FCC OET BULLETIN 65 SUPPLEMENT C 01-01
Class II Permissive Change
IC RSS-102 ISSUE 4

SAR EVALUATION REPORT

For

Gobi2000 PCI Express Mini Card
Tested inside of Fujitsu LifeBook T Series (T580/TH550)

MODEL: Gobi2000
FCC ID: N7NGOBI2
IC: 2417C-GOBI2

REPORT NUMBER: 10U13368-1

ISSUE DATE: October 22, 2010

Prepared for

Fujitsu Australia Ltd.
570 St Kilda Road
Melbourne, Victoria 3004, Australia

Prepared by

COMPLIANCE CERTIFICATION SERVICES (UL CCS)
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	October 22, 2010	Initial Issue	--

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1. ATTESTATION OF TEST RESULTS

Tested for:	Fujitsu Australia Ltd. 570 St Kilda Road Melbourne, Victoria 3004, Australia
EUT description:	Gobi2000 PCI Express Mini Card Tested inside of Fujitsu LifeBook T Series (T580/TH550)
Model number:	Gobi2000
Device category:	Portable
Exposure category:	General Population/Uncontrolled Exposure
Date tested:	September 12 - 17, 2010

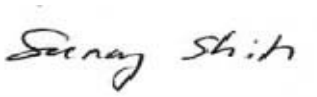
FCC / IC Rule Parts	Freq. Range [MHz]	Highest 1-g SAR (mW/g)	Limit (mW/g)
22H / RSS-132	824 - 849	0.390 (GPRS850) Position: Tablet - Bottom face	1.6
24E / RSS-133	1850 - 1910	0.901 (CDMA PCS) Position: Tablet - Secondary Landscape	

Applicable Standards	Test Results
FCC OET Bulletin 65 Supplement C 01-01 IC RSS 102 Issue 4	Pass

Compliance Certification Services, Inc. (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

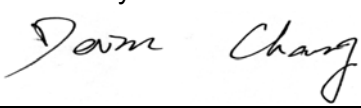
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government (NIST Handbook 150, Annex A). This report is written to support regulatory compliance of the applicable standards stated above.

Approved & Released For UL CCS By:



Sunny Shih
Engineering Team Leader
Compliance Certification Services (UL CCS)

Tested By:



Devin Chang
EMC Engineer
Compliance Certification Services (UL CCS)

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C 01-01, IEEE Std 1528-2003, IC RSS 102 Issue 4 and the following specific FCC Test Procedures.

- KDB 941225 D01 SAR test for 3G devices v02
- KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE vo1
- KDB 447498 D01 Mobile Portable RF Exposure v04
- KDB 616217 D03 SAR Supp Note and Netbook Laptop v01

3. FACILITIES AND ACCREDITATION

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due date		
				MM	DD	Year
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	22	2010
Signal Generator	Agilent	8753ES-6	MY40001647	11	22	2010
E-Field Probe	SPEAG	EX3DV3	3531	2	23	2011
Thermometer	ERTCO	639-1S	1718	7	19	2011
Data Acquisition Electronics	SPEAG	DAE3 V1	427	7	21	2011
System Validation Dipole	SPEAG	D835V2	4d002	4	23	2012
System Validation Dipole	SPEAG	D1900V2	5d043	11	24	2012
Power Meter	Giga-tronics	8651A	8651404	3	13	2012
Power Sensor	Giga-tronics	80701A	1834588	3	13	2012
Amplifier	Mini-Circuits	ZVE-8G	90606	N/A		
Amplifier	Mini-Circuits	ZHL-42W	D072701-5	N/A		
Simulating Liquid	SPEAG	M1900	N/A	Within 24 hrs of first test		
Simulating Liquid	SPEAG	M835	N/A	Within 24 hrs of first test		

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

1. There is no physical damage on the dipole
2. System validation with specific dipole is within 10% of calibrated value.
3. Return-loss is within 20% of calibrated measurement (test data on file in UL CCS)
4. Impedance is within 5Ω of calibrated measurement (test data on file in UL CCS)

