114				
					6	0	23.40	0	0.194	0.121			

**Right Hand Side (RHS): 3 MHz BW - Middle Ch.**

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Right Touch	QPSK	18900	1880.0	1	0	23.32	0	0.483	0.293	
				1	14	23.14	0	0.485	0.292	
				8	4	23.47	0	0.467	0.283	
				15	0	23.44	0	0.463	0.281	
	16QAM	18900	1880.0	1	0	23.36	0	0.489	0.295	
				1	14	23.31	0	0.523	0.316	
				8	4	23.21	0	0.482	0.291	
				15	0	23.22	0	0.506	0.304	
Right Tilt	QPSK	18900	1880.0	1	0	23.32	0	0.199	0.126	
				1	14	23.14	0	0.205	0.129	
				8	4	23.47	0	0.197	0.124	
				15	0	23.44	0	0.197	0.124	
	16QAM	18900	1880.0	1	0	23.36	0	0.206	0.131	
				1	14	23.31	0	0.211	0.133	
				8	4	23.21	0	0.200	0.126	
				15	0	23.22	0	0.212	0.132	

**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.

**Right Hand Side (RHS): 5 MHz BW - Middle Ch.**

Test Position	Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	SAR (mW/g)		Note
								1-g	10-g	
Right Touch	QPSK	18900	1880.0	1	0	23.21	0	0.517	0.310	
				1	24	23.22	0	0.502	0.302	
				12	6	23.41	0	0.498	0.299	
				25	0	23.38	0	0.499	0.300	
	16QAM	18900	1880.0	1	0	23.31	0	0.516	0.311	
				1	24	23.31	0	0.505	0.304	
				12	6	23.21	0	0.479	0.289	
				25	0	23.22	0	0.482	0.290	
Right Tilt	QPSK	18900	1880.0	1	0	23.21	0	0.189	0.119	
				1	24	23.22	0	0.188	0.117	
				12	6	23.41	0	0.180	0.113	
				25	0	23.38	0	0.186	0.116	
	16QAM	18900	1880.0	1	0	23.31	0	0.184	0.116	
				1	24	23.31	0	0.190	0.119	
				12	6	23.21	0	0.179	0.112	
				25	0	23.22	0	0.180	0.113	

**Note(s):**

1. 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.

**(2) Body-worn & Body-hotspot SAR**

**Rear: 1.4 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.31	0	10	0.569	0.329	
			1	5	23.40	0	10	<b>0.584</b>	<b>0.336</b>	
			1	5	23.40	0	10	0.443	0.257	2
			3	2	23.30	0	10	0.575	0.033	
			6	0	23.40	0	10	0.563	0.323	
16QAM	18900	1880.0	1	0	23.43	0	10	0.563	0.325	
			1	5	23.44	0	10	0.568	0.327	
			3	2	23.21	0	10	0.553	0.319	
			6	0	23.40	0	10	0.542	0.313	

**Rear: 3 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.32	0	10	0.560	0.324	
			1	0	23.32	0	10	0.463	0.267	2
			1	14	23.14	0	10	0.547	0.316	
			8	4	23.47	0	10	0.538	0.311	
			15	0	23.44	0	10	0.532	0.307	
16QAM	18900	1880.0	1	0	23.36	0	10	0.553	0.318	
			1	14	23.31	0	10	0.539	0.311	
			8	4	23.21	0	10	0.536	0.312	
			15	0	23.22	0	10	0.507	0.293	

**Rear: 5 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.21	0	10	0.534	0.312	
			1	24	23.22	0	10	0.510	0.298	
			12	6	23.41	0	10	0.509	0.295	
			25	0	23.38	0	10	0.488	0.284	
16QAM	18900	1880.0	1	0	23.31	0	10	0.547	0.319	
			1	24	23.31	0	10	0.526	0.305	
			12	6	23.21	0	10	0.494	0.287	
			25	0	23.22	0	10	<b>0.549</b>	<b>0.319</b>	
			25	0	23.22	0	10	0.495	0.287	2

**Note(s):**

1. 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.
2. With headset attached.

**Front: 1.4 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.31	0	10	0.380	0.237	
			1	5	23.40	0	10	0.380	0.238	
			3	2	23.30	0	10	0.377	0.236	
			6	0	23.40	0	10	0.369	0.231	
16QAM	18900	1880.0	1	0	23.43	0	10	0.391	0.243	
			1	5	23.44	0	10	0.426	0.268	
			3	2	23.21	0	10	0.424	0.267	
			6	0	23.40	0	10	0.395	0.246	

**Front: 3 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.32	0	10	0.401	0.025	
			1	14	23.14	0	10	0.396	0.247	
			8	4	23.47	0	10	0.392	0.242	
			15	0	23.44	0	10	0.384	0.241	
16QAM	18900	1880.0	1	0	23.36	0	10	0.395	0.247	
			1	14	23.31	0	10	0.380	0.238	
			8	4	23.21	0	10	0.409	0.255	
			15	0	23.22	0	10	0.383	0.238	

**Front: 5 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.21	0	10	0.417	0.258	
			1	24	23.22	0	10	0.404	0.252	
			12	6	23.41	0	10	0.405	0.252	
			25	0	23.38	0	10	0.401	0.248	
16QAM	18900	1880.0	1	0	23.31	0	10	0.426	0.267	
			1	24	23.31	0	10	0.434	0.270	
			12	6	23.21	0	10	0.401	0.249	
			25	0	23.22	0	10	0.454	0.283	

**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.

**Right: 1.4 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.31	0	10	0.308	0.177	
			1	5	23.40	0	10	0.310	0.179	
			3	2	23.30	0	10	0.306	0.176	
			6	0	23.40	0	10	0.303	0.175	
16QAM	18900	1880.0	1	0	23.43	0	10	0.295	0.172	
			1	5	23.44	0	10	0.302	0.176	
			3	2	23.21	0	10	0.299	0.174	
			6	0	23.40	0	10	0.293	0.170	

**Right: 3 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.32	0	10	0.299	0.175	
			1	14	23.14	0	10	0.297	0.171	
			8	4	23.47	0	10	0.282	0.162	
			15	0	23.44	0	10	0.279	0.162	
16QAM	18900	1880.0	1	0	23.36	0	10	0.285	0.165	
			1	14	23.31	0	10	0.280	0.163	
			8	4	23.21	0	10	0.285	0.165	
			15	0	23.22	0	10	0.269	0.156	

**Right: 5 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.21	0	10	0.293	0.170	
			1	24	23.22	0	10	0.294	0.171	
			12	6	23.41	0	10	0.271	0.158	
			25	0	23.38	0	10	0.278	0.161	
16QAM	18900	1880.0	1	0	23.31	0	10	0.370	0.212	
			1	24	23.31	0	10	0.371	0.212	
			12	6	23.21	0	10	0.347	0.198	
			25	0	23.22	0	10	0.392	0.224	

**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.

**Bottom: 1.4 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.31	0	10	0.194	0.115	
			1	5	23.40	0	10	0.201	0.119	
			3	2	23.30	0	10	0.199	0.117	
			6	0	23.40	0	10	0.198	0.117	
16QAM	18900	1880.0	1	0	23.43	0	10	0.192	0.113	
			1	5	23.44	0	10	0.180	0.107	
			3	2	23.21	0	10	0.186	0.110	
			6	0	23.40	0	10	0.183	0.107	

**Bottom: 3 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.32	0	10	0.260	0.151	
			1	14	23.14	0	10	0.267	0.154	
			8	4	23.47	0	10	0.246	0.142	
			15	0	23.44	0	10	0.246	0.142	
16QAM	18900	1880.0	1	0	23.36	0	10	0.249	0.144	
			1	14	23.31	0	10	0.257	0.148	
			8	4	23.21	0	10	0.253	0.146	
			15	0	23.22	0	10	0.242	0.140	

**Bottom: 5 MHz BW – Middle Ch.**

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	18900	1880.0	1	0	23.21	0	10	0.218	0.130	
			1	24	23.22	0	10	0.229	0.135	
			12	6	23.41	0	10	0.215	0.127	
			25	0	23.38	0	10	0.215	0.127	
16QAM	18900	1880.0	1	0	23.31	0	10	0.244	0.144	
			1	24	23.31	0	10	0.252	0.147	
			12	6	23.21	0	10	0.222	0.131	
			25	0	23.22	0	10	0.257	0.151	

**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.

## 12.6. 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	12.6			1
		<b>6</b>	<b>2437</b>	<b>13.9</b>	<b>0.119</b>	<b>0.061</b>	
		11	2462	13.9			1
Left Tilt	802.11b	1	2412	12.6			1
		6	2437	13.9	0.086	0.041	
		11	2462	13.9			1
Right Touch	802.11b	1	2412	12.6			1
		6	2437	13.9	0.056	0.031	
		11	2462	13.9			1
Right Tilt	802.11b	1	2412	12.6			1
		6	2437	13.9	0.041	0.021	
		11	2462	13.9			1

### Body-worn & Body-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	12.6			1
		6	2437	13.9	0.169	0.079	
		11	2462	13.9			1
		<b>6</b>	<b>2437</b>	<b>13.9</b>	<b>0.178</b>	<b>0.087</b>	2
Front	802.11b	1	2412	12.6			1
		6	2437	13.9	0.017	0.010	
		11	2462	13.9			1
Left	802.11b	1	2412	12.6			1
		6	2437	13.9	0.053	0.003	
		11	2462	13.9			1
Right	802.11b	1	2412	12.6			1
		6	2437	13.9	0.108	0.054	
		11	2462	13.9			1
Bottom	802.11b	1	2412				3
		6	2437				3
		11	2462				3
Top	802.11b	1	2412	12.6			1
		6	2437	13.9	0.044	0.023	
		11	2462	13.9			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-bottom edge's distances are greater than 2.5 cm.

### 13. Simultaneous Transmission SAR Analysis (KDB 648474)

#### 13.1. SV-DO Head Exposure Condition

Test Position	Voice			Data				Σ 1g SAR (mW/g)	
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE		(8) WiFi
Left touch	0.354				0.371			0.119	0.844
Left tilt	0.209				0.293			0.086	0.588
Right touch	0.292				0.793			0.056	1.141
Right tilt	0.191				0.257			0.041	0.489
Left touch	0.354					0.298		0.119	0.771
Left tilt	0.209					0.273		0.086	0.568
Right touch	0.292					0.718		0.056	1.066
Right tilt	0.191					0.256		0.041	0.488
Left touch		0.935			0.371			0.119	1.425
Left tilt		0.178			0.293			0.086	0.557
Right touch		0.563			0.793			0.056	1.412
Right tilt		0.182			0.257			0.041	0.480
Left touch		0.935				0.298		0.119	1.352
Left tilt		0.178				0.273		0.086	0.537
Right touch		0.563				0.718		0.056	1.337
Right tilt		0.182				0.256		0.041	0.479
<b>Left touch</b>			<b>1.04</b>		<b>0.371</b>			<b>0.119</b>	<b>1.530</b>
Left tilt			0.273		0.293			0.086	0.652
Right touch			0.654		0.793			0.056	1.503
Right tilt			0.284		0.257			0.041	0.582
Left touch			1.04			0.298		0.119	1.457
Left tilt			0.273			0.273		0.086	0.632
Right touch			0.654			0.718		0.056	1.428
Right tilt			0.284			0.256		0.041	0.581

#### SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA1900 1xRTT	(5) CDMA1700 1xEVDO	(8) WiFi			
Left touch	1.040	0.371	0.119	1.530		
	1.040	0.371		1.411	n/a	n/a
	1.040		0.119	1.159	n/a	n/a

**Conclusions:**

Simultaneous transmission SAR is not required for CDMA 1xRTT (voice), CDMA 1xEVDO (data) & Wi-Fi because the sum of the 1-g SAR is < 1.6 W/kg

Simultaneous transmission SAR is not required for Wi-Fi & WWAN because the SAR to peak location separation ratios is < 0.3 for Wi-Fi and WWAN antenna pairs.

