



FCC OET BULLETIN 65 SUPPLEMENT C 01-01

IEEE STD 1528:2003

SAR EVALUATION REPORT

For

Cellular/PCS GSM/WCDMA and LTE Phone with Bluetooth and WLAN

MODEL: LG-P930, P930, LGP930

FCC ID: BEJP930

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Prepared for

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	August 4, 2011	Initial Issue	--
A	September 15, 2011	Updated report based on TCB reviewer's comments. 1. Section 5.3 (page 11): Changed "Head SAR is required in LTE mode as this model supports SVLTE operation" to "Head SAR is required in LTE mode as this model supports VOIP" 2. Section 5.4: Added "Simultaneous transmission condition table". List of all possible combinations of transmissions. 3. Section 11: Changed frequency from "1880.0" to "1907.74" 4. Section 14.2: - Changed "Body-worn exposure condition" to "Body-worn & Body-hotspot exposure condition" and - Changed SAR value from "0.881" to "1.12".	Sunny Shih
B	October 7, 2011	Updated report based on FCC reviewer's comments. - Page 42: Fixed typo, changed from "Rear" to "Front"	Sunny Shih

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1. Attestation of Test Results

Applicant:	LG ELECTRONICS, INC.		
EUT description:	Cellular/PCS GSM/WCDMA and LTE Phone with Bluetooth and WLAN		
Model number:	BEJP930, IMEI: 004402-34-038179-1		
Device category:	Portable devices		
Exposure category:	General Population/Uncontrolled Exposure		
Date tested:	July 21 - 29, 2011		
FCC Rule Parts	Freq. Range [MHz]	Highest 1-g SAR (W/kg)	Limit (W/kg)
22H	824 - 849	Head: 0.263 W/kg (Left Touch) Body: 0.340 W/kg (Rear w/ 10mm distance)	1.6
24E	1850 - 1910	Head: 0.666 W/kg (Right Touch) Body: 1.120 W/kg (Bottom w/ 10mm distance)	
27 (LTE Band 17)	704-716	Head: 0.392 W/kg (Right Touch) Body: 0.607 W/kg (Rear w/ 10mm distance)	
27 (LTE Band 4)	1710-1755	Head: 0.486 W/kg (Right Touch) Body: 1.05 W/kg (Rear w/ 10mm distance)	
15.247	2412 – 2462	Head: 0.069 W/kg (Left Touch) Body: 0.041 W/kg (Rear w/ 10mm distance)	
Applicable Standards			Test Results
FCC OET Bulletin 65 Supplement C 01-01, IEEE Std 1528:2003 & IC RSS 102 Issue 4			Pass
Compliance Certification Services, Inc. (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report. 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:	
			
Sunny Shih Engineering Team Leader Compliance Certification Services (UL CCS)		Chakrit Thammanavarat EMC Associate Engineer Compliance Certification Services (UL CCS)	

2. Test Methodology

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C Edition 01-01, IEEE STD 1528:2003, RSS-102 Issue 4, March 2010, and RSS-102 Supplementary Procedures (SPR)-001, January 1, 2011 and the following KDB Procedures.

- o 648474 D01 SAR Handsets Multi Xmitter and Ant, v01r05
- o 248227 D01 SAR meas for 802 11abg v01r02
- o 941225 D01 SAR test for 3G devices v02
- o 941225 D02 Guidance for 3GPP R6 and R7 HSPA v02v01
- o 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- o 941225 D05 SAR for LTE Devices v01

KDB inquiry #: 933906

3. FACILITIES AND ACCREDITATION

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

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

4. Calibration and Uncertainty

4.1. Measuring Instrument Calibration

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

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due date		
				MM	DD	Year
Dielectronic Probe kit	HP	85070C	N/A	N/A		
ESA Series Network Analyzer	Agilent	E5071B	MY42100131	8	2	2011
Synthesized Signal Generator	HP	83732B	US34490599	7	14	2012
E-Field Probe	SPEAG	EX3DV4	3749	12	13	2011
E-Field Probe	SPEAG	EX3DV4	3686	1	24	2012
Thermometer	ERTCO	639-1S	1718	7	19	2012
Data Acquisition Electronics	SPEAG	DAE3	427	7	21	2011
Data Acquisition Electronics	SPEAG	DAE4	1239	11	11	2011
System Validation Dipole	SPEAG	D750V3	1024	4	20	2012
System Validation Dipole	SPEAG	D835V2	4d117	4	15	2012
System Validation Dipole	SPEAG	D1900V2	5d140	4	18	2012
System Validation Dipole	SPEAG	*D2450V2	706	4	19	2012
Power Meter	Giga-tronics	8651A	8651404	5	13	2012
Power Sensor	Giga-tronics	80701A	1834588	5	13	2012
Power Meter	HP	437B	3125U16345	5	13	2012
Power Sensor	HP	8481A	2702A60780	5	13	2012
Amplifier	MITEQ	4D00400600-50-30P	1620606	N/A		
Directional coupler	Werlatone	C8060-102	2141	N/A		

Notes:

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

1. There is no physical damage on the dipole
2. System validation with specific dipole is within 10% of calibrated value.
3. Return-loss is within 20% of calibrated measurement. (See Appendix "8_Calibration Certificate - Validation Dipole D2450V2 - SN 706" with extended cal. data)
4. Impedance is within 5Ω of calibrated measurement (See Appendix "8_Calibration Certificate - Validation Dipole D2450V2 - SN 706" with extended cal. data)

4.2. Measurement Uncertainty

Measurement uncertainty for 300 MHz to 3 GHz averaged over 1 gram

Component	error, %	Probe Distribution	Divisor	Sensitivity	U (X), %
Measurement System					
Probe Calibration (k=1) @ 835, 1900 and 2450 MHz	5.50	Normal	1	1	5.50
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	9.20	Rectangular	1.732	0.7071	3.76
Boundary Effect	0.90	Rectangular	1.732	1	0.52
Probe Linearity	3.45	Rectangular	1.732	1	1.99
System Detection Limits	1.00	Rectangular	1.732	1	0.58
Readout Electronics	0.30	Normal	1	1	0.30
Response Time	0.80	Rectangular	1.732	1	0.46
Integration Time	2.60	Rectangular	1.732	1	1.50
RF Ambient Conditions - Noise	3.00	Rectangular	1.732	1	1.73
RF Ambient Conditions - Reflections	3.00	Rectangular	1.732	1	1.73
Probe Positioner Mechanical Tolerance	0.40	Rectangular	1.732	1	0.23
Probe Positioning with respect to Phantom	2.90	Rectangular	1.732	1	1.67
Extrapolation, Interpolation and Integration	1.00	Rectangular	1.732	1	0.58
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 @ Body 750 MHz	3.16	Normal	1	0.64	2.02
Liquid Permittivity - deviation from target	5.00	Rectangular	1.732	0.6	1.73
Liquid Permittivity - measurement @ Body 1750 MHz	3.96	Normal	1	0.6	2.38
Combined Standard Uncertainty Uc(y) =					10.59
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				21.17	%
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				1.67	dB

5. Equipment Under Test

Cellular/PCS GSM/GPRS/EDGE and AWS WCDMA/HSPA Phone with Bluetooth and WLAN.

Model: LG-P930, P930, LGP930

Normal operation:	- Held to head, - Body-worn (Rear and Front sides) with 10 mm separation distance. - Personal Hotspot with 10 mm separation distance to all sides and edges.
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Body Worn Accessory	- Headset
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Antenna-to-antenna and antenna-to-edges' separation distances:	Please refer to Section 16 Antenna Locations & Separation Distances for details
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5.1. Band and Air interlaces

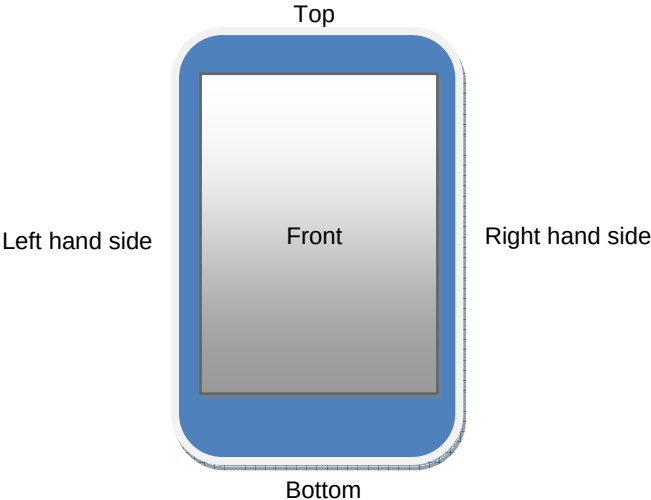
Tx Frequency Bands:	Cellular: 824 – 849 MHz PCS: 1850 – 1910 MHz 802.11b/g/n: 2412 – 2462MHz, HT20 Bluetooth: 2402-2480 MHz
Air Interfaces:	GSM, GPRS, EGPRS. WCDMA (Rel 99), HSDPA (Rel 6, CAT 10), HSUPA (Rel 6, CAT 6). 802.11b/g/n. Bluetooth
Uplink Modulations:	GSM Modes: GMSK, 8PSK UMTS Modes: BPSK, QPSK 802.11b: DSS CCK 802.11g: OFDM 802.11n: OFDM Bluetooth: DQPSK, 8DPSK, GFSK
GPRS Multi-Slot Class:	10
Capability Class:	B

5.2. Personal Hotspot Mode

The device is capable of personal hotspot mode. The hotspot mode can be enabled by the users. SAR measurements in the Personal hot spot function are performed with 10 m separation distance to all sides and edges to the body phantom.

5.3. KDB 941225 D05 “SAR for LTE Devices v01”

#	Description	Parameter
1	Identify the operating frequency range of each LTE transmission band used by the device	Band 17: 704 to 716 MHz Band 4: 1710 to 1755 MHz
2	Identify the channel bandwidths used in each frequency band; 1.4, 3, 5, 10, 15, 20 MHz etc	Band 17: 5MHz, 10MHz Band 4: 5MHz, 10MHz
3	Identify the high, middle and low (H, M, L) channel numbers and frequencies in each LTE frequency band	LTE Band 4 1) Low channel - Bandwidth: 5 MHz Ch. #: 19975, Frequency: 1712.5 MHz - Bandwidth: 10 MHz Ch. #: 20000, Frequency: 1715.0 MHz 2) Middle channel - Bandwidth: 5 MHz Ch. #: 20175, Frequency: 1732.5 MHz - Bandwidth: 10 MHz Ch. #: 20175, Frequency: 1732.5 MHz 3) High channel - Bandwidth: 5 MHz Ch. #: 20375, Frequency: 1752.5 MHz - Bandwidth: 10 MHz Ch. #: 20350, Frequency: 1750.0 MHz LTE Band17 - Bandwidth: 5 MHz Ch. #: 23755, Frequency: 706.5 MHz - Bandwidth: 10MHz Ch. #: 23790, Frequency: 710.0 MHz - Bandwidth: 5 MHz Ch. #: 23825, Frequency: 713.5 MHz
4	Specify the UE category and uplink modulations used	The UE Category is 3 Uplink modulations: QPSK, 16QAM
5	Descriptions of the LTE transmitter and antenna implementation & identify whether it is a standalone transmitter operating independently of other wireless transmitters in the device or sharing hardware components and/or antenna(s) with other transmitters etc.	This model(P930) has the same HW and one Tx antenna for GSM/WCDMA/LTE. For details, please refer to the antenna distance diagram

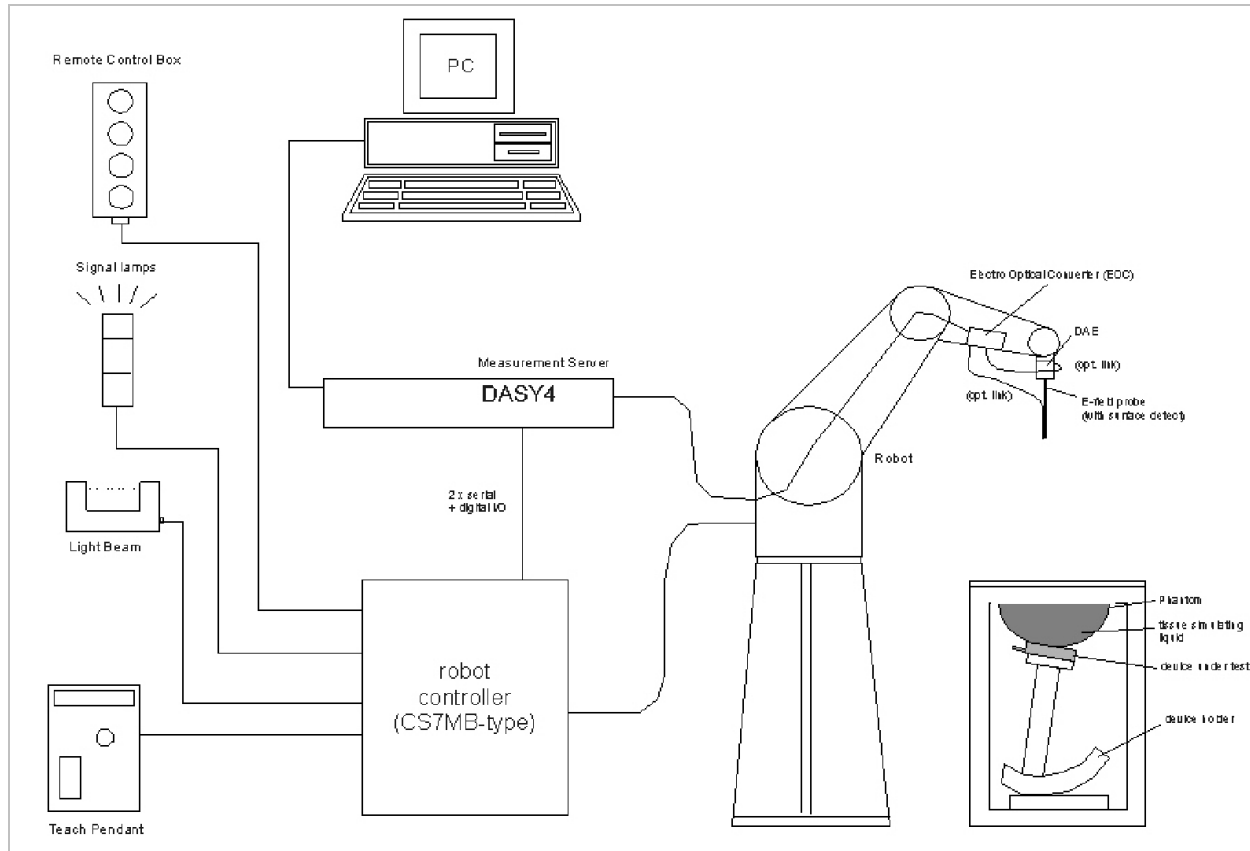
#	Description	Parameter
6	Identify the LTE voice/data requirements in each operating mode and exposure condition with respect to head and body test configurations, antenna locations, handset flip-cover or slide positions, antenna diversity conditions, etc.	The following exposure condition with respect to head and body test are required for both voice and data modes due to EUT functionality and antenna locations. 1) Body SAR is required at 10 mm separation distance 2) Mobile Hot Spot Mode will be tested by positioning the smart phone with 10 mm separation distance. - Wireless Personal Hotspot mode with consideration for the Front Display of EUT, Rear of EUT, Left Hand side of EUT, Right Hand side of EUT, Top Edge of EUT and Bottom Edge of EUT with respect to the antenna location. The test separation distance between the EUT edge and phantom flat surface for this mode will be 10mm as the dimensions of the device is > 9cm x 5cm. 3) Head SAR is required in LTE mode as this model supports VOIP.  The diagram shows a blue smartphone with a white screen. Labels indicate the orientation: 'Top' at the top, 'Bottom' at the bottom, 'Left hand side' on the left, 'Right hand side' on the right, and 'Front' in the center of the screen area.
7	Identify if Maximum Power Reduction (MPR) is optional or mandatory, i.e. built-in by design: a) only mandatory MPR may be considered during SAR testing, when the maximum output power is permanently limited by the MPR implemented within the UE; and only for the applicable RB (resource block) configurations specified in LTE standards b) A-MPR (additional MPR) must be disabled.	The EUT incorporates MPR as per 36.101 as shown in the table below. MPR cannot be disabled after the phone is manufactured, MPR is mandatory. MPR is mandatory. For details, please see the conducted power table. * Target MPR(5/10 MHz) - QPSK 1RB 0offset: 0dB, QPSK 1RB 49offset: 0dB - 16QAM 1RB 0offset: 1dB, 16QAM 1RB 49offset: 1dB - QPSK 25RB 13offset: 1dB, 16QAM 25RB 13offset: 2dB - QPSK 50RB 0offset: 1dB, 16QAM 50RB 0offset: 2dB A-MPR is always disabled during the SAR testing.
8	Include the maximum average conducted output power measured on the required test channels for each channel bandwidth and UL modulation used in each frequency band: a) with 1 RB allocated at the upper edge of a channel b) with 1 RB allocated at the lower edge of a channel c) using 50% RB allocation centered within a channel	Refer to section 10 RF output power table

	d) using 100% RB allocation	
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	The following bands are supported for the exposure conditions 1) GSM850/1900 and UMTS (WCDMA) band V (850) & band II (1900) Exposure conditions: Head/Body worn SAR required for GSM/UMTS (WCDMA) and wireless personal hotspot. DTM is not supported. 2) Bluetooth 2.4GHz (Basic Rate & EDR) - Exposure conditions: BT SAR is not required as maximum output power < 12 mW & antenna separation distance 3) WiFi 2.4GHz - Exposure conditions: Head/Body SAR required for wireless personal hotspot. No power reduction.
10	Include the maximum average conducted output power measured for the other wireless mode and frequency bands	See section 10 RF output power measurements in SAR report.
11	Identify the simultaneous transmission conditions for the voice and data configurations supported by all wireless modes, device configurations and frequency bands, for the head and body exposure conditions and device operating configurations (handset flip or cover positions, antenna diversity conditions etc.)	Simultaneous transmission conditions 1) GSM Voice or WCDMA Voice + WiFi data. 2) GSM hotspot: GPRS/EDGE + WiFi 3) WCDMA Voice/WCDMA Data hotspot: WCDMA Voice/WCDMA data + WiFi 4) LTE Hotspot: LTE + WiFi - WCDMA Voice & LTE doesn't transmit simultaneously. - WCDMA Voice & WCDMA data doesn't transmit simultaneously. - WCDMA & LTE & WCDMA data doesn't transmit simultaneously. - GSM & LTE doesn't transmit simultaneously. - DTM is not supported. - SVLTE is not supported. For details about the simultaneous transmission configurations, Please refer to the table in section 4.1
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	No power reduction applied.
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	No power reduction applied.
14	When appropriate, include a SAR test plan proposal with respect to the above	No power reduction applied.
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	No power reduction applied.

5.4. Simultaneous Transmission Conditions

No.	Capable Tx Configurations	Head SAR	Body SAR	Power Reduction	Note
1	GSM Voice	v	v	no	Standalone GSM Voice
2	GPRS	v	v	no	Standalone GPRS Class 10
3	EDGE	x	x	no	Standalone EDGE Class 10
4	WCDMA Voice	v	v	no	Standalone WCDMA Voice
5	WCDMA data	x	v	no	Standalone HSPA
6	LTE	v	v	no	Standalone LTE
7	WIFI	v	v	no	Standalone WIFI
8	GSM Voice + WIFI	v	v	no	GSM Voice + WIFI Data
9	WCDMA Voice + WIFI	v	v	no	WCDMA Voice + WIFI Data
10	GPRS + WIFI	x	v	no	GPRS hotspot
11	EDGE + WIFI	x	x	no	EDGE hotspot
12	LTE + WIFI	x	v	no	LTE hotspot
13	WCDMA data + WIFI	x	v	no	WCDMA data + WIFI
14	WCDMA Voice + WCDMA data + WIFI	v	v	no	WCDMA Voice + WCDMA data hotspot * WCDMA Voice & WCDMA data doesn't transmit simultaneously.
15	GSM Voice + LTE	Not supported			
16	WCDMA Voice + LTE	Not supported			
17	GPRS + LTE	Not supported			
18	EDGE + LTE	Not supported			
19	WCDMA data + LTE	Not supported			
* There are no simultaneous transmission configurations except for the configurations mentioned above.					
* SVLTE is not supported.					

6. System Specifications



The DASY4 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.
- DASY4 software.
- Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing validating the proper functioning of the system.

7. Liquid Parameters Check

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

Reference Values of Tissue Dielectric Parameters for Head & Body Phantom

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

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

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

7.1. Liquid Check Results

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)
7/12/2011	Body 1750	e'	55.2533	Relative Permittivity (ϵ_r):	55.25	53.44	3.39
		e''	14.7228	Conductivity (σ):	1.43	1.49	-3.60
7/13/2011	Body 1750	e'	55.2600	Relative Permittivity (ϵ_r):	55.26	53.44	3.40
		e''	14.8240	Conductivity (σ):	1.44	1.49	-2.94
7/14/2011	Body 1750	e'	55.5547	Relative Permittivity (ϵ_r):	55.55	53.44	3.96
		e''	15.0808	Conductivity (σ):	1.47	1.49	-1.26
7/15/2011	Body 1750	e'	54.3100	Relative Permittivity (ϵ_r):	54.31	53.44	1.63
		e''	15.2850	Conductivity (σ):	1.49	1.49	0.08
7/15/2011	Body 750	e'	55.1700	Relative Permittivity (ϵ_r):	55.17	55.55	-0.68
		e''	22.7722	Conductivity (σ):	0.95	0.96	-1.39
7/16/2011	Body 750	e'	54.0600	Relative Permittivity (ϵ_r):	54.06	55.55	-2.68
		e''	22.2272	Conductivity (σ):	0.93	0.96	-3.75
7/18/2011	Head 1750	e'	41.3541	Relative Permittivity (ϵ_r):	41.35	40.08	3.17
		e''	13.8665	Conductivity (σ):	1.35	1.37	-1.44
7/19/2011	Head 750	e'	43.4400	Relative Permittivity (ϵ_r):	43.44	41.96	3.52
		e''	22.0924	Conductivity (σ):	0.92	0.89	3.16
7/20/2011	Head 1750	e'	40.3490	Relative Permittivity (ϵ_r):	40.35	40.08	0.66
		e''	13.7596	Conductivity (σ):	1.34	1.37	-2.20
7/27/2011	Body 1900	e'	51.3300	Relative Permittivity (ϵ_r):	51.33	53.30	-3.70
		e''	14.5220	Conductivity (σ):	1.53	1.52	0.93
7/28/2011	Head 1900	e'	38.3166	Relative Permittivity (ϵ_r):	38.32	40.00	-4.21
		e''	13.0206	Conductivity (σ):	1.38	1.40	-1.74
7/28/2011	Body 900	e'	55.0200	Relative Permittivity (ϵ_r):	55.02	55.00	0.04
		e''	21.1504	Conductivity (σ):	1.06	1.05	0.80
7/28/2011	Head 900	e'	41.7800	Relative Permittivity (ϵ_r):	41.78	41.50	0.67
		e''	19.0688	Conductivity (σ):	0.95	0.97	-1.62
7/29/2011	Head 2450	e'	39.0600	Relative Permittivity (ϵ_r):	39.06	39.20	-0.36
		e''	13.8348	Conductivity (σ):	1.88	1.80	4.70
7/29/2011	Body 2450	e'	50.8300	Relative Permittivity (ϵ_r):	50.83	52.70	-3.55
		e''	14.3580	Conductivity (σ):	1.96	1.95	0.31

8. System Verification

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

System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the SAM twin phantom filled with Head or Body simulating liquid of the following parameters.
- The DASY4 system with an E-Field Probe EX3DV4, SN: 3686 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 fine cube was chosen for cube
- Distance between probe sensors and phantom surface was set to 3 mm.
For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 100 mW
- The results are normalized to 1 W input power.

