FCC OET BULLETIN 65 SUPPLEMENT C
IC RSS-102 ISSUE 3

SAR EVALUATION REPORT

For

CDMA/1x EVDO Phone with 802.11b/g and Bluetooth

MODEL: P121EWW

FCC ID: O8F-PIXEW
IC: 39Ø5A-PIXEW

REPORT NUMBER: 09U12852-4A

ISSUE DATE: November 19, 2009

Prepared for

PALM
950 MAUDE AVENUE
SUNNYVALE, CA. 94085
UNITED STATES

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	November 2, 2009	Initial Issue	--
A	November 19, 2009	Updated the following sections: 1. Section 5 - Co-located Tx 2. Section 12.3.3 - Channel & frequency 3. Section 13 - Simultaneous Transmission	Sunny Shih

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	PALM 950 MAUDE AVENUE SUNNYVALE, CA. 94085, UNITED STATES
EUT DESCRIPTION:	CDMA/1x EVDO Phone with 802.11b/g and Bluetooth
MODEL NUMBER:	P121EWW
DEVICE CATEGORY:	Portable
EXPOSURE CATEGORY:	General Population/Uncontrolled Exposure
DATE TESTED:	September 13 – 16, 26, 2009

THE HIGHEST SAR VALUES:

FCC / IC Rule Parts	Frequency Range [MHz]	The Highest SAR Values (1g_mW/g)	Limit (mW/g)
22H / RSS-132	824 - 849	Head: 1.23; Body: 0.730	1.6
24E / RSS-133	1850 - 1910	Head: 1.47; Body: 0.634	1.6
15.2247 / RSS-210	2400 – 2483.5	Head: 0.1; Body: 0.025	1.6

APPLICABLE STANDARDS AND TEST PROCEDURES:

STANDARDS AND TEST PROCEDURES	TEST RESULTS
• FCC OET Bulletin 65 Supplement C and the following specific Test Procedure: o KDB 941225 SAR test for 3G devices o KDB 648474 D01 SAR evaluation considerations for handsets with multiple transmitters and antennas	Pass
• RSS-102 ISSUE 3	Pass

Compliance Certification Services, Inc. (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 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by 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.

Approved & Released For CCS By:

SUNNY SHIH
ENGINEERING SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

CHAO YEN LIN
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C, IC RSS 102 Issue 3, and the following specific FCC Test Procedure.

- KDB 941225 SAR test for 3G devices
- KDB 648474 D01 SAR evaluation considerations for handsets with multiple transmitters and antennas

3. FACILITIES AND ACCREDITATION

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

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
Robot - Six Axes	Stäubli	RX90BL	N/A	N/A		
Robot Remote Control	Stäubli	CS7MB	3403-91535	N/A		
DASY4 Measurement Server	SPEAG	SEUMS001BA	1041	N/A		
Probe Alignment Unit	SPEAG	LB (V2)	261	N/A		
SAM Phantom (SAM1)	SPEAG	QD000P40CA	1185	N/A		
SAM Phantom (SAM2)	SPEAG	QD000P40CA	1050	N/A		
Oval Flat Phantom (ELI 4.0)	SPEAG	QD OVA001 B	1003	N/A		
Electronic Probe kit	HP	85070C	N/A	N/A		
S-Parameter Network Analyzer	Agilent	8753ES-6	MY40001647	11	14	2009
Signal Generator	Agilent	8753ES-6	MY40001647	11	14	2009
E-Field Probe	SPEAG	EX3DV4	3686	3	23	2010
Thermometer	ERTCO	639-1S	1718	5	1	2010
Data Acquisition Electronics	SPEAG	DAE3 V1	427	10	20	2009
System Validation Dipole	SPEAG	D835V2	4d002	4	23	2011
System Validation Dipole	SPEAG	D900V2	108	1	21	2010
System Validation Dipole	SPEAG	D1800V2	294	1	29	2010
System Validation Dipole	SPEAG	D1900V2	5d043	1	29	2010
System Validation Dipole	SPEAG	D2450V2	748	4	14	2010
System Validation Dipole	SPEAG	D5GHzV2	1003	11	21	2009
MXA Signal Analyzer	Agilent	N9020A	US48350984	10	23	2009
ESG Vector Signal Generator	Agilent	E4438C	US44271090	9	17	2010
Power Meter	Giga-tronics	8651A	8651404	1	11	2010
Power Sensor	Giga-tronics	80701A	1834588	1	11	2010
Amplifier	Mini-Circuits	ZVE-8G	90606	N/A		
Amplifier	Mini-Circuits	ZHL-42W	D072701-5	N/A		
Simulating Liquid	CCS	H1900	N/A	Within 24 hrs of first test		
Simulating Liquid	CCS	M1900	N/A	Within 24 hrs of first test		
Simulating Liquid	CCS	H1800	N/A	Within 24 hrs of first test		
Simulating Liquid	CCS	M1800	N/A	Within 24 hrs of first test		
Simulating Liquid	CCS	H1700	N/A	Within 24 hrs of first test		
Simulating Liquid	CCS	M1700	N/A	Within 24 hrs of first test		
Simulating Liquid	CCS	H835	N/A	Within 24 hrs of first test		
Simulating Liquid	CCS	M835	N/A	Within 24 hrs of first test		
Simulating Liquid	CCS	H900	N/A	Within 24 hrs of first test		
Simulating Liquid	CCS	M900	N/A	Within 24 hrs of first test		
Simulating Liquid	SPAEG	H2450	N/A	Within 24 hrs of first test		
Simulating Liquid	SPAEG	M2450	N/A	Within 24 hrs of first test		

4.2. MEASUREMENT UNCERTAINTY

Measurement uncertainty for 300 MHz – 3000 MHz

Uncertainty component	Tol. (±%)	Probe Dist.	Div.	Ci (1g)	Ci (10g)	Std. Unc.(±%)	
						Ui (1g)	Ui(10g)
Measurement System							
Probe Calibration	4.80	N	1	1	1	4.80	4.80
Axial Isotropy	4.70	R	1.732	0.707	0.707	1.92	1.92
Hemispherical Isotropy	9.60	R	1.732	0.707	0.707	3.92	3.92
Boundary Effects	1.00	R	1.732	1	1	0.58	0.58
Linearity	4.70	R	1.732	1	1	2.71	2.71
System Detection Limits	1.00	R	1.732	1	1	0.58	0.58
Readout Electronics	1.00	N	1	1	1	1.00	1.00
Response Time	0.80	R	1.732	1	1	0.46	0.46
Integration Time	2.60	R	1.732	1	1	1.50	1.50
RF Ambient Conditions - Noise	1.59	R	1.732	1	1	0.92	0.92
RF Ambient Conditions - Reflections	0.00	R	1.732	1	1	0.00	0.00
Probe Positioner Mechnical Tolerance	0.40	R	1.732	1	1	0.23	0.23
Probe Positioning With Respect to Phantom Shell	2.90	R	1.732	1	1	1.67	1.67
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	3.90	R	1.732	1	1	2.25	2.25
Test sample Related							
Test Sample Positioning	1.10	N	1	1	1	1.10	1.10
Device Holder Uncertainty	3.60	N	1	1	1	3.60	3.60
Power and SAR Drift Measurement	5.00	R	1.732	1	1	2.89	2.89
Phantom and Tissue Parameters							
Phantom Uncertainty	4.00	R	1.732	1	1	2.31	2.31
Liquid Conductivity - Target	5.00	R	1.732	0.64	0.43	1.85	1.24
Liquid Conductivity - Meas.	8.60	N	1	0.64	0.43	5.50	3.70
Liquid Permittivity - Target	5.00	R	1.732	0.6	0.49	1.73	1.41
Liquid Permittivity - Meas.	3.30	N	1	0.6	0.49	1.98	1.62
Combined Standard Uncertainty	RSS					11.44	10.49
Expanded Uncertainty (95% Confidence Interval)	K=2					22.87	20.98