### 13.2. SV-DO Body-worn and Body-hotspot exposure condition

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE	(8) WiFi	
Rear	0.534				0.684			0.178	1.396
	0.534					<b>0.761</b>		0.178	1.473
Front	0.248				0.568			0.017	0.833
	0.248					0.475		0.017	0.740
Rear		<b>0.847</b>			<b>0.613</b>			<b>0.178</b>	<b>1.638</b>
		<b>0.847</b>				<b>0.541</b>		<b>0.178</b>	<b>1.566</b>
Front		0.665			0.568			0.017	1.250
		0.665				0.475		0.017	1.157
Rear			<b>1.01</b>		<b>0.613</b>			<b>0.178</b>	<b>1.801</b>
			<b>1.01</b>			<b>0.541</b>		<b>0.178</b>	<b>1.729</b>
Front			0.703		0.568			0.017	1.288
			0.703			0.475		0.017	1.195

#### SAR to Peak Location Separation Ratio (SPLSR)

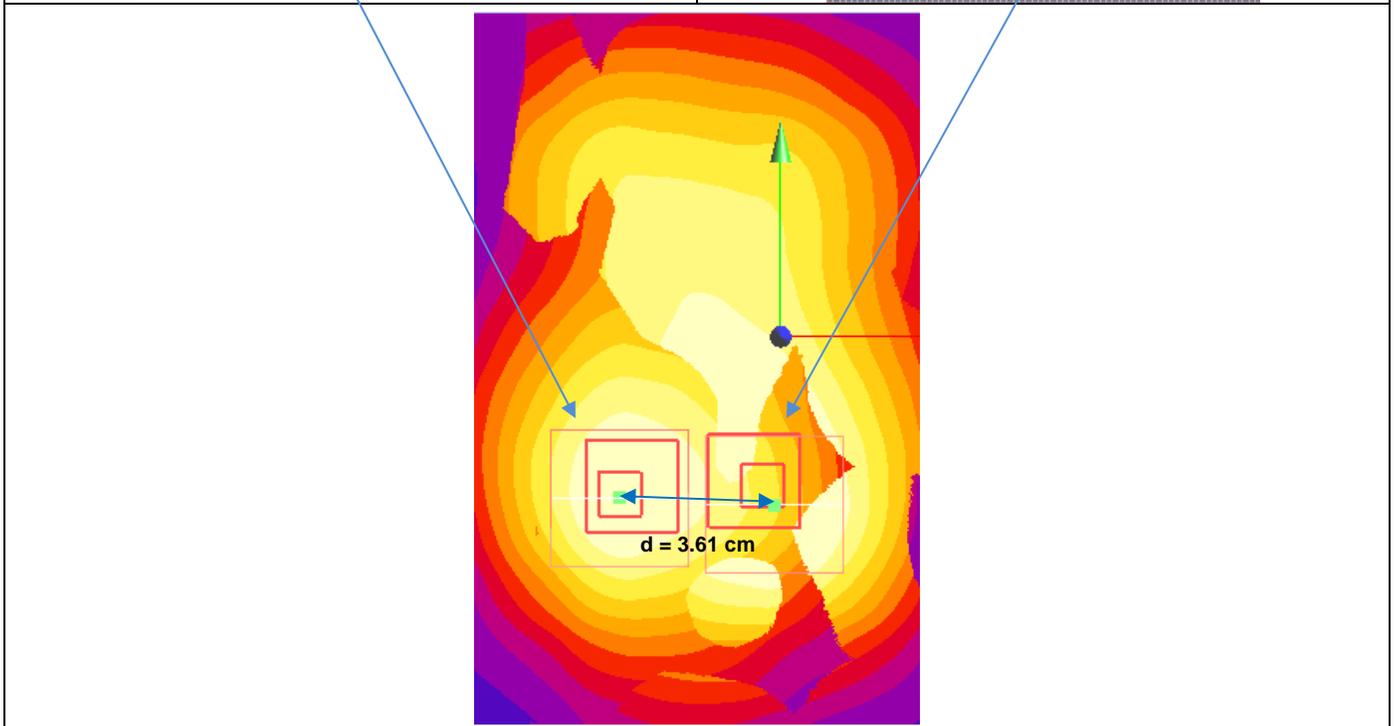
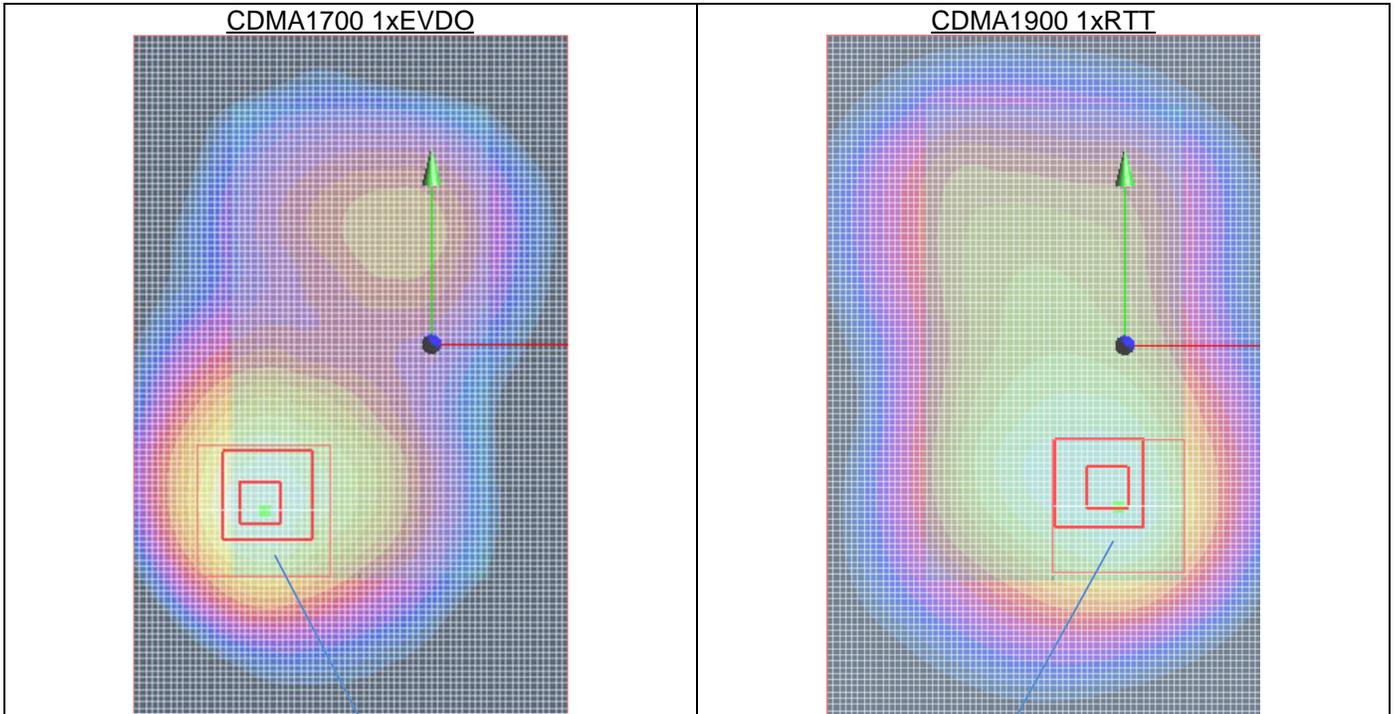
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(2) CDMA1700 1xRTT	(5) CDMA1700 1xEVDO	(8) WiFi			
Rear	0.847	0.613	0.178	<b>1.638</b>		
	0.847	0.613		1.460	n/a	n/a
	0.847		0.178	1.025	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(2) CDMA1700 1xRTT	(6) CDMA1900 1xEVDO	(8) WiFi			
Rear	0.847	0.541	0.178	1.566		
	0.847	0.541		1.388	n/a	n/a
	0.847		0.178	1.025	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA1900 1xRTT	(5) CDMA1700 1xEVDO	(8) WiFi			
Rear	1.01	0.613	0.178	<b>1.801</b>		
	1.01	0.613		<b>1.623</b>	3.61	<b>0.450</b>
	1.01		0.178	1.188	n/a	n/a
Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA1900 1xRTT	(6) CDMA1900 1xEVDO	(8) WiFi			
Rear	1.01	0.541	0.178	<b>1.729</b>		
	1.01	0.541		1.551	n/a	n/a
	1.01		0.178	1.188	n/a	n/a

#### Conclusions:

- Simultaneous transmission SAR is required because the sum of the 1-g SAR is > 1.6 W/kg
- Simultaneous transmission SAR is not required because the SAR to peak location separation ratios is < 0.3 for Wi-Fi and WWAN antenna pairs.

**SAR to Peak Location Separation Ratio (SPLSR)**

**"(3) CDMA1900 1xRTT" to "(5) CDMA1700 1xEVDO"**



	Value of SAR mW/g	X m	Y m	Z m
CDMA1700 1x EVDO:	0.948	-0.0375	-0.0375	-0.207
CDMA1900 1x RTT:	1.67	-0.0015	-0.0406	-0.207
	m	cm		

Separation distance (d) =	0.0361	3.61	
	SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)		

**13.2.1. SV-DO Body Volume Scans & Multi Band (Combined) Results**

Test position	Multi-band	Ch. #	Freq. (MHz)	Zoom scan	Test Results (mW/g)		
					Volume scan	Multi Band (Combined) Results	
Rear	CDMA1700 (1xRTT)	450	1732.5	0.847	0.816	1.27	1.29
	CDMA1700 (1xEVDO)	450	1732.50	0.613	0.572		
	802.11b	6	2437.00	0.178	0.181		
Rear	CDMA1700 (1xRTT)	450	1732.5	0.847	0.816	1.17	1.19
	CDMA1900 (1xEVDO)	600	1880.00	0.541	0.523		
	802.11b	6	2437.00	0.178	0.181		
Rear	CDMA1900 (1xRTT)	600	1880.00	1.010	0.965	1.23	1.25
	CDMA1700 (1xEVDO)	450	1732.50	0.613	0.572		
	802.11b	6	2437.00	0.178	0.181		
Rear	CDMA1900 (1xRTT)	600	1880.00	1.010	0.965	1.14	1.17
	CDMA1900 (1xEVDO)	600	1880.00	0.541	0.523		
	802.11b	6	2437.00	0.178	0.181		

**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

### 13.3. SV-LTE Band 4 Head Exposure Condition

#### 1.4 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE Band 4	(8) WiFi	
Left touch	0.354						0.156	0.119	0.629
Left tilt	0.209						0.121	0.086	0.416
Right touch	0.292						0.324	0.056	0.672
Right tilt	0.191						0.132	0.041	0.364
Left touch		0.935					0.156	0.119	1.210
Left tilt		0.178					0.121	0.086	0.385
Right touch		0.563					0.324	0.056	0.943
Right tilt		0.182					0.132	0.041	0.355
<b>Left touch</b>			<b>1.04</b>				<b>0.156</b>	<b>0.119</b>	<b>1.315</b>
Left tilt			0.273				0.121	0.086	0.480
Right touch			0.654				0.324	0.056	1.034
Right tilt			0.284				0.132	0.041	0.457

#### 3 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE Band 4	(8) WiFi	
Left touch	0.354						0.187	0.119	0.660
Left tilt	0.209						0.129	0.086	0.424
Right touch	0.292						0.302	0.056	0.650
Right tilt	0.191						0.134	0.041	0.366
Left touch		0.935					0.187	0.119	1.241
Left tilt		0.178					0.129	0.086	0.393
Right touch		0.563					0.302	0.056	0.921
Right tilt		0.182					0.134	0.041	0.357
<b>Left touch</b>			<b>1.04</b>				<b>0.187</b>	<b>0.119</b>	<b>1.346</b>
Left tilt			0.273				0.129	0.086	0.488
Right touch			0.654				0.302	0.056	1.012
Right tilt			0.284				0.134	0.041	0.459

#### 5 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE Band 4	(8) WiFi	
Left touch	0.354						0.179	0.119	0.652
Left tilt	0.209						0.136	0.086	0.431
Right touch	0.292						0.321	0.056	0.669
Right tilt	0.191						0.133	0.041	0.365
Left touch		0.935					0.179	0.119	1.233
Left tilt		0.178					0.136	0.086	0.400
Right touch		0.563					0.321	0.056	0.940
Right tilt		0.182					0.133	0.041	0.356
<b>Left touch</b>			<b>1.04</b>				<b>0.179</b>	<b>0.119</b>	<b>1.338</b>
Left tilt			0.273				0.136	0.086	0.495
Right touch			0.654				0.321	0.056	1.031
Right tilt			0.284				0.133	0.041	0.458

#### Conclusions:

Simultaneous transmission SAR is not required because the sum of the 1-g SAR is < 1.6 W/kg

### 13.4. SV-LTE Band 2 Head Exposure Condition

#### 1.4 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE Band 2	(8) WiFi	
Left touch	0.354						0.232	0.119	0.705
Left tilt	0.209						0.223	0.086	0.518
Right touch	0.292						0.483	0.056	0.831
Right tilt	0.191						0.194	0.041	0.426
Left touch		0.935					0.232	0.119	1.286
Left tilt		0.178					0.223	0.086	0.487
Right touch		0.563					0.483	0.056	1.102
Right tilt		0.182					0.194	0.041	0.417
<b>Left touch</b>			<b>1.04</b>				<b>0.232</b>	<b>0.119</b>	<b>1.391</b>
Left tilt			0.273				0.223	0.086	0.582
Right touch			0.654				0.483	0.056	1.193
Right tilt			0.284				0.194	0.041	0.519

#### 3 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE Band 2	(8) WiFi	
Left touch	0.354						0.265	0.119	0.738
Left tilt	0.209						0.259	0.086	0.554
Right touch	0.292						0.523	0.056	0.871
Right tilt	0.191						0.212	0.041	0.444
Left touch		0.935					0.265	0.119	1.319
Left tilt		0.178					0.259	0.086	0.523
Right touch		0.563					0.523	0.056	1.142
Right tilt		0.182					0.212	0.041	0.435
<b>Left touch</b>			<b>1.04</b>				<b>0.265</b>	<b>0.119</b>	<b>1.424</b>
Left tilt			0.273				0.259	0.086	0.618
Right touch			0.654				0.523	0.056	1.233
Right tilt			0.284				0.212	0.041	0.537

#### 5 MHz

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE Band 2	(8) WiFi	
Left touch	0.354						0.255	0.119	0.728
Left tilt	0.209						0.198	0.086	0.493
Right touch	0.292						0.517	0.056	0.865
Right tilt	0.191						0.190	0.041	0.422
Left touch		0.935					0.255	0.119	1.309
Left tilt		0.178					0.198	0.086	0.462
Right touch		0.563					0.517	0.056	1.136
Right tilt		0.182					0.190	0.041	0.413
<b>Left touch</b>			<b>1.04</b>				<b>0.255</b>	<b>0.119</b>	<b>1.414</b>
Left tilt			0.273				0.198	0.086	0.557
Right touch			0.654				0.517	0.056	1.227
Right tilt			0.284				0.190	0.041	0.515

