



**OET BULLETIN 65 SUPPLEMENT C 01-01
IEEE Std 1528-2003 and IEEE Std 1528a-2005**

(Class II Permissive Change)

SAR EVALUATION REPORT

For

Cellular/PCS CDMA/GSM/WCDMA & LTE Phone with BT & WLAN + NFC

**Model: LG-VS930
FCC ID: ZNFVS930**

**Report Number: 12U14433-9
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Prepared for

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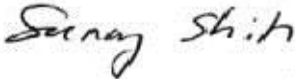

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1. Attestation of Test Results

Applicant	LG ELECTRONICS MOBILECOMM U.S.A., INC.			
DUT description	Cellular/PCS CDMA/GSM/WCDMA & LTE Phone with BT & WLAN + NFC			
Model	LG-VS930			
Test device is	An identical prototype			
Device category	Portable			
Exposure category	General Population/Uncontrolled Exposure			
Date tested	5/21/2012 – 6/05/2012			
FCC Rule Parts	Freq. Range	Highest 1-g SAR	Limit	
22	824-849 MHz	Head: 0.719 W/kg (Left Touch) Body & Hotspot: 0.902 W/kg (Rear with 10mm distance)	1.6 W/kg	
24	1850-1910 MHz	Head: 0.592 W/kg (Left Touch) Body & Hotspot: 0.913 W/kg (Rear with 10mm distance)		
27	777-787 MHz	Head: 0.390 W/kg (QPSK Left Touch) Body & Hotspot: 0.681 W/kg (QPSK Rear with 10 mm distance)		
15.247	2412-2462 MHz	Head: 0.205 W/kg (Left Touch) Body & Hotspot: 0.143 W/kg (Rear with 10 mm distance)		
	5725-5850 MHz	Head: 0.153 W/kg (Left Touch) Body: 0.046 W/kg (Rear with 10 mm distance)		
15.407	5150-5250 MHz	Head: 0.827 W/kg (Left Touch) Body: 0.166 W/kg (Rear with 10 mm distance)		
	5250-5350 MHz	Head: 0.558 W/kg (Left Touch) Body: 0.090 W/kg (Rear with 10 mm distance)		
	5500-5700 MHz	Head: 0.513 W/kg (Left Touch) Body: 0.120 W/kg (Rear with 10 mm distance)		
Simultaneous Transmission Condition:		1.29 W/kg (refer to Section 14.4)		
Applicable Standards				Test Results
- FCC OET Bulletin 65 Supplement C 01-01, - IEEE Std 1528-2003 and IEEE Std 1528a-2005			Pass	
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. Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government (NIST Handbook 150, Annex A). This report is written to support regulatory compliance of the applicable standards stated above. Approved & Released For UL CCS By: Tested By: <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  Sunny Shih Engineering Leader UL CCS </div> <div style="text-align: center;">  David Rodgers SAR Engineer UL CCS </div> </div>				

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, IEEE Std 1528a-2005 and the following KDB Procedures:

- 648474 D01 SAR Handsets Multi Xmitter and Ant, v01r05
- 648474 D03 Handset Wireless Battery Chargers v01
- 248227 D01 SAR meas for 802 11abg v01r02
- 865664 SAR 3 to 6 GHz Rev
- 941225 D01 SAR test for 3G devices v02
- 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- 941225 D05 SAR for LTE Devices v01
- 941225 D06 Hot Spot SAR v01

KDB Inquiry #: 181634

As this device, LG-VS930 (FCC ID ZNFVS930) is similar to the model LG-VS920 (FCC ID BEJVS920), KDB Inquiry # 181634 was used in the testing of this filing.

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 used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due date		
				MM	DD	Year
Dielectronic Probe kit	HP	85070C	N/A	N/A		
Base Station Simulator	Agilent	8960	GB46160222	6	17	2012
Base Station Simulator	R & S	CMU200	54-1005296	6	24	2012
Base Station Simulator	R & S	CMW500	10-300233773	12	14	2012
ESA Series Network Analyzer	Agilent	E5071B	MY42100131	2	11	2013
Synthesized Signal Generator	HP	83732B	US34490599	7	14	2012
E-Field Probe	SPEAG	EX3DV4	3686	2	16	2013
Thermometer	ERTCO	639-1S	1718	7	19	2012
Data Acquisition Electronics	SPEAG	DAE4	1259	2	13	2013
System Validation Dipole	SPEAG	D750V3	1019	2	9	2013
System Validation Dipole	SPEAG	D835V2	4d002	3	6	2013
System Validation Dipole	SPEAG	D1900V2	5d043	11	10	2012
System Validation Dipole	SPEAG	D2450V2	748	2	7	2013
System Validation Dipole	SPEAG	D5GHzV2	1075	2	14	2013
Power Meter	HP	8481A	2720A66876	8	1	2013
Power Sensor	HP	438A	2822A05684	10	7	2013
Power Meter	HP	8481A	2237A31744	8	17	2013
Power Sensor	HP	438A	3513U04320	9	17	2012
Amplifier	MITEQ	4D00400600-50-30P	1620606	N/A		
Directional coupler	Werlatone	C8060-102	2141	N/A		

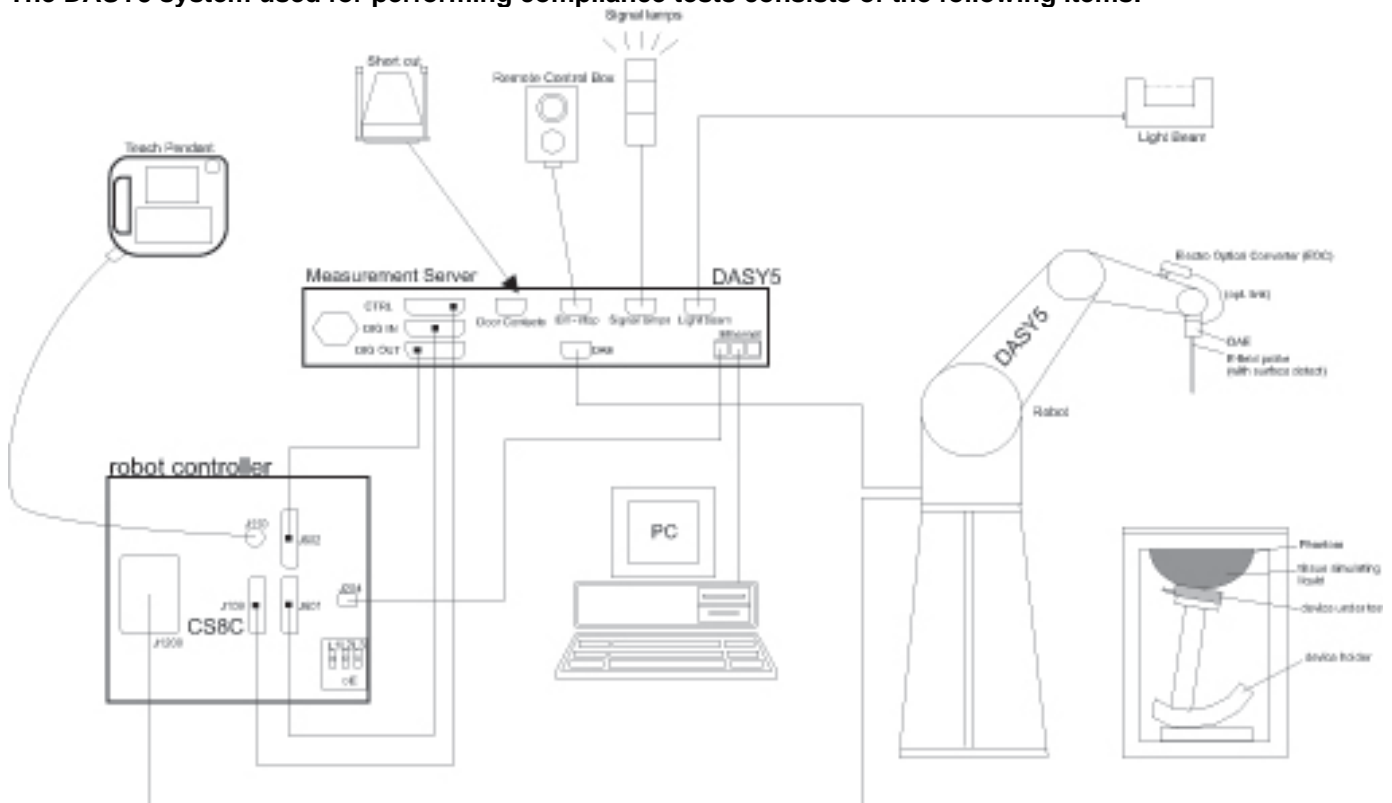
4.2. Measurement Uncertainty

Measurement uncertainty for 300 MHz to 3 GHz averaged over 1 gram					
Component	Error, %	Distribution	Divisor	Sensitivity	U (Xi), %
Measurement System					
Probe Calibration (k=1)	6.00	Normal	1	1	6.00
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	2.30	Rectangular	1.732	0.7071	0.94
Boundary Effect	0.90	Rectangular	1.732	1	0.52
Probe Linearity	3.45	Rectangular	1.732	1	1.99
System Detection Limits	1.00	Rectangular	1.732	1	0.58
Readout Electronics	0.30	Normal	1	1	0.30
Response Time	0.80	Rectangular	1.732	1	0.46
Integration Time	2.60	Rectangular	1.732	1	1.50
RF Ambient Conditions - Noise	3.00	Rectangular	1.732	1	1.73
RF Ambient Conditions - Reflections	3.00	Rectangular	1.732	1	1.73
Probe Positioner Mechanical Tolerance	0.40	Rectangular	1.732	1	0.23
Probe Positioning with respect to Phantom	2.90	Rectangular	1.732	1	1.67
Extrapolation, Interpolation and Integration	1.00	Rectangular	1.732	1	0.58
Test Sample Related					
Test Sample Positioning	2.90	Normal	1	1	2.90
Device Holder Uncertainty	3.60	Normal	1	1	3.60
Output Power Variation - SAR Drift	5.00	Rectangular	1.732	1	2.89
Phantom and Tissue Parameters					
Phantom Uncertainty (shape and thickness)	4.00	Rectangular	1.732	1	2.31
Liquid Conductivity - deviation from target	5.00	Rectangular	1.732	0.64	1.85
Liquid Conductivity - measurement	-4.93	Normal	1	0.64	-3.16
Liquid Permittivity - deviation from target	5.00	Rectangular	1.732	0.6	1.73
Liquid Permittivity - measurement uncertainty	-4.94	Normal	1	0.6	-2.96
Combined Standard Uncertainty Uc(y) =					10.66
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				21.32 %	
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				1.68 dB	

Measurement uncertainty for 3 to 6 GHz averaged over 1 gram					
Component	Error, %	Distribution	Divisor	Sensitivity	U (Xi), %
Measurement System					
Probe Calibration (k=1)	6.55	Normal	1	1	6.55
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	2.30	Rectangular	1.732	0.7071	0.94
Boundary Effect	0.90	Rectangular	1.732	1	0.52
Probe Linearity	3.45	Rectangular	1.732	1	1.99
System Detection Limits	1.00	Rectangular	1.732	1	0.58
Readout Electronics	1.00	Normal	1	1	1.00
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	3.90	Rectangular	1.732	1	2.25
Test Sample Related					
Test Sample Positioning	1.10	Normal	1	1	1.10
Device Holder Uncertainty	3.60	Normal	1	1	3.60
Output Power Variation - SAR Drift	5.00	Rectangular	1.732	1	2.89
Phantom and Tissue Parameters					
Phantom Uncertainty (shape and thickness)	4.00	Rectangular	1.732	1	2.31
Liquid Conductivity - deviation from target	5.00	Rectangular	1.732	0.64	1.85
Liquid Conductivity - measurement	-4.93	Normal	1	0.64	-3.16
Liquid Permittivity - deviation from target	10.00	Rectangular	1.732	0.6	3.46
Liquid Permittivity - measurement uncertainty	4.29	Normal	1	0.6	2.57
Combined Standard Uncertainty Uc(y), %:					11.22
Expanded Uncertainty U, Coverage Factor = 1.96, > 95 % Confidence =				21.98 %	
Expanded Uncertainty U, Coverage Factor = 1.96, > 95 % Confidence =				1.73 dB	

5. Measurement System Description and Setup

The DASY5 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- 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 Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- 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.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

6. SAR Measurement Procedure

6.1. Normal SAR Measurement Procedure

Step 1: Power Reference Measurement

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

Step 2: Area Scan

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

Step 3: Zoom Scan

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

Step 4: 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 (FCC only)

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.

6.2. Volume Scan Procedures

Step 1: Power Reference Measurement

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

Step 2: Area Scan

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

Step 3: Zoom Scan

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

Step 4: Volume Scan

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

Step 5: Power drift measurement

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

7. Device Under Test

Cellular/PCS CDMA and LTE Phone with Bluetooth & WLAN	
Model: LG-VS930	
Normal operation	<ul style="list-style-type: none"> • Held to head, • Body (Rear and Front sides) with 10 mm separation distance. • Hotspot (wireless router) with 10 mm separation distance to all sides and edges.
Accessory	<ol style="list-style-type: none"> 1. Headset 2. Battery Cover <ul style="list-style-type: none"> ○ Standard Battery Cover with NFC ○ Wireless Charging Battery Cover with NFC

7.1. Band and Air Interfaces

Tx Frequency Bands	<ul style="list-style-type: none"> • GSM850: 824 - 849 MHz • GSM1900: 1850 - 1910 MHz • W-CDMA Band II: 1850 - 1910 MHz • CDMA BC 0: 824 - 849 MHz • CDMA BC 1: 1850 - 1910 MHz • LTE Band 13: 777 - 787 MHz • 802.11ab/g/n: 2412 - 2462 MHz, b / g / HT20 5150 - 5250 MHz, a / HT20 5250 - 5350 MHz, a / HT20 5500 - 5700 MHz, a / HT20 5725 - 5850 MHz, a / HT20 • Bluetooth: 2402 - 2480 MHz
GPRS Multi-Slot Class:	10
GPRS Class:	B
DTM Class:	Not supported

7.2. Hotspot (Wireless router) Exposure Condition

The device is capable of personal hotspot mode. The hotspot mode can be enabled by the user. However, the 5 GHz bands do not support hotspot mode.

7.3. Simultaneous Transmission

No.	Conditions
1	GSM850 Voice + Wi-Fi 2.4GHz and 5 GHz Bands
2	GSM1900 Voice + Wi-Fi 2.4GHz and 5 GHz Bands
3	GSM850 GPRS + Wi-Fi 2.4GHz
4	GSM1900 GPRS + Wi-Fi 2.4GHz
5	W-CDMA (UMTS) Band II+ Wi-Fi 2.4GHz and 5 GHz Bands (Wi-Fi 5 GHz Bands exclude Hotspot mode)
6	GSM850 Voice + BT
7	GSM1900 Voice + BT
8	GSM850 GPRS + BT
9	GSM1900 GPRS + BT
10	W-CDMA (UMTS) Band II+ BT
11	CDMA BC0 1xRTT + Wi-Fi 2.4 GHz and 5 GHz Bands (Wi-Fi 5 GHz Bands exclude Hotspot mode)
12	CDMA BC1 1xRTT + Wi-Fi 2.4 GHz and 5 GHz Bands (Wi-Fi 5 GHz Bands exclude Hotspot mode)
13	CDMA BC0 1xEVDO + Wi-Fi 2.4 GHz
14	CDMA BC1 1xEVDO + Wi-Fi 2.4 GHz
15	CDMA BC0 1xRTT + BT
16	CDMA BC1 1xRTT + BT
17	CDMA BC0 1xEVDO + BT
18	CDMA BC1 1xEVDO + BT
19	LTE Band 13 + Wi-Fi 2.4 GHz
20	LTE Band 13 + BT
21	CDMA BC0 1xRTT + CDMA BC0 1xEVDO (SV-DO BC0/BC0)
22	CDMA BC0 1xRTT + CDMA BC1 1xEVDO (SV-DO BC0/BC1)
23	CDMA BC1 1xRTT + CDMA BC0 1xEVDO (SV-DO BC1/BC0)
24	CDMA BC1 1xRTT + CDMA BC1 1xEVDO (SV-DO BC1/BC1)
25	SV-DO BC0/BC0 + Wi-Fi 2.4 GHz (SV-DO Hotspot Mode)
26	SV-DO BC0/BC1+ Wi-Fi 2.4 GHz (SV-DO Hotspot Mode)
27	SV-DO BC1/BC0+ Wi-Fi 2.4 GHz (SV-DO Hotspot Mode)
28	SV-DO BC1/BC1+ Wi-Fi 2.4 GHz (SV-DO Hotspot Mode)
29	SV-DO BC0/BC0 + BT
30	SV-DO BC0/BC1+ BT
31	SV-DO BC1/BC0+ BT
32	SV-DO BC1/BC1+ BT
33	CDMA BC0 1xRTT + LTE Band 13 (SV-LTE BC0)
34	CDMA BC1 1xRTT + LTE Band 13 (SV-LTE BC1)
35	SV-LTE BC0 + Wi-Fi 2.4 GHz (SV-LTE Hotspot Mode)
36	SV-LTE BC1 + Wi-Fi 2.4 GHz (SV-LTE Hotspot Mode)
37	SV-LTE BC0 + BT
38	SV-LTE BC1 + BT

Notes:

1. Wi-Fi 2.4 GHz can transmit simultaneously with WWAN
2. Wi-Fi 5 GHz Bands can transmit simultaneously with WWAN, but only in voice mode operation

KDB 941225 D05 SAR for LTE devices v01 (Continued)

#	Description	Information																			
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	* Supported band & Exposure conditions 1) Bluetooth 2.4GHz - Exposure Conditions: BT SAR is not required due to the lower power and antenna separation distance. 2) Wi-Fi 2.4GHz - Exposure Conditions: Head/Body SAR required * Wi-Fi hotspot is supported. 3) Supported WWAN bands: GSM850/1900, W-CDMA Band II CDMA BC0/BC1 -Exposure Conditions: Head and Body SAR required.																			
10	Include the maximum average conducted output power measured for the other wireless mode and frequency bands	See Section 10.6 RF output power measurements																			
11	Identify the simultaneous transmission conditions for the voice and data configurations supported by all wireless modes, device configurations and frequency bands, for the head and body exposure conditions and device operating configurations (handset flip or cover positions, antenna diversity conditions etc.)	Refer to the table in Section 7.3																			
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	1. Power Reduction operation table for SV-DO Mode <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Mode</th> <th>CDMA Current Voice Power for BC0, BC1</th> <th>CDMA EVDO Max. Power for BC0</th> <th>CDMA EVDO Max. Power for BC1</th> </tr> </thead> <tbody> <tr> <td rowspan="2">SV-DO</td> <td>P < 15.5 dBm</td> <td>24.5 dBm (Limited)</td> <td>23.7 dBm (Limited)</td> </tr> <tr> <td>P ≥ 15.5 dBm</td> <td>19.5 dBm (Limited)</td> <td>18.7 dBm (Limited)</td> </tr> </tbody> </table> 2. Power Reduction operation table for SV-LTE Mode <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Mode</th> <th>CDMA Current Voice Power for BC0, BC1</th> <th>LTE Max. Power for B13</th> </tr> </thead> <tbody> <tr> <td rowspan="2">SV-LTE</td> <td>P < 18.5 dBm</td> <td>22.5 dBm (Limited)</td> </tr> <tr> <td>P ≥ 18.5 dBm</td> <td>18.5 dBm (Limited)</td> </tr> </tbody> </table>	Mode	CDMA Current Voice Power for BC0, BC1	CDMA EVDO Max. Power for BC0	CDMA EVDO Max. Power for BC1	SV-DO	P < 15.5 dBm	24.5 dBm (Limited)	23.7 dBm (Limited)	P ≥ 15.5 dBm	19.5 dBm (Limited)	18.7 dBm (Limited)	Mode	CDMA Current Voice Power for BC0, BC1	LTE Max. Power for B13	SV-LTE	P < 18.5 dBm	22.5 dBm (Limited)	P ≥ 18.5 dBm	18.5 dBm (Limited)
Mode	CDMA Current Voice Power for BC0, BC1	CDMA EVDO Max. Power for BC0	CDMA EVDO Max. Power for BC1																		
SV-DO	P < 15.5 dBm	24.5 dBm (Limited)	23.7 dBm (Limited)																		
	P ≥ 15.5 dBm	19.5 dBm (Limited)	18.7 dBm (Limited)																		
Mode	CDMA Current Voice Power for BC0, BC1	LTE Max. Power for B13																			
SV-LTE	P < 18.5 dBm	22.5 dBm (Limited)																			
	P ≥ 18.5 dBm	18.5 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	Not Applicable																			
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																			

8. Summary of Test Configurations

Refer to Section 17 “Antenna Location and Separation Distances” for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

8.1. Head Test Configurations for WWAN and Wi-Fi

Test Configurations	SAR Required	Note
Left Touch	Yes	
Left Tilt (15°)	Yes	
Right Touch	Yes	
Right Tilt (15°)	Yes	

8.2. Body-worn Accessory Test Configurations for GSM850/1900

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	

8.3. Personal Router/Hotspot Test Configurations for GSM850/1900

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	
Edge 1	117 mm	No	SAR is not required because the distance from the GSM850/1900 antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 2	1.3 mm	Yes	
Edge 3	1.5 mm	Yes	
Edge 4	37.1 mm	No	SAR is not required because the distance from the GSM850/1900 antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01

8.4. Body-worn Accessory Test Configurations for W-CDMA (UMTS) Band II

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	

8.5. Personal Router/Hotspot Test Configurations for W-CDMA (UMTS) Band II

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	
Edge 1	117 mm	No	SAR is not required because the distance from the W-CDMA antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 2	36.1 mm	No	SAR is not required because the distance from the W-CDMA antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 3	1.5 mm	Yes	
Edge 4	1.3 mm	Yes	

8.6. Body-worn Accessory Test Configurations for CDMA BC0/BC1, 1xRTT Mode

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	

8.7. Personal Router/Hotspot Test Configurations for CDMA BC0/BC1, 1xRTT Mode

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	
Edge 1	117 mm	No	SAR is not required because the distance from the CDMA BC0/BC1 1xRTT antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 2	1.3 mm	Yes	
Edge 3	1.5 mm	Yes	
Edge 4	37.1 mm	No	SAR is not required because the distance from the CDMA BC0/BC1 1xRTT antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01

8.8. Body-worn Accessory Test Configurations for CDMA BC0, 1xEVDO Mode

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	

8.9. Personal Router/Hotspot Test Configurations for CDMA BC0, 1xEVDO Mode

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	
Edge 1	3 mm	Yes	
Edge 2	1.3 mm	Yes	
Edge 3	108 mm	No	SAR is not required because the distance from the CDMA BC0 1xEVDO antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 4	42.2 mm	No	SAR is not required because the distance from the CDMA BC0 1xEVDO antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01

8.10. Body-worn Accessory Test Configurations for CDMA BC1, 1xEVDO Mode

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	

8.11. Personal Router/Hotspot Test Configurations for CDMA BC1, 1xEVDO Mode

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	
Edge 1	117 mm	No	SAR is not required because the distance from the CDMA BC1 1xEVDO antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 2	36.1 mm	No	SAR is not required because the distance from the CDMA BC1 1xEVDO antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 3	1.5 mm	Yes	
Edge 4	1.3 mm	Yes	

8.12. Body-worn Accessory Test Configurations for LTE Band 13

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	

8.13. Personal Router/Hotspot Test Configurations for LTE Band 13

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	
Edge 1	117 mm	No	SAR is not required because the distance from the LTE Band 13 antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 2	36.1 mm	No	SAR is not required because the distance from the LTE Band 13 antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 3	1.5 mm	Yes	
Edge 4	1.3 mm	Yes	

8.14. Body-worn Accessory Test Configurations for Wi-Fi 2.4 and 5 GHz Bands*

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	

8.15. Personal Router/Hotspot Test Configurations for Wi-Fi 2.4 GHz Band

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	< 25 mm	Yes	
Front	< 25 mm	Yes	
Edge 1*	3 mm	Yes	
Edge 2	31.6 mm	No	SAR is not required because the distance from the Wi-Fi antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 3	121.3 mm	No	SAR is not required because the distance from the Wi-Fi antenna to this edge is > 2.5 cm as per KDB 941225 D06 Hot Spot SAR v01
Edge 4*	20.7 mm	Yes	

*: SAR testing under Hotspot Mode test positions is not required for Wi-Fi in the 5 GHz Bands as it does not support hotspot mode operation,

9. RF Output Power Measurement

9.1. GSM850

Target Power: 32.3dBm

Tune-up Tolerance: -1.5 dB / +0.7 dB

GSM (GMSK) Voice Mode

Band	Ch No.	Freq. (MHz)	Avg burst Pwr (dBm)
850	128	824.2	32.9
	190	836.6	33.0
	251	848.8	32.8

Target Power: GPRS 1 slot: 32.3 dBm / 2 slots: 32 dBm

EGPRS 1 slot: 25.5 dBm / 2 slots: 25.5 dBm

Tune-up Tolerance: -1.5 dB / +0.7 dB

GPRS (GMSK) - Coding Scheme: CS1

Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr
850	128	824.2	32.6	23.5	32.3	26.2
	190	836.6	32.8	23.7	32.4	26.4
	251	848.8	32.7	23.6	32.3	26.3

EGPRS (8PSK) - Coding Scheme: MCS5

Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr
850	128	824.2	26.1	17.1	25.8	19.8
	190	836.6	26.2	17.2	25.9	19.9
	251	848.8	26.1	17.1	25.9	19.9

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- Head: GMSK Voice Mode
- Body: GMSK (GPRS) mode with 2 time slots, based on the output power measurements above
- SAR is not required for EGPRS (8PSK) Mode because its output power is less than that of GPRS Mode

9.2. GSM1900

Target Power: 29.3 dBm
 Tune-up Tolerance: -1.5 dB / +0.7 dB

GSM (GMSK) Voice Mode

Band	Ch No.	Freq. (MHz)	Avg burst Pwr (dBm)
1900	512	1850.2	29.7
	661	1880.0	30.0
	810	1909.8	29.7

Target Power: GPRS 1 slot: 29.3 dBm / 2 slots: 29 dBm
 EGPRS 1 slot: 24.5 dBm / 2 slots: 24.5 dBm
 Tune-up Tolerance: -1.5 dB / +0.7 dB

GPRS (GMSK) - Coding Scheme: CS1

Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr
1900	512	1850.2	29.5	20.5	29.4	23.3
	661	1880.0	29.4	20.4	29.3	23.3
	810	1909.8	29.7	20.6	29.5	23.5

EGPRS (8PSK) - Coding Scheme: MCS5

Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr
1900	512	1850.2	25.2	16.1	25.0	19.0
	661	1880.0	25.0	16.0	24.8	18.7
	810	1909.8	24.9	15.9	24.8	18.8

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- Head: GMSK Voice Mode
- Body: GMSK (GPRS) mode with 2 time slots, based on the output power measurements above
- SAR is not required for EGPRS (8PSK) Mode because its output power is less than that of GPRS Mode

9.3. W-CDMA (UMTS) Band II

Target Power: 22.5 dBm
 Tune-up Tolerance: -1.5 dB / +0.7 dB

Release 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	β_c/β_d	8/15

Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)
W-CDMA (UMTS) Band II	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	23.0
		9400	1880.0	23.0
		9538	1907.6	23.0

HSDPA

The following 4 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
W-CDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	β_c/β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
CM (dB)	0	1	1.5	1.5	
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	$A_{hs} = \beta_{hs}/\beta_c$	30/15			

Results

Band	Mode	UL Ch No.	Freq. (MHz)	Target MPR	Meas. MPR	Avg Pwr (dBm)
W-CDMA (UMTS) Band II	Subtest 1	9262	1852.4	0	0	23.0
		9400	1880.0	0	0	23.1
		9538	1907.6	0	0	23.0
	Subtest 2	9262	1852.4	0	0	23.0
		9400	1880.0	0	0	23.0
		9538	1907.6	0	0	23.0
	Subtest 3	9262	1852.4	0.5	0.5	22.6
		9400	1880.0	0.5	0.5	22.6
		9538	1907.6	0.5	0.6	22.6
	Subtest 4	9262	1852.4	0.5	0.5	22.6
		9400	1880.0	0.5	0.4	22.7
		9538	1907.6	0.5	0.5	22.6

Note(s):

KDB 941225 D01 – Body SAR is not required for HSDPA when the maximum average output of each RF channel with HSDPA active is less than ¼ dB higher than that measured without HSDPA using 12.2 kbps RMC or the maximum SAR for 12.2 kbps RMC is < 75% of the SAR limit.

HSPA (HSDPA & HSUPA)

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

Mode	HSPA	HSPA	HSPA	HSPA	HSPA	
Subtest	1	2	3	4	5	
WCDMA General Settings	Loopback Mode					
	Test Mode 1					
	Rel99 RMC					
	12.2kbps RMC					
	HSDPA FRC					
	H-Set1					
	HSUPA Test					
	HSUPA Loopback					
	Power Control Algorithm					
	Algorithm2					
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	15/15
β_{ec}	209/225	12/15	30/15	2/15	24/15	
β_c/β_d	11/15	6/15	15/9	2/15	15/15	
β_{hs}	22/15	12/15	30/15	4/15	30/15	
β_{ed}	1309/225	94/75	47/15	56/75	134/15	
CM (dB)	1.0	3.0	2.0	3.0	1.0	
MPR (dB)	0	2	1	2	0	
HSDPA Specific Settings	DACK					
	8					
	DNAK					
	8					
	DCQI					
	8					
Ack-Nack repetition factor						
3						
CQI Feedback (Table 5.2B.4)						
4ms						
CQI Repetition Factor (Table 5.2B.4)						
2						
$A_{hs} = \beta_{hs}/\beta_c$						
30/15						
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27	

Results

Mode	UL Ch No.	Freq. (MHz)	Target MPR	*Meas. MPR	Avg Pwr (dBm)
Subtest 1	9262	1852.4	0	0.7	22.5
	9400	1880.0	0	0.6	22.4
	9538	1907.6	0	1.1	22.1
Subtest 2	9262	1852.4	2	1.1	22.1
	9400	1880.0	2	0.7	22.4
	9538	1907.6	2	1.0	22.1
Subtest 3	9262	1852.4	1	1.1	22.1
	9400	1880.0	1	1.4	21.7
	9538	1907.6	1	1.3	21.9
Subtest 4	9262	1852.4	2	1.6	21.5
	9400	1880.0	2	0.9	22.1
	9538	1907.6	2	1.1	22.1
Subtest 5	9262	1852.4	0	0.2	22.9
	9400	1880.0	0	0.7	22.3
	9538	1907.6	0	0.7	22.4

Note(s):

- KDB 941225 D01 – Body SAR is not required for handsets with HSPA capabilities when the maximum average output of each RF channel with HSUPA/HSDPA active is less than ¼ dB higher than that measured without HSUPA/HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit.
- *: Please refer to the separately attached document *MPR HSUPA Issue_ZNFVS930* for a detailed explanation/justification from the manufacturer on why MPR was not implemented for this particular mode on this device.

9.4. CDMA BC0

Target Power: 24.5 dBm
 Tune-up Tolerance: -1.5 dB / +0.7 dB

1xRTT

CDMA			Avg Pwr (dBm)		
			RC1 - SO55	RC3 - SO55	RC3 - SO32
Band	Ch	Freq. (MHz)	(Loopback)	(Loopback)	(+F-SCH)
BC 0	1013	824.7	25.0	25.0	25.0
	384	836.52	25.0	24.9	25.0
	777	848.31	24.9	24.8	24.7

1xEv-Do Rel. 0

Band	FTAP Rate	RTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC0	307.2 kbps (2 slot, QPSK)	153.6 kbps	1013	824.7	24.9
			384	836.52	24.9
			777	848.31	24.8

1xEv-Do Rev. A

Band	FETAP Traffic Format	RETAP Data Payload Size	Channel	f (MHz)	Avg Pwr (dBm)
BC0	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	1013	824.7	25.0
			384	836.52	25.0
			777	848.31	24.9

9.5. CDMA BC1

Target Power: 23.7 dBm

Tune-up Tolerance: -1.5 dB / +0.7 dB

1xRTT

CDMA			Avg Pwr (dBm)		
			RC1 - SO55	RC3 - SO55	RC3 - SO32
Band	Ch	Freq. (MHz)	(Loopback)	(Loopback)	(+F-SCH)
BC 1	25	1851.25	24.1	24.1	24.1
	600	1880	24.1	24.1	24.1
	1175	1908.75	23.7	23.7	23.7

1xEv-Do Rel. 0

Band	FTAP Rate	RTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC1	307.2 kbps (2 slot, QPSK)	153.6 kbps	25	1851.25	24.4
			600	1880	24.4
			1175	1908.75	24.3

1xEv-Do Rev. A

Band	FETAP Traffic Format	RETAP Data Payload Size	Channel	f (MHz)	Avg Pwr (dBm)
BC1	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	25	1851.25	24.4
			600	1880	24.4
			1175	1908.75	24.3

9.6. LTE Band 13

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
NS_04	6.6.2.2.2	41	20	>10	≤ 1
			5	>6	≤ 1
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

Target Power: 22.5 dBm

Tune-up Tolerance: -1.5 dB / +0.7 dB

Band 13

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
10	23230	782.0	QPSK	25	12	1	0	22.6
				1	0	0	0	22.4
				1	49	0	1	21.9
				50	0	1	1	21.7
			16QAM	25	12	2	1	22.0
				1	0	1	1	21.8
				1	49	1	2	20.6
				50	0	2	2	20.8

9.7. Power Reduction for SV-DO

CDMA 1xRTT (BC0) to 1xEVDO (BC0 & BC1)

Agilent 8960		R&S CMU 200					
CDMA BC0 1xRTT		BC0 1xEVDO			BC1 1xEVDO		
		Output Power [dBm]			Output Power [dBm]		
Ch. #	Output Power [dBm]	1013	384	777	25	600	1175
1013	15	24.8	25.0	24.9	23.8	23.9	23.6
	16	19.8	19.9	20.0	18.8	18.8	18.7
384	15	24.8	24.9	24.8	23.8	23.8	23.6
	16	19.9	20.0	20.0	18.8	18.7	18.6
777	15	24.8	25.0	25.0	23.8	23.7	23.6
	16	19.9	20.1	20.0	18.7	18.7	18.6

CDMA 1xRTT (BC1) to 1xEVDO (BC0 & BC1)

Agilent 8960		R&S CMU 200					
CDMA BC1 1xRTT		BC0 1xEVDO			BC1 1xEVDO		
		Output Power [dBm]			Output Power [dBm]		
Ch. #	Output Power [dBm]	1013	384	777	25	600	1175
25	15	24.8	24.9	24.8	23.8	23.8	23.6
	16	19.9	20.0	19.8	18.8	18.7	18.7
600	15	24.8	25.0	24.8	23.8	23.9	23.6
	16	19.8	20.0	19.7	18.8	18.8	18.6
1175	15	24.8	25.0	24.9	23.8	23.9	23.6
	16	19.7	20.0	19.9	18.7	18.9	18.6

9.8. Power Reduction for SV-LTE Band 13

CDMA 1xRTT (BC0) to SV-LTE Band 13 (QPSK, 16QAM)

Agilent 8960		R&S CMW 500							
CDMA BC0 1xRTT		QPSK				16QAM			
		Output Power [dBm]				Output Power [dBm]			
Ch. #	Output Power [dBm]	1RB, 0 offset	1RB 49 offset	25RB 12 offset	50RB	1RB, 0 offset	1RB 49 offset	25RB 12 offset	50RB
1013	18	22.5	22.3	21.7	21.6	21.9	21.8	20.8	20.6
	19	18.5	18.2	18.6	18.7	18.9	18.8	18.8	18.5
384	18	22.4	22.3	21.7	21.6	21.8	21.8	20.8	20.5
	19	18.4	18.3	18.5	18.6	18.8	18.7	18.7	18.5
777	18	22.6	22.3	21.8	21.6	21.9	21.7	20.8	20.6
	19	18.5	18.3	18.6	18.7	18.8	18.7	18.8	18.6

CDMA 1xRTT (BC1) to SV-LTE Band 13 (QPSK, 16QAM)

Agilent 8960		R&S CMW 500							
CDMA BC1 1xRTT		QPSK				16QAM			
		Output Power [dBm]				Output Power [dBm]			
Ch. #	Output Power [dBm]	1RB, 0 offset	1RB 49 offset	25RB 12 offset	50RB	1RB, 0 offset	1RB 49 offset	25RB 12 offset	50RB
25	18	22.5	22.3	21.8	21.7	21.9	21.7	20.7	20.6
	19	18.6	18.3	18.7	18.7	18.8	18.8	18.8	18.6
600	18	22.4	22.3	21.7	21.7	21.8	21.7	20.8	20.6
	19	18.5	18.3	18.7	18.6	18.8	18.7	18.8	18.7
1175	18	22.6	22.4	21.8	21.7	21.7	21.8	20.8	20.5
	19	18.5	18.4	18.7	18.8	18.8	18.8	18.9	18.6

9.9. Wi-Fi (2.4 GHz band)

Band (MHz)	Mode	Ch #	Freq. (MHz)	Measured Avg Pwr(dBm)	Target Power
2.4	802.11b	1	2412	15.5	16
		6	2437	15.0	
		11	2462	15.2	
	802.11g	1	2412	12.1	12
		6	2437	11.6	
		11	2462	11.6	
	802.11n (HT20)	1	2412	11.3	11
		6	2437	10.8	
		11	2462	11.0	

Note(s):

- 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 802.11a/b channels. As per KDB 248227

9.10. Wi-Fi (5 GHz bands)

Band (MHz)	Mode	Ch #	Freq. (MHz)	Measured Avg Pwr(dBm)	Target Power
5.2	802.11a	36	5180	11.9	12
		40	5200	11.8	
		44	5220	11.4	
		48	5240	11.6	
	802.11n (HT20)	36	5180	10.7	12
		40	5200	10.5	
48		5240	10.6		
5.3	802.11a	52	5260	11.4	12
		56	5280	11.6	
		60	5300	11.5	
		64	5320	11.6	
	802.11n (HT20)	52	5260	10.7	12
		60	5300	10.8	
64		5320	10.7		
5.5	802.11a	100	5500	11.9	12
		104	5520	11.8	
		108	5540	12.0	
		112	5560	11.9	
		116	5580	12.0	
		120	5600	n/a*	
		124	5620	n/a*	
		128	5640	n/a*	
		132	5660	11.9	
		136	5680	11.8	
	140	5700	11.9		
	802.11n (HT20)	100	5500	10.9	11
		120	5600	n/a*	
		140	5700	10.8	
5.8	802.11a	149	5745	11.9	11
		153	5765	11.5	
		157	5785	11.6	
		161	5805	11.6	
		165	5825	11.9	
	802.11n (HT20)	149	5745	10.9	11
		157	5785	10.5	
		165	5825	10.8	