4.2. MEASUREMENT UNCERTAINTY

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

Component	error, %	Probe Distribution	Divisor	Sensitivity	U (Xi), %
Measurement System					
Probe Calibration (k=1) @ Body 850 MHz	5.50	Normal	1	1	5.50
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	2.30	Rectangular	1.732	0.7071	0.94
Boundary Effect	0.90	Rectangular	1.732	1	0.52
Probe Linearity	3.45	Rectangular	1.732	1	1.99
System Detection Limits	1.00	Rectangular	1.732	1	0.58
Readout Electronics	0.30	Normal	1	1	0.30
Response Time	0.80	Rectangular	1.732	1	0.46
Integration Time	2.60	Rectangular	1.732	1	1.50
RF Ambient Conditions - Noise	3.00	Rectangular	1.732	1	1.73
RF Ambient Conditions - Reflections	3.00	Rectangular	1.732	1	1.73
Probe Positioner Mechanical Tolerance	0.40	Rectangular	1.732	1	0.23
Probe Positioning with respect to Phantom	2.90	Rectangular	1.732	1	1.67
Extrapolation, Interpolation and Integration	1.00	Rectangular	1.732	1	0.58
Test Sample Related					
Test Sample Positioning	2.90	Normal	1	1	2.90
Device Holder Uncertainty	3.60	Normal	1	1	3.60
Output Power Variation - SAR Drift	5.00	Rectangular	1.732	1	2.89
Phantom and Tissue Parameters					
Phantom Uncertainty (shape and thickness)	4.00	Rectangular	1.732	1	2.31
Liquid Conductivity - deviation from target	5.00	Rectangular	1.732	0.64	1.85
Liquid Conductivity - measurement	1.49	Normal	1	0.64	0.95
Liquid Permittivity - deviation from target	5.00	Rectangular	1.732	0.6	1.73
Liquid Permittivity - measurement	-3.73	Normal	1	0.6	-2.24
Combined Standard Uncertainty Uc(y) =					9.75
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				19.50	%
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				1.55	dB

Measurement uncertainty for 300 MHz to 3 GHz averaged over 10 gram

Component	error, %	Probe Distribution	Divisor	Sensitivity	U (Xi), %
Measurement System					
Probe Calibration (k=1) @ 850 MHz	5.50	Normal	1	1	5.50
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	2.30	Rectangular	1.732	0.7071	0.94
Boundary Effect	0.90	Rectangular	1.732	1	0.52
Probe Linearity	3.45	Rectangular	1.732	1	1.99
System Detection Limits	1.00	Rectangular	1.732	1	0.58
Readout Electronics	0.30	Normal	1	1	0.30
Response Time	0.80	Rectangular	1.732	1	0.46
Integration Time	2.60	Rectangular	1.732	1	1.50
RF Ambient Conditions - Noise	3.00	Rectangular	1.732	1	1.73
RF Ambient Conditions - Reflections	3.00	Rectangular	1.732	1	1.73
Probe Positioner Mechanical Tolerance	0.40	Rectangular	1.732	1	0.23
Probe Positioning with respect to Phantom	2.90	Rectangular	1.732	1	1.67
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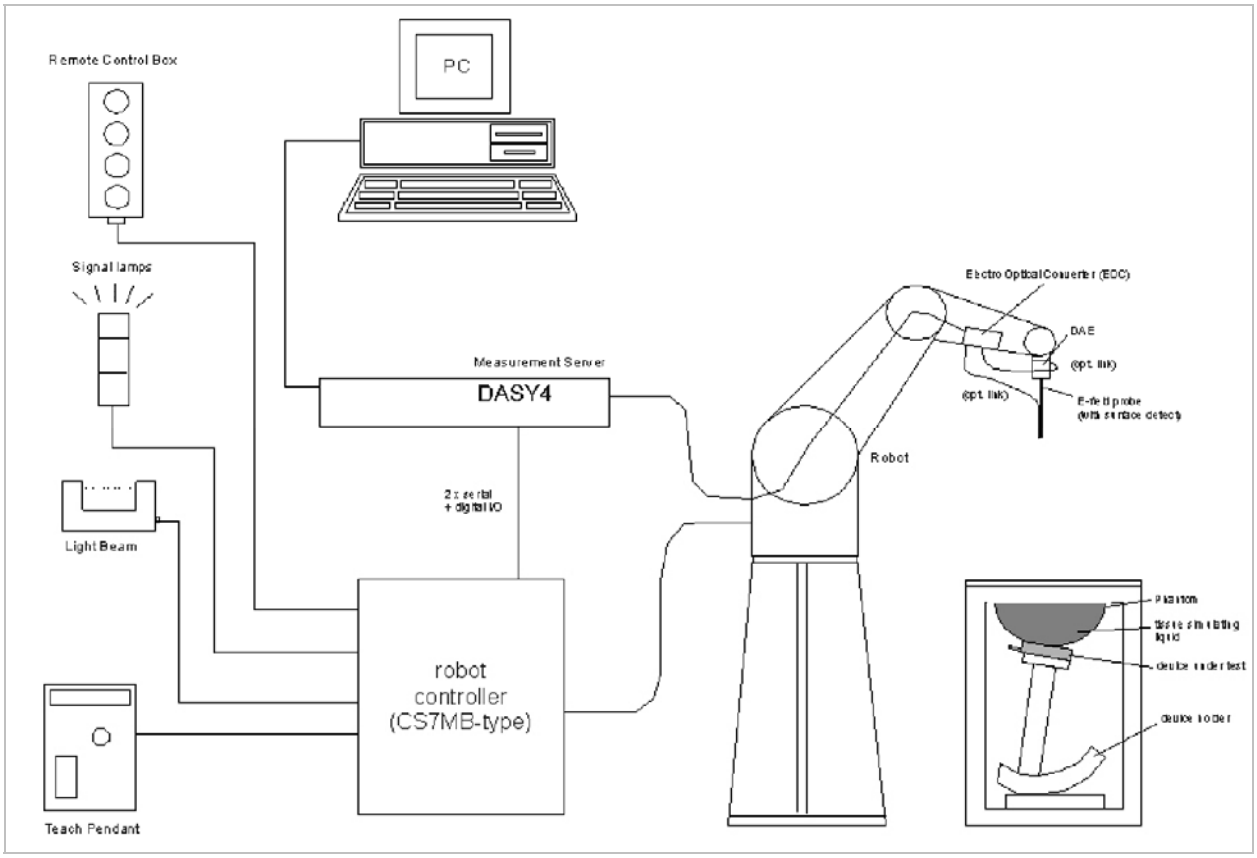
Test Sample Related					
Test Sample Positioning	2.90	Normal	1	1	2.90
Device Holder Uncertainty	3.60	Normal	1	1	3.60
Output Power Variation - SAR Drift	5.00	Rectangular	1.732	1	2.89
Phantom and Tissue Parameters					
Phantom Uncertainty (shape and thickness)	4.00	Rectangular	1.732	1	2.31
Liquid Conductivity - deviation from target	5.00	Rectangular	1.732	0.43	1.24
Liquid Conductivity - measurement	1.49	Normal	1	0.43	0.64
Liquid Permittivity - deviation from target	5.00	Rectangular	1.732	0.49	1.41
Liquid Permittivity - measurement uncertainty	-3.73	Normal	1	0.49	-1.83
Combined Standard Uncertainty Uc(y), % =					9.49
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				18.97	%
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				1.51	dB