#### Conclusions:

Simultaneous transmission SAR is not required because the sum of the 1-g SAR is < 1.6 W/kg

### 13.5. SV-LTE Band 4 Body-worn &-hotspot exposure condition

#### 1.4 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE (Band 4)	(8) WiFi	
Rear	0.534						0.512	0.178	1.224
Front	0.248						0.239	0.017	0.504
Rear		0.847					0.512	0.178	1.537
Front		0.665					0.239	0.017	0.921
Rear			1.01				0.512	0.178	1.700
Front			0.703				0.239	0.017	0.959

#### 3 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE (Band 4)	(8) WiFi	
Rear	0.534						0.493	0.178	1.205
Front	0.248						0.227	0.017	0.492
Rear		0.847					0.493	0.178	1.518
Front		0.665					0.227	0.017	0.909
Rear			1.01				0.493	0.178	1.681
Front			0.703				0.227	0.017	0.947

#### 5 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE (Band 4)	(8) WiFi	
Rear	0.534						0.475	0.178	1.187
Front	0.248						0.248	0.017	0.513
Rear		0.847					0.475	0.178	1.500
Front		0.665					0.248	0.017	0.930
Rear			1.01				0.475	0.178	1.663
Front			0.703				0.248	0.017	0.968

**SAR to Peak Location Separation Ratio (SPLSR)**

**1.4 MHz BW**

Test Position	Worst-case combination			$\Sigma$ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA1900 1xRTT	(7) LTE Band 4	(8) WiFi			
Rear	1.01	0.512	0.178	1.700		
	1.01	0.512		1.522	n/a	n/a
	1.01		0.178	1.188	n/a	n/a

**3 MHz BW**

Test Position	Worst-case combination			$\Sigma$ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA1900 1xRTT	(7) LTE Band 4	(8) WiFi			
Rear	1.01	0.493	0.178	1.681		
	1.01	0.493		1.503	n/a	n/a
	1.01		0.178	1.188	n/a	n/a

**5 MHz BW**

Test Position	Worst-case combination			$\Sigma$ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA1900 1xRTT	(7) LTE Band 4	(8) WiFi			
Rear	1.01	0.475	0.178	1.663		
	1.01	0.475		1.485	n/a	n/a
	1.01		0.178	1.188	n/a	n/a

### 13.6. SV-LTE Band 2 Body-worn &-hotspot exposure condition

#### 1.4 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE (Band 2)	(8) WiFi	
Rear	0.534						0.584	0.178	1.296
Front	0.248						0.426	0.017	0.691
Rear		0.847					0.584	0.178	1.609
Front		0.665					0.426	0.017	1.108
Rear			1.01				0.584	0.178	1.772
Front			0.703				0.426	0.017	1.146

#### 3 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE	(8) WiFi	
Rear	0.534						0.560	0.178	1.272
Front	0.248						0.409	0.017	0.674
Rear		0.847					0.560	0.178	1.585
Front		0.665					0.409	0.017	1.091
Rear			1.01				0.560	0.178	1.748
Front			0.703				0.409	0.017	1.129

#### 5 MHz BW

Test Position	Voice			Data					Σ 1g SAR (mW/g)
	(1) CDMA850 1xRTT	(2) CDMA1700 1xRTT	(3) CDMA1900 1xRTT	(4) CDMA850 1xEVDO (Not supported)	(5) CDMA1700 1xEVDO	(6) CDMA1900 1xEVDO	(7) LTE	(8) WiFi	
Rear	0.534						0.549	0.178	1.261
Front	0.248						0.454	0.017	0.719
Rear		0.847					0.549	0.178	1.574
Front		0.665					0.454	0.017	1.136
Rear			1.01				0.549	0.178	1.737
Front			0.703				0.454	0.017	1.174

**SAR to Peak Location Separation Ratio (SPLSR)**

**1.4 MHz BW**

Test Position	Worst-case combination			$\Sigma$ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(2) CDMA1700 1xRTT	(7) LTE Band 2	(8) WiFi			
Rear	0.847	0.584	0.178	1.609		
	0.847	0.584		1.431	n/a	n/a
	0.847		0.178	1.025	n/a	n/a
Test Position	Worst-case combination			$\Sigma$ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA1900 1xRTT	(7) LTE Band 2	(8) WiFi			
Rear	1.01	0.584	0.178	1.772		
	1.01	0.584		1.594	n/a	n/a
	1.01		0.178	1.188	n/a	n/a

**3 MHz BW**

Test Position	Worst-case combination			$\Sigma$ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA1900 1xRTT	(7) LTE Band 2	(8) WiFi			
Rear	1.01	0.560	0.178	1.748		
	1.01	0.560		1.570	n/a	n/a
	1.01		0.178	1.188	n/a	n/a

**5 MHz BW**

Test Position	Worst-case combination			$\Sigma$ 1-g SAR (mW/g)	3D distance (cm)	SPLSR
	(3) CDMA1900 1xRTT	(7) LTE Band 2	(8) WiFi			
Rear	1.01	0.549	0.178	1.737		
	1.01	0.549		1.559	n/a	n/a
	1.01		0.178	1.188	n/a	n/a

**13.6.1. SV-LTE Band 4 Body Volume Scans & Multi Band (Combined) Results**

Test position	Multi-band	Ch. #	Freq. (MHz)	Zoom scan	Test Results (mW/g)		
					Volume scan	Combined	
Rear	CDMA1900 (1xRTT)	600	1880.00	1.010	0.965	1.16	1.19
	LTE Band 4 (1.4 MHz)	20175	1732.50	0.512	0.516		
	802.11b	6	2437.00	0.178	0.181		
Rear	CDMA1900 (1xRTT)	600	1880.00	1.010	0.965	1.12	1.15
	LTE Band 4 (3 MHz)	20175	1732.50	0.493	0.483		
	802.11b	6	2437.00	0.178	0.181		
Rear	CDMA1900 (1xRTT)	600	1880.00	1.010	0.965	1.14	1.16
	LTE Band 4 (5 MHz)	20175	1732.50	0.475	0.498		
	802.11b	6	2437.00	0.178	0.181		

**13.6.2. SV-LTE Band 2 Body Volume Scans & Multi Band (Combined) Results**

Test position	Multi-band	Ch. #	Freq. (MHz)	Zoom scan	Test Results (mW/g)		
					Volume scan	Combined	
Rear	CDMA1700 (1xRTT)	450	1732.50	0.847	0.816	1.18	1.21
	LTE Band 2 (1.4 MHz)	18900	1880.00	0.584	0.527		
	802.11b	6	2437.00	0.178	0.181		
Rear	CDMA1900 (1xRTT)	600	1880.00	1.010	0.965	1.15	1.18
	LTE Band 2 (1.4 MHz)	18900	1880.00	0.584	0.527		
	802.11b	6	2437.00	0.178	0.181		
Rear	CDMA1900 (1xRTT)	600	1880.00	1.010	0.965	1.18	1.21
	LTE Band 2 (3 MHz)	18900	1880.00	0.560	0.536		
	802.11b	6	2437.00	0.178	0.181		
Rear	CDMA1900 (1xRTT)	600	1880.00	1.010	0.965	1.19	1.22
	LTE Band 2 (5 MHz)	18900	1880.00	0.549	0.564		
	802.11b	6	2437.00	0.178	0.181		

## 14. Summary of Highest 1-g SAR

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

Technology	Test configuration	Mode	Separation distance (mm)	Highest 1g SAR (W/kg)
CDMA Cell Band (Part 22)	Head: Left Touch	1xRTT (RC3, SO55)	--	0.354
	Body-worn: Rear	1xRTT (RC3,SO55)	10	0.534
CDMA AWS Band (Part 27)	Head: Left Touch	1xRTT (RC3,SO55)	--	0.935
	Body-worn & -hotspot: Rear	1xRTT (RC3, SO32)	10	0.847
CDMA PCS Band (Part 24)	Head: Left Touch	1xRTT (RC3, SO55)	--	1.040
	Body-Worn: Rear	1xRTT (RC3, SO32)	10	1.010
LTE Band 4 (Part 27)	Head: Right Touch	1.4 MHz (16QAM) RB# 6 RB# 0	--	0.324
	Body-worn & -hotspot: Rear	1.4 MHz (16QAM) RB# 6 RB# 0	10	0.512
LTE Band 2 (Part 27)	Head: Right touch	3.0 MHz (16QAM) RB# 1 RB# 14	--	0.523
	Body-worn & -hotspot: Rear	1.4 MHz (QPSK) RB# 1 RB# 5	10	0.584
Wi-Fi 2.4 GHz (Part 15 C)	Head: Left touch	802.11b, 1 kbps	--	0.119
	Body-worn & -hotspot: Rear	802.11b, 1 kbps	10	0.178

## 15. Worst-case SAR Plots

Date: 8/20/2011

Test Laboratory: UL CCS SAR Lab A

### 01\_Head\_Left\_CDMA\_Cell Band\_1xRTT

Communication System: CDMA2000 (1xRTT); Frequency: 836.52 MHz; Duty Cycle: 1:1  
Medium parameters used (interpolated):  $f = 836.52$  MHz;  $\sigma = 0.891$  mho/m;  $\epsilon_r = 42.795$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
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 - SN3686; ConvF(8.65, 8.65, 8.65); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

**Left Touch/1xRTT(RC3, SO55)\_M-ch/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.407 mW/g

**Left Touch/1xRTT(RC3, SO55)\_M-ch/Zoom Scan 2 (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

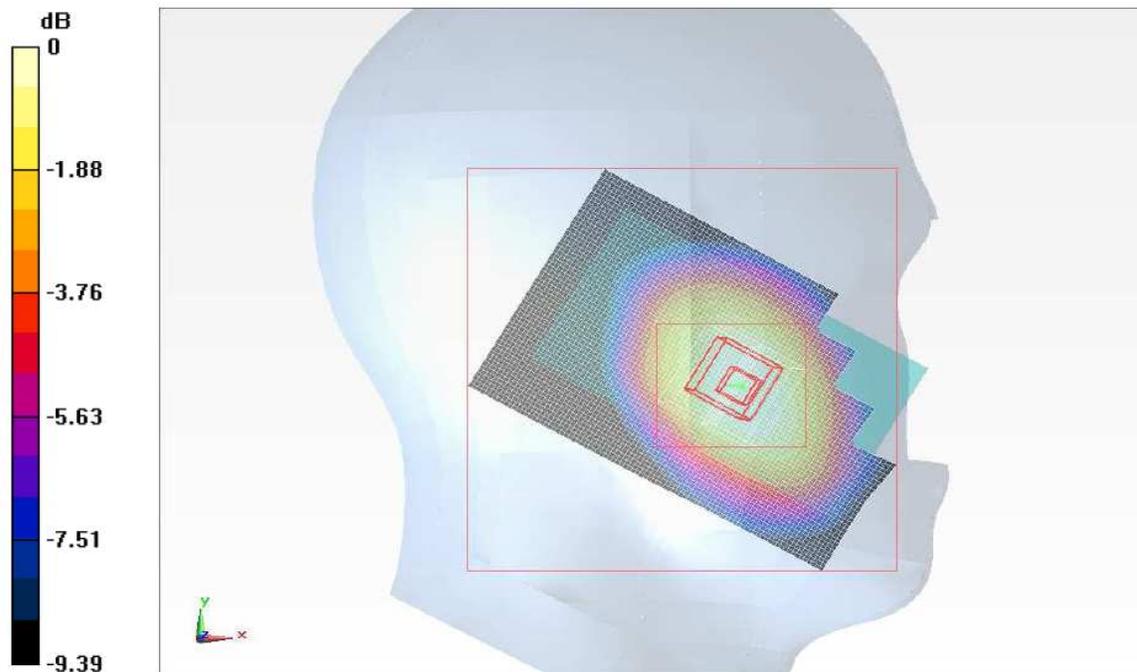
Reference Value = 21.169 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.455 W/kg

**SAR(1 g) = 0.354 mW/g; SAR(10 g) = 0.266 mW/g**

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

Maximum value of SAR (measured) = 0.400 mW/g



0 dB = 0.400mW/g

Date: 8/20/2011

Test Laboratory: UL CCS SAR Lab A

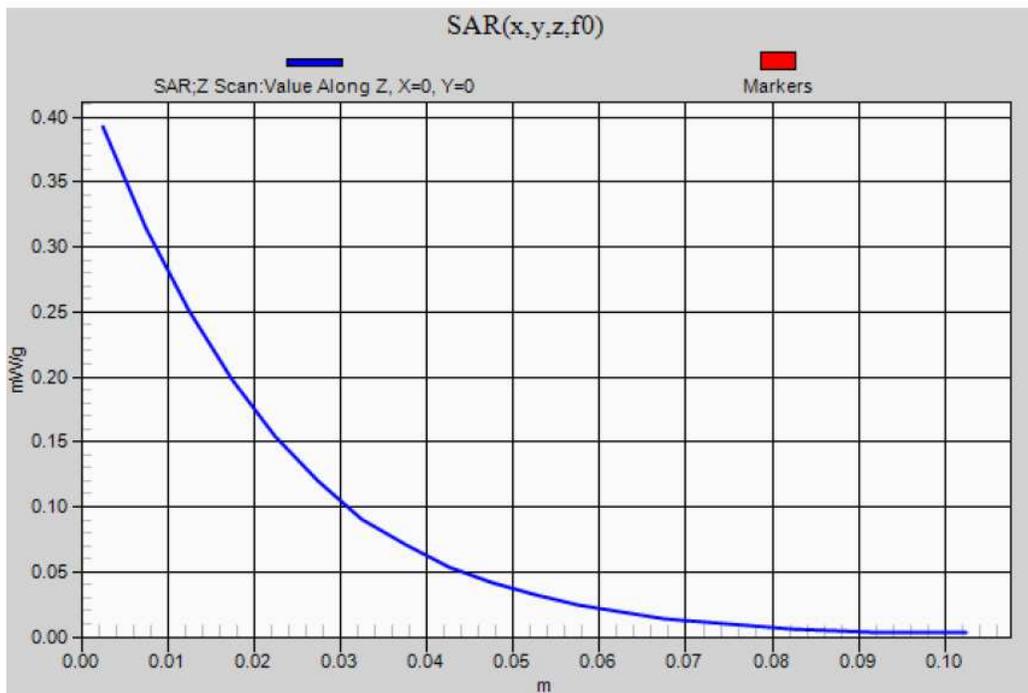
### 01\_Head\_Left\_CDMA\_Cell Band\_1xRTT