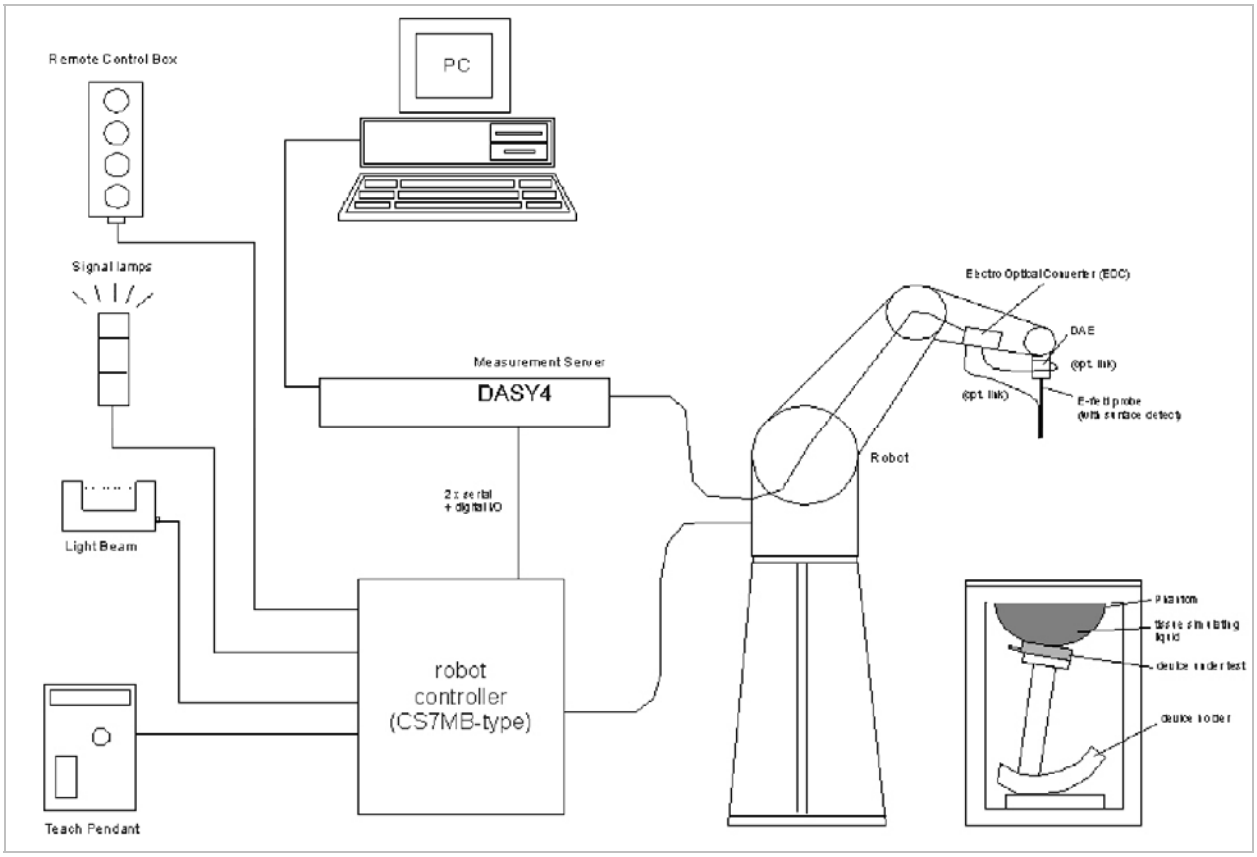
Notesfor table
1. Tol. - tolerance in influence quaitity
2. N - Nomal
3. R - Rectangular
4. Div. - Divisor used to obtain standard uncertainty
5. Ci - is te sensitivity coefficient

5. EQUIPMENT UNDER TEST

CDMA/1x EVDO Phone with 802.11b/g and Bluetooth

Normal operation:	• Held to head • Worn on body (LCD facing-up; LCD facing-down) with 15 mm separation distance
Body Worn Accessory	Headset
Antenna(s):	Internal
Other radio modules in host:	Bluetooth & 802.11b/g
Co-located Tx:	WWAN can transmit simultaneously with Bluetooth and WLAN
Antenna-to-antenna distance	BT/WiFi to WWAN: 7 (cm) Note: BT & WLAN use same antenna

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 to validate the proper functioning of the system.

7. COMPOSITION OF INGREDIENTS FOR TISSUE SIMULATING LIQUIDS

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

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

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

8. LIQUID PARAMETERS CHECK

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameters are within the tolerances of the specified target values. The relative permittivity and conductivity of the tissue material should be within ± 5% of the values given in the table below.

Reference Values of Tissue Dielectric Parameters for Head and Body Phantom (for 150 – 3000 MHz and 5800 MHz)

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in IEEE Standard 1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and 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
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
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
5800	35.3	5.27	48.2	6

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

8.1. LIQUID CHECK RESULTS FOR 835 MHZ

Simulating Liquid Dielectric Parameters for Head 835 MHz

Room Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Chaoyen Lin

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
835	e'	41.71	Relative Permittivity (ϵ_r):	41.710	41.5	0.51	± 5
	e"	19.36	Conductivity (σ):	0.899	0.90	-0.09	± 5
900	e'	41.10	Relative Permittivity (ϵ_r):	41.096	41.5	-0.97	± 5
	e"	18.93	Conductivity (σ):	0.948	0.97	-2.27	± 5

Liquid temperature: 23 deg. C
October 14, 2009 8:15 AM

Frequency	e'	e"
800000000	42.0347	19.3477
805000000	42.0254	19.3584
810000000	41.9865	19.3395
815000000	41.9514	19.3681
820000000	41.9036	19.368
825000000	41.8738	19.3895
830000000	41.8103	19.3834
835000000	**41.71**	**19.3568**
840000000	41.6333	19.3342
845000000	41.5558	19.2705
850000000	41.5196	19.2369
855000000	41.4127	19.1732
860000000	41.344	19.1298
865000000	41.298	19.0904
870000000	41.2162	19.0318
875000000	41.1653	19.0051
880000000	41.1153	18.9786
885000000	41.0873	18.9556
890000000	41.0868	18.9544
895000000	41.1201	18.9324
900000000	**41.0961**	**18.9333**
905000000	41.0563	18.9292
910000000	41.0136	18.9755
915000000	40.932	19.0044
920000000	40.8549	18.9976
925000000	40.7729	19.0025
930000000	40.6982	18.9665
935000000	40.6042	18.9276
940000000	40.552	18.8662
945000000	40.512	18.8111
950000000	40.5096	18.7823
955000000	40.459	18.7504
960000000	40.429	18.7217

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters for Muscle 835 MHz

Room Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Chaoyen Lin

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
835	e'	55.93	Relative Permittivity (ϵ_r):	55.932	55.2	1.33	± 5
	e"	20.86	Conductivity (σ):	0.969	0.97	-0.08	± 5
900	e'	55.36	Relative Permittivity (ϵ_r):	55.357	55.0	0.65	± 5
	e"	20.34	Conductivity (σ):	1.019	1.05	-3.00	± 5