5. EQUIPMENT UNDER TEST

Gobi2000 PCI Express Mini Card (Manufacturer by Qualcomm / Sierra Wireless) Tested inside of Fujitsu LifeBook T Series (T580/TH550), 10.1" LCD T580 and TH550 are identical to each other except color, target market and model designation. The Gobi2000 Module has the features of CDMA2000/1xEVDO data at 850 and 1900 MHz with diversity support for both bands; UMTS/HSDPA/HSUPA data at 850 MHz, Japan 800 MHz, 900 MHz and 2100 MHz with diversity support for all three bands; GSM/GPRS/EDGE data at 850 MHz, 900 MHz, 1800 MHz and 1900 MHz. In the US and Canada, only 850 MHz (Cellular) and 1900 MHz (PCS) bands are used for CDMA2000, UMTS/HSPA and GSM/GPRS/EDGE operation. The Gobi2000 Module was only tested in those two bands for FCC IC application. GPRS Multi-slot class: Class 10	
Normal operation:	Laptop mode (display open at 90° to the keyboard) Tablet bottom face, and Tablet edges - Multiple display orientations supporting both portrait and landscape configurations
WWAN Antenna tested:	Install in Fujitsu LifeBook T Series (T580/TH550) Manufactured Model/Part # Nissei Main: CP492576, Aux: CP492575
Simultaneous transmission:	WWAN can transmit simultaneously with WiFi and Bluetooth

6. SYSTEM SPECIFICATIONS



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

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

7. 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. For frequencies in 300 MHz to just under 2 GHz, the measured conductivity and relative permittivity should be within ± 5% of the target values. For frequencies in the range of 2–3 GHz and above the measured conductivity should be within ± 5% of the target values. The measured relative permittivity tolerance can be relaxed to no more than ± 10%.