Communication System: CDMA2000 (1xRTT); Frequency: 836.52 MHz; Duty Cycle: 1:1

**Left Touch/1xRTT(RC3, SO55)\_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) = 0.392 mW/g



Date: 8/21/2011

Test Laboratory: UL CCS SAR Lab A

### 01\_Body-Worn\_Cell Band\_1xRTT

Communication System: CDMA2000 (1xRTT); Frequency: 836.52 MHz; Duty Cycle: 1:1  
Medium parameters used (interpolated):  $f = 836.52$  MHz;  $\sigma = 0.67$  mho/m;  $\epsilon_r = 57.281$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
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 - SN3686; ConvF(8.78, 8.78, 8.78); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

**Rear/1xRTT\_M-ch/Area Scan (71x111x1):** Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.616 mW/g

**Rear/1xRTT\_M-ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

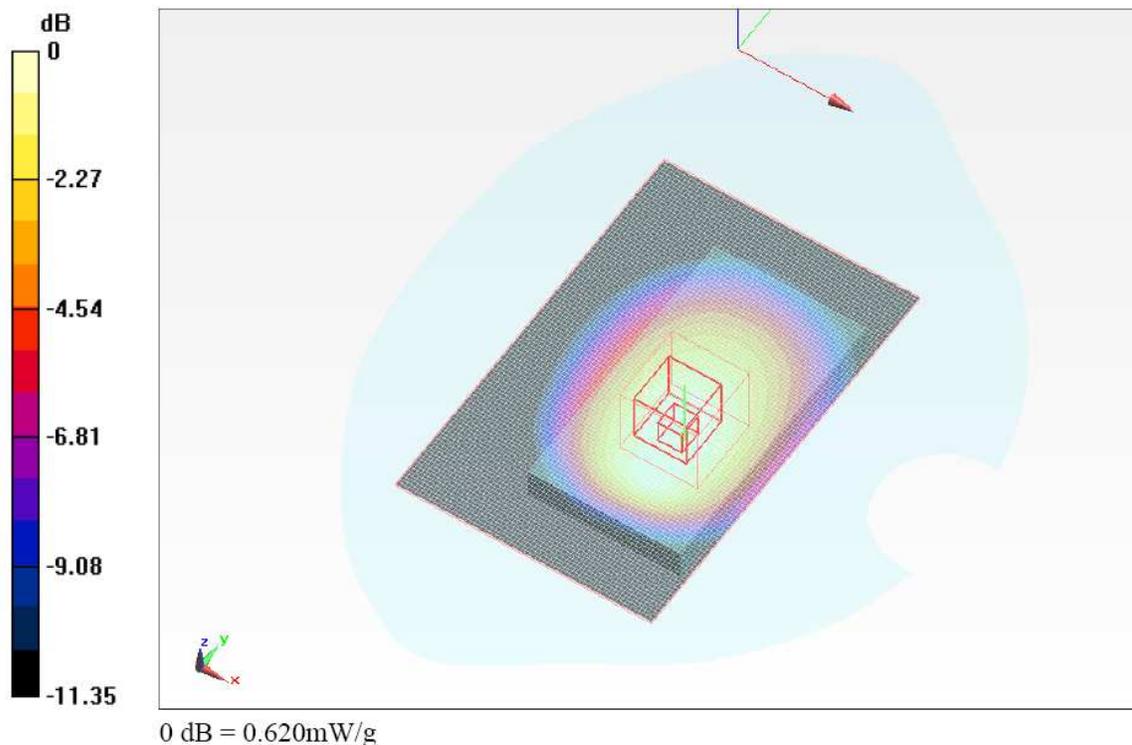
Reference Value = 29.721 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.730 W/kg

**SAR(1 g) = 0.534 mW/g; SAR(10 g) = 0.384 mW/g**

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

Maximum value of SAR (measured) = 0.618 mW/g



Date: 8/21/2011

Test Laboratory: UL CCS SAR Lab A

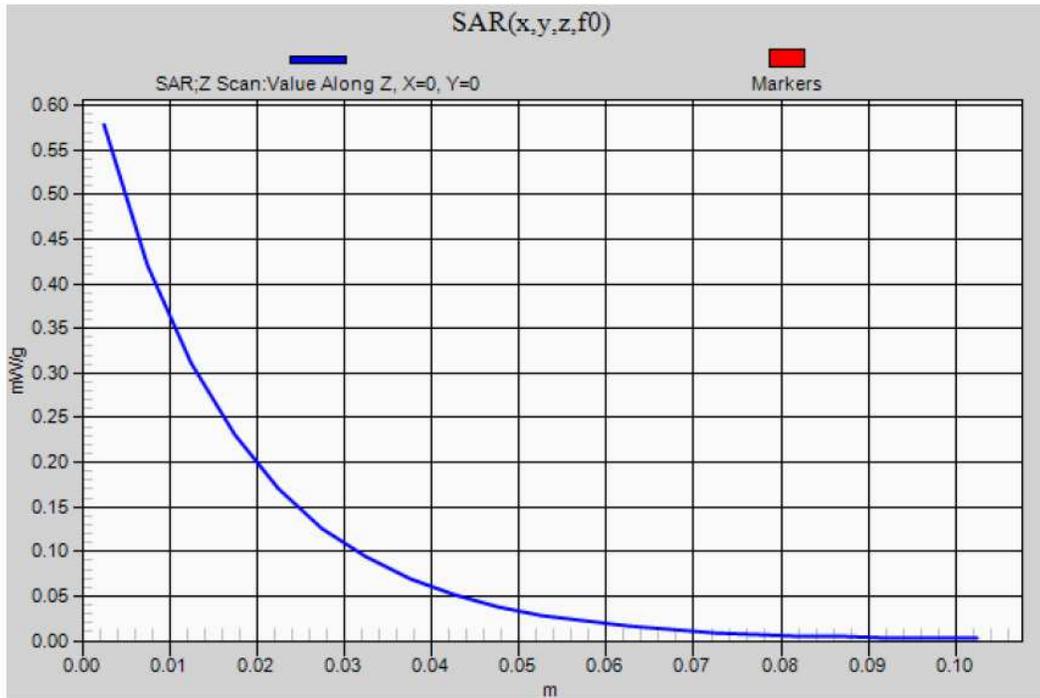
### 01\_Body-Worn\_Cell Band\_1xRTT

Communication System: CDMA2000 (1xRTT); Frequency: 836.52 MHz; Duty Cycle: 1:1

**Rear/1xRTT\_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) = 0.578 mW/g



Date: 8/19/2011

Test Laboratory: UL CCS SAR Lab A

### 003\_Head\_CDMA\_AWS Band\_1xRTT

Communication System: CDMA2000 (1xRTT); Frequency: 1753.75 MHz; Duty Cycle: 1:1  
Medium parameters used (interpolated):  $f = 1753.75$  MHz;  $\sigma = 1.337$  mho/m;  $\epsilon_r = 40.666$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
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 - SN3686; ConvF(7.69, 7.69, 7.69); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

**Left Touch/1xRTT(RC3, SO55)\_H-ch/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 1.183 mW/g

**Left Touch/1xRTT(RC3, SO55)\_H-ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

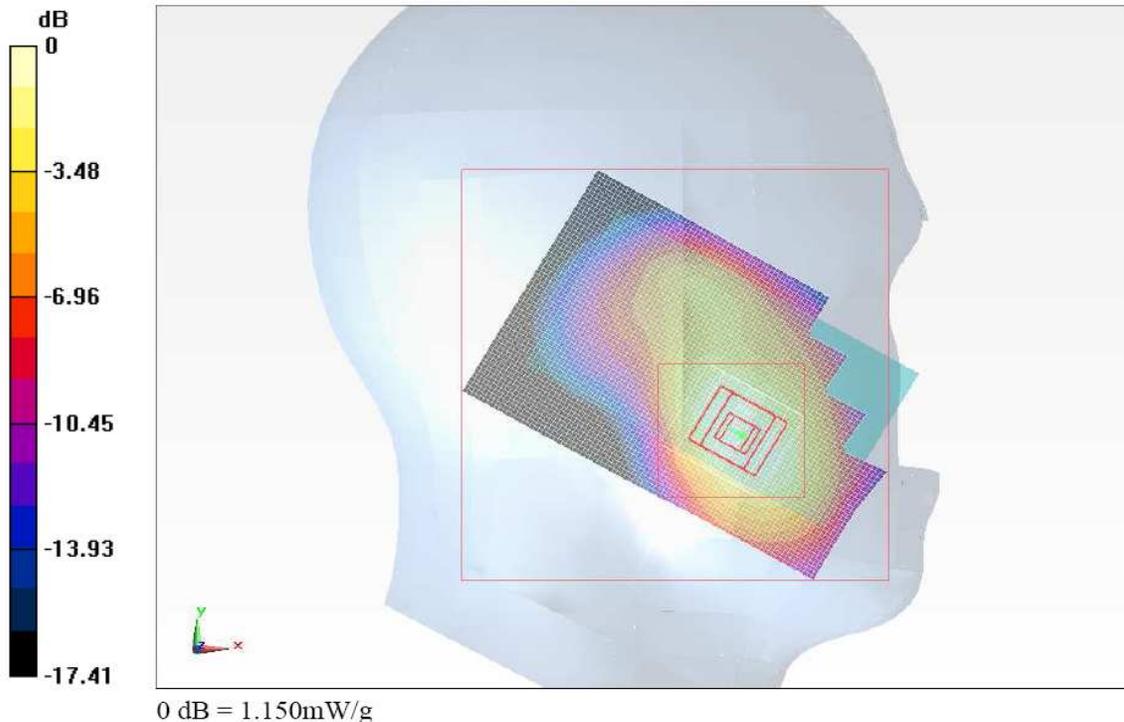
Reference Value = 29.607 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.413 W/kg

**SAR(1 g) = 0.935 mW/g; SAR(10 g) = 0.581 mW/g**

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

Maximum value of SAR (measured) = 1.149 mW/g



Date: 8/19/2011

Test Laboratory: UL CCS SAR Lab A

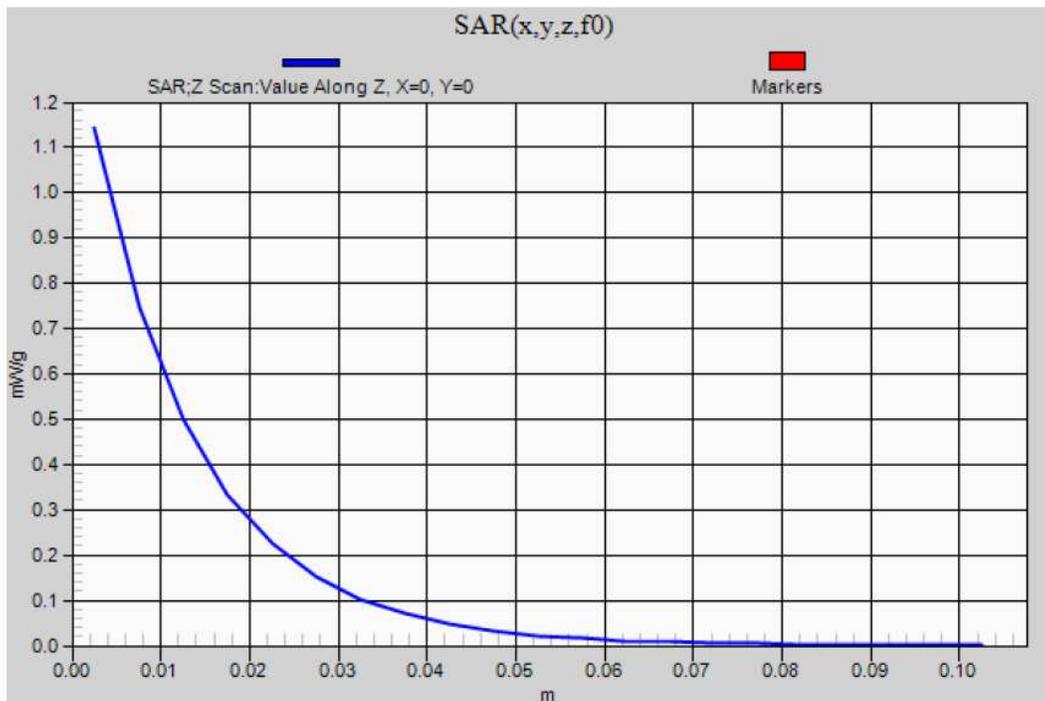
### 003\_Head\_CDMA\_AWS Band\_1xRTT

Communication System: CDMA2000 (1xRTT); Frequency: 1753.75 MHz; Duty Cycle: 1:1

**Left Touch/1xRTT(RC3, SO55)\_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) = 1.142 mW/g



Date: 8/25/2011

Test Laboratory: UL CCS SAR Lab A

### 001\_Rear\_CDMA\_AWS\_1xRTT

Communication System: CDMA2000 (1xRTT); Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium parameters used (interpolated):  $f = 1732.5$  MHz;  $\sigma = 1.411$  mho/m;  $\epsilon_r = 53.633$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
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 - SN3686; ConvF(7.28, 7.28, 7.28); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

