FCC OET BULLETIN 65 SUPPLEMENT C

SAR EVALUATION REPORT

FOR

USB WIRELESS MODEM

MODEL: USB598

FCC ID: N7NU598

IC: 2417C-U598

REPORT NUMBER: 08U11927-5A

ISSUE DATE: AUGUST 20, 2008

Prepared for

SIERRA WIRELESS INC.
2290 COSMOS CT.
CARLSBAD, CA 92011

Prepared by

COMPLIANCE CERTIFICATION SERVICES
47173 BENICIA STREET
FREMONT, CA 94538, USA

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issued date	Revisions	Revised By
--	JULY 29, 2008	Initial issue	Sunny Shih
A	August 20, 2008	Additional tests on Horizontal-down and Vertical-right position	Sunny Shih

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ATTESTATION OF TEST RESULTS

COMPANY NAME:	SIERRA WIRELESS INC. 2290 COSMOS CT. CARLSBAD, CA 92011
EUT DESCRIPTION:	USB Wireless Modem
MODEL:	USB598
DEVICE CATEGORY:	Portable
EXPOSURE CATEGORY:	General Population/Uncontrolled Exposure
DATE TESTED:	July 24 – August 13, 2008

THE HIGHEST SAR VALUES:

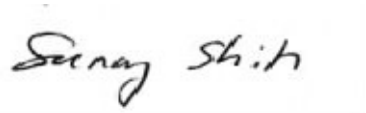
FCC / IC Rule Parts	Frequency Range [MHz]	The Highest SAR(1 g) Values
22H / RSS-102	824 - 849	0.99 mW/g / Horizontal-Up @ 12 mm
24E / RSS-102	1850 - 1910	1.27 mW/g / Horizontal-Up @ 12 mm

REFERENCE STANDARD/TEST PROCEDURE
FCC OET BULLETIN 65 SUPPLEMENT C and KDB447498 Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies, Published on July 28, 2008

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. 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. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:



SUNNY SHIH
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

CAROL BAUMANN
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

1 TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C and in consultation with the FCC lab staff.

2 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.

3 CALIBRATION AND UNCERTAINTY

3.1 MEASURING INSTRUMENT CALIBRATION

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

4 MEASUREMENT UNCERTAINTY

Measurement uncertainty for 300 MHz – 3000 MHz

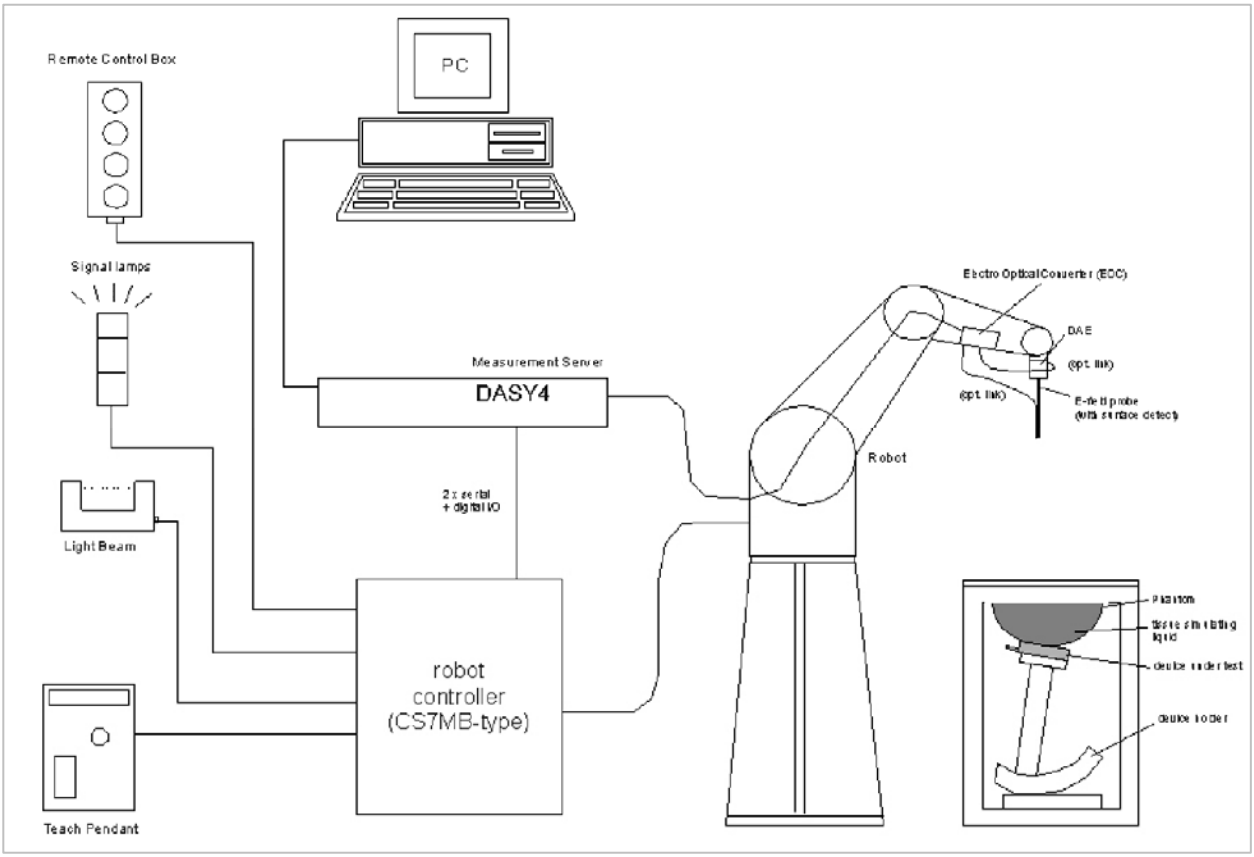
Uncertainty component	Tol. (±%)	Probe Dist.	Div.	Ci (1g)	Ci (10g)	Std. Unc.(±%)	
						Ui (1g)	Ui(10g)
Measurement System							
Probe Calibration	4.80	N	1	1	1	4.80	4.80
Axial Isotropy	4.70	R	1.732	0.707	0.707	1.92	1.92
Hemispherical Isotropy	9.60	R	1.732	0.707	0.707	3.92	3.92
Boundary Effects	1.00	R	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 DEVICE UNDER TEST (DUT) DESCRIPTION

USB wireless modem, Model USB598	
Network:	3G-CDMA2000 EV-DO Rel 0, Rev A, this device also support 1x RTT voice and/or data operations.
Host Device:	Dell Latitude D620, with USB orientations as follow: vertical-left horizontal-up Photos are included in the SAR Test Setup Photos SAR probe →
USB Cable:	Length: 0.5 m Setup for vertical-right horizontal-down Photos are included in the SAR Test Setup Photos
Power Supply:	Power supplied through laptop computer (host device)

6 SYSTEM DESCRIPTION



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 to validate the proper functioning of the system.