Note(s):

- SAR is not required for 802.HT20 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11a/b channels. As per KDB 248227
- *: These channels were disabled

9.11. Bluetooth

Mode	Channel #	Freq. (MHz)	Conducted Avg Power	
			(dBm)	(mW)
V2.1 + EDR, GFSK	0	2402	7.8	6.03
	39	2441	7.9	6.17
	78	2480	8.5	7.08
V2.1 + EDR, $\pi/4$ DQPSK	0	2402	7.2	5.25
	39	2441	6.5	4.47
	78	2480	7.0	5.01
V2.1 + EDR, 8-DPSK	0	2402	6.2	4.17
	39	2441	6.4	4.37
	78	2480	6.9	4.90
V4.0 LE, GFSK	0	2402	7.3	5.38
	39	2441	8.0	6.32
	78	2480	7.5	5.56

Note(s):

According to KDB 648474, Table 2, Unlicensed transmitters

When there is simultaneous transmission, Stand-alone SAR not required due to

- Output $\leq 2 \cdot P_{Ref}$ (13.8dBm / 24 mW) and antenna is ≥ 5.0 cm from other antennas
- Output $\leq P_{Ref}$ (10.79dBm / 12 mW) and antenna is ≥ 2.5 cm from other antennas
- Output $\leq P_{Ref}$ (10.79dBm / 12 mW) and antenna is < 2.5 cm from other antennas

10. Tissue Dielectric Properties

IEEE Std 1528-2003 Table 2

Target Frequency (MHz)	Head	
	ϵ_r	σ (S/m)
300	45.3	0.87
450	43.5	0.87
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800 – 2000	40.0	1.40
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40

FCC OET Bulletin 65 Supplement C 01-01

Target Frequency (MHz)	Head		Body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

10.2. Tissue Dielectric Parameter Check Results

Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
5/21/2012	Head 1900	e'	40.0960	Relative Permittivity (ϵ_r):	40.10	40.00	0.24	5
		e"	13.3750	Conductivity (σ):	1.41	1.40	0.93	5
	Head 1850	e'	40.3112	Relative Permittivity (ϵ_r):	40.31	40.00	0.78	5
		e"	13.2114	Conductivity (σ):	1.36	1.40	-2.93	5
	Head 1880	e'	40.1819	Relative Permittivity (ϵ_r):	40.18	40.00	0.45	5
		e"	13.3113	Conductivity (σ):	1.39	1.40	-0.61	5
	Head 1910	e'	40.0511	Relative Permittivity (ϵ_r):	40.05	40.00	0.13	5
		e"	13.4075	Conductivity (σ):	1.42	1.40	1.71	5
5/21/2012	Body 1900	e'	51.1592	Relative Permittivity (ϵ_r):	51.16	53.30	-4.02	5
		e"	14.5277	Conductivity (σ):	1.53	1.52	0.97	5
	Body 1850	e'	51.3557	Relative Permittivity (ϵ_r):	51.36	53.30	-3.65	5
		e"	14.3566	Conductivity (σ):	1.48	1.52	-2.84	5
	Body 1880	e'	51.2143	Relative Permittivity (ϵ_r):	51.21	53.30	-3.91	5
		e"	14.4543	Conductivity (σ):	1.51	1.52	-0.59	5
	Body 1910	e'	51.1408	Relative Permittivity (ϵ_r):	51.14	53.30	-4.05	5
		e"	14.5635	Conductivity (σ):	1.55	1.52	1.75	5
5/22/2012	Head 1900	e'	40.1737	Relative Permittivity (ϵ_r):	40.17	40.00	0.43	5
		e"	13.2128	Conductivity (σ):	1.40	1.40	-0.29	5
	Head 1850	e'	40.3689	Relative Permittivity (ϵ_r):	40.37	40.00	0.92	5
		e"	13.0583	Conductivity (σ):	1.34	1.40	-4.05	5
	Head 1880	e'	40.2516	Relative Permittivity (ϵ_r):	40.25	40.00	0.63	5
		e"	13.1502	Conductivity (σ):	1.37	1.40	-1.81	5
	Head 1910	e'	40.1303	Relative Permittivity (ϵ_r):	40.13	40.00	0.33	5
		e"	13.2441	Conductivity (σ):	1.41	1.40	0.47	5
5/22/2012	Body 1900	e'	50.6957	Relative Permittivity (ϵ_r):	50.70	53.30	-4.89	5
		e"	14.5509	Conductivity (σ):	1.54	1.52	1.13	5
	Body 1850	e'	50.8698	Relative Permittivity (ϵ_r):	50.87	53.30	-4.56	5
		e"	14.3859	Conductivity (σ):	1.48	1.52	-2.64	5
	Body 1880	e'	50.7632	Relative Permittivity (ϵ_r):	50.76	53.30	-4.76	5
		e"	14.4832	Conductivity (σ):	1.51	1.52	-0.40	5
	Body 1910	e'	50.6652	Relative Permittivity (ϵ_r):	50.67	53.30	-4.94	5
		e"	14.5828	Conductivity (σ):	1.55	1.52	1.89	5
5/23/2012	Head 1900	e'	40.2774	Relative Permittivity (ϵ_r):	40.28	40.00	0.69	5
		e"	13.4203	Conductivity (σ):	1.42	1.40	1.27	5
	Head 1850	e'	40.4766	Relative Permittivity (ϵ_r):	40.48	40.00	1.19	5
		e"	13.2578	Conductivity (σ):	1.36	1.40	-2.59	5
	Head 1880	e'	40.3571	Relative Permittivity (ϵ_r):	40.36	40.00	0.89	5
		e"	13.3552	Conductivity (σ):	1.40	1.40	-0.28	5
	Head 1910	e'	40.2356	Relative Permittivity (ϵ_r):	40.24	40.00	0.59	5
		e"	13.4565	Conductivity (σ):	1.43	1.40	2.08	5

Tissue Dielectric Parameter Check Results (continued)

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
05/23/2012	Body 1900	e'	52.6537	Relative Permittivity (ϵ_r):	52.65	53.30	-1.21	5
		e''	14.2062	Conductivity (σ):	1.50	1.52	-1.26	5
	Body 1850	e'	52.8097	Relative Permittivity (ϵ_r):	52.81	53.30	-0.92	5
		e''	14.0486	Conductivity (σ):	1.45	1.52	-4.93	5
	Body 1880	e'	52.7107	Relative Permittivity (ϵ_r):	52.71	53.30	-1.11	5
		e''	14.1356	Conductivity (σ):	1.48	1.52	-2.79	5
Body 1910	e'	52.6244	Relative Permittivity (ϵ_r):	52.62	53.30	-1.27	5	
	e''	14.2411	Conductivity (σ):	1.51	1.52	-0.50	5	
05/23/2012	Body 835	e'	54.1335	Relative Permittivity (ϵ_r):	54.13	55.20	-1.93	5
		e''	21.7621	Conductivity (σ):	1.01	0.97	4.16	5
	Body 820	e'	54.3258	Relative Permittivity (ϵ_r):	54.33	55.28	-1.72	5
		e''	21.8069	Conductivity (σ):	0.99	0.97	2.67	5
	Body 850	e'	53.9578	Relative Permittivity (ϵ_r):	53.96	55.16	-2.17	5
		e''	21.7074	Conductivity (σ):	1.03	0.99	3.93	5
05/24/2012	Head 835	e'	41.4222	Relative Permittivity (ϵ_r):	41.42	41.50	-0.19	5
		e''	18.9267	Conductivity (σ):	0.88	0.90	-2.36	5
	Head 825	e'	41.5570	Relative Permittivity (ϵ_r):	41.56	41.58	-0.05	5
		e''	18.9775	Conductivity (σ):	0.87	0.90	-3.15	5
	Head 850	e'	41.2219	Relative Permittivity (ϵ_r):	41.22	41.50	-0.67	5
		e''	18.9142	Conductivity (σ):	0.89	0.92	-2.30	5
05/24/2012	Head 750	e'	41.0978	Relative Permittivity (ϵ_r):	41.10	41.96	-2.06	5
		e''	21.1770	Conductivity (σ):	0.88	0.89	-1.11	5
	Head 780	e'	40.7116	Relative Permittivity (ϵ_r):	40.71	41.81	-2.62	5
		e''	20.9734	Conductivity (σ):	0.91	0.90	1.59	5
	Head 790	e'	40.5725	Relative Permittivity (ϵ_r):	40.57	41.76	-2.84	5
		e''	20.9136	Conductivity (σ):	0.92	0.90	2.51	5
05/25/2012	Body 750	e'	56.3133	Relative Permittivity (ϵ_r):	56.31	55.55	1.38	5
		e''	22.9812	Conductivity (σ):	0.96	0.96	-0.49	5
	Body 775	e'	56.0734	Relative Permittivity (ϵ_r):	56.07	55.45	1.12	5
		e''	22.7879	Conductivity (σ):	0.98	0.97	1.76	5
	Body 790	e'	55.9346	Relative Permittivity (ϵ_r):	55.93	55.39	0.98	5
		e''	22.6646	Conductivity (σ):	1.00	0.97	3.05	5
05/30/2012	Body 2450	e'	52.2371	Relative Permittivity (ϵ_r):	52.24	52.70	-0.88	5
		e''	14.4044	Conductivity (σ):	1.96	1.95	0.63	5
	Body 2410	e'	52.4019	Relative Permittivity (ϵ_r):	52.40	52.76	-0.68	5
		e''	14.2162	Conductivity (σ):	1.91	1.91	-0.13	5
	Body 2435	e'	52.2828	Relative Permittivity (ϵ_r):	52.28	52.73	-0.84	5
		e''	14.3330	Conductivity (σ):	1.94	1.93	0.49	5
Body 2475	e'	52.1893	Relative Permittivity (ϵ_r):	52.19	52.67	-0.91	5	
	e''	14.5064	Conductivity (σ):	2.00	1.99	0.56	5	

Tissue Dielectric Parameter Check Results (continued)

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)		
05/31/2012	Head 2450	e'	39.1047	Relative Permittivity (ϵ_r):	39.10	39.20	-0.24	5	
		e"	13.3845	Conductivity (σ):	1.82	1.80	1.30	5	
	Head 2410	e'	39.2347	Relative Permittivity (ϵ_r):	39.23	39.28	-0.11	5	
		e"	13.2589	Conductivity (σ):	1.78	1.76	0.93	5	
	Head 2435	e'	39.1413	Relative Permittivity (ϵ_r):	39.14	39.24	-0.24	5	
		e"	13.3454	Conductivity (σ):	1.81	1.78	1.37	5	
	Head 2475	e'	39.0049	Relative Permittivity (ϵ_r):	39.00	39.17	-0.42	5	
		e"	13.4867	Conductivity (σ):	1.86	1.83	1.59	5	
05/31/2012	Body 835	e'	53.6824	Relative Permittivity (ϵ_r):	53.68	55.20	-2.75	5	
		e"	21.1172	Conductivity (σ):	0.98	0.97	1.08	5	
	Body 820	e'	53.8549	Relative Permittivity (ϵ_r):	53.85	55.28	-2.57	5	
		e"	21.1864	Conductivity (σ):	0.97	0.97	-0.26	5	
	Body 850	e'	53.5195	Relative Permittivity (ϵ_r):	53.52	55.16	-2.97	5	
		e"	21.0573	Conductivity (σ):	1.00	0.99	0.82	5	
05/31/2012	Body 5180	e'	50.5685	Relative Permittivity (ϵ_r):	50.57	49.05	3.10	10	
		e"	18.3791	Conductivity (σ):	5.29	5.27	0.42	5	
	Body 5200	e'	50.5726	Relative Permittivity (ϵ_r):	50.57	49.02	3.17	10	
		e"	18.4281	Conductivity (σ):	5.33	5.29	0.63	5	
	Body 5500	e'	50.0281	Relative Permittivity (ϵ_r):	50.03	48.61	2.91	10	
		e"	18.8571	Conductivity (σ):	5.77	5.64	2.17	5	
	Body 5800	e'	49.4051	Relative Permittivity (ϵ_r):	49.41	48.20	2.50	10	
		e"	19.2714	Conductivity (σ):	6.21	6.00	3.58	5	
	Body 5825	e'	49.3865	Relative Permittivity (ϵ_r):	49.39	48.20	2.46	10	
		e"	19.4041	Conductivity (σ):	6.28	6.00	4.75	5	
	06/01/2012	Body 5180	e'	51.1522	Relative Permittivity (ϵ_r):	51.15	49.05	4.29	10
			e"	17.4199	Conductivity (σ):	5.02	5.27	-4.82	5
Body 5200		e'	51.1093	Relative Permittivity (ϵ_r):	51.11	49.02	4.26	10	
		e"	17.4100	Conductivity (σ):	5.03	5.29	-4.93	5	
Body 5500		e'	50.6290	Relative Permittivity (ϵ_r):	50.63	48.61	4.15	10	
		e"	17.7352	Conductivity (σ):	5.42	5.64	-3.91	5	
Body 5800		e'	50.1781	Relative Permittivity (ϵ_r):	50.18	48.20	4.10	10	
		e"	17.9727	Conductivity (σ):	5.80	6.00	-3.40	5	
Body 5825		e'	50.1547	Relative Permittivity (ϵ_r):	50.15	48.20	4.06	10	
		e"	17.9379	Conductivity (σ):	5.81	6.00	-3.17	5	
06/01/2012	Body 1900	e'	52.4265	Relative Permittivity (ϵ_r):	52.43	53.30	-1.64	5	
		e"	14.5783	Conductivity (σ):	1.54	1.52	1.32	5	
	Body 1850	e'	52.5425	Relative Permittivity (ϵ_r):	52.54	53.30	-1.42	5	
		e"	14.4197	Conductivity (σ):	1.48	1.52	-2.41	5	
	Body 1880	e'	52.4882	Relative Permittivity (ϵ_r):	52.49	53.30	-1.52	5	
		e"	14.5308	Conductivity (σ):	1.52	1.52	-0.07	5	
	Body 1910	e'	52.3783	Relative Permittivity (ϵ_r):	52.38	53.30	-1.73	5	
		e"	14.6042	Conductivity (σ):	1.55	1.52	2.04	5	

Tissue Dielectric Parameter Check Results (continued)

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
06/02/2012	Body 750	e'	55.9917	Relative Permittivity (ϵ_r):	55.99	55.55	0.80	5
		e"	22.8716	Conductivity (σ):	0.95	0.96	-0.96	5
	Body 775	e'	55.7587	Relative Permittivity (ϵ_r):	55.76	55.45	0.56	5
		e"	22.6601	Conductivity (σ):	0.98	0.97	1.19	5
	Body 790	e'	55.6118	Relative Permittivity (ϵ_r):	55.61	55.39	0.40	5
		e"	22.5384	Conductivity (σ):	0.99	0.97	2.47	5
06/04/2012	Head 5180	e'	35.9300	Relative Permittivity (ϵ_r):	35.93	36.01	-0.23	10
		e"	16.5687	Conductivity (σ):	4.77	4.63	3.06	5
	Head 5200	e'	35.9151	Relative Permittivity (ϵ_r):	35.92	35.99	-0.21	10
		e"	16.5777	Conductivity (σ):	4.79	4.65	3.06	5
	Head 5500	e'	35.5003	Relative Permittivity (ϵ_r):	35.50	35.65	-0.41	10
		e"	16.6468	Conductivity (σ):	5.09	4.96	2.68	5
	Head 5800	e'	35.0505	Relative Permittivity (ϵ_r):	35.05	35.30	-0.71	10
		e"	16.6888	Conductivity (σ):	5.38	5.27	2.13	5

11. System Performance Check

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 $\pm 10\%$.

11.1. System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ± 0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
 For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the 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.

11.2. Reference SAR Values for System Performance Check

The reference SAR values can be obtained from the calibration certificate of system validation dipoles

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	SAR Measured (mW/g)		
				1g/10g	Head	Body
D750V3	1019	2/9/12	750	1g	8.64	8.84
				10g	5.64	5.84
D835V2	4d002	3/6/12	835	1g	9.24	9.64
				10g	6.04	6.32
D1900V2	5d043	11/10/11	1900	1g	40.8	42.0
				10g	21.2	22.0
D2450V2	748	2/7/12	2450	1g	53.6	50.8
				10g	24.8	23.6
D5GHzV2	1075	2/14/12	5200	1g	79.7	72.8
				10g	22.9	20.5
			5500	1g	86.1	77.7
				10g	24.5	21.7
			5800	1g	79.4	72.4
				10g	22.7	20.2

11.3. System Performance Check Results

Date Tested	System Dipole		T.S. Liquid	SAR Measured (Normalized to 1 W)		Target (Ref. Value)	Delta (%)	Tolerance (%)
	Type	Serial No.		1g	10g			
5/21/2012	D1900V2	5d043	Head	1g	40.20	40.8	-1.47	±10
				10g	21.00	21.2	-0.94	
5/21/2012	D1900V2	5d043	Body	1g	39.70	42	-5.48	±10
				10g	20.70	22	-5.91	
5/22/2012	D1900V2	5d043	Head	1g	37.50	40.8	-8.09	±10
				10g	19.60	21.2	-7.55	
5/22/2012	D1900V2	5d043	Body	1g	41.60	42	-0.95	±10
				10g	21.90	22	-0.45	
5/23/2012	D1900V2	5d043	Head	1g	41.40	40.8	1.47	±10
				10g	21.80	21.2	2.83	
5/23/2012	D1900V2	5d043	Body	1g	41.60	42	-0.95	±10
				10g	21.80	22	-0.91	
5/23/2012	D835V2	4d002	Body	1g	10.10	9.64	4.77	±10
				10g	6.64	6.32	5.06	
5/24/2012	D835V2	4d002	Head	1g	8.96	9.24	-3.03	±10
				10g	6.50	6.04	7.62	
5/24/2012	D750V3	1019	Head	1g	8.53	8.64	-1.27	±10
				10g	5.33	5.64	-5.50	
5/25/2012	D750V3	1019	Body	1g	9.48	8.84	7.24	±10
				10g	6.01	5.84	2.91	
5/30/2012	D2450V2	748	Body	1g	50.60	50.8	-0.39	±10
				10g	23.20	23.6	-1.69	
5/31/2012	D2450V2	748	Head	1g	53.70	53.6	0.19	±10
				10g	24.20	24.8	-2.42	
5/31/2012	D835V2	4d002	Body	1g	9.90	9.64	2.70	±10
				10g	6.49	6.32	2.69	
5/31/2012	D5GHzV2 5.2GHz	1075	Body	1g	77.00	72.8	5.77	±10
				10g	21.70	20.5	5.85	
6/1/2012	D5GHzV2 5.5GHz	1075	Body	1g	76.50	77.7	-1.54	±10
				10g	20.90	21.7	-3.69	
6/1/2012	D5GHzV2 5.8GHz	1075	Body	1g	72.60	72.4	0.28	±10
				10g	20.30	20.2	0.50	
6/1/2012	D1900V2	5d043	Body	1g	42.00	42	0.00	±10
				10g	22.10	22	0.45	
6/2/2012	D750V3	1019	Body	1g	8.73	8.84	-1.24	±10
				10g	5.63	5.84	-3.60	
6/4/2012	D5GHzV2 5.2GHz	1075	Head	1g	85.80	79.7	7.65	±10
				10g	24.70	22.9	7.86	
	D5GHzV2 5.5GHz	1075	Head	1g	87.30	86.1	1.39	±10
				10g	25.20	24.5	2.86	
	D5GHzV2 5.8GHz	1075	Head	1g	84.40	79.4	6.30	±10
				10g	23.80	22.7	4.85	

12. SAR Test Results

All SAR tests were performed with the normal battery cover with NFC (without the wireless charging hardware). Testing was repeated with the wireless charging battery cover for the highest SAR measured from normal battery cover, as per KDB 648474 D03 Handset Wireless Battery Chargers v01.

12.1. GSM850

12.1.1. Head SAR

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	GSM	128	824.20	32.9			1
		190	836.60	33.0	0.356	0.315	
		251	848.80	32.8			1
Left Tilt (15°)	GSM	128	824.20	32.9			1
		190	836.60	33.0	0.260	0.226	
		251	848.80	32.8			1
Right Touch	GSM	128	824.20	32.9			1
		190	836.60	33.0	0.428	0.367	
		190	836.60	33.0	0.427	0.362	2
		251	848.80	32.8			1
Right Tilt (15°)	GSM	128	824.20	32.9			1
		190	836.60	33.0	0.241	0.213	
		251	848.80	32.8			1

Note(s):

1. According to FCC "Public Notice DA 02-1438" by the SCC-34/SC-2, when the SAR measured for the middle channel is < 50% of the SAR limit, testing for the low and high channel is optional.
2. With wireless charging battery cover.

12.1.2. Body & Hotspot SAR

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
						1-g	10-g	
Rear	GPRS 2 slots	10	128	824.20	32.3	0.902	0.642	
			128	824.20	32.3	0.780	0.542	2
			128	824.20	32.3	0.826	0.586	3
			190	836.60	32.4	0.868	0.616	
			251	848.80	32.3	0.895	0.629	
Front	GPRS 2 slots	10	128	824.20	32.3	0.852	0.65	
			190	836.60	32.4	0.861	0.660	
			251	848.80	32.3	0.863	0.661	
Edge 1	GPRS 2 slots	10	128	824.20	32.3			4
			190	836.60	32.4			4
			251	848.80	32.3			4
Edge 2	GPRS 2 slots	10	128	824.20	32.3			1
			190	836.60	32.4	0.675	0.469	
			251	848.80	32.3			1
Edge 3	GPRS 2 slots	10	128	824.20	32.3			1
			190	836.60	32.4	0.184	0.118	
			251	848.80	32.3			1
Edge 4	GPRS 2 slots	10	128	824.20	32.3			4
			190	836.60	32.4			4
			251	848.80	32.3			4

Note(s):

1. According to FCC "Public Notice DA 02-1438" by the SCC-34/SC-2, when the SAR measured for the middle channel is < 50% of the SAR limit, testing for the low and high channel is optional.
2. With headset attached.
3. With wireless charging battery cover.
4. SAR is not required because the distance from the tested antenna to this edge is greater than 2.5 cm.

12.2. GSM1900

12.2.1. Head SAR

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	GSM	512	1850.2	29.7			1
		661	1880.0	30.0	0.189	0.124	
		810	1909.8	29.7			1
Left Tilt (15°)	GSM	512	1850.2	29.7			1
		661	1880.0	30.0	0.051	0.032	
		810	1909.8	29.7			1
Right Touch	GSM	512	1850.2	29.7			1
		661	1880.0	30.0	0.350	0.220	
		661	1880.0	30.0	0.324	0.202	3
		810	1909.8	29.7			1
Right Tilt (15°)	GSM	512	1850.2	29.7			1
		661	1880.0	30.0	0.079	0.048	
		810	1909.8	29.7			1

12.2.2. Body & Hotspot SAR

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
						1-g	10-g	
Rear	GPRS 2 slots	10	512	1850.2	29.4	0.676	0.406	
			661	1880.0	29.3	0.837	0.490	
			661	1880.0	29.3	0.735	0.420	2
			661	1880.0	29.3	0.860	0.492	3
			810	1909.8	29.5	0.724	0.42	
Front	GPRS 2 slots	10	512	1850.2	29.4			1
			661	1880.0	29.3	0.578	0.346	
			810	1909.8	29.5			1
Edge 1	GPRS 2 slots	10	512	1850.2	29.4			4
			661	1880.0	29.3			4
			810	1909.8	29.5			4
Edge 2	GPRS 2 slots	10	512	1850.2	29.4			1
			661	1880.0	29.3	0.388	0.234	
			810	1909.8	29.5			1
Edge 3	GPRS 2 slots	10	512	1850.2	29.4			1
			661	1880.0	29.3	0.298	0.172	
			810	1909.8	29.5			1
Edge 4	GPRS 2 slots	10	512	1850.2	29.4			4
			661	1880.0	29.3			4
			810	1909.8	29.5			4

Note(s):

1. According to FCC "Public Notice DA 02-1438" by the SCC-34/SC-2, when the SAR measured for the middle channel is < 50% of the SAR limit, testing for the low and high channel is optional.
2. With headset attached.
3. With wireless charging battery cover.
4. SAR is not required because the distance from the tested antenna to this edge is greater than 2.5 cm.

12.3. WCDMA (UMTS) Band II

Test mode reduction considerations

Body SAR is not required for handsets with HSPA capabilities when the maximum average output of each RF channel with HSUPA/HSDPA active is less than ¼ dB higher than that measured without HSUPA/HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit as per KDB 941225 D01

12.3.1. Head SAR

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	Rel 99 RMC 12.2kbps	9262	1852.4	23.0			1
		9400	1880.0	23.0	0.365	0.227	
		9400	1880.0	23.0	0.374	0.233	2
		9538	1907.6	23.0			1
Left Tilt (15°)	Rel 99 RMC 12.2kbps	9262	1852.4	23.0			1
		9400	1880.0	23.0	0.154	0.084	
		9538	1907.6	23.0			1
Right Touch	Rel 99 RMC 12.2kbps	9262	1852.4	23.0			1
		9400	1880.0	23.0	0.191	0.126	
		9538	1907.6	23.0			1
Right Tilt (15°)	Rel 99 RMC 12.2kbps	9262	1852.4	23.0			1
		9400	1880.0	23.0	0.174	0.107	
		9538	1907.6	23.0			1

Note(s):

1. According to FCC "Public Notice DA 02-1438" by the SCC-34/SC-2, when the SAR measured for the middle channel is < 50% of the SAR limit, testing for the low and high channel is optional.
2. With wireless charging battery cover.

12.3.2. Body & Hotspot SAR

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
						1-g	10-g	
Rear	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.0			1
			9400	1880.0	23.0	0.630	0.398	
			9400	1880.0	23.0	0.681	0.427	2
			9400	1880.0	23.0	0.621	0.382	3
			9538	1907.6	23.0			1
Front	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.0			1
			9400	1880.0	23.0	0.396	0.243	
			9538	1907.6	23.0			1
Edge 1	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.0			4
			9400	1880.0	23.0			4
			9538	1907.6	23.0			4
Edge 2	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.0			4
			9400	1880.0	23.0			4
			9538	1907.6	23.0			4
Edge 3	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.0			1
			9400	1880.0	23.0	0.301	0.168	
			9538	1907.6	23.0			1
Edge 4	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.0			1
			9400	1880.0	23.0	0.315	0.191	
			9538	1907.6	23.0			1

Note(s):

1. According to FCC "Public Notice DA 02-1438" by the SCC-34/SC-2, when the SAR measured for the middle channel is < 50% of the SAR limit, testing for the low and high channel is optional.
2. With headset attached.
3. With wireless charging battery cover.
4. SAR is not required because the distance from the tested antenna to this edge is greater than 2.5 cm.

12.4. CDMA BC0

12.4.1. 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	824.7	25.0			1
		384	836.5	25.0	0.431	0.382	
		777	848.3	24.9			1
Left Tilt (15°)	1xRTT (RC3 SO55)	1013	824.7	25.0			1
		384	836.5	25.0	0.265	0.233	
		777	848.3	24.9			1
Right Touch	1xRTT (RC3 SO55)	1013	824.7	25.0			1
		384	836.5	25.0	0.479	0.423	
		384	836.5	25.0	0.473	0.414	2
		777	848.3	24.9			1
Right Tilt (15°)	1xRTT (RC3 SO55)	1013	824.7	25.0			1
		384	836.5	25.0	0.315	0.279	
		777	848.3	24.9			1
Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
Left Touch	1xEVDO (Rel. 0)	1013	824.7	24.9			1
		384	836.5	24.9	0.712	0.431	
		384	836.5	24.9	0.719	0.442	2
		777	848.3	24.8			1
Left Tilt (15°)	1xEVDO (Rel. 0)	1013	824.7	24.9			1
		384	836.5	24.9	0.491	0.301	
		777	848.3	24.8			1
Right Touch	1xEVDO (Rel. 0)	1013	824.7	24.9			1
		384	836.5	24.9	0.521	0.376	
		777	848.3	24.8			1
Right Tilt (15°)	1xEVDO (Rel. 0)	1013	824.7	24.9			1
		384	836.5	24.9	0.341	0.245	
		777	848.3	24.8			1

Note(s):

1. According to FCC "Public Notice DA 02-1438" by the SCC-34/SC-2, when the SAR measured for the middle channel is < 50% of the SAR limit, testing for the low and high channel is optional.
2. With wireless charging battery cover.

12.4.2. Body & Hotspot SAR

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
						1-g	10-g	
Rear	1xRTT (RC3 SO32)	10	1013	824.7	25.0			1
			384	836.5	25.0	0.572	0.400	
			384	836.5	25.0	0.585	0.405	2
			384	836.5	25.0	0.510	0.352	3
			777	848.3	24.7			1
Front	1xRTT (RC3 SO32)	10	1013	824.7	25.0			1
			384	836.5	25.0	0.534	0.409	
			777	848.3	24.7			1
Edge 1	1xRTT (RC3 SO32)	10	1013	824.7	25.0			4
			384	836.5	25.0			4
			777	848.3	24.7			4
Edge 2	1xRTT (RC3 SO32)	10	1013	824.7	25.0			1
			384	836.5	25.0	0.382	0.267	
			777	848.3	24.7			1
Edge 3	1xRTT (RC3 SO32)	10	1013	824.7	25.0			1
			384	836.5	25.0	0.152	0.097	
			777	848.3	24.7			1
Edge 4	1xRTT (RC3 SO32)	10	1013	824.7	25.0			4
			384	836.5	25.0			4
			777	848.3	24.7			4

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
						1-g	10-g	
Rear	1xEVDO (Rel. 0)	10	1013	824.7	24.9			1
			384	836.5	24.9	0.556	0.351	
			384	836.5	24.9	0.617	0.424	2
			384	836.5	24.9	0.603	0.382	3
			777	848.3	24.8			1
Front	1xEVDO (Rel. 0)	10	1013	824.7	24.9			1
			384	836.5	24.9	0.209	0.132	
			777	848.3	24.8			1
Edge 1	1xEVDO (Rel. 0)	10	1013	824.7	24.9			1
			384	836.5	24.9	0.139	0.087	
			777	848.3	24.8			1
Edge 2	1xEVDO (Rel. 0)	10	1013	824.7	24.9			1
			384	836.5	24.9	0.403	0.230	
			777	848.3	24.8			1
Edge 3	1xEVDO (Rel. 0)	10	1013	824.7	24.9			4
			384	836.5	24.9			4
			777	848.3	24.8			4
Edge 4	1xEVDO (Rel. 0)	10	1013	824.7	24.9			4
			384	836.5	24.9			4
			777	848.3	24.8			4

Note(s):

1. According to FCC "Public Notice DA 02-1438" by the SCC-34/SC-2, when the SAR measured for the middle channel is < 50% of the SAR limit, testing for the low and high channel is optional.
2. With headset attached.
3. With wireless charging battery cover.
4. SAR is not required because the distance from the tested antenna to this edge is greater than 2.5 cm.

12.5. CDMA BC1

12.5.1. 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	24.1			1
		600	1880.00	24.1	0.289	0.189	
		1175	1908.75	23.7			1
Left Tilt (15°)	1xRTT (RC3 SO55)	25	1851.25	24.1			1
		600	1880.00	24.1	0.081	0.051	
		1175	1908.75	23.7			1
Right Touch	1xRTT (RC3 SO55)	25	1851.25	24.1			
		600	1880.00	24.1	0.541	0.337	
		600	1880.00	24.1	0.577	0.362	3
		1175	1908.75	23.7			
Right Tilt (15°)	1xRTT (RC3 SO55)	25	1851.25	24.1			1
		600	1880.00	24.1	0.127	0.080	
		1175	1908.75	23.7			1
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	24.4			1
		600	1880.00	24.4	0.592	0.371	
		600	1880.00	24.4	0.581	0.362	3
		1175	1908.75	24.3			1
Left Tilt (15°)	1xEVDO (Rel. 0)	25	1851.25	24.4			1
		600	1880.00	24.4	0.103	0.063	
		1175	1908.75	24.3			1
Right Touch	1xEVDO (Rel. 0)	25	1851.25	24.4			1
		600	1880.00	24.4	0.342	0.229	
		1175	1908.75	24.3			1
Right Tilt (15°)	1xEVDO (Rel. 0)	25	1851.25	24.4			1
		600	1880.00	24.4	0.138	0.089	
		1175	1908.75	24.3			1

Note(s):

1. According to FCC "Public Notice DA 02-1438" by the SCC-34/SC-2, when the SAR measured for the middle channel is < 50% of the SAR limit, testing for the low and high channel is optional.
2. With headset attached.
3. With wireless charging battery cover.

12.5.2. Body & Hotspot SAR

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
						1-g	10-g	
Rear	1xRTT (RC3 SO32)	10	25	1851.25	24.1	0.738	0.432	
			600	1880.00	24.1	0.826	0.483	
			600	1880.00	24.1	0.910	0.536	2
			600	1880.00	24.1	0.808	0.467	3
			1175	1908.75	23.7	0.740	0.442	
Front	1xRTT (RC3 SO32)	10	25	1851.25	24.1			1
			600	1880.00	24.1	0.635	0.372	
			1175	1908.75	23.7			1
Edge 1	1xRTT (RC3 SO32)	10	25	1851.25	24.1			4
			600	1880.00	24.1			4
			1175	1908.75	23.7			4
Edge 2	1xRTT (RC3 SO32)	10	25	1851.25	24.1			1
			600	1880.00	24.1	0.363	0.219	
			1175	1908.75	23.7			1
Edge 3	1xRTT (RC3 SO32)	10	25	1851.25	24.1			1
			600	1880.00	24.1	0.340	0.196	
			1175	1908.75	23.7			1
Edge 4	1xRTT (RC3 SO32)	10	25	1851.25	24.1			4
			600	1880.00	24.1			4
			1175	1908.75	23.7			4
Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
Rear	1xEVDO (Rel. 0)	10	25	1851.25	24.4	0.687	0.424	
			600	1880.00	24.4	0.822	0.502	
			1175	1908.75	24.3	0.913	0.553	
			1175	1908.75	24.3	0.851	0.518	2
			1175	1908.75	24.3	0.855	0.503	3
Front	1xEVDO (Rel. 0)	10	25	1851.25	24.4			1
			600	1880.00	24.4	0.586	0.362	
			1175	1908.75	24.3			1
Edge 1	1xEVDO (Rel. 0)	10	25	1851.25	24.4			4
			600	1880.00	24.4			4
			1175	1908.75	24.3			4
Edge 2	1xEVDO (Rel. 0)	10	25	1851.25	24.4			4
			600	1880.00	24.4			4
			1175	1908.75	24.3			4
Edge 3	1xEVDO (Rel. 0)	10	25	1851.25	24.4			1
			600	1880.00	24.4	0.299	0.172	
			1175	1908.75	24.3			1
Edge 4	1xEVDO (Rel. 0)	10	25	1851.25	24.4			1
			600	1880.00	24.4	0.377	0.228	
			1175	1908.75	24.3			1

Note(s):

1. According to FCC "Public Notice DA 02-1438" by the SCC-34/SC-2, when the SAR measured for the middle channel is < 50% of the SAR limit, testing for the low and high channel is optional.
2. With headset attached.
3. With wireless charging battery cover.
4. SAR is not required because the distance from the tested antenna to this edge is greater than 2.5 cm.

12.6. LTE Band 13

12.6.1. Head SAR

Test Position	Mode	UL Ch #.	Freq. (MHz)	UL RB Allocatio	UL RB Start	MPR	Avg Pwr (dBm)	SAR (mW/g)		Note	
								1-g	10-g		
Left Touch	QPSK	23230	782.0	25	12	1	22.6	0.322	0.235		
				1	0	0	22.4	0.381	0.278		
				1	0	0	22.4	0.390	0.297	2	
				1	49	0	21.9	0.333	0.243		
				50	0	1	21.7			1	
	16QAM	23230	782.0	25	12	1	22.6	0.271	0.197		
				1	0	0	22.4	0.303	0.222		
				1	0	0	22.4	0.307	0.236	2	
				1	49	0	21.9	0.261	0.189		
				50	0	1	21.7			1	
Left Tilt (15°)	QPSK	23230	782.0	25	12	1	22.6	0.184	0.143		
				1	0	0	22.4	0.227	0.177		
				1	49	0	21.9	0.194	0.151		
				50	0	1	21.7			1	
				16QAM	23230	782.0	25	12	1	22.0	0.151
	1	0	0				21.8	0.176	0.138		
	1	49	0				20.6	0.148	0.116		
	50	0	1				20.8			1	
	Right Touch	QPSK	23230				782.0	25	12	1	22.6
				1	0	0		22.4	0.315	0.243	
1				49	0	21.9		0.273	0.202		
50				0	1	21.7				1	
16QAM				23230	782.0	25		12	1	22.0	0.212
		1	0			0	21.8	0.264	0.205		
		1	49			0	20.6	0.236	0.182		
		50	0			1	20.8			1	
		Right Tilt (15°)	QPSK			23230	782.0	25	12	1	22.6
1				0	0			22.4	0.170	0.134	
1	49			0	21.9			0.163	0.128		
50	0			1	21.7					1	
16QAM	23230			782.0	25			12	1	22.0	0.115
			1		0	0	21.8	0.145	0.115		
			1		49	0	20.6	0.140	0.111		
			50		0	1	20.8			1	

Note(s):

1. Testing for 100% RB allocation is not required because the SAR value for 50% RB allocation is $\leq 1.45W/Kg$, as per KDB 941225 D05 SAR for LTE Devices v01
2. With wireless charging battery cover.