**Rear Vol/1xRTT M-Ch/Area Scan (71x111x1):** Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 1.114 mW/g

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

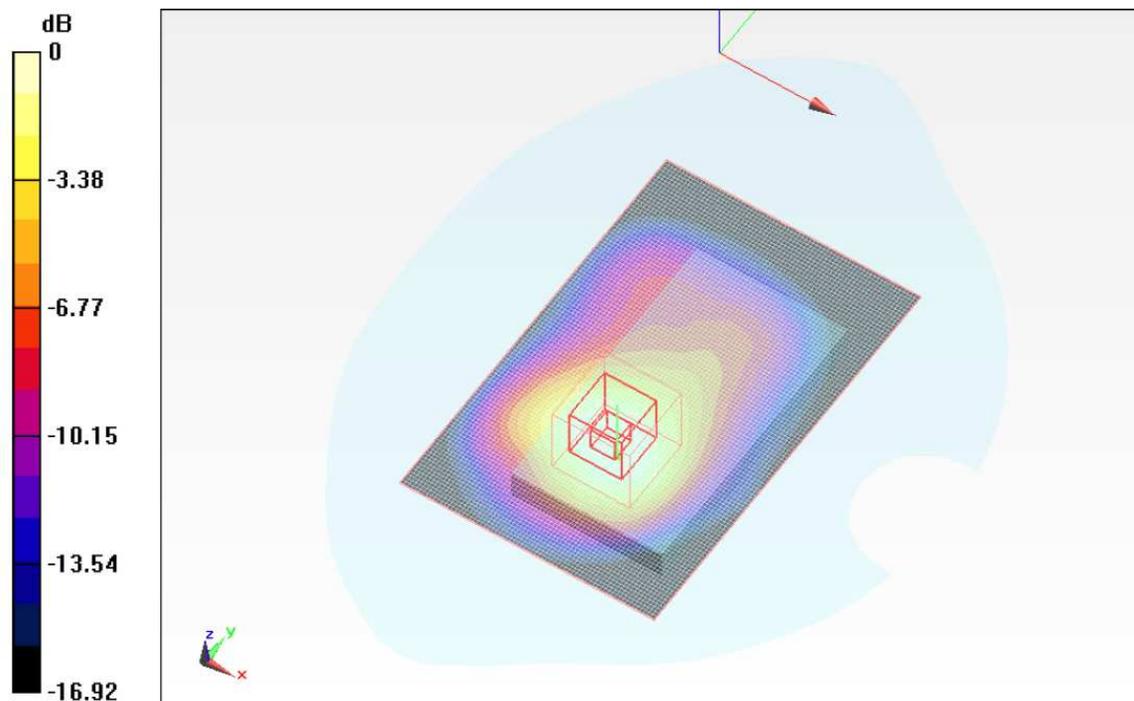
Reference Value = 26.086 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 1.309 W/kg

**SAR(1 g) = 0.847 mW/g; SAR(10 g) = 0.526 mW/g**

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

Maximum value of SAR (measured) = 1.005 mW/g



0 dB = 1.010mW/g

Date: 8/20/2011

Test Laboratory: UL CCS SAR Lab A

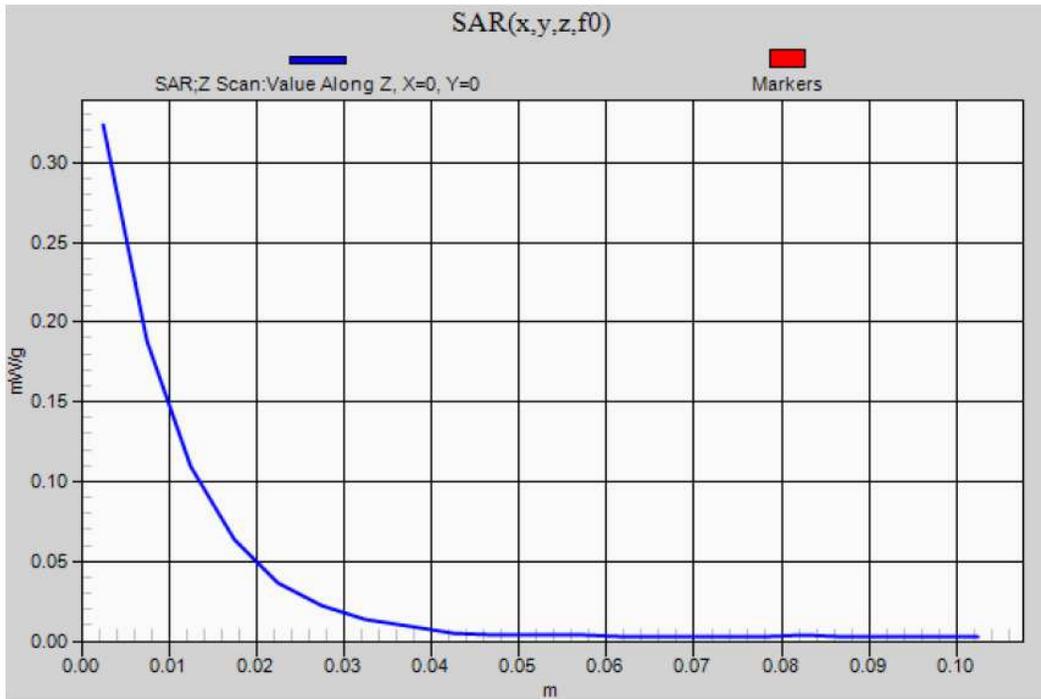
### 01\_AWS\_Body\_Rear-Hotspot

Communication System: CDMA2000 (1xEV-DO); Frequency: 1732.5 MHz; Duty Cycle: 1:1

**Rear/1xRTT\_M-ch with/Z Scan (1x1x21):** Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.323 mW/g



Date: 8/17/2011

Test Laboratory: UL CCS SAR Lab A

### 001\_Head\_CDMA\_PCS Band\_1xRTT

Communication System: CDMA2000 (1xRTT,RC3); Frequency: 1908.75 MHz; Duty Cycle: 1:1  
Medium parameters used (interpolated):  $f = 1908.75$  MHz;  $\sigma = 1.407$  mho/m;  $\epsilon_r = 39.382$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
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 - SN3686; ConvF(7.42, 7.42, 7.42); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

**Left Touch/1xRTT(RC3, SO55)\_H-ch/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 1.326 mW/g

**Left Touch/1xRTT(RC3, SO55)\_H-ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

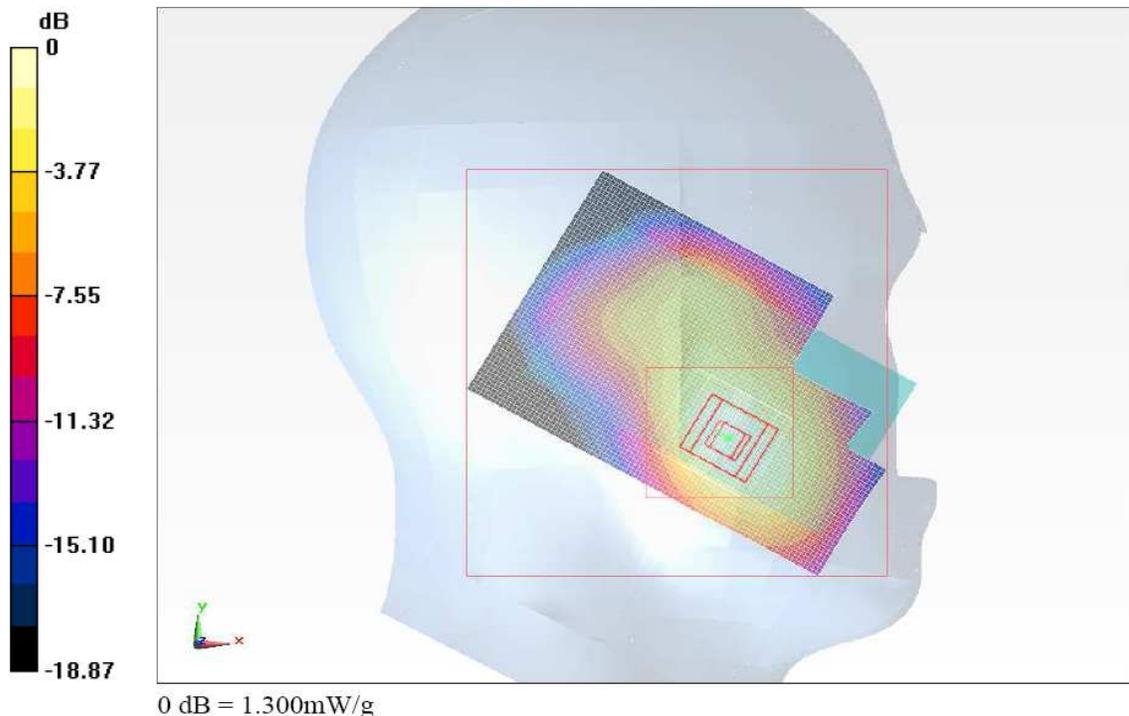
Reference Value = 29.800 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 1.645 W/kg

**SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.625 mW/g**

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

Maximum value of SAR (measured) = 1.302 mW/g



Date: 8/17/2011

Test Laboratory: UL CCS SAR Lab A

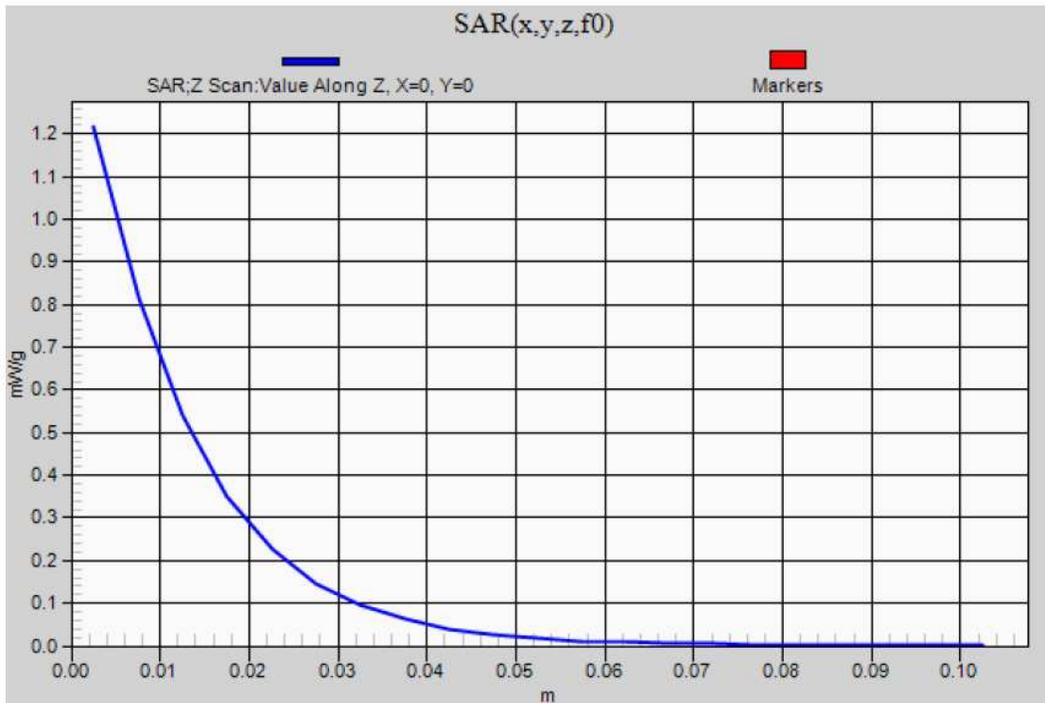
### 001\_Head\_CDMA\_PCS Band\_1xRTT

Communication System: CDMA2000 (1xRTT,RC3); Frequency: 1908.75 MHz;Duty Cycle: 1:1