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

System validation dipole	Cal. certificate #	Cal. date	SAR Avg (mW/g)		
			Tissue:	Head	Body
D1750V2	D1750V2-1053_May11	5/27/11	1g SAR:	36.08	36.88
			10g SAR:	19.16	19.72
D750V3	D750V3-1024_Apr11	4/20/11	1g SAR:	8.52	8.80
			10g SAR:	5.56	5.84
D1900V2	D1900V2-5d140-Apr11	4/18/11	1g SAR:	41.60	41.20
			10g SAR:	21.50	21.60
D835V2	D835V2-4d117-Apr11	4/15/11	1g SAR:	9.64	10.10
			10g SAR:	6.28	6.60
D2450V2	D2450V2-706-Apr10	4/19/10	1g SAR:	51.60	52.40
			10g SAR:	24.40	24.50

8.1. System Check Results

Measured by: Hung Thai

System validation dipole	Date Tested	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
D1750V2 Body	07/12/11	1g SAR:	36.80	36.88	-0.22	±10
		10g SAR:	19.70	19.72	-0.10	
D1750V2 Body	07/13/11	1g SAR:	36.50	36.88	-1.03	±10
		10g SAR:	19.50	19.72	-1.12	
D1750V2 Body	07/14/11	1g SAR:	37.20	36.88	0.87	±10
		10g SAR:	19.70	19.72	-0.10	
D1750V2 Body	07/15/11	1g SAR:	37.10	36.88	0.60	±10
		10g SAR:	19.70	19.72	-0.10	
D750V3 Body	07/15/11	1g SAR:	8.40	8.80	-4.55	±10
		10g SAR:	5.58	5.84	-4.45	
D750V3 Body	07/16/11	1g SAR:	8.35	8.80	-5.11	±10
		10g SAR:	5.57	5.84	-4.62	
D750V3 Body	07/17/11	1g SAR:	8.90	8.80	1.14	±10
		10g SAR:	5.91	5.84	1.20	
D1750V2 Head	07/18/11	1g SAR:	35.80	36.08	-0.78	±10
		10g SAR:	19.00	19.16	-0.84	
D750V3 Head	07/19/11	1g SAR:	8.25	8.52	-3.17	±10
		10g SAR:	5.38	5.56	-3.24	
D1750V2 Head	07/20/11	1g SAR:	36.40	36.08	0.89	±10
		10g SAR:	19.20	19.16	0.21	
D1900V2 Body	07/27/11	1g SAR:	42.00	41.2	1.94	±10
		10g SAR:	22.00	21.6	1.85	
D1900V2 Head	07/28/11	1g SAR:	40.30	41.6	-3.13	±10
		10g SAR:	20.90	21.5	-2.79	
D835V2 Body	07/28/11	1g SAR:	9.99	10.1	-1.09	±10
		10g SAR:	6.58	6.6	-0.30	
D835V2 Head	07/28/11	1g SAR:	9.30	9.64	-3.53	±10
		10g SAR:	6.12	6.28	-2.55	
D2450V2 Head	07/29/11	1g SAR:	50.80	51.60	-1.55	±10
		10g SAR:	23.20	24.40	-4.92	
D2450V2 Body	07/29/11	1g SAR:	50.50	52.40	-3.63	±10
		10g SAR:	23.40	24.50	-4.49	

9. SAR Measurement Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties (for example, 1.2 mm for an EX3DV3 probe type).

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 DASY4 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, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Step 3: Zoom Scan

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

Step 4: Power drift measurement

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

Step 5: Z-Scan

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

10. RF Output Power Measurement

10.1. LTE Band 17 & Band 4

Output power for LTE Band 17

Freq. (MHz)	UL Channel	BW (MHz)	RB Size	RB Offset	Modulation	MPR (dB)	Max Avg Power (dBm)
706.5	23755	5 (L)	1	0	QPSK	0	23.57
			1	24	QPSK	0	23.18
			12	6	QPSK	1	22.4
			25	0	QPSK	1	22.48
			1	0	16-QAM	1	22.49
			1	24	16-QAM	1	22.32
			12	6	16-QAM	2	21.62
			25	0	16-QAM	2	21.51
710.0	23790	10(M)	1	0	QPSK	0	23.68
			1	49	QPSK	0	23.45
			25	12	QPSK	1	22.52
			50	0	QPSK	1	22.51
			1	0	16-QAM	1	22.52
			1	49	16-QAM	1	22.48
			25	12	16-QAM	2	21.48
			50	0	16-QAM	2	21.55
713.5	23825	5 (H)	1	0	QPSK	0	23.3
			1	24	QPSK	0	23.32
			12	6	QPSK	1	22.35
			25	0	QPSK	1	22.41
			1	0	16-QAM	1	22.47
			1	24	16-QAM	1	22.4
			12	6	16-QAM	2	21.42
			25	0	16-QAM	2	21.48

Output power for LTE Band 4

Freq. (MHz)	UL Channel	BW (MHz)	RB Size	RB Offset	Modulation	MPR (dB)	Max Avg Power (dBm)
1712.5	19975	5 (L)	1	0	QPSK	0	22.98
			1	24	QPSK	0	22.88
			12	6	QPSK	1	21.86
			25	0	QPSK	1	21.95
			1	0	16-QAM	1	21.83
			1	24	16-QAM	1	21.84
			12	6	16-QAM	2	20.88
			25	0	16-QAM	2	21.02
1715	20000	10 (L)	1	0	QPSK	0	23.07
			1	49	QPSK	0	23.14
			25	12	QPSK	1	22.05
			50	0	QPSK	1	22
			1	0	16-QAM	1	22.08
			1	49	16-QAM	1	21.97
			25	12	16-QAM	2	21.13
			50	0	16-QAM	2	21.17
1732.5	20175	5 (M)	1	0	QPSK	0	23.08
			1	24	QPSK	0	23.1
			12	6	QPSK	1	21.97
			25	0	QPSK	1	22.05
			1	0	16-QAM	1	22.02
			1	24	16-QAM	1	21.98
			12	6	16-QAM	2	21
			25	0	16-QAM	2	21.11
1732.5	20175	10 (M)	1	0	QPSK	0	22.88
			1	49	QPSK	0	22.97
			25	12	QPSK	1	21.92
			50	0	QPSK	1	21.97
			1	0	16-QAM	1	21.83
			1	49	16-QAM	1	21.92
			25	12	16-QAM	2	20.87
			50	0	16-QAM	2	21
1752.5	20375	5 (H)	1	0	QPSK	0	23.15
			1	24	QPSK	0	23.01
			12	6	QPSK	1	22.08
			25	0	QPSK	1	22.06
			1	0	16-QAM	1	21.82
			1	24	16-QAM	1	21.82
			12	6	16-QAM	2	20.86
			25	0	16-QAM	2	21.11
1750.0	20350	10 (H)	1	0	QPSK	0	23.2
			1	49	QPSK	0	23.1
			25	12	QPSK	1	21.97
			50	0	QPSK	1	21.88
			1	0	16-QAM	1	21.98
			1	49	16-QAM	1	21.91
			25	12	16-QAM	2	20.9
			50	0	16-QAM	2	20.96

10.2. GSM

GSM (GMSK) voice mode

Band	Ch No.	Freq. (MHz)	Avg burst Pwr
GSM850	128	824.2	33.37
	190	836.6	33.65
	251	848.8	33.59
GSM1900	512	1850.2	30.15
	661	1880.0	30.37
	810	1909.8	30.52

GPRS Multi-slot class: 10

GPRS (GMSK) - Coding Scheme: CS1

Band	Ch No.	Freq. (MHz)	Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr
GSM850	128	824.2	33.52	24.5	31.60	25.6
	190	836.6	33.65	24.7	31.57	25.6
	251	848.8	33.71	24.7	31.58	25.6
GSM1900	512	1850.2	30.36	21.4	29.09	23.1
	661	1880	30.53	21.5	29.10	23.1
	810	1909.8	30.70	21.7	29.08	23.1

EGPRS Multi-slot class: 10

EGPRS (8PSK) - Coding Scheme: MCS5

Band	Ch No.	Freq. (MHz)	Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr
GSM850	128	824.2	27.38	18.3	27.35	21.3
	190	836.6	27.56	18.5	27.53	21.5
	251	848.8	27.42	18.4	27.39	21.4
GSM1900	512	1850.2	26.05	17.0	26.03	20.0
	661	1880	26.20	17.2	26.00	20.0
	810	1909.8	26.10	17.1	25.96	19.9

Note: According to KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE vo1, noted in the following sections indicated below may be considered to determine SAR test reduction requirements for devices operating in GSM/GPRS/EDGE modes to demonstrate RF exposure compliance.

1. Since the source-based time-averaged output power for EGPRS mode is lower than that in the GPRS mode, therefore Body SAR test reduction is applicable for this device.
2. Based on output power above and time slots, the following worst-case configurations were chosen for Body SAR testing.
 - a. GPRS850 2 time slots
 - b. GPRS1900 2 time slots

10.3. UMTS 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 EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7). RMC 12.2 kbps is used for this testing.

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

Results

Rel 99 (12.2kbps RMC)

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Tx Pwr (dBm)
UMTS850 (Band V)	Rel 99 12.2kbps RMC	4132	826.4	23.59
		4182	836.4	23.55
		4233	846.6	23.60
UMTS1900 (Band II)	Rel 99 12.2kbps RMC	9263	1852.6	23.20
		9400	1880.0	23.30
		9537	1907.4	23.35

10.4. UMTS 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	Rel5 HSDPA			
	Subtest	1	2	3	4
WCDMA 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
HSDPA Specific Settings	MPR (dB)	0	0	0.5	0.5
	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			
	Ahs = β_{hs}/β_c	30/15			

Results

Rel 5 HSDPA

Band	Mode	UL Ch No.	f (MHz)	Avg Tx Pwr (dBm)
UMTS850 (Band V)	Subtest 1	4132	826.4	23.54
		4182	836.4	23.50
		4233	846.6	23.54
	Subtest 2	4132	826.4	23.53
		4182	836.4	23.51
		4233	846.6	23.54
	Subtest 3	4132	826.4	23.09
		4182	836.4	23.11
		4233	846.6	23.11
	Subtest 4	4132	826.4	23.09
		4182	836.4	23.15
		4233	846.6	23.12
UMTS1900 (Band II)	Subtest 1	9262	1852.4	23.10
		9400	1880.0	23.26
		9538	1907.6	23.32
	Subtest 2	9262	1852.4	23.15
		9400	1880.0	23.24
		9538	1907.6	23.37
	Subtest 3	9262	1852.4	22.80
		9400	1880.0	22.86
		9538	1907.6	22.96
	Subtest 4	9262	1852.4	22.80
		9400	1880.0	22.87
		9538	1907.6	22.95

Note:

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.

10.5. UMTS Rel 6 HSPA (HSDPA & HSUPA)

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2B of 3GPP TS34.121-1. A summary of these settings are illustrated below:

	Mode	Rel6 HSPA	Rel6 HSPA	Rel6 HSPA	Rel6 HSPA	Rel6 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 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				
	Ahs = β_{hs}/β_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

Rel 6 HSDPA/HSUPA

Band	Mode	UL Ch No.	DL Ch No.	f (MHz)	Avg Tx Pwr (dBm)
UMTS850 (Band V)	Subtest 1	4132	4357	826.4	23.54
		4182	4407	836.4	23.48
		4233	4458	846.6	23.55
	Subtest 2	4132	4357	826.4	21.90
		4182	4407	836.4	21.60
		4233	4458	846.6	21.89
	Subtest 3	4132	4357	826.4	22.40
		4182	4407	836.4	22.38
		4233	4458	846.6	22.35
	Subtest 4	4132	4357	826.4	21.91
		4182	4407	836.4	21.81
		4233	4458	846.6	21.82
	Subtest 5	4132	4357	826.4	23.10
		4182	4407	836.4	23.36
		4233	4458	846.6	23.49
UMTS1900 (Band II)	Subtest 1	9262	9662	1852.4	22.80
		9400	9800	1880.0	22.84
		9538	9938	1907.6	22.99
	Subtest 2	9262	9662	1852.4	20.90
		9400	9800	1880.0	21.26
		9538	9938	1907.6	21.85
	Subtest 3	9262	9662	1852.4	22.21
		9400	9800	1880.0	21.52
		9538	9938	1907.6	21.71
	Subtest 4	9262	9662	1852.4	21.45
		9400	9800	1880.0	21.13
		9538	9938	1907.6	21.12
	Subtest 5	9262	9662	1852.4	23.08
		9400	9800	1880.0	22.95
		9538	9938	1907.6	22.95

Note:

KDB 941225 D01, Body SAR is not required for device 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.

10.6. WIFI RF Output Power

802.11b			
Channel #	Freq. (MHz)	Conducted Avg Power	
		(dBm)	(mW)
1	2412	15.9	38.9
6	2437	16.3	42.7
11	2462	16.5	44.7
802.11g			
1	2412	12.0	15.8
6	2437	12.4	17.4
11	2462	12.6	18.2
802.11n HT20			
1	2412	10.9	12.3
6	2437	11.2	13.2
11	2462	11.5	14.1

Note:

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

10.7. Bluetooth RF Output Power

Bluetooth				
Mode	Channel #	Freq. (MHz)	Conducted Avg Power	
			(dBm)	(mW)
GFSK	0	2402	9.7	9.4
	39	2441	10.1	10.3
	78	2480	10.1	10.3
8PSK	0	2402	7.4	5.5
	39	2441	8.1	6.5
	78	2480	8.0	6.3

Note:

According to KDB 648474, Table 2, Unlicensed transmitters

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

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

11. Summary of Test Results for Highest 1g SAR

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

Technology	Frequency (MHz)	Test configuration	Mode	Separation distance (mm)	Highest 1g SAR (W/kg)
GSM850 (Part 22)	836.6	Head: Left touch	GSM voice	0	0.253
	836.6	Head: Left touch	GPRS 2 Slot, CS1 (VOIP)	0	0.263
	836.6	Body-worn & -hotspot: Rear	GPRS 2 Slot, CS1	10	0.293
UMTS (WCDMA) Band V (Part 22)	834.4	Head Left Touch	R99 (RMC, 12.2 kbps)	0	0.256
	834.4	Body-worn & -hotspot: Rear	R99 (RMC, 12.2 kbps)	10	0.340
GSM1900 (Part 24)	1880.0	Head Right Touch	GSM Voice	0	0.345
	1880.0	Head: Right touch	GPRS 2 Slot, CS1 (VOIP mode)	0	0.476
	1880.0	Body-worn & -hotspot: Front	GPRS 2 Slot, CS1	10	0.668
UMTS (WCDMA) Band II (Part 24)	1880.0	Head: Right touch	R99 (RMC, 12.2 kbps)	0	0.666
	1907.4	Body-worn & -hotspot: Bottom	R99 (RMC, 12.2 kbps)	10	1.120
LTE Band 17 (Part 27)	710.0	Head Right Touch	10Mhz RB#1 RB#49	0	0.392
	710.0	Body-worn & -hotspot: Rear	10Mhz RB#1 RB#49	10	0.607
LTE Band 4 (Part 27)	1732.5	Head: Right touch	10Mhz RB#1 RB#49	0	0.486
	1732.5	Body-worn & -hotspot: Rear	10Mhz RB#1 RB#49	10	1.050
WiFi 2.4 GHz (Part 15 C)	2437.0	Head: Left touch	802.11b, 1 kbps	0	0.069
	2437.0	Body-worn & -hotspot: Rear	802.11b, 1 kbps	15	0.041

12. Standalone SAR Test Results

12.1. WiFi

Head SAR

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	802.11b	1	2412	15.9			1
		6	2437	16.3	0.069	0.027	
		11	2462	16.5			1
Left Tilt	802.11b	1	2412	15.9			1
		6	2437	16.3	0.016	0.009	
		11	2462	16.5			1
Right Touch	802.11b	1	2412	15.9			1
		6	2437	16.3	0.065	0.029	
		11	2462	16.5			1
Right Tilt	802.11b	1	2412	15.9			1
		6	2437	16.3	0.024	0.012	
		11	2462	16.5			1

Body-worn & Body-hotspot SAR with 10 mm separation distance

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	802.11b	1	2412	15.9			1
		6	2437	16.3	0.041	0.022	
		11	2462	16.5			1
		6	2437	16.3	0.036	0.018	2
Front	802.11b	1	2412	15.9			1
		6	2437	16.3	0.014	0.007	
		11	2462	16.5			1
Left	802.11b	1	2412	15.9			1
		6	2437	16.3	0.036	0.018	
		11	2462	16.5			1
Right	802.11b	1	2412	15.9			3
		6	2437	16.3			3
		11	2462	16.5			3
Bottom	802.11b	1	2412	15.9			3
		6	2437	16.3			3
		11	2462	16.5			3
Top	802.11b	1	2412	15.9			3
		6	2437	16.3			3
		11	2462	16.5			3

Note(s):

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

12.2. WCDMA (UMTS Band V)

Head SAR

Test Position	Mode	UL Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	R99 (RMC, 12.2 kbps)	4133	826.6	23.59			1
		4182	834.4	23.55	0.256	0.193	
		4232	842.4	23.60			1
Left Tilt	R99 (RMC, 12.2 kbps)	4133	826.6	23.59			1
		4182	834.4	23.55	0.153	0.118	
		4232	842.4	23.60			1
Right Touch	R99 (RMC, 12.2 kbps)	4133	826.6	23.59			1
		4182	834.4	23.55	0.210	0.161	
		4232	842.4	23.60			1
Right Tilt	R99 (RMC, 12.2 kbps)	4133	826.6	23.59			1
		4182	834.4	23.55	0.152	0.117	
		4232	842.4	23.60			1

Body-worn & Body-hotspot SAR with 10 mm separation distance

Test Position	Mode	UL Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	R99 (RMC, 12.2 kbps)	4133	826.6	23.59			1
		4182	834.4	23.55	0.340	0.255	
		4232	842.4	23.60			1
		4182	834.4	23.55	0.334	0.201	2
Front	R99 (RMC, 12.2 kbps)	4133	826.6	23.59			1
		4182	834.4	23.55	0.267	0.204	
		4232	842.4	23.60			
Left	R99 (RMC, 12.2 kbps)	4133	826.6	23.59			1
		4182	834.4	23.55	0.276	0.194	
		4232	842.4	23.60			1
Right	R99 (RMC, 12.2 kbps)	4133	826.6	23.59			1
		4182	834.4	23.55	0.155	0.107	
		4232	842.4	23.60			1
Bottom	R99 (RMC, 12.2 kbps)	4133	826.6	23.59			1
		4182	834.4	23.55	0.108	0.064	
		4232	842.4	23.60			1
Top	R99 (RMC, 12.2 kbps)	4133	826.6	23.59			3
		4182	834.4	23.55			3
		4232	842.4	23.60			3

Note(s):

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

12.3. WCDMA (UMTS Band II)

Head SAR

Test Position	Mode	UL Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	R99 (RMC, 12.2 kbps)	9263	1852.6	23.20			1
		9400	1880.0	23.30	0.488	0.292	
		9537	1907.4	23.35			1
Left Tilt	R99 (RMC, 12.2 kbps)	9263	1852.6	23.20			1
		9400	1880.0	23.30	0.168	0.094	
		9537	1907.4	23.35			1
Right Touch	R99 (RMC, 12.2 kbps)	9263	1852.6	23.20			1
		9400	1880.0	23.30	0.666	0.405	
		9537	1907.4	23.35			1
Right Tilt	R99 (RMC, 12.2 kbps)	9263	1852.6	23.20			1
		9400	1880.0	23.30	0.176	0.099	
		9537	1907.4	23.35			1

Body-worn & Body-hotspot SAR with 10 mm separation distance

Test Position	Mode	UL Ch #.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	R99 (RMC, 12.2 kbps)	9263	1852.6	23.20			1
		9400	1880.0	23.30	0.745	0.464	
		9537	1907.4	23.35			1
Front	R99 (RMC, 12.2 kbps)	9263	1852.6	23.20			1
		9400	1880.0	23.30	0.783	0.424	
		9537	1907.4	23.35			1
		9400	1880.0	23.30	0.793	0.426	2
Left	R99 (RMC, 12.2 kbps)	9263	1852.6	23.20			1
		9400	1880.0	23.30	0.200	0.120	
		9537	1907.4	23.35			1
Right	R99 (RMC, 12.2 kbps)	9263	1852.6	23.20			1
		9400	1880.0	23.30	0.304	0.183	
		9537	1907.4	23.35			1
Bottom	R99 (RMC, 12.2 kbps)	9263	1852.6	23.20	0.762	0.389	
		9400	1880.0	23.30	0.881	0.445	
		9537	1907.4	23.35	1.120	0.567	
Top	R99 (RMC, 12.2 kbps)	9263	1852.6	23.20			3
		9400	1880.0	23.30			3
		9537	1907.4	23.35			3

Note(s):