Reference Values of Tissue Dielectric Parameters for Head and Body Phantom

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 Body 835 MHz Measured by: Devin Chang

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
835	e'	53.14	Relative Permittivity (ϵ_r):	53.139	55.2	-3.73	± 5
	e"	21.19	Conductivity (σ):	0.984	0.97	1.49	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
September 16, 2010 13:07 AM

Frequency	e'	e"
800000000.	53.4488	21.2888
805000000.	53.3875	21.2705
810000000.	53.3289	21.2469
815000000.	53.2819	21.2377
820000000.	53.2368	21.2255
825000000.	53.2036	21.2150
830000000.	53.1747	21.2071
835000000.	**53.1393**	**21.1927**
840000000.	53.1106	21.1867
845000000.	53.0826	21.1719
850000000.	53.0478	21.1570
855000000.	53.0238	21.1289
860000000.	52.9913	21.1078
865000000.	52.9496	21.0742
870000000.	52.8899	21.0466
875000000.	52.8285	21.0176
880000000.	52.7599	20.9890
885000000.	52.6905	20.9543
890000000.	52.6271	20.9233
895000000.	52.5691	20.8946
900000000.	52.5119	20.8736
905000000.	52.4574	20.8607
910000000.	52.4029	20.8483
915000000.	52.3482	20.8426
920000000.	52.3042	20.8391
925000000.	52.2741	20.8349
930000000.	52.2374	20.8311
935000000.	52.2074	20.8288
940000000.	52.1856	20.8211
945000000.	52.1594	20.8057
950000000.	52.1330	20.7943

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 Body 835 MHz Measured by: Devin Chang

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
835	e'	56.45	Relative Permittivity (ϵ_r):	56.452	55.2	2.27	± 5
	e"	21.27	Conductivity (σ):	0.988	0.97	1.87	± 5

Liquid Check
Ambient temperature: 24 deg. C; Liquid temperature: 23 deg. C; Relative humidity = 42%
September 17, 2010 12:45 PM

Frequency	e'	e"
750000000.	57.2955	21.6840
755000000.	57.2677	21.6884
760000000.	57.2182	21.6654
765000000.	57.2005	21.6456
770000000.	57.1272	21.6259
775000000.	57.0934	21.6243
780000000.	57.0323	21.5851
785000000.	56.9634	21.5553
790000000.	56.9347	21.5098
795000000.	56.8838	21.4996
800000000.	56.8415	21.4852
805000000.	56.7813	21.4344
810000000.	56.7600	21.4279
815000000.	56.6817	21.3558
820000000.	56.6550	21.3345
825000000.	56.5789	21.3040
830000000.	56.5409	21.2986
835000000.	**56.4518**	**21.2719**
840000000.	56.4329	21.2386
845000000.	56.3760	21.1998
850000000.	56.3245	21.1765
855000000.	56.3040	21.1898
860000000.	56.2607	21.1447
865000000.	56.1887	21.1253
870000000.	56.1658	21.0961
875000000.	56.1135	21.0754
880000000.	56.0905	21.0954
885000000.	56.0339	21.0777
890000000.	55.9679	21.0792
895000000.	55.9599	21.0427
900000000.	55.9184	21.0218

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 Body 1900 MHz Measured by: Devin Chang

f (MHz)	Muscle Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
1900	e'	53.799	Relative Permittivity (ε_r):	53.7991	53.3	0.94	± 5
	e"	14.184	Conductivity (σ):	1.49928	1.52	-1.36	± 5

Liquid Check
Ambient temperature: 24 deg. C; Liquid temperature: 23 deg. C; Relative humidity = 42%
September 12, 2010 09:31 AM

Frequency	e'	e"
1710000000.	54.3748	13.5928
1720000000.	54.3399	13.6862
1730000000.	54.3587	13.7784
1740000000.	54.3655	13.8358
1750000000.	54.3813	13.8705
1760000000.	54.3280	13.8830
1770000000.	54.2661	13.8662
1780000000.	54.1953	13.8247
1790000000.	54.1188	13.8002
1800000000.	54.0627	13.8469
1810000000.	53.9841	13.9031
1820000000.	53.8971	14.0006
1830000000.	53.8649	14.0864
1840000000.	53.8413	14.1868
1850000000.	53.8449	14.2331
1860000000.	53.8415	14.2452
1870000000.	53.8347	14.2236
1880000000.	53.8482	14.1906
1890000000.	53.8335	14.1616
1900000000.	**53.7991**	**14.1844**
1910000000.	53.7189	14.2657

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 Body 1900 MHz Measured by: Devin Chang

f (MHz)	Muscle Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
1900	e'	52.562	Relative Permittivity (ε_r):	52.5621	53.3	-1.38	± 5
	e"	14.216	Conductivity (σ):	1.50261	1.52	-1.14	± 5

Liquid Check
Ambient temperature: 24 deg. C; Liquid temperature: 23 deg. C; Relative humidity = 40%
September 13, 2010 09:45 AM