**Left Touch/1xRTT(RC3, SO55)\_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) = 1.217 mW/g



Date: 8/24/2011

Test Laboratory: UL CCS SAR Lab A

### 001\_Rear\_CDMA\_PCS Band\_1xRTT

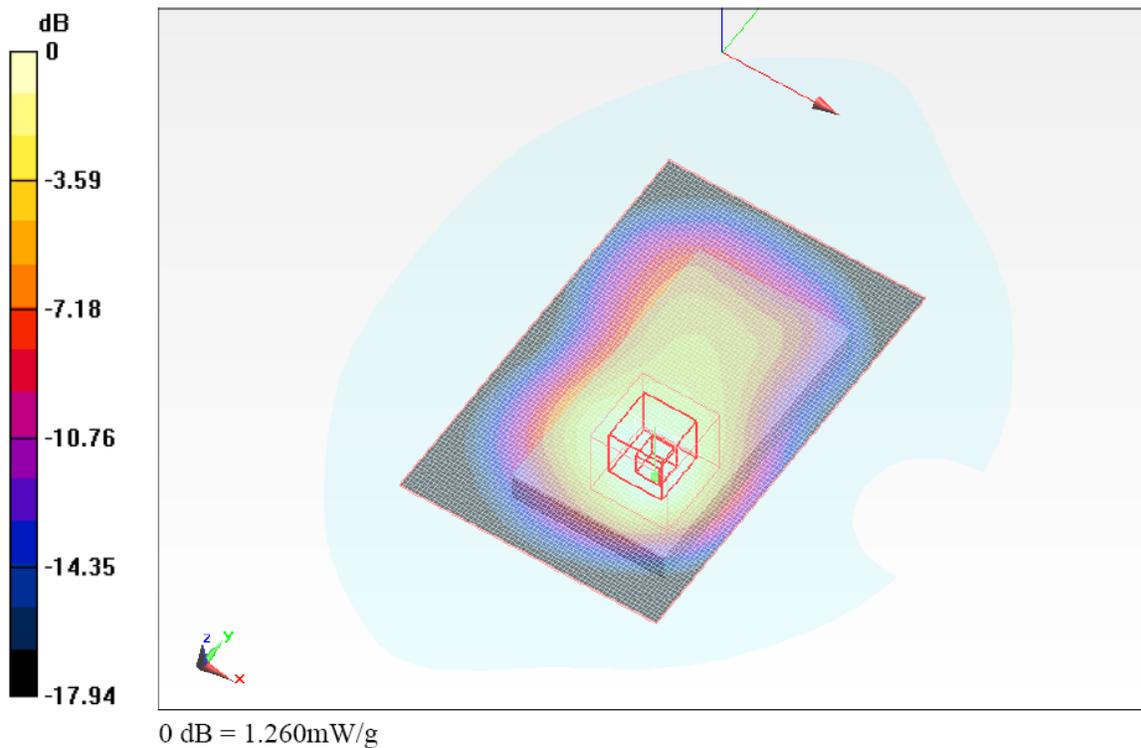
Communication System: CDMA2000 (1xRTT,RC3); Frequency: 1880 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.479$  mho/m;  $\epsilon_r = 53.728$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

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 - SN3686; ConvF(6.99, 6.99, 6.99); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

**Rear/1xRTT (RC3, SO32)\_M-ch/Area Scan (71x111x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (interpolated) = 1.377 mW/g

**Rear/1xRTT (RC3, SO32)\_M-ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 28.020 V/m; Power Drift = -0.15 dB  
Peak SAR (extrapolated) = 1.675 W/kg  
**SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.619 mW/g**  
Maximum value of SAR (measured) = 1.264 mW/g



Date: 9/2/2011

Test Laboratory: UL CCS SAR Lab A

### LTE Band 4\_1.4M\_RHS

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium parameters used (interpolated):  $f = 1732.5$  MHz;  $\sigma = 1.324$  mho/m;  $\epsilon_r = 39.502$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Right Section

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

DASY5 Configuration:

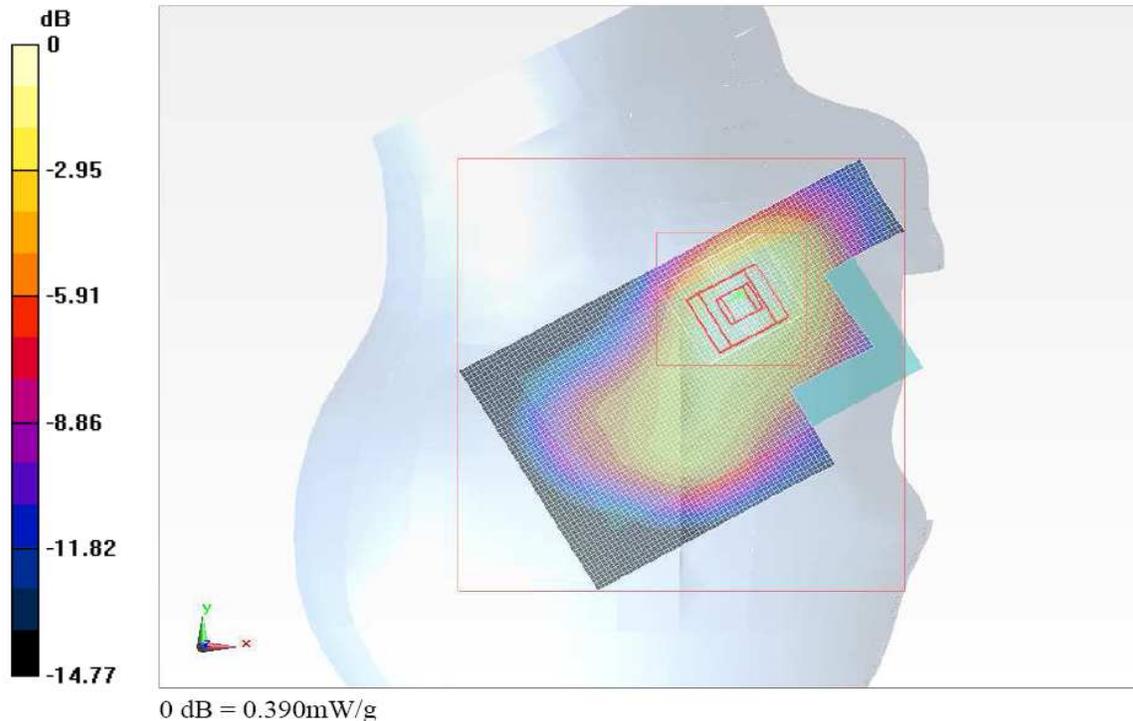
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(7.69, 7.69, 7.69); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

### Right Touch 1.4MHz/16QAM\_#RB6\_RB0\_M-ch/Area Scan (61x101x1): Measurement grid:

$dx=15$ mm,  $dy=15$ mm  
Maximum value of SAR (interpolated) = 0.381 mW/g

### Right Touch 1.4MHz/16QAM\_#RB6\_RB0\_M-ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

$dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm  
Reference Value = 16.615 V/m; Power Drift = 0.08 dB  
Peak SAR (extrapolated) = 0.496 W/kg  
**SAR(1 g) = 0.324 mW/g; SAR(10 g) = 0.201 mW/g**  
Maximum value of SAR (measured) = 0.394 mW/g



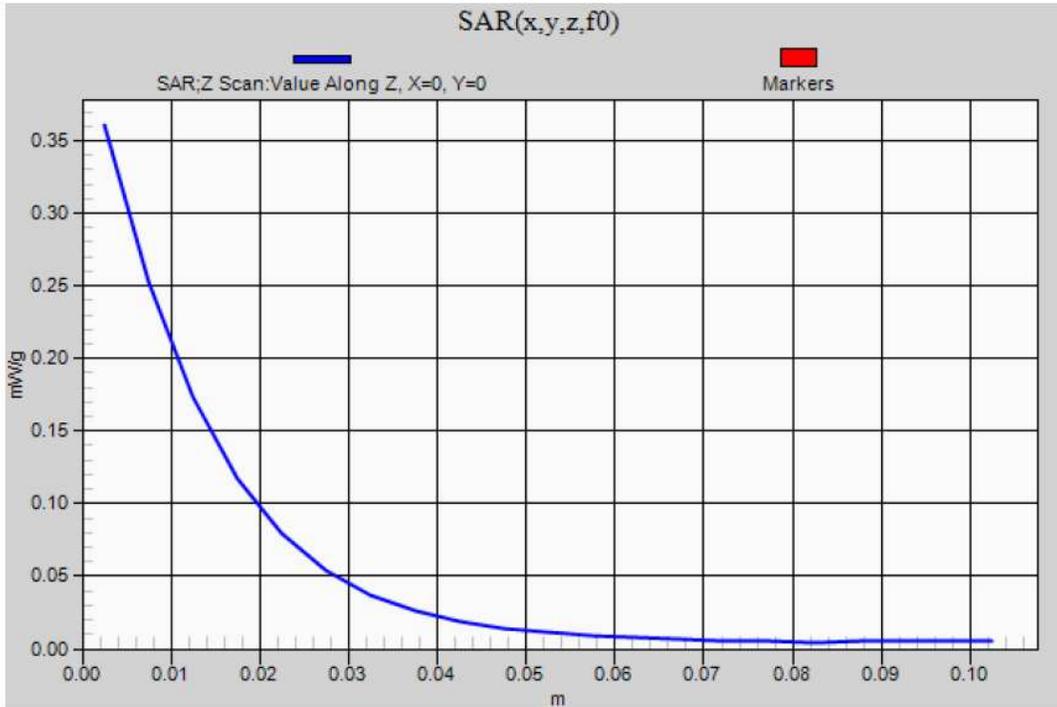
Date: 9/2/2011

Test Laboratory: UL CCS SAR Lab A

### LTE Band 4\_1.4M\_RHS

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1

**Right Touch 1.4MHz/16QAM\_#RB6\_RB0\_M-ch/Z Scan (1x1x21):** Measurement grid: dx=20mm, dy=20mm, dz=5mm  
Maximum value of SAR (measured) = 0.361 mW/g



Date: 8/26/2011

Test Laboratory: UL CCS SAR Lab A

### LTE Band 4\_1.4M\_Body-Worn

Communication System: LTE 1.4MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1  
Medium parameters used (interpolated):  $f = 1732.5$  MHz;  $\sigma = 1.491$  mho/m;  $\epsilon_r = 54.385$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
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 - SN3686; ConvF(7.28, 7.28, 7.28); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

**Rear/16QAM\_#RB6\_RB0\_M-ch/Area Scan (81x101x1):** Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.684 mW/g

**Rear/16QAM\_#RB6\_RB0\_M-ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

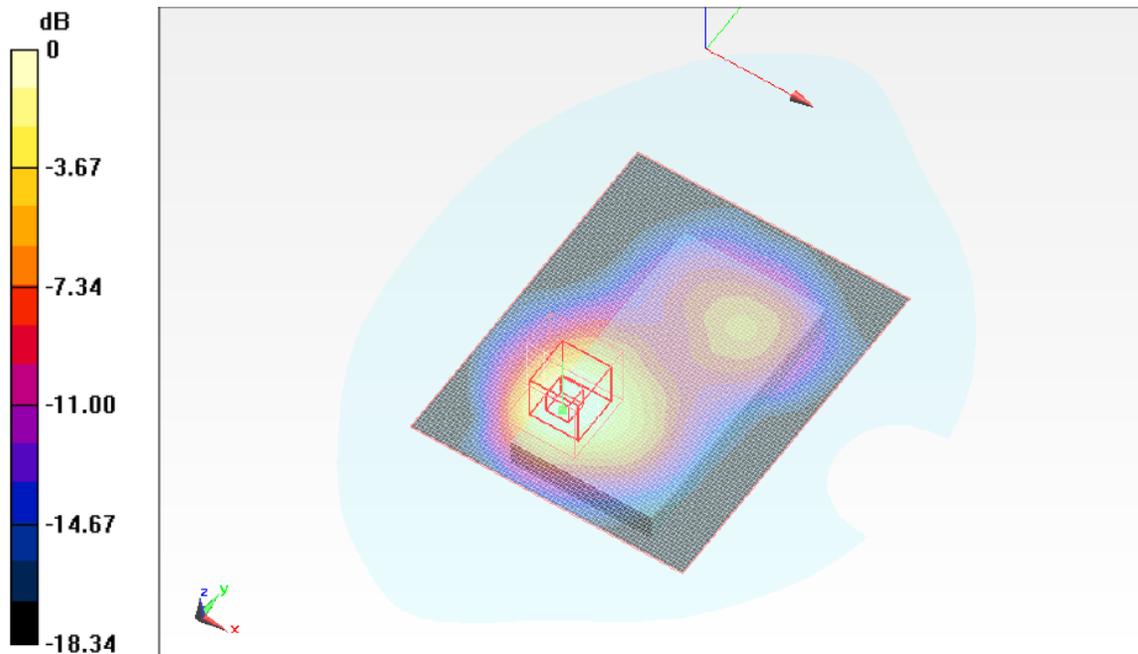
Reference Value = 20.115 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.862 W/kg