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

12.4. GSM850

Head SAR

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	Voice	128	824.2	33.37			1
		190	836.6	33.65	0.253	0.189	
		251	848.8	33.59			1
Left Tilt	Voice	128	824.2	33.37			1
		190	836.6	33.65	0.146	0.112	
		251	848.8	33.59			1
Right Touch	Voice	128	824.2	33.37			1
		190	836.6	33.65	0.176	0.135	
		251	848.8	33.59			1
Right Tilt	Voice	128	824.2	33.37			1
		190	836.6	33.65	0.124	0.096	
		251	848.8	33.59			1

Head SAR (VOIP mode operation)

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	GPRS 2 Slot	128	824.2	31.60			1
		190	836.6	31.57	0.263	0.199	
		251	848.8	31.58			1
Left Tilt	GPRS 2 Slot	128	824.2	31.60			1
		190	836.6	31.57	0.162	0.125	
		251	848.8	31.58			1
Right Touch	GPRS 2 Slot	128	824.2	31.60			1
		190	836.6	31.57	0.214	0.165	
		251	848.8	31.58			1
Right Tilt	GPRS 2 Slot	128	824.2	31.60			1
		190	836.6	31.57	0.171	0.133	
		251	848.8	31.58			1

Note(s):

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

Body-worn & Body-hotspot SAR with 10 mm separation distance

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	GPRS 2 Slot	128	824.2	31.60			1
		190	836.6	31.57	0.293	0.219	
		190	836.6	31.57	0.263	0.194	2
		251	848.8	31.58			1
Front	GPRS 2 Slot	128	824.2	31.60			1
		190	836.6	31.57	0.268	0.204	
		251	848.8	31.58			1
Left	GPRS 2 Slot	128	824.2	31.60			1
		190	836.6	31.57	0.266	0.185	
		251	848.8	31.58			1
Right	GPRS 2 Slot	128	824.2	31.60			1
		190	836.6	31.57	0.153	0.105	
		251	848.8	31.58			1
Bottom	GPRS 2 Slot	128	824.2	31.60			1
		190	836.6	31.57	0.099	0.059	
		251	848.8	31.58			1
Top	GPRS 2 Slot	128	824.2	31.60			3
		190	836.6	31.57			3
		251	848.8	31.58			3

Note(s):

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

12.5. GSM1900

Head SAR

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	Voice	512	1850.2	30.15			1
		661	1880.0	30.37	0.255	0.155	
		810	1909.8	30.52			1
Left Tilt	Voice	512	1850.2	30.15			1
		661	1880.0	30.37	0.094	0.053	
		810	1909.8	30.52			1
Right Touch	Voice	512	1850.2	30.15			1
		661	1880.0	30.37	0.345	0.210	
		810	1909.8	30.52			1
Right Tilt	Voice	512	1850.2	30.15			1
		661	1880.0	30.37	0.100	0.058	
		810	1909.8	30.52			1

Head SAR (VOIP mode operation)

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Left Touch	GPRS 2 Slot	512	1850.2	29.09			1
		661	1880.0	29.10	0.344	0.209	
		810	1909.8	29.08			1
Left Tilt	GPRS 2 Slot	512	1850.2	29.09			1
		661	1880.0	29.10	0.119	0.067	
		810	1909.8	29.08			1
Right Touch	GPRS 2 Slot	512	1850.2	29.09			1
		661	1880.0	29.10	0.476	0.290	
		810	1909.8	29.08			1
Right Tilt	GPRS 2 Slot	512	1850.2	29.09			1
		661	1880.0	29.10	0.126	0.075	
		810	1909.8	29.08			1

Note(s):

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

Body-worn & Body-hotspot SAR with 10 mm separation distance

Test position	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	SAR (mW/g)		Note
					1-g	10-g	
Rear	GPRS 2 Slot	512	1850.2	29.09			1
		661	1880.0	29.10	0.589	0.365	
		810	1909.8	29.08			1
Front	GPRS 2 Slot	512	1850.2	29.09			1
		661	1880.0	29.10	0.668	0.350	
		810	1909.8	29.08			1
		661	1880.0	29.10	0.664	0.405	2
Left	GPRS 2 Slot	512	1850.2	29.09			1
		661	1880.0	29.10	0.149	0.089	
		810	1909.8	29.08			1
Right	GPRS 2 Slot	512	1850.2	29.09			1
		661	1880.0	29.10	0.220	0.133	
		810	1909.8	29.08			1
Bottom	GPRS 2 Slot	512	1850.2	29.09			1
		661	1880.0	29.10	0.612	0.306	
		810	1909.8	29.08			1
Top	GPRS 2 Slot	512	1850.2	29.09			3
		661	1880.0	29.10			3
		810	1909.8	29.08			3

Note(s):

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

12.6. LTE Band 4

Head SAR

Left Hand Side (LHS): 10 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	22.88	0	Left Touch	0.326	0.206	
QPSK	20175	1732.5	1	49	22.97	0	Left Touch	0.352	0.222	
QPSK	20175	1732.5	25	12	21.92	1	Left Touch	0.282	0.177	
QPSK	20175	1732.5	50	0	21.97	1	Left Touch	0.281	0.177	
16QAM	20175	1732.5	1	0	21.83	1	Left Touch	0.269	0.167	
16QAM	20175	1732.5	1	49	21.92	1	Left Touch	0.282	0.176	
16QAM	20175	1732.5	25	12	20.87	2	Left Touch	0.222	0.140	
16QAM	20175	1732.5	50	0	21.00	2	Left Touch	0.232	0.145	
QPSK	20175	1732.5	1	0	22.88	0	Left Tilt	0.236	0.143	
QPSK	20175	1732.5	1	49	22.97	0	Left Tilt	0.242	0.146	
QPSK	20175	1732.5	25	12	21.92	1	Left Tilt	0.235	0.142	
QPSK	20175	1732.5	50	0	21.97	1				
16QAM	20175	1732.5	1	0	21.83	1	Left Tilt	0.184	0.112	
16QAM	20175	1732.5	1	49	21.92	1	Left Tilt	0.186	0.113	
16QAM	20175	1732.5	25	12	20.87	2	Left Tilt	0.142	0.087	
16QAM	20175	1732.5	50	0	21.00	2				

10 MHz BW – Low Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20000	1715.0	1	49	23.14	0	Left Touch	0.325	0.205	

10 MHz BW – High Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20350	1750.0	1	49	23.10	0	Left Touch	0.376	0.238	

Left Hand Side (LHS): 5 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.08	0	Left Touch	0.335	0.213	
QPSK	20175	1732.5	1	24	23.10	0	Left Touch	0.353	0.224	
QPSK	20175	1732.5	12	6	21.97	1	Left Touch	0.282	0.179	
QPSK	20175	1732.5	25	0	22.05	1	Left Touch	0.285	0.180	
16QAM	20175	1732.5	1	0	22.02	1	Left Touch	0.307	0.194	
16QAM	20175	1732.5	1	24	21.98	1	Left Touch	0.317	0.200	
16QAM	20175	1732.5	12	6	21.00	2	Left Touch	0.198	0.126	
16QAM	20175	1732.5	25	0	21.11	2	Left Touch	0.224	0.142	
QPSK	20175	1732.5	1	0	23.08	0	Left Tilt	0.229	0.138	
QPSK	20175	1732.5	1	24	23.10	0	Left Tilt	0.232	0.140	
QPSK	20175	1732.5	12	6	21.97	1	Left Tilt	0.182	0.110	
QPSK	20175	1732.5	25	0	22.05	1				
16QAM	20175	1732.5	1	0	22.02	1	Left Tilt	0.197	0.119	
16QAM	20175	1732.5	1	24	21.98	1	Left Tilt	0.197	0.119	
16QAM	20175	1732.5	12	6	21.00	2	Left Tilt	0.138	0.084	
16QAM	20175	1732.5	25	0	21.11	2				

5 MHz BW – Low Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	19975	1712.5	1	24	22.88	0	Left Touch	0.314	0.200	

5 MHz BW – High Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20375	1752.5	1	24	23.01	0	Left Touch	0.401	0.252	

Right Hand Side (RHS): 10 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	22.88	0	Right Touch	0.455	0.290	
QPSK	20175	1732.5	1	49	22.97	0	Right Touch	0.486	0.309	
QPSK	20175	1732.5	25	12	21.92	1	Right Touch	0.379	0.241	
QPSK	20175	1732.5	50	0	21.97	1	Right Touch	0.382	0.242	
16QAM	20175	1732.5	1	0	21.83	1	Right Touch	0.320	0.204	
16QAM	20175	1732.5	1	49	21.92	1	Right Touch	0.351	0.224	
16QAM	20175	1732.5	25	12	20.87	2	Right Touch	0.270	0.172	
16QAM	20175	1732.5	50	0	21.00	2	Right Touch	0.260	0.164	
QPSK	20175	1732.5	1	0	22.88	0	RightTilt	0.214	0.136	
QPSK	20175	1732.5	1	49	22.97	0	RightTilt	0.225	0.142	
QPSK	20175	1732.5	25	12	21.92	1	RightTilt	0.179	0.113	
QPSK	20175	1732.5	50	0	21.97	1				
16QAM	20175	1732.5	1	0	21.83	1	RightTilt	0.172	0.110	
16QAM	20175	1732.5	1	49	21.92	1	RightTilt	0.178	0.113	
16QAM	20175	1732.5	25	12	20.87	2	RightTilt	0.145	0.091	
16QAM	20175	1732.5	50	0	21.00	2				

10 MHz BW – Low Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20000	1715.0	1	49	23.14	0	Right Touch	0.466	0.300	

10 MHz BW – High Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20350	1750.0	1	49	23.10	0	Right Touch	0.562	0.357	

Right Hand Side (RHS): 5 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.08	0	Right Touch	0.443	0.283	
QPSK	20175	1732.5	1	24	23.10	0	Right Touch	0.464	0.296	
QPSK	20175	1732.5	12	6	21.97	1	Right Touch	0.370	0.236	
QPSK	20175	1732.5	25	0	22.05	1	Right Touch	0.373	0.237	
16QAM	20175	1732.5	1	0	22.02	1	Right Touch	0.397	0.254	
16QAM	20175	1732.5	1	24	21.98	1	Right Touch	0.406	0.259	
16QAM	20175	1732.5	12	6	21.00	2	Right Touch	0.284	0.180	
16QAM	20175	1732.5	25	0	21.11	2	Right Touch	0.315	0.200	
QPSK	20175	1732.5	1	0	23.08	0	Right Tilt	0.220	0.142	
QPSK	20175	1732.5	1	24	23.10	0	Right Tilt	0.216	0.139	
QPSK	20175	1732.5	12	6	21.97	1	Right Tilt	0.175	0.112	
QPSK	20175	1732.5	25	0	22.05	1				
16QAM	20175	1732.5	1	0	22.02	1	Right Tilt	0.192	0.123	
16QAM	20175	1732.5	1	24	21.98	1	Right Tilt	0.195	0.125	
16QAM	20175	1732.5	12	6	21.00	2	Right Tilt	0.135	0.087	
16QAM	20175	1732.5	25	0	21.11	2				

5 MHz BW – Low Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	19975	1712.5	1	24	22.88	0	Right Touch	0.101	0.065	

5 MHz BW – High Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20375	1752.5	1	24	23.01	0	Right Touch	0.343	0.222	

(1) Body-worn & Body-hotspot: Rear

10 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	22.88	0	10	0.987	0.630	
QPSK	20175	1732.5	1	49	22.97	0	10	1.050	0.667	
QPSK	20175	1732.5	1	49	22.97	0	10	0.906	0.569	1
QPSK	20175	1732.5	25	12	21.92	1	10	0.829	0.528	
QPSK	20175	1732.5	50	0	21.97	1	10	0.852	0.541	
16QAM	20175	1732.5	1	0	21.83	1	10	0.777	0.493	
16QAM	20175	1732.5	1	49	21.92	1	10	0.754	0.478	
16QAM	20175	1732.5	25	12	20.87	2	10	0.624	0.395	
16QAM	20175	1732.5	50	0	21.00	2	10	0.640	0.406	

Note:

1. With headset attached

10 MHz BW – Low Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20000	1715	1	0	23.07	0	10	0.890	0.564	
QPSK	20000	1715	1	49	23.14	0	10	0.883	0.559	
QPSK	20000	1715	25	12	22.05	1	10	0.696	0.439	
QPSK	20000	1715	50	0	22.00	1	10	0.699	0.441	
16QAM	20000	1715	1	0	22.08	1	10	0.682	0.425	
16QAM	20000	1715	1	49	21.97	1	10	0.663	0.414	
16QAM	20000	1715	25	12	21.13	2	10	0.517	0.323	
16QAM	20000	1715	50	0	21.17	2	10	0.524	0.328	

10 MHz BW - High Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20350	1750	1	0	23.20	0	10	0.908	0.573	
QPSK	20350	1750	1	49	23.10	0	10	0.914	0.577	
QPSK	20350	1750	25	12	21.97	1	10	0.712	0.447	
QPSK	20350	1750	50	0	21.88	1	10	0.692	0.444	
16QAM	20350	1750	1	0	21.98	1	10	0.802	0.502	
16QAM	20350	1750	1	49	21.91	1	10	0.831	0.521	
16QAM	20350	1750	25	12	20.90	2	10	0.646	0.404	
16QAM	20350	1750	50	0	20.96	2	10	0.656	0.412	

2) Body-worn & Body-hotspot: Rear

5 MHz BW- Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.08	0	10	0.912	0.576	
QPSK	20175	1732.5	1	24	23.10	0	10	0.931	0.591	
QPSK	20175	1732.5	1	24	23.10	0	10	0.827	0.522	1
QPSK	20175	1732.5	12	6	21.97	1	10	0.754	0.478	
QPSK	20175	1732.5	25	0	22.05	1	10	0.754	0.478	
16QAM	20175	1732.5	1	0	22.02	1	10	0.950	0.603	
16QAM	20175	1732.5	1	24	21.98	1	10	0.761	0.483	
16QAM	20175	1732.5	12	6	21.00	2	10	0.800	0.507	
16QAM	20175	1732.5	25	0	21.11	2	10	0.801	0.506	

Note:

2. With headset attached

5 MHz BW - Low Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	19975	1712.5	1	0	22.98	0	10	0.915	0.583	
QPSK	19975	1712.5	1	24	22.88	0	10	0.921	0.586	
QPSK	19975	1712.5	12	6	21.86	1	10	0.737	0.469	
QPSK	19975	1712.5	25	0	21.95	1	10	0.744	0.472	
16QAM	19975	1712.5	1	0	21.86	1	10	0.796	0.505	
16QAM	19975	1712.5	1	24	21.84	1	10	0.843	0.528	
16QAM	19975	1712.5	12	6	20.88	2	10	0.555	0.353	
16QAM	19975	1712.5	25	0	21.02	2	10	0.681	0.393	

5 MHz BW - High Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20375	1752.5	1	0	23.15	0	10	0.961	0.613	
QPSK	20375	1752.5	1	24	23.01	0	10	0.976	0.622	
QPSK	20375	1752.5	12	6	22.08	1	10	0.760	0.483	
QPSK	20375	1752.5	25	0	22.06	1	10	0.766	0.488	
16QAM	20375	1752.5	1	0	22.82	1	10	0.834	0.530	
16QAM	20375	1752.5	1	24	21.82	1	10	0.846	0.533	
16QAM	20375	1752.5	12	6	20.86	2	10	0.580	0.366	
16QAM	20375	1752.5	25	0	21.11	2	10	0.623	0.392	

(3) Body-worn & Body-hotspot: Front

10 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	22.88	0	10	0.655	0.408	
QPSK	20175	1732.5	1	49	22.97	0	10	0.693	0.433	
QPSK	20175	1732.5	25	12	21.92	1	10	0.558	0.347	
QPSK	20175	1732.5	50	0	21.97	1	10	0.563	0.350	
16QAM	20175	1732.5	1	0	21.83	1	10	0.535	0.327	
16QAM	20175	1732.5	1	49	21.92	1	10	0.498	0.309	
16QAM	20175	1732.5	25	12	20.87	2	10	0.397	0.245	
16QAM	20175	1732.5	50	0	21.00	2	10	0.396	0.245	

5 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.08	0	10	0.716	0.445	
QPSK	20175	1732.5	1	24	23.10	0	10	0.751	0.466	
QPSK	20175	1732.5	12	6	21.97	1	10	0.597	0.369	
QPSK	20175	1732.5	25	0	22.05	1	10	0.593	0.367	
16QAM	20175	1732.5	1	0	22.02	1	10	0.656	0.404	
16QAM	20175	1732.5	1	24	21.98	1	10	0.669	0.414	
16QAM	20175	1732.5	12	6	21.00	2	10	0.457	0.282	
16QAM	20175	1732.5	25	0	21.11	2	10	0.497	0.307	

(4) Body-worn & Body-hotspot: Bottom

10 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	22.88	0	10	0.297	0.161	
QPSK	20175	1732.5	1	49	22.97	0	10	0.289	0.160	
QPSK	20175	1732.5	25	12	21.92	1	10	0.297	0.161	
QPSK	20175	1732.5	50	0	21.97	1	10	0.238	0.129	
16QAM	20175	1732.5	1	0	21.83	1	10	0.234	0.127	
16QAM	20175	1732.5	1	49	21.92	1	10	0.246	0.132	
16QAM	20175	1732.5	25	12	20.87	2	10	0.202	0.109	
16QAM	20175	1732.5	50	0	21.00	2	10	0.190	0.102	

5 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.08	0	10	0.353	0.188	
QPSK	20175	1732.5	1	24	23.10	0	10	0.299	0.160	
QPSK	20175	1732.5	12	6	21.97	1	10	0.243	0.131	
QPSK	20175	1732.5	25	0	22.05	1	10	0.246	0.132	
16QAM	20175	1732.5	1	0	22.02	1	10	0.265	0.142	
16QAM	20175	1732.5	1	24	21.98	1	10	0.271	0.145	
16QAM	20175	1732.5	12	6	21.00	2	10	0.176	0.095	
16QAM	20175	1732.5	25	0	21.11	2	10	0.199	0.107	

(5) Body-worn & Body-hotspot: Left

10 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	22.88	0	10	0.123	0.075	
QPSK	20175	1732.5	1	49	22.97	0	10	0.139	0.087	
QPSK	20175	1732.5	25	12	21.92	1	10	0.105	0.063	
QPSK	20175	1732.5	50	0	21.97	1	10	0.100	0.063	
16QAM	20175	1732.5	1	0	21.83	1	10	0.097	0.060	
16QAM	20175	1732.5	1	49	21.92	1	10	0.110	0.068	
16QAM	20175	1732.5	25	12	20.87	2	10	0.082	0.049	
16QAM	20175	1732.5	50	0	21.00	2	10	0.080	0.050	

5 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.08	0	10	0.128	0.078	
QPSK	20175	1732.5	1	24	23.10	0	10	0.135	0.084	
QPSK	20175	1732.5	12	6	21.97	1	10	0.104	0.065	
QPSK	20175	1732.5	25	0	22.05	1	10	0.089	0.056	
16QAM	20175	1732.5	1	0	22.02	1	10	0.094	0.059	
16QAM	20175	1732.5	1	24	21.98	1	10	0.097	0.061	
16QAM	20175	1732.5	12	6	21.00	2	10	0.066	0.040	
16QAM	20175	1732.5	25	0	21.11	2	10	0.074	0.046	

(6) Body-worn & Body-hotspot: Right

10 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	22.88	0	10	0.307	0.187	
QPSK	20175	1732.5	1	49	22.97	0	10	0.330	0.201	
QPSK	20175	1732.5	25	12	21.92	1	10	0.263	0.159	
QPSK	20175	1732.5	50	0	21.97	1	10	0.261	0.159	
16QAM	20175	1732.5	1	0	21.83	1	10	0.234	0.143	
16QAM	20175	1732.5	1	49	21.92	1	10	0.242	0.148	
16QAM	20175	1732.5	25	12	20.87	2	10	0.192	0.117	
16QAM	20175	1732.5	50	0	21.00	2	10	0.195	0.119	

5 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	20175	1732.5	1	0	23.08	0	10	0.326	0.199	
QPSK	20175	1732.5	1	24	23.10	0	10	0.333	0.203	
QPSK	20175	1732.5	12	6	21.97	1	10	0.258	0.157	
QPSK	20175	1732.5	25	0	22.05	1	10	0.264	0.160	
16QAM	20175	1732.5	1	0	22.02	1	10	0.261	0.158	
16QAM	20175	1732.5	1	24	21.98	1	10	0.268	0.162	
16QAM	20175	1732.5	12	6	21.00	2	10	0.181	0.110	
16QAM	20175	1732.5	25	0	21.11	2	10	0.205	0.124	

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Head SAR

Left Hand Side (LHS): 10 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23790	710	1	0	23.68	0	Left Touch	0.306	0.228	
QPSK	23790	710	1	49	23.45	0	Left Touch	0.341	0.265	
QPSK	23790	710	25	12	22.52	1	Left Touch	0.228	0.176	
QPSK	23790	710	50	0	22.51	1	Left Touch	0.238	0.184	
16QAM	23790	710	1	0	22.52	1	Left Touch	0.266	0.206	
16QAM	23790	710	1	49	22.48	1	Left Touch	0.326	0.255	
16QAM	23790	710	25	12	21.48	2	Left Touch	0.208	0.163	
16QAM	23790	710	50	0	21.55	2	Left Touch	0.229	0.177	
QPSK	23790	710	1	0	23.68	0	Left Tilt	0.198	0.157	
QPSK	23790	710	1	49	23.45	0	Left Tilt	0.228	0.181	
QPSK	23790	710	25	12	22.52	1	Left Tilt	0.139	0.110	
QPSK	23790	710	50	0	22.51	1	Left Tilt			
16QAM	23790	710	1	0	22.52	1	Left Tilt	0.171	0.135	
16QAM	23790	710	1	49	22.48	1	Left Tilt	0.194	0.153	
16QAM	23790	710	25	12	21.48	2	Left Tilt	0.117	0.092	
16QAM	23790	710	50	0	21.55	2	Left Tilt			