12.6.2. Body & Hotspot SAR

Test Position	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocatio	UL RB Start	MPR	Avg Pwr (dBm)	SAR (mW/g)		Note	
									1-g	10-g		
Rear	QPSK	10	23230	782.0	25	12	1	22.6	0.606	0.386		
					1	0	0	22.4	0.681	0.430		
					1	0	0	22.4	0.657	0.411	2	
					1	0	0	22.4	0.611	0.393	3	
					1	49	0	21.9	0.634	0.403		
	50	0	1	21.7			1					
	16QAM	10	23230	782.0	25	12	1	22.6	0.511	0.325		
	1	0	0	22.4	0.576	0.367						
	1	0	0	22.4	0.531	0.330	2					
	1	0	0	22.4	0.486	0.312	3					
1	49	0	21.9	0.560	0.347							
50	0	1	21.7			1						
Front	QPSK	10	23230	782.0	25	12	1	22.6	0.380	0.278		
					1	0	0	22.4	0.431	0.316		
					1	49	0	21.9	0.388	0.283		
					50	0	1	21.7			1	
	16QAM	10	23230	782.0	25	12	1	22.0	0.320	0.234		
	1	0	0	21.8	0.364	0.269						
	1	49	0	20.6	0.319	0.234						
	50	0	1	20.8			1					
	Edge 3	QPSK	10	23230	782.0	25	12	1	22.6	0.206	0.140	
						1	0	0	22.4	0.213	0.145	
1						49	0	21.9	0.260	0.179		
50						0	1	21.7			1	
16QAM		10	23230	782.0	25	12	1	22.0	0.166	0.114		
1		0	0	21.8	0.165	0.112						
1		49	0	20.6	0.198	0.136						
50		0	1	20.8			1					
Edge 4		QPSK	10	23230	782.0	25	12	1	22.6	0.349	0.245	
						1	0	0	22.4	0.402	0.282	
	1					49	0	21.9	0.364	0.256		
	50					0	1	21.7			1	
	16QAM	10	23230	782.0	25	12	1	22.0	0.289	0.202		
	1	0	0	21.8	0.306	0.216						
	1	49	0	20.6	0.284	0.199						
	50	0	1	20.8			1					

Note(s):

1. Testing for 100% RB allocation is not required because the SAR value for 50% RB allocation is $\leq 1.45W/Kg$, as per KDB 941225 D05 SAR for LTE Devices v01
2. With headset attached.
3. With wireless charging battery cover.

12.7. Wi-Fi (2.4 GHz Band)

12.7.1. Head SAR

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	802.11b	1	2412	15.5	0.188	0.091	
		1	2412	15.5	0.205	0.100	3
		6	2437	15.0			1
		11	2462	15.2			1
Left Tilt (15°)	802.11b	1	2412	15.5	0.148	0.069	
		6	2437	15.0			1
		11	2462	15.2			1
Right Touch	802.11b	1	2412	15.5	0.158	0.072	
		6	2437	15.0			1
		11	2462	15.2			1
Right Tilt (15°)	802.11b	1	2412	15.5	0.146	0.072	
		6	2437	15.0			1
		11	2462	15.2			1

12.7.2. Body & Hotspot SAR

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
						1-g	10-g	
Rear	802.11b	10	1	2412	15.5	0.138	0.073	
			1	2412	15.5	0.143	0.071	2
			1	2412	15.5	0.122	0.064	3
			6	2437	15.0			1
			11	2462	15.2			1
Front	802.11b	10	1	2412	15.5	0.052	0.029	
			6	2437	15.0			1
			11	2462	15.2			1
Edge 1	802.11b	10	1	2412	15.5	0.076	0.039	
			6	2437	15.0			1
			11	2462	15.2			1
Edge 2	802.11b	10	1	2412	15.5			4
			6	2437	15.0			4
			11	2462	15.2			4
Edge 3	802.11b	10	1	2412	15.5			4
			6	2437	15.0			4
			11	2462	15.2			4
Edge 4	802.11b	10	1	2412	15.5	0.017	0.008	
			6	2437	15.0			1
			11	2462	15.2			1

Note(s):

- For frequency bands with an operating range of < 100 MHz, when the SAR measured for the highest output power channel within is ≤ 0.8 W/kg, SAR for the remaining channels is not required. Per KDB 447498 1) e) i)
- With headset attached.
- With wireless charging battery cover.
- SAR is not required because the distance from the tested antenna to this edge is greater than 2.5 cm.

12.8. Wi-Fi (5 GHz Bands)

12.8.1. Head SAR

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	802.11a (5.2 GHz)	36	5180	11.9	0.743	0.177	
		36	5180	11.9	0.827	0.193	3
		48	5240	11.6	0.671	0.139	
Left Tilt (15°)		36	5180	11.9	0.585	0.149	
		48	5240	11.6			1
Right Touch		36	5180	11.9	0.654	0.159	
		48	5240	11.6			1
Right Tilt (15°)		36	5180	11.9	0.594	0.152	
		48	5240	11.6			1
Left Touch	802.11a (5.3 GHz)	52	5260	11.4			1
		64	5320	11.6	0.558	0.107	
		64	5320	11.6	0.496	0.090	3
Left Tilt (15°)		52	5260	11.4			1
		64	5320	11.6	0.522	0.091	
Right Touch		52	5260	11.4			1
		64	5320	11.6	0.485	0.118	
Right Tilt (15°)		52	5260	11.4			1
		64	5320	11.6	0.509	0.127	
Left Touch	802.11a (5.5 GHz)	104	5520	11.8			2
		116	5580	12.0	0.498	0.096	
		116	5580	12.0	0.513	0.121	3
		132	5660	11.9			2
		136	5680	11.8			2
Left Tilt (15°)		104	5520	11.8			2
		116	5580	12.0	0.492	0.086	
		132	5660	11.9			2
Right Touch		136	5680	11.8			2
		104	5520	11.8			2
		116	5580	12.0	0.463	0.097	
		132	5660	11.9			2
Right Tilt (15°)		136	5680	11.8			2
		104	5520	11.8			2
		116	5580	12.0	0.437	0.104	
	132	5660	11.9			2	
		136	5680	11.8			2

Note(s):

- For frequency bands with an operating range of < 100 MHz, when the SAR measured for the highest output power channel within is ≤ 0.8 W/kg, SAR for the remaining channels is not required. Per KDB 447498 1) e) i)
- For frequency bands with an operating range of < 200 MHz, when the SAR for the highest output power channel within is ≤ 0.4 W/kg, SAR for the remaining channels is not required. Per KDB 447498 1) e) i)
- With wireless charging battery cover.

Head SAR continued

Test Position	Mode	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	802.11a (5.8 GHz)	149	5745	11.9			1
		157	5785	11.6			1
		165	5825	11.9	0.099	0.030	
		165	5825	11.9	0.153	0.052	3
Left Tilt (15°)		149	5745	11.9			1
		157	5785	11.6			1
		165	5825	11.9	0.064	0.023	
Right Touch		149	5745	11.9			1
		157	5785	11.6			1
		165	5825	11.9	0.076	0.008	
Right Tilt (15°)		149	5745	11.9			1
		157	5785	11.6			1
	165	5825	11.9	0.068	0.020		

Note(s):

1. For frequency bands with an operating range of < 100 MHz, when the SAR measured for the highest output power channel within is ≤ 0.8 W/kg, SAR for the remaining channels is not required. Per KDB 447498 1) e) i)
2. For frequency bands with an operating range of < 200 MHz, when the SAR measured for the highest output power channel within is ≤ 0.4 W/kg, SAR for the remaining channels is not required. Per KDB 447498 1) e) i)
3. With wireless charging battery cover.

12.8.2. Body SAR

Hotspot SAR is not required for WiFi in the 5 GHz Bands as these transmission bands do not support hotspot mode operation.

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note	
						1-g	10-g		
Rear	802.11a (5.2 GHz)	10	36	5180	11.9	0.128	0.038		
			36	5180	11.9	0.089	0.025	3	
			36	5180	11.9	0.166	0.052	4	
			48	5240	11.6			1	
Front		10	36	5180	11.9	0.059	0.019		
			48	5240	11.6			1	
Rear		802.11a (5.3 GHz)	10	52	5260	11.4			
				64	5320	11.6	0.072	0.022	
	64			5320	11.6	0.063	0.021	3	
	64			5320	11.6	0.090	0.028	4	
Front	10		52	5260	11.4				
			64	5320	11.6	0.054	0.016		
Rear	802.11a (5.5 GHz)		10	104	5520	11.8			2
				116	5580	12.0	0.120	0.033	
		116		5580	12.0	0.060	0.024	3	
		116		5580	12.0	0.108	0.035	4	
		132		5660	11.9			2	
		136		5680	11.8			2	
Front		10	104	5520	11.8			2	
			116	5580	12.0	0.101	0.029		
			132	5660	11.9			2	
			136	5680	11.8			2	
			149	5745	11.9			1	
			157	5785	11.6			1	
Rear	802.11a (5.8 GHz)	10	165	5825	11.9	0.031	0.001		
			165	5825	11.9	0.005	0.006	3	
			165	5825	11.9	0.046	0.010	4	
			149	5745	11.9			1	
			157	5785	11.6			1	
Front		10	149	5745	11.9			1	
			165	5825	11.9	0.030	0.005		

Note(s):

1. For frequency bands with an operating range of < 100 MHz, when the SAR measured for the highest output power channel within is ≤ 0.8 W/kg, SAR for the remaining channels is not required. Per KDB 447498 1) e) i)
2. For frequency bands with an operating range of < 200 MHz, when the SAR measured for the highest output power channel within is ≤ 0.4 W/kg, SAR for the remaining channels is not required. Per KDB 447498 1) e) i)
3. With headset attached.
4. With wireless charging battery cover.

13. Summary of Highest SAR Values

Results of highest SAR values for each frequency band and mode

Technology/Band	Test configuration		Mode	Highest 1g SAR (W/kg)
GSM850	Head	Right Touch	GSM	0.428
	Body & Hotspot	Rear	GPRS 2 slot	0.902
GSM1900	Head	Right Touch	GSM	0.350
	Body & Hotspot	Rear	GPRS 2 slot With wireless charging battery cover	0.860
W-CDMA Band II	Head	Left Touch	Rel 99 RMC 12.2kbps With wireless charging battery cover	0.374
	Body & Hotspot	Rear	Rel 99 RMC 12.2kbps with headset	0.681
CDMA BC0	Head	Right Touch	1xRTT (RC3, SO55)	0.479
	Head	Left Touch	1xEVDO (Rel.0) with wireless charging battery cover	0.719
	Body & Hotspot	Rear	1xRTT (RC3, SO32) with headset	0.585
	Body & Hotspot	Rear	1xEVDO (Rel.0) with headset	0.617
CDMA BC1	Head	Right Touch	1xRTT (RC3, SO55) with wireless charging battery cover	0.577
	Head	Left Touch	1xEVDO (Rel.0)	0.592
	Body & Hotspot	Rear	1xRTT (RC3, SO32) with headset	0.910
	Body & Hotspot	Rear	1xEVDO (Rel.0)	0.913
LTE Band 13	Head	Left Touch	10 MHz (QPSK) RB 1/0 with wireless charging battery cover	0.390
	Body & Hotspot	Rear	10 MHz (QPSK) RB 1/0	0.681
WiFi 2.4 GHz	Head	Left Touch	802.11b 1Mbps with wireless charging battery cover	0.205
	Body & Hotspot	Rear	802.11b 1Mbps with headset	0.143
WiFi 5.2 GHz	Head	Left Touch	802.11a 6Mbps with wireless charging battery cover	0.827
	Body	Rear	802.11a 6Mbps with wireless charging battery cover	0.166
WiFi 5.3 GHz	Head	Left Touch	802.11a 6Mbps	0.558
	Body	Rear	802.11a 6Mbps with wireless charging battery cover	0.090
WiFi 5.5 GHz	Head	Left Touch	802.11a 6Mbps with wireless charging battery cover	0.513
	Body	Rear	802.11a 6Mbps	0.120
WiFi 5.8 GHz	Head	Left Touch	802.11a 6Mbps with wireless charging battery cover	0.153
	Body	Rear	802.11a 6Mbps with wireless charging battery cover	0.046

13.1. Scaled SAR Values to the Maximum tune-up Tolerances

The following measured results were scaled to the maximum tune-up tolerance, according to the output power of the channel tested for the highest measured results in each frequency band.

Test Configuration		Mode	Ch #.	Freq. (MHz)	Power (dBm)		SAR (W/kg)	
					Max. tune-up limit	Measured	Measured	Scaled
Head	LeftTouch	GSM850	190	836.6	33.0	33.00	0.356	0.356
Head	Right Touch	GSM850	190	836.6	33.0	33.00	0.428	0.428
Body&Hotspot	Rear	GSM850(GPRS)	128	824.2	32.7	32.30	0.902	0.989
Head	Left Touch	GSM1900	661	1880.0	30.0	30.00	0.189	0.189
Head	Right Touch	GSM1900	661	1880.0	30.0	30.00	0.350	0.350
Body&Hotspot	Rear	GSM1900 (GPRS)	661	1880.0	29.7	29.30	0.860	0.943
Head	Left Touch	W-CDMA BAND II	9400	1880.0	23.2	23.00	0.374	0.392
Head	Right Touch	W-CDMA BAND II	9400	1880.0	23.2	23.00	0.191	0.200
Body&Hotspot	Rear	W-CDMA BAND II	9400	1880.0	23.2	23.00	0.681	0.713
Head	Left Touch	1xRTT (RC3 SO55)	384	836.5	25.2	25.00	0.431	0.451
Head	Right Touch	1xRTT (RC3 SO55)	384	836.5	25.2	25.00	0.479	0.502
Head	Left Touch	1xEVDO (Rel. 0)	384	836.5	25.2	24.90	0.719	0.770
Head	Right Touch	1xEVDO (Rel. 0)	384	836.5	25.2	24.90	0.521	0.558
Body&Hotspot	Rear	1xRTT (RC3 SO32)	384	836.5	25.2	25.00	0.585	0.613
Body&Hotspot	Rear	1xEVDO (Rel. 0)	384	836.5	25.2	24.90	0.617	0.661
Head	Left Touch	1xRTT (RC3 SO55)	600	1880.0	24.4	24.10	0.289	0.310
Head	Right Touch	1xRTT (RC3 SO55)	600	1880.0	24.4	24.10	0.577	0.618
Head	Left Touch	1xEVDO (Rel. 0)	600	1880.0	24.4	24.40	0.592	0.592
Head	Right Touch	1xEVDO (Rel. 0)	600	1880.0	24.4	24.40	0.342	0.342
Body&Hotspot	Rear	1xRTT (RC3 SO32)	600	1880.0	24.4	24.10	0.910	0.975
Body&Hotspot	Rear	1xEVDO (Rel. 0)	1175	1908.8	24.4	24.30	0.913	0.934
Head	Left Touch	10M (QPSK) RB1/0	23230	782.0	23.2	22.40	0.390	0.469
Head	Right Touch	10M (QPSK) RB1/0	23230	782.0	23.2	22.40	0.315	0.379
Body&Hotspot	Rear	10M (QPSK) RB1/0	23230	782.0	23.2	22.40	0.681	0.819
Head	Left Touch	802.11b	1	2412.0	16.0	15.50	0.205	0.230
Head	Right Touch	802.11b	1	2412.0	16.0	15.50	0.158	0.177
Body&Hotspot	Rear	802.11b	1	2412.0	16.0	15.50	0.143	0.160
Head	Left Touch	802.11a	36	5180.0	12.0	11.90	0.827	0.846
Head	Right Touch	802.11a	36	5180.0	12.0	11.90	0.654	0.669
Body	Rear	802.11a	36	5180.0	12.0	11.90	0.166	0.170
Head	Left Touch	802.11a	64	5320.0	12.0	11.60	0.558	0.612
Head	Right Touch	802.11a	64	5320.0	12.0	11.60	0.485	0.532
Body	Rear	802.11a	64	5320.0	12.0	11.60	0.090	0.099
Head	Left Touch	802.11a	116	5580.0	12.0	12.00	0.513	0.513
Head	Right Touch	802.11a	116	5580.0	12.0	12.00	0.463	0.463
Body	Rear	802.11a	116	5580.0	12.0	12.00	0.120	0.120
Head	Left Touch	802.11a	165	5825.0	11.0	11.90	0.153	0.124
Head	Right Touch	802.11a	165	5825.0	11.0	11.90	0.076	0.062
Body	Rear	802.11a	165	5825.0	11.0	11.90	0.046	0.037

13.2. SAR Plots (from Summary of Highest SAR Values)

Test Laboratory: UL CCS SAR Lab B Date: 5/24/2012

GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.00018; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.882$ mho/m; $\epsilon_r = 41.4$; $\rho = 1000$ kg/m³
DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(8.61, 8.61, 8.61); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

Right/Touch_GSM_Ch 190/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (measured) = 0.440 mW/g

Right/Touch_GSM_Ch 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

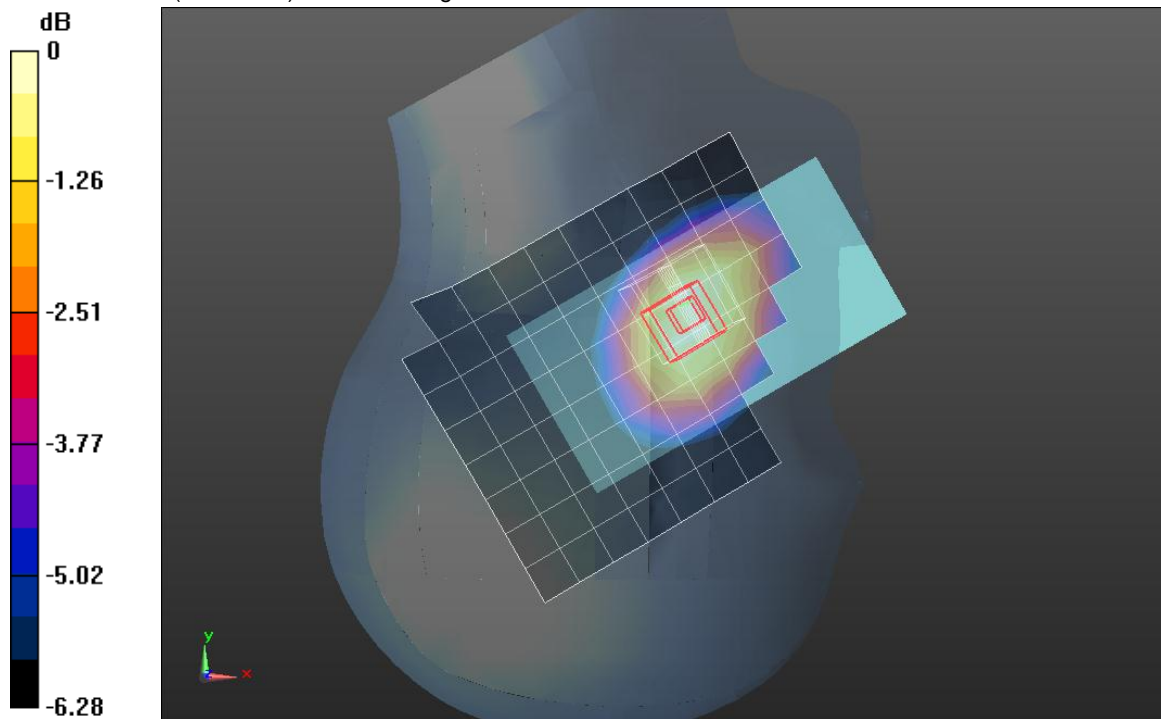
Reference Value = 22.855 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.4880

SAR(1 g) = 0.428 mW/g; SAR(10 g) = 0.367 mW/g

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

Maximum value of SAR (measured) = 0.453 mW/g



0 dB = 0.450mW/g = -6.94 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/24/2012

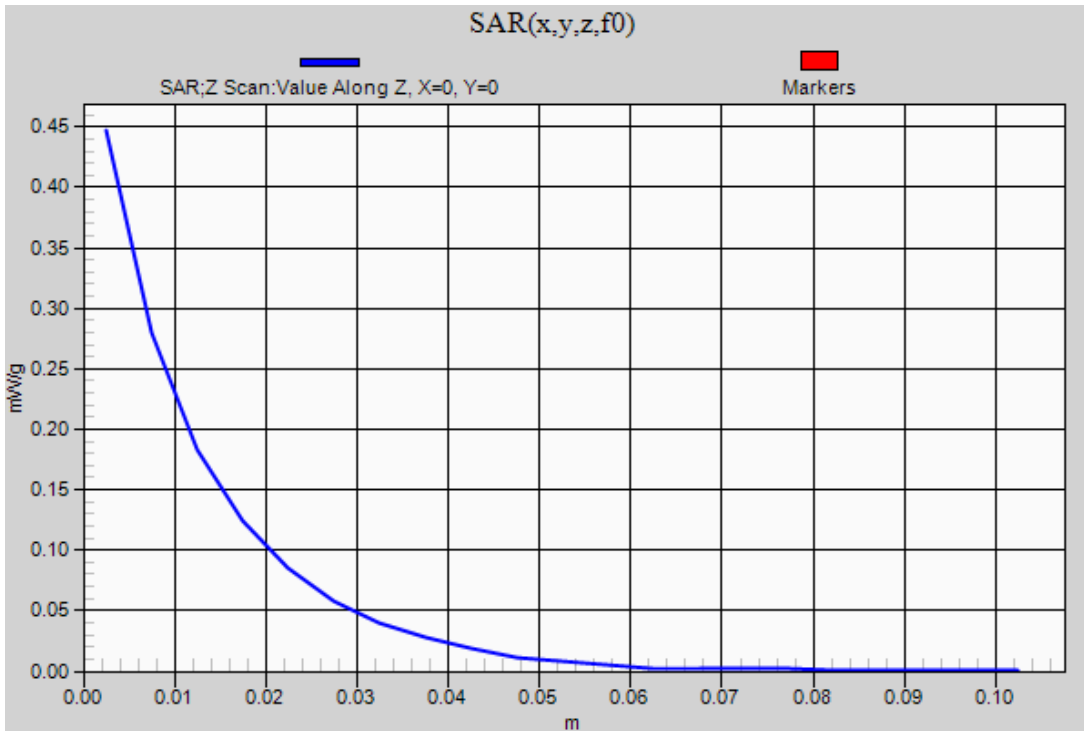
GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.00018

Right/Touch_GSM_Ch 190/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.439 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/23/2012

GSM850

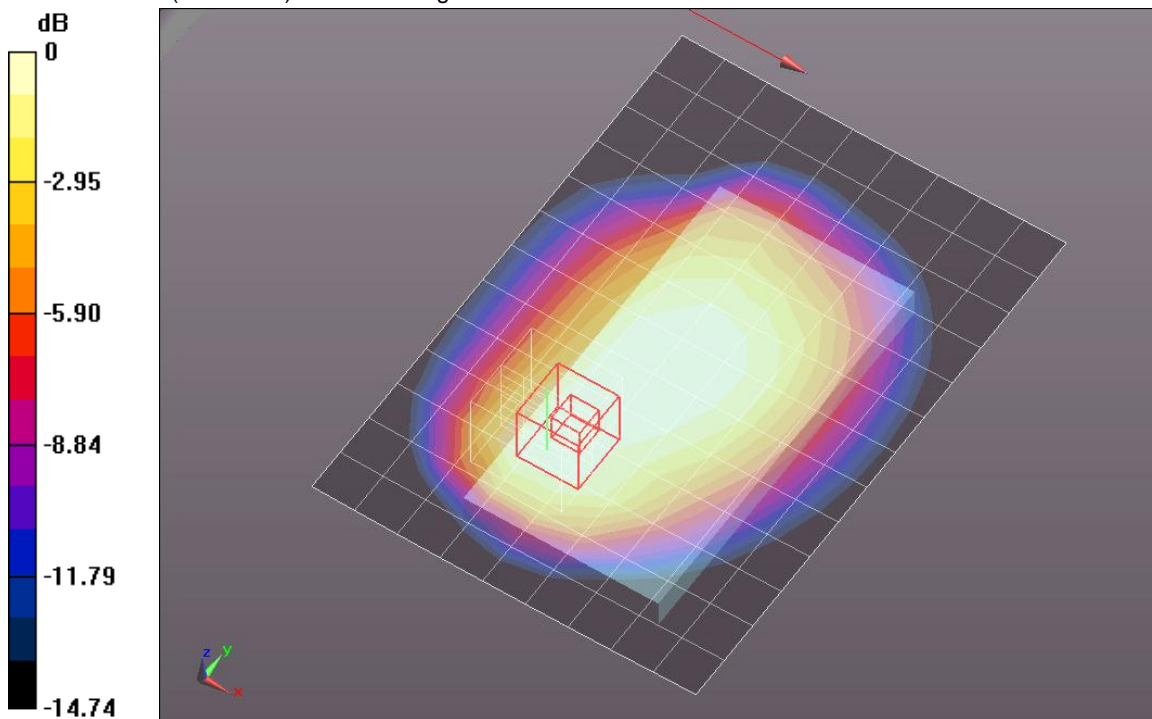
Frequency: 824.4 MHz; Duty Cycle: 1:4.00037; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used: $f = 825$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 54.263$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(8.73, 8.73, 8.73); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118

Rear/GPRS 2 Slots_Ch 128/Area Scan (10x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.072 mW/g

Rear/GPRS 2 Slots_Ch 128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.234 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.3240
SAR(1 g) = 0.902 mW/g; SAR(10 g) = 0.642 mW/g
Maximum value of SAR (measured) = 1.045 mW/g



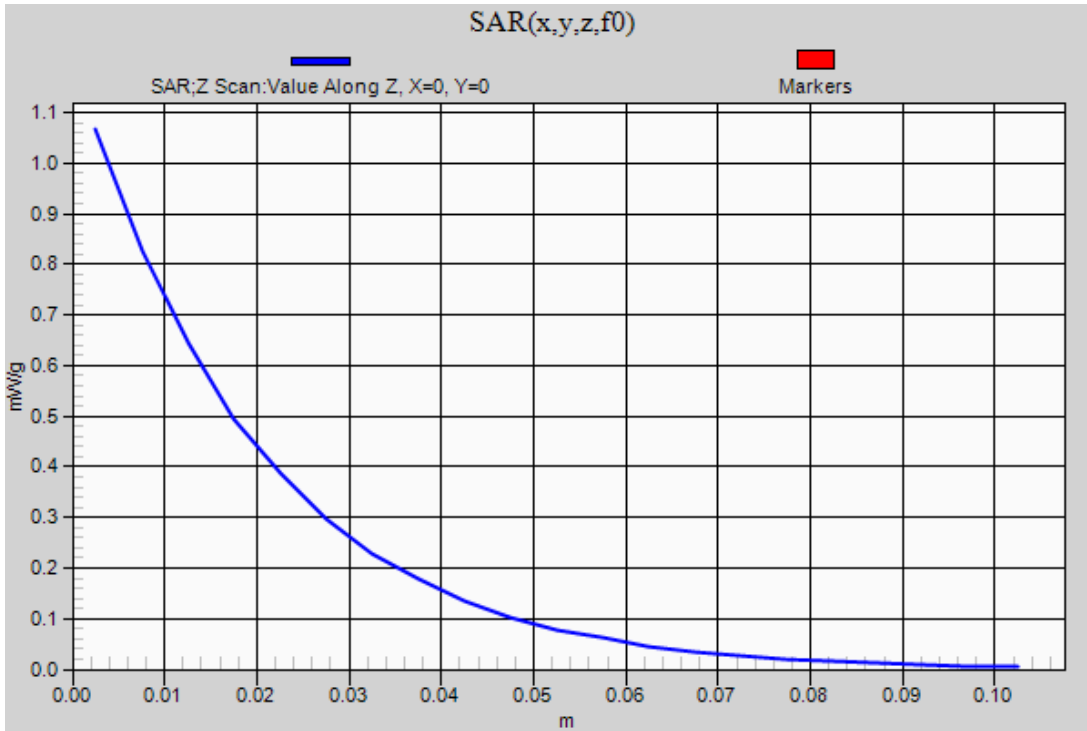
0 dB = 1.050mW/g = 0.42 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/23/2012

GSM850

Frequency: 824.4 MHz; Duty Cycle: 1:4.00037

Rear/GPRS 2 Slots_Ch 128/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.067 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/21/2012

GSM1900

Frequency: 1880 MHz; Duty Cycle: 1:8.00018; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.392$ mho/m; $\epsilon_r = 40.182$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(7.51, 7.51, 7.51); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

Right/Touch_GSM_Ch 661/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.402 mW/g

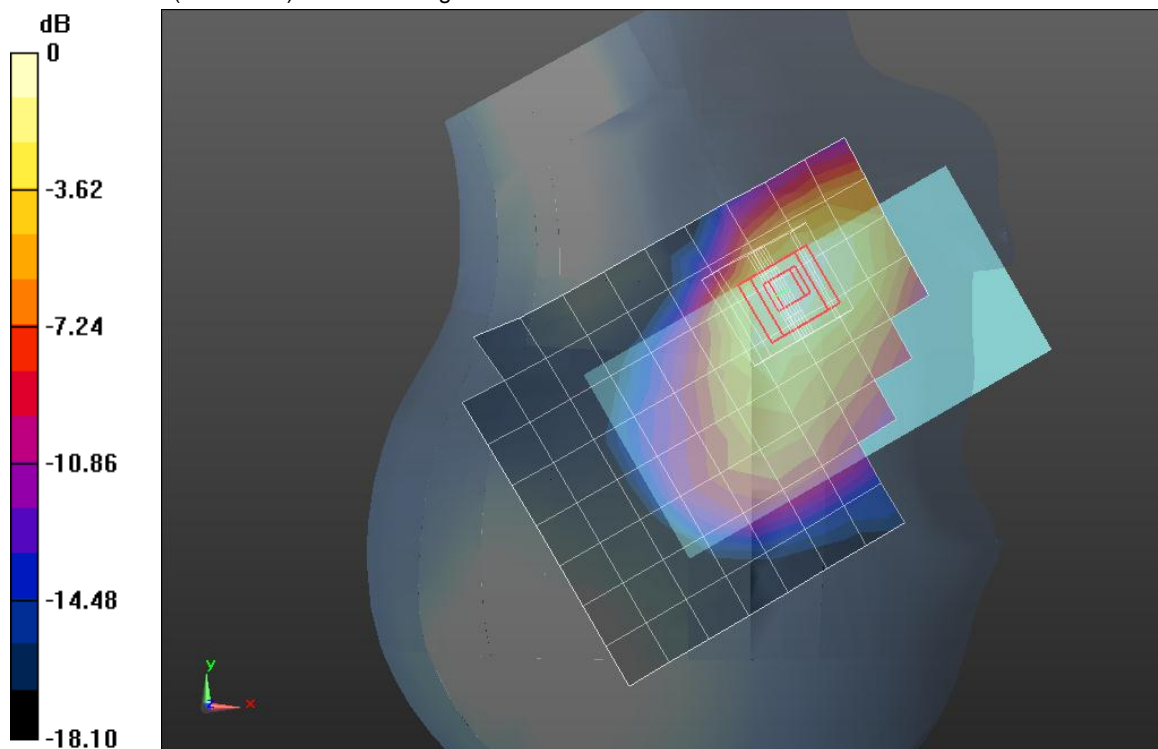
Right/Touch_GSM_Ch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.489 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.5400

SAR(1 g) = 0.350 mW/g; SAR(10 g) = 0.220 mW/g

Maximum value of SAR (measured) = 0.426 mW/g



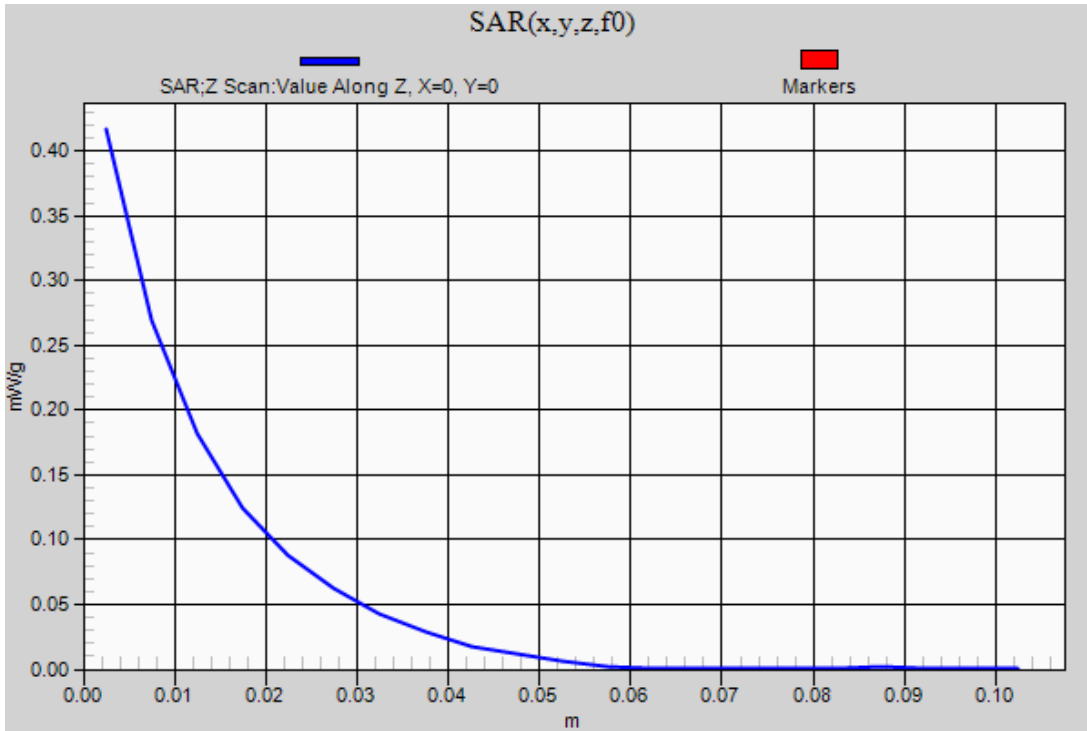
0 dB = 0.430mW/g = -7.33 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/21/2012

GSM1900

Frequency: 1880 MHz; Duty Cycle: 1:8.00018

Right/Touch_GSM_Ch 661/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.417 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/21/2012

GSM 1900

Frequency: 1880 MHz; Duty Cycle: 1:4.00037; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.512$ mho/m; $\epsilon_r = 51.214$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(7.04, 7.04, 7.04); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (A); Type: QDOVA001BB; Serial: 1120

Rear/GPRS 2 Slot_Ch 661_W/Wireless Charger/Area Scan (10x14x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 1.129 mW/g

Rear/GPRS 2 Slot_Ch 661_W/Wireless Charger/Zoom Scan (5x5x7)/Cube 0: Measurement

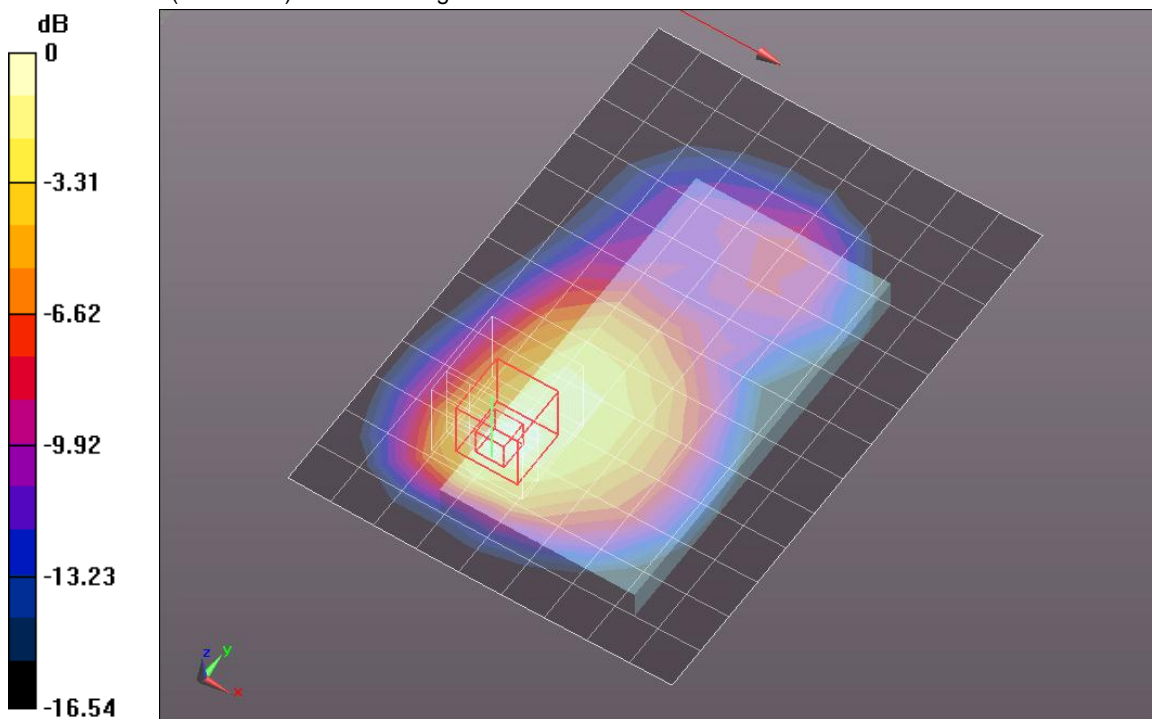
grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 27.471 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.4410

SAR(1 g) = 0.860 mW/g; SAR(10 g) = 0.492 mW/g

Maximum value of SAR (measured) = 1.054 mW/g



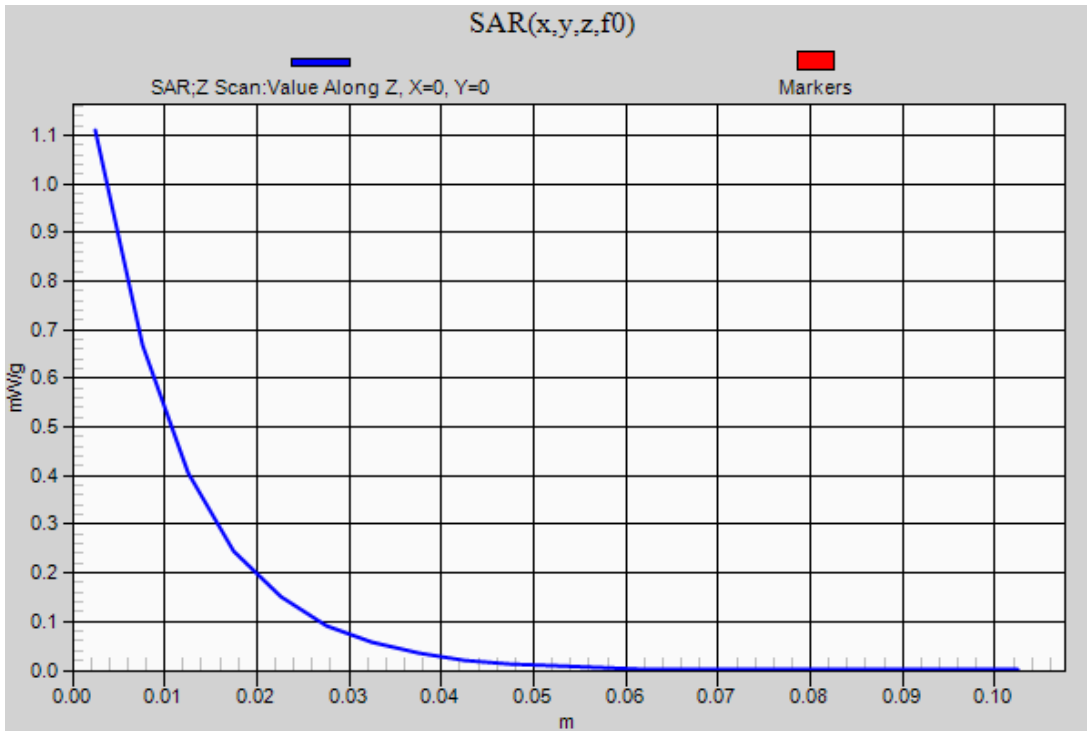
0 dB = 1.050mW/g = 0.42 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/21/2012