Frequency	e'	e"
1710000000.	53.1574	13.4872
1720000000.	53.1372	13.5499
1730000000.	53.1189	13.6054
1740000000.	53.0998	13.6568
1750000000.	53.0725	13.6947
1760000000.	53.0350	13.7241
1770000000.	52.9935	13.7541
1780000000.	52.9600	13.7943
1790000000.	52.9354	13.8423
1800000000.	52.9073	13.8936
1810000000.	52.8739	13.9521
1820000000.	52.8383	14.0039
1830000000.	52.7991	14.0458
1840000000.	52.7583	14.0611
1850000000.	52.7272	14.0679
1860000000.	52.7085	14.0732
1870000000.	52.6865	14.0856
1880000000.	52.6526	14.1137
1890000000.	52.6052	14.1588
1900000000.	**52.5621**	**14.2159**
1910000000.	52.5149	14.2749

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 Body 1900 MHz Measured by: Devin Chang

f (MHz)	Muscle Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
1900	e'	52.504	Relative Permittivity (ε_r):	52.5038	53.3	-1.49	± 5
	e"	14.203	Conductivity (σ):	1.50123	1.52	-1.24	± 5

Liquid Check
Ambient temperature: 24 deg. C; Liquid temperature: 23 deg. C; Relative humidity = 40%
September 14, 2010 07:15 AM

Frequency	e'	e"
1710000000.	53.2514	13.4952
1720000000.	53.1759	13.4843
1730000000.	53.1438	13.4868
1740000000.	53.0910	13.5413
1750000000.	53.0548	13.6059
1760000000.	53.0003	13.7005
1770000000.	52.9391	13.7789
1780000000.	52.9202	13.8287
1790000000.	52.8979	13.8453
1800000000.	52.9034	13.8798
1810000000.	52.8847	13.8976
1820000000.	52.8521	13.8811
1830000000.	52.8357	13.8743
1840000000.	52.7703	13.9148
1850000000.	52.7154	13.9578
1860000000.	52.6279	14.0259
1870000000.	52.5654	14.0597
1880000000.	52.5201	14.1062
1890000000.	52.5102	14.1503
1900000000.	**52.5038**	**14.2028**
1910000000.	52.4815	14.2481

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 VERIFICATION

The system performance check is performed prior to any usage of the system in order to verify SAR system measurement accuracy. The system performance check verifies that the system operates within its specifications of ±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 EX3DV3 SN3531 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 fine cube was chosen for cube
- Distance between probe sensors and phantom surface was set to 3 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 100 mW
- The results are normalized to 1 W input power.

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

System validation dipole	Cal. certificate #	Cal. date	SAR Avg (mW/g)		
			Tissue:	Head	Body
D835V2	D835V2-4d002_Apr09	04/23/09	SAR_{1g}:	9.64	9.96
			SAR_{10g}:	6.28	6.56
D1900V2	D1900V2-5d043_Nov09	11/24/09	SAR_{1g}:	39.8	40.4
			SAR_{10g}:	20.7	21.4

9.1. SYSTEM CHECK RESULTS FOR D835V2

System validation dipole	Date Tested	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
		Tissue:	Body			
D835V2	9/16/10	SAR_{1g}:	9.81	9.96	-1.51	±10
		SAR_{10g}:	6.49	6.56	-1.07	
D835V2	9/17/10	SAR_{1g}:	10.3	9.96	3.41	±10
		SAR_{10g}:	6.85	6.56	4.42	

9.2. SYSTEM CHECK RESULTS FOR D1900V2

System validation dipole	Date Tested	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
		Tissue:	Body			
D1900V2	09/12/10	SAR_{1g}:	39.7	40.4	-1.73	±10
		SAR_{10g}:	21.0	21.4	-1.87	
D1900V2	09/13/10	SAR_{1g}:	41.5	40.4	2.72	±10
		SAR_{10g}:	22.2	21.4	3.74	
D1900V2	09/14/10	SAR_{1g}:	40.9	40.4	1.24	±10
		SAR_{10g}:	21.6	21.4	0.93	