5 MHz BW – Low Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23755	706.5	1	24	23.18	0	Left Touch	0.314	0.242	

5 MHz BW – High Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23825	713.5	1	24	23.32	0	Left Touch	0.393	0.303	

Right Hand Side (RHS): 10 MHz BW - Middle Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23790	710	1	0	23.68	0	Right Touch	0.334	0.257	
QPSK	23790	710	1	49	23.45	0	Right Touch	0.392	0.302	
QPSK	23790	710	25	12	22.52	1	Right Touch	0.250	0.193	
QPSK	23790	710	50	0	22.51	1	Right Touch	0.265	0.203	
16QAM	23790	710	1	0	22.52	1	Right Touch	0.292	0.225	
16QAM	23790	710	1	49	22.48	1	Right Touch	0.320	0.247	
16QAM	23790	710	25	12	21.48	2	Right Touch	0.172	0.131	
16QAM	23790	710	50	0	21.55	2	Right Touch	0.187	0.141	
QPSK	23790	710	1	0	23.68	0	RightTilt	0.187	0.147	
QPSK	23790	710	1	49	23.45	0	RightTilt	0.218	0.170	
QPSK	23790	710	25	12	22.52	1	RightTilt	0.141	0.110	
QPSK	23790	710	50	0	22.51	1				
16QAM	23790	710	1	0	22.52	1	RightTilt	0.182	0.142	
16QAM	23790	710	1	49	22.48	1	RightTilt	0.215	0.167	
16QAM	23790	710	25	12	21.48	2	RightTilt	0.128	0.099	
16QAM	23790	710	50	0	21.55	2				

5 MHz BW – Low Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23755	706.5	1	24	23.18	0	Right Touch	0.271	0.208	

5 MHz BW – High Channel (From The worst case configuration)

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Test Position	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23825	713.5	1	24	23.32	0	Right Touch	0.383	0.295	

(1) Body-worn & Body-hotspot: Rear

10 MHz BW – Middle (Fix) Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23790	710	1	0	23.68	0	10	0.410	0.309	
QPSK	23790	710	1	49	23.45	0	10	0.607	0.456	
QPSK	23790	710	1	49	23.45	0	10	0.442	0.336	1
QPSK	23790	710	25	12	22.52	1	10	0.399	0.297	
QPSK	23790	710	50	0	22.51	1	10	0.325	0.245	
16QAM	23790	710	1	0	22.52	1	10	0.414	0.310	
16QAM	23790	710	1	49	22.48	1	10	0.455	0.342	
16QAM	23790	710	25	12	21.48	2	10	0.320	0.239	
16QAM	23790	710	50	0	21.55	2	10	0.319	0.239	

Note(s):

1. With headset attached

5 MHz BW – Low Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23755	706.5	1	0	23.57	0	10	0.422	0.316	
QPSK	23755	706.5	1	24	23.18	0	10	0.371	0.279	
QPSK	23755	706.5	12	6	22.40	1	10	0.313	0.235	
QPSK	23755	706.5	25	0	22.48	1	10	0.318	0.238	
16QAM	23755	706.5	1	0	22.49	1	10	0.490	0.371	
16QAM	23755	706.5	1	24	22.32	1	10	0.443	0.331	
16QAM	23755	706.5	12	6	21.62	2	10	0.313	0.232	
16QAM	23755	706.5	25	0	21.51	2	10	0.332	0.249	

5 MHz BW – High Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23825	713.5	1	0	23.30	0	10	0.460	0.346	
QPSK	23825	713.5	1	24	23.32	0	10	0.593	0.446	
QPSK	23825	713.5	12	6	22.35	1	10	0.462	0.347	
QPSK	23825	713.5	25	0	22.41	1	10	0.450	0.339	
16QAM	23825	713.5	1	0	22.47	1	10	0.531	0.395	
16QAM	23825	713.5	1	24	22.40	1	10	0.576	0.432	
16QAM	23825	713.5	12	6	21.42	2	10	0.390	0.292	
16QAM	23825	713.5	25	0	21.48	2	10	0.425	0.321	

(2) Body-worn & Body-hotspot: Front

10 MHz BW – Middle (Fix) Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23790	710	1	0	23.68	0	10	0.393	0.304	
QPSK	23790	710	1	49	23.45	0	10	0.469	0.363	
QPSK	23790	710	25	12	22.52	1	10	0.292	0.226	
QPSK	23790	710	50	0	22.51	1	10	0.307	0.237	
16QAM	23790	710	1	0	22.52	1	10	0.339	0.262	
16QAM	23790	710	1	49	22.48	1	10	0.394	0.305	
16QAM	23790	710	25	12	21.48	2	10	0.232	0.177	
16QAM	23790	710	50	0	21.55	2	10	0.248	0.192	

5 MHz BW – Low Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23755	706.5	1	0	23.57	0	10	0.412	0.315	
QPSK	23755	706.5	1	24	23.18	0	10	0.338	0.261	
QPSK	23755	706.5	12	6	22.40	1	10	0.293	0.227	
QPSK	23755	706.5	25	0	22.48	1	10	0.297	0.229	
16QAM	23755	706.5	1	0	22.49	1	10	0.398	0.309	
16QAM	23755	706.5	1	24	22.32	1	10	0.329	0.254	
16QAM	23755	706.5	12	6	21.62	2	10	0.230	0.178	
16QAM	23755	706.5	25	0	21.51	2	10	0.261	0.202	

5 MHz BW – High Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23825	713.5	1	0	23.30	0	10	0.350	0.272	
QPSK	23825	713.5	1	24	23.32	0	10	0.432	0.336	
QPSK	23825	713.5	12	6	22.35	1	10	0.336	0.261	
QPSK	23825	713.5	25	0	22.41	1	10	0.332	0.258	
16QAM	23825	713.5	1	0	22.47	1	10	0.318	0.246	
16QAM	23825	713.5	1	24	22.40	1	10	0.373	0.291	
16QAM	23825	713.5	12	6	21.42	2	10	0.238	0.184	
16QAM	23825	713.5	25	0	21.48	2	10	0.269	0.209	

(3) Body-worn & Body-hotspot: Bottom

10 MHz BW – Middle (Fix) Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23790	710	1	0	23.68	0	10	0.073	0.046	
QPSK	23790	710	1	49	23.45	0	10	0.075	0.046	
QPSK	23790	710	25	12	22.52	1	10	0.051	0.032	
QPSK	23790	710	50	0	22.51	1	10	0.052	0.033	
16QAM	23790	710	1	0	22.52	1	10	0.057	0.036	
16QAM	23790	710	1	49	22.48	1	10	0.058	0.036	
16QAM	23790	710	25	12	21.48	2	10	0.037	0.023	
16QAM	23790	710	50	0	21.55	2	10	0.039	0.024	

5 MHz BW – Low Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23755	706.5	1	0	23.57	0	10	0.066	0.042	
QPSK	23755	706.5	1	24	23.18	0	10	0.057	0.036	
QPSK	23755	706.5	12	6	22.40	1	10	0.051	0.032	
QPSK	23755	706.5	25	0	22.48	1	10	0.050	0.032	
16QAM	23755	706.5	1	0	22.49	1	10	0.063	0.039	
16QAM	23755	706.5	1	24	22.32	1	10	0.050	0.032	
16QAM	23755	706.5	12	6	21.62	2	10	0.037	0.023	
16QAM	23755	706.5	25	0	21.51	2	10	0.042	0.027	

5 MHz BW – High Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23825	713.5	1	0	23.30	0	10	0.052	0.033	
QPSK	23825	713.5	1	24	23.32	0	10	0.064	0.041	
QPSK	23825	713.5	12	6	22.35	1	10	0.047	0.030	
QPSK	23825	713.5	25	0	22.41	1	10	0.046	0.029	
16QAM	23825	713.5	1	0	22.47	1	10	0.051	0.033	
16QAM	23825	713.5	1	24	22.40	1	10	0.062	0.039	
16QAM	23825	713.5	12	6	21.42	2	10	0.038	0.024	
16QAM	23825	713.5	25	0	21.48	2	10	0.043	0.027	

(4) Body-worn & Body-hotspot: Left

10 MHz BW – Middle (Fix) Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23790	710	1	0	23.68	0	10	0.290	0.207	
QPSK	23790	710	1	49	23.45	0	10	0.385	0.275	
QPSK	23790	710	25	12	22.52	1	10	0.229	0.164	
QPSK	23790	710	50	0	22.51	1	10	0.239	0.171	
16QAM	23790	710	1	0	22.52	1	10	0.256	0.183	
16QAM	23790	710	1	49	22.48	1	10	0.326	0.233	
16QAM	23790	710	25	12	21.48	2	10	0.185	0.132	
16QAM	23790	710	50	0	21.55	2	10	0.200	0.143	

5 MHz BW – Low Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23755	706.5	1	0	23.57	0	10	0.299	0.213	
QPSK	23755	706.5	1	24	23.18	0	10	0.269	0.192	
QPSK	23755	706.5	12	6	22.40	1	10	0.223	0.159	
QPSK	23755	706.5	25	0	22.48	1	10	0.233	0.165	
16QAM	23755	706.5	1	0	22.49	1	10	0.287	0.205	
16QAM	23755	706.5	1	24	22.32	1	10	0.265	0.188	
16QAM	23755	706.5	12	6	21.62	2	10	0.178	0.126	
16QAM	23755	706.5	25	0	21.51	2	10	0.202	0.144	

5 MHz BW – High Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23825	713.5	1	0	23.30	0	10	0.312	0.222	
QPSK	23825	713.5	1	24	23.32	0	10	0.376	0.268	
QPSK	23825	713.5	12	6	22.35	1	10	0.296	0.211	
QPSK	23825	713.5	25	0	22.41	1	10	0.292	0.207	
16QAM	23825	713.5	1	0	22.47	1	10	0.290	0.207	
16QAM	23825	713.5	1	24	22.40	1	10	0.336	0.241	
16QAM	23825	713.5	12	6	21.42	2	10	0.221	0.158	
16QAM	23825	713.5	25	0	21.48	2	10	0.242	0.173	

(5) Body-worn & Body-hotspot: Right

10 MHz BW – Middle (Fix) Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23790	710	1	0	23.68	0	10	0.323	0.227	
QPSK	23790	710	1	49	23.45	0	10	0.380	0.267	
QPSK	23790	710	25	12	22.52	1	10	0.238	0.167	
QPSK	23790	710	50	0	22.51	1	10	0.249	0.177	
16QAM	23790	710	1	0	22.52	1	10	0.274	0.192	
16QAM	23790	710	1	49	22.48	1	10	0.304	0.214	
16QAM	23790	710	25	12	21.48	2	10	0.176	0.125	
16QAM	23790	710	50	0	21.55	2	10	0.194	0.137	

5 MHz BW – Low Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23755	706.5	1	0	23.57	0	10	0.321	0.228	
QPSK	23755	706.5	1	24	23.18	0	10	0.281	0.198	
QPSK	23755	706.5	12	6	22.40	1	10	0.243	0.171	
QPSK	23755	706.5	25	0	22.48	1	10	0.244	0.172	
16QAM	23755	706.5	1	0	22.49	1	10	0.310	0.214	
16QAM	23755	706.5	1	24	22.32	1	10	0.288	0.201	
16QAM	23755	706.5	12	6	21.62	2	10	0.195	0.137	
16QAM	23755	706.5	25	0	21.51	2	10	0.223	0.157	

5 MHz BW – High Channel

Mode	UL Ch #.	Freq. (MHz)	RB Size	RB Offset	Avg Pwr (dBm)	MPR	Separation Distance (mm)	SAR (mW/g)		Note
								1-g	10-g	
QPSK	23825	713.5	1	0	23.30	0	10	0.302	0.214	
QPSK	23825	713.5	1	24	23.32	0	10	0.379	0.267	
QPSK	23825	713.5	12	6	22.35	1	10	0.298	0.209	
QPSK	23825	713.5	25	0	22.41	1	10	0.313	0.220	
16QAM	23825	713.5	1	0	22.47	1	10	0.273	0.194	
16QAM	23825	713.5	1	24	22.40	1	10	0.319	0.226	
16QAM	23825	713.5	12	6	21.42	2	10	0.210	0.149	
16QAM	23825	713.5	25	0	21.48	2	10	0.233	0.164	

13. Worst-case SAR Plots

13.1. Worst-case SAR Plots for WWAN

Worst-case HEAD SAR Plot for LTE Band 17

Date: 7/19/2011

Test Laboratory: UL CCS SAR Lab A

07_Right Touch_LTE B17_10M_QPSK_M-Ch

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 710$ MHz; $\sigma = 0.885$ mho/m; $\epsilon_r = 43.971$; $\rho = 1000$ kg/m³
Phantom section: Right Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(9.06, 9.06, 9.06); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

QPSK/#RB1_RB49_M ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.436 mW/g

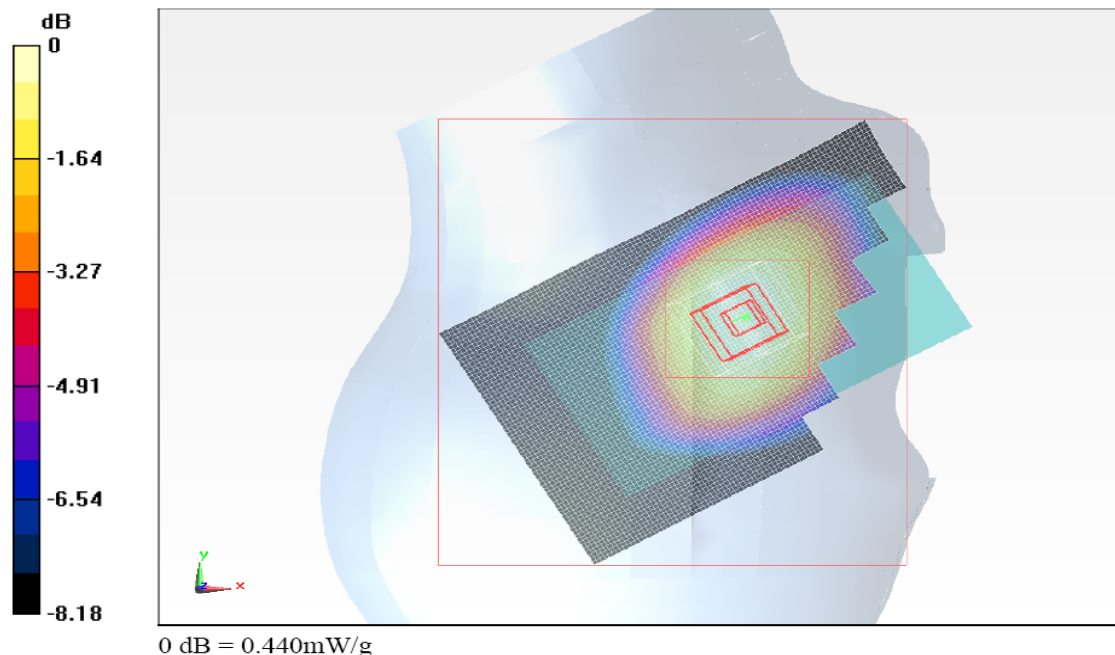
QPSK/#RB1_RB49_M ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.299 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.493 W/kg

SAR(1 g) = 0.392 mW/g; SAR(10 g) = 0.302 mW/g

Maximum value of SAR (measured) = 0.437 mW/g



Worst-case HEAD SAR Plot for LTE Band 17 – Z Plot

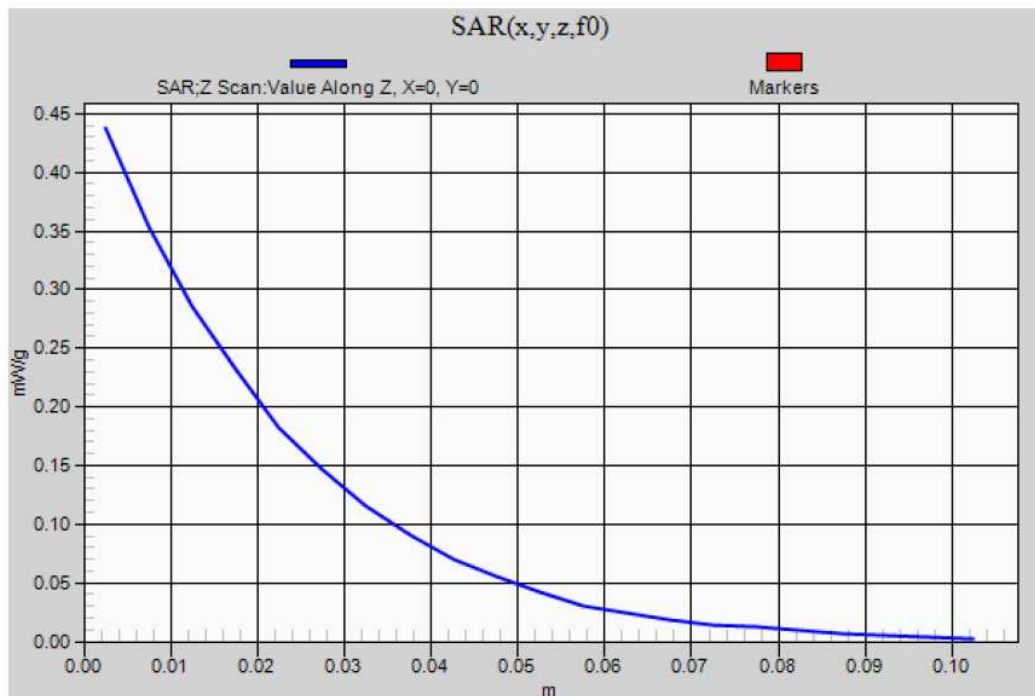
Date: 7/19/2011

Test Laboratory: UL CCS SAR Lab A

07_Right Touch_LTE B17_10M_QPSK_M-Ch

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

QPSK/#RB1_RB49_M ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.438 mW/g



Worst-case Body SAR Plot for LTE Band 17

Date: 7/15/2011

Test Laboratory: UL CCS SAR Lab A

01_Rear_LTE B17_10M_QPSK_M-ch

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 710$ MHz; $\sigma = 0.913$ mho/m; $\epsilon_r = 55.59$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(8.87, 8.87, 8.87); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

QPSK/#RB1_RB49_M-ch/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

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

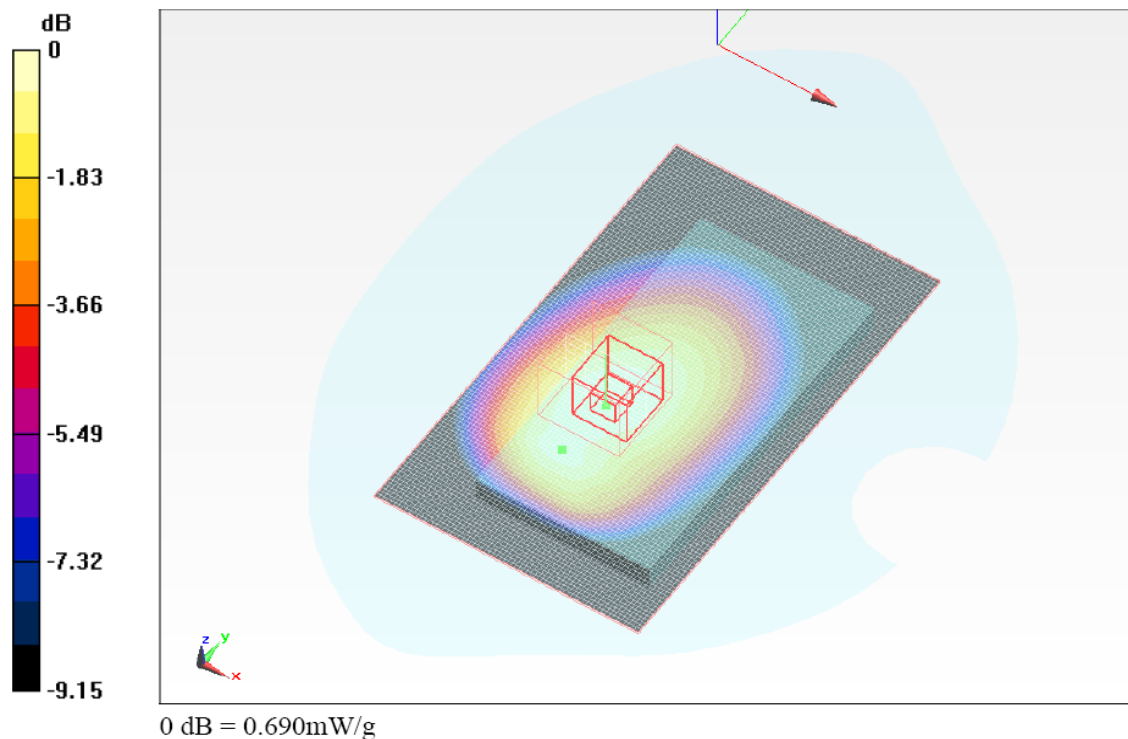
QPSK/#RB1_RB49_M-ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.527 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.787 W/kg

SAR(1 g) = 0.607 mW/g; SAR(10 g) = 0.456 mW/g

Maximum value of SAR (measured) = 0.689 mW/g



Worst-case Body SAR Plot for LTE Band 17 – Z Plot

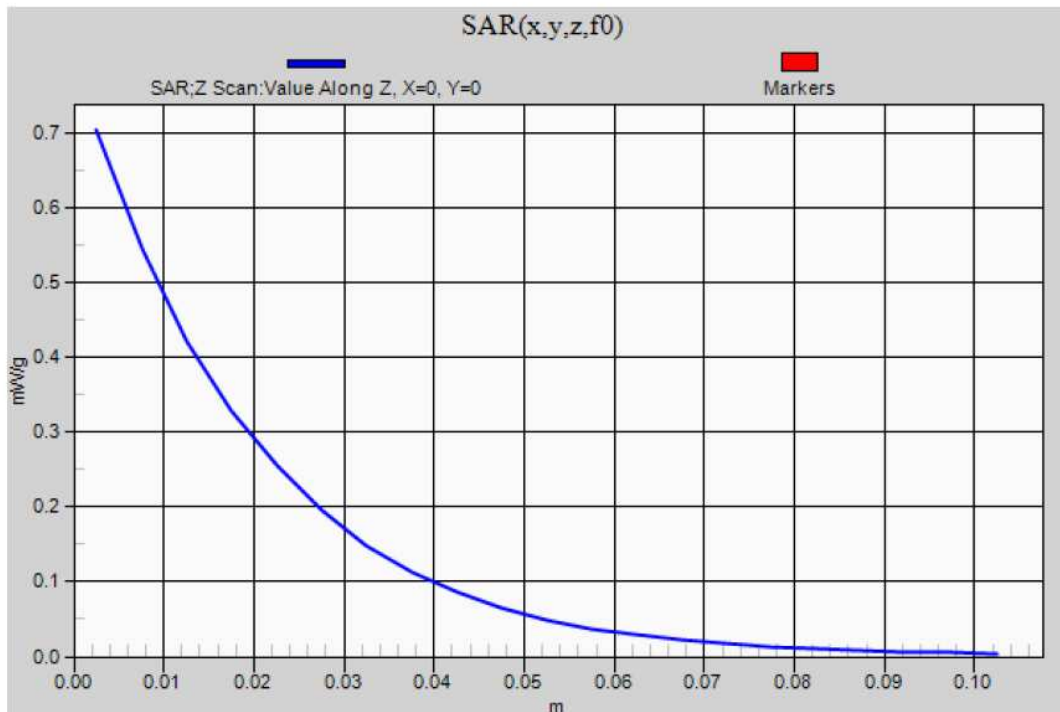
Date: 7/15/2011

Test Laboratory: UL CCS SAR Lab A

01_Rear_LTE B17_10M_QPSK_M-ch

Communication System: LTE; Frequency: 710 MHz; Duty Cycle: 1:1

QPSK/#RB1_RB49_M-ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.703 mW/g



Worst-case HEAD SAR Plot for GSM850

Date: 7/28/2011

Test Laboratory: UL CCS SAR Lab A

01_Head_Left Touch_GSM850

Communication System: Generic GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.30042
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.895$ mho/m; $\epsilon_r = 42.52$; $\rho = 1000$ kg/m³
Phantom section: Left Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(8.65, 8.65, 8.65); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