Liquid temperature: 23 deg. C
October 14, 2009 8:17 AM

Frequency	e'	e"
800000000	56.2289	20.9199
805000000	56.1915	20.9132
810000000	56.1483	20.9029
815000000	56.1208	20.9322
820000000	56.1093	20.9102
825000000	56.0677	20.9106
830000000	55.9961	20.872
835000000	**55.9317**	**20.8645**
840000000	55.8806	20.8301
845000000	55.8425	20.7693
850000000	55.8028	20.7314
855000000	55.7282	20.6854
860000000	55.6868	20.6382
865000000	55.6556	20.5875
870000000	55.5768	20.5233
875000000	55.497	20.4818
880000000	55.4756	20.45
885000000	55.4328	20.4162
890000000	55.3817	20.386
895000000	55.3806	20.3468
900000000	**55.3573**	**20.3428**
905000000	55.2924	20.3502
910000000	55.2395	20.3842
915000000	55.151	20.391
920000000	55.0905	20.3866
925000000	54.9955	20.3709
930000000	54.9395	20.3345
935000000	54.8649	20.2756
940000000	54.8282	20.2323
945000000	54.8044	20.1942
950000000	54.8091	20.1746
955000000	54.79	20.1448
960000000	54.775	20.1234

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

8.2. LIQUID CHECK RESULTS FOR 1900 MHZ

Simulating Liquid Dielectric Parameters for Head 1900 MHz

Room Ambient Temperature = 25°C; Relative humidity = 35% Measured by: Chao Lin

f (MHz)	Liquid Parameters		Measured Results		Target	Delta (%)	Limit (%)
1900	e'	40.181	Relative Permittivity (ϵ_r):	40.1806	40.0	0.45	± 5
	e"	13.240	Conductivity (σ):	1.39942	1.40	-0.04	± 5

Liquid temperature: 23 deg. C
October 13, 2009 8:11 AM

Frequency	e'	e"
1710000000	41.2323	12.5765
1720000000	41.184	12.5926
1730000000	41.166	12.6311
1740000000	41.1222	12.7066
1750000000	41.0893	12.8124
1760000000	40.9932	12.8822
1770000000	40.8874	12.9428
1780000000	40.7968	12.93
1790000000	40.7489	12.9346
1800000000	40.706	12.9454
1810000000	40.6504	12.934
1820000000	40.6018	12.9125
1830000000	40.5961	12.9098
1840000000	40.5894	13.0044
1850000000	40.5448	13.1225
1860000000	40.4225	13.2146
1870000000	40.2874	13.255
1880000000	40.2177	13.2215
1890000000	40.203	13.2071
1900000000	**40.1806**	**13.2396**
1910000000	40.149	13.2423

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters for Muscle 1900 MHz

Room Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Chaoyen Lin

f (MHz)	Muscle Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
1900	e'	53.584	Relative Permittivity (ϵ_r):	53.5835	53.3	0.53	± 5
	e"	14.372	Conductivity (σ):	1.51914	1.52	-0.06	± 5

Liquid temperature: 23 deg. C
October 13, 2009 8:04 AM

Frequency	e'	e"
1710000000	54.1854	13.8414
1720000000	54.1747	13.9069
1730000000	54.1735	13.9938
1740000000	54.1702	14.0749
1750000000	54.1698	14.1087
1760000000	54.1133	14.1095
1770000000	54.078	14.0774
1780000000	54.0167	14.0391
1790000000	53.9579	14.0398
1800000000	53.8944	14.0747
1810000000	53.8215	14.1295
1820000000	53.7539	14.1877
1830000000	53.7014	14.2843
1840000000	53.6971	14.3743
1850000000	53.6731	14.4236
1860000000	53.6456	14.4505
1870000000	53.6305	14.4367
1880000000	53.6308	14.3904
1890000000	53.6043	14.3655
1900000000	**53.5835**	**14.3723**
1910000000	53.5043	14.4088

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters for Head 1900 MHz

Room Ambient Temperature = 25°C; Relative humidity = 35% Measured by: Chao Lin

f (MHz)	Liquid Parameters		Measured Results		Target	Delta (%)	Limit (%)
1900	e'	39.889	Relative Permittivity (ϵ_r):	39.8886	40.0	-0.28	± 5
	e"	13.021	Conductivity (σ):	1.37627	1.40	-1.70	± 5

Liquid temperature: 23 deg. C
October 15, 2009 4:39 PM

Frequency	e'	e"
1710000000	40.9403	12.3575
1720000000	40.892	12.3736
1730000000	40.874	12.4121
1740000000	40.8302	12.4876
1750000000	40.7973	12.5934
1760000000	40.7012	12.6632
1770000000	40.5954	12.7238
1780000000	40.5048	12.711
1790000000	40.4569	12.7156
1800000000	40.414	12.7264
1810000000	40.3584	12.715
1820000000	40.3098	12.6935
1830000000	40.3041	12.6908
1840000000	40.2974	12.7854
1850000000	40.2528	12.9035
1860000000	40.1305	12.9956
1870000000	39.9954	13.036
1880000000	39.9257	13.0025
1890000000	39.911	12.9881
1900000000	**39.8886**	**13.0206**
1910000000	39.857	13.0233

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters for Muscle 1900 MHz

Room Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Chaoyen Lin

f (MHz)	Muscle Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
1900	e'	53.490	Relative Permittivity (ϵ_r):	53.4895	53.3	0.36	± 5
	e"	14.237	Conductivity (σ):	1.50487	1.52	-1.00	± 5

Liquid temperature: 23 deg. C
October 15, 2009 4:34 PM

Frequency	e'	e"
1710000000	54.0914	13.7064
1720000000	54.0807	13.7719
1730000000	54.0795	13.8588
1740000000	54.0762	13.9399
1750000000	54.0758	13.9737
1760000000	54.0193	13.9745
1770000000	53.984	13.9424
1780000000	53.9227	13.9041
1790000000	53.8639	13.9048
1800000000	53.8004	13.9397
1810000000	53.7275	13.9945
1820000000	53.6599	14.0527
1830000000	53.6074	14.1493
1840000000	53.6031	14.2393
1850000000	53.5791	14.2886
1860000000	53.5516	14.3155
1870000000	53.5365	14.3017
1880000000	53.5368	14.2554
1890000000	53.5103	14.2305
1900000000	**53.4895**	**14.2373**
1910000000	53.4103	14.2738

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

8.3. LIQUID CHECK RESULTS FOR 2450 MHZ

Simulating Liquid Dielectric Parameters for Head 2450 MHz

Room Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Sunny Shih

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
2450	e'	39.26	Relative Permittivity (ϵ_r):	39.261	39.2	0.16	± 5
	e"	13.41	Conductivity (σ):	1.828	1.80	1.55	± 5

Liquid Temperature: 23 deg. C
October 15, 2009 8:05 AM

Frequency	e'	e"
2400000000	39.4123	13.2136
2405000000	39.3955	13.2831
2410000000	39.3785	13.3217
2415000000	39.3734	13.3674
2420000000	39.3598	13.3892
2425000000	39.3447	13.4123
2430000000	39.3345	13.4143
2435000000	39.3236	13.4284
2440000000	39.3119	13.4347
2445000000	39.2838	13.4381
2450000000	**39.2612**	**13.4115**
2455000000	39.1921	13.4223
2460000000	39.1721	13.405
2465000000	39.1186	13.3747
2470000000	39.0958	13.3406
2475000000	39.057	13.3206
2480000000	39.0501	13.3179
2485000000	39.0457	13.3243
2490000000	39.031	13.3509
2495000000	39.0156	13.3894
2500000000	39.0166	13.4528