6.1 COMPOSITION OF INGREDIENTS FOR TISSUE SIMULATING LIQUIDS

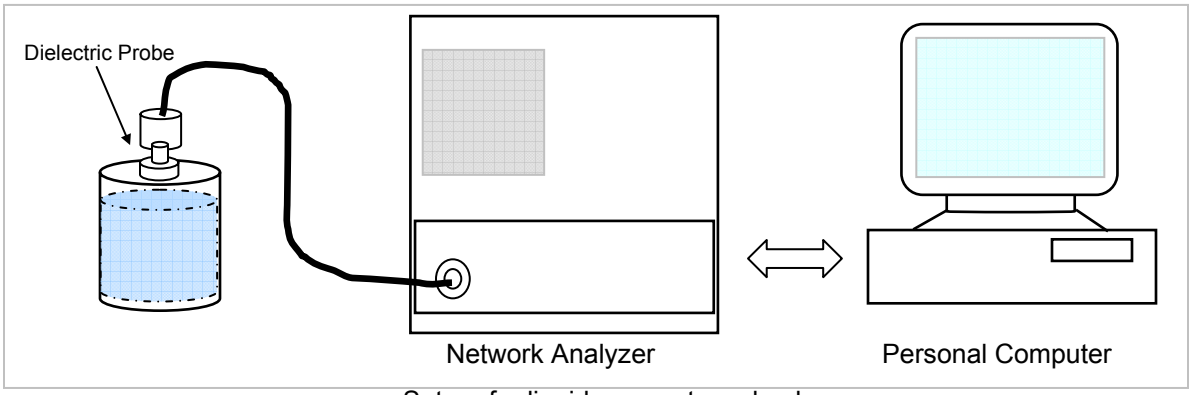
The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

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

7 SIMULATING LIQUID 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.



Set-up for liquid parameters check

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	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	**55.0**	**1.05**
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	**53.3**	**1.52**
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

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

7.1 SIMULATING LIQUID PARAMETER CHECK RESULT

Simulating Liquid Dielectric Parameters Check Result @ Muscle 1900 MHz

Room Ambient Temperature = 25°C; Relative humidity = 40% Measured by: Sunny Shih

Simulating Liquid		Parameters			Measured	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)							
1900	15	e'	50.9824	Relative Permittivity (ϵ_r):	50.9824	53.3	-4.35	± 5
		e"	14.3359	Conductivity (σ):	1.51530	1.52	-0.31	± 5
1880	15	e'	51.0008	Relative Permittivity (ϵ_r):	51.0008	53.3	-4.31	± 5
		e"	14.2509	Conductivity (σ):	1.49046	1.52	-1.94	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 23.5 deg. C
July 24, 2008 08:37 AM

Frequency	e'	e"
1710000000.	51.7359	13.6503
1720000000.	51.7076	13.6367
1730000000.	51.6715	13.6473
1740000000.	51.6213	13.6872
1750000000.	51.5940	13.7661
1760000000.	51.5033	13.8606
1770000000.	51.4413	13.9607
1780000000.	51.3975	14.0143
1790000000.	51.3837	14.0542
1800000000.	51.3914	14.0833
1810000000.	51.3921	14.0505
1820000000.	51.3729	14.0096
1830000000.	51.3622	13.9900
1840000000.	51.3382	14.0241
1850000000.	51.2716	14.0807
1860000000.	51.1637	14.1483
1870000000.	51.0515	14.2204
1880000000.	**51.0008**	**14.2509**
1890000000.	50.9577	14.3000
1900000000.	**50.9824**	**14.3359**
1910000000.	50.9943	14.3230

The conductivity (σ) can be given as:

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

where f = target f * 10^6

ε_0 = 8.854 * 10^{-12}

Simulating Liquid Dielectric Parameters Check Result @ Muscle 835 MHz

Room Ambient Temperature = 25°C; Relative humidity = 41% Measured by: Sunny Shih

Simulating Liquid		Parameters			Measured	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)							
835	15	e'	55.4573	Relative Permittivity (ε_r):	55.4573	55.2	0.47	± 5
		e"	21.6373	Conductivity (σ):	1.00510	0.97	3.62	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 23.5 deg. C
July 25, 2008 08:57 PM

Frequency	e'	e"
750000000.	56.2994	22.1072
755000000.	56.2135	22.0649
760000000.	56.1722	22.0437
765000000.	56.1347	21.9620
770000000.	56.0665	21.8918
775000000.	56.0000	21.8571
780000000.	55.9489	21.8291
785000000.	55.8879	21.7701
790000000.	55.8698	21.7311
795000000.	55.8051	21.7206
800000000.	55.7757	21.7090
805000000.	55.7271	21.7044
810000000.	55.6842	21.6808
815000000.	55.6519	21.6988
820000000.	55.6159	21.6728
825000000.	55.5636	21.6755
830000000.	55.4836	21.6608
835000000.	**55.4573**	**21.6373**
840000000.	55.3834	21.6319
845000000.	55.3324	21.5961
850000000.	55.2633	21.5677
855000000.	55.2261	21.5055
860000000.	55.1766	21.4378
865000000.	55.1257	21.3929
870000000.	55.0909	21.3315
875000000.	55.0547	21.2926
880000000.	55.0286	21.2500
885000000.	55.0104	21.2258
890000000.	55.0020	21.1978
895000000.	54.9988	21.1678
900000000.	54.9670	21.1703

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 Check Result @ Muscle 1900 MHz

Room Ambient Temperature = 25°C; Relative humidity = 40% Measured by: Sunny Shih

Simulating Liquid		Parameters			Measured	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)							
1900	15	e'	50.8384	Relative Permittivity (ϵ_r):	50.8384	53.3	-4.62	± 5
		e"	14.0821	Conductivity (σ):	1.48847	1.52	-2.07	± 5
1880	15	e'	50.8255	Relative Permittivity (ϵ_r):	50.8255	53.3	-4.64	± 5
		e"	13.9944	Conductivity (σ):	1.46363	1.52	-3.71	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 23.5 deg. C
July 26, 2008 09:14 AM

Frequency	e'	e"
1710000000.	51.6303	13.4110
1720000000.	51.5996	13.3825
1730000000.	51.5584	13.3839
1740000000.	51.5266	13.4350
1750000000.	51.4903	13.5218
1760000000.	51.4012	13.6370
1770000000.	51.3072	13.7425
1780000000.	51.2541	13.7904
1790000000.	51.2537	13.8308
1800000000.	51.2535	13.8390
1810000000.	51.2463	13.8282
1820000000.	51.2271	13.7425
1830000000.	51.2430	13.7228
1840000000.	51.2379	13.7559
1850000000.	51.1611	13.8431
1860000000.	51.0229	13.9340
1870000000.	50.8826	13.9783
1880000000.	**50.8255**	**13.9944**
1890000000.	50.8147	14.0375
1900000000.	**50.8384**	**14.0821**
1910000000.	50.8489	14.0854

The conductivity (σ) can be given as:

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

where f = target f * 10^6

ε_0 = 8.854 * 10^{-12}

Simulating Liquid Dielectric Parameters Check Result @ Muscle 1900 MHz

Room Ambient Temperature = 25°C; Relative humidity = 40% Measured by: Sunny Shih

Simulating Liquid		Parameters			Measured	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)							
1900	15	e'	52.0288	Relative Permittivity (ε_r):	52.0288	53.3	-2.38	± 5
		e"	14.2473	Conductivity (σ):	1.50593	1.52	-0.93	± 5
1880	15	e'	52.0554	Relative Permittivity (ε_r):	52.0554	53.3	-2.34	± 5
		e"	14.1663	Conductivity (σ):	1.48161	1.52	-2.53	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 23.5 deg. C
July 29, 2008 02:12 PM