GSM850_1 slot/Left Touch_M ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.261 mW/g

GSM850_1 slot/Left Touch_M ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

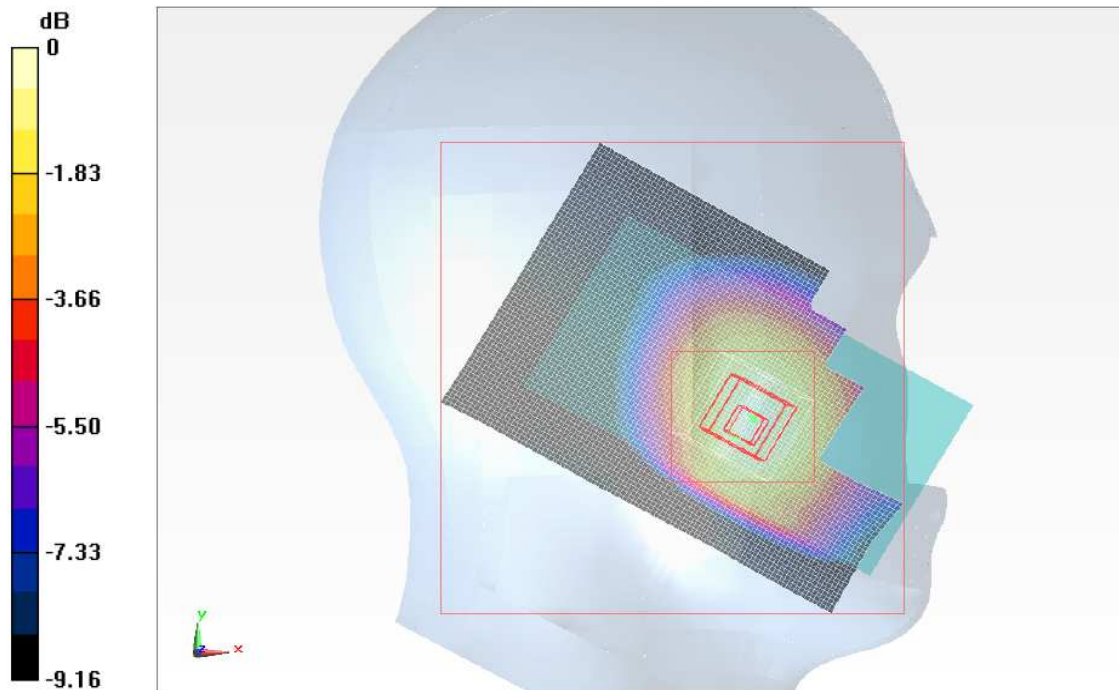
Reference Value = 17.837 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.329 W/kg

SAR(1 g) = 0.253 mW/g; SAR(10 g) = 0.189 mW/g

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

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



0 dB = 0.280mW/g

Worst-case HEAD SAR Plot for GSM850 – Z Plot

Date: 7/28/2011

Test Laboratory: UL CCS SAR Lab A

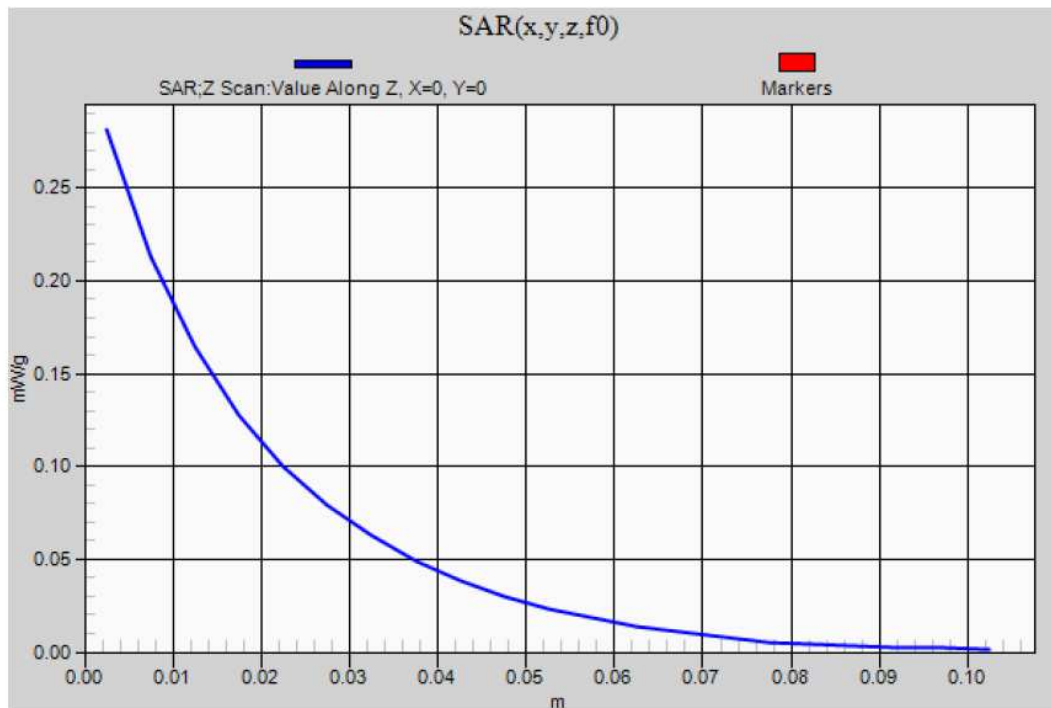
01_Head_Left Touch_GSM850

Communication System: Generic GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.30042

GSM850_1 slot/Left Touch_M ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.281 mW/g



Worst-case HEAD SAR Plot for GSM850 (VOIP)

Date: 7/28/2011

Test Laboratory: UL CCS SAR Lab A

05_Head_Left Touch_GSM850 (VOIP)

Communication System: GPRS-FDD (TDMA, GMSK, 2 slot); Frequency: 836.6 MHz; Duty Cycle: 1:4.00037
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.895$ mho/m; $\epsilon_r = 42.52$; $\rho = 1000$ kg/m³
Phantom section: Left Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(8.65, 8.65, 8.65); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

GSM850_2 slot/Left Touch_M ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.308 mW/g

GSM850_2 slot/Left Touch_M ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

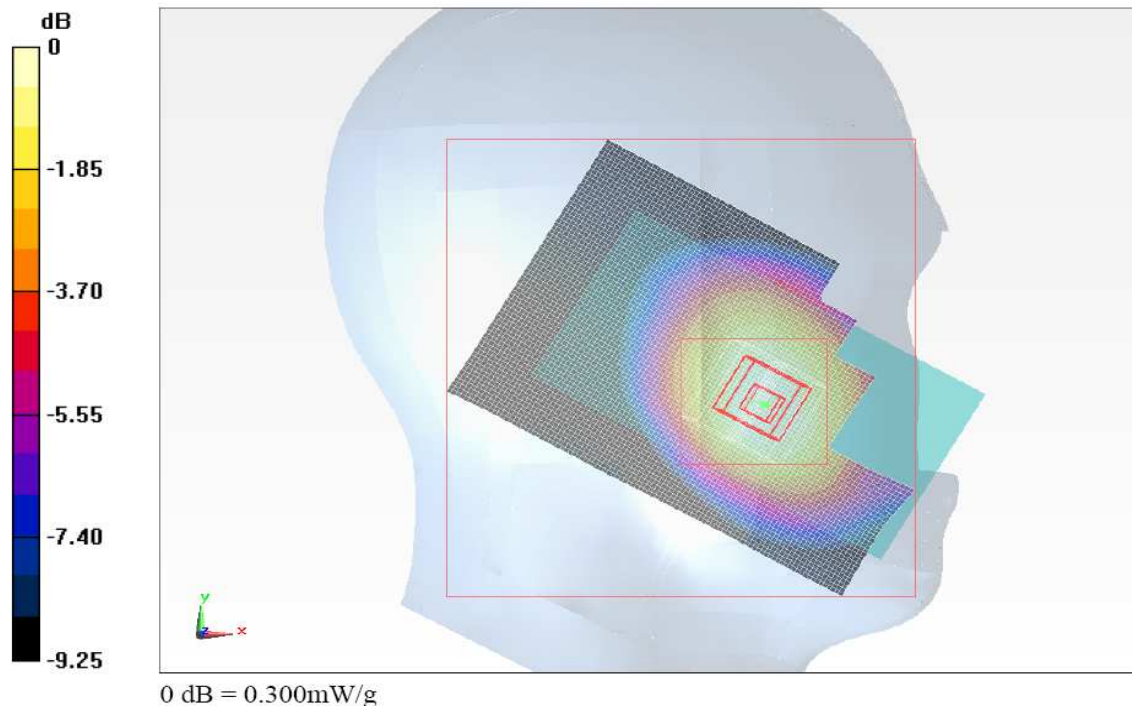
Reference Value = 18.341 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.343 W/kg

SAR(1 g) = 0.263 mW/g; SAR(10 g) = 0.199 mW/g

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

Maximum value of SAR (measured) = 0.297 mW/g



Worst-case Body SAR Plot for GSM850

Date: 7/29/2011

Test Laboratory: UL CCS SAR Lab A

01_Rear_GPRS850

Communication System: GPRS-FDD (TDMA, GMSK, 2 slot); Frequency: 836.6 MHz; Duty Cycle: 1:4.00037
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.997$ mho/m; $\epsilon_r = 55.608$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

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

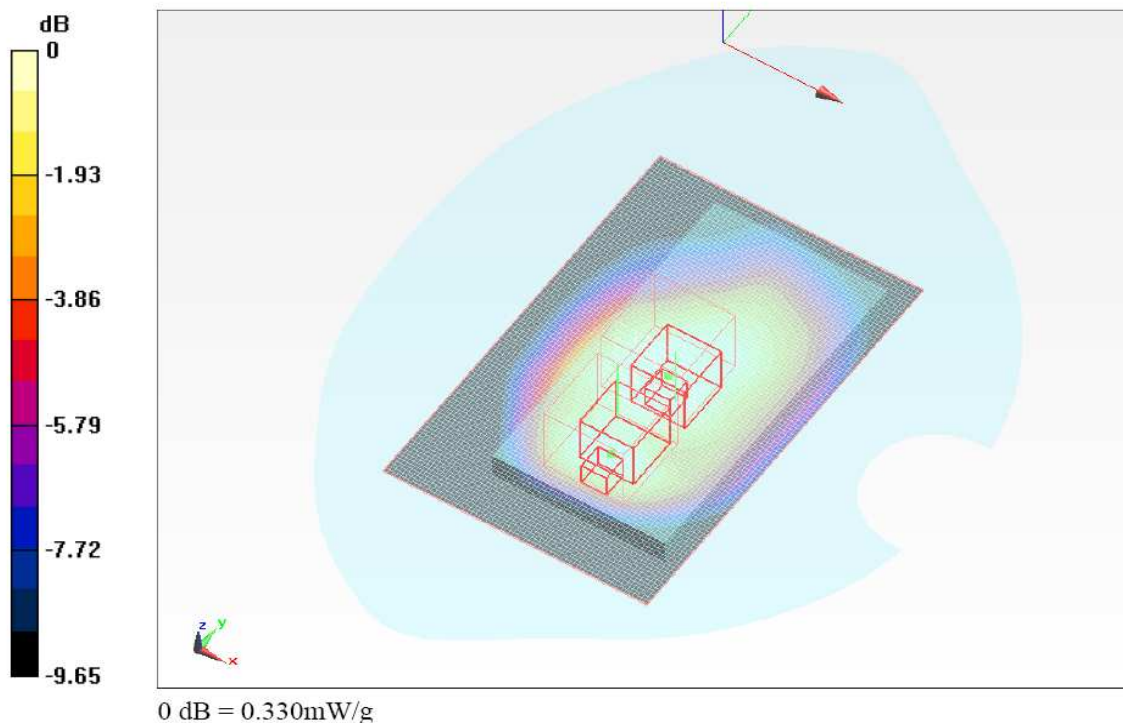
DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(8.78, 8.78, 8.78); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

GRPS_2 slot/M_Ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.363 mW/g

GRPS_2 slot/M_Ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.132 V/m; Power Drift = 0.02
Peak SAR (extrapolated) = 0.381 W/kg
SAR(1 g) = 0.239 mW/g; SAR(10 g) = 0.161 mW/g
Maximum value of SAR (measured) = 0.305 mW/g

GRPS_2 slot/M_Ch/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.132 V/m; Power Drift = 0.02
Peak SAR (extrapolated) = 0.393 W/kg
SAR(1 g) = 0.293 mW/g; SAR(10 g) = 0.219 mW/g
Maximum value of SAR (measured) = 0.335 mW/g



Worst-case Body SAR Plot for GSM850 – Z Plot

Date: 7/29/2011

Test Laboratory: UL CCS SAR Lab A

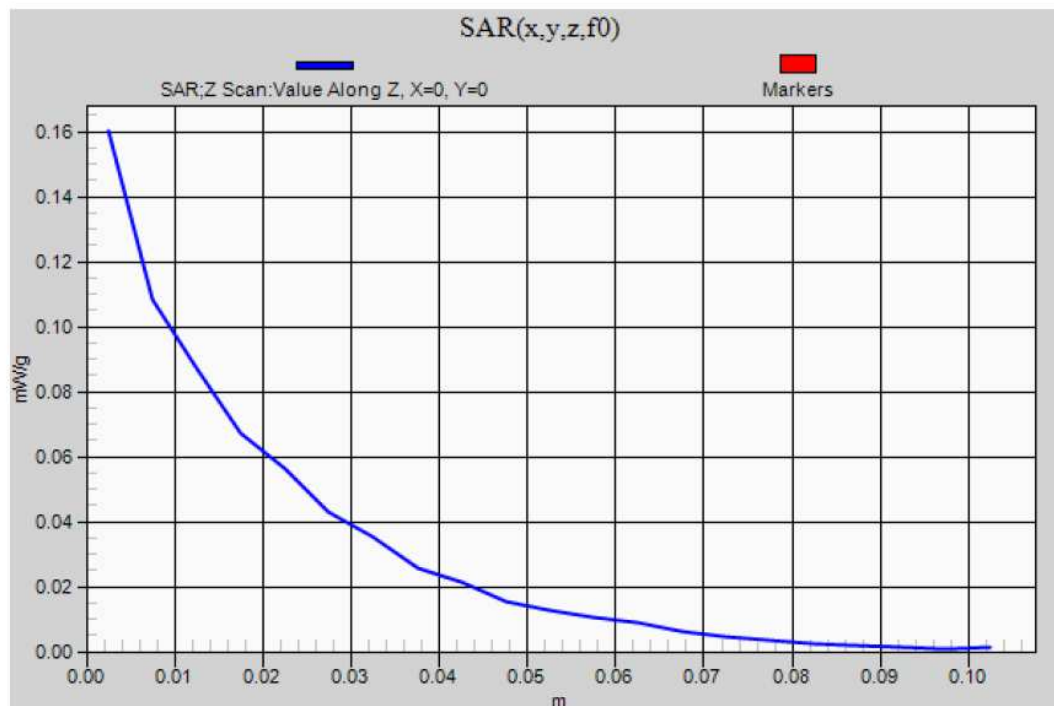
01_Rear_GPRS850

Communication System: GPRS-FDD (TDMA, GMSK, 2 slot); Frequency: 836.6 MHz; Duty Cycle: 1:4.00037

GRPS_2 slot/M_Ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.160 mW/g



Worst-case HEAD SAR Plot for UMTS (WCDMA) Band V

Date: 7/29/2011

Test Laboratory: UL CCS SAR Lab A

01_Head_Left Touch_UMTS Band V

Communication System: WCDMA (UMTS); Frequency: 834.4 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 834.4$ MHz; $\sigma = 0.893$ mho/m; $\epsilon_r = 42.551$; $\rho = 1000$ kg/m³
Phantom section: Left Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(8.65, 8.65, 8.65); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

R99/Left Touch_M ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.285 mW/g

R99/Left Touch_M ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

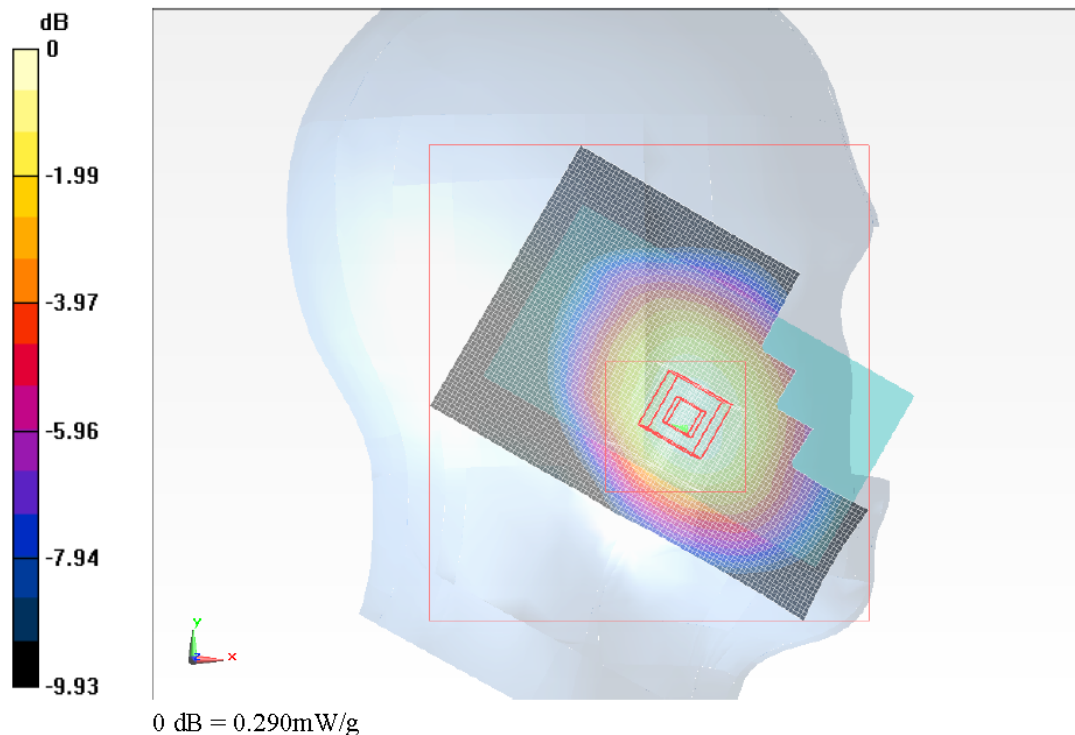
Reference Value = 17.648 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.326 W/kg

SAR(1 g) = 0.256 mW/g; SAR(10 g) = 0.193 mW/g

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

Maximum value of SAR (measured) = 0.287 mW/g



Worst-case HEAD SAR Plot for UMTS (WCDMA) Band V – Z plot

Date: 7/29/2011

Test Laboratory: UL CCS SAR Lab A

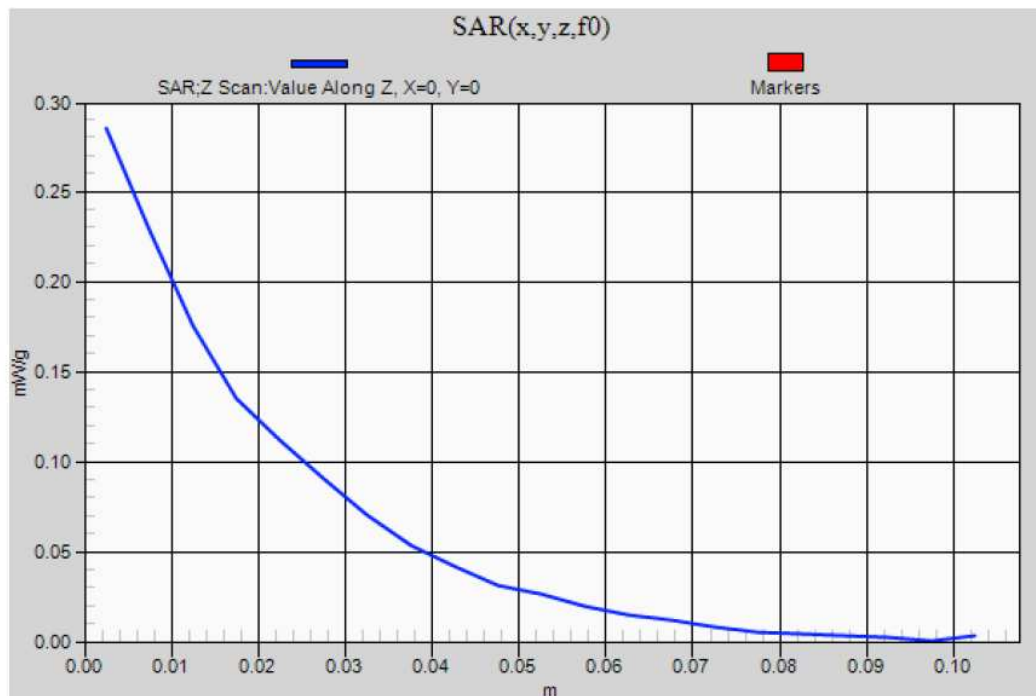
01_Head_Left Touch_UMTS Band V

Communication System: WCDMA (UMTS); Frequency: 834.4 MHz; Duty Cycle: 1:1

R99/Left Touch_M ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.285 mW/g



Worst-case Body SAR Plot for UMTS (WCDMA) Band V

Date: 7/29/2011

Test Laboratory: UL CCS SAR Lab A

01_Rear_UMTS Band V

Communication System: WCDMA (UMTS); Frequency: 834.4 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 834.4$ MHz; $\sigma = 0.995$ mho/m; $\epsilon_r = 55.632$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(8.78, 8.78, 8.78); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