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters for Muscle 2450 MHz

Room Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Chaoyen Lin

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
2450	e'	52.14	Relative Permittivity (ϵ_r):	52.142	52.7	-1.06	± 5
	e"	14.09	Conductivity (σ):	1.920	1.95	-1.53	± 5

Liquid Temperature: 23 deg. C
October 15, 2009 8:12 AM

Frequency	e'	e"
2400000000	52.2343	13.8594
2405000000	52.2198	13.9588
2410000000	52.2135	14.0257
2415000000	52.2044	14.0927
2420000000	52.1876	14.1058
2425000000	52.1886	14.1117
2430000000	52.1807	14.1103
2435000000	52.1696	14.0943
2440000000	52.1835	14.1065
2445000000	52.1616	14.1082
2450000000	**52.1422**	**14.088**
2455000000	52.0721	14.0692
2460000000	52.0424	14.0289
2465000000	51.974	13.9936
2470000000	51.9429	13.9406
2475000000	51.9181	13.9098
2480000000	51.9248	13.8944
2485000000	51.9349	13.9162
2490000000	51.9448	13.9835
2495000000	51.948	14.0598
2500000000	51.9536	14.1863

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters for Head 2450 MHz

Room Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Sunny Shih

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
2450	e'	39.29	Relative Permittivity (ϵ_r):	39.289	39.2	0.23	± 5
	e"	13.39	Conductivity (σ):	1.826	1.80	1.42	± 5

Liquid Temperature: 23 deg. C
October 16, 2009 6:15 PM

Frequency	e'	e"
2400000000	39.4403	13.1966
2405000000	39.4235	13.2661
2410000000	39.4065	13.3047
2415000000	39.4014	13.3504
2420000000	39.3878	13.3722
2425000000	39.3727	13.3953
2430000000	39.3625	13.3973
2435000000	39.3516	13.4114
2440000000	39.3399	13.4177
2445000000	39.3118	13.4211
2450000000	**39.2892**	**13.3945**
2455000000	39.2201	13.4053
2460000000	39.2001	13.388
2465000000	39.1466	13.3577
2470000000	39.1238	13.3236
2475000000	39.085	13.3036
2480000000	39.0781	13.3009
2485000000	39.0737	13.3073
2490000000	39.059	13.3339
2495000000	39.0436	13.3724
2500000000	39.0446	13.4358

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters for Muscle 2450 MHz

Room Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Chaoyen Lin

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
2450	e'	51.99	Relative Permittivity (ϵ_r):	51.985	52.7	-1.36	± 5
	e"	13.97	Conductivity (σ):	1.904	1.95	-2.35	± 5

Liquid Temperature: 23 deg. C
October 16, 2009 6:12 PM

Frequency	e'	e"
2400000000	52.0773	13.7424
2405000000	52.0628	13.8418
2410000000	52.0565	13.9087
2415000000	52.0474	13.9757
2420000000	52.0306	13.9888
2425000000	52.0316	13.9947
2430000000	52.0237	13.9933
2435000000	52.0126	13.9773
2440000000	52.0265	13.9895
2445000000	52.0046	13.9912
2450000000	**51.9852**	**13.971**
2455000000	51.9151	13.9522
2460000000	51.8854	13.9119
2465000000	51.817	13.8766
2470000000	51.7859	13.8236
2475000000	51.7611	13.7928
2480000000	51.7678	13.7774
2485000000	51.7779	13.7992
2490000000	51.7878	13.8665
2495000000	51.791	13.9428
2500000000	51.7966	14.0693

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters for Muscle 2450 MHz

Room Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Chaoyen Lin

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
2450	e'	52.13	Relative Permittivity (ϵ_r):	52.134	52.7	-1.07	± 5
	e"	14.03	Conductivity (σ):	1.912	1.95	-1.94	± 5

Liquid Temperature: 23 deg. C
October 26, 2009 8:02 AM

Frequency	e'	e"
2400000000	52.2262	13.8004
2405000000	52.2117	13.8998
2410000000	52.2054	13.9667
2415000000	52.1963	14.0337
2420000000	52.1795	14.0468
2425000000	52.1805	14.0527
2430000000	52.1726	14.0513
2435000000	52.1615	14.0353
2440000000	52.1754	14.0475
2445000000	52.1535	14.0492
2450000000	**52.1341**	**14.029**
2455000000	52.064	14.0102
2460000000	52.0343	13.9699
2465000000	51.9659	13.9346
2470000000	51.9348	13.8816
2475000000	51.91	13.8508
2480000000	51.9167	13.8354
2485000000	51.9268	13.8572
2490000000	51.9367	13.9245
2495000000	51.9399	14.0008
2500000000	51.9455	14.1273

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6

$\varepsilon_0 = 8.854 * 10^{-12}$

9. SYSTEM CHECK

The system performance check is performed prior to any usage of the system in order to guarantee reproducible results. The system performance check verifies that the system operates within its specifications of ±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 Isotropic E-Field Probe EX3DV4 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 fine cube was chosen for cube
- Distance between probe sensors and phantom surface was set to 3 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 250 mW±3%.
- The results are normalized to 1 W input power.

IEEE Standard 1528-2003 Numerical reference SAR values (W/kg) for reference dipole and flat phantom

Frequency (MHz)	Distance (mm)	1g SAR [W/kg]	10g SAR [W/kg]	Local SAR at surface (above feed-point)
300	15	3	2	4.4
450	15	4.9	3.3	7.2
835	15	9.5	6.2	4.1
900	15	10.8	6.9	16.4
1450	10	29	16	5.02
1800	10	38.1	19.8	69.5
1900	10	39.7	20.5	72.1
2000	10	41.1	21.1	74.6
2450	10	52.4	24	104.2
3000	10	63.8	25.7	104.2

Reference SAR Values for Body-tissue (From SPEAG)

Dipole Type	Distance	Frequency	SAR (1g)	SAR (10g)	SAR (peak)
	(mm)	(MHz)	[W/kg]	[W/kg]	[W/kg]
D835V2	15	835	9.71	6.38	14.1
D1900V2	10	1900	39.8	20.8	69.6

9.1. SYSTEM CHECK RESULTS FOR D1900V2

System Validation Dipole: D1900V2 SN: 5d043

Date: October 13, 2009

Ambient Temperature = 24°C; Relative humidity = 35% Measured by: Chaoyen Lin

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Body	1900	250	1g SAR:	38.5	39.8	-3.27	±10
			10g SAR:	20.3	20.8	-2.40	

Date: October 15, 2009

Ambient Temperature = 24°C; Relative humidity = 35% Measured by: Chaoyen Lin

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Body	1900	250	1g SAR:	38.1	39.8	-4.27	±10
			10g SAR:	19.9	20.8	-4.33	

9.2. SYSTEM CHECK RESULTS FOR D835V2

System Validation Dipole: D835V2 SN:4d002

Date: October 14, 2009

Ambient Temperature = 25°C; Relative humidity = 40% Measured by: Chaoyen Lin

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Body	835	250	1g SAR:	10.1	9.71	4.02	±10
			10g SAR:	6.62	6.38	3.76	