GSM 1900

Frequency: 1880 MHz; Duty Cycle: 1:4.00037

Rear/GPRS 2 Slot_Ch 661_W/Wireless Charger/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.110 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/23/2012

WCDMA Band II

Frequency: 1880 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.397$ mho/m; $\epsilon_r = 40.357$; $\rho = 1000$ kg/m³

DASY5 Configuration:

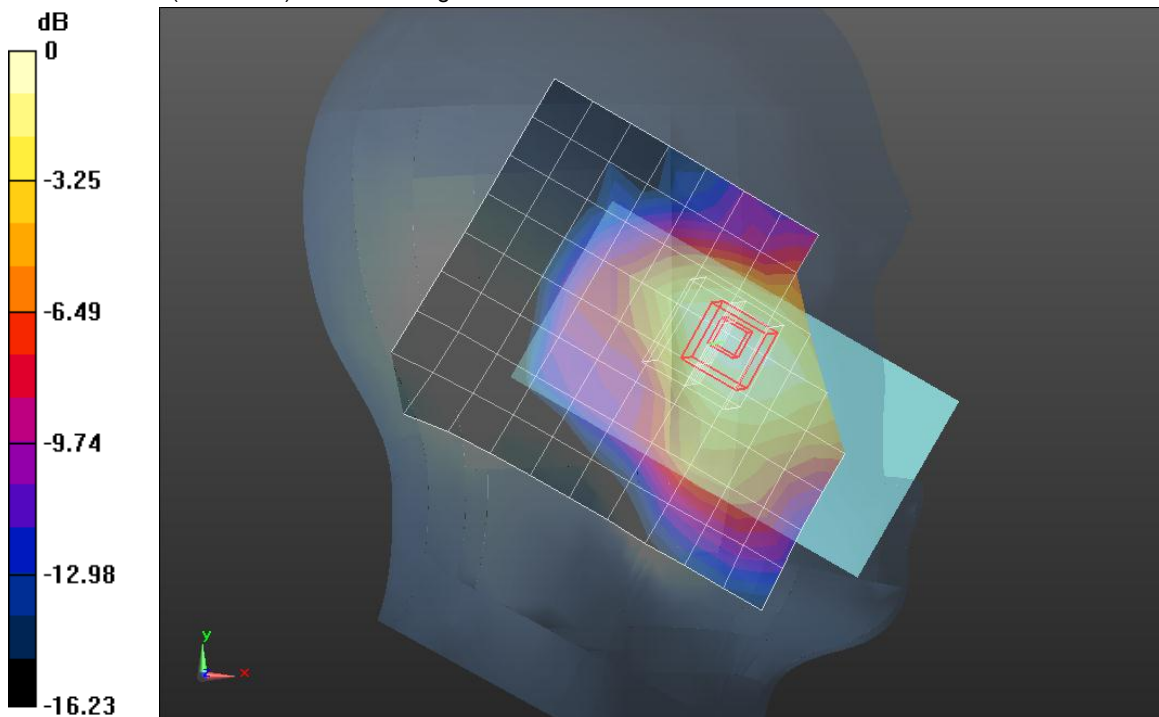
- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(7.51, 7.51, 7.51); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

Left/Touch_R99 RMC_Ch 9400_w/Wireless Charging Cover/Area Scan (9x11x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.442 mW/g

Left/Touch_R99 RMC_Ch 9400_w/Wireless Charging Cover/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.071 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.5750
SAR(1 g) = 0.374 mW/g; SAR(10 g) = 0.233 mW/g
Maximum value of SAR (measured) = 0.449 mW/g



0 dB = 0.450mW/g = -6.94 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/23/2012

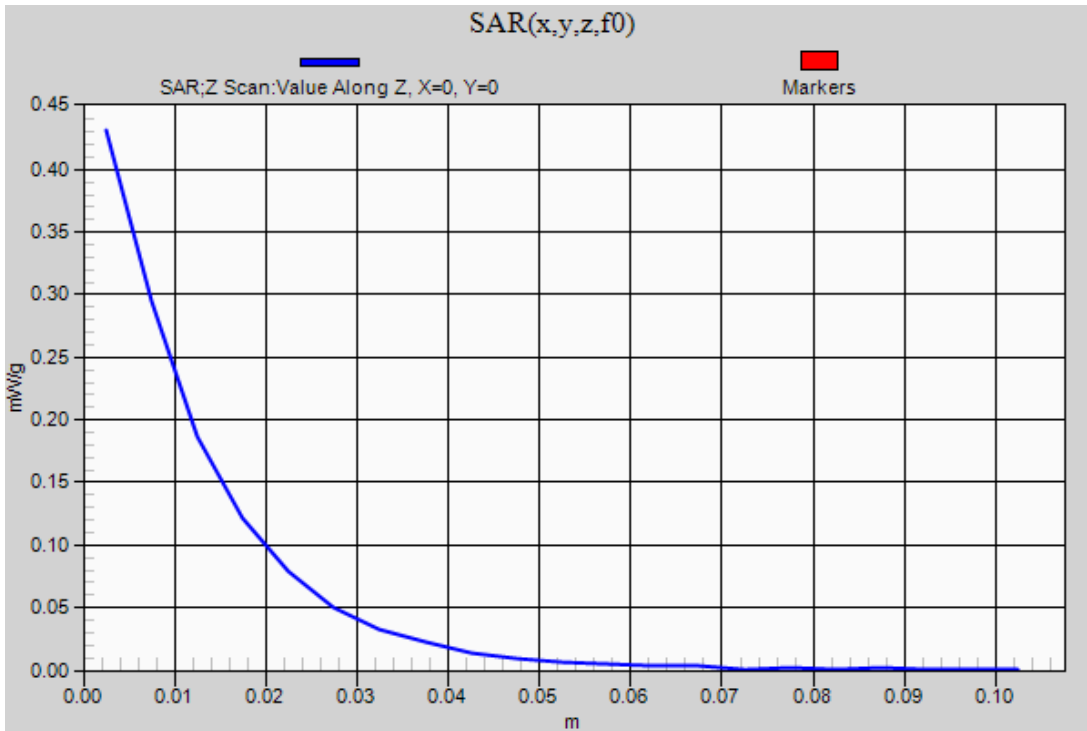
WCDMA Band II

Frequency: 1880 MHz; Duty Cycle: 1:1

Left/Touch_R99_RMC_Ch 9400_w/Wireless Charging Cover/Z Scan (1x1x21): Measurement

grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.431 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/23/2012

WCDMA Band II

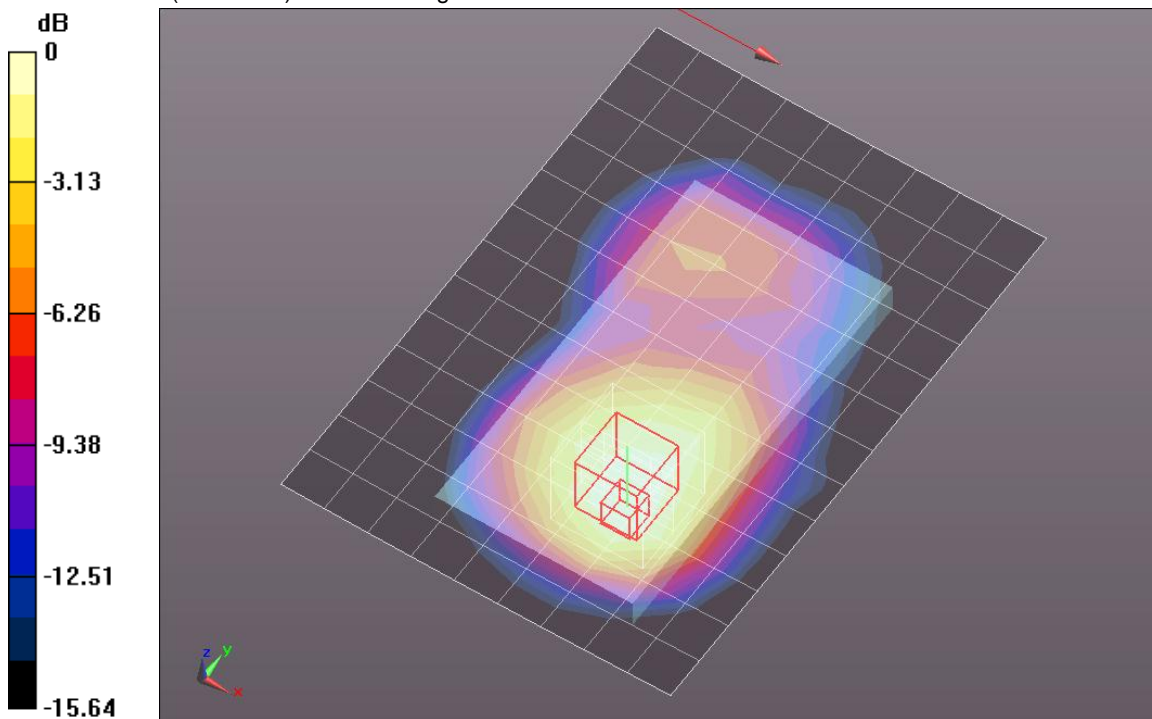
Frequency: 1880 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.478$ mho/m; $\epsilon_r = 52.711$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(7.04, 7.04, 7.04); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (A); Type: QDOVA001BB; Serial: 1120

Rear/R99 RMC_Ch 9400_w/Headset/Area Scan (10x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.844 mW/g

Rear/R99 RMC_Ch 9400_w/Headset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.252 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.1100
SAR(1 g) = 0.681 mW/g; SAR(10 g) = 0.427 mW/g
Maximum value of SAR (measured) = 0.830 mW/g



0 dB = 0.830mW/g = -1.62 dB mW/g

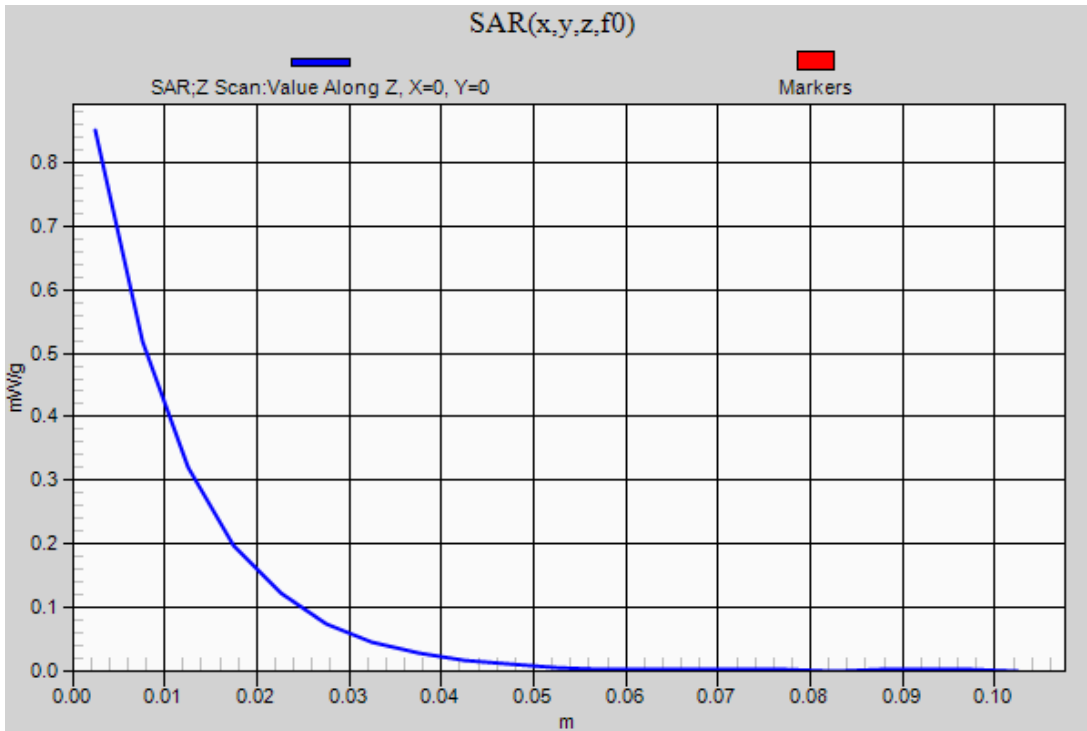
Test Laboratory: UL CCS SAR Lab B Date: 5/23/2012

WCDMA Band II

Frequency: 1880 MHz; Duty Cycle: 1:1

Rear/R99 RMC_Ch 9400_w/Headset/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.852 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/24/2012

CDMA BC0

Frequency: 836.52 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 836.52$ MHz; $\sigma = 0.882$ mho/m; $\epsilon_r = 41.402$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(8.61, 8.61, 8.61); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

Right/Touch_1xRTT_RC3 SO55_ch 384/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (measured) = 0.495 mW/g

Right/Touch_1xRTT_RC3 SO55_ch 384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

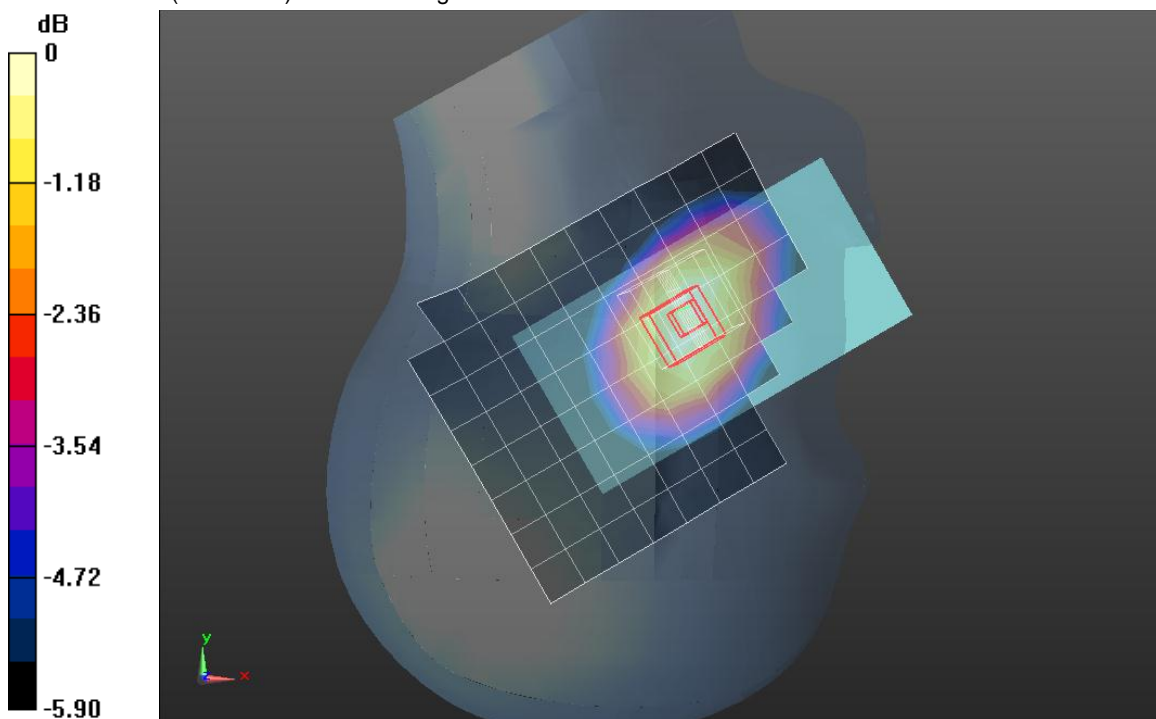
Reference Value = 24.094 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.5360

SAR(1 g) = 0.479 mW/g; SAR(10 g) = 0.423 mW/g

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

Maximum value of SAR (measured) = 0.502 mW/g



0 dB = 0.500mW/g = -6.02 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/24/2012

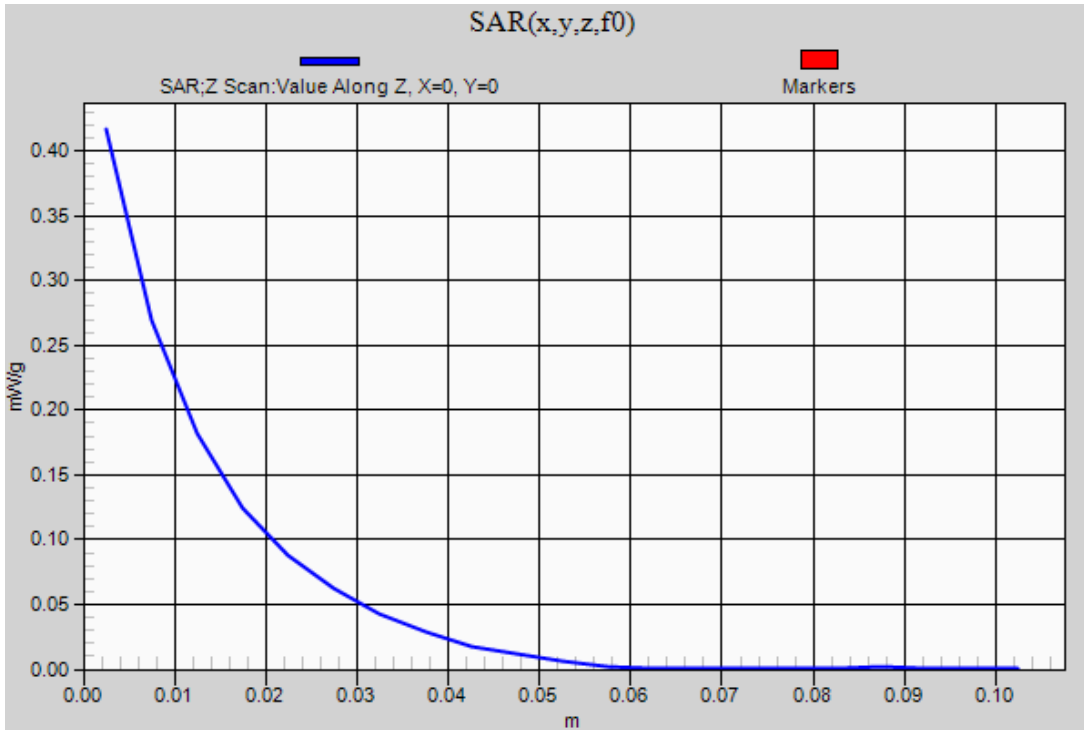
CDMA BC0

Frequency: 836.52 MHz; Duty Cycle: 1:1

Right/Touch_1xRTT_RC3 SO55_ch 384/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.492 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/24/2012

CDMA BC0

Frequency: 836.52 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 836.52$ MHz; $\sigma = 0.882$ mho/m; $\epsilon_r = 41.402$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(8.61, 8.61, 8.61); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

Left/Touch_1xEVDO_Rel. 0_ch 384_w/Wireless Charging Cover/Area Scan (9x11x1):

Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (measured) = 0.920 mW/g

Left/Touch_1xEVDO_Rel. 0_ch 384_w/Wireless Charging Cover/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

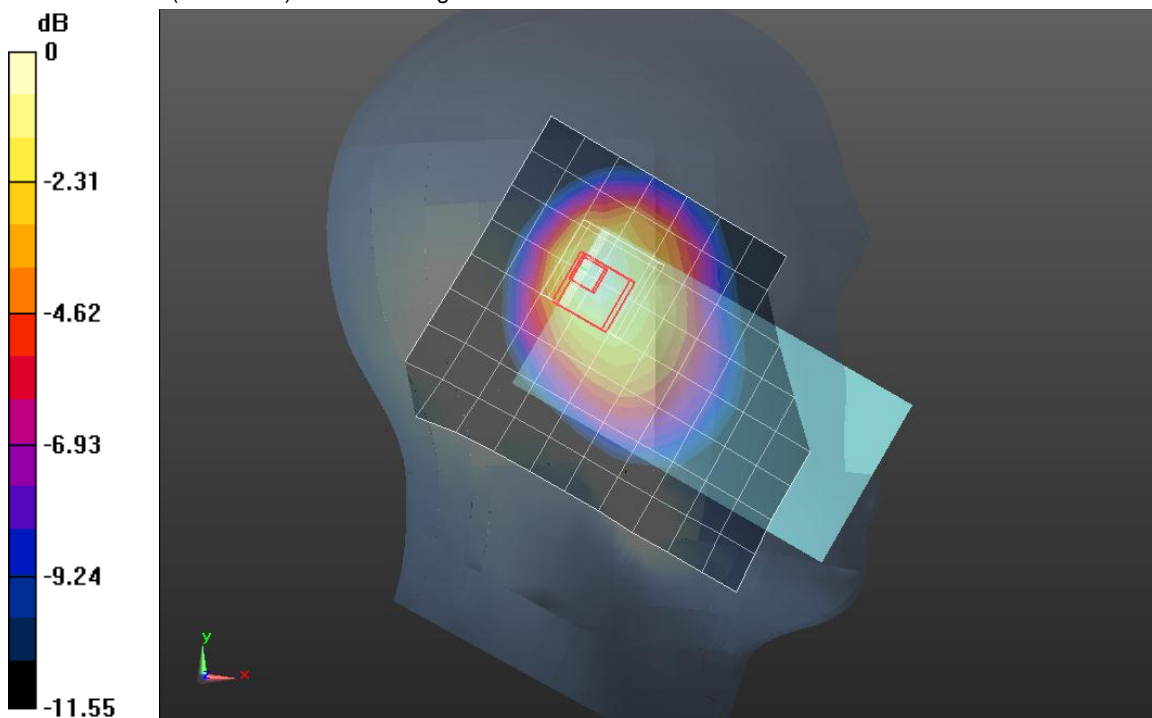
Reference Value = 32.631 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.2750

SAR(1 g) = 0.719 mW/g; SAR(10 g) = 0.442 mW/g

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

Maximum value of SAR (measured) = 0.900 mW/g



0 dB = 0.900mW/g = -0.92 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/24/2012

CDMA BC0

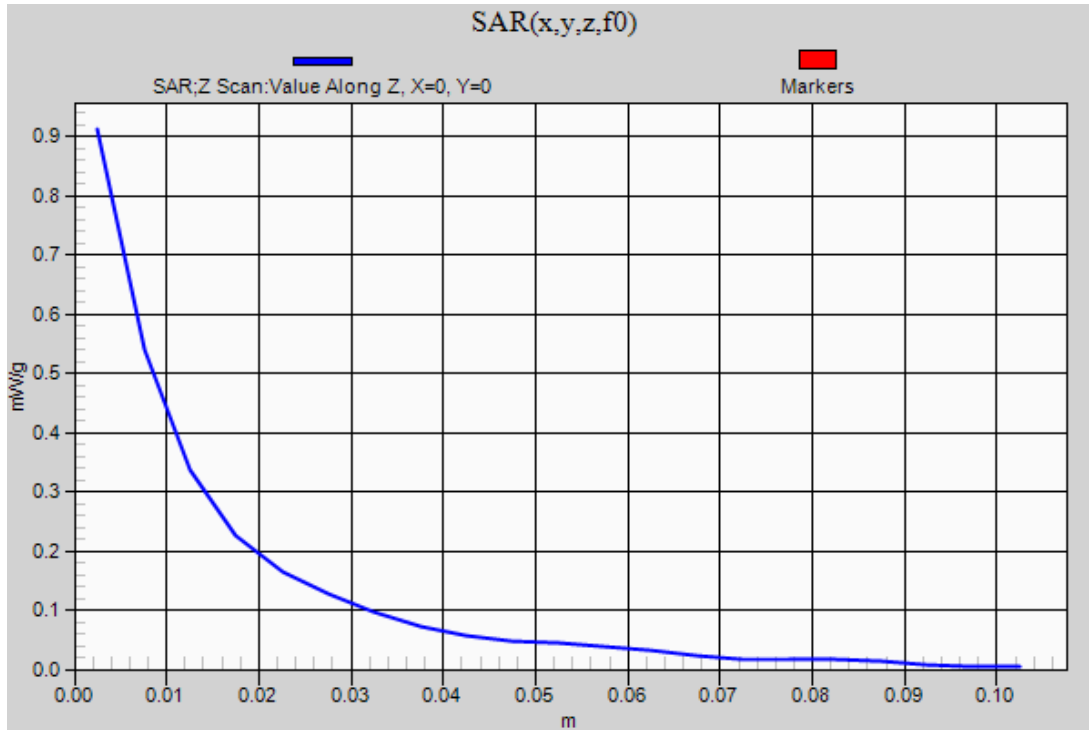
Frequency: 836.52 MHz; Duty Cycle: 1:1

Left/Touch_1xEVDO_Rel. 0_ch 384_w/Wireless Charging Cover/Z Scan (1x1x21):

Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.911 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/24/2012

CDMA BC0

Frequency: 836.52 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 836.52$ MHz; $\sigma = 1.012$ mho/m; $\epsilon_r = 54.116$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(8.73, 8.73, 8.73); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118

Rear/1xRTT_RC3_SO32_Ch 384_W/Headset/Area Scan (10x14x1): Measurement grid: dx=15mm, dy=15mm

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

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

Rear/1xRTT_RC3_SO32_Ch 384_W/Headset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

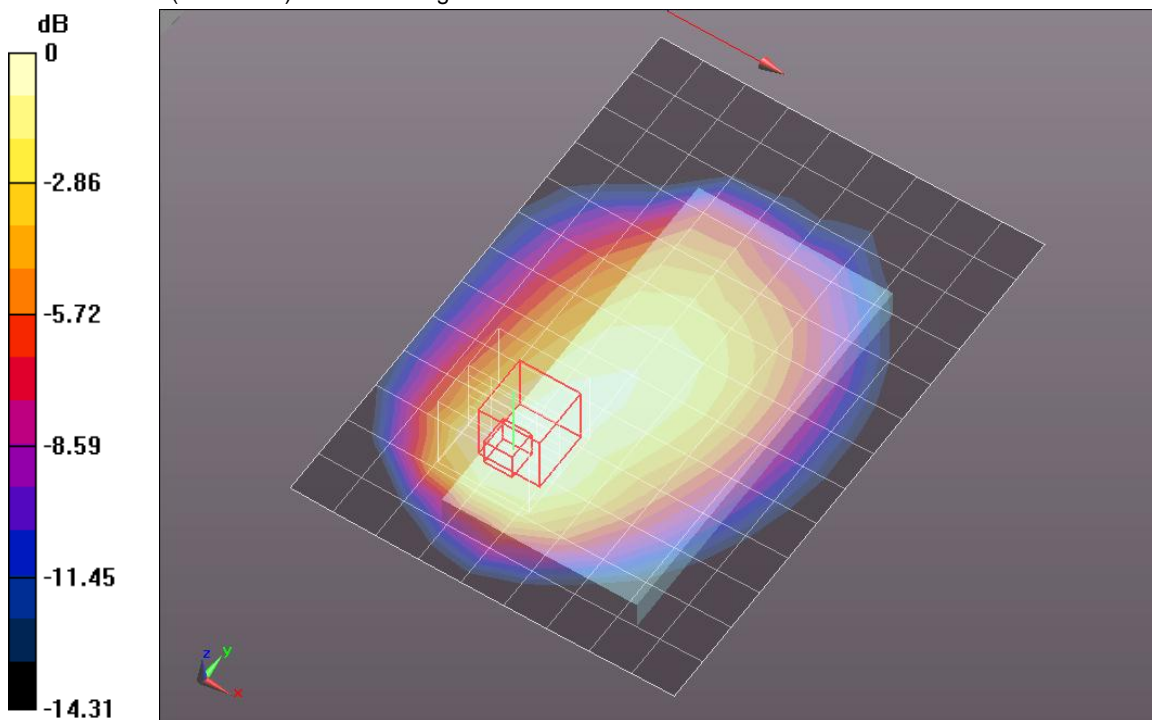
Reference Value = 26.705 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.9120

SAR(1 g) = 0.585 mW/g; SAR(10 g) = 0.405 mW/g

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

Maximum value of SAR (measured) = 0.688 mW/g



0 dB = 0.690mW/g = -3.22 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/24/2012

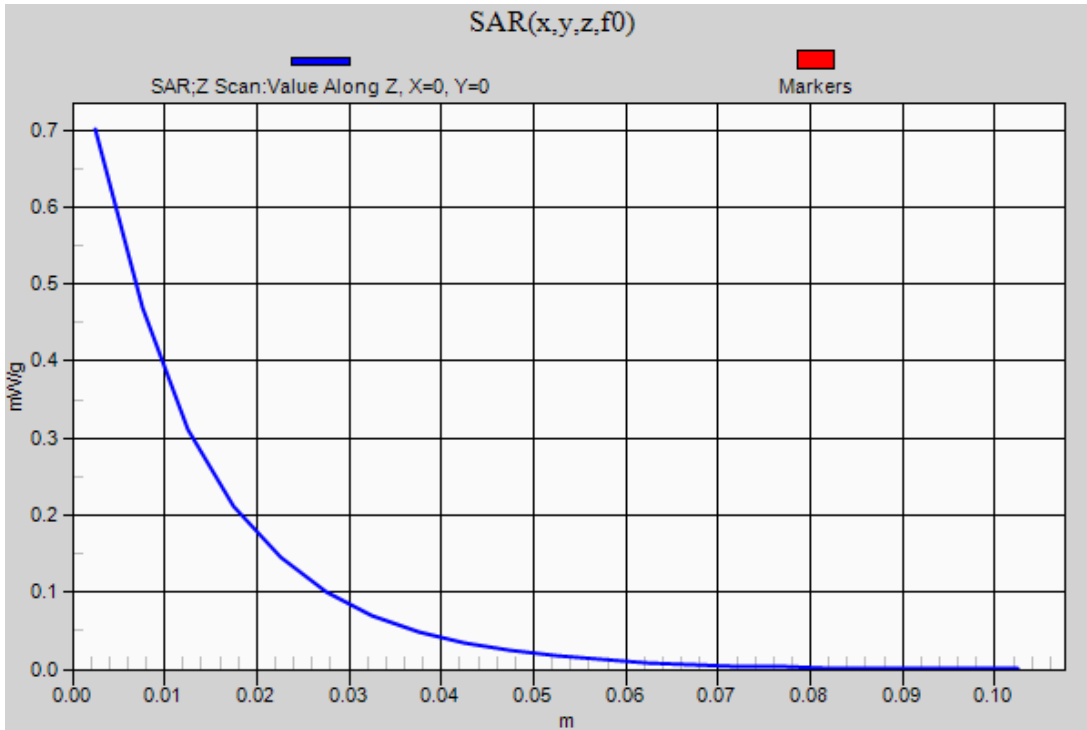
CDMA BC0

Frequency: 836.52 MHz; Duty Cycle: 1:1

Rear/1xRTT_RC3_SO32_Ch 384_W/Headset/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.701 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/24/2012

CDMA BC0

Frequency: 836.52 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 836.52$ MHz; $\sigma = 1.012$ mho/m; $\epsilon_r = 54.116$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(8.73, 8.73, 8.73); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118

Rear/1xEVDO_Rel. 0_Ch 384_W/Headset/Area Scan (10x14x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (measured) = 0.751 mW/g

Rear/1xEVDO_Rel. 0_Ch 384_W/Headset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

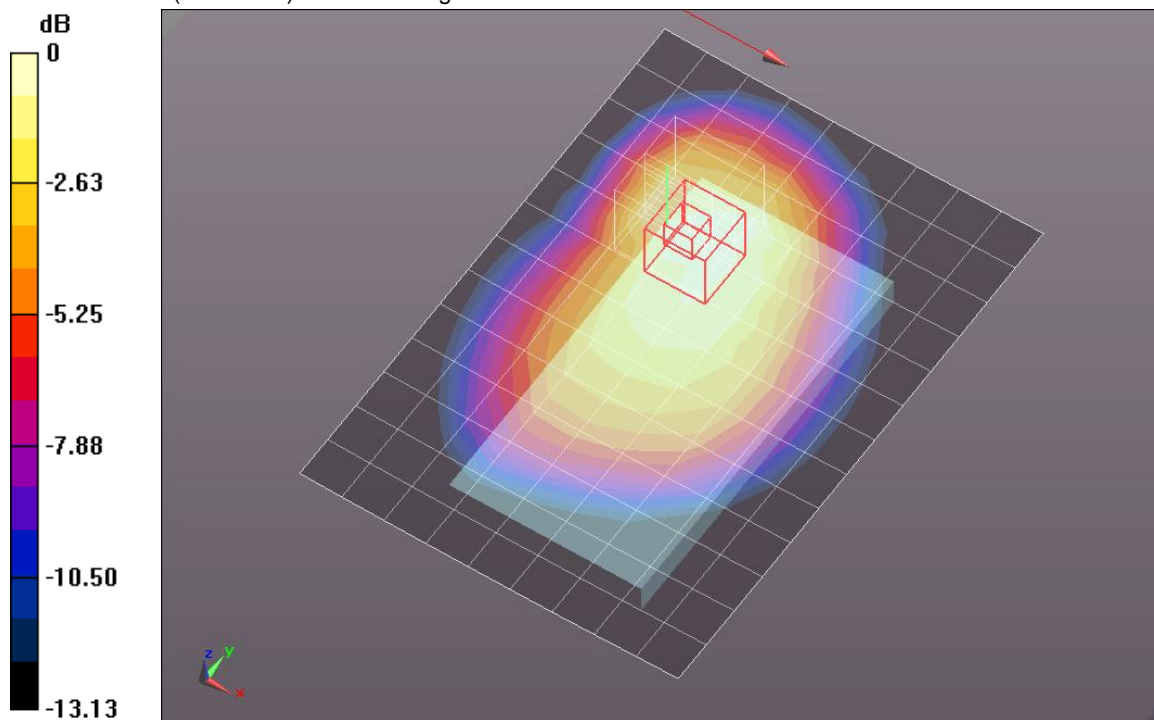
Reference Value = 27.435 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 1.0440

SAR(1 g) = 0.617 mW/g; SAR(10 g) = 0.424 mW/g

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

Maximum value of SAR (measured) = 0.769 mW/g



0 dB = 0.770mW/g = -2.27 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/24/2012

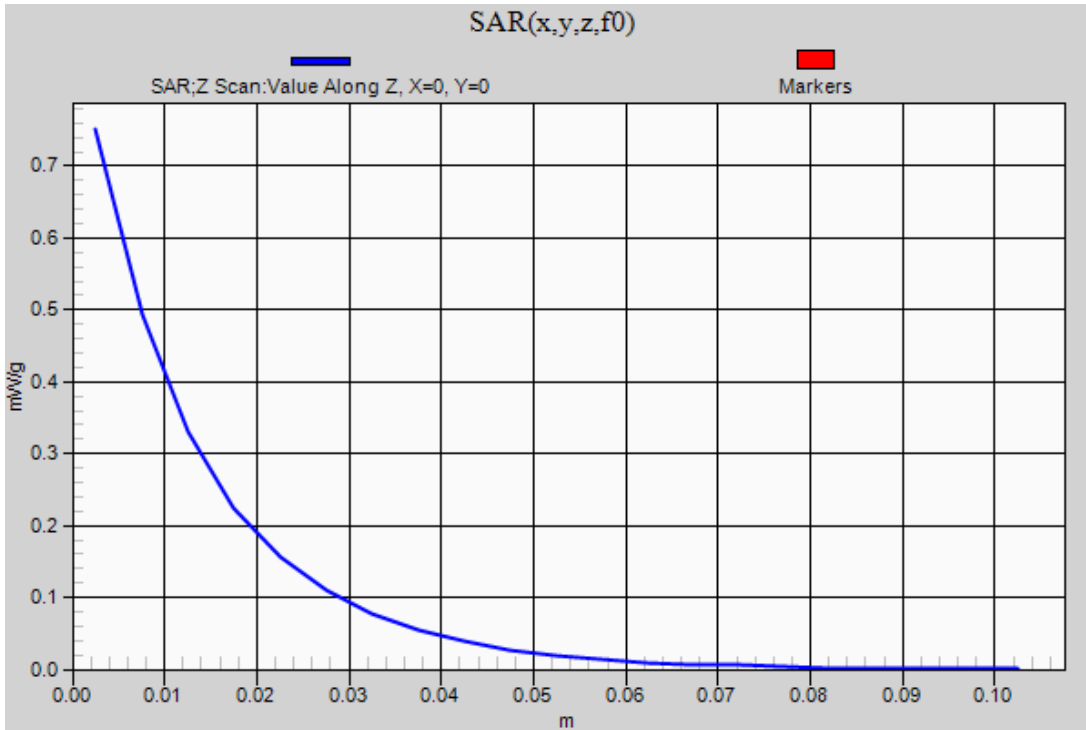
CDMA BC0

Frequency: 836.52 MHz; Duty Cycle: 1:1

Rear/1xEVDO_Rel. 0_Ch 384_W/Headset/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.751 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/22/2012

CDMA BC1

Frequency: 1880 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.375$ mho/m; $\epsilon_r = 40.252$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(7.51, 7.51, 7.51); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