R 99/M ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.388 mW/g

R 99/M ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

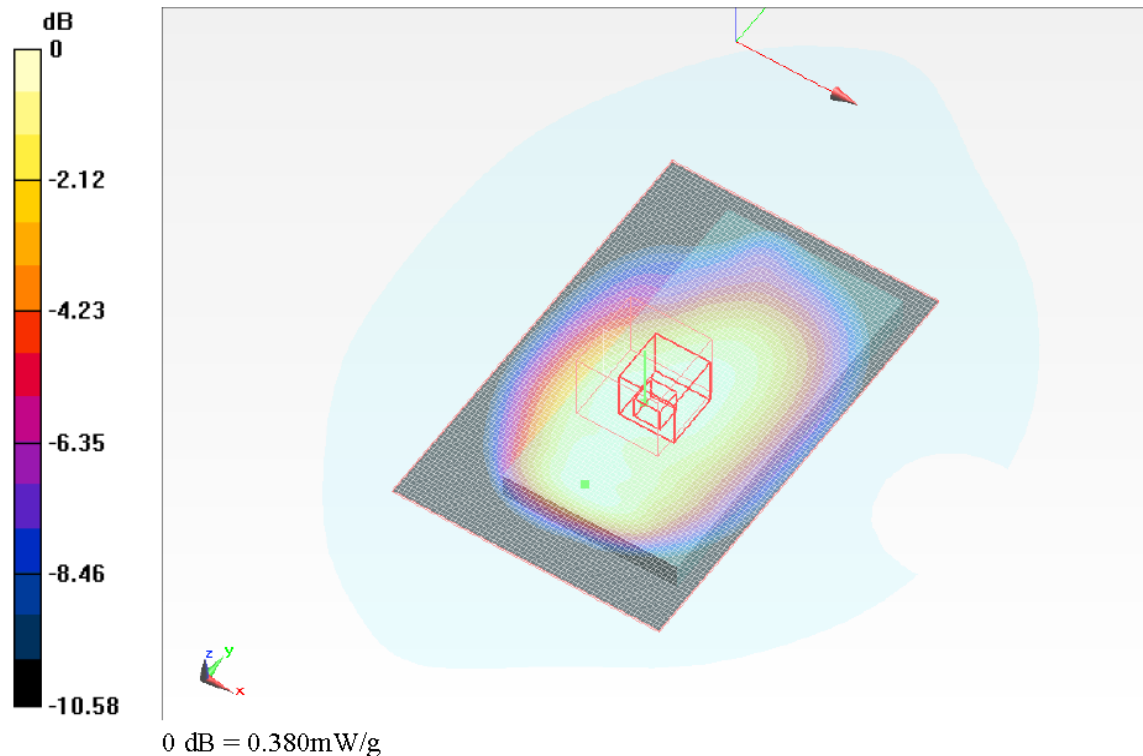
Reference Value = 19.797 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.450 W/kg

SAR(1 g) = 0.340 mW/g; SAR(10 g) = 0.255 mW/g

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

Maximum value of SAR (measured) = 0.385 mW/g



Worst-case Body SAR Plot for UMTS (WCDMA) Band V – Z plot

Date: 7/29/2011

Test Laboratory: UL CCS SAR Lab A

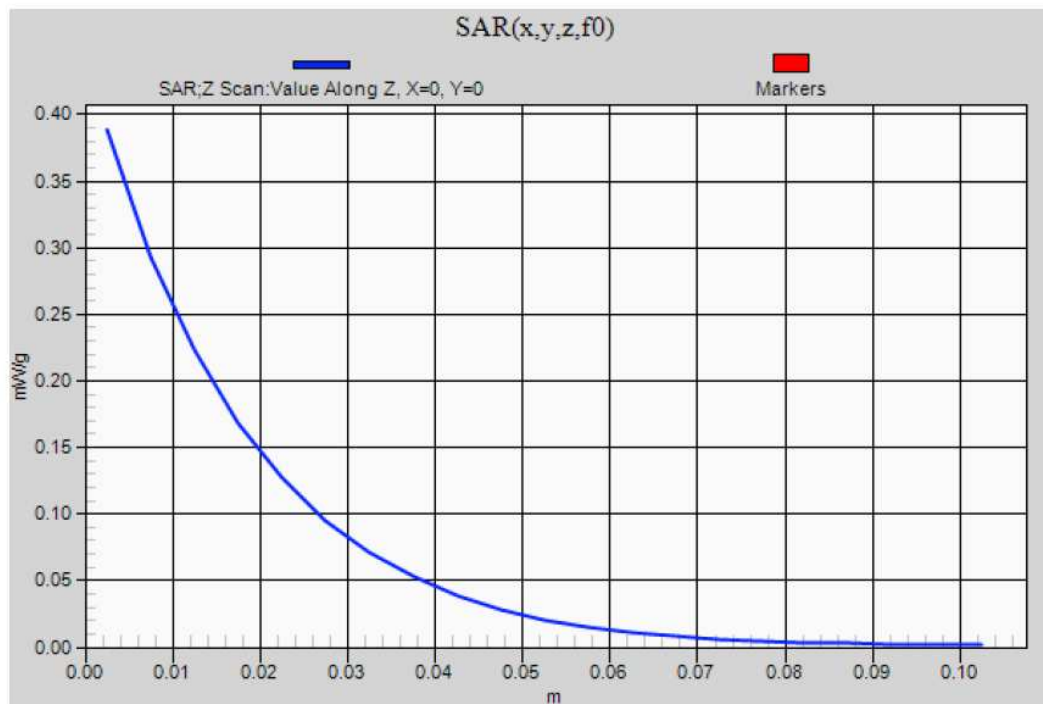
01_Rear_UMTS Band V

Communication System: WCDMA (UMTS); Frequency: 834.4 MHz; Duty Cycle: 1:1

R 99/M ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.388 mW/g



Worst-case HEAD SAR Plot for LTE Band 4

Date: 7/18/2011

Test Laboratory: UL CCS SAR Lab A

02_Right_Touch_LTE B4_10M_QPSK_M-Ch

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.333$ mho/m; $\epsilon_r = 41.423$; $\rho = 1000$ kg/m³
Phantom section: Right Section

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

DASY5 Configuration:

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

QPSK/#RB1_RB49_M ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.597 mW/g

QPSK/#RB1_RB49_M ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

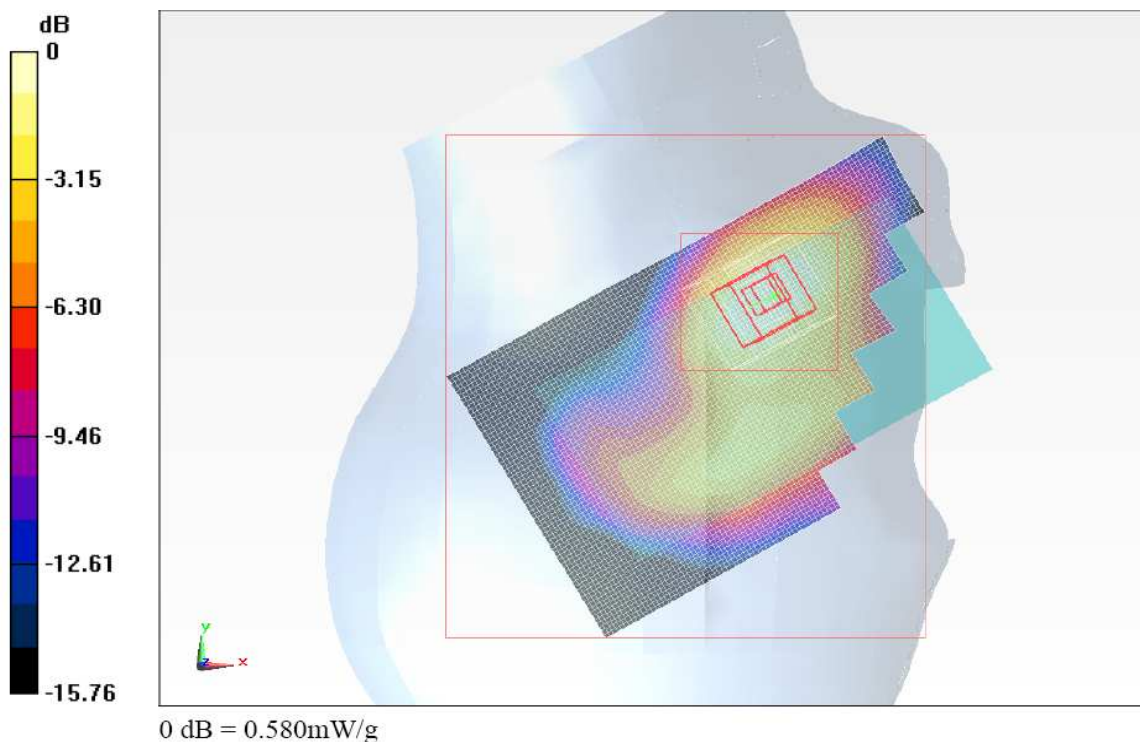
Reference Value = 21.079 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.734 W/kg

SAR(1 g) = 0.486 mW/g; SAR(10 g) = 0.309 mW/g

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

Maximum value of SAR (measured) = 0.581 mW/g



Worst-case HEAD SAR Plot for LTE Band 4 – Z plot

Date: 7/18/2011

Test Laboratory: UL CCS SAR Lab A

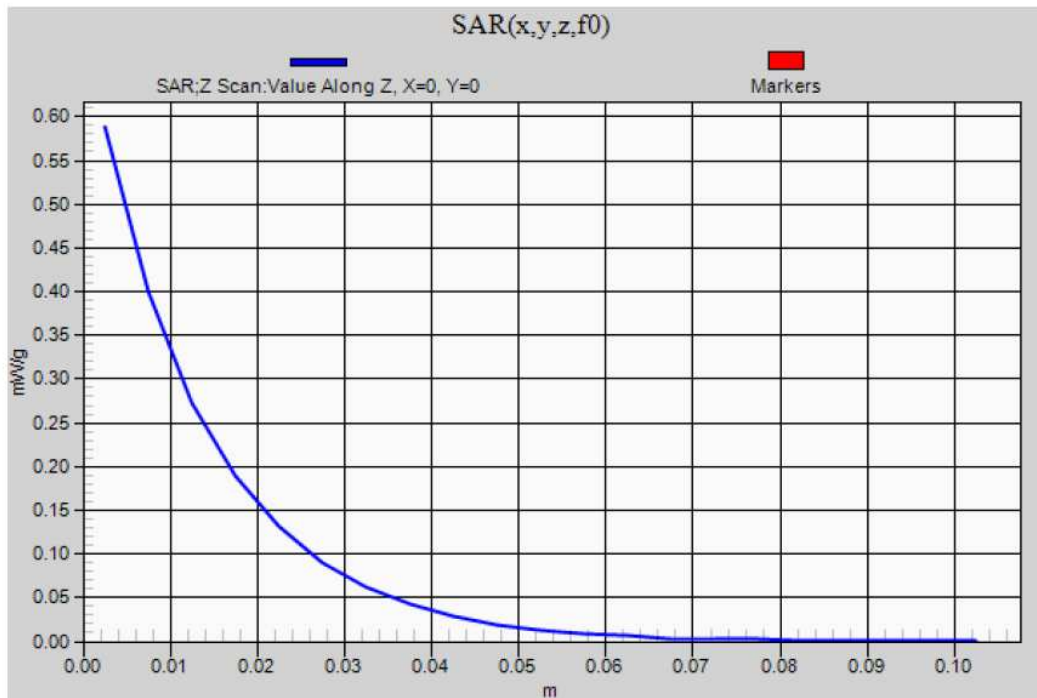
07_Right Touch_LTE B4_10M_QPSK_M-Ch

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

QPSK/#RB1_RB49_M ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.588 mW/g



Worst-case Body SAR Plot for LTE Band 4

Date: 7/12/2011

Test Laboratory: UL CCS SAR Lab A

01_Rear_LTE B4_10M

Communication System: LTE; Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.418$ mho/m; $\epsilon_r = 55.351$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(7.28, 7.28, 7.28); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

10M_QPSK_#RB1_RB49_M-ch/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 1.389 mW/g

10M_QPSK_#RB1_RB49_M-ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

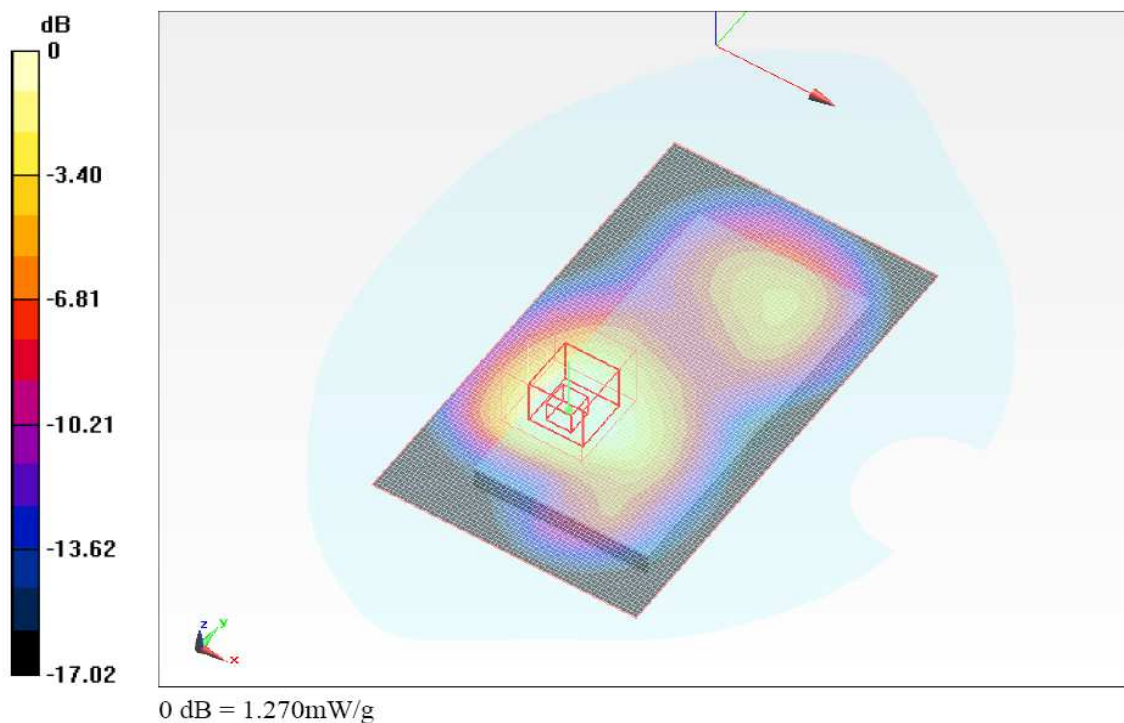
Reference Value = 29.434 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.555 W/kg

SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.667 mW/g

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

Maximum value of SAR (measured) = 1.268 mW/g



Worst-case Body SAR Plot for LTE Band 4– Z plot

Date: 7/12/2011

Test Laboratory: UL CCS SAR Lab A

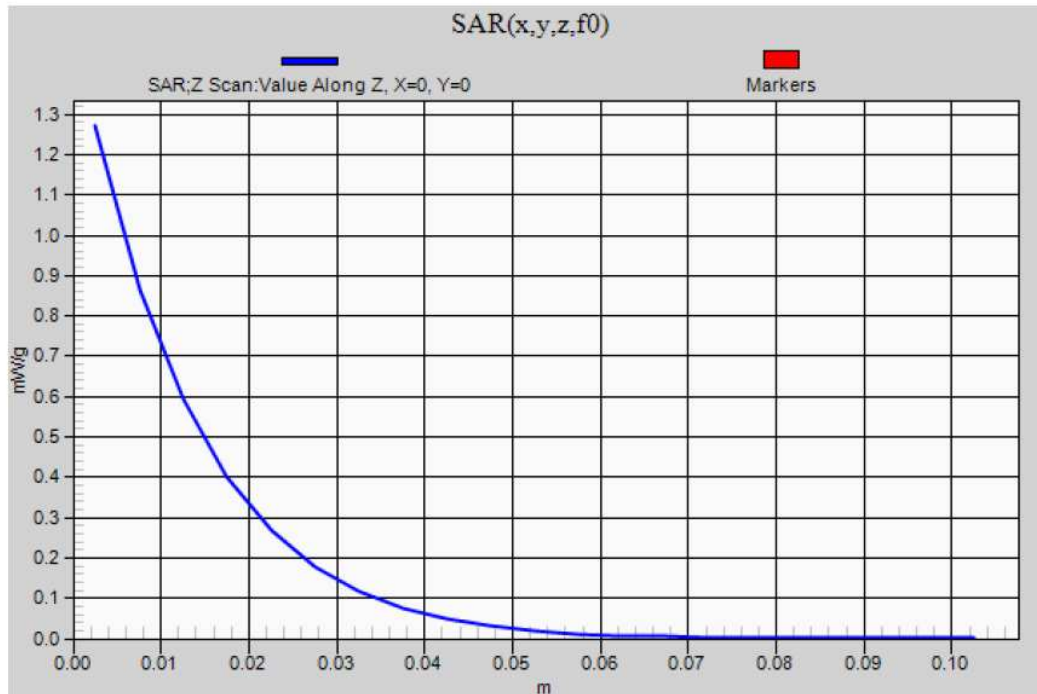
01_Rear_LTE B4_10M

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

10M_QPSK_#RB1_RB49_M-ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.271 mW/g



Worst-case HEAD SAR Plot for GSM1900

Date: 7/28/2011

Test Laboratory: UL CCS SAR Lab A

03_Head_Right Touch_GSM1900

Communication System: Generic GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.30042
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.355$ mho/m; $\epsilon_r = 38.395$; $\rho = 1000$ kg/m³
Phantom section: Right Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(7.42, 7.42, 7.42); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2);SEMCAD X Version 14.4.5 (3634)

GSM1900_1 slot/M ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.445 mW/g

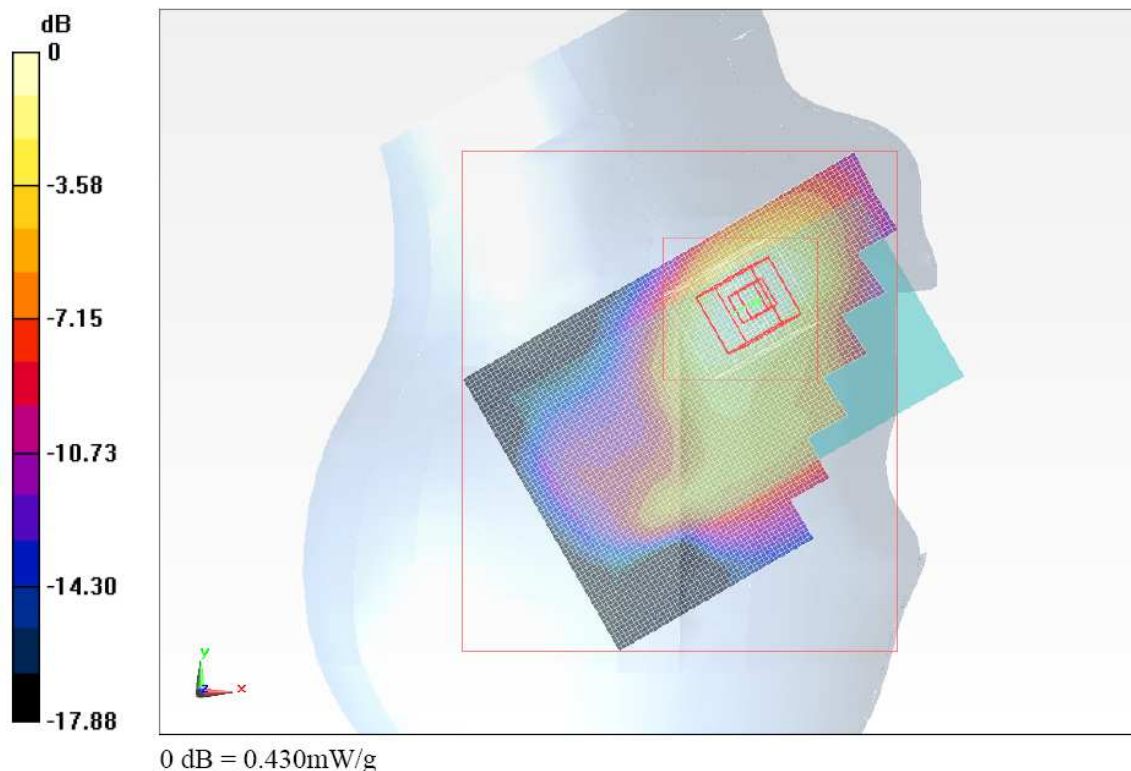
GSM1900_1 slot/M ch/Zoom Scan(5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.121 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.540 W/kg

SAR(1 g) = 0.345 mW/g; SAR(10 g) = 0.210 mW/g

Maximum value of SAR (measured) = 0.430 mW/g



Worst-case HEAD SAR Plot for GSM1900– Z plot

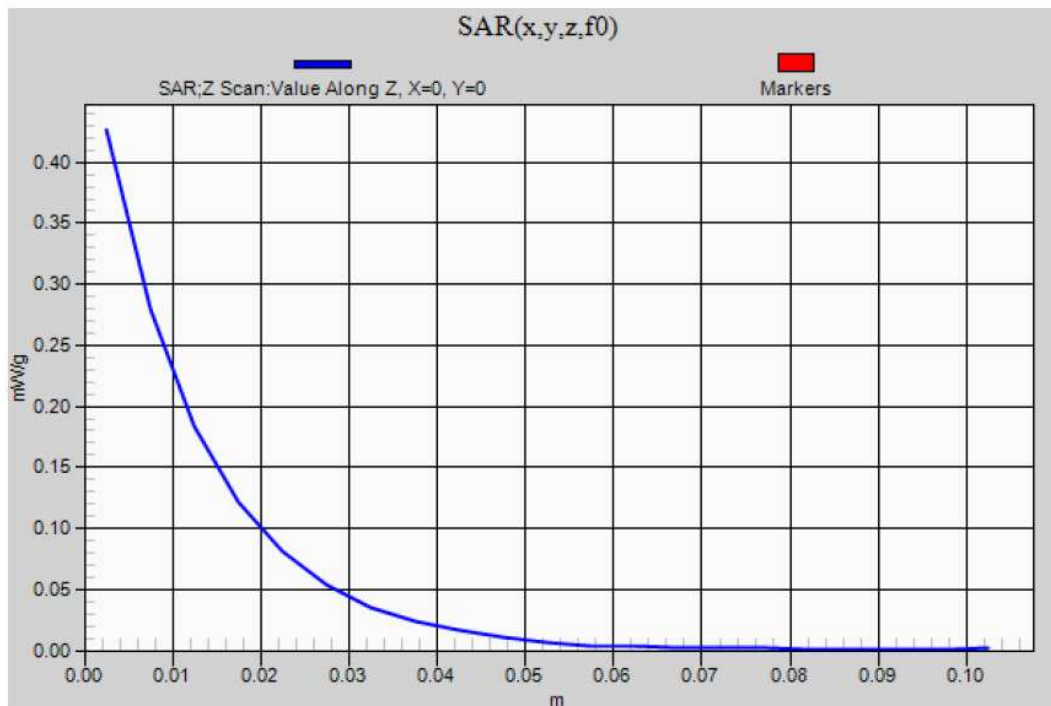
Date: 7/28/2011

Test Laboratory: UL CCS SAR Lab A

03_Head_Right Touch_GSM1900

Communication System: Generic GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.30042