9.3. SYSTEM CHECK RESULTS FOR WiFi

System Validation Dipole: D2450V2 SN: 748

Date: October 15, 2009

Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Chaoyen Lin

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Body	2450	250	1g SAR:	54.2	51.2	5.86	±10
			10g SAR:	25.5	23.7	7.59	

Date: October 16, 2009

Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Chaoyen Lin

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Body	2450	250	1g SAR:	53.7	51.2	4.88	±10
			10g SAR:	25.1	23.7	5.91	

Date: October 26, 2009

Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Chaoyen Lin

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Body	2450	250	1g SAR:	54	51.2	5.47	±10
			10g SAR:	25.4	23.7	7.17	

10. OUTPUT POWER VERIFICATION

10.1. RF Output Power for WWAN

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

10.2. RF Output Power for 1XRTT

This procedure assumes the CMU200

- Call Setup > Shift & Preset
- Cell Info > Cell Parameters > System ID (SID) > 3333 for cell band
- Cell Info > Cell Parameters > System ID (SID) > 3333 for cell band
  > Network ID (NID) > 3333 for cell and PCS bands.
- Protocol Rev > 6 (IS-2000-0)
- Radio Config (RC) > Please see following table or details
- FCH Service Option (SO) Setup > Please see following table or details
- Traffic Data Rate > Full
- TDSO SCH Info > F-SCH Parameters > F-SCH Data Rate > 153.6 kbps
  > R-SCH Parameters > R-SCH Data Rate > 153.6 kbps
- Rvs Power Ctrl > Active bits
  - Rvs Power Ctrl > All Up bits (Maximum TxPout)

RF Power Output for 1xRTT - Cell Band				
Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 1013/824.7MHz	Ch. 384/836.52MHz	Ch. 777/848.31MHz
		Average	Average	Average
RC3 (Fwd3, Rvs3)	1 (Voice)			
	2 (Loopback)	23.91	24.51	24.31
	3 (Voice)			
	55 (Loopback)	23.89	24.56	24.32
	32 (+ F-SCH)	23.92	24.56	24.35
	32 (+ SCH)	23.88	24.54	24.32
	68 (Voice)			

RF Power Output for 1xRTT - PCS Band				
Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 25/1851.25MHz	Ch. 600/1880MHz	Ch. 1175/1908.75 MHz
		Average	Average	Average
RC3 (Fwd3, Rvs3)	1 (Voice)			
	2 (Loopback)	23.13	23.11	23.11
	3 (Voice)			
	55 (Loopback)	23.17	23.14	23.10
	32 (+ F-SCH)	23.18	23.18	23.19
	32 (+ SCH)	23.14	23.17	23.18
	68 (Voice)			
	32768 (Voice)			

10.3. RF Output Power for EVDO Release 0

This procedure assumes the CMU200

EVDO Release 0 - RTAP

- Call Setup > Shift & Preset
- Call Control:
  - Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
  - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Parms:
  - Cell Power > -105.5 dBm/1.23 MHz
  - Cell Band > (Select US Cellular or US PCS)
  - Channel > (Enter channel number)
  - Application Config > Enhanced Test Application Protocol > RTAP
  - RTAP Rate > 153.6 kbps
  - Rvs Power Ctrl > Active bits
  - Protocol Rel > 0 (1xEV-DO)
- Press “Start Data Connection” when “Session Open” appear in “Active Cell”
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

EVDO Release 0 - FTAP

- Call Setup > Shift & Preset
- Call Control:
  - Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
  - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Parms:
  - Cell Power > -105.5 dBm/1.23 MHz
  - Cell Band > (Select US Cellular or US PCS)
  - Channel > (Enter channel number)
  - Application Config > Enhanced Test Application Protocol > FTAP (default)
  - FTAP Rate > 307.2 kbps (2 Slot, QPSK)
  - Rvs Power Ctrl > Active bits
  - Protocol Rel > 0 (1xEV-DO)
- Press “Start Data Connection” when “Session Open” appear in “Active Cell”
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

RF Power Output for EV-DO Rel 0

Cell Band

FTAP Rate	RTAP Rate	Channel	f (MHz)	Conducted power (dBm) Average
307.2 kbps (2 slot, QPSK)	153.6 kbps	1013	824.70	23.14
		384	836.52	24.03
		777	848.31	23.80

PCS Band

FTAP Rate	RTAP Rate	Channel	f (MHz)	Conducted power (dBm) Average
307.2 kbps (2 slot, QPSK)	153.6 kbps	25	1851.25	23.15
		600	1880.00	23.12
		1175	1908.75	23.14

10.4. RF Output Power for EVDO Revision A

This procedure assumes the CMU200

EVDO Revision A – RETAP
- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Revision A Physical Layer Subtype > Subtype 2
> PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Revision A - FETAP
- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- Protocol Subtype Config > Revision A Physical Layer Subtype > Subtype 2
> PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

RF Power Output Results for EV-DO Rev A

Cell Band

FETAP-Traffic Format	RETAP-Data Payload Size	Channel	f (MHz)	Conducted power (dBm) Average
307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	1013	824.70	23.34
		384	836.52	24.15
		777	848.31	23.69

PCS Band

FETAP-Traffic Format	RETAP-Data Payload Size	Channel	f (MHz)	Conducted power (dBm) Average
307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	25	1851.25	23.13
		600	1880.00	23.10
		1175	1908.75	23.12

10.5. RF Output Power for WLAN

802.11b

Channel	Frequency (MHz)	Power (dBm)
Low	2412	12.05
Middle	2437	12.22
High	2462	12.18

802.11g

Channel	Frequency (MHz)	Power (dBm)
Low	2412	10.50
Middle	2437	10.19
High	2462	10.22

11. KDB 941225 Test Reduction Consideration

Head SAR Measurement
Based upon the power measurement in section 10.3 and 10.4 for 1xEVDO, Rev.0 and Rev. A power measurement is not ¼ dB higher than RC3. Thus, RC3/SO55 is used for head SAR measurement.

Body SAR Measurement
Based upon the power measurement in section 10.3 and 10.4, SAR for 1xEVDO Rev.0 and Rev. A power measurement is not ¼ dB higher than RC3. Thus, RC3/SO32 is used for body SAR measurement.

12. SUMMARY OF TEST RESULTS

WORST-CASE CONFIGURATIONS

Non-inductive back cover is used for all SAR testing. Additional SAR testing with inductive back cover is performed at worst-case test configurations.

Additional SAR testing with headset for body worn is performed at worst-case configurations as well.