Frequency	e'	e"
1710000000.	52.7901	13.6094
1720000000.	52.7442	13.6033
1730000000.	52.7082	13.6293
1740000000.	52.6671	13.6380
1750000000.	52.6488	13.7112
1760000000.	52.5635	13.7967
1770000000.	52.4972	13.8886
1780000000.	52.4396	13.9447
1790000000.	52.4205	13.9795
1800000000.	52.4360	14.0101
1810000000.	52.4288	13.9951
1820000000.	52.3993	13.9776
1830000000.	52.3873	13.9703
1840000000.	52.3683	13.9945
1850000000.	52.3118	14.0228
1860000000.	52.2106	14.0838
1870000000.	52.1212	14.1352
1880000000.	**52.0554**	**14.1663**
1890000000.	52.0171	14.2059
1900000000.	**52.0288**	**14.2473**
1910000000.	52.0423	14.3120

The conductivity (σ) can be given as:

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

where f = target f * 10^6

ε_0 = 8.854 * 10^{-12}

Simulating Liquid Dielectric Parameters Check Result @ Muscle 835 MHz

Room Ambient Temperature = 25°C; Relative humidity = 40% Measured by: Carol Baumann

Simulating Liquid		Parameters			Measured	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)							
835	15	e'	54.7081	Relative Permittivity (ε_r):	54.7081	55.2	-0.89	± 5
		e"	21.3841	Conductivity (σ):	0.99334	0.97	2.41	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
August 12, 2008 01:32 PM

Frequency	e'	e"
750000000.	55.5158	21.8557
755000000.	55.4450	21.8484
760000000.	55.4003	21.8085
765000000.	55.3673	21.7650
770000000.	55.3420	21.7074
775000000.	55.2929	21.6467
780000000.	55.2349	21.6248
785000000.	55.1988	21.5954
790000000.	55.1781	21.6070
795000000.	55.1198	21.5743
800000000.	55.0662	21.5517
805000000.	55.0174	21.5391
810000000.	54.9442	21.5184
815000000.	54.9140	21.4882
820000000.	54.8715	21.4683
825000000.	54.7951	21.4442
830000000.	54.7372	21.3915
835000000.	**54.7081**	**21.3841**
840000000.	54.6436	21.3679
845000000.	54.5827	21.3287
850000000.	54.4809	21.2943
855000000.	54.4427	21.2803
860000000.	54.4134	21.2304
865000000.	54.3589	21.1691
870000000.	54.3347	21.1288
875000000.	54.2926	21.0958
880000000.	54.3063	21.0947
885000000.	54.2764	21.0890
890000000.	54.2509	21.0922
895000000.	54.2317	21.0822
900000000.	54.2069	21.0693

The conductivity (σ) can be given as:

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

where f = target f * 10^6
ε_0 = 8.854 * 10^{-12}

Simulating Liquid Dielectric Parameters Check Result @ Muscle 1900 MHz

Room Ambient Temperature = 25°C; Relative humidity = 40% Measured by: Carol Baumann

Simulating Liquid		Parameters			Measured	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)							
1900	15	e'	51.3486	Relative Permittivity (ϵ_r):	51.3486	53.3	-3.66	± 5
		e"	14.1982	Conductivity (σ):	1.50074	1.52	-1.27	± 5
1880	15	e'	51.3865	Relative Permittivity (ϵ_r):	51.3865	53.3	-3.59	± 5
		e"	14.1177	Conductivity (σ):	1.47653	1.52	-2.86	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
August 12, 2008 01:00 PM

Frequency	e'	e"
1710000000.	51.9569	13.6163
1720000000.	51.9275	13.6381
1730000000.	51.9106	13.6822
1740000000.	51.8949	13.6894
1750000000.	51.8744	13.7327
1760000000.	51.8232	13.7796
1770000000.	51.7627	13.8343
1780000000.	51.7039	13.8666
1790000000.	51.6747	13.8891
1800000000.	51.6400	13.9412
1810000000.	51.6227	13.9860
1820000000.	51.5710	13.9960
1830000000.	51.5483	14.0171
1840000000.	51.5332	14.0284
1850000000.	51.5139	14.0576
1860000000.	51.4637	14.0816
1870000000.	51.4129	14.1030
1880000000.	**51.3865**	**14.1177**
1890000000.	51.3619	14.1486
1900000000.	**51.3486**	**14.1982**
1910000000.	51.3192	14.2833

The conductivity (σ) can be given as:

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

where f = target f * 10^6

ε_0 = 8.854 * 10^{-12}

8 SYSTEM PERFORMANCE 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 Body simulating liquid of the following parameters.
- The DASY4 system with an Isotropic E-Field Probe EX3DV3-SN: 3531 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 7 x 7 x 7 fine cube was chosen for cube integration(dx=dy=5mm; dz=5mm).
  For 5 GHz band - Special 7 x 7 x 7 fine cube was chosen for cube integration (dx=dy=4.3mm; dz=3mm)
- Distance between probe sensors and phantom surface was set to 4 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.0mm
- The dipole input power (forward power) was 250 mW±3%.
- The results are normalized to 1 W input power.

Reference SAR Values for body-tissue

In the table below, the numerical reference SAR values of a SPEAG validation dipoles placed below the flat phantom filled with body-tissue simulating liquid are given. The reference SAR values were calculated using the finite-difference time-domain method and the geometry parameters.

Dipole Type	Distance (mm)	Frequency (MHz)	SAR (1g) [W/kg]	SAR (10g) [W/kg]	SAR (peak) [W/kg]
D450V2	15	450	5.01	3.36	7.22
D835V2	15	835	**9.71**	**6.38**	14.1
D900V2	15	900	11.1	7.17	16.3
D1450V2	10	1450	29.6	16.6	49.8
D1800V2	10	1800	38.5	20.3	67.5
D1900V2	10	1900	**39.8**	**20.8**	69.6
D2000V2	10	2000	40.9	21.2	71.5
D2450V2	10	2450	51.2	23.7	97.6

Note: All SAR values normalized to 1 W forward power.

8.1 SYSTEM PERFORMANCE CHECK RESULTS

System Validation Dipole: D835V2 SN:4d002

Date: July 25, 2008
Ambient Temperature = 25°C; Relative humidity = 42% Measured by: Sunny Shih

Body Simulating Liquid		SAR (mW/g)	Normalized to 1 W	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)					
835	15	1g	9.78	9.71	0.72	± 10
		10g	6.48	6.38	1.57	± 10

Date: August 12, 2008
Ambient Temperature = 25°C; Relative humidity = 40% Measured by: Carol Baumann

Body Simulating Liquid		SAR (mW/g)	Normalized to 1 W	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)					
835	15	1g	10	9.71	2.99	± 10
		10g	6.62	6.38	3.76	± 10

System Validation Dipole: D1900V2 SN:5d043

Date: July 24, 2008
Ambient Temperature = 25°C; Relative humidity = 40% Measured by: Sunny Shih

Body Simulating Liquid		SAR (mW/g)	Normalized to 1 W	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)					
1900	15	1g	37.2	39.8	-6.53	± 10
		10g	19.7	20.8	-5.29	± 10

Date: July 29, 2008
Ambient Temperature = 25°C; Relative humidity = 40% Measured by: Sunny Shih

Body Simulating Liquid		SAR (mW/g)	Normalized to 1 W	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)					
1900	15	1g	37.5	39.8	-5.78	± 10
		10g	19.6	20.8	-5.77	± 10

Date: August 12, 2008
Ambient Temperature = 25°C; Relative humidity = 40% Measured by: Carol Baumann

Body Simulating Liquid		SAR (mW/g)	Normalized to 1 W	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)					
1900	15	1g	38.2	39.8	-4.02	± 10
		10g	20.1	20.8	-3.37	± 10

9 OUTPUT POWER VERIFICATION

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

The following procedures have been used to prepare the EUT for the SAR test.