GSM1900_1 slot/M ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.426 mW/g



Worst-case HEAD SAR Plot for GPRS1900 (VOIP)

Date: 7/28/2011

Test Laboratory: UL CCS SAR Lab A

07_Head_Right Touch_GPRS1900 (VOIP)

Communication System: GPRS-FDD (TDMA, GMSK, 2 slot); Frequency: 1880 MHz; Duty Cycle: 1:4.00037
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.355$ mho/m; $\epsilon_r = 38.395$; $\rho = 1000$ kg/m³
Phantom section: Right Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(7.42, 7.42, 7.42); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

GPRS1900_2 slot/M ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.602 mW/g

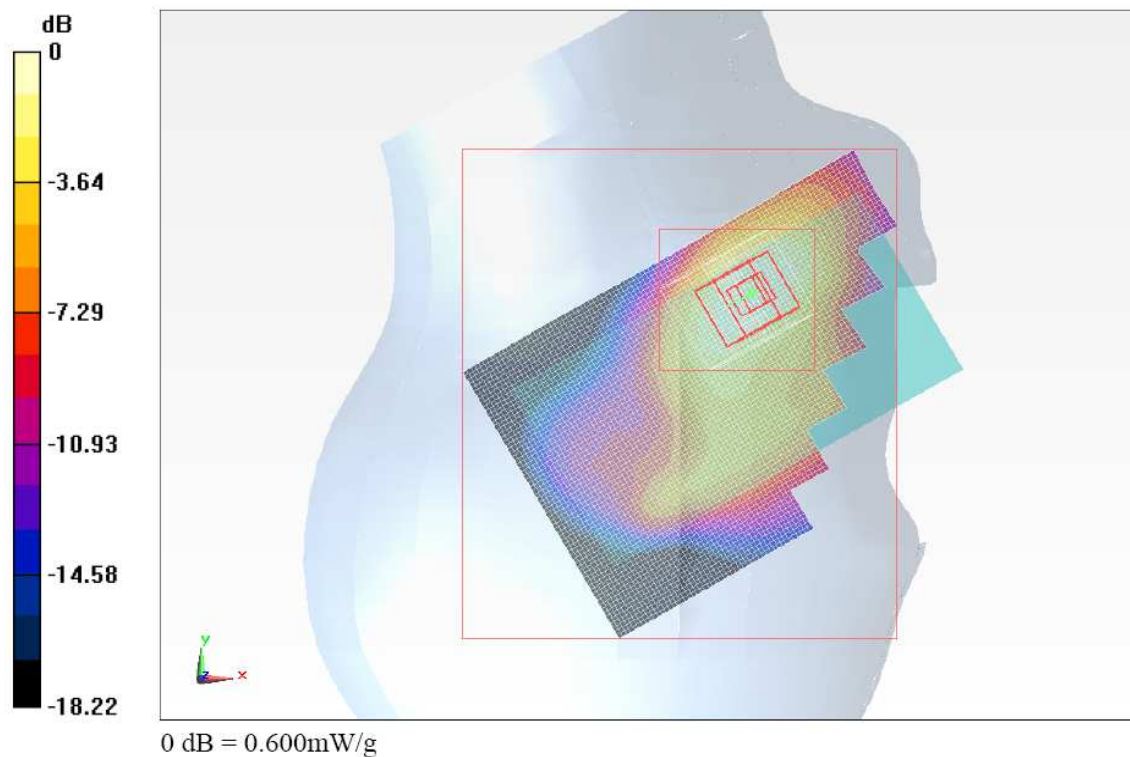
GPRS1900_2 slot/M ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.886 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.758 W/kg

SAR(1 g) = 0.476 mW/g; SAR(10 g) = 0.290 mW/g

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



Worst-case HEAD SAR Plot for GPRS1900 (VOIP)– Z plot

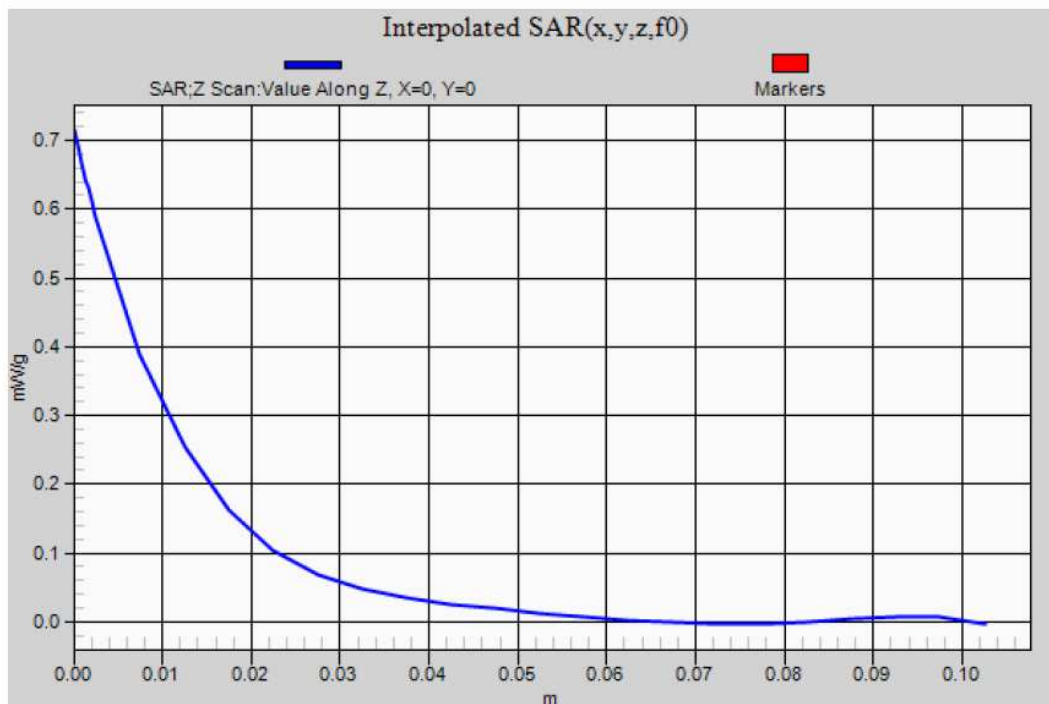
Date: 7/28/2011

Test Laboratory: UL CCS SAR Lab A

07_Head_Right Touch_GPRS1900 (VOIP)

Communication System: GPRS-FDD (TDMA, GMSK, 2 slot); Frequency: 1880 MHz; Duty Cycle: 1:4.00037

GPRS1900_2 slot/M ch/Z Scan (1x1x32): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (interpolated) = 0.716 mW/g



Worst-case Body SAR Plot for GPRS1900

Date: 7/27/2011

Test Laboratory: UL CCS SAR Lab A

02_Front_GPRS1900

Communication System: GPRS-FDD (TDMA, GMSK, 2 slot); Frequency: 1880 MHz; Duty Cycle: 1:4.00037
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.513$ mho/m; $\epsilon_r = 53.165$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(6.99, 6.99, 6.99); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

GPRS_2 slot/M_Ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.855 mW/g

GPRS_2 slot/M_Ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.023 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 1.155 W/kg

SAR(1 g) = 0.668 mW/g; SAR(10 g) = 0.350 mW/g

Maximum value of SAR (measured) = 0.849 mW/g

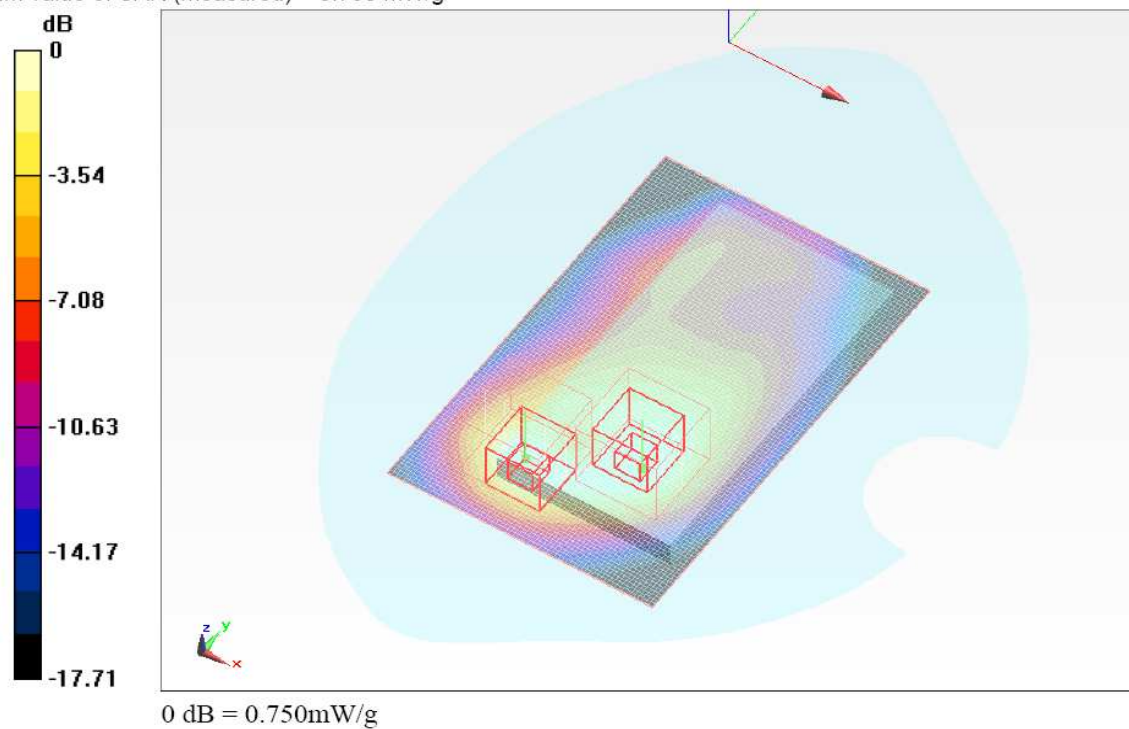
GPRS_2 slot/M_Ch/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.023 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.976 W/kg

SAR(1 g) = 0.617 mW/g; SAR(10 g) = 0.375 mW/g

Maximum value of SAR (measured) = 0.750 mW/g



Worst-case Body SAR Plot for GPRS1900– Z plot

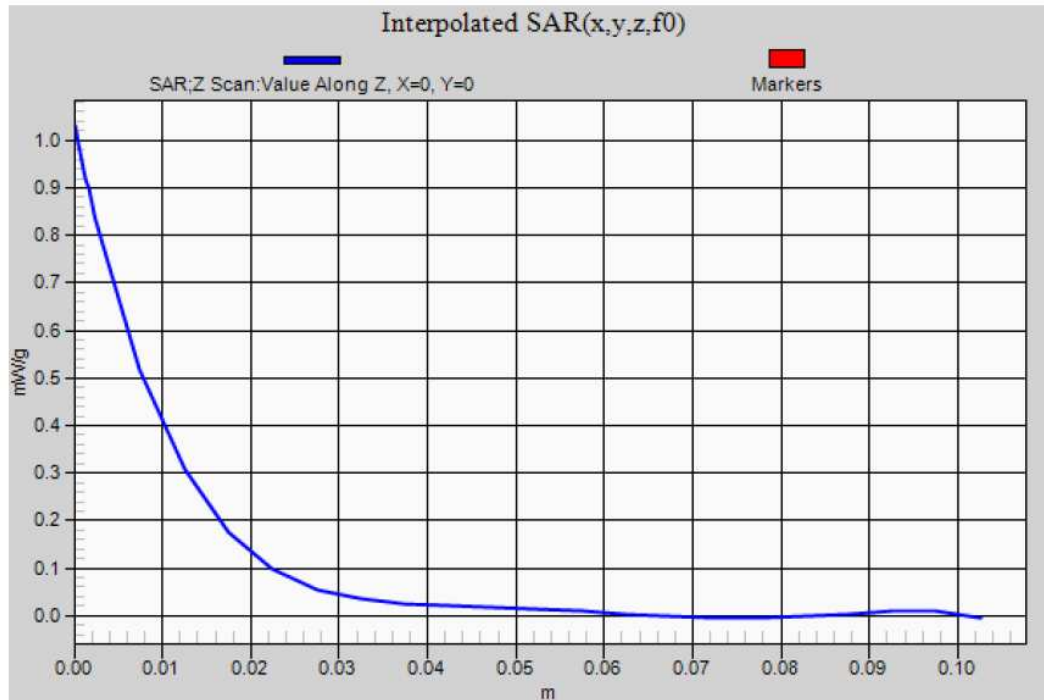
Date: 7/27/2011

Test Laboratory: UL CCS SAR Lab A

02_Front_GPRS1900

Communication System: GPRS-FDD (TDMA, GMSK, 2 slot); Frequency: 1880 MHz; Duty Cycle: 1:4.00037

GPRS_2 slot/M_Ch/Z Scan (1x1x32): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (interpolated) = 1.034 mW/g



Worst-case HEAD SAR Plot for UMTS (WCDMA) Band II

Date: 7/28/2011

Test Laboratory: UL CCS SAR Lab A

03_Head_Right Touch_UMTS Band II

Communication System: WCDMA (UMTS); Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.355$ mho/m; $\epsilon_r = 38.395$; $\rho = 1000$ kg/m³
Phantom section: Right Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(7.42, 7.42, 7.42); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

R99/Right_Touch_M ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.849 mW/g

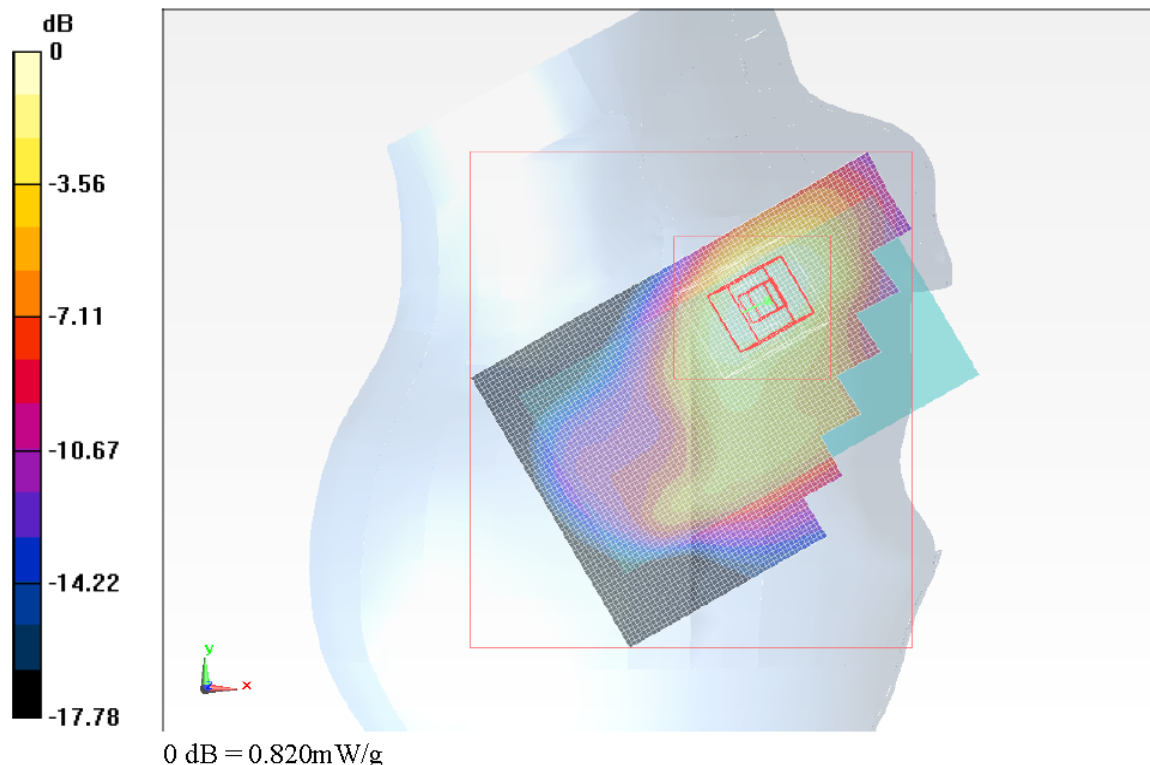
R99/Right_Touch_M ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.678 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.049 W/kg

SAR(1 g) = 0.666 mW/g; SAR(10 g) = 0.405 mW/g

Maximum value of SAR (measured) = 0.824 mW/g



Worst-case HEAD SAR Plot for UMTS (WCDMA) Band II – Z plot

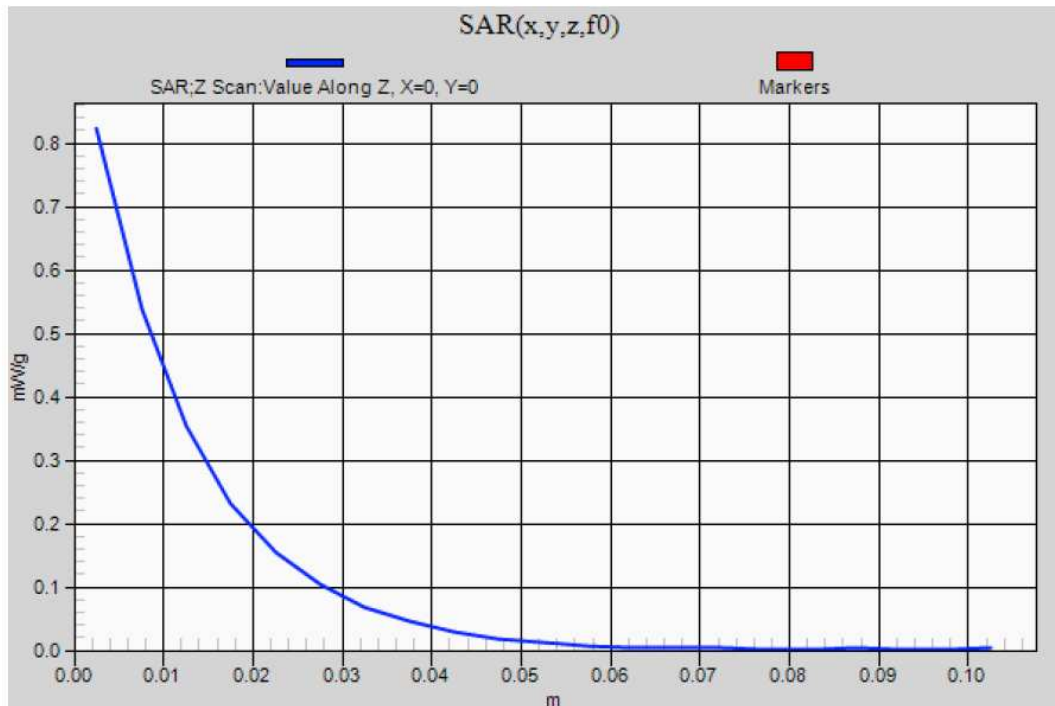
Date: 7/28/2011

Test Laboratory: UL CCS SAR Lab A

03_Head_Right Touch_UMTS Band II

Communication System: WCDMA (UMTS); Frequency: 1880 MHz; Duty Cycle: 1:1

R99/Right_Touch_M ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.823 mW/g



Worst-case Body SAR Plot for UMTS (WCDMA) Band II

Date: 7/27/2011

Test Laboratory: UL CCS SAR Lab A

05_Bottom_UMTS Band II

Communication System: WCDMA (UMTS); Frequency: 1907.4 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1907.4$ MHz; $\sigma = 1.543$ mho/m; $\epsilon_r = 53.083$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(6.99, 6.99, 6.99); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

R99/H-ch/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 1.398 mW/g

R99/H-ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

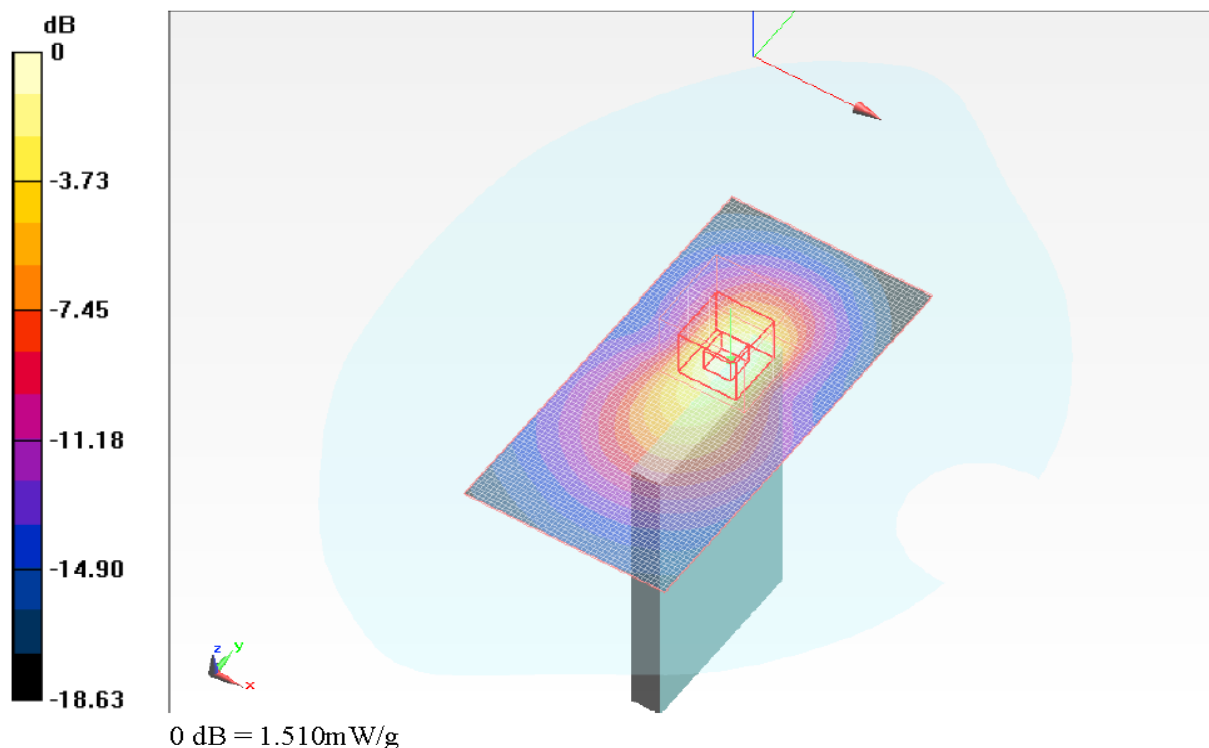
Reference Value = 25.887 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 1.992 W/kg

SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.567 mW/g

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

Maximum value of SAR (measured) = 1.513 mW/g



Worst-case Body SAR Plot for UMTS (WCDMA) Band II – Z plot

Date: 7/27/2011

Test Laboratory: UL CCS SAR Lab A

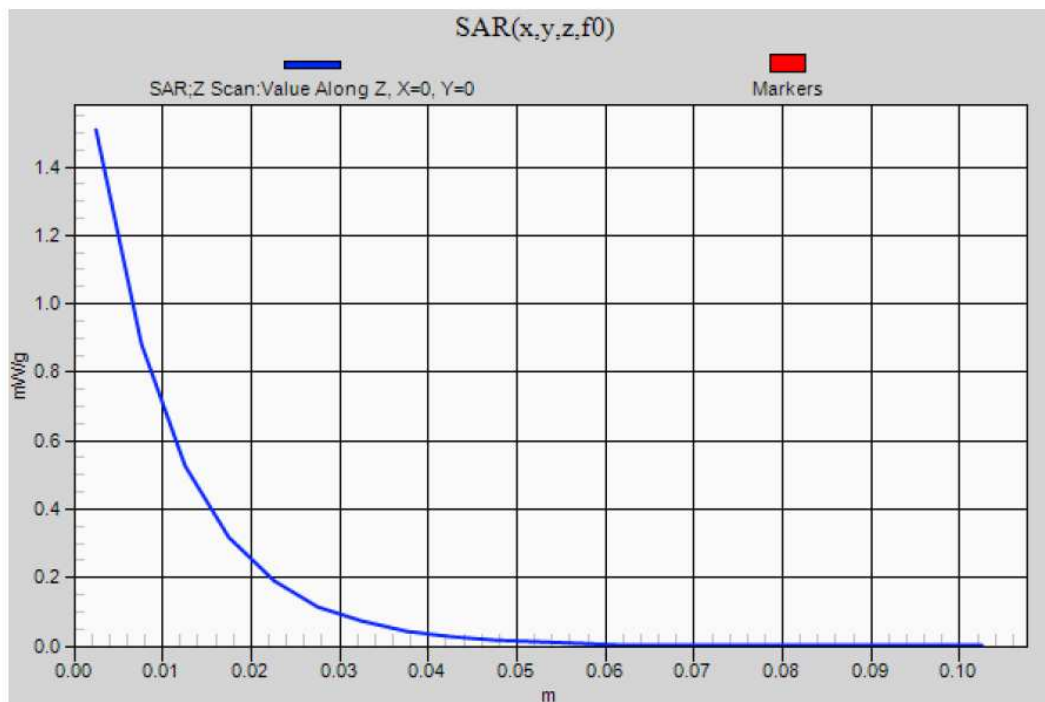
05_Bottom_UMTS Band II

Communication System: WCDMA (UMTS); Frequency: 1907.4 MHz; Duty Cycle: 1:1

R99/H-ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 1.508 mW/g



13.2. Worst-case SAR Plots for WiFi

Worst-case HEAD SAR Plot for WiFi 2.4 GHz

Date: 7/29/2011

Test Laboratory: UL CCS SAR Lab A

01_Head_Left Touch_WiFi 2.4GHz

Communication System: IEEE 802.11b WiFi 2.4GHz; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.878$ mho/m; $\epsilon_r = 39.119$; $\rho = 1000$ kg/m³
Phantom section: Left Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(6.82, 6.82, 6.82); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (A); Type: QD000P40CD; Serial: 1602
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

WiFi 2.4GHz/Left Touch_M ch/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.058 mW/g

WiFi 2.4GHz/Left Touch_M ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

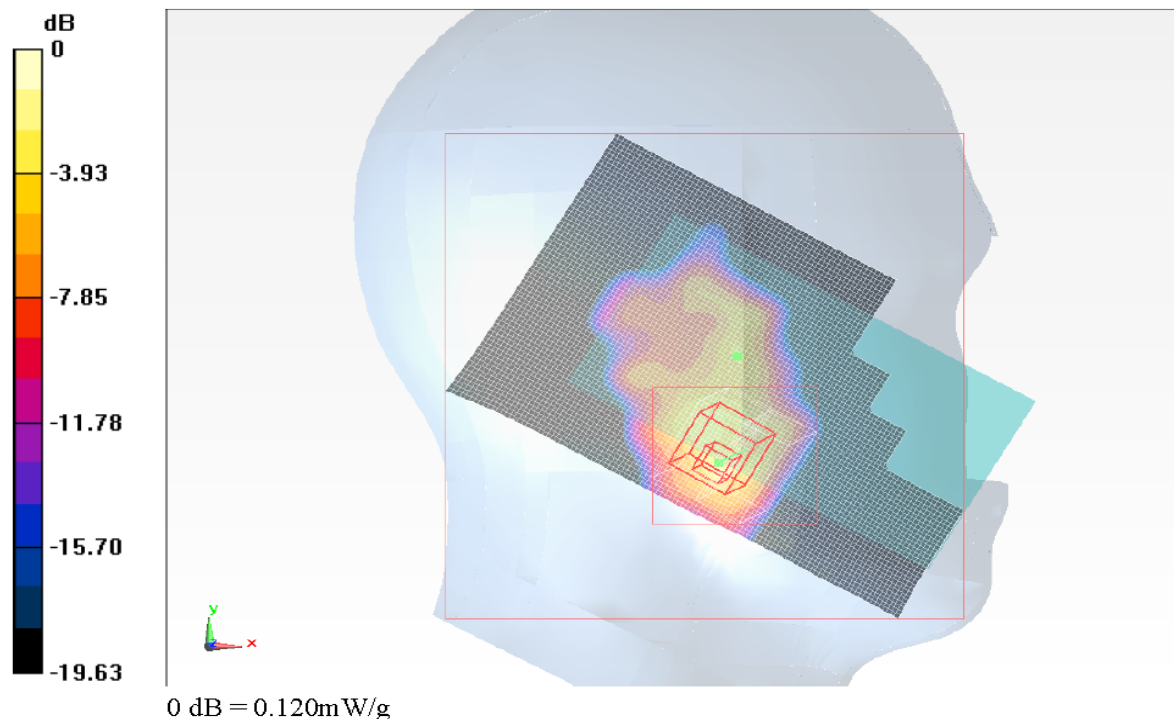
Reference Value = 5.236 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.176 W/kg

SAR(1 g) = 0.069 mW/g; SAR(10 g) = 0.027 mW/g

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

Maximum value of SAR (measured) = 0.120 mW/g



Worst-case HEAD SAR Plot for WiFi 2.4 GHz – Z plot

Date: 7/29/2011

Test Laboratory: UL CCS SAR Lab A

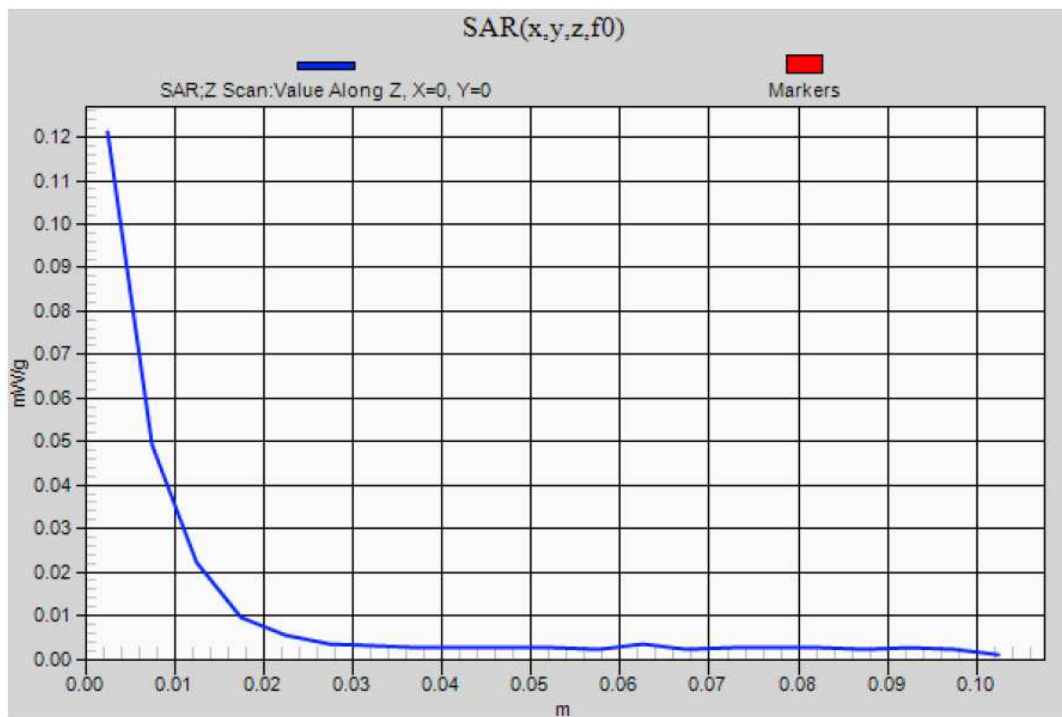
01_Head_Left Touch_WiFi 2.4GHz

Communication System: IEEE 802.11b WiFi 2.4GHz; Frequency: 2437 MHz; Duty Cycle: 1:1

WiFi 2.4GHz/Left Touch_M ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.121 mW/g



Worst-case Body SAR Plot for WiFi 2.4 GHz

Date: 7/29/2011

Test Laboratory: UL CCS SAR Lab A

01_Rear_WiFi 2.4GHz

Communication System: IEEE 802.11b WiFi 2.4GHz; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.945$ mho/m; $\epsilon_r = 50.899$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

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

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(6.86, 6.86, 6.86); Calibrated: 1/24/2011
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1239; Calibrated: 11/17/2010
- Phantom: SAM with CRP v5.0 (B); Type: QD000P40CD; Serial: 1628
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

WiFi 2.4GHz/Rear_M ch/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.055 mW/g

WiFi 2.4GHz/Rear_M ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

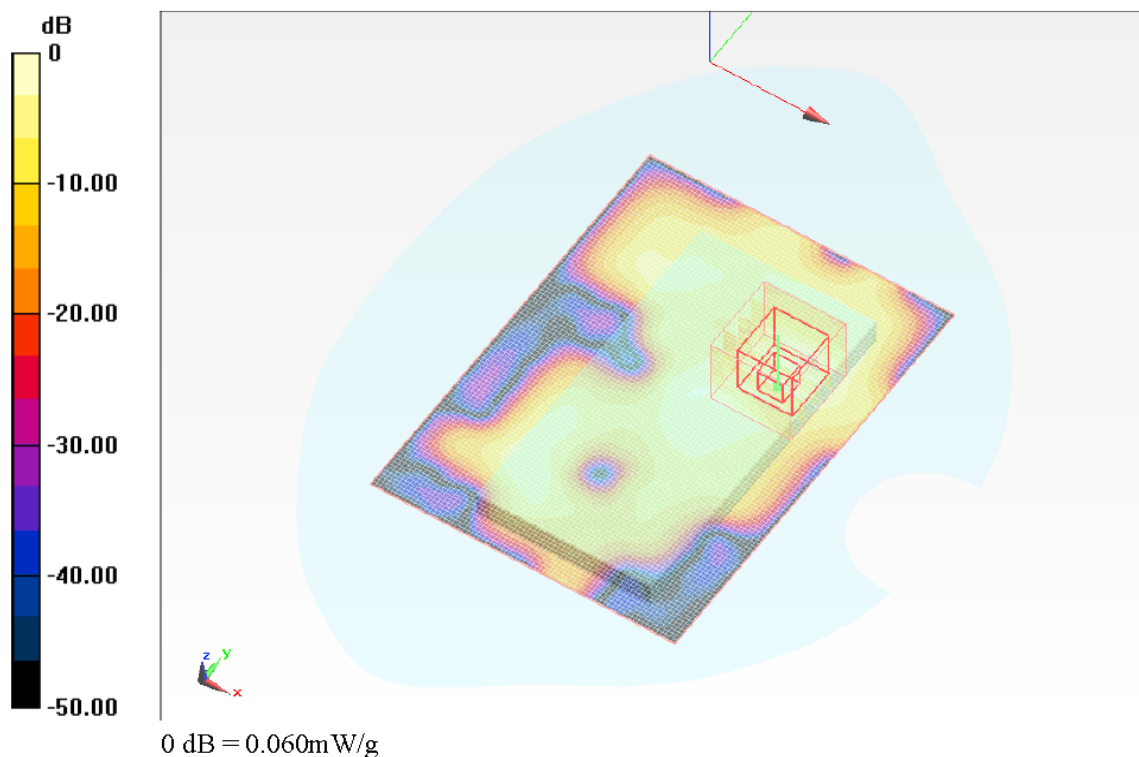
Reference Value = 5.239 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.083 W/kg

SAR(1 g) = 0.041 mW/g; SAR(10 g) = 0.022 mW/g

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

Maximum value of SAR (measured) = 0.057 mW/g



Worst-case Body SAR Plot for WiFi 2.4 GHz - Z plot

Date: 7/29/2011

Test Laboratory: UL CCS SAR Lab A

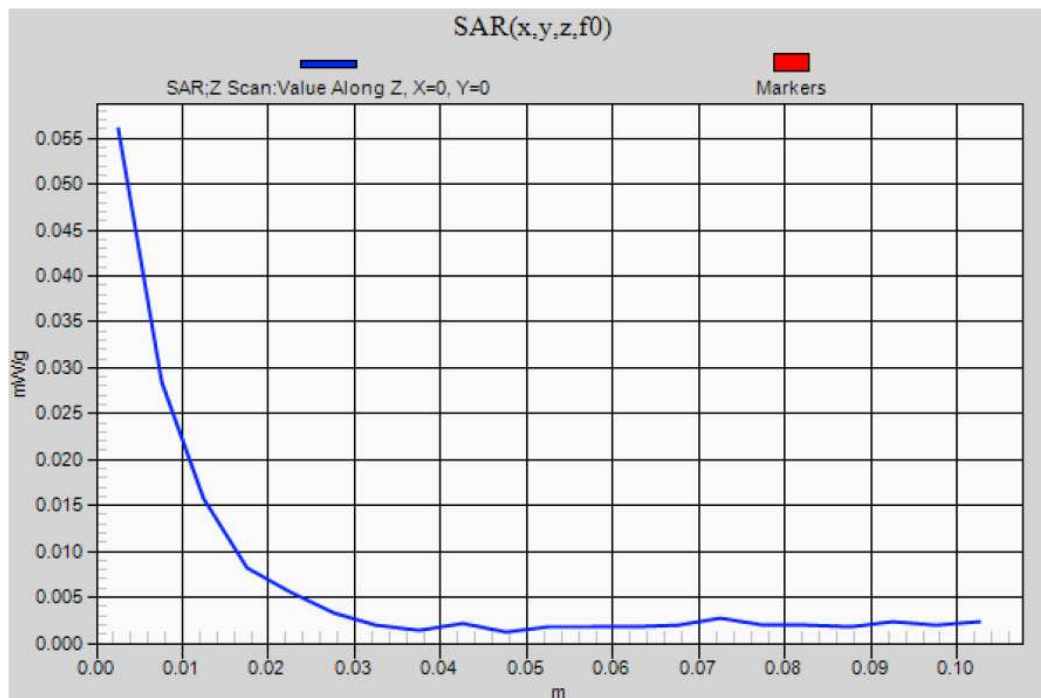
01_Rear_WiFi 2.4GHz

Communication System: IEEE 802.11b WiFi 2.4GHz ; Frequency: 2437 MHz; Duty Cycle: 1:1

WiFi 2.4GHz/Rear_M ch/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

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

Maximum value of SAR (measured) = 0.056 mW/g



14. Simultaneous Transmission SAR Analysis (KDB 648474)

14.1. Head Exposure Condition

Band	Test Position	WWAN	Wi-Fi (2.4GHz)	$\sum$ 1-g SAR (W/kg)
GSM850	Left Touch	0.253	0.069	0.322
	Left Tilt	0.146	0.016	0.162
	Right Touch	0.176	0.065	0.241
	Right Tilt	0.124	0.024	0.148
GSM1900	Left Touch	0.255	0.069	0.324
	Left Tilt	0.094	0.016	0.110
	Right Touch	0.345	0.065	0.410
	Right Tilt	0.100	0.024	0.124
UMTS (WCDMA) Band V	Left Touch	0.256	0.069	0.325
	Left Tilt	0.153	0.016	0.169
	Right Touch	0.210	0.065	0.275
	Right Tilt	0.152	0.024	0.176
UMTS (WCDMA) Band II	Left Touch	0.488	0.069	0.557
	Left Tilt	0.168	0.016	0.184
	Right Touch	0.666	0.065	0.731
	Right Tilt	0.176	0.024	0.200
Band	Test Position	LTE	Wi-Fi (2.4GHz)	$\sum$ 1-g SAR (W/kg)
LTE Band 4	Left Touch	0.352	0.069	0.421
	Left Tilt	0.242	0.016	0.258
	Right Touch	0.489	0.065	0.554
	Right Tilt	0.260	0.024	0.284
LTE Band 17	Left Touch	0.341	0.069	0.410
	Left Tilt	0.228	0.016	0.244
	Right Touch	0.486	0.065	0.551
	Right Tilt	0.225	0.024	0.249

CONCLUSIONS:

- ☒ Simultaneous transmission SAR is not required for WWAN + WiFi or LTE & WiFi because the sum of the 1-g SAR is < 1.6 W/kg.
- ☐ Simultaneous transmission SAR is not required for WiFi & WWAN because the SAR to peak location separation ratios is < 0.3 for WiFi and WWAN antenna pairs.

14.2. Body-worn & Body-hotspot exposure condition

Band	Test Position	WWAN	Wi-Fi (2.4GHz)	Σ 1-g SAR (W/kg)
GSM850	Rear	0.293	0.041	0.334
	Front	0.268	0.036	0.304
	Left	0.266	0.036	0.302
	Right	0.153	0.000	0.153
	Bottom	0.099	0.000	0.099
	Top	0.000	0.036	0.036
GSM1900	Rear	0.589	0.041	0.630
	Front	0.668	0.036	0.704
	Left	0.664	0.036	0.700
	Right	0.149	0.000	0.149
	Bottom	0.220	0.000	0.220
	Top	0.000	0.036	0.036
UMTS (WCDMA) Band V	Rear	0.340	0.041	0.381
	Front	0.267	0.036	0.303
	Left	0.276	0.036	0.312
	Right	0.155	0.000	0.155
	Bottom	0.108	0.000	0.108
	Top	0.000	0.036	0.036
UMTS (WCDMA) Band II	Rear	0.745	0.041	0.786
	Front	0.783	0.036	0.819
	Left	0.200	0.036	0.236
	Right	0.304	0.000	0.304
	Bottom	1.120	0.000	1.120
	Top	0.000	0.036	0.036
Band	Test Position	LTE	Wi-Fi (2.4GHz)	Σ 1-g SAR (W/kg)
LTE Band 4	Rear	1.050	0.041	1.091
	Front	0.751	0.036	0.787
	Left	0.139	0.036	0.175
	Right	0.333	0.000	0.333
	Bottom	0.353	0.000	0.353
	Top	0.000	0.036	0.036
LTE Band 17	Rear	0.607	0.041	0.648
	Front	0.469	0.036	0.505
	Left	0.385	0.036	0.421
	Right	0.380	0.000	0.380
	Bottom	0.075	0.000	0.075
	Top	0.000	0.036	0.036

CONCLUSIONS:

- ☒ Simultaneous transmission SAR is not required for WWAN + WiFi or LTE & WiFi because the sum of the 1-g SAR is < 1.6 W/kg
- ☐ Simultaneous transmission SAR is not required for WWAN + WiFi or LTE & WiFi because the SAR to peak location separation ratios is < 0.3 for WiFi and WWAN antenna pairs.

15. Appendixes

Refer to separated files for the following appendixes.

- 15.1. Appendix A: System check plots
- 15.2. Appendix B: SAR test plots for WiFi
- 15.3. Appendix C: SAR test plots for UMTS Band V
- 15.4. Appendix D: SAR test plots for UMTS band II
- 15.5. Appendix E: SAR test plots for GSM850
- 15.6. Appendix F: SAR test plots for GSM1900
- 15.7. Appendix G: SAR test plots for LTE Band 4; 10MHz Head
- 15.8. Appendix H: SAR test plots for LTE Band 4; 5MHz Head
- 15.9. Appendix I: SAR test plots for LTE Band 4; 10MHz Body
- 15.10. Appendix J: SAR test plots for LTE Band 4; 5MHz Body
- 15.11. Appendix K: SAR test plots for LTE Band 17 Head
- 15.12. Appendix L: SAR test plots for LTE Band 17; 10MHz
- 15.13. Appendix M: SAR test plots for LTE Band 17; 5MHz
- 15.14. Appendix N: Calibration certificate for E-Field Probe EX3DV4 SN 3686
- 15.15. Appendix O: Calibration Certificate for D750V3 – SN 1024
- 15.16. Appendix P: Calibration Certificate for D835V2 - SN 4d117
- 15.17. Appendix Q: Calibration certificate for D1750V2 SN 1053
- 15.18. Appendix R: Calibration certificate for D1900V2 SN 5d140
- 15.19. Appendix S: Calibration certificate for D2450V2 SN: 706 w/ extended cal. data