SYSTEM CHECK PLOT for D835V2

Date/Time: 9/16/2010 13:53:20 PM

Test Laboratory: Compliance Certification Services

System Performance Check - D835V2

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:xxx

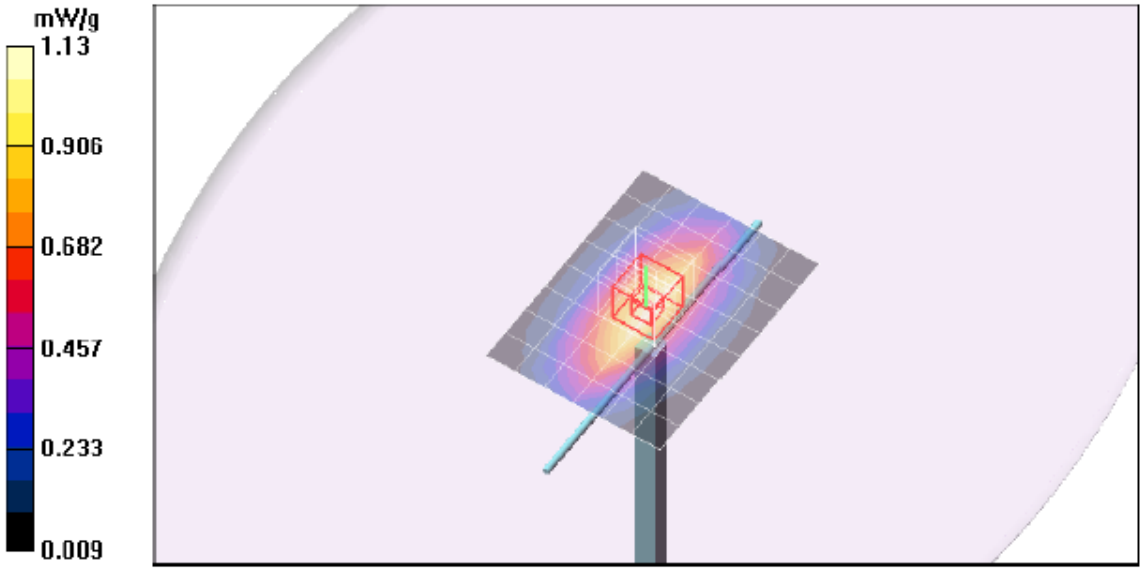
Communication System: CW 835; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.984 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

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: EX3DV3 - SN3531; ConvF(10.18, 10.18, 10.18); Calibrated: 2/23/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 7/21/2010
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=15mm, Pin=100 mW/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.13 mW/g

d=15mm, Pin=100 mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 34.1 V/m; Power Drift = 0.034 dB
Peak SAR (extrapolated) = 1.45 W/kg
SAR(1 g) = 0.981 mW/g; SAR(10 g) = 0.649 mW/g
Maximum value of SAR (measured) = 1.14 mW/g



Z-Axis PLOT for D835V2

Date/Time: 9/16/2010 9:14:11 PM

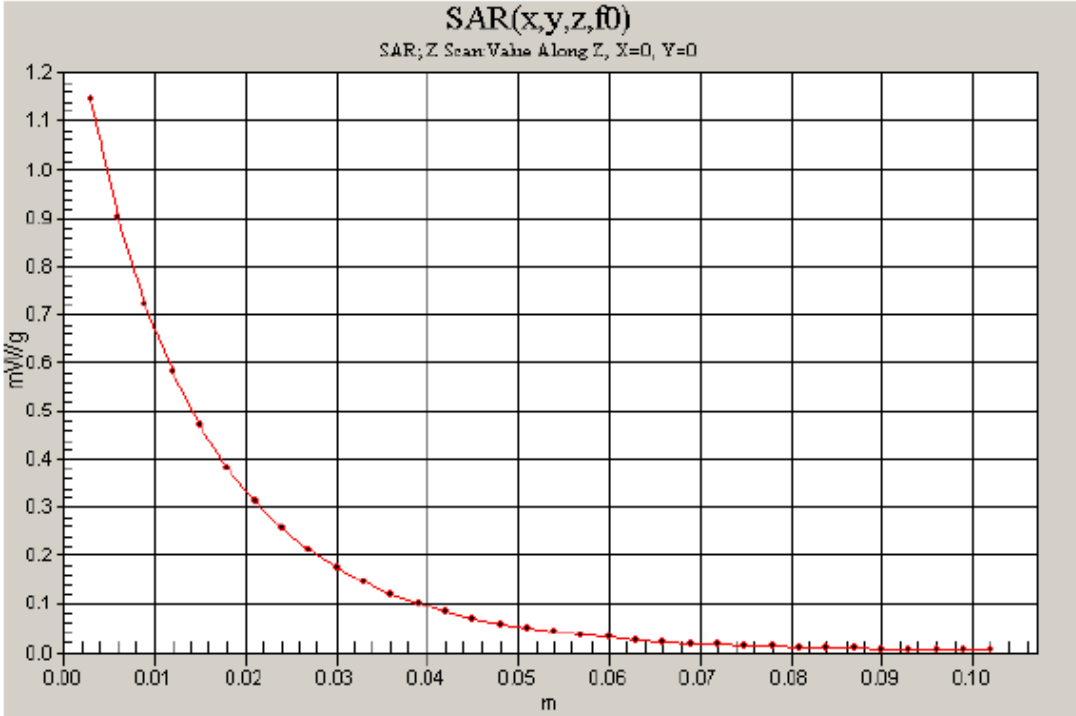
Test Laboratory: Compliance Certification Services