3G - CDMA2000 1xRTT

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

Application	Rev, License
CDMA2000 Mobile Test	B.13.08, L

1xRTT

- Call Setup > Shift & Preset
- Cell Info > Cell Parameters > System ID (SID) > 8
  > Network ID (NID) > 65535
- 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)

1xRTT - Cell Band (Sample #: FCC2-F2B)				
Radio Configuration (RC)	**Service Option (SO)**	**Conducted Output power (dBm)**		
		Ch. 1013	**Ch. 384**	**Ch. 777**
RC1 (Fwd1, Rvs1)	2 (Loopback)	23.83	23.92	23.91
	55 (Loopback)	23.87	23.93	23.94
RC2 (Fwd2, Rvs2)	9 (Loopback)	23.85	23.93	23.97
	55 (Loopback)	23.87	23.95	23.96
RC3 (Fwd3, Rvs3)	2 (Loopback)	23.87	23.95	23.94
	55 (Loopback)	23.86	23.94	23.92
	32 (+ F-SCH)	23.89	23.92	23.91
	32 (+ SCH)	23.86	23.92	23.90
RC4 (Fwd4, Rvs3)	2 (Loopback)	23.79	23.92	23.96
	55 (Loopback)	23.81	23.93	23.95
	32 (+ F-SCH)	23.80	23.93	23.92
	32 (+ SCH)	23.83	23.91	23.90
RC5 (Fwd5, Rvs4)	9 (Loopback)	23.79	23.97	23.97
	55 (Loopback)	23.78	23.95	23.96

1xRTT - PCS Band (Sample #: FCC2-F2B)				
Radio Configuration (RC)	**Service Option (SO)**	**Conducted Output power (dBm)**		
		Ch. 25	**Ch. 600**	**Ch. 1175**
RC1 (Fwd1, Rvs1)	2 (Loopback)	23.92	24.00	23.96
	55 (Loopback)	23.91	23.96	23.97
RC2 (Fwd2, Rvs2)	9 (Loopback)	23.91	23.97	23.96
	55 (Loopback)	23.93	23.96	23.98
RC3 (Fwd3, Rvs3)	2 (Loopback)	23.87	23.98	23.93
	55 (Loopback)	23.88	23.97	23.91
	32 (+ F-SCH)	23.87	23.94	23.86
	32 (+ SCH)	23.89	23.95	23.85
RC4 (Fwd4, Rvs3)	2 (Loopback)	23.87	23.95	23.92
	55 (Loopback)	23.90	23.92	23.84
	32 (+ F-SCH)	23.86	23.96	23.90
	32 (+ SCH)	23.93	23.97	23.92
RC5 (Fwd5, Rvs4)	9 (Loopback)	23.89	23.95	23.91
	55 (Loopback)	23.86	23.94	23.93

3G - CDMA2000 1xEV-DO Release 0 (Rel 0) & Rev A

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

Application	Rev, License
1xEV-DO Terminal Test	A.06.06

EVDO Release 0 - RTAP

- Call Setup > Shift & Preset
- Call Control:
  - o Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
  - o Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Parms:
  - o Cell Power > -105.5 dBm/1.23 MHz
  - o Cell Band > (Select US Cellular or US PCS)
  - o Channel > (Enter channel number)
  - o Application Config > Enhanced Test Application Protocol > RTAP
  - o RTAP Rate > 153.6 kbps
  - o Rvs Power Ctrl > Active bits
  - o 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:
  - o Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
  - o Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Parms:
  - o Cell Power > -105.5 dBm/1.23 MHz
  - o Cell Band > (Select US Cellular or US PCS)
  - o Channel > (Enter channel number)
  - o Application Config > Enhanced Test Application Protocol > FTAP (default)
  - o FTAP Rate > 307.2 kbps (2 Slot, QPSK)
  - o Rvs Power Ctrl > Active bits
  - o Protocol Rel > 0 (1xEV-DO)
- Press "Start Data Connection" when "Session Open" appear in "Active Cell"
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

Maximum Output Power Measurement Results for EV-DO Rel 0

Cell Band (Sample #: FCC2-F2B)

Channel	f (MHz)	FTAP Rate	RTAP Rate	Conducted power (dBm) Average
1013	824.70	307.2 kbps (2 slot, QPSK)	153.6 kbps	23.82
384	836.52			**24.04**
777	848.31			24.03

PCS Band (Sample #: FCC2-F2B)

Channel	f (MHz)	FTAP Rate	RTAP Rate	Conducted power (dBm) Average
25	1851.25	307.2 kbps (2 slot, QPSK)	153.6 kbps	24.00
600	1880.00			**24.08**
1175	1908.75			23.95

EVDO Release A – RETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
  > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > 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 Release A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > **FETAP**
- **F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)**
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
  > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > 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)

Maximum Output Power Measurement Results for EV-DO Rev A

Cell Band (Sample #: FCC2-F2B**)**

Channel	f (MHz)	FETAP-Traffic Format	RETAP-Data Payload Size	Conducted power (dBm) Average
1013	824.70	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	23.70
384	836.52			**23.95**
777	848.31			23.85

PCS Band (Sample #: FCC2-F2B**)**

Channel	f (MHz)	FETAP-Traffic Format	RETAP-Data Payload Size	Conducted power (dBm) Average
25	1851.25	307.2k, QPSK/ ACK channel is transmitted at all the slots)	4096	23.92
600	1880.00			**24.00**
1175	1908.75			23.85

SAR Evaluation consideration

The mode of operation was selected based upon output power verification.

- Per FCC 3G procedures for 1xRTT with EV-DO Data modem device, when 1xRTT highest output power is less 0.25 dB higher of highest output power of EV-DO. 1xRTT SAR measurement is not required. Based upon output power measurement, the highest measured 1xRTT output power is 23.97 dBm which is not 0.25 dB higher of EV-DO Rev.0 / 24.08 dBm.
- Per the FCC 3G procedures EV-DO Rev 0/A Data modem device, EV-DO Rev.A SAR evaluation is not required when the highest measured average output power (24 dBm) is less than EV-DO Rev.0/24.08 dBm. EV-DO Rev. A SAR evaluation is omitted.
- Final SAR evaluations were performed for EV-DO Rev.0 with configuration of RTAP Rate/153.6kbps (FTAP=307kbps/2slot/QPSK).

10 SAR MEASURMENT RESULTS

10.1 USB HORIZONTAL- DOWN

Photos are included in the SAR Test Setup Photos

PCS Band: 1xEVDO Rel 0 - RTAP			
Channel #	Frequency (MHz)	Separation Distance	SAR (1g) mW/g
25	1851.25	12 mm	0.906
600	1880.00	12 mm	0.994
1175	1908.75	12 mm	1.12
Cell Band: 1xEVDO Rel 0 - RTAP			
Channel #	Frequency (MHz)	Separation Distance	SAR (1g) mW/g
1013	824.70		
384	836.52	12 mm	0.57
777	848.31		

Note: The SAR measured at the middle channel for this configuration is at least 3 dB lower (0.8 mW/g) than SAR limit (1.6 mW/g), thus testing at low & high channel is optional.