Right/Touch_1xRTT_RC3 SO55_ch 600_w/Wireless Charging Cover/Area Scan

(9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.666 mW/g

Right/Touch_1xRTT_RC3 SO55_ch 600_w/Wireless Charging Cover/Zoom Scan

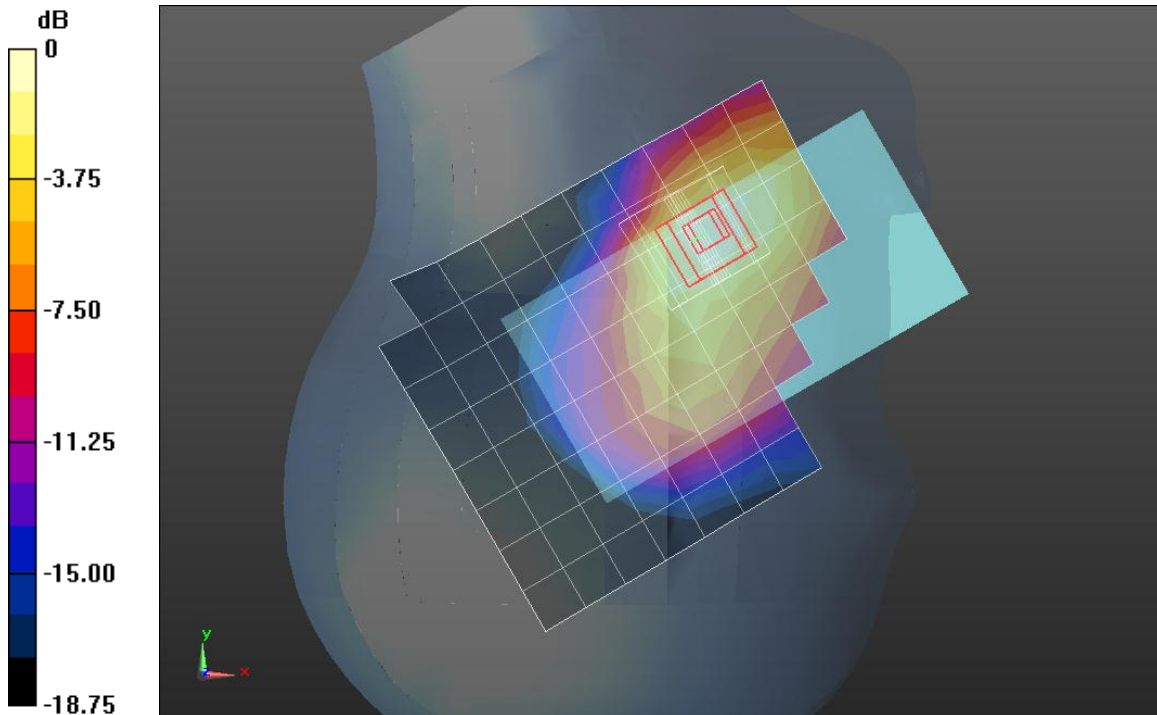
(5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.462 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.8900

SAR(1 g) = 0.577 mW/g; SAR(10 g) = 0.362 mW/g

Maximum value of SAR (measured) = 0.704 mW/g



0 dB = 0.700mW/g = -3.10 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/22/2012

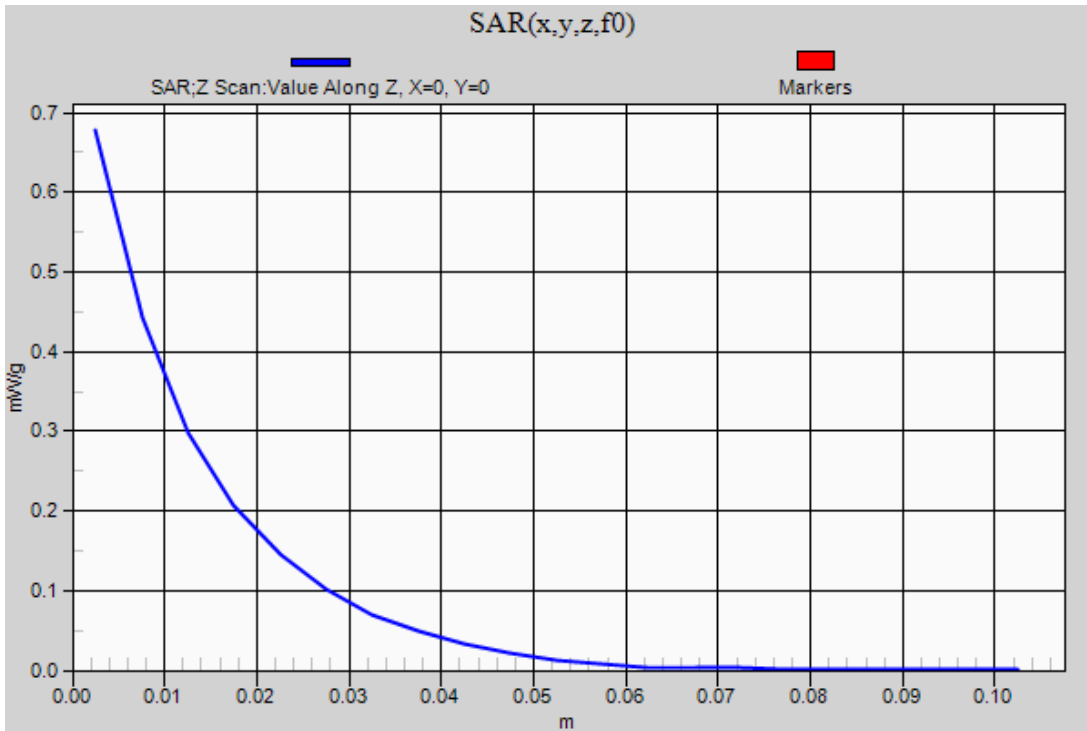
CDMA BC1

Frequency: 1880 MHz; Duty Cycle: 1:1

Right/Touch_1xRTT_RC3 SO55_ch 600_w/Wireless Charging Cover/Z Scan (1x1x21):

Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.678 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/22/2012

CDMA BC1

Frequency: 1880 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.375$ mho/m; $\epsilon_r = 40.252$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(7.51, 7.51, 7.51); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

Left/Touch_1xEVDO_Rel. 0_ch 600/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.705 mW/g

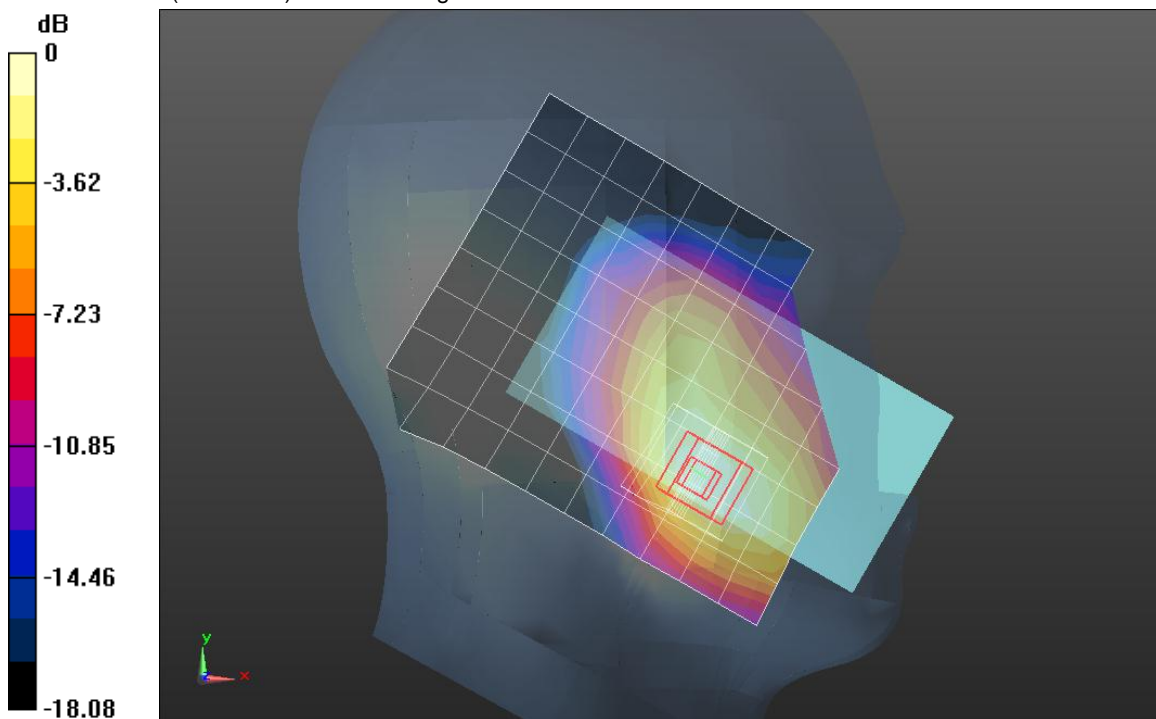
Left/Touch_1xEVDO_Rel. 0_ch 600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.967 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 0.9300

SAR(1 g) = 0.592 mW/g; SAR(10 g) = 0.371 mW/g

Maximum value of SAR (measured) = 0.713 mW/g



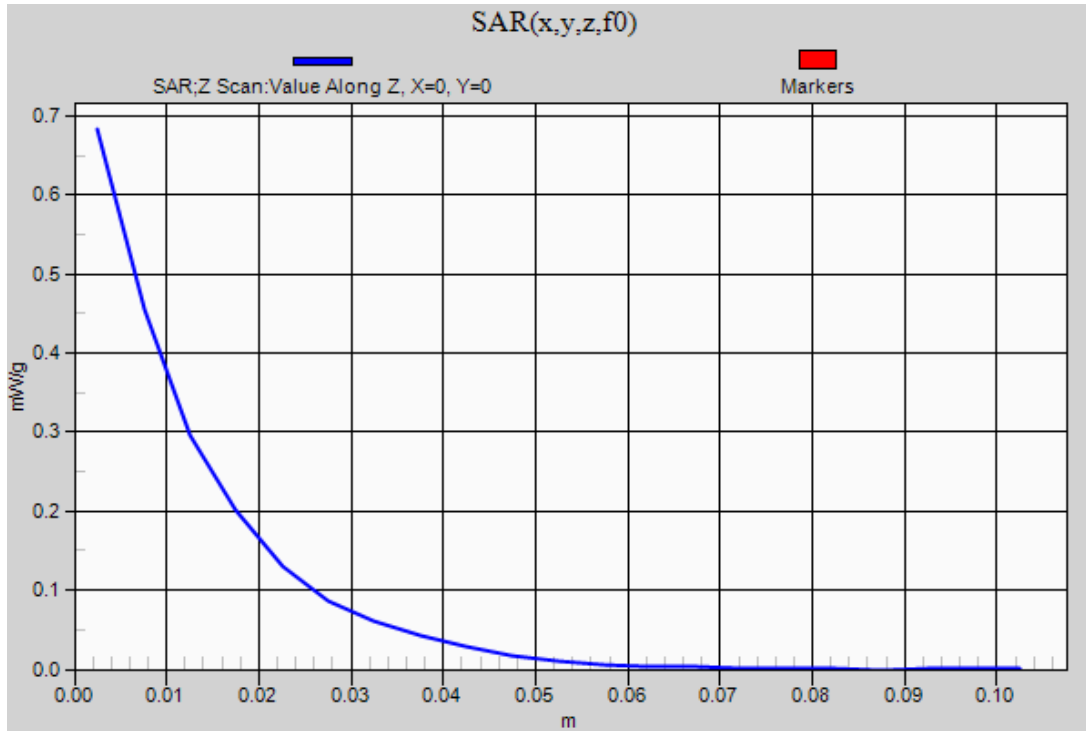
0 dB = 0.710mW/g = -2.97 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/22/2012

CDMA BC1

Frequency: 1880 MHz; Duty Cycle: 1:1

Left/Touch_1xEVDO_Rel. 0_ch 600/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.683 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/22/2012

CDMA BC1

Frequency: 1880 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 50.763$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(7.04, 7.04, 7.04); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (A); Type: QDOVA001BB; Serial: 1120

Rear./1xRTT_RC3_SO32_Ch 600_w/Headset/Area Scan (10x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.143 mW/g

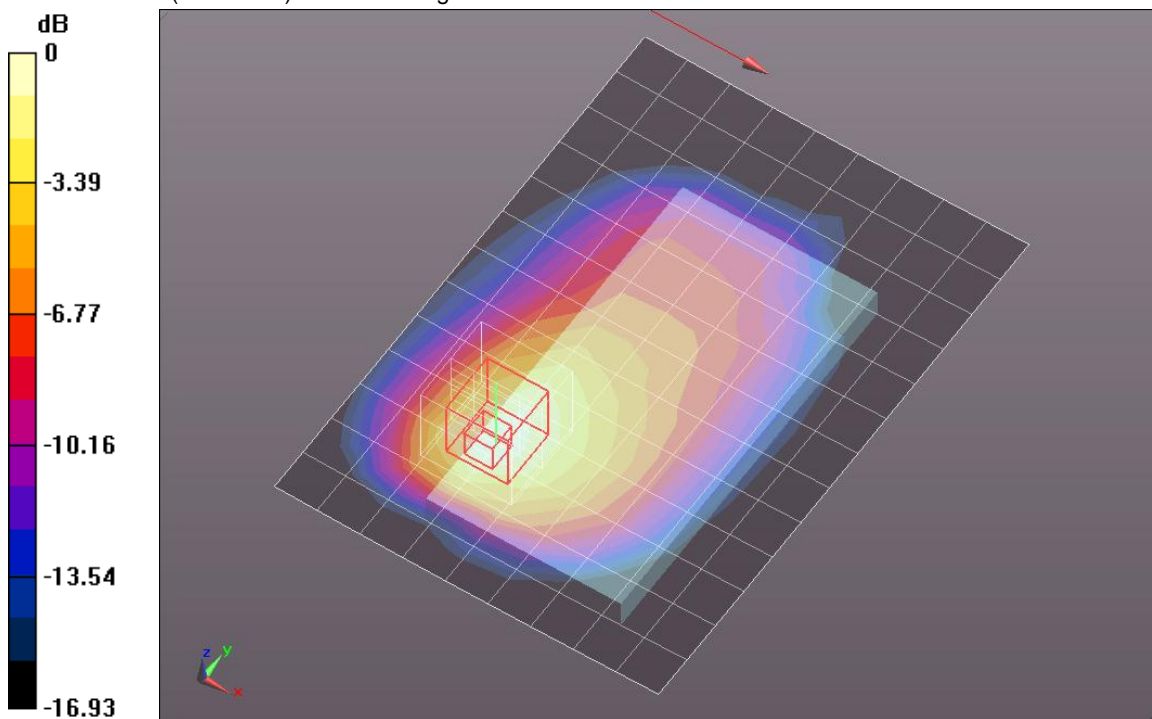
Rear./1xRTT_RC3_SO32_Ch 600_w/Headset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.678 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 1.5050

SAR(1 g) = 0.910 mW/g; SAR(10 g) = 0.536 mW/g

Maximum value of SAR (measured) = 1.117 mW/g



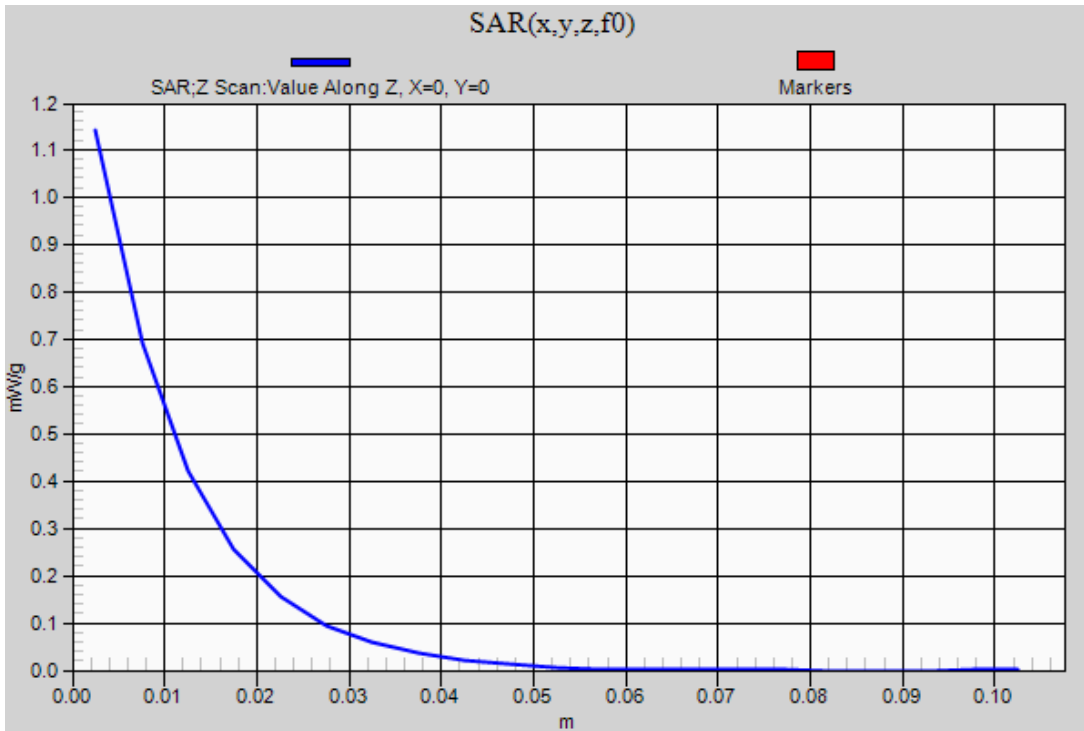
0 dB = 1.120mW/g = 0.98 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/22/2012

CDMA BC1

Frequency: 1880 MHz; Duty Cycle: 1:1

Rear./1xRTT_RC3_SO32_Ch 600_w/Headset/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 1.141 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/22/2012

CDMA BC1

Frequency: 1908.75 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 1908.75$ MHz; $\sigma = 1.548$ mho/m; $\epsilon_r = 50.669$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(7.04, 7.04, 7.04); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (A); Type: QDOVA001BB; Serial: 1120

Rear/1xEVDO_Rel. 0_Ch 1175/Area Scan (10x14x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (measured) = 1.152 mW/g

Rear/1xEVDO_Rel. 0_Ch 1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

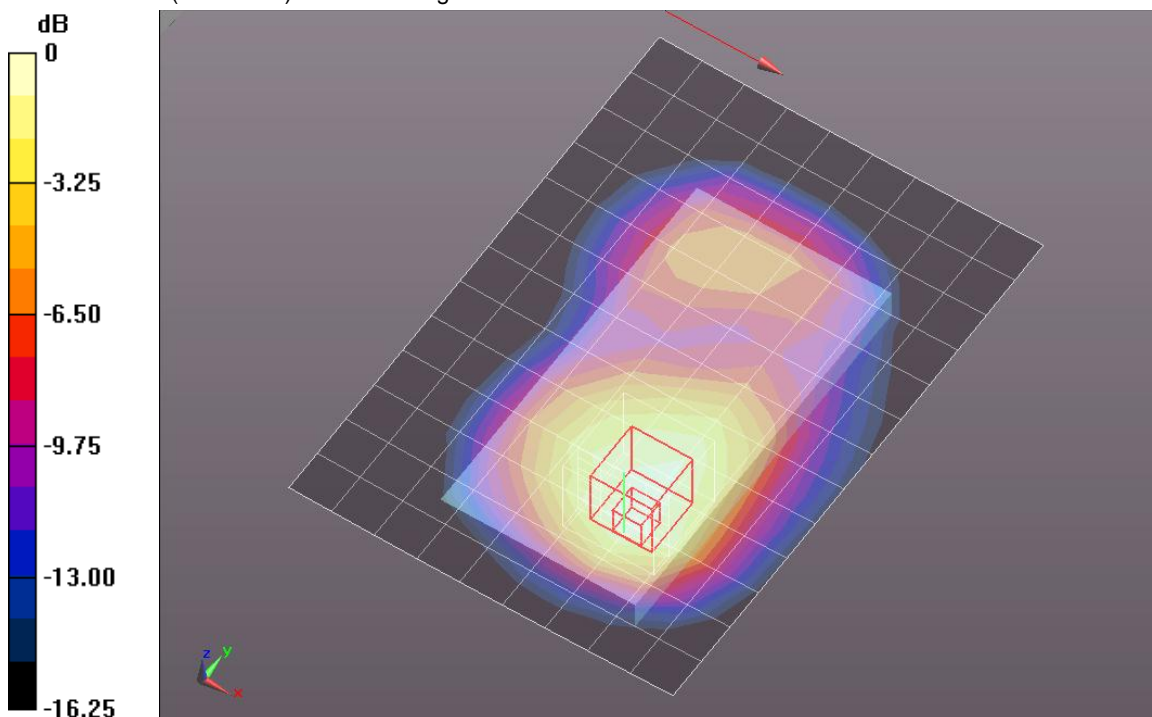
Reference Value = 27.730 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.5270

SAR(1 g) = 0.913 mW/g; SAR(10 g) = 0.553 mW/g

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

Maximum value of SAR (measured) = 1.127 mW/g



0 dB = 1.130mW/g = 1.06 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/22/2012

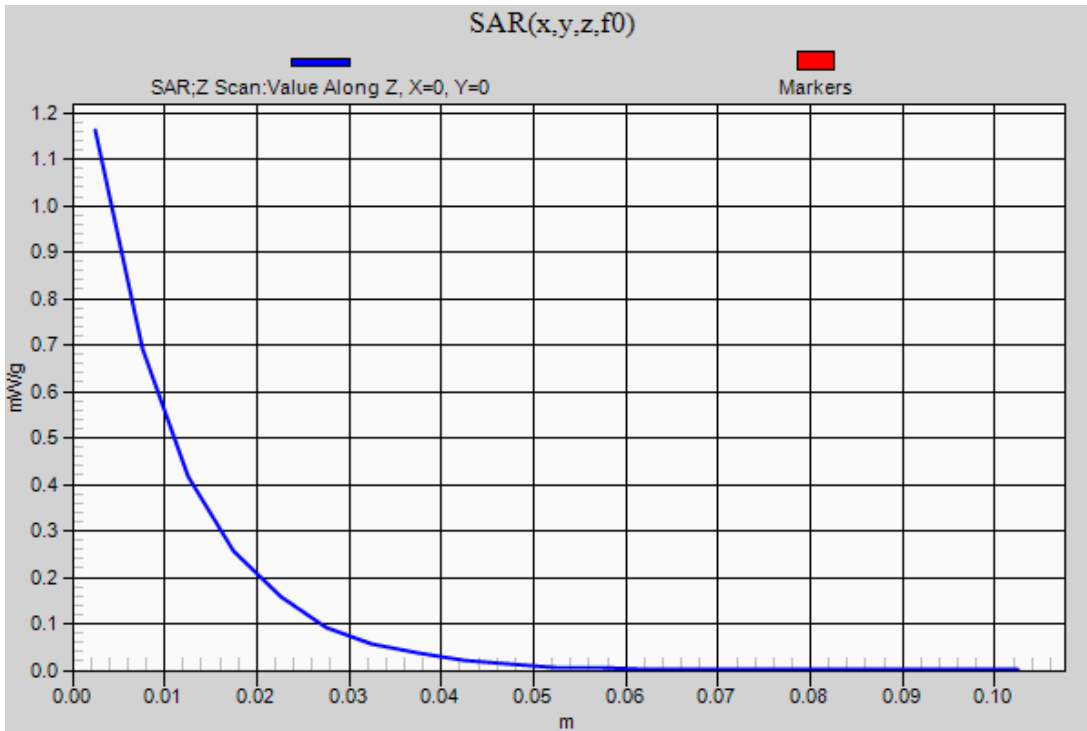
CDMA BC1

Frequency: 1908.75 MHz; Duty Cycle: 1:1

Rear/1xEVDO_Rel. 0_Ch 1175/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 1.162 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/25/2012

LTE Band 13

Frequency: 782 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 782 \text{ MHz}$; $\sigma = 0.912 \text{ mho/m}$; $\epsilon_r = 40.685$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(8.83, 8.83, 8.83); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

Left/Touch_QPSK_RB 1/0_Ch 782_w/Wireless Charging Cover/Area Scan (9x11x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Maximum value of SAR (measured) = 0.410 mW/g

Left/Touch_QPSK_RB 1/0_Ch 782_w/Wireless Charging Cover/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

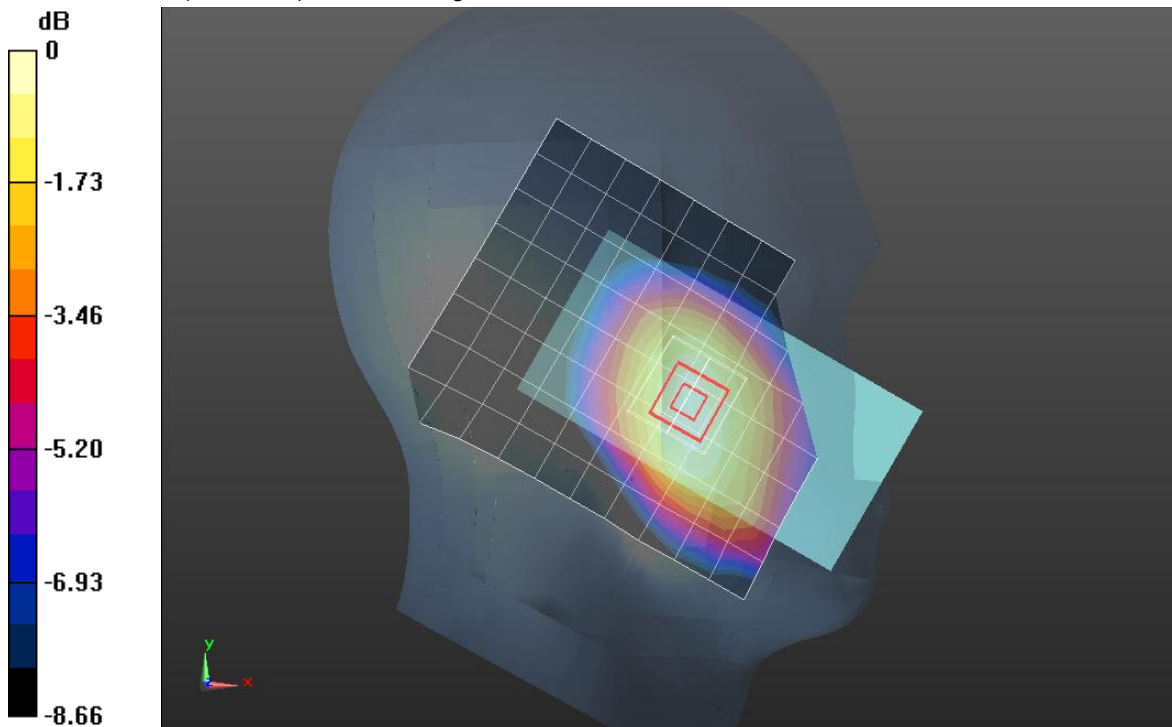
Reference Value = 21.727 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.4780

SAR(1 g) = 0.390 mW/g; SAR(10 g) = 0.297 mW/g

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

Maximum value of SAR (measured) = 0.440 mW/g



0 dB = 0.440mW/g = -7.13 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/25/2012

LTE Band 13

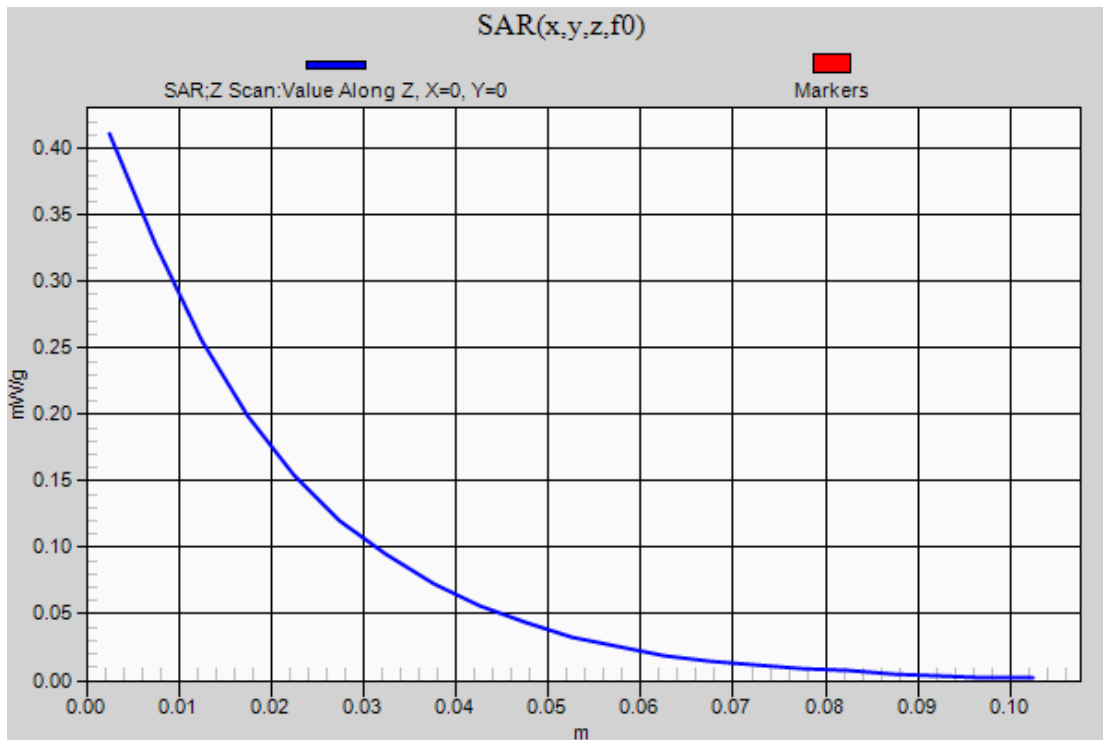
Frequency: 782 MHz; Duty Cycle: 1:1

Left/Touch_QPSK_RB 1/0_Ch 782_w/Wireless Charging Cover/Z Scan (1x1x21):

Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.411 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/25/2012

LTE Band 13

Frequency: 782 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 782 \text{ MHz}$; $\sigma = 0.989 \text{ mho/m}$; $\epsilon_r = 56.005$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(8.87, 8.87, 8.87); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (A); Type: QDOVA001BB; Serial: 1120

Rear/QPSK_10mm Separation_RB 1/0_Ch 782/Area Scan (9x14x1): Measurement grid:

$dx=15\text{mm}$, $dy=15\text{mm}$

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

Maximum value of SAR (measured) = 0.835 mW/g

Rear/QPSK_10mm Separation_RB 1/0_Ch 782/Zoom Scan (5x5x7)/Cube 0: Measurement

grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

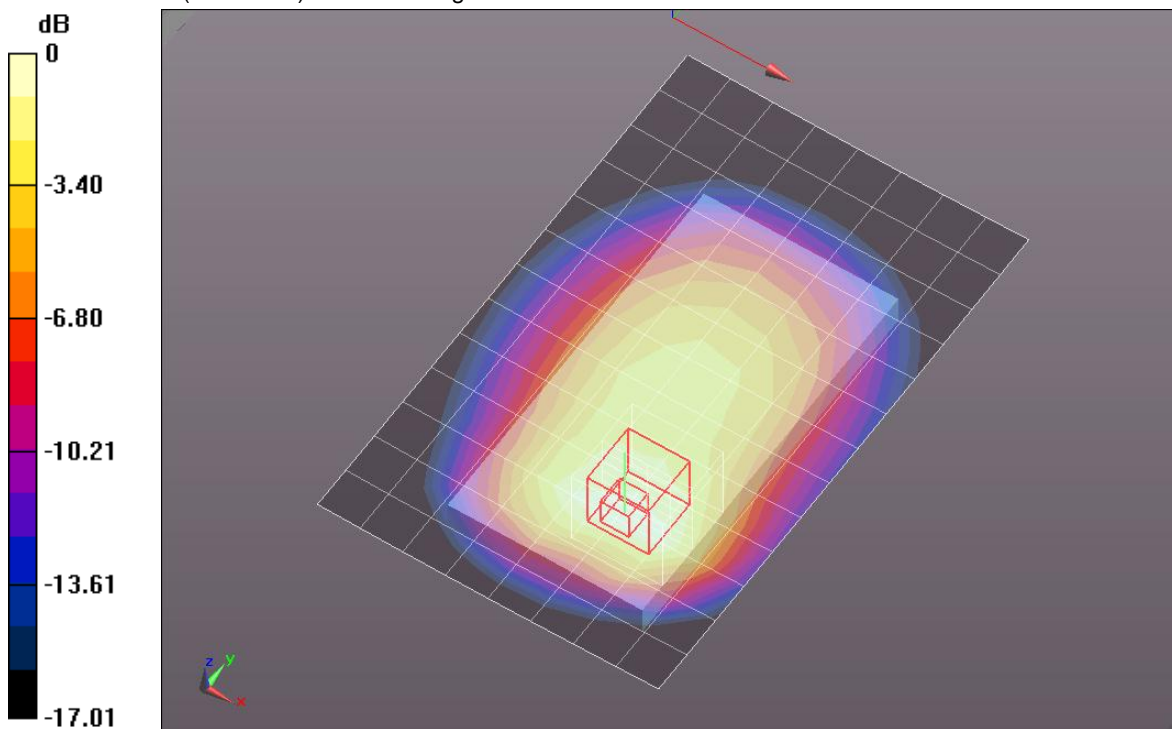
Reference Value = 29.803 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.1230

SAR(1 g) = 0.681 mW/g; SAR(10 g) = 0.430 mW/g

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

Maximum value of SAR (measured) = 0.863 mW/g



0 dB = 0.860mW/g = -1.31 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/25/2012

LTE Band 13

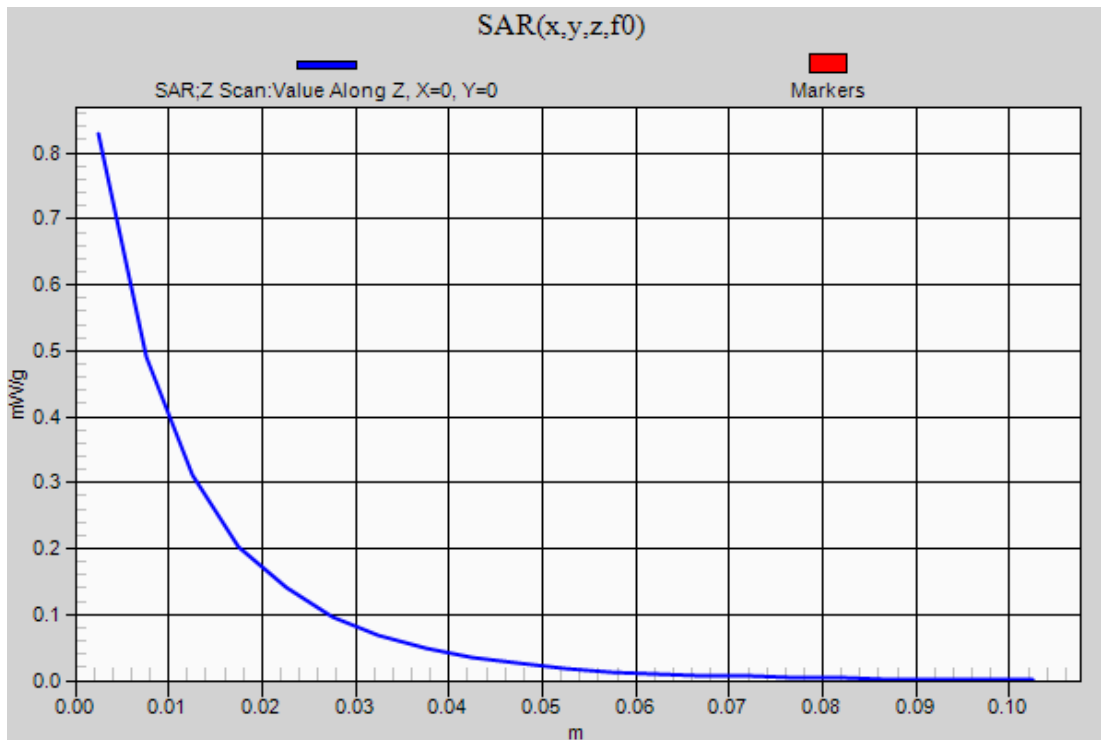
Frequency: 782 MHz; Duty Cycle: 1:1

Rear/QPSK_10mm Separation W/Headset_RB 1/0_Ch 782/Z Scan (1x1x21): Measurement

grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.829 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/31/2012

WiFi 2.45GHz Bands

Frequency: 2412 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 2412$ MHz; $\sigma = 1.78$ mho/m; $\epsilon_r = 39.226$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(6.72, 6.72, 6.72); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

LHS/Touch_Ch 1_w/Wireless Charging Cover/Area Scan (13x16x1): Measurement grid:

dx=10mm, dy=10mm

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

Maximum value of SAR (measured) = 0.237 mW/g

LHS/Touch_Ch 1_w/Wireless Charging Cover/Zoom Scan (7x7x9)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2.5mm

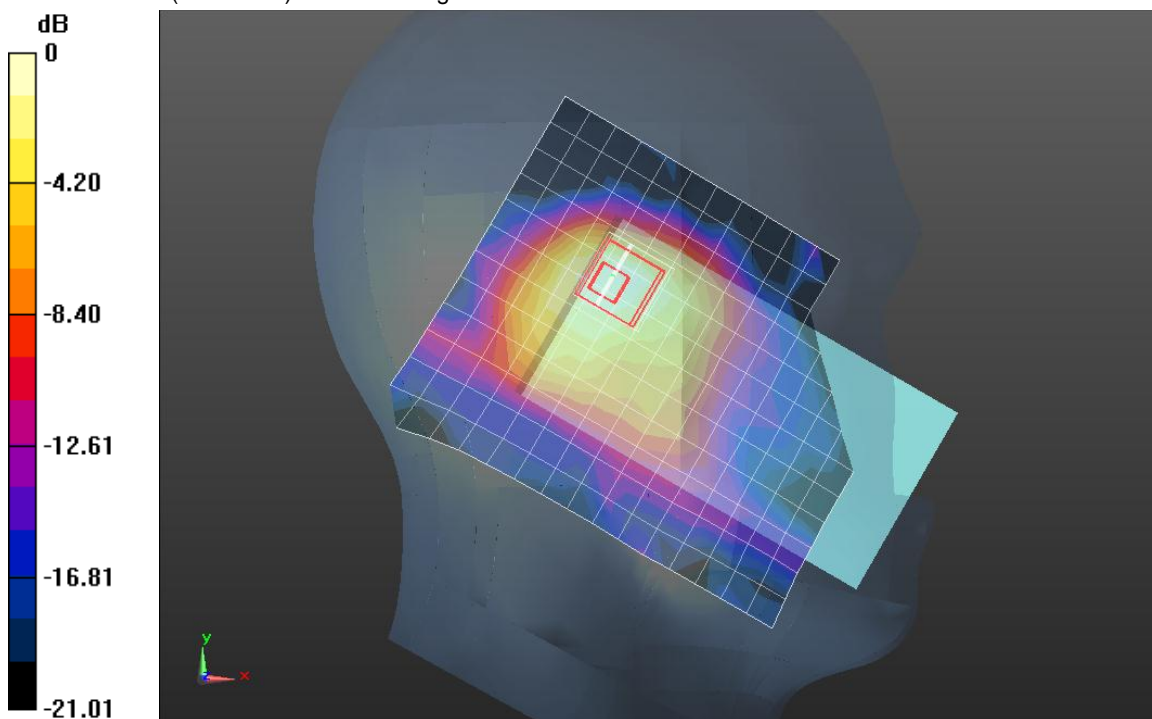
Reference Value = 11.205 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.3680