System Performance Check - D835V2

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:xxx

Communication System: CW 835; Frequency: 835 MHz;Duty Cycle: 1:1

d=15mm, Pin=100 mW/Z Scan (1x1x34): Measurement grid: dx=20mm, dy=20mm, dz=3mm
Maximum value of SAR (measured) = 1.15 mW/g



SYSTEM CHECK PLOT for D835V2

Date/Time: 9/17/2010 13:29:43 PM

Test Laboratory: Compliance Certification Services

System Performance Check - D835V2

DUT: D835V2; Type: D835V2; Serial: 4d002

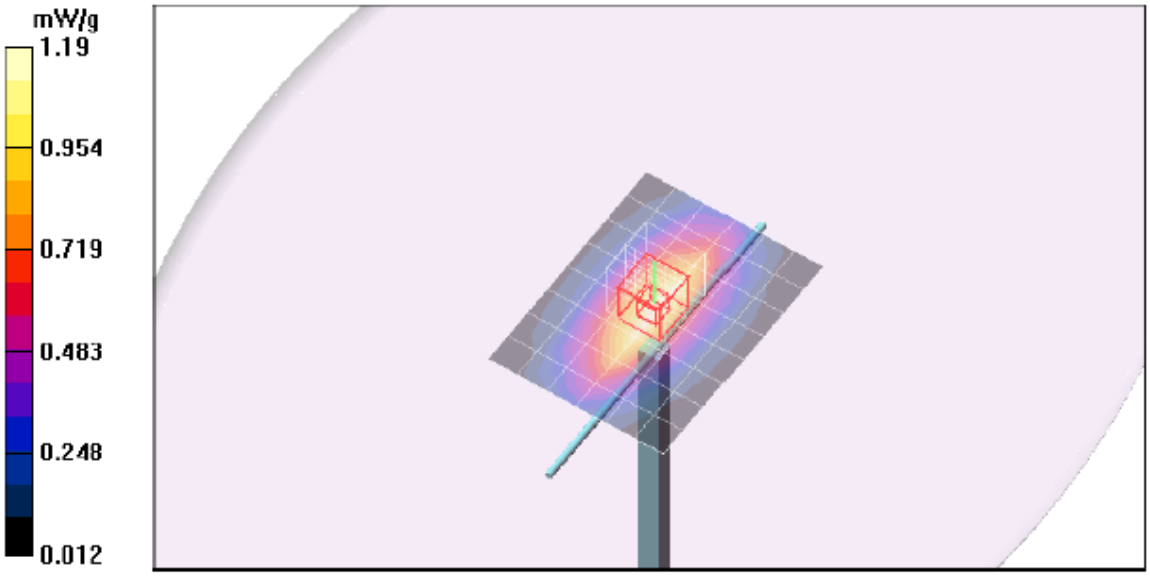
Communication System: CW 835MHz; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.988 mho/m; ε_r = 56.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

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: EX3DV3 - SN3531; ConvF(10.18, 10.18, 10.18); Calibrated: 2/23/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 7/21/2010
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:XXXX
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=15mm, Pin=100 mW/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.19 mW/g

d=15mm, Pin=100 mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 34.9 V/m; Power Drift = 0.013 dB
Peak SAR (extrapolated) = 1.52 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.685 mW/g
Maximum value of SAR (measured) = 1.20 mW/g