PCS BAND WORST-CASE SAR TEST PLOT FOR HORIZONTAL-DOWN POSITION

Date/Time: 8/12/2008 6:45:27 PM

Test Laboratory: Compliance Certification Services

USB Horizontal-down

DUT: USB598; Type: USB Modem; Serial: FCC2-F2B

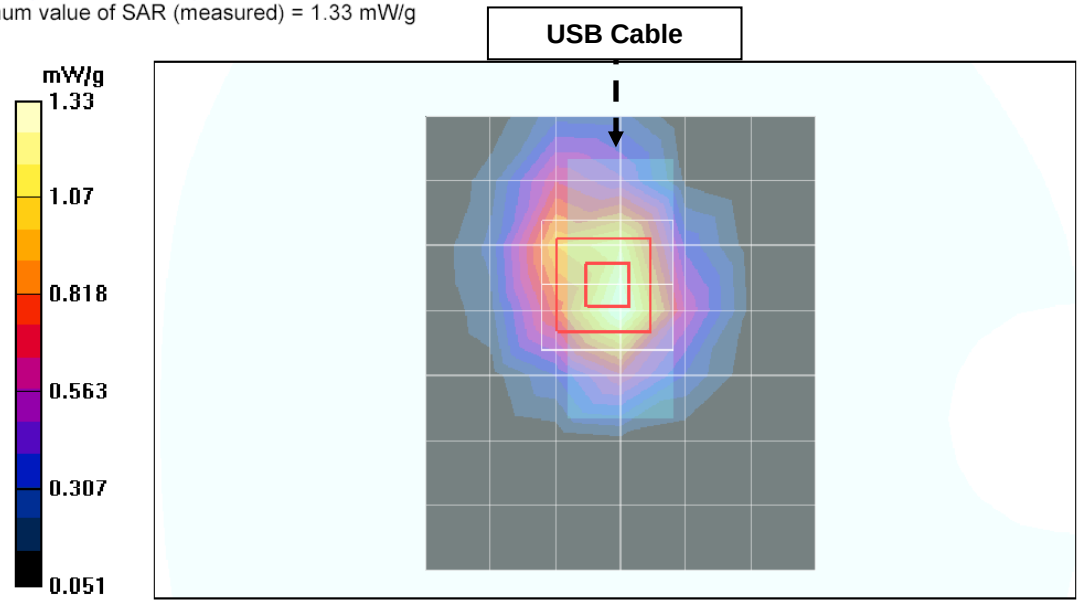
Communication System: CDMA PCS band; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1908.75 MHz; σ = 1.52 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.0 deg. C; Liquid Temperature: 24.0 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: EX3DV3 - SN3531; ConvF(8.7, 8.7, 8.7); Calibrated: 4/23/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 11/16/2007
- Phantom: SAM 2 (Twin); Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

EV-DO Rel 0 @12 mm - H ch 2/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.36 mW/g

EV-DO Rel 0 @12 mm - H ch 2/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 13.0 V/m; Power Drift = -0.913 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.648 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.33 mW/g



CELL BAND WORST-CASE SAR TEST PLOT FOR HORIZONTAL-DOWN POSITION

Date/Time: 8/13/2008 12:15:41 PM

Test Laboratory: Compliance Certification Services

USB Horizontal-down

DUT: USB598; Type: USB Modem; Serial: FCC2-F2B

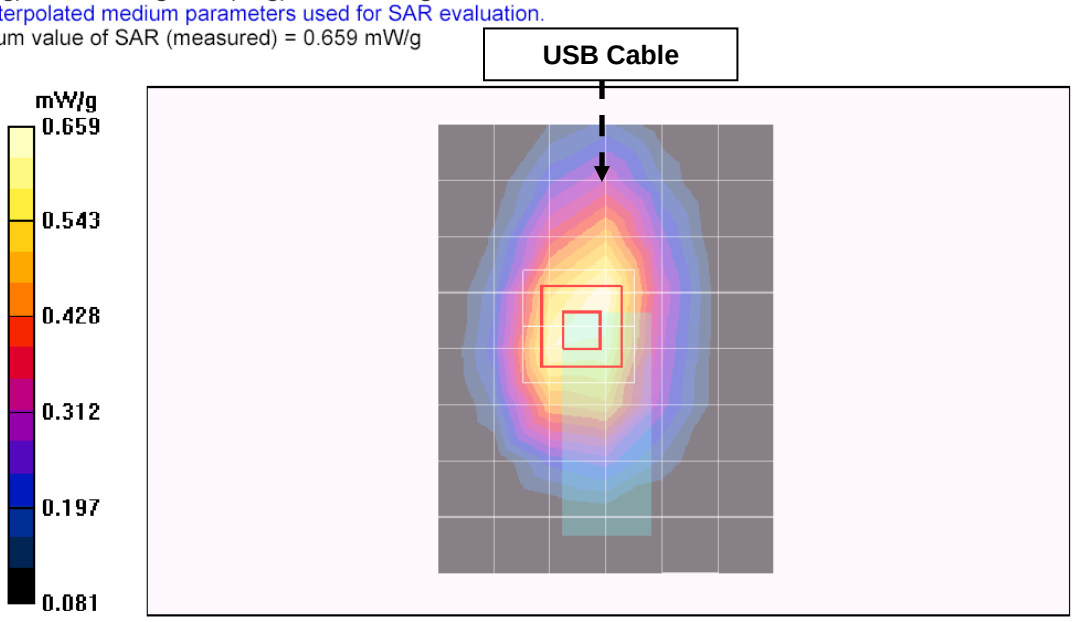
Communication System: CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 0.995 mho/m; ε_r = 54.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.0 deg. C; Liquid Temperature: 24.0 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: EX3DV3 - SN3531; ConvF(10.22, 10.22, 10.22); Calibrated: 4/23/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 11/16/2007
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

EV-DO Rel 0 @12 mm - M ch 2/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.650 mW/g

EV-DO Rel 0 @12 mm - M ch 2/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 6.74 V/m; Power Drift = -0.471 dB
Peak SAR (extrapolated) = 0.828 W/kg
SAR(1 g) = 0.571 mW/g; SAR(10 g) = 0.382 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.659 mW/g



10.2 USB HORIZONTAL-UP

Photos are included in the SAR Test Setup Photos

PCS Band: 1xEVDO Rel 0 - RTAP			
Channel #	Frequency (MHz)	Separation Distance	SAR (1g) mW/g
25	1851.25	12 mm	1.18
600	1880.00	12 mm	1.20
1175	**1908.75**	**12 mm**	**1.27**
Cell Band: 1xEVDO Rel 0 - RTAP			
Channel #	Frequency (MHz)	Separation Distance	SAR (1g) mW/g
1013	824.70	12 mm	0.80
384	**836.52**	**12 mm**	**0.99**
777	848.31	12 mm	0.98

PCS BAND WORST-CASE SAR TEST PLOT FOR HORIZONTAL-UP POSITION

Date/Time: 7/29/2008 3:42:22 PM

Test Laboratory: Compliance Certification Services

USB Horizontal-up

DUT: USB598; Type: USB Modem; Serial: FCC2-F2B

Communication System: CDMA PCS band; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1908.75 MHz; σ = 1.52 mho/m; ε_r = 52; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.5 deg. C; Liquid Temperature: 23.5 deg. C