12.1. PCS Band

12.1.1. LEFT HAND SIDE

Test position	Mode	UL Ch No.	f (MHz)	1g SAR (mW/g)	Limit (mW/g)
Touch	SO55, RC3	25	1851.25	1.310	1.6
		600	1880.00	1.430	
		1175	1908.75	1.470	
Touch (with inductive backcover)	SO55, RC3	25	1851.25	1.290	
		600	1880.00	1.310	
		1175	1908.75	1.360	
Tilt (15°)	SO55, RC3	25	1851.25		1.6
		600	1880.00	0.442	
		1175	1908.75		

12.1.2. RIGHT HAND SIDE

Test position	Mode	UL Ch No.	f (MHz)	1g SAR (mW/g)	Limit (mW/g)
Touch	SO55, RC3	25	1851.25	0.987	1.6
		600	1880.00	1.070	
		1175	1908.75	1.110	
Tilt (15°)	SO55, RC3	25	1851.25		1.6
		600	1880.00	0.570	
		1175	1908.75		

12.1.3. BODY WORN

Test position	Mode	Separation distance (mm)	UL Ch No.	f (MHz)	1g SAR (mW/g)	Limit (mW/g)
LCD down	SO32, RC3	15	25	1851.25		1.6
			600	1880.00	0.634	
			1175	1908.75		
LCD up	SO32, RC3	15	25	1851.25		1.6
			600	1880.00	0.628	
			1175	1908.75		
LCD down (with inductive backcover)	SO32, RC3	15	25	1851.25		1.6
			600	1880.00	0.611	
			1175	1908.75		
LCD down (with headset)	SO32, RC3	15	25	1851.25		1.6
			600	1880.00	0.622	
			1175	1908.75		

12.2. Cell Band

12.2.1. LEFT HAND SIDE

Test position	Mode	Ch No.	f (MHz)	1g SAR (mW/g)	Limit (mW/g)
Touch	SO55, RC3	1013	824.70	1.010	1.6
		384	836.52	0.984	
		777	848.31	1.080	
Tilt (15°)	SO55, RC3	1013	824.70		1.6
		384	836.52	0.543	
		777	848.31		

12.2.2. RIGHT HAND SIDE

Test position	Mode	Ch No.	f (MHz)	1g SAR (mW/g)	Limit (mW/g)
Touch	SO55, RC3	1013	824.70	1.140	1.6
		384	836.52	0.970	
		777	848.31	1.200	
Touch (with inductive backcover)	SO55, RC3	777	848.31	1.230	
Tilt (15°)	SO55, RC3	1013	824.70		1.6
		384	836.52	0.557	
		777	848.31		

12.2.3. BODY WORN

Test position	Mode	Sep. dist. (mm)	Ch No.	f (MHz)	1g SAR (mW/g)	Limit (mW/g)
LCD down	SO32, RC3	15	1013	824.70		1.6
			384	836.52	0.701	
			777	848.31		
LCD up	SO32, RC3	15	1013	824.70		1.6
			384	836.52	0.730	
			777	848.31		
LCD up(with inductive backcover)	SO32, RC3	15	1013	824.70		1.6
			384	836.52	0.701	
			777	848.31		
LCD up(with headset)	SO32, RC3	15	1013	824.70		1.6
			384	836.52	0.699	
			777	848.31		

12.3. WiFi Band

12.3.1. LEFT HAND SIDE

Test position	Mode	Ch No.	f (MHz)	1g SAR (mW/g)	Limit (mW/g)
Touch	802.11b	1	2412		1.6
		6	2437	0.050	
		11	2462		
Tilt (15°)	802.11b	1	2412		1.6
		6	2437	0.048	
		11	2462		

12.3.2. RIGHT HAND SIDE

Test position	Mode	Ch No.	f (MHz)	1g SAR (mW/g)	Limit (mW/g)
Touch	802.11b	1	2412		1.6
		6	2437	0.099	
		11	2462		
Touch (with inductive cover)	802.11b	6	2437	0.100	
Touch (Co-Tx with Bluetooth)	802.11b	6	2437	0.095	
Tilt (15°)	802.11b	1	2412		1.6
		6	2437	0.070	
		11	2462		

12.3.3. BODY WORN

Test position	Mode	Sep. dist. (mm)	Ch No.	f (MHz)	1g SAR (mW/g)	Limit (mW/g)
LCD down	802.11b	15	1	2412		1.6
			6	2437	0.0190	
			11	2462		
LCD up	802.11b	15	1	2412		1.6
			6	2437	0.0130	
			11	2462		
LCD down (with inductive backcover)	802.11b	15	1	2412		1.6
			6	2437	0.0250	
			11	2462		
LCD down (Co-Tx with Bluetooth)	802.11b	15	1	2412		1.6
			6	2437	0.0240	
			11	2462		

13. KDB 648474 Simultaneous Transmission Consideration

Bluetooth Antenna Transmitter
Since the output power of Bluetooth transmitter is less than 60/f(GHz) and its antenna is separate more than 5.0 (cm) from WWAN antenna, stand-alone SAR evaluation is not required.

Simultaneous Transmission:

WWAN – BT: Since stand-alone SAR evaluation is not required for Bluetooth antenna and its antenna is more than 5.0 (cm) from other antennas, simultaneous transmission SAR evaluation is not required.

WWAN – WLAN: Since the sum of the 1-g SAR is < 1.6 W/kg for all simultaneous transmission antennas, simultaneous transmission SAR evaluation is not required.

14. WORST-CASE SAR TEST PLOTS

WORST-CASE SAR PLOT for CDMA1900 **HEAD** POSITION

Date/Time: 10/13/2009 11:02:02 AM

Test Laboratory: Compliance Certification Services

Left Hand Side

DUT: Palm; Type: N/A; Serial: N/A

Communication System: CDMA PCS band; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used (extrapolated): f = 1908.75 MHz; σ = 1.41 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3
Phantom section: Left Section

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

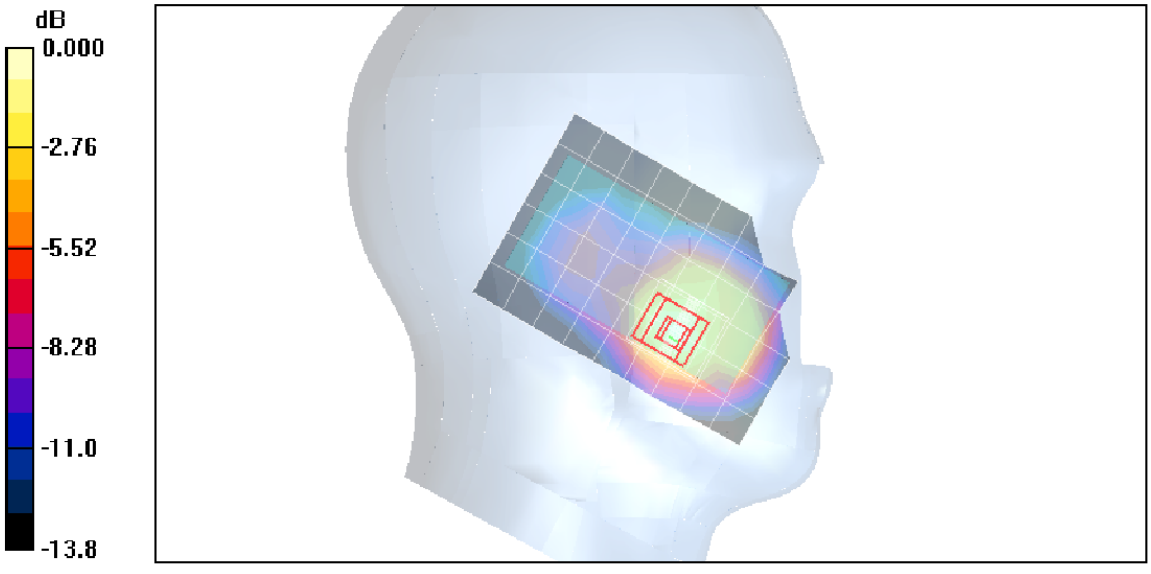
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(7.51, 7.51, 7.51); Calibrated: 3/23/2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: SAM 2 (Twin); Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - High-ch 2/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.70 mW/g

Touch position - High-ch 2/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 11.1 V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 2.19 W/kg
SAR(1 g) = 1.47 mW/g; SAR(10 g) = 0.857 mW/g