Z-Axis PLOT for D835V2

Date/Time: 9/17/2010 13:47:55 PM

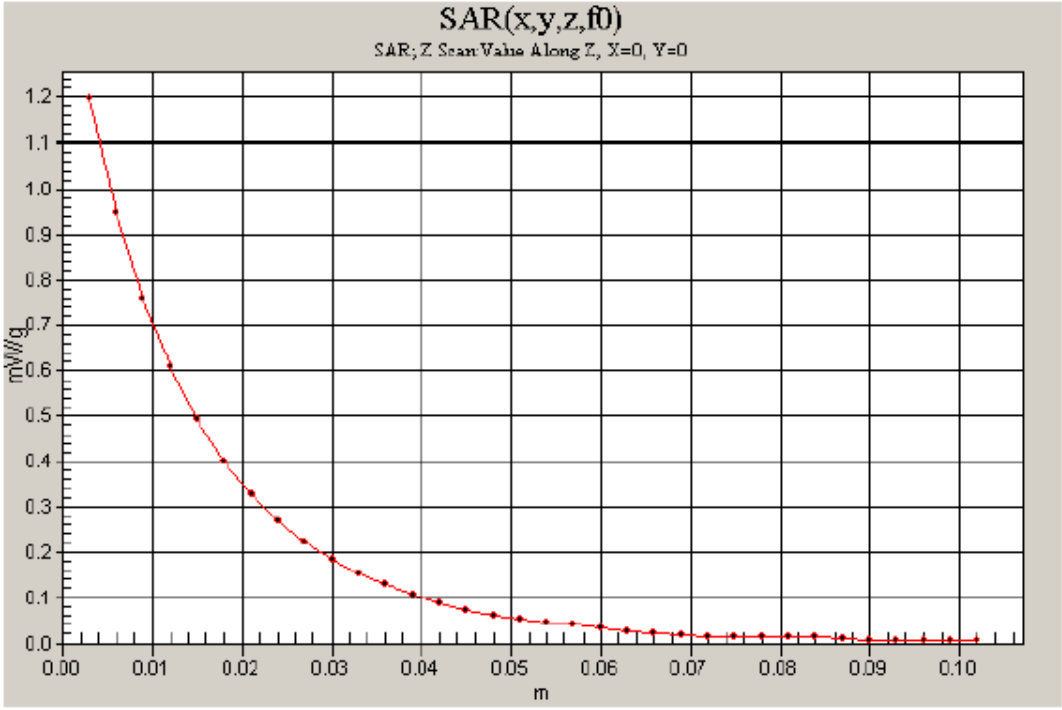
Test Laboratory: Compliance Certification Services

System Performance Check - D835V2

DUT: D835V2; Type: D835V2; Serial: 4d002

Communication System: CW 835MHz; Frequency: 835 MHz;Duty Cycle: 1:1

d=15mm, Pin=100 mW/Z Scan (1x1x34): Measurement grid: dx=20mm, dy=20mm, dz=3mm
Maximum value of SAR (measured) = 1.20 mW/g



SYSTEM CHECK PLOT for D1900V2

Date/Time: 9/12/2010 10:31:32 AM

Test Laboratory: Compliance Certification Services

System Performance Check - D1900V2

DUT: Dipole; Type: D1900V2; Serial: 5d043

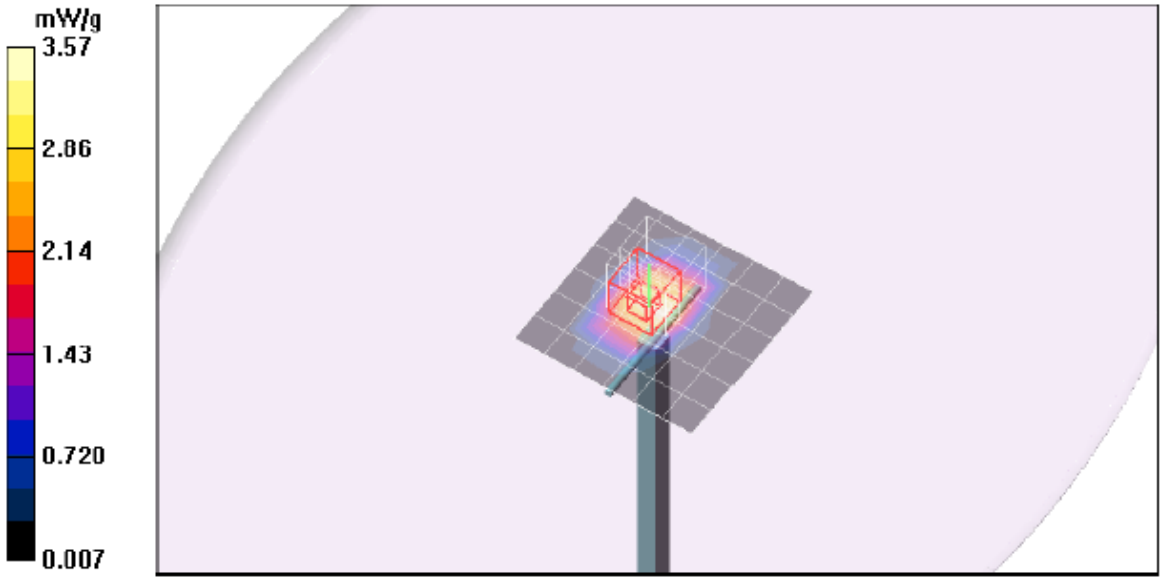
Communication System: System Check Signal - CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.5 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

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: EX3DV3 - SN3531; ConvF(8.04, 8.04, 8.04); Calibrated: 2/23/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 7/21/2010
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=100mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.57 mW/g

d=10mm, Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.0 V/m; Power Drift = -0.127 dB
Peak SAR (extrapolated) = 7.14 W/kg
SAR(1 g) = 3.97 mW/g; SAR(10 g) = 2.1 mW/g
Maximum value of SAR (measured) = 4.84 mW/g