SAR(1 g) = 0.205 mW/g; SAR(10 g) = 0.100 mW/g

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

Maximum value of SAR (measured) = 0.273 mW/g



0 dB = 0.270mW/g = -11.37 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/31/2012

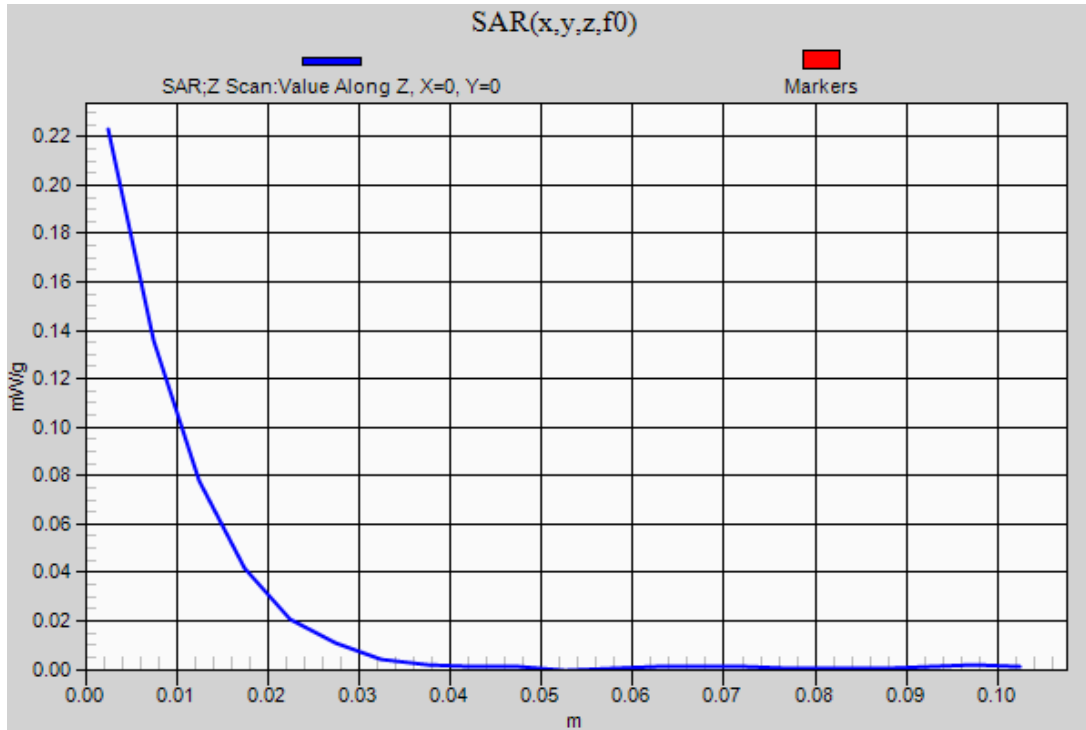
WiFi 2.45GHz Bands

Frequency: 2412 MHz; Duty Cycle: 1:1

LHS/Touch_Ch 1_w/Wireless Charging Cover/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.223 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 5/30/2012

WiFi 2.45GHz Band

Frequency: 2412 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 2412$ MHz; $\sigma = 1.909$ mho/m; $\epsilon_r = 52.391$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(6.7, 6.7, 6.7); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (A); Type: QDOVA001BB; Serial: 1120

Rear/802.11b, Ch 1_w/Headset/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (measured) = 0.150 mW/g

Rear/802.11b, Ch 1_w/Headset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

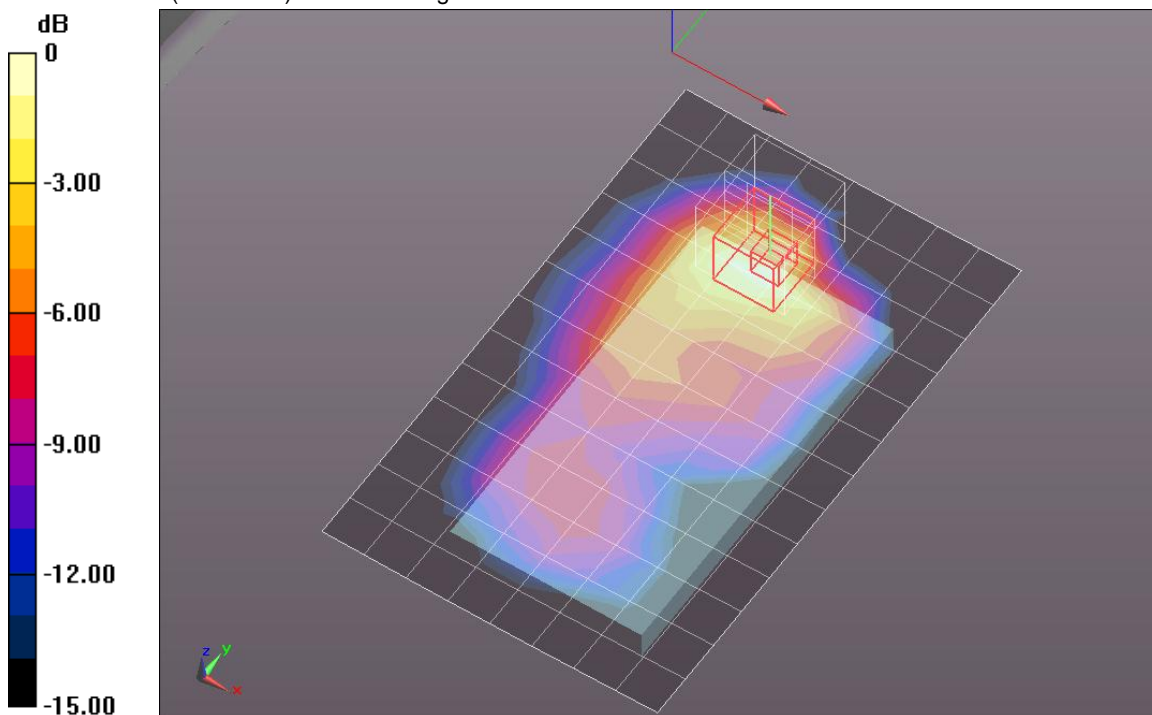
Reference Value = 9.005 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.5990

SAR(1 g) = 0.143 mW/g; SAR(10 g) = 0.071 mW/g

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

Maximum value of SAR (measured) = 0.174 mW/g



0 dB = 0.170mW/g = -15.39 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 5/31/2012

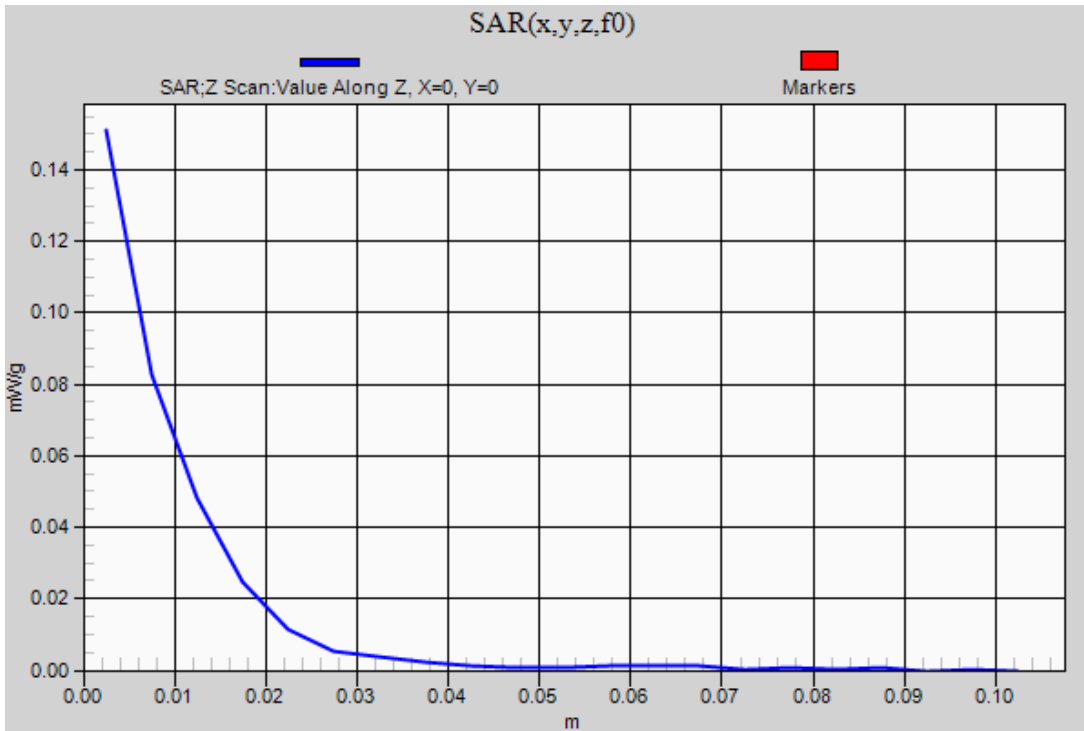
WiFi 2.45GHz Band

Frequency: 2412 MHz; Duty Cycle: 1:1

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

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

Maximum value of SAR (measured) = 0.151 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 6/4/2012

WiFi 5GHz Bands

Frequency: 5180 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: $f = 5180$ MHz; $\sigma = 4.775$ mho/m; $\epsilon_r = 35.93$; $\rho = 1000$ kg/m³

DASY5 Configuration:

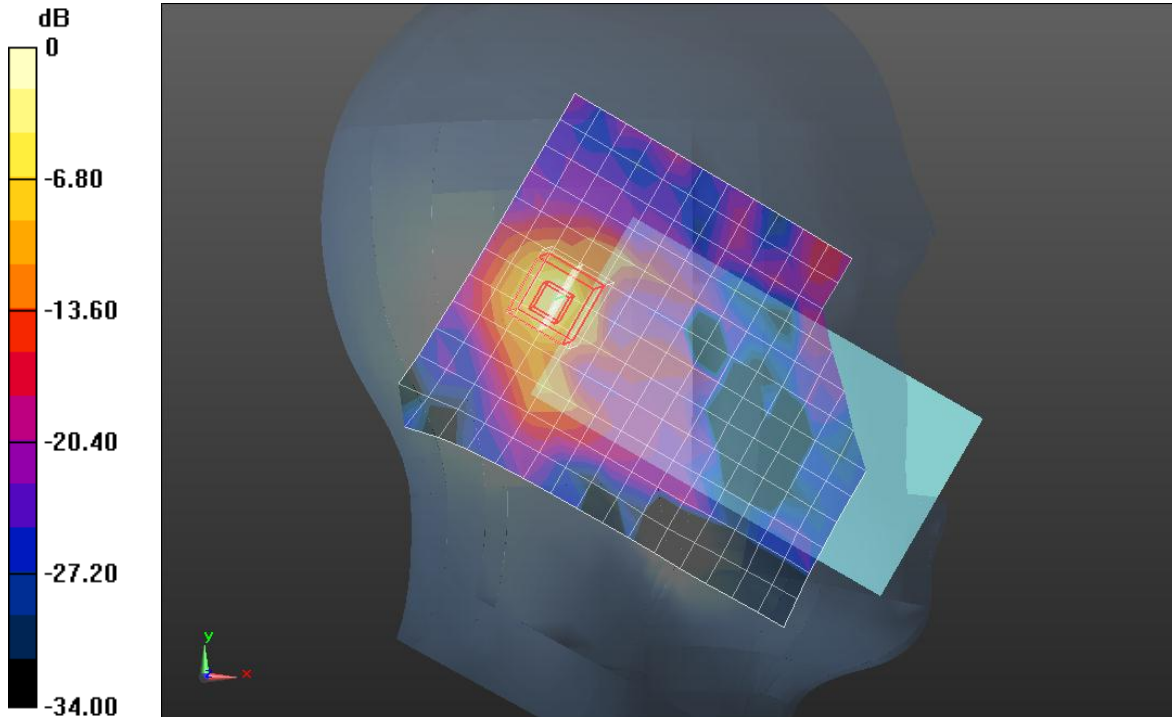
- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(4.61, 4.61, 4.61); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

LHS/Touch_Ch 36_w/Wireless Charging Cover/Area Scan (13x16x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.433 mW/g

LHS/Touch_Ch 36_w/Wireless Charging Cover/Zoom Scan (7x7x9)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 16.932 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 2.8440
SAR(1 g) = 0.827 mW/g; SAR(10 g) = 0.193 mW/g
Maximum value of SAR (measured) = 1.733 mW/g



0 dB = 1.730mW/g = 4.76 dB mW/g

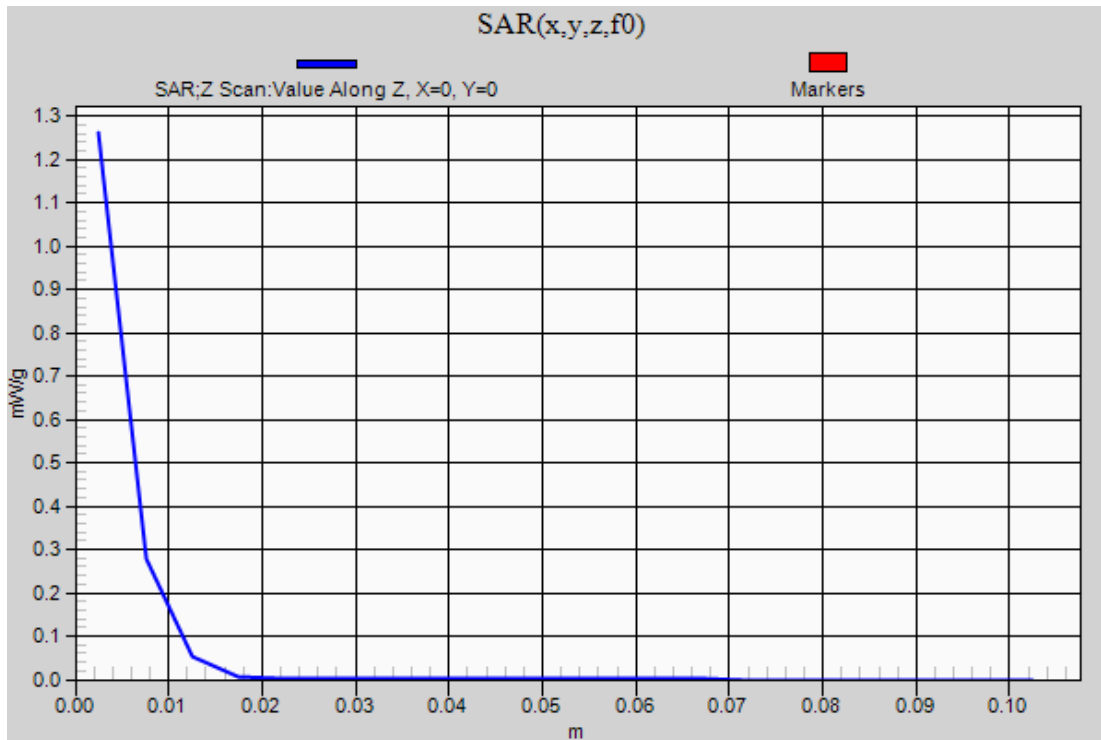
Test Laboratory: UL CCS SAR Lab B Date: 6/4/2012

WiFi 5GHz Bands

Frequency: 5180 MHz; Duty Cycle: 1:1

LHS/Touch_Ch 36_w/Wireless Charging Cover/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 1.261 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 6/1/2012

WiFi 5GHz Bands

Frequency: 5180 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: $f = 5180$ MHz; $\sigma = 5.296$ mho/m; $\epsilon_r = 50.569$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(4.04, 4.04, 4.04); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118

Rear/802.11a, Ch 36_w/Wireless Charging Cover/Area Scan (13x20x1): Measurement grid:

dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.278 mW/g

Rear/802.11a, Ch 36_w/Wireless Charging Cover/Zoom Scan (7x7x9)/Cube 0: Measurement

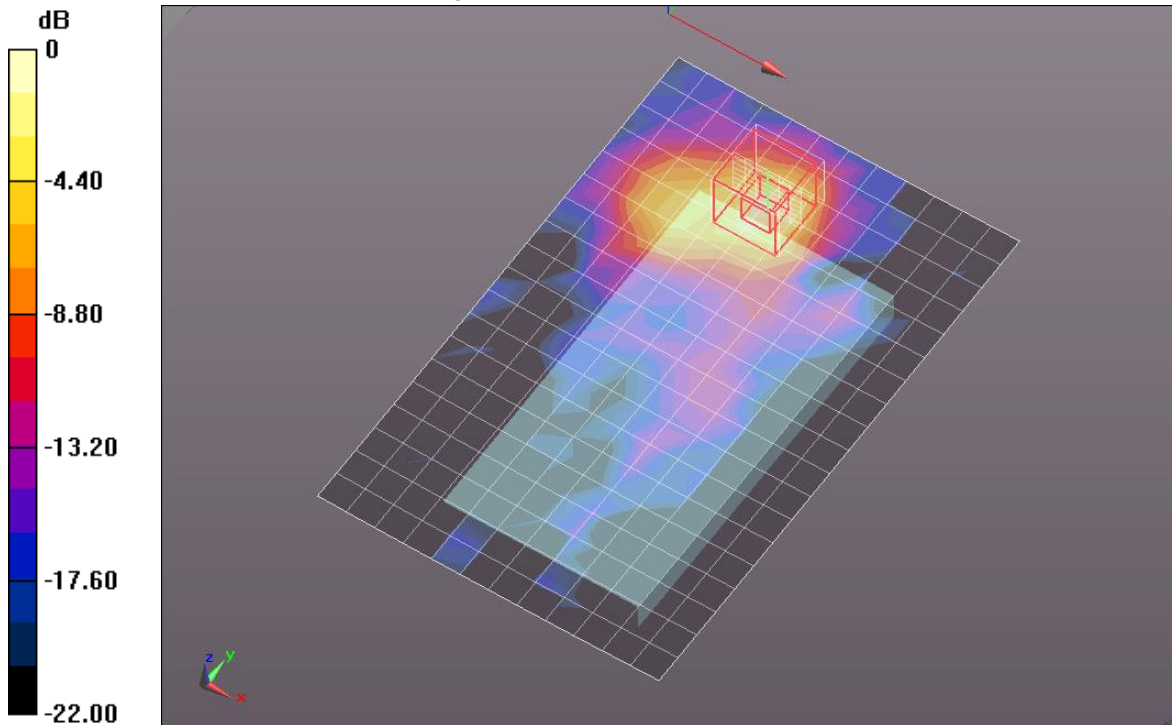
grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 7.974 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.5540

SAR(1 g) = 0.166 mW/g; SAR(10 g) = 0.052 mW/g

Maximum value of SAR (measured) = 0.294 mW/g



0 dB = 0.290mW/g = -10.75 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 6/1/2012

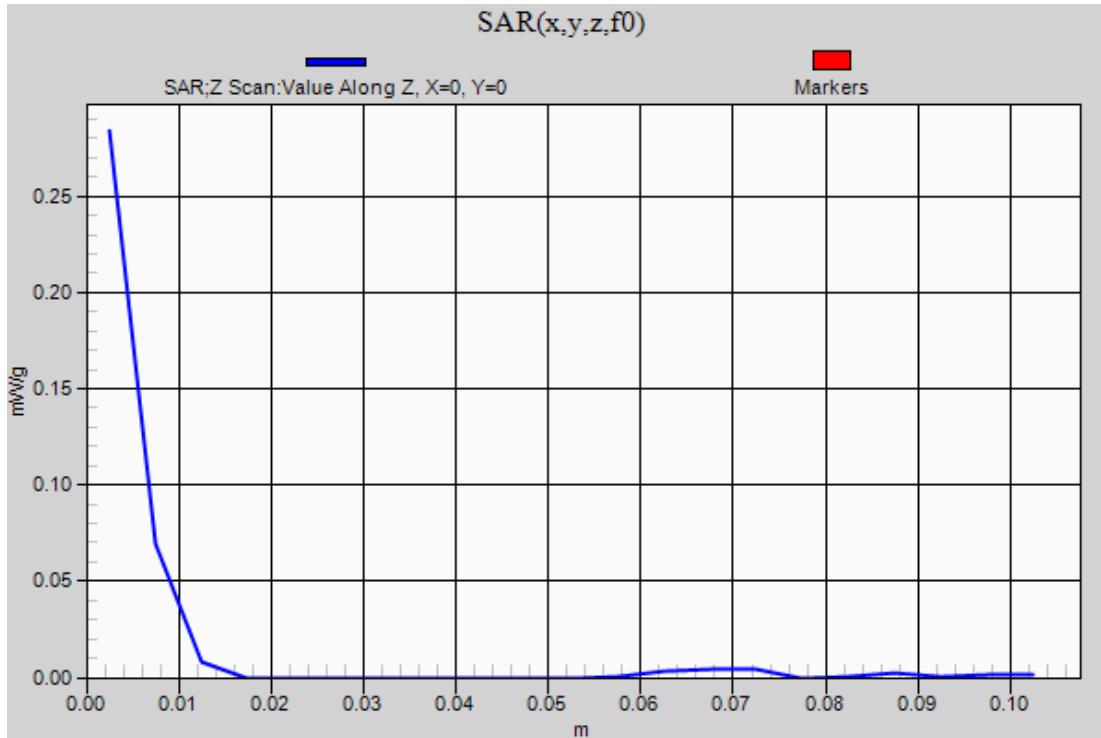
WiFi 5GHz Bands

Frequency: 5180 MHz; Duty Cycle: 1:1

Rear/802.11a, Ch 36_w/Wireless Charging Cover/Z Scan (1x1x21): Measurement grid:

dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.284 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 6/4/2012

WiFi 5GHz Bands

Frequency: 5320 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: $f = 5320$ MHz; $\sigma = 4.91$ mho/m; $\epsilon_r = 35.743$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(4.39, 4.39, 4.39); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

LHS/Touch_Ch 64/Area Scan (13x16x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 1.038 mW/g

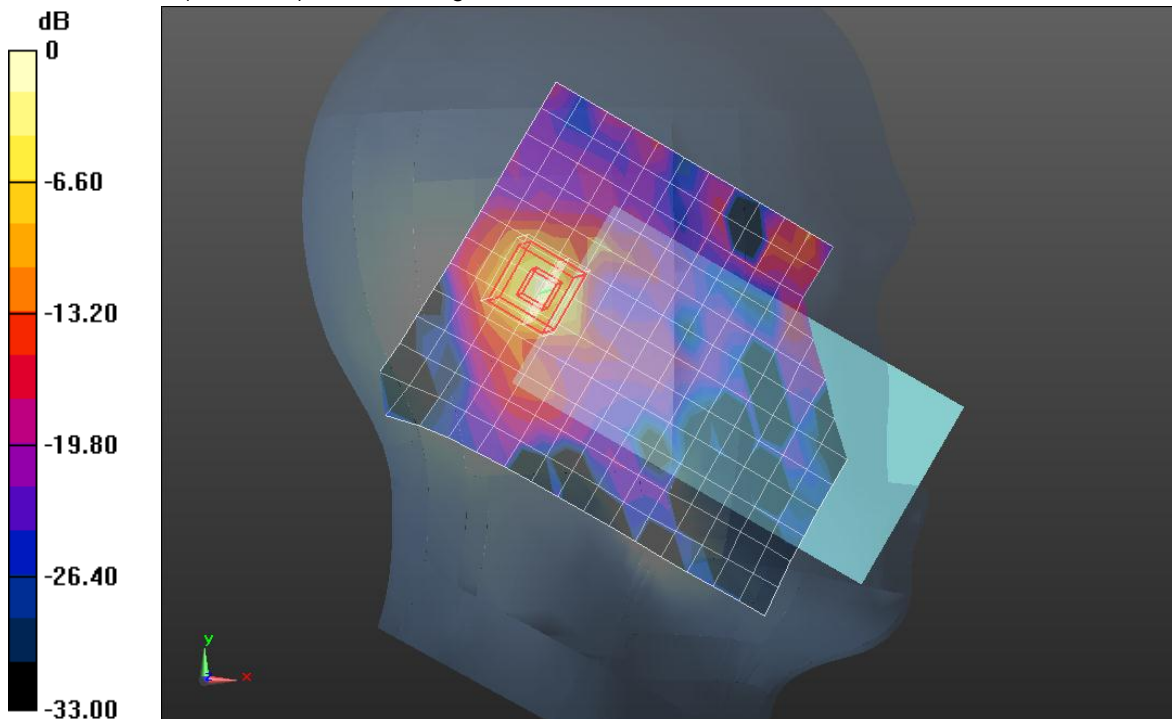
LHS/Touch_Ch 64/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 14.709 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 4.1260

SAR(1 g) = 0.558 mW/g; SAR(10 g) = 0.107 mW/g

Maximum value of SAR (measured) = 1.146 mW/g



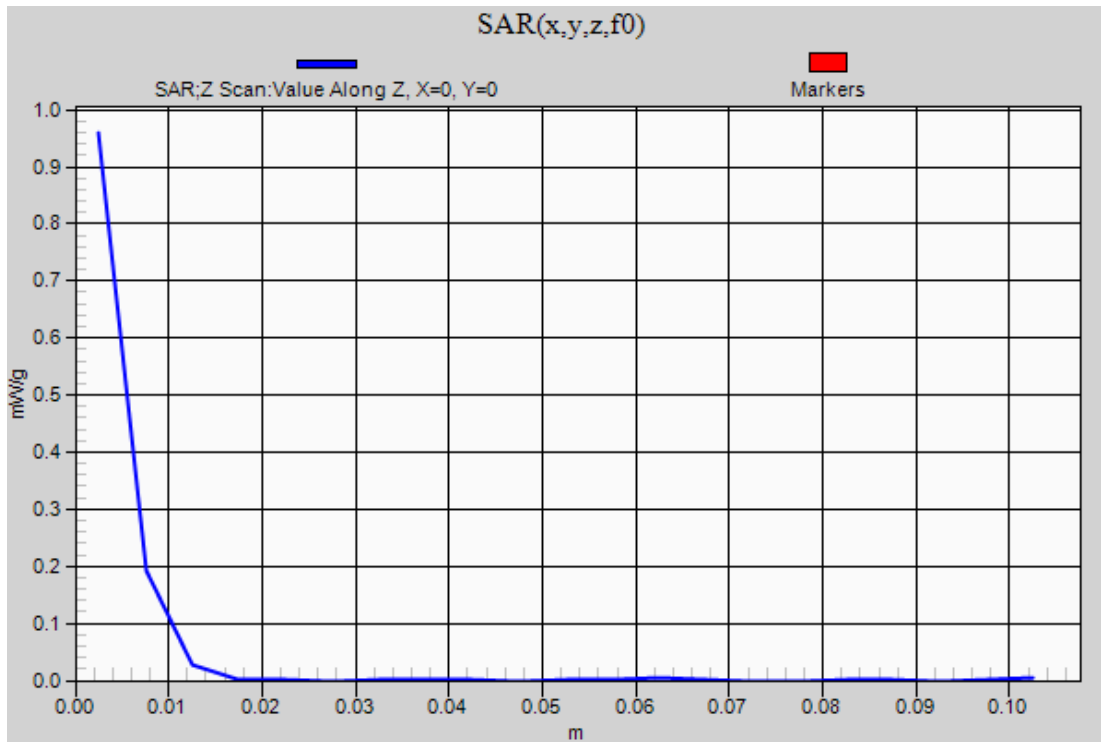
0 dB = 1.150mW/g = 1.21 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 6/4/2012

WiFi 5GHz Bands

Frequency: 5320 MHz; Duty Cycle: 1:1

LHS/Touch_Ch 64/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.959 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 6/1/2012

WiFi 5GHz Bands

Frequency: 5320 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: $f = 5320$ MHz; $\sigma = 5.503$ mho/m; $\epsilon_r = 50.282$; $\rho = 1000$ kg/m³

DASY5 Configuration:

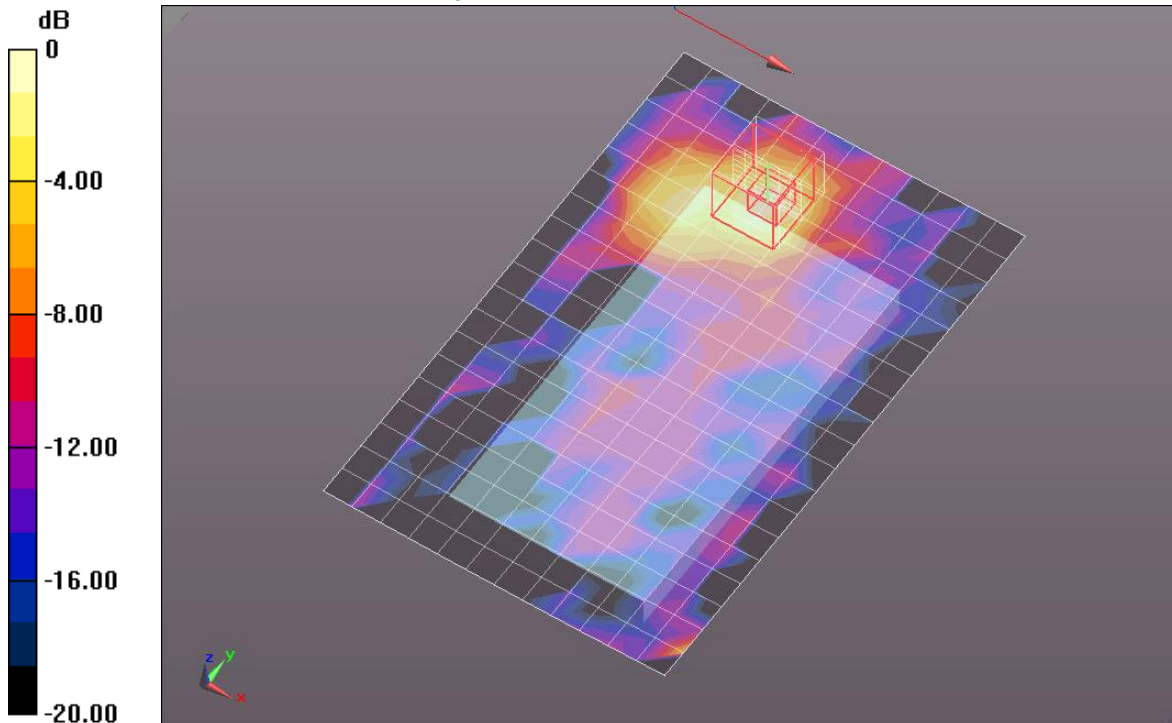
- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(3.8, 3.8, 3.8); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118

Rear/802.11a, Ch 64_w/Wireless Charging Cover/Area Scan (13x20x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.132 mW/g

Rear/802.11a, Ch 64_w/Wireless Charging Cover/Zoom Scan (7x7x9)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 5.047 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.7990
SAR(1 g) = 0.090 mW/g; SAR(10 g) = 0.028 mW/g
Maximum value of SAR (measured) = 0.122 mW/g



0 dB = 0.120mW/g = -18.42 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 6/1/2012

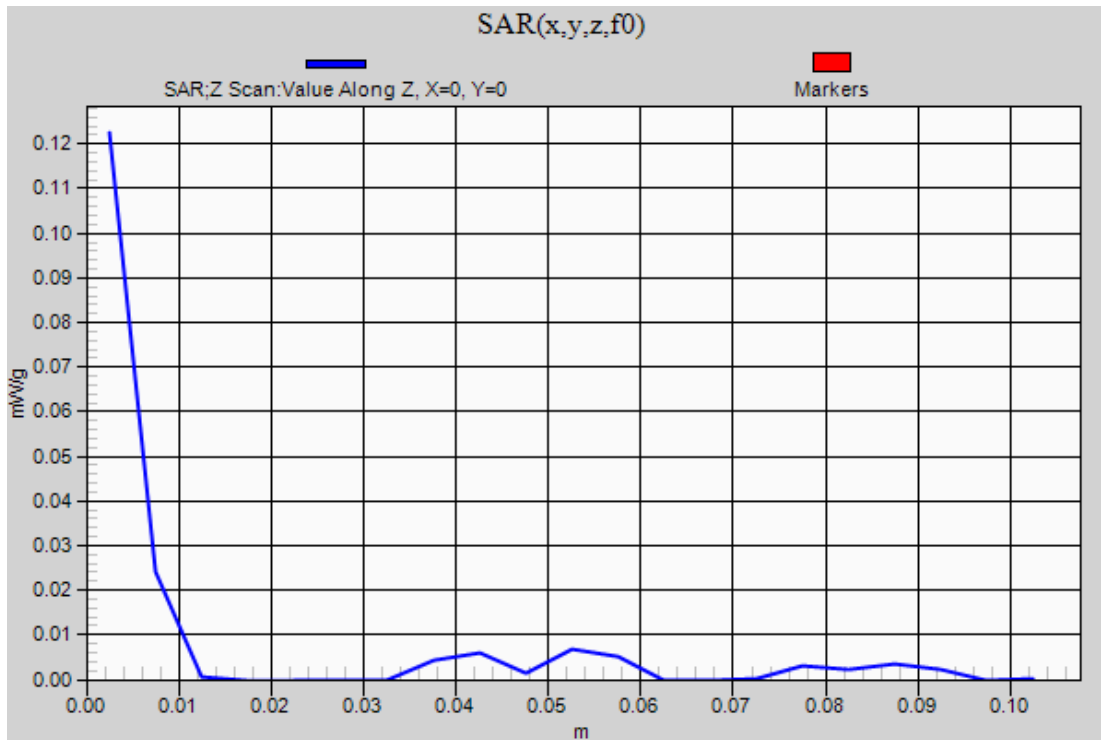
WiFi 5GHz Bands

Frequency: 5320 MHz; Duty Cycle: 1:1

Rear/802.11a, Ch 64_w/Wireless Charging Cover/Z Scan (1x1x21): Measurement grid:

dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.122 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 6/5/2012

WiFi 5GHz Bands

Frequency: 5580 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: $f = 5580$ MHz; $\sigma = 5.172$ mho/m; $\epsilon_r = 35.365$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(4.15, 4.15, 4.15); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

LHS/Touch_Ch 116_w/Wireless Charging Cover/Area Scan (13x16x1): Measurement grid:

$dx=10$ mm, $dy=10$ mm

Maximum value of SAR (measured) = 0.823 mW/g

LHS/Touch_Ch 116_w/Wireless Charging Cover/Zoom Scan (7x7x9)/Cube 0: Measurement

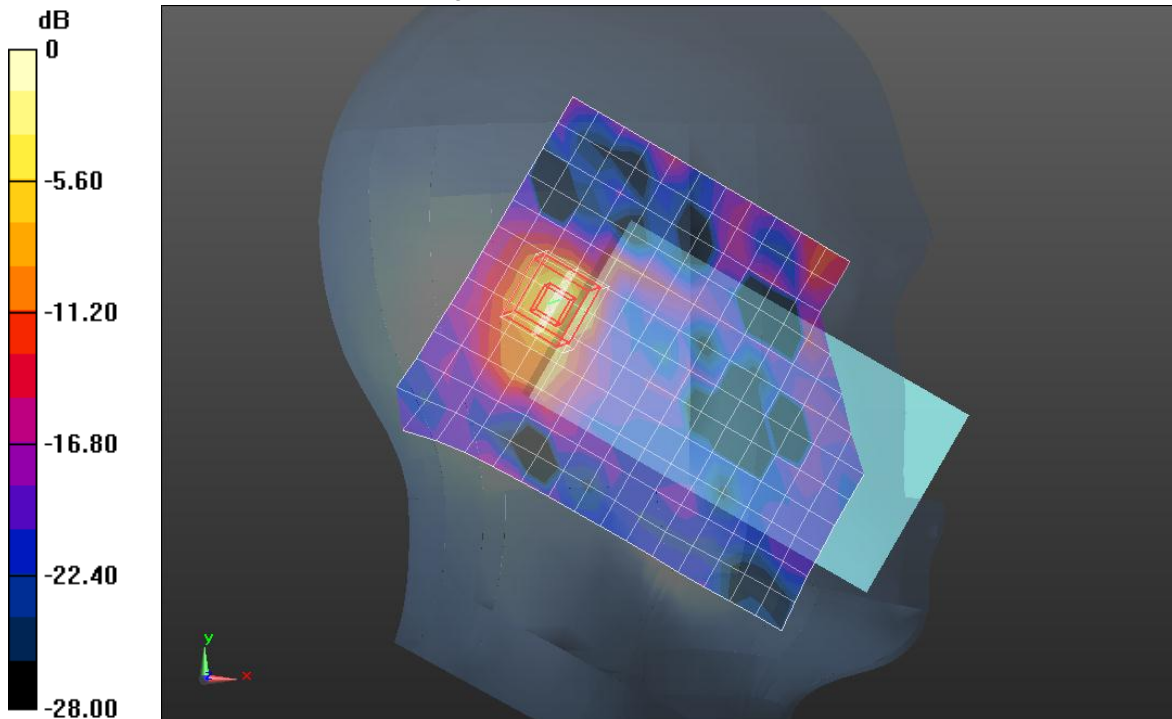
grid: $dx=4$ mm, $dy=4$ mm, $dz=2.5$ mm

Reference Value = 13.306 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 2.4160