**SAR(1 g) = 0.512 mW/g; SAR(10 g) = 0.296 mW/g**

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

Maximum value of SAR (measured) = 0.654 mW/g



0 dB = 0.650mW/g

Date: 8/26/2011

Test Laboratory: UL CCS SAR Lab A

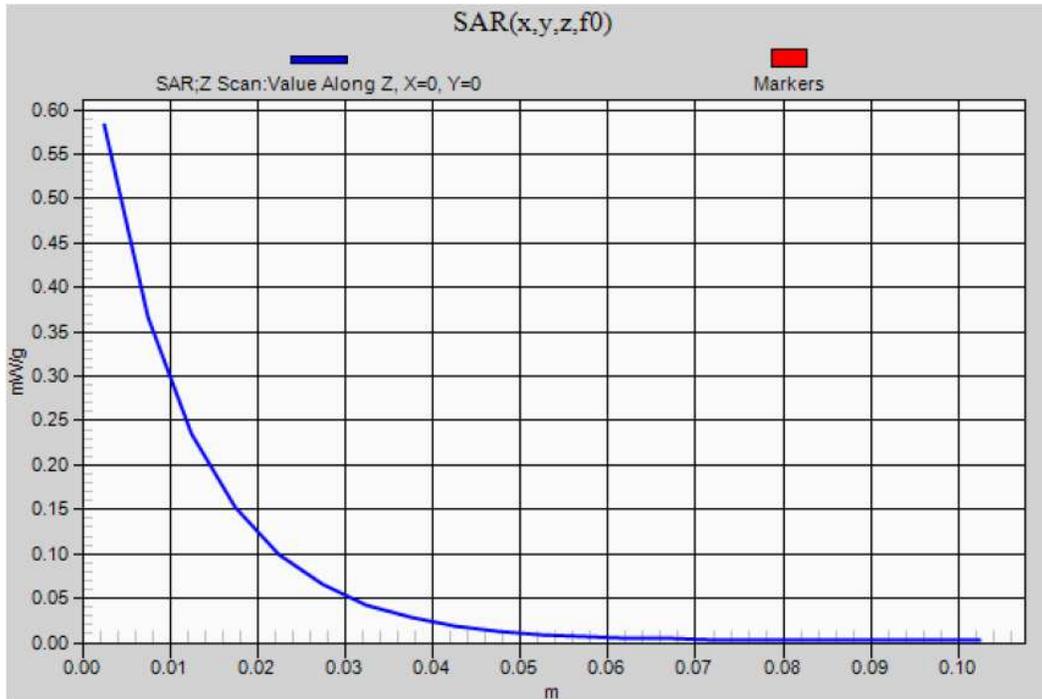
### LTE Band 4\_Body-Worn

Communication System: LTE 1.4MHz; Frequency: 1732.5 MHz; Duty Cycle: 1:1

**Rear/16QAM\_#RB6\_RB0\_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) = 0.583 mW/g



Date: 9/13/2011

Test Laboratory: UL CCS SAR Lab A

### LTE Band 2\_3M\_RHS

Communication System: LTE; Frequency: 1880 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.389$  mho/m;  $\epsilon_r = 39.555$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
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 - SN3686; ConvF(7.42, 7.42, 7.42); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

#### Right Touch 3MHz/16QAM\_#RB1\_RB14\_M-ch/Area Scan (61x101x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.596 mW/g

#### Right Touch 3MHz/16QAM\_#RB1\_RB14\_M-ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

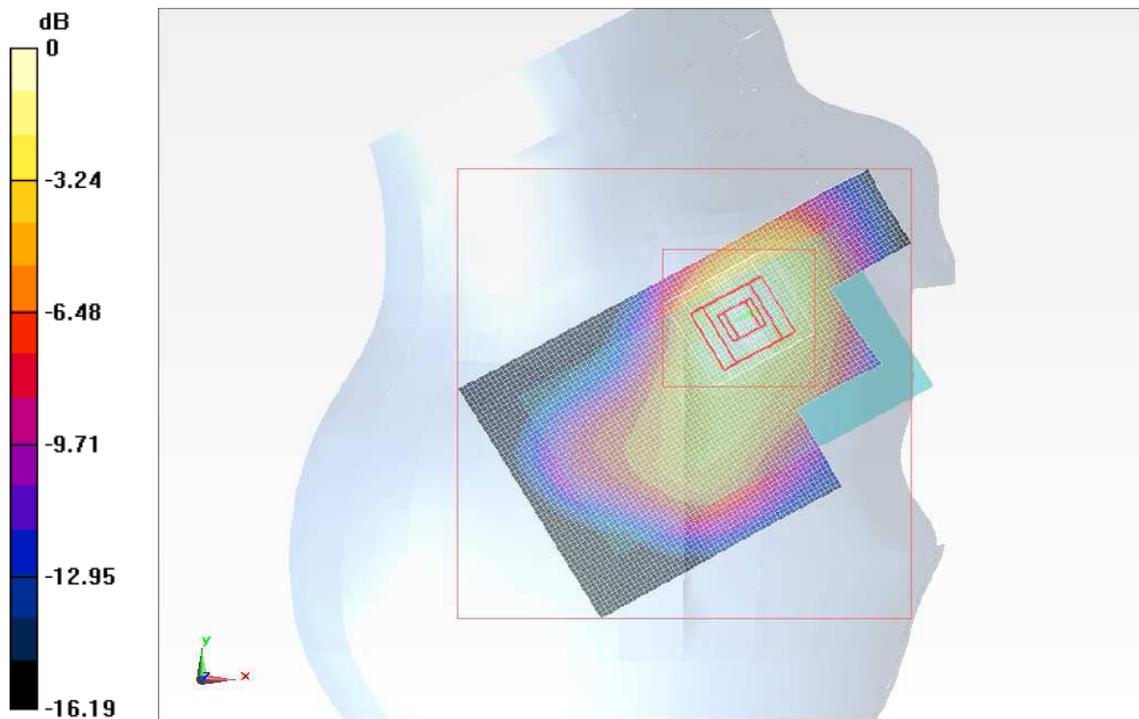
dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.401 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.815 W/kg

**SAR(1 g) = 0.523 mW/g; SAR(10 g) = 0.316 mW/g**

Maximum value of SAR (measured) = 0.643 mW/g



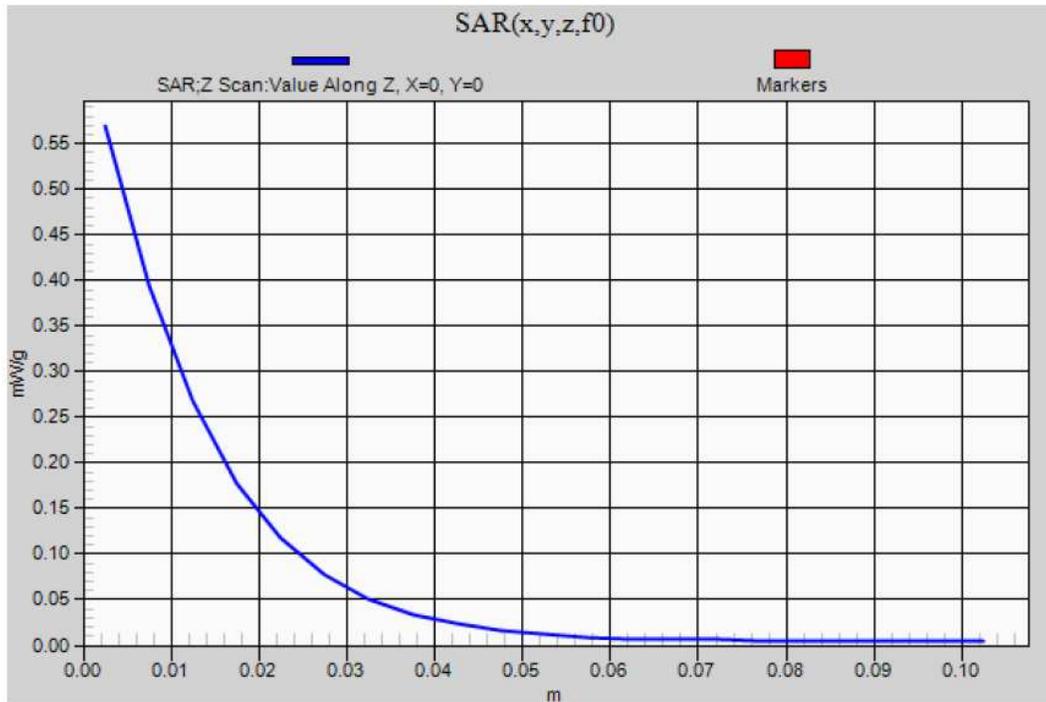
Date: 9/13/2011

Test Laboratory: UL CCS SAR Lab A

### LTE Band 2\_3M\_RHS

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

**Right Touch 3MHz/16QAM\_#RB1\_RB14\_M-ch/Z Scan (1x1x21):** Measurement grid: dx=20mm, dy=20mm, dz=5mm  
Maximum value of SAR (measured) = 0.569 mW/g



Date: 9/6/2011

Test Laboratory: UL CCS SAR Lab A

### LTE Band 2\_1.4M\_Body-Worn

Communication System: LTE; Frequency: 1880 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.513$  mho/m;  $\epsilon_r = 51.442$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

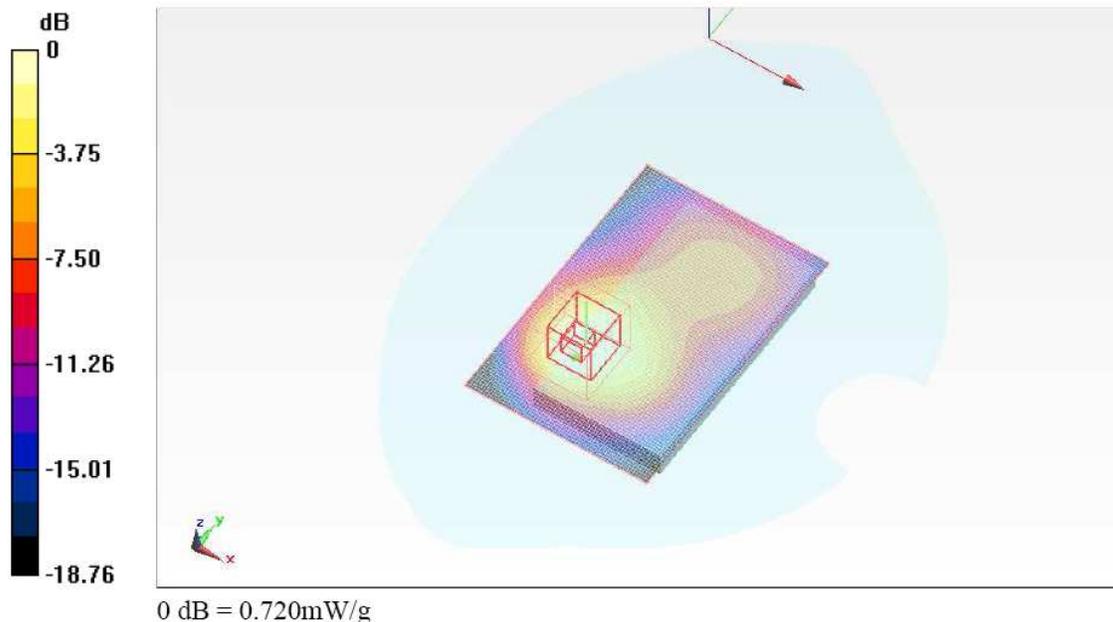
Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

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 - SN3686; ConvF(6.99, 6.99, 6.99); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

**Rear 1.4 MHz/QPSK\_#RB1\_RB5\_M-ch/Area Scan (61x91x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (interpolated) = 0.742 mW/g

**Rear 1.4 MHz/QPSK\_#RB1\_RB5\_M-ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 21.964 V/m; Power Drift = 0.05 dB  
Peak SAR (extrapolated) = 1.000 W/kg  
**SAR(1 g) = 0.584 mW/g; SAR(10 g) = 0.336 mW/g**  
Maximum value of SAR (measured) = 0.717 mW/g



Date: 9/6/2011

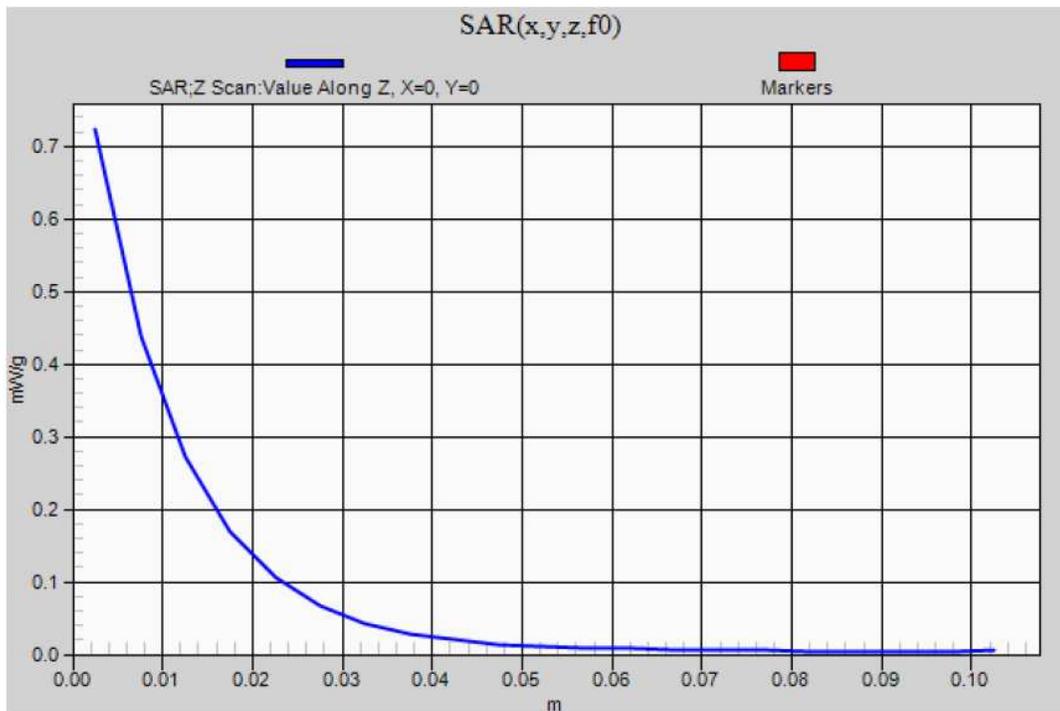
Test Laboratory: UL CCS SAR Lab A

### LTE Band 2\_1.4M\_Body-Worn

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

**Rear 1.4 MHz/QPSK\_#RB1\_RB5\_M-ch/Z Scan (1x1x21):** Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.723 mW/g



Date: 9/13/2011

Test Laboratory: UL CCS SAR Lab C

### Left Hand Side

Communication System: IEEE 802.11 b/g/n; Frequency: 2437 MHz; Duty Cycle: 1:1  
Medium parameters used (interpolated):  $f = 2437$  MHz;  $\sigma = 1.856$  mho/m;  $\epsilon_r = 39.057$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
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(6.43, 6.43, 6.43); Calibrated: 5/3/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1257; Calibrated: 5/3/2011
- 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/802.11b/Ch 6/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.170 mW/g