Maximum value of SAR (measured) = 1.75 mW/g



0 dB = 1.75mW/g

WORST-CASE SAR PLOT for CDMA1900 **BODY** POSITION

Date/Time: 10/13/2009 7:11:20 PM

Test Laboratory: Compliance Certification Services

Body Worn PCS Band

DUT: Palm; Type: NA; Serial: NA

Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

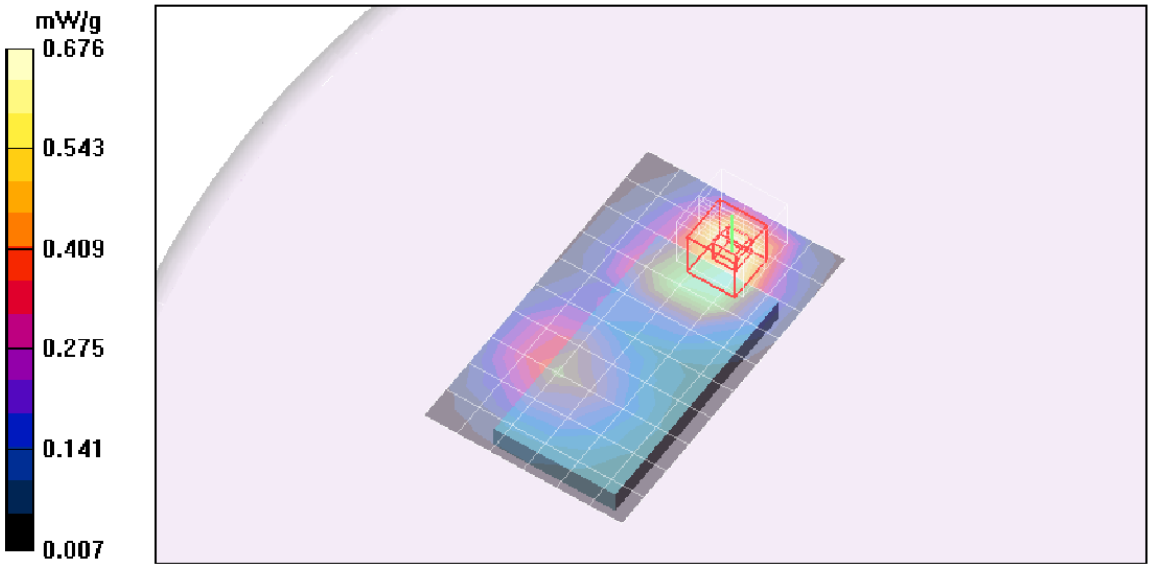
Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY4 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(6.85, 6.85, 6.85); Calibrated: 3/23/2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

LCD Face down - M-ch/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.676 mW/g

LCD Face down - M-ch/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 6.40 V/m; Power Drift = 0.437 dB
Peak SAR (extrapolated) = 0.948 W/kg
SAR(1 g) = 0.634 mW/g; SAR(10 g) = 0.407 mW/g

Maximum value of SAR (measured) = 0.748 mW/g



WORST-CASE SAR PLOT for CDMA850 - **HEAD** POSITION

Date/Time: 10/14/2009 1:45:01 PM

Test Laboratory: Compliance Certification Services

Right Hand Side

DUT: Palm; Type: N/A; Serial: N/A

Communication System: CDMA; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 848.31 MHz; σ = 0.908 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Right Section

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

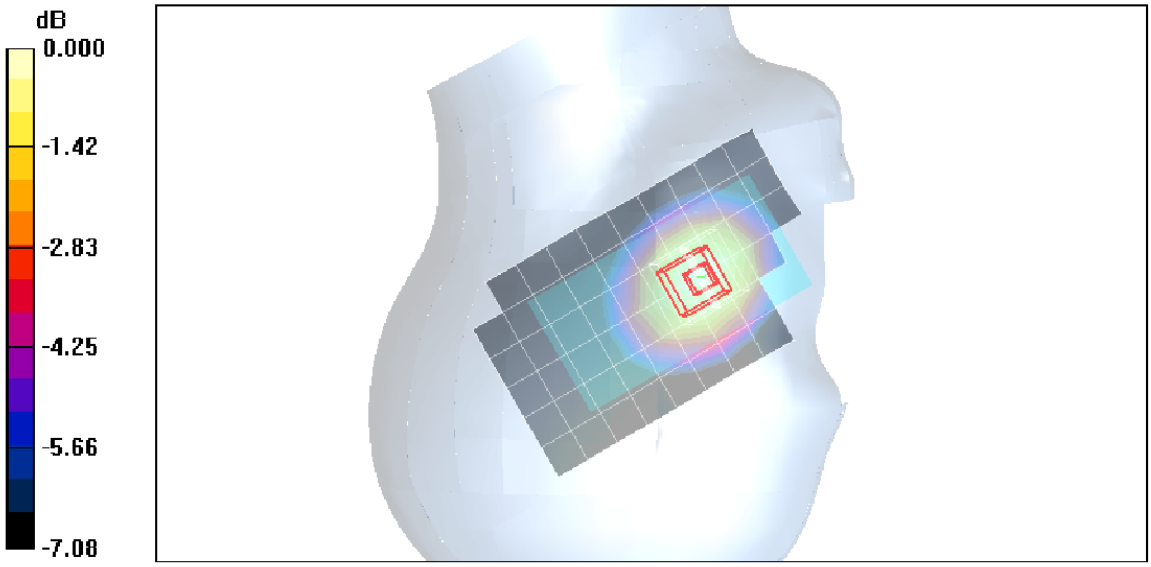
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(8.72, 8.72, 8.72); Calibrated: 3/23/2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: SAM 2 (Twin); Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - H-ch with inductive cover/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.26 mW/g

Touch position - H-ch with inductive cover/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 10.7 V/m; Power Drift = 0.095 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 1.23 mW/g; SAR(10 g) = 1.01 mW/g

Maximum value of SAR (measured) = 1.30 mW/g



0 dB = 1.30mW/g

WORST-CASE SAR PLOT for CDMA850 - **BODY** POSITION

Date/Time: 10/14/2009 2:17:18 PM

Test Laboratory: Compliance Certification Services

Body Worn Cellular Band

DUT: Palm; Type: NA; Serial: NA

Communication System: CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 0.97 mho/m; ε_r = 55.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

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

DASY4 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(8.7, 8.7, 8.7); Calibrated: 3/23/2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

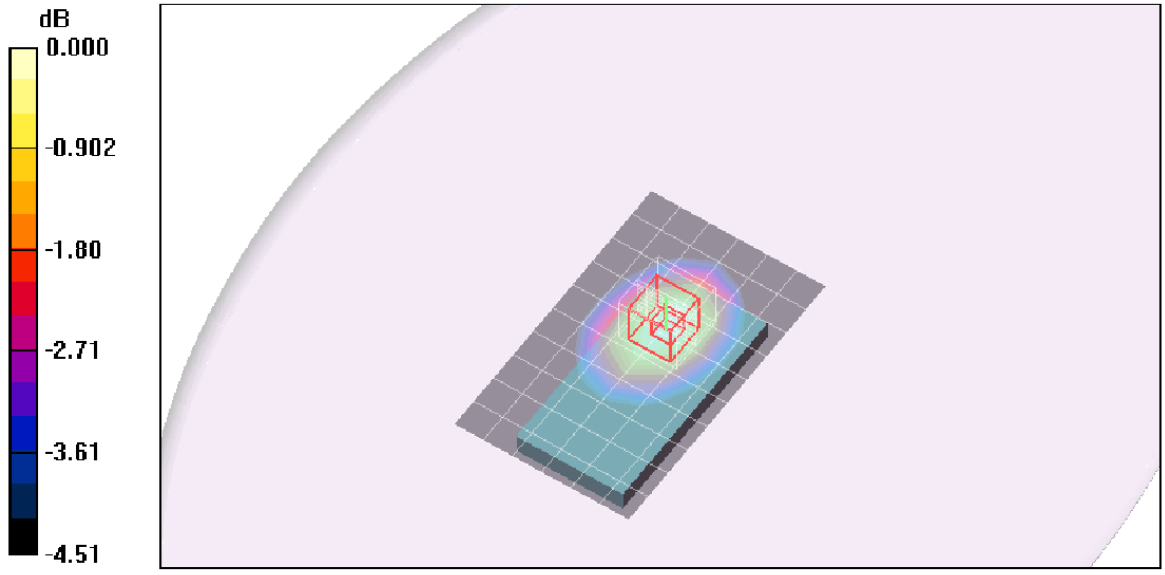
LCD Face up - M-ch/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.762 mW/g

LCD Face up - M-ch/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 19.8 V/m; Power Drift = 0.450 dB
Peak SAR (extrapolated) = 0.758 W/kg
SAR(1 g) = 0.730 mW/g; SAR(10 g) = 0.602 mW/g

Maximum value of SAR (measured) = 0.757 mW/g



0 dB = 0.757mW/g

WORST-CASE SAR PLOT for Wifi - **BODY** POSITION

Date/Time: 10/26/2009 10:08:02 AM

Test Laboratory: Compliance Certification Services

Body Worn

DUT: Palm; Type: NA; Serial: NA

Communication System: 802.11bg; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.9 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

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

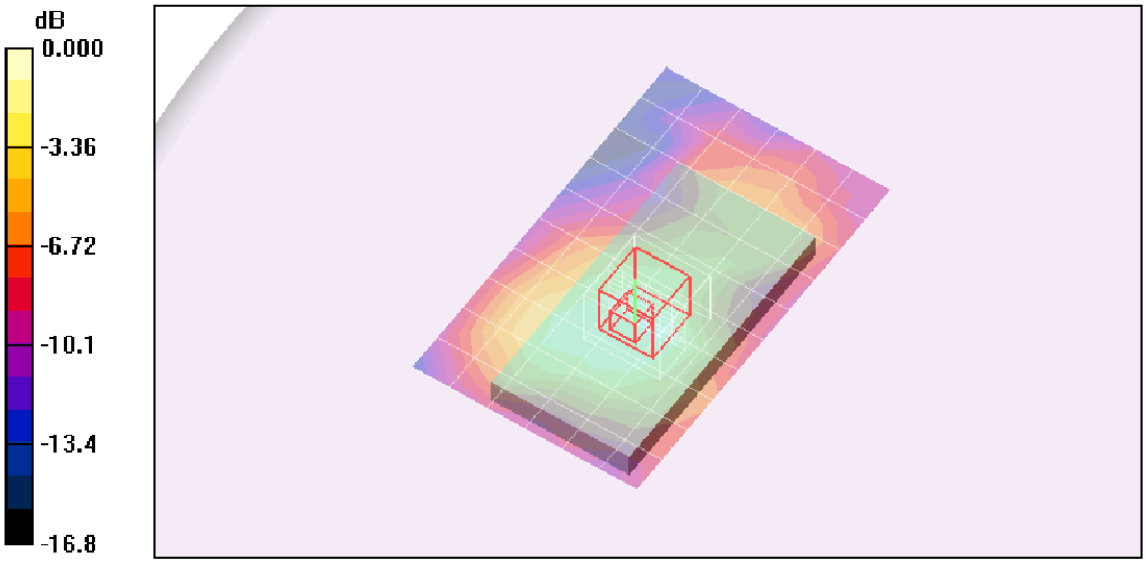
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(6.48, 6.48, 6.48); Calibrated: 3/23/2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: DAE not calibrated
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

LCD Face down - M-ch - with inductive cover/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.025 mW/g

LCD Face down - M-ch - with inductive cover/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 2.42 V/m; Power Drift = 1.06 dB
Peak SAR (extrapolated) = 0.041 W/kg
SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.014 mW/g

Maximum value of SAR (measured) = 0.031 mW/g



0 dB = 0.031mW/g

WORST-CASE SAR PLOT for Wifi - **HEAD** POSITION

Date/Time: 10/16/2009 11:00:08 PM

Test Laboratory: Compliance Certification Services

Right Hand Side

DUT: Palm; Type: N/A; Serial: N/A

Communication System: 802.11bg; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.82 mho/m; ε_r = 39.3; ρ = 1000 kg/m^3
Phantom section: Right Section

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

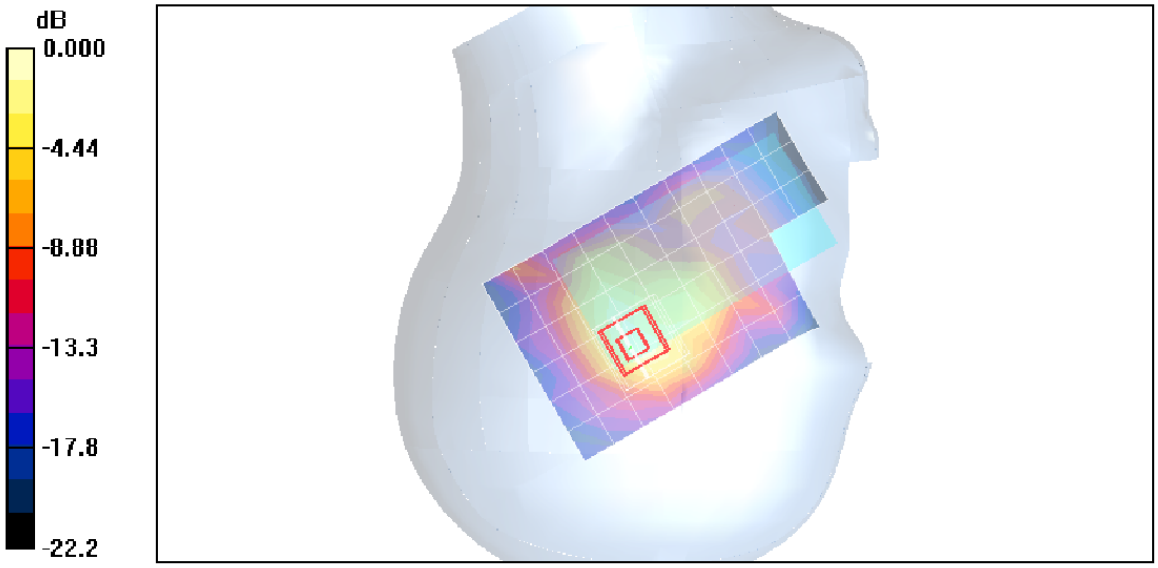
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(6.81, 6.81, 6.81); Calibrated: 3/23/2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: SAM 2 (Twin); Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - M-ch with inductive cover/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.137 mW/g

Touch position - M-ch with inductive cover/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 6.48 V/m; Power Drift = -0.364 dB
Peak SAR (extrapolated) = 0.245 W/kg
SAR(1 g) = 0.100 mW/g; SAR(10 g) = 0.045 mW/g

Maximum value of SAR (measured) = 0.132 mW/g



0 dB = 0.132mW/g

15. ATTACHMENTS

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