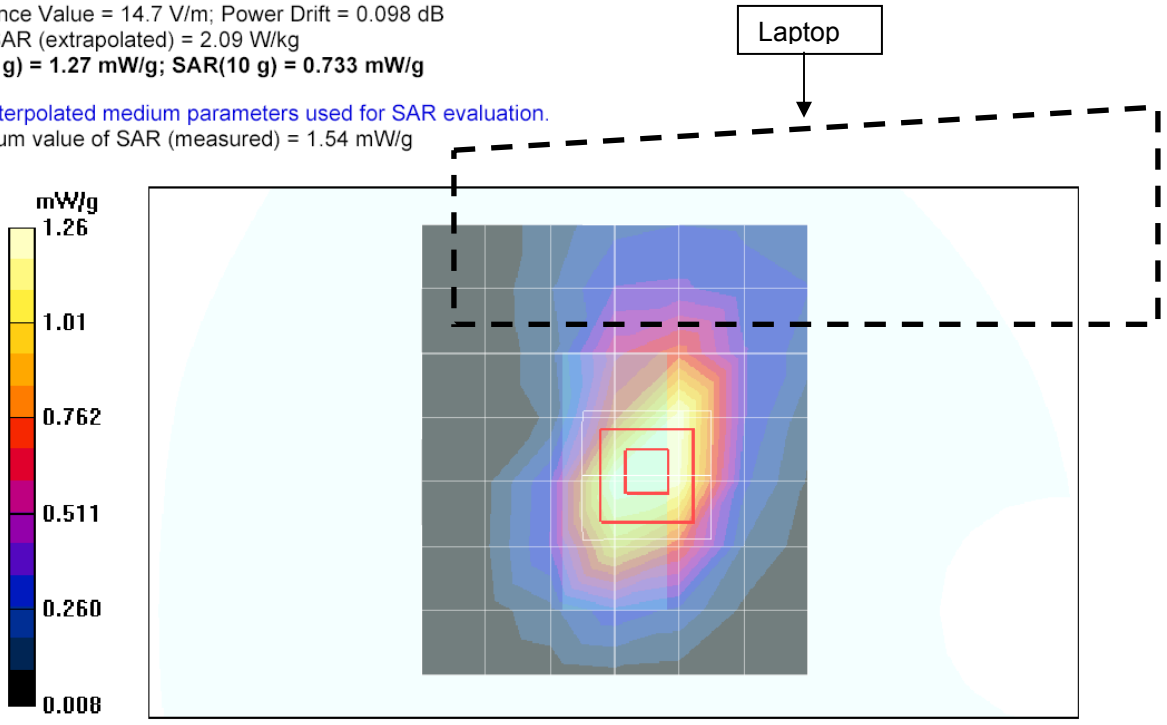
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV3 - SN3531; ConvF(8.7, 8.7, 8.7); Calibrated: 4/23/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 11/16/2007
- Phantom: SAM 2; Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

EV-DO Rel 0 @12 mm - H ch/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.26 mW/g

EV-DO Rel 0 @12 mm - H ch/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 14.7 V/m; Power Drift = 0.098 dB
Peak SAR (extrapolated) = 2.09 W/kg
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.733 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.54 mW/g



CELL BAND WORST-CASE SAR TEST PLOT FOR HORIZONTAL-UP POSITION

Date/Time: 7/25/2008 2:47:05 PM

Test Laboratory: Compliance Certification Services

USB Horizontal-up

DUT: USB598; Type: USB Modem; Serial: FCC2-F2B

Communication System: CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 1.01 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.5 deg. C; Liquid Temperature: 23.5 deg. C

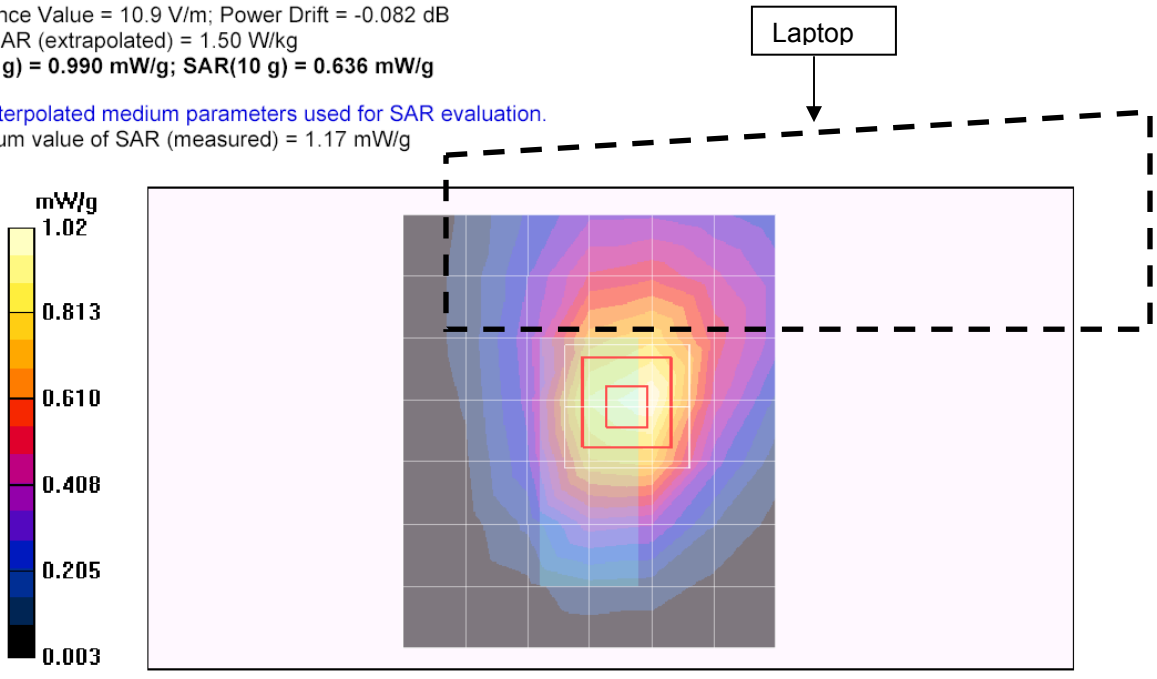
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV3 - SN3531; ConvF(10.22, 10.22, 10.22); Calibrated: 4/23/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 11/16/2007
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

EV-DO Rel 0 @12 mm - M-ch/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.02 mW/g

EV-DO Rel 0 @12 mm - M-ch/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 10.9 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 1.50 W/kg
SAR(1 g) = 0.990 mW/g; SAR(10 g) = 0.636 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.17 mW/g



10.3 USB VERTICAL - LEFT

Photos are included in the SAR Test Setup Photos

PCS Band: 1xEVDO Rel 0 - RTAP			
Channel #	Frequency (MHz)	Separation Distance	SAR (1g) mW/g
25	1851.25	8 mm	1.17
600	1880.00	8 mm	0.98
1175	**1908.75**	**8 mm**	**1.21**
Cell Band: 1xEVDO Rel 0 - RTAP			
Channel #	Frequency (MHz)	Separation Distance	SAR (1g) mW/g
1013	824.70		
384	836.52	12 mm	0.77
777	848.31		

Note: The SAR measured at the middle channel for this configuration is at least 3 dB lower (0.8 mW/g) than SAR limit (1.6 mW/g), thus testing at low & high channel is optional.