SAR(1 g) = 0.513 mW/g; SAR(10 g) = 0.121 mW/g

Maximum value of SAR (measured) = 0.984 mW/g



0 dB = 0.980mW/g = -0.18 dB mW/g

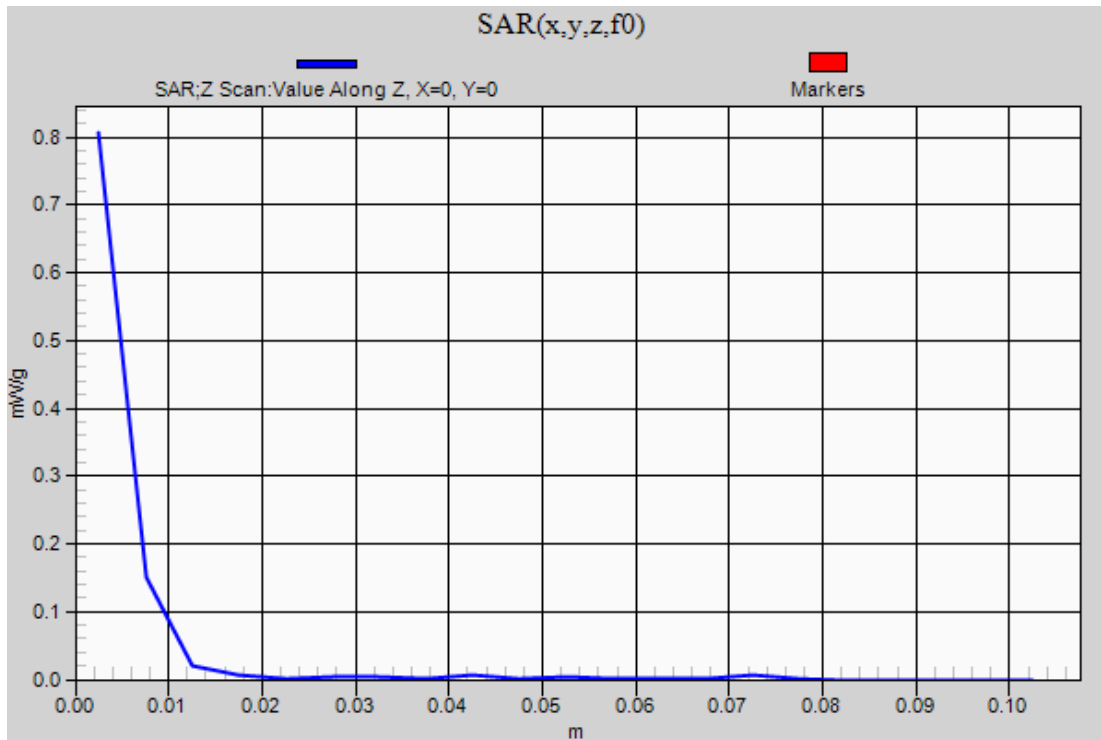
Test Laboratory: UL CCS SAR Lab B Date: 6/5/2012

WiFi 5GHz Bands

Frequency: 5580 MHz; Duty Cycle: 1:1

LHS/Touch_Ch 116_w/Wireless Charging Cover/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.806 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 6/2/2012

WiFi 5GHz Bands

Frequency: 5580 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: $f = 5580$ MHz; $\sigma = 5.521$ mho/m; $\epsilon_r = 50.511$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(3.44, 3.44, 3.44); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118

Rear/802.11a, Ch 116/Area Scan (13x20x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.241 mW/g

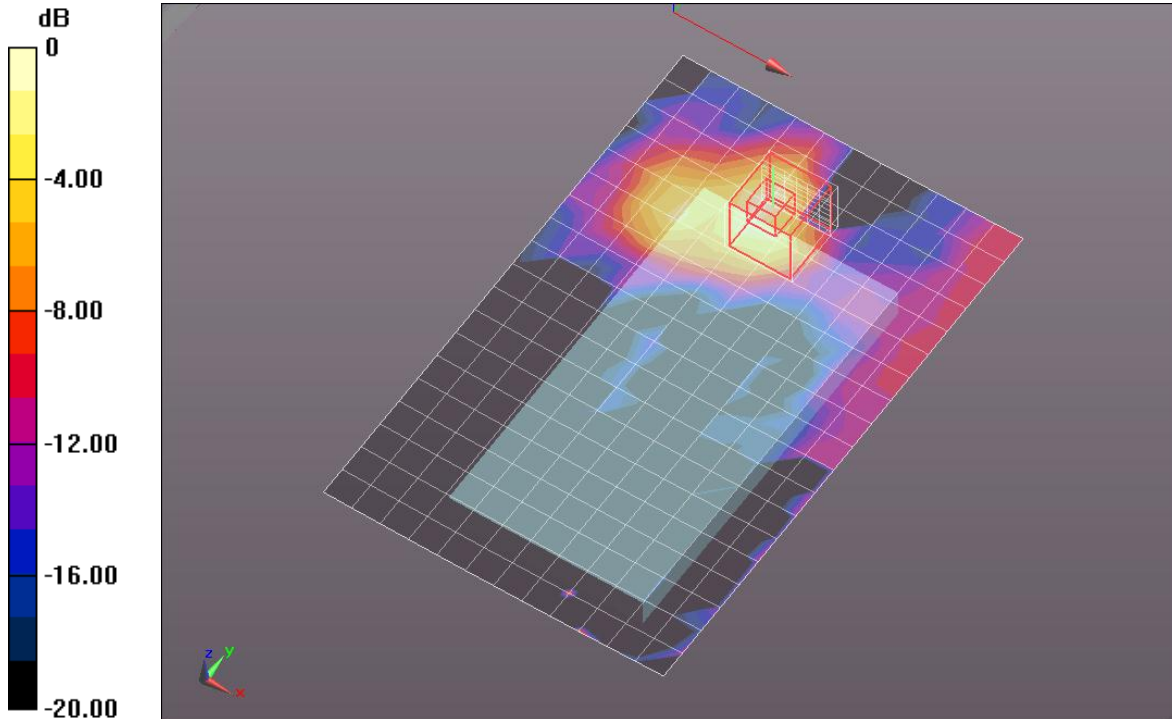
Rear/802.11a, Ch 116/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 7.038 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.4240

SAR(1 g) = 0.120 mW/g; SAR(10 g) = 0.033 mW/g

Maximum value of SAR (measured) = 0.221 mW/g



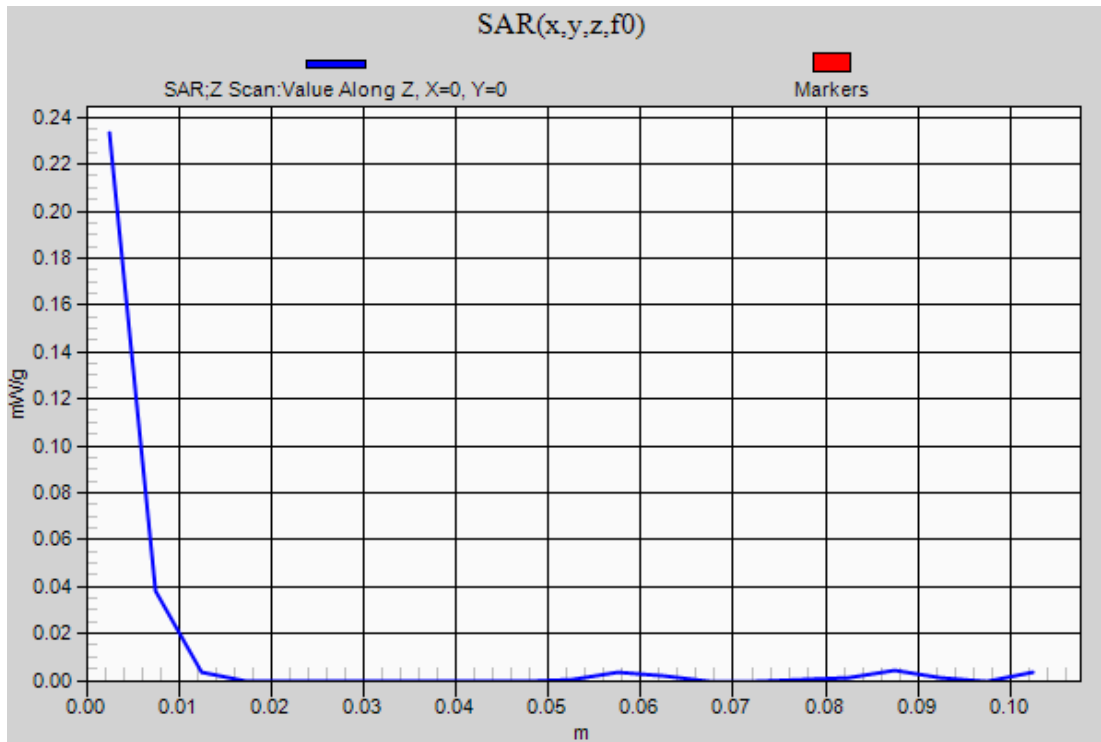
0 dB = 0.220mW/g = -13.15 dB mW/g

Test Laboratory: UL CCS SAR Lab B Date: 6/2/2012

WiFi 5GHz Bands

Frequency: 5580 MHz; Duty Cycle: 1:1

Rear/802.11a, Ch 116/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.233 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 6/5/2012

WiFi 5GHz Bands

Frequency: 5825 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: $f = 5825$ MHz; $\sigma = 5.425$ mho/m; $\epsilon_r = 35.019$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(4.14, 4.14, 4.14); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: SAM; Type: QD000P40CD; Serial: 1629

LHS/Touch_Ch 165_w/Wireless Charging Cover/Area Scan (13x16x1): Measurement grid:

dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.243 mW/g

LHS/Touch_Ch 165_w/Wireless Charging Cover/Zoom Scan (7x7x9)/Cube 0: Measurement

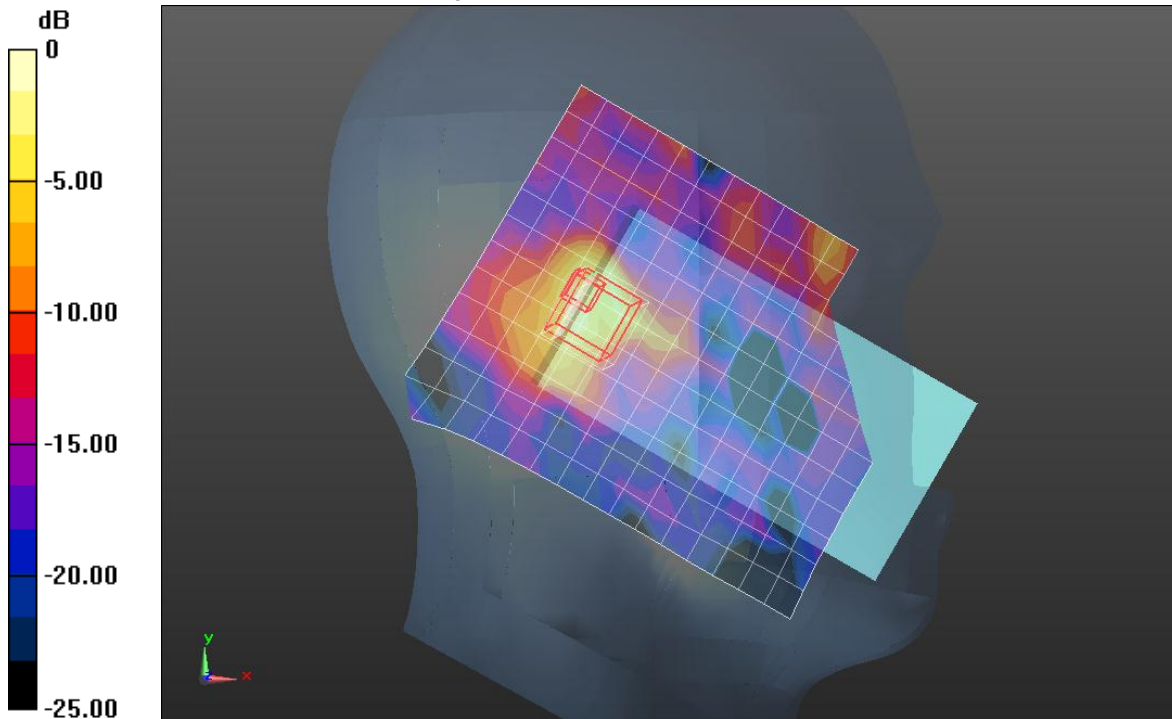
grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 6.607 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.7660

SAR(1 g) = 0.153 mW/g; SAR(10 g) = 0.052 mW/g

Maximum value of SAR (measured) = 0.393 mW/g



0 dB = 0.390mW/g = -8.18 dB mW/g

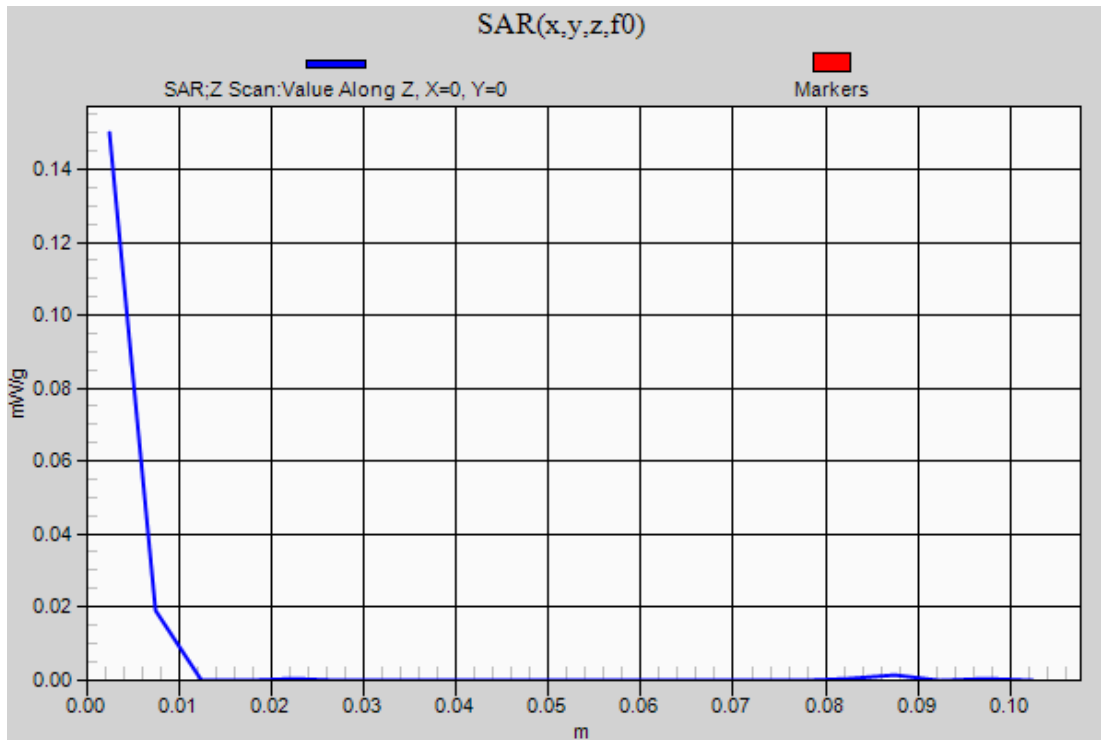
Test Laboratory: UL CCS SAR Lab B Date: 6/5/2012

WiFi 5GHz Bands

Frequency: 5825 MHz; Duty Cycle: 1:1

LHS/Touch_Ch 165_w/Wireless Charging Cover/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.150 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 6/2/2012

WiFi 5GHz Bands

Frequency: 5825 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 25.0°C; Liquid Temperature: 24.0°C
Medium parameters used: $f = 5825$ MHz; $\sigma = 5.813$ mho/m; $\epsilon_r = 50.155$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Electronics: DAE4 Sn1259; Calibrated: 2/13/2012
- Probe: EX3DV4 - SN3686; ConvF(3.57, 3.57, 3.57); Calibrated: 2/16/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1118

Rear/802.11a, Ch 165_w/Wireless Charging Cover/Area Scan (13x20x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.050 mW/g

Rear/802.11a, Ch 165_w/Wireless Charging Cover/Zoom Scan (7x7x9)/Cube 0:

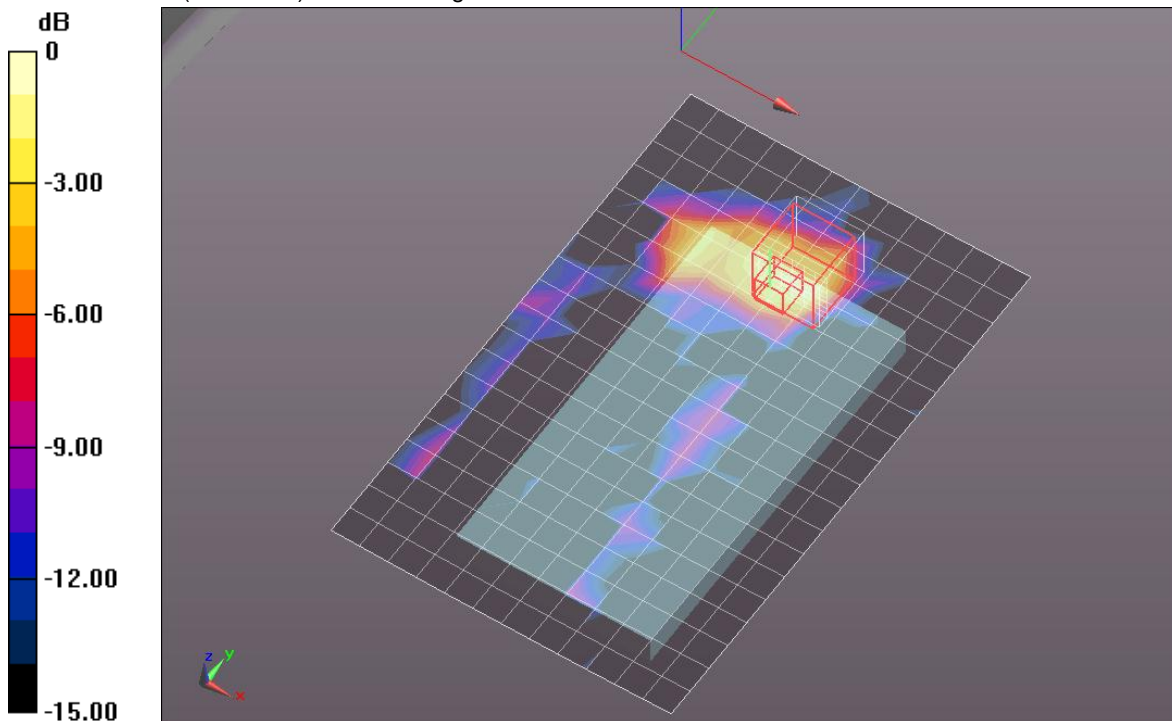
Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 2.452 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.4240

SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.00953 mW/g

Maximum value of SAR (measured) = 0.075 mW/g



0 dB = 0.070mW/g = -23.10 dB mW/g

14. Simultaneous Transmission SAR Analysis

As its max average power is 7.08 mW [$<60/f(\text{GHz})$ mW], standalone SAR is not required for Bluetooth. Therefore, Bluetooth need not be considered in the simultaneous transmission SAR evaluation of other transmitters

SAR Scaling Considerations for Simultaneous Transmission:

- The greatest deviation in measured output power below the maximum of output power tune-up limit across all transmit modes is 0.8 dBm. Applying a scale-down based on this value to the SAR limit of 1.6 W/kg results in a value of 1.33082 W/kg, which is then rounded down to 1.33 W/kg and used as the criteria to applying scaled SAR in simultaneous transmission conditions. In other words, for Simultaneous Transmission Cases with Sum of SAR values < 1.33 W/kg, SAR scaling was not applied.
- For simultaneous transmission cases where the Sum of SAR is > 1.6 W/kg with measured values, when the SPLSR is > 0.3 , no scaling was applied, for Volume Scans were performed to address compliance; if the SPLSR is < 0.3 with measured SAR values, the SPLSR is performed again with scaled values to ensure compliance and exemption from Volume Scans at the uppermost of output power tolerance.
- Hence, the following criteria for applying SAR scaling to simultaneous transmission:
 - Sum of SAR < 1.33 W/kg: No scaling is applied
 - 1.33 W/kg $<$ Sum of SAR < 1.6 W/kg: Scaling is applied
 - Sum of SAR > 1.6 W/kg, SPLSR > 0.3 : No scaling is applied
 - Sum of SAR > 1.6 W/kg, SPLSR < 0.3 : Scaling is applied, and SPLSR recalculated with scaled values
- Whenever SAR scaling was required for a simultaneous transmission case, the scaling factor for each of the transmitters involved is assessed independently according to the deviation in output power of each transmitter to the corresponding maximum tune-up limit. Scaling is then applied in this manner to all of the transmitters involved in order to determine the Sum of SAR after scaling to the maximum tune-up limit.
- If the resultant Sum of SAR value from scaling is > 1.6 W/kg, SPLSR will also be calculated.

14.1. Head Exposure Conditions

14.1.1. Sum of the SAR with Measured Values for W-CDMA & Wi-Fi in the 2.4 GHz Band

Sum of the SAR with Measured Values

Test Position	Voice			Data	Σ 1-g SAR (W/kg)
	GSM 850	GSM 1900	W-CDMA Band II	WiFi 2.4 GHz	
Left Touch	0.356			0.205	0.561
		0.189		0.205	0.394
			0.374	0.205	0.579
Left Tilt	0.260			0.302	0.562
		0.051		0.302	0.353
			0.154	0.302	0.456
Right Touch	0.428			0.349	0.777
		0.350		0.349	0.699
			0.191	0.349	0.540
Right Tilt	0.241			0.146	0.387
		0.079		0.146	0.225
			0.174	0.146	0.320

Note(s):

- No scaling was applied to any of the simultaneous transmission cases above as the Sum of SAR was < 1.33 W/kg for all listed cases.

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

14.1.2.Sum of the SAR for GSM & WiFi in the 5 GHz Bands

Sum of the SAR with Measured Values

Test Position	Voice		Data				Σ 1-g SAR (W/kg)
	GSM850	GSM 1900	WiFi 5.2 GHz	WiFi 5.3 GHz	WiFi 5.5 GHz	WiFi 5.8 GHz	
Left Touch	0.356		0.827				1.183
	0.356			0.558			0.914
	0.356				0.513		0.869
	0.356					0.153	0.509
		0.189	0.827				1.016
		0.189		0.558			0.747
		0.189			0.513		0.702
		0.189				0.153	0.342
Left Tilt	0.260		0.585				0.845
	0.260			0.522			0.782
	0.260				0.492		0.752
	0.260					0.064	0.324
		0.051	0.585				0.636
		0.051		0.522			0.573
		0.051			0.492		0.543
		0.051				0.064	0.115
Right Touch	0.428		0.654				1.082
	0.428			0.485			0.913
	0.428				0.463		0.891
	0.428					0.076	0.504
		0.350	0.654				1.004
		0.350		0.485			0.835
		0.350			0.463		0.813
		0.350				0.076	0.426
RightTilt	0.241		0.594				0.835
	0.241			0.509			0.750
	0.241				0.437		0.678
	0.241					0.068	0.309
		0.079	0.594				0.673
		0.079		0.509			0.588
		0.079			0.437		0.516
		0.079				0.068	0.147

Note(s):

- The SAR summation in the table above evaluates the SAR exposure for held-to-ear voice calls with WiFi in the 5 GHz bands transmitting simultaneously.
- No scaling was applied to any of the simultaneous transmission cases above as the Sum of SAR was < 1.33 W/kg for all listed cases.

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

14.1.3. Sum of the SAR for W-CDMA & WiFi in the 5 GHz Bands

Sum of the SAR with Measured Values

Test Position	Voice	Data				Σ 1-g SAR (W/kg)
	W-CDMA Band II	WiFi 5.2 GHz	WiFi 5.3 GHz	WiFi 5.85GHz	WiFi 5.8 GHz	
Left Touch	0.374	0.827				1.201
	0.374		0.558			0.932
	0.374			0.513		0.887
	0.374				0.153	0.527
Left Tilt	0.154	0.585				0.739
	0.154		0.522			0.676
	0.154			0.492		0.646
	0.154				0.064	0.218
Right Touch	0.191	0.654				0.845
	0.191		0.485			0.676
	0.191			0.463		0.654
	0.191				0.076	0.267
RightTilt	0.174	0.594				0.768
	0.174		0.509			0.683
	0.174			0.437		0.611
	0.174				0.068	0.242

Note(s):

- The SAR summation in the table above evaluates the SAR exposure for held-to-ear voice calls with WiFi in the 5 GHz bands transmitting simultaneously.
- No scaling was applied for any of the simultaneous transmission cases above as the Sum of SAR was < 1.33 W/kg for all listed cases.

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

14.1.4. Sum of the SAR for CDMA 1xRTT & Wi-Fi in the 5 GHz Bands

Sum of the SAR with Measured Values

Test Position	Voice		Data				Σ 1-g SAR (W/kg)
	CDMA BC0 1xRTT	CDMA BC1 1xRTT	WiFi 5.2 GHz	WiFi 5.3 GHz	WiFi 5.5 GHz	WiFi 5.8 GHz	
Left Touch	0.431		0.827				1.258
	0.431			0.558			0.989
	0.431				0.513		0.944
	0.431					0.153	0.584
		0.289	0.827				1.116
		0.289		0.558			0.847
		0.289			0.513		0.802
		0.289				0.153	0.442
Left Tilt	0.265		0.585				0.850
	0.265			0.522			0.787
	0.265				0.492		0.757
	0.265					0.064	0.329
		0.081	0.585				0.666
		0.081		0.522			0.603
		0.081			0.492		0.573
		0.081				0.064	0.145
Right Touch	0.479		0.654				1.133
	0.479			0.485			0.964
	0.479				0.463		0.942
	0.479					0.076	0.555
		0.577	0.654				1.231
		0.577		0.485			1.062
		0.577			0.463		1.040
		0.577				0.076	0.653
RightTilt	0.315		0.594				0.909
	0.315			0.509			0.824
	0.315				0.437		0.752
	0.315					0.068	0.383
		0.127	0.594				0.721
		0.127		0.509			0.636
		0.127			0.437		0.564
		0.127				0.068	0.195

Note(s):

- The SAR summation in the table above evaluates the SAR exposure for held-to-ear voice calls with WiFi in the 5 GHz bands transmitting simultaneously.
- No scaling was applied to any of the simultaneous transmission cases above as the Sum of SAR was < 1.33 W/kg for all listed cases.

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

14.1.5. Sum of the SAR for SV-DO & Wi-Fi in the 2.4 GHz Band

Sum of the SAR with Measured Values

Test Position	Voice		Data			Σ 1-g SAR (W/kg)
	CDMA BC0 1xRTT	CDMA BC1 1xRTT	CDMA BC0 1xEVDO	CDMA BC1 1xEVDO	WiFi 2.4 GHz	
Left Touch	0.431		0.719		0.205	1.355
	0.431			0.592	0.205	1.228
		0.289	0.719		0.205	1.213
		0.289		0.592	0.205	1.086
Left Tilt	0.265		0.491		0.148	0.904
	0.265			0.103	0.148	0.516
		0.081	0.491		0.148	0.720
		0.081		0.103	0.148	0.332
Right Touch	0.479		0.521		0.158	1.158
	0.479			0.342	0.158	0.979
		0.577	0.521		0.158	1.256
		0.577		0.342	0.158	1.077
RightTilt	0.315		0.341		0.146	0.802
	0.315			0.138	0.146	0.599
		0.127	0.341		0.146	0.614
		0.127		0.138	0.146	0.411

Note(s):

1.355 Denotes the select Simultaneous Transmission case(s) to which SAR scaling was applied.

Sum of the SAR with Scaled Values for Select Case(s)

Test Position	Voice		Data			Σ 1-g SAR (W/kg)
	CDMA BC0 1xRTT	CDMA BC1 1xRTT	CDMA BC0 1xEVDO	CDMA BC1 1xEVDO	WiFi 2.4 GHz	
Left Touch	0.451		0.770		0.230	1.451

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is <1.6 W/kg SPLSR assessment is not required.

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

14.1.6. Sum of the SAR for SV-LTE & Wi-Fi in the 2.4 GHz Band

Sum of the SAR with Measured Values

Test Position	Voice		Data		Σ 1-g SAR (W/kg)
	CDMA BC0 1xRTT	CDMA BC1 1xRTT	LTE Band 13	WiFi 2.4 GHz	
Left Touch	0.431		0.390	0.205	1.026
		0.289	0.390	0.205	0.884
Left Tilt	0.265		0.227	0.148	0.640
		0.081	0.227	0.148	0.456
Right Touch	0.479		0.315	0.158	0.952
		0.577	0.315	0.158	1.050
RightTilt	0.315		0.170	0.146	0.631
		0.127	0.170	0.146	0.443

Note(s):

- No scaling was applied to any of the simultaneous transmission cases above as the Sum of SAR was < 1.33 W/kg for all listed cases.

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

14.2. Body Exposure Conditions

14.2.1. Sum of the SAR for GSM, WCDMA & Wi-Fi in the 2.4 GHz Band

Sum of the SAR with Measured Values

Test Position	Data				Σ 1-g SAR (W/kg)
	GSM850	GSM1900	WCDMA Band II	WiFi 2.4 GHz	
Rear	0.902			0.143	1.045
		0.860		0.143	1.003
			0.681	0.143	0.824
Front	0.863			0.052	0.915
		0.578		0.052	0.630
			0.396	0.052	0.448
Edge 1	n/a			0.076	0.076
		n/a		0.076	0.076
			n/a	0.076	0.076
Edge 2	0.675			n/a	0.675
		0.388		n/a	0.388
			n/a	n/a	0.000
Edge 3	0.184			n/a	0.184
		0.298		n/a	0.298
			0.301	n/a	0.301
Edge 4	n/a			0.017	0.017
		n/a		0.017	0.017
			0.315	0.017	0.332

Note(s):

- No scaling was applied to any of the simultaneous transmission cases above as the Sum of SAR was < 1.33 W/kg for all listed cases.

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg, SPLSR assessment is not required.

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

14.2.2. Sum of the SAR for GSM & Wi-Fi in the 5 GHz Bands

Sum of the SAR with Measured Values

Test Position	Voice		Data				Σ 1-g SAR (W/kg)
	GSM850	GSM 1900	WiFi 5.2 GHz	WiFi 5.3 GHz	WiFi 5.5 GHz	WiFi 5.8 GHz	
Rear	0.902		0.166				1.068
	0.902			0.090			0.992
	0.902				0.120		1.022
	0.902					0.046	0.948
		0.860	0.166				1.026
		0.860		0.090			0.950
		0.860			0.120		0.980
		0.860				0.046	0.906
Front	0.863		0.059				0.922
	0.863			0.054			0.917
	0.863				0.101		0.964
	0.863					0.030	0.893
		0.578	0.059				0.637
		0.578		0.054			0.632
		0.578			0.101		0.679
		0.578				0.030	0.608

Note(s):

- The SAR summation in the table above evaluates the SAR exposure for body-worn voice calls with WiFi in the 5 GHz bands transmitting simultaneously.
- The SAR values measured for GPRS mode were used to represent the SAR for GSM Voice Mode.
- No scaling was applied to any of the simultaneous transmission cases above as the Sum of SAR was < 1.33 W/kg for all listed cases.

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

14.2.3. Sum of the SAR for W-CDMA & Wi-Fi in the 5 GHz Bands

Sum of the SAR with Measured Values

Test Position	Voice	Data				Σ 1-g SAR (W/kg)
	W-CDMA Band II	WiFi 5.2 GHz	WiFi 5.3 GHz	WiFi 5.85GHz	WiFi 5.8 GHz	
Rear	0.681	0.166				0.847
	0.681		0.090			0.771
	0.681			0.120		0.801
	0.681				0.046	0.727
Front	0.396	0.059				0.455
	0.396		0.054			0.450
	0.396			0.101		0.497
	0.396				0.030	0.426

Note(s):

- The SAR summation in the table above evaluates the SAR exposure for body-worn voice calls with WiFi in the 5 GHz bands transmitting simultaneously
- No scaling was applied to any of the simultaneous transmission cases above as the Sum of SAR was < 1.33 W/kg for all listed cases.

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

14.2.4. Sum of the SAR for CDMA 1xRTT & Wi-Fi in the 5 GHz Bands

Sum of the SAR with Measured Values

Test Position	Voice		Data				Σ 1-g SAR (W/kg)
	CDMA BC0 1xRTT	CDMA BC1 1xRTT	WiFi 5.2 GHz	WiFi 5.3 GHz	WiFi 5.5 GHz	WiFi 5.8 GHz	
Rear	0.585		0.166				0.751
	0.585			0.090			0.675
	0.585				0.120		0.705
	0.585					0.046	0.631
		0.910	0.166				1.076
		0.910		0.090			1.000
		0.910			0.120		1.030
		0.910				0.046	0.956
Front	0.534		0.059				0.593
	0.534			0.054			0.588
	0.534				0.101		0.635
	0.534					0.030	0.564
		0.635	0.059				0.694
		0.635		0.054			0.689
		0.635			0.101		0.736
		0.635				0.030	0.665

Note(s):

- The SAR summation in the table above evaluates the SAR exposure for body-worn voice calls with WiFi in the 5 GHz bands transmitting simultaneously
- No scaling was applied to any of the simultaneous transmission cases above as the Sum of SAR was < 1.33 W/kg for all listed cases.