**LHS/Touch/802.11b/Ch 6/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

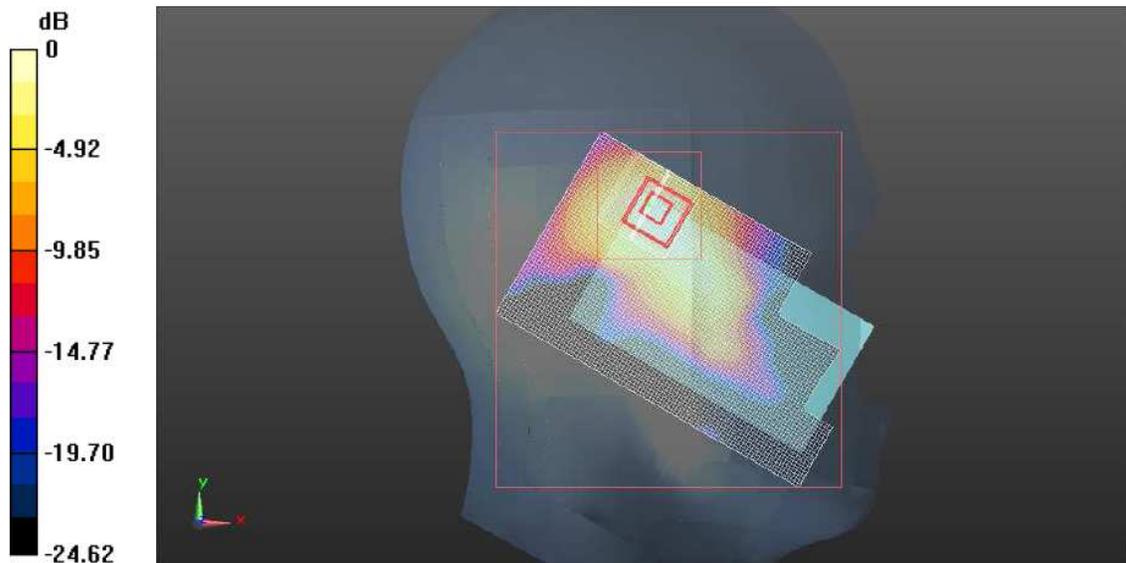
Reference Value = 9.154 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.244 W/kg

**SAR(1 g) = 0.119 mW/g; SAR(10 g) = 0.061 mW/g**

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

Maximum value of SAR (measured) = 0.171 mW/g



0 dB = 0.170mW/g

Date: 9/13/2011

Test Laboratory: UL CCS SAR Lab C

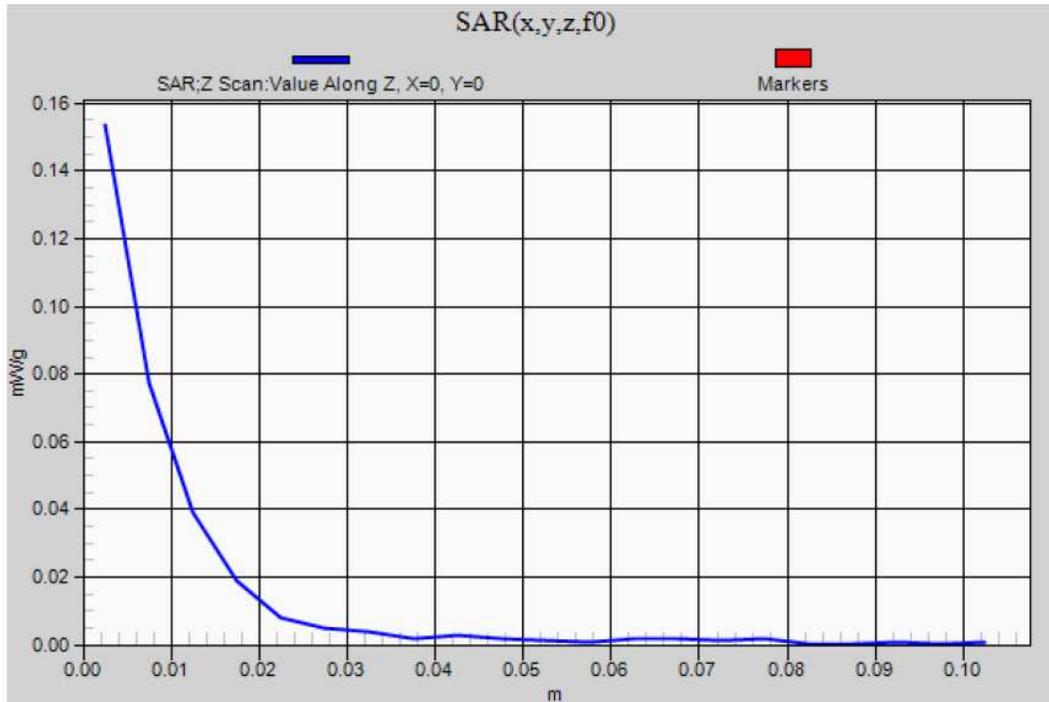
### Left Hand Side

Communication System: IEEE 802.11 b/g/n; Frequency: 2437 MHz; Duty Cycle: 1:1

**LHS/Touch/802.11b/Ch 6/Z Scan (1x1x21):** Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.154 mW/g



Date: 9/15/2011

Test Laboratory: UL CCS SAR Lab A

### Rear\_WiFi\_802.11b

Communication System: IEEE 802.11b WiFi 2.4GHz ; Frequency: 2437 MHz; Duty Cycle: 1:1  
Medium parameters used (interpolated):  $f = 2437$  MHz;  $\sigma = 1.995$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
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 - SN3686; ConvF(6.86, 6.86, 6.86); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

### Rear/802.11b M-ch/Area Scan (71x111x1):

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

Maximum value of SAR (interpolated) = 0.224 mW/g

### Rear/802.11b M-ch/Zoom Scan (5x5x7)/Cube 0:

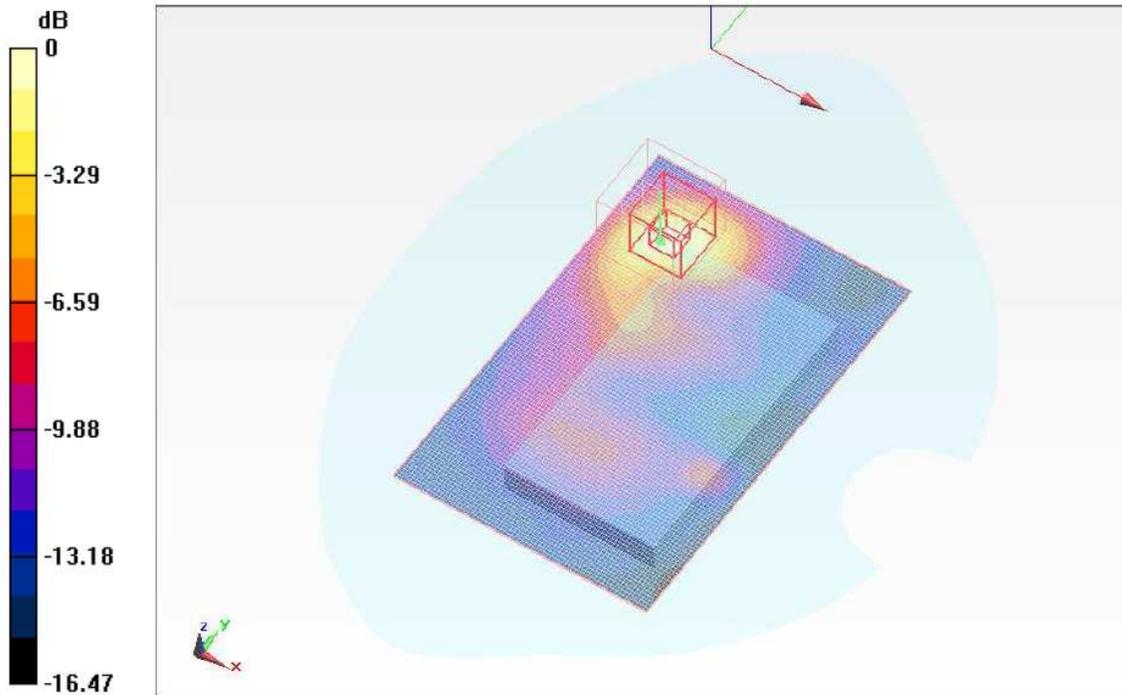
Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 9.652 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.356 W/kg

SAR(1 g) = 0.178 mW/g; SAR(10 g) = 0.087 mW/g

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

Maximum value of SAR (measured) = 0.242 mW/g



Date: 9/13/2011

Test Laboratory: UL CCS SAR Lab C

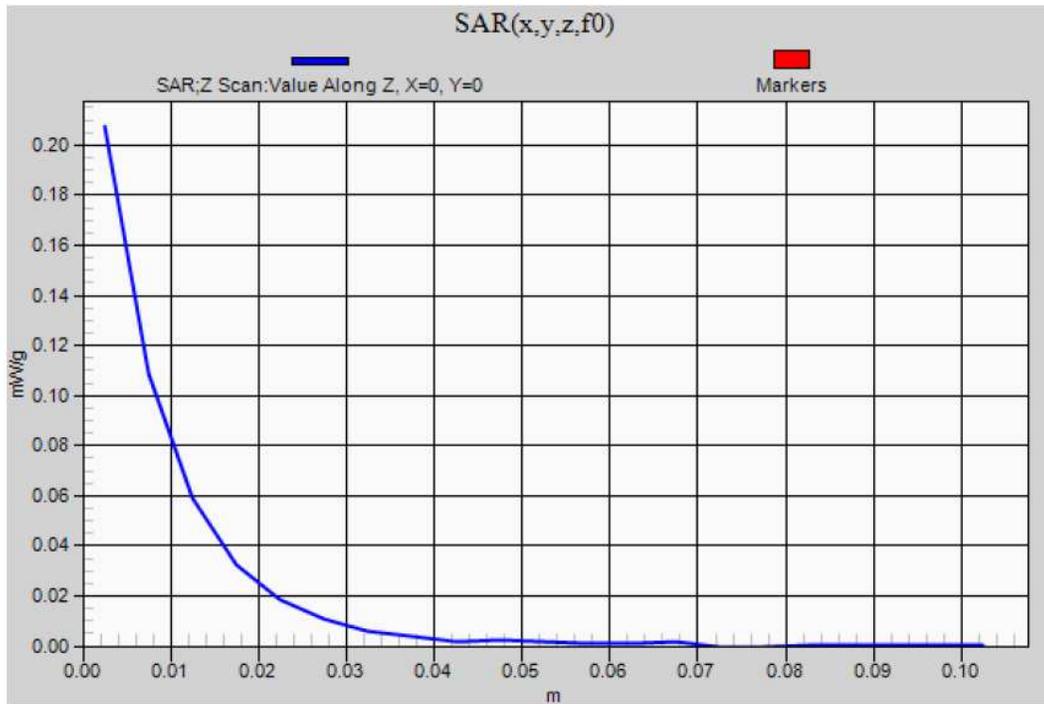
### Rear Side w/handset

Communication System: 802.11b/g 2.4GHz; Frequency: 2437 MHz;Duty Cycle: 1:1

**802.11b/Ch 6/Z Scan (1x1x21):** Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.207 mW/g



## 16. Appendixes

Refer to separated files for the following appendixes.

- 16.1. Appendix A: System check plots
- 16.2. Appendix B: SAR Test plots for CDMA Cellular Band 850
- 16.3. Appendix C: SAR test plots for CDMA AWS Band 1700
- 16.4. Appendix D: SAR test plots for CDMA PCS Band 1900
- 16.5. Appendix E: SAR test plots for WiFi
- 16.6. Appendix F: SAR test plots for LTE Band 2
- 16.7. Appendix G: SAR test plots for LTE Band 4
- 16.8. Appendix H: SAR test plots for SV-DO Volume scans
- 16.9. Appendix I: SAR test plots for SV-DO Multi band results
- 16.10. Appendix J: SAR test plots for SV-LTE Multi band results
- 16.11. Appendix K: SAR test plots for SV-LTE volume scans
- 16.12. Appendix L: Calibration certificate for E-Field Probe EX3DV4 SN 3772
- 16.13. Appendix M: Calibration certificate for E-Field Probe EX3DV4 SN 3686
- 16.14. Appendix N: Calibration Certificate for D835V2 - SN 4d117
- 16.15. Appendix O: Calibration certificate for D1750V2 SN 1053
- 16.16. Appendix P: Calibration certificate for D1900V2 SN 5d140
- 16.17. Appendix Q: Calibration certificate for D2450V2 SN: 706 w/ extended cal. data