PCS BAND WORST-CASE SAR TEST PLOT FOR VERTICAL-LEFT POSITION

Date/Time: 7/25/2008 12:30:15 AM

Test Laboratory: Compliance Certification Services

USB Vertical-left

DUT: USB598; Type: USB Modem; Serial: FCC2-F2B

Communication System: CDMA PCS band; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1908.75 MHz; σ = 1.52 mho/m; ε_r = 51; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.5 deg. C; Liquid Temperature: 23.5 deg. C

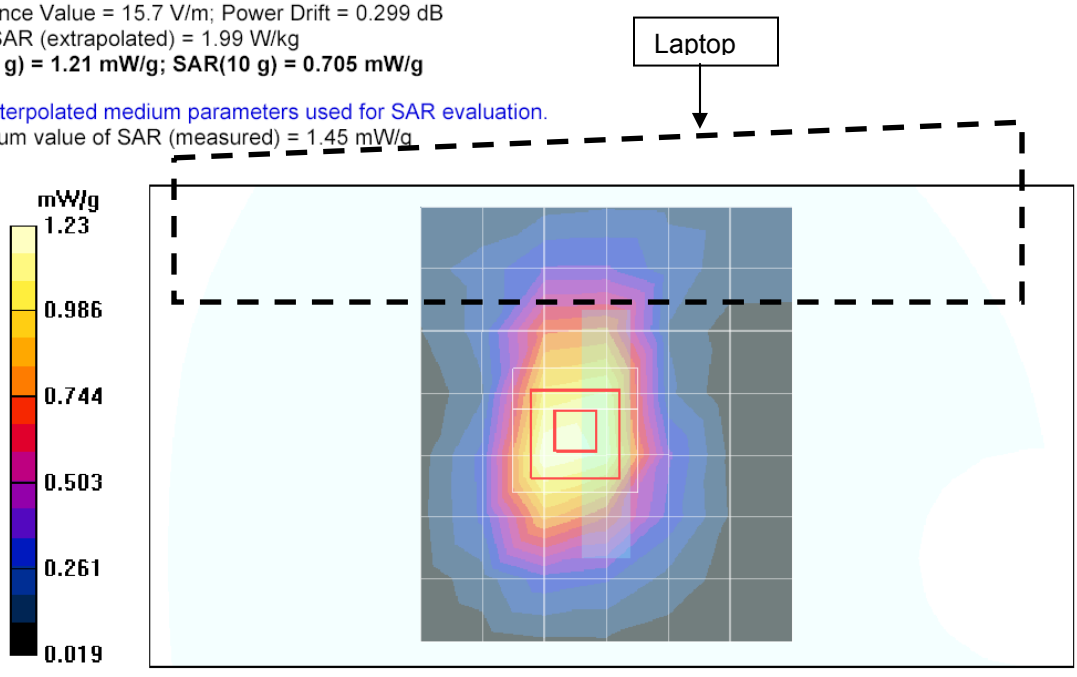
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV3 - SN3531; ConvF(8.7, 8.7, 8.7); Calibrated: 4/23/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 11/16/2007
- Phantom: SAM 2; Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

EV-DO Rel 0 @ 8 mm - H ch/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.23 mW/g

EV-DO Rel 0 @ 8 mm - H ch/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 15.7 V/m; Power Drift = 0.299 dB
Peak SAR (extrapolated) = 1.99 W/kg
SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.705 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.45 mW/g



CELL BAND WORST-CASE SAR TEST PLOT FOR VERTICAL-LEFT POSITION

Date/Time: 7/25/2008 4:33:14 PM

Test Laboratory: Compliance Certification Services

USB Vertical-left

DUT: USB598; Type: USB Modem; Serial: FCC2-F2B

Communication System: CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 1.01 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.5 deg. C; Liquid Temperature: 23.5 deg. C

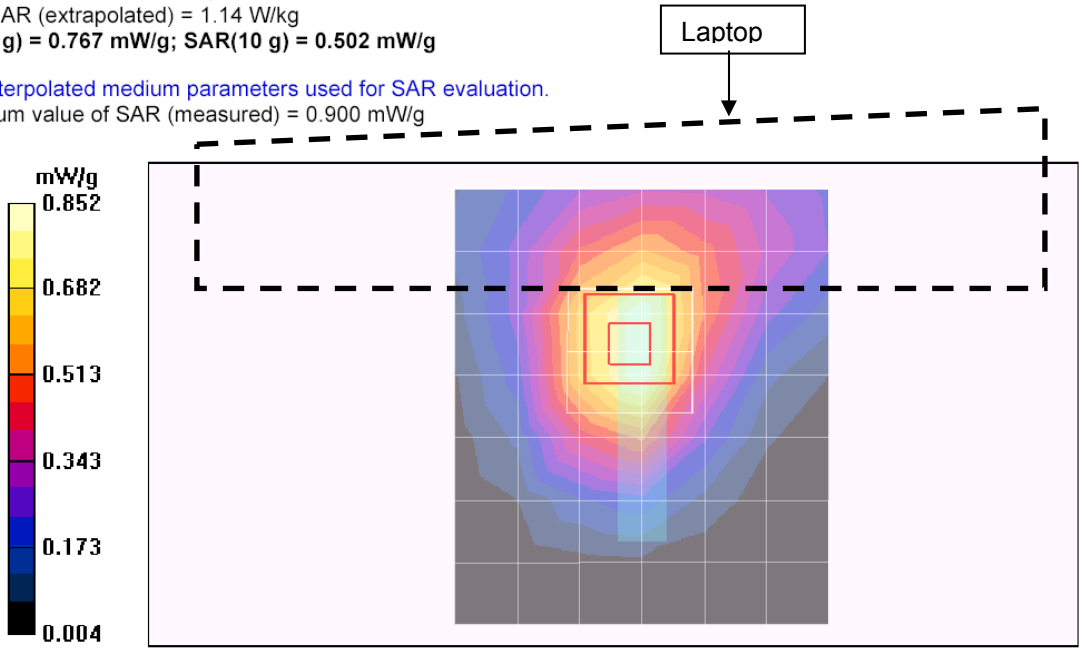
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV3 - SN3531; ConvF(10.22, 10.22, 10.22); Calibrated: 4/23/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 11/16/2007
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

EV-DO Rel 0 @ 12 mm - M-ch/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.852 mW/g

EV-DO Rel 0 @ 12 mm - M-ch/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 9.68 V/m; Power Drift = -0.160 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.767 mW/g; SAR(10 g) = 0.502 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.900 mW/g



10.4 USB VERTICAL - RIGHT

Photos are included in the SAR Test Setup Photos

Channel #	Frequency (MHz)	Separation Distance	SAR (1g) mW/g
25	1852.25		
600	1880.00	12 mm	0.473
1175	1908.75		
Cell Band: 1xEVDO Rel 0 -RTAP			
Channel #	Frequency (MHz)	Separation Distance	SAR (1g) mW/g
1013	824.70		
384	836.52	12 mm	0.211
777	848.31		

Note: The SAR measured at the middle channel for this configuration is at least 3 dB lower (0.8 mW/g) than SAR limit (1.6 mW/g), thus testing at low & high channel is optional.