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

14.2.5. Sum of the SAR for SV-DO & Wi-Fi in the 2.4 GHz Band

Sum of the SAR with Measured Values

Test Position	Voice		Data		WiFi 2.4 GHz	Σ 1-g SAR (W/kg)
	CDMA BC0 1xRTT	CDMA BC1 1xRTT	CDMA BC0 1xEVDO	CDMA BC1 1xEVDO		
Rear	0.585		0.617		0.143	1.345
	0.585			0.913	0.143	1.641
		0.910	0.617		0.143	1.670
		0.910		0.913	0.143	1.966
Front	0.534		0.209		0.052	0.795
	0.534			0.586	0.052	1.172
		0.635	0.209		0.052	0.896
		0.635		0.586	0.052	1.273
Edge 1	n/a		0.139		0.076	0.215
	n/a			n/a	0.076	0.076
		n/a	0.139		0.076	0.215
		n/a		n/a	0.076	0.076
Edge 2	0.382		0.403		n/a	0.785
	0.382			n/a	n/a	0.382
		0.363	0.403		n/a	0.766
		0.363		n/a	n/a	0.363
Edge 3	0.152		n/a		n/a	0.152
	0.152			0.299	n/a	0.451
		0.340	n/a		n/a	0.340
		0.340		0.299	n/a	0.639
Edge 4	n/a		n/a		0.017	0.017
	n/a			0.377	0.017	0.394
		n/a	n/a		0.017	0.017
		n/a		0.377	0.017	0.394

Note(s):

1.345 Denotes the select Simultaneous Transmission case(s) to which SAR scaling was applied.

Sum of the SAR with Scaled Values for Select Case(s)

Test Position	Voice		Data		WiFi 2.4 GHz	Σ 1-g SAR (W/kg)
	CDMA BC0 1xRTT	CDMA BC1 1xRTT	CDMA BC0 1xEVDO	CDMA BC1 1xEVDO		
Rear	0.613		0.661		0.160	1.434

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination					Σ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
		CDMA BC0 1xRTT	CDMA BC1 1xRTT	CDMA BC0 1xEVDO	CDMA BC1 1xEVDO	WiFi 2.4 GHz				
1	Rear	0.585			0.913	0.143	1.641			
		0.585			0.913		1.498	5.00	0.300	1
		0.585				0.143	0.728	11.59	0.063	2
					0.913	0.143	1.056	11.51	0.092	3
2	Rear		0.910	0.617		0.143	1.670			
			0.910	0.617			1.527	7.08	0.216	4
			0.910			0.143	1.053	9.03	0.117	5
				0.617		0.143	0.760	2.51	0.303	6
3	Rear		0.910		0.913	0.143	1.966			
			0.910		0.913		1.823	3.70	0.493	7
			0.910			0.143	1.053	9.03	0.117	5
					0.913	0.143	1.056	11.51	0.092	3

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is required for all listed Cases because the sum of the 1-g SAR is > 1.6 W/kg for each of these cases and the SPLSR for at least one combination of antenna pairing within each case is ≥ 0.3

14.2.6. Sum of the SAR for SV-LTE & Wi-Fi in the 2.4 GHz Band

Sum of the SAR with Measured Values

Test Position	Voice		Data		Σ 1-g SAR (W/kg)
	CDMA BC0 1xRTT	CDMA BC1 1xRTT	LTE Band 13	WiFi 2.4 GHz	
Rear	0.585		0.681	0.143	1.409
		0.910	0.681	0.143	1.734
Front	0.534		0.431	0.052	1.017
		0.635	0.431	0.052	1.118
Edge 1	n/a		n/a	0.076	0.076
		n/a	n/a	0.076	0.076
Edge 2	0.382		n/a	n/a	0.382
		0.363	n/a	n/a	0.363
Edge 3	0.152		0.260	n/a	0.412
		0.340	0.260	n/a	0.600
Edge 4	n/a		0.402	0.017	0.419
		n/a	0.402	0.017	0.419

Note(s):

1.409 Denotes the select Simultaneous Transmission case(s) for which SAR scaling considerations are applied to

Sum of the SAR with Scaled Values for Select Case(s)

Test Position	Voice		Data		Σ 1-g SAR (W/kg)
	CDMA BC0 1xRTT	CDMA BC1 1xRTT	LTE Band 13	WiFi 2.4 GHz	
Rear	0.613		0.819	0.160	1.592

SAR to Peak Location Separation Ratio (SPLSR)

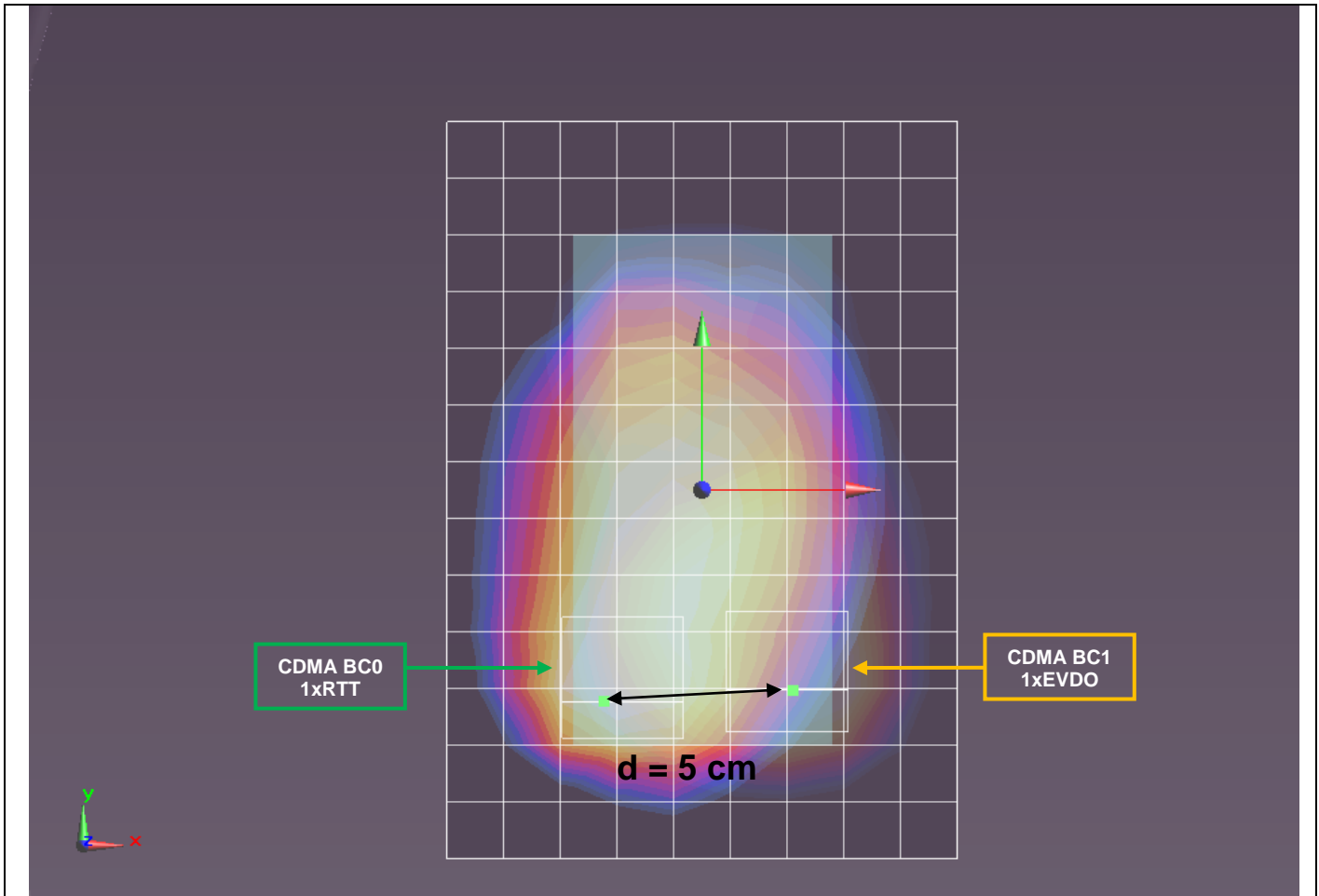
Case #	Test Position	Worst-case combination				Σ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
		CDMA BC0 1xRTT	CDMA BC1 1xRTT	LTE Band 13	WiFi 2.4 GHz				
4	Rear		0.910	0.681	0.143	1.734			
			0.910	0.681		1.591	3.56	0.447	8
			0.910		0.143	1.053	9.03	0.117	5
				0.681	0.143	0.824	11.46	0.072	9

Conclusion:

- Simultaneous transmission SAR measurement (Volume Scan) is required for Case #4 because the Sum of the 1-g SAR is > 1.6 W/kg and the SPLSR for at least one combination of antenna pairing within is ≥ 0.3

14.3. SAR Peak Location Separation Distance Calculations and Figures

Figure (1)

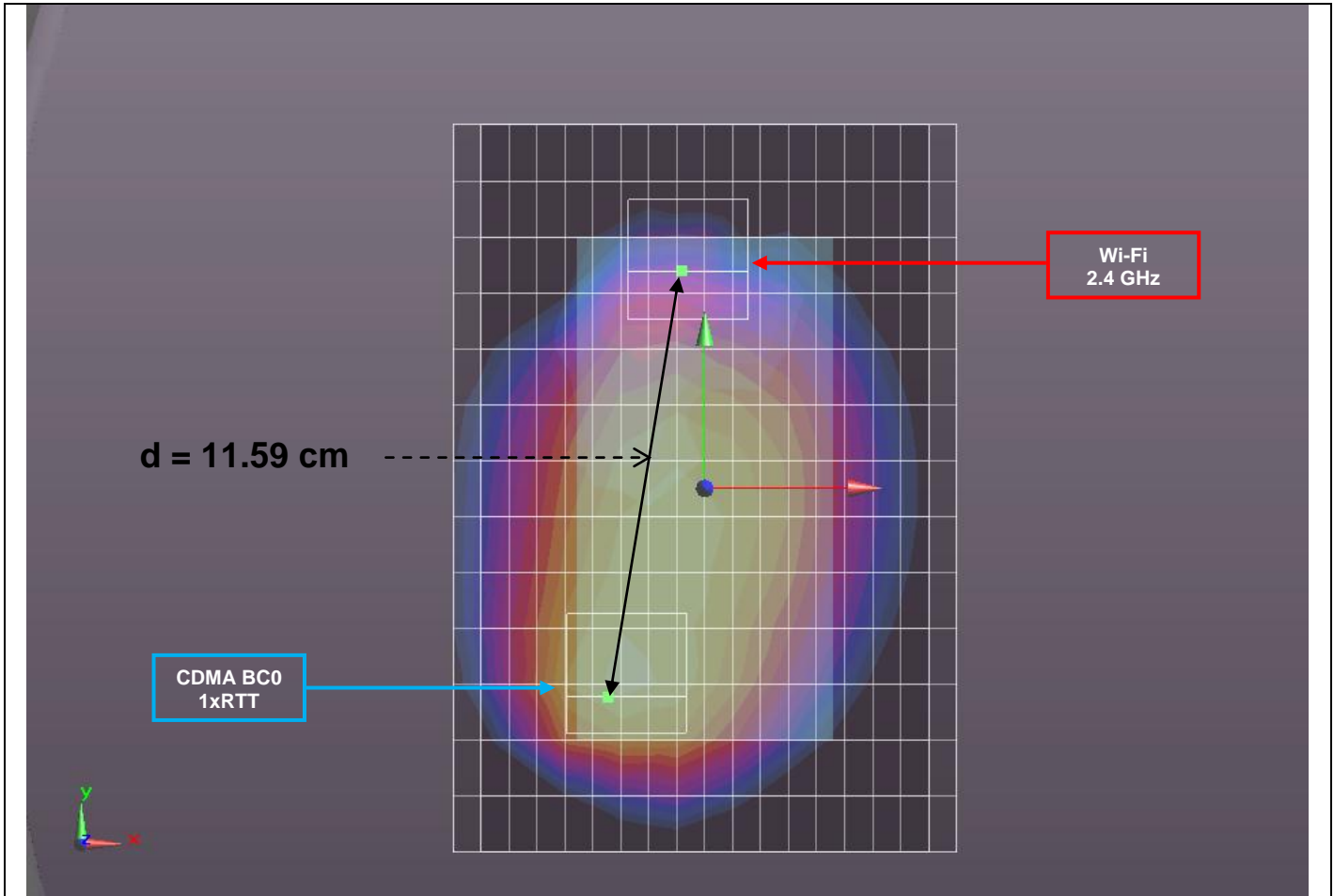


Mode	Peak SAR mW/g	X m	Y m	Z m
CDMA BC0, 1xRTT	0.912	-0.0258	-0.0559	-0.186
CDMA BC1, 1xEVDO	1.53	0.0241	-0.0528	-0.186

d: Calculated distance (cm)	
5.00	

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (2)

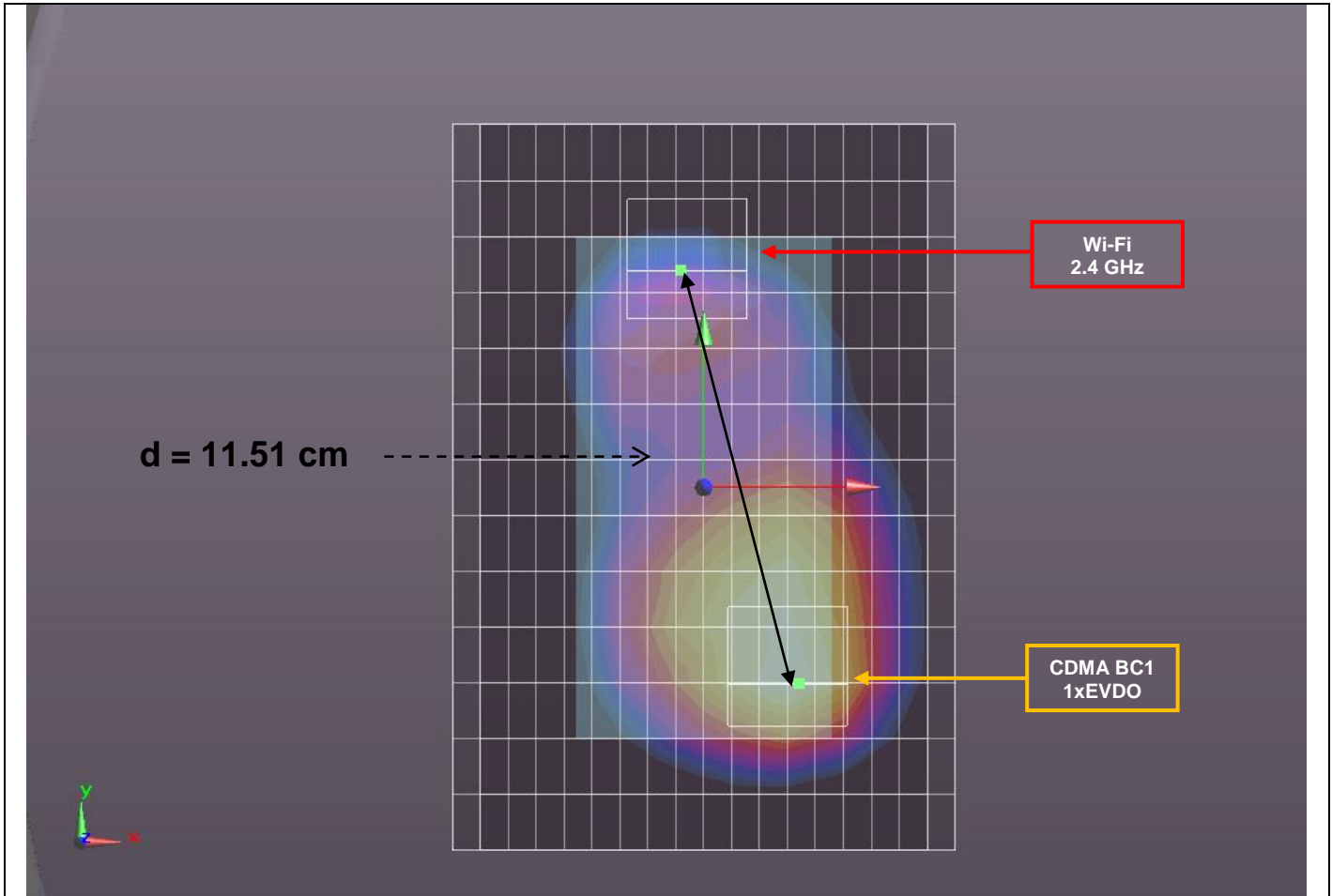


Mode	Peak SAR mW/g	X m	Y m	Z m
CDMA BC0, 1xRTT	0.912	-0.0258	-0.0559	-0.186
WiFi	0.599	-0.0061	0.0583	-0.187

d: Calculated distance (cm)
11.59

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (3)

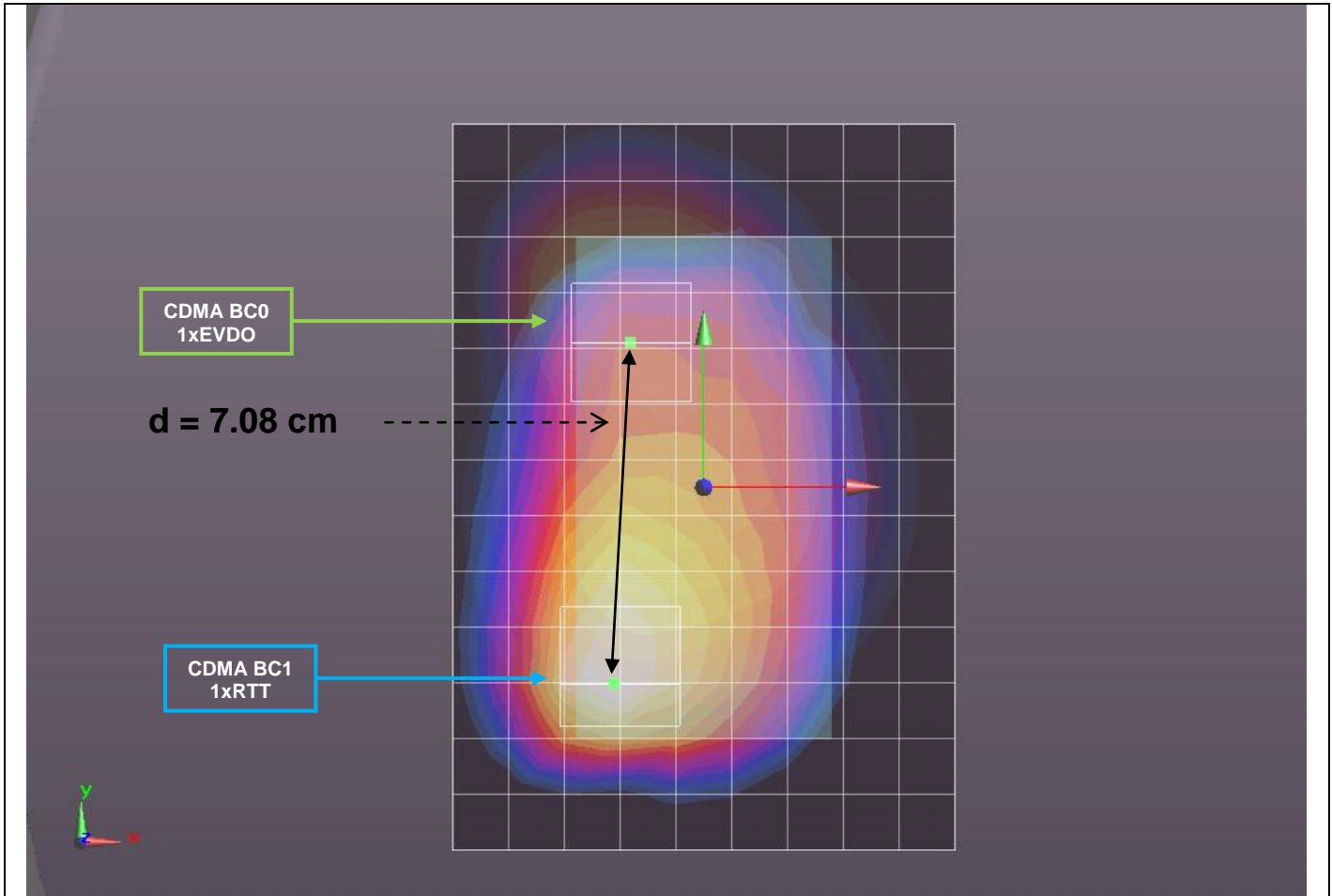


Mode	Peak SAR mW/g	X m	Y m	Z m
CDMA BC1, 1xEVDO	1.53	0.0241	-0.0528	-0.186
WiFi	0.599	-0.0061	0.0583	-0.187

d: Calculated distance (cm)
11.51

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (4)

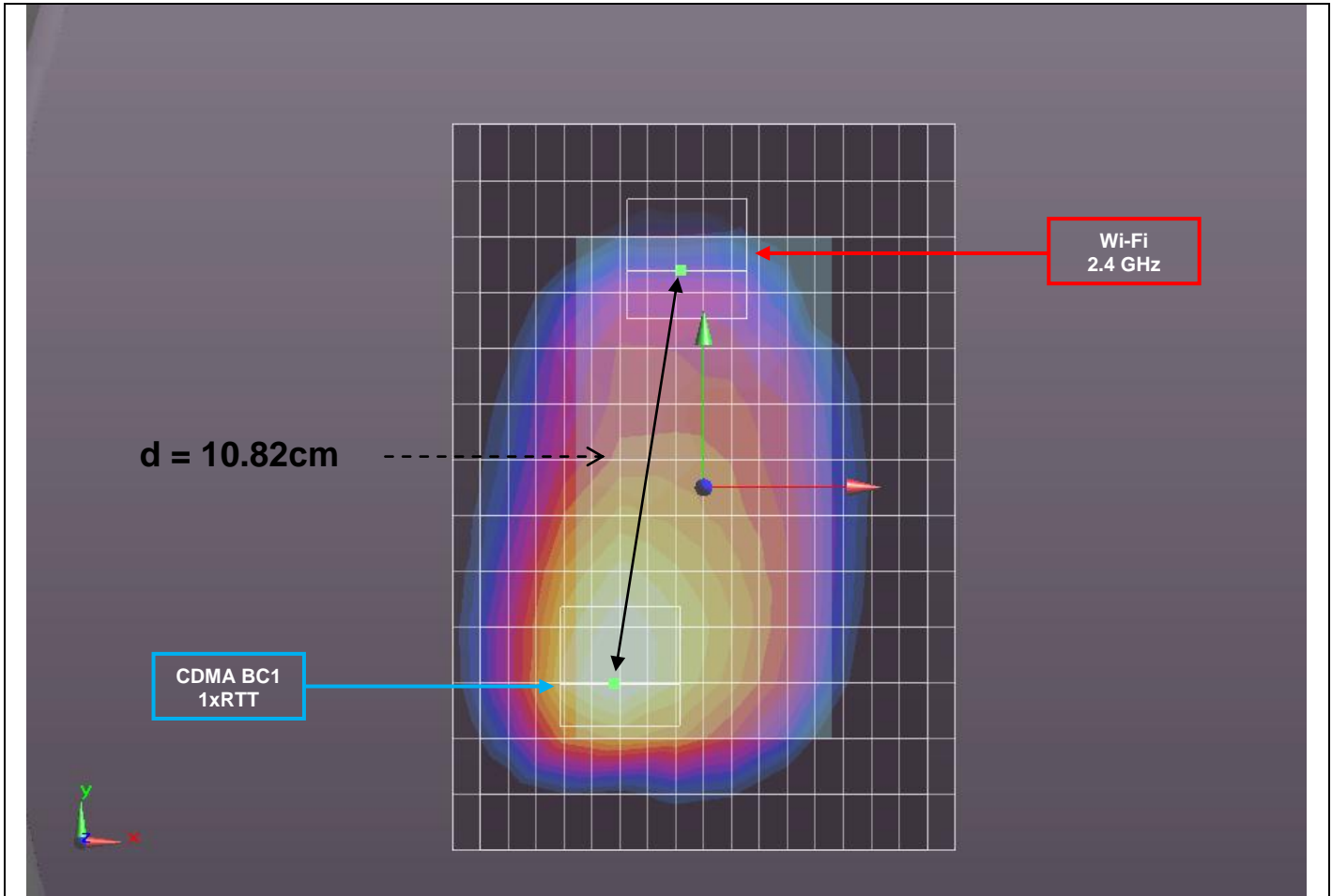


Mode	Peak SAR mW/g	X m	Y m	Z m
CDMA BC1, 1xRTT	0.751	-0.0065	-0.032	-0.186
CDMA BC0, 1xEVDO	1.04	-0.0195	0.0375	-0.183

d: Calculated distance (cm)
7.08

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (5)

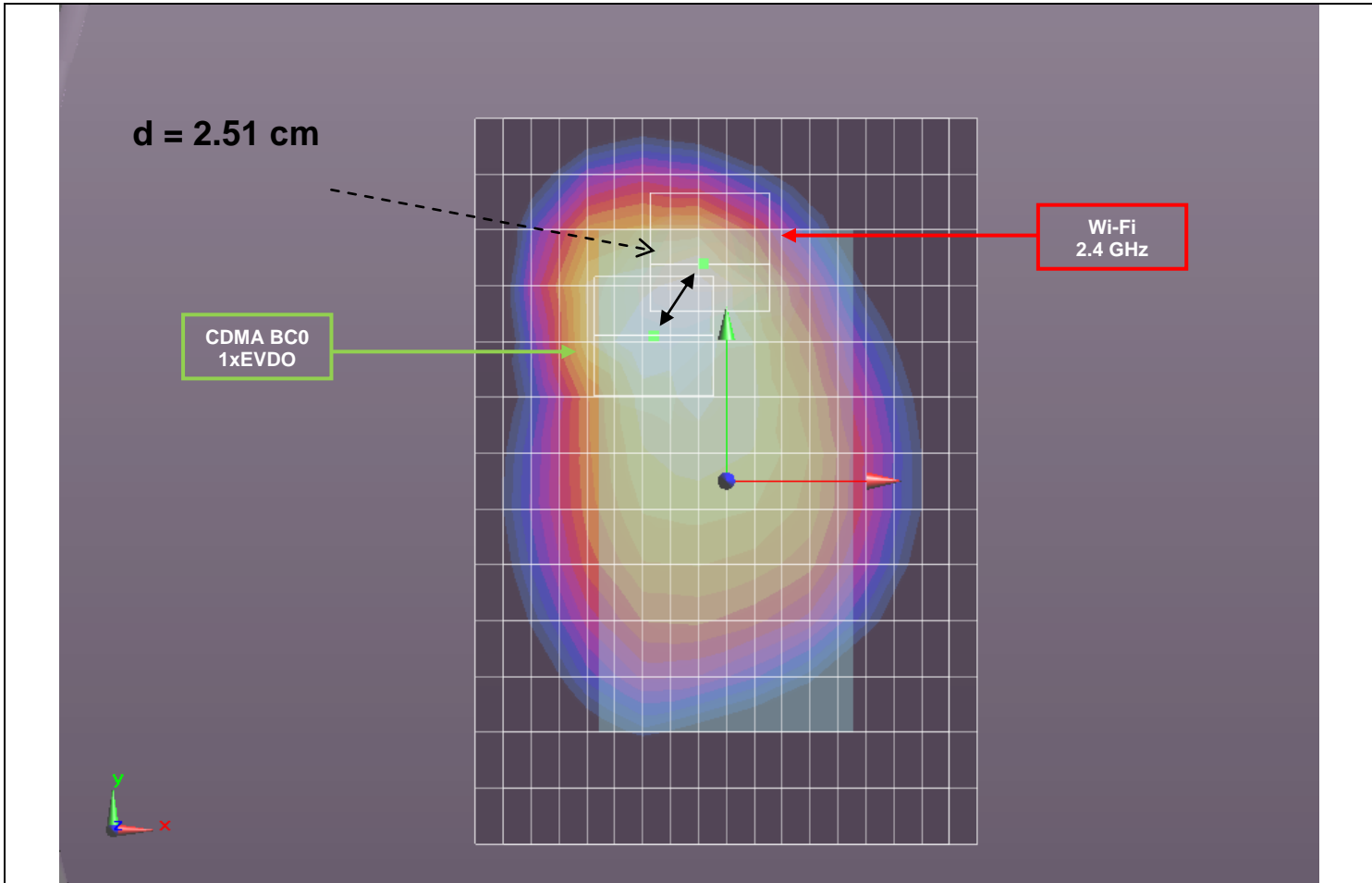


Mode	Peak SAR mW/g	X m	Y m	Z m
CDMA BC1, 1xRTT	0.751	-0.0065	-0.032	-0.186
WiFi	0.599	-0.0061	0.0583	-0.187

d: Calculated distance (cm)
9.03

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (6)

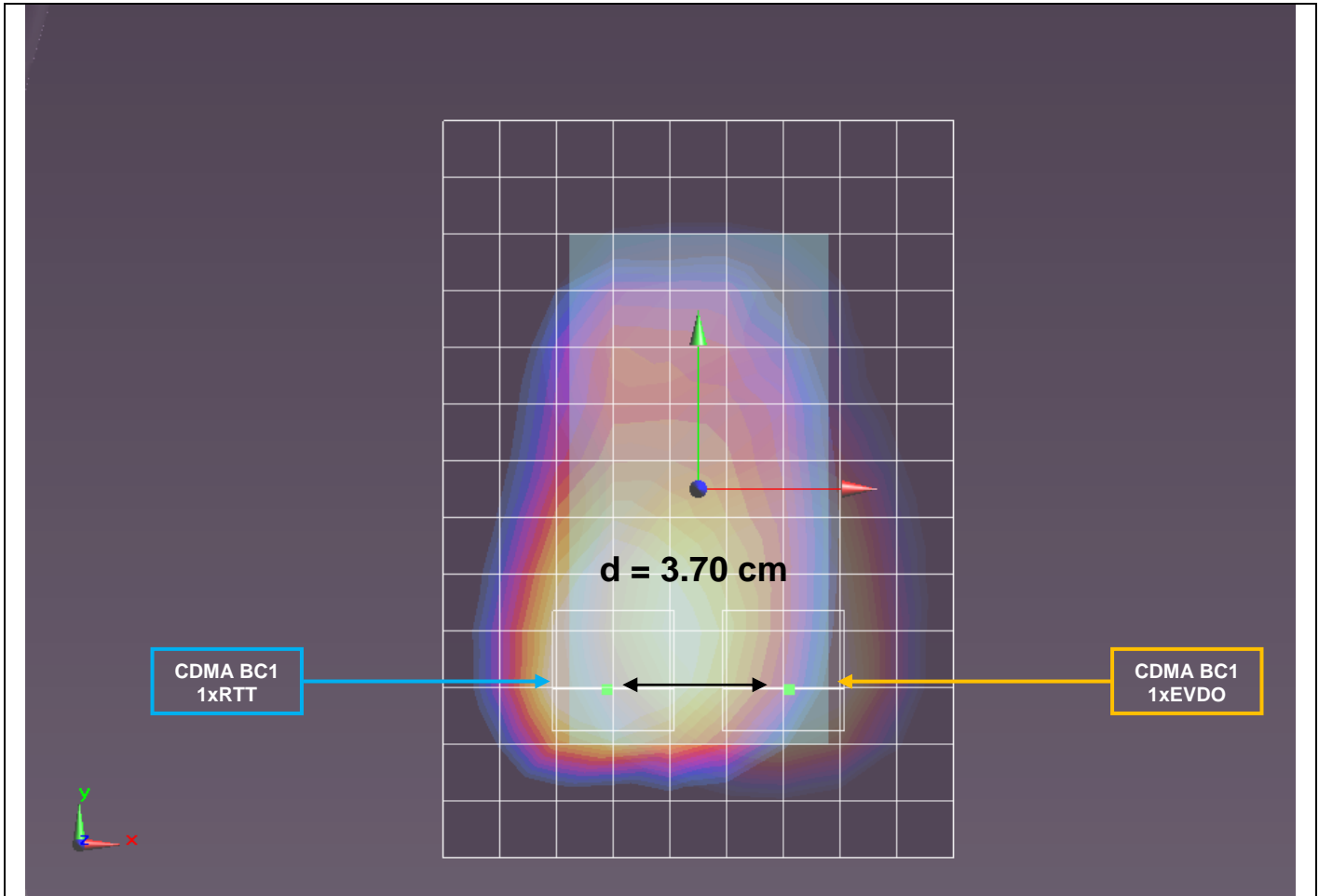


Mode	Peak SAR mW/g	X m	Y m	Z m
CDMA BC0, 1xEVDO	1.04	-0.0195	0.0375	-0.183
WiFi	0.599	-0.0061	0.0583	-0.187

d: Calculated distance (cm)
2.51

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

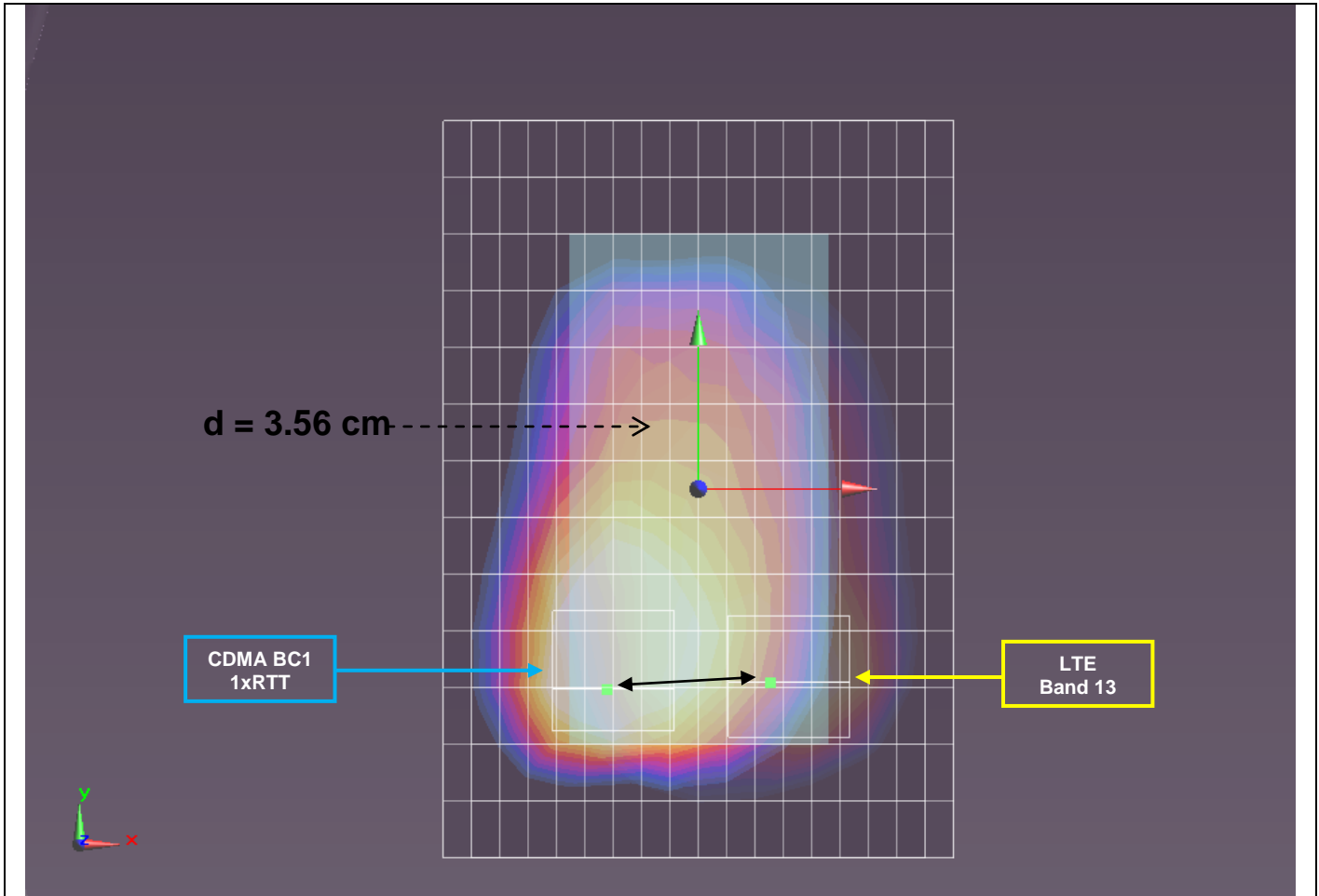
Figure (7)



Mode	Peak SAR mW/g	X m	Y m	Z m
CDMA BC1, 1xRTT	0.751	-0.0065	-0.032	-0.186
CDMA BC1, 1xEVDO	1.53	0.0241	-0.0528	-0.186
d: Calculated distance (cm)				
3.70				

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (8)

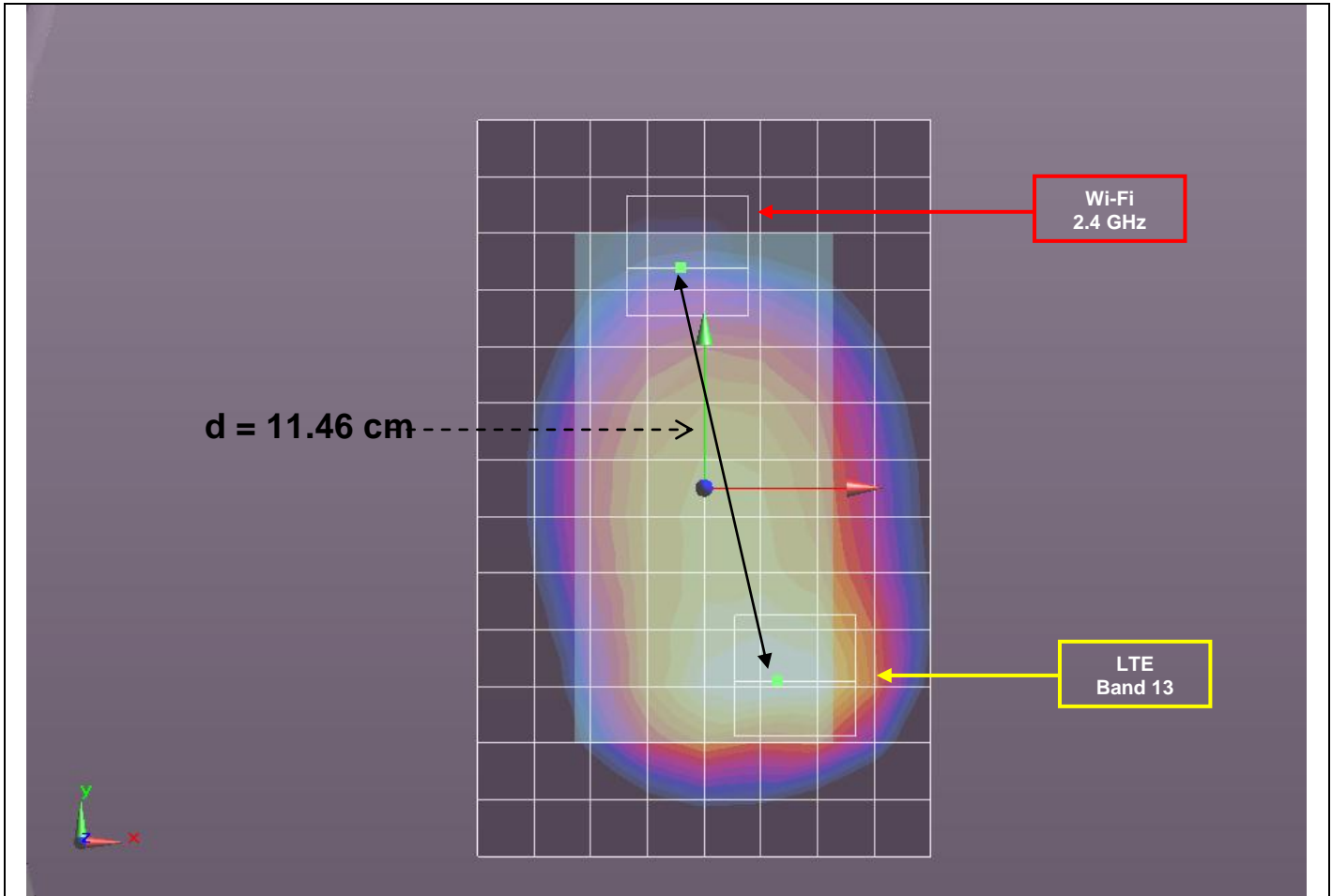


Mode	Peak SAR mW/g	X m	Y m	Z m
CDMA BC1, 1xRTT	0.751	-0.0065	-0.032	-0.186
LTE Band 13	1.12	0.0224	-0.0527	-0.187

d: Calculated distance (cm)	
3.56	

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (9)



Mode	Peak SAR mW/g	X m	Y m	Z m
LTE Band 13	1.12	0.0224	-0.0527	-0.187
WiFi	0.599	-0.0061	0.0583	-0.187

d: Calculated distance (cm)
11.46

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

14.4. Multi-Band Combined Volume Scan Results

Case #	Test position	Modes/Bands	Standalone Results (W/kg)		Multi-Band Combined Results (W/kg) ^{2,3}
			Zoom Scan	Volume Scan ¹	
1	Rear	CDMA BC0 1xRTT	0.585	0.596	1.19
		CDMA BC1 1xEVDO	0.913	0.933	
		WiFi 2.4GHz	0.143	0.135	
2	Rear	CDMA BC1 1xRTT	0.910	0.906	1.04
		CDMA BC0 1xEVDO	0.617	0.615	
		WiFi 2.4GHz	0.143	0.135	
3	Rear	CDMA BC1 1xRTT	0.910	0.906	1.29
		CDMA BC1 1xEVDO	0.913	0.933	
		WiFi 2.4GHz	0.143	0.135	
4	Rear	CDMA BC1 1xRTT	0.910	0.906	1.16
		LTE Band 13	0.681	0.677	
		WiFi 2.4GHz	0.143	0.135	

Note(s):

1. See Appendix 15.10_SAR Test Plots for Standalone Volume Scans.
2. See Appendix 15.11_SAR Test Plots for SV-DO Multi-Band Combined Volume Scans (Cases #1, #2 and #3)
3. See Appendix 15.12_SAR Test Plots for SV-LTE Multi-Band Combined Volume Scans (Case #4)

15. Appendixes

Refer to separated files for the following appendixes.

- 15.1. System Performance Check Plots
- 15.2. SAR Test Plots for GSM850
- 15.3. SAR Test Plots for GSM1900
- 15.4. SAR Test Plots for W-CDMA (UMTS) Band II
- 15.5. SAR Test Plots for CDMA BC0
- 15.6. SAR Test Plots for CDMA BC1
- 15.7. SAR Test Plots for LTE Band 13
- 15.8. SAR Test Plots for Wi-Fi 2.4 GHz Band
- 15.9. SAR Test Plots for Wi-Fi 5 GHz Bands
- 15.10. SAR Test Plots for Standalone Volume Scans
- 15.11. SAR Test Plots for SV-DO Multi-Band Combined Volume Scans
- 15.12. SAR Test Plots for SV-LTE Multi-Band Combined Volume Scans
- 15.13. Calibration Certificate for E-Field Probe EX3DV4 - SN 3686
- 15.14. Calibration Certificate for D750V3 - SN 1019
- 15.15. Calibration Certificate for D835V2 - SN 4d002
- 15.16. Calibration Certificate for D1900V2 - SN 5d043
- 15.17. Calibration Certificate for D2450V2 - SN 748
- 15.18. Calibration Certificate for D5GHzV2 - SN 1075