PCS BAND WORST-CASE SAR TEST PLOT FOR VERTICAL-RIGHT POSITION

Date/Time: 8/13/2008 9:21:47 AM

Test Laboratory: Compliance Certification Services

USB Vertical-Right

DUT: USB598; Type: USB Modem; Serial: FCC2-F2B

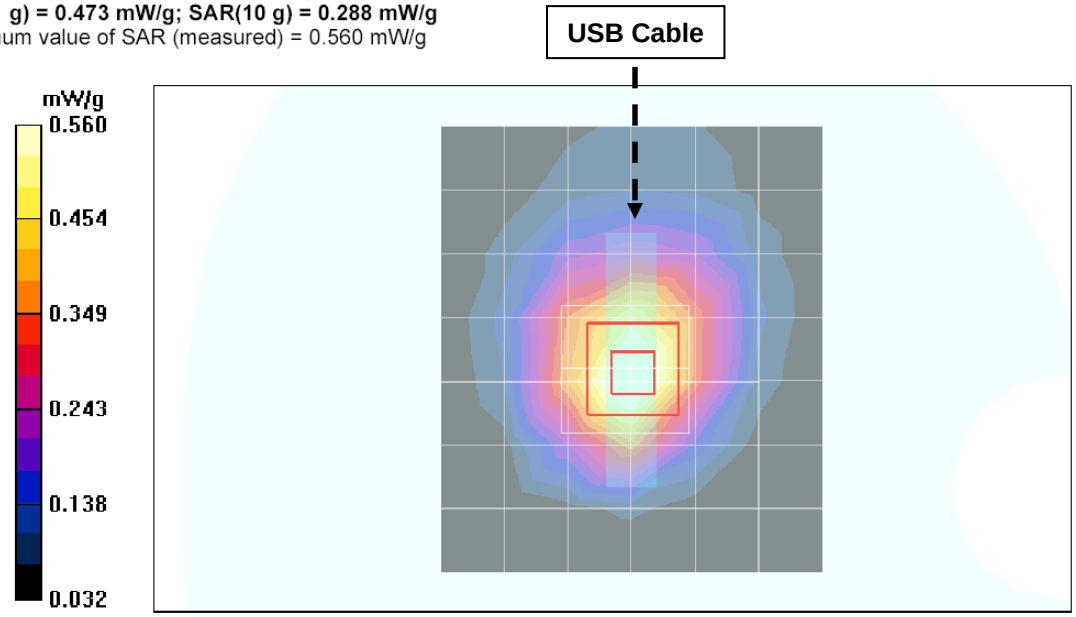
Communication System: CDMA PCS band; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 51.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.0 deg. C; Liquid Temperature: 24.0 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: EX3DV3 - SN3531; ConvF(8.7, 8.7, 8.7); Calibrated: 4/23/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 11/16/2007
- Phantom: SAM 2 (Twin); Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

EV-DO Rel 0 @ 12 mm - M ch/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.666 mW/g

EV-DO Rel 0 @ 12 mm - M ch/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 10.5 V/m; Power Drift = -1.26 dB
Peak SAR (extrapolated) = 0.741 W/kg
SAR(1 g) = 0.473 mW/g; SAR(10 g) = 0.288 mW/g
Maximum value of SAR (measured) = 0.560 mW/g



CELL BAND WORST-CASE SAR TEST PLOT FOR VERTICAL-RIGHT POSITION

Date/Time: 8/13/2008 10:46:20 AM

Test Laboratory: Compliance Certification Services

USB Vertical-Right

DUT: USB598; Type: USB Modem; Serial: FCC2-F2B

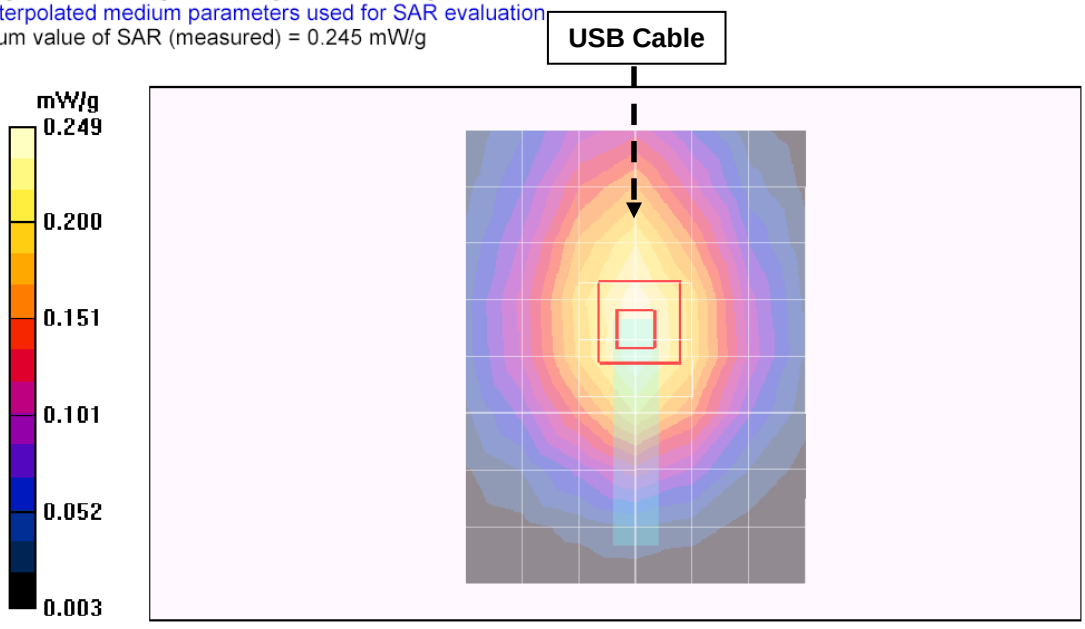
Communication System: CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 0.995 mho/m; ε_r = 54.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.0 deg. C; Liquid Temperature: 24.0 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: EX3DV3 - SN3531; ConvF(10.22, 10.22, 10.22); Calibrated: 4/23/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 11/16/2007
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

EV-DO Rel 0 @ 12 mm - M ch/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.249 mW/g

EV-DO Rel 0 @ 12 mm - M ch/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 4.78 V/m; Power Drift = -0.236 dB
Peak SAR (extrapolated) = 0.328 W/kg
SAR(1 g) = 0.211 mW/g; SAR(10 g) = 0.146 mW/g
Info: Interpolated medium parameters used for SAR evaluation
Maximum value of SAR (measured) = 0.245 mW/g



11 EQUIPMENT LIST AND CALIBRATION

Name of Equipment	Manufacturer	Type/Model	Serial Number	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	2008
E-Field Probe	SPEAG	EX3DV3	3531	4	24	2009
Thermometer	ERTCO	639-1S	1718	8	30	2008
Data Acquisition Electronics	SPEAG	DAE3 V1	500	11	16	2008
System Validation Dipole	SPEAG	D835V2	4d002	6	22	2009
System Validation Dipole	SPEAG	D1900V2	5d043	1	29	2010
Signal Generator	R&S	SMP 04	DE34210	2	16	2009
Power Meter	Giga-tronics	8651A	8651404	1	11	2010
Power Sensor	Giga-tronics	80701A	1834588	1	11	2010
Amplifier	Mini-Circuits	ZHL-42W	D072701-5		N/A	
Radio Communication Tester	R &S	CMU 200	106291	5	16	2009
Simulating Liquid	CCS	M835	N/A	Within 24 hrs of first test		
Simulating Liquid	CCS	M1900	N/A	Within 24 hrs of first test		

12 ATTACHMENTS

No.	Contents	No. Of Pages
1	System Performance Check Plots	10
2-1	Final SAR Test Plots for PCS Band	10
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3	Certificate of E-Field Probe - EX3DV3SN3531	10
4	Certificate of System Validation Dipole - D835V2 SN:4d002	9
5	Certificate of System Validation Dipole - D1900V2 SN:5d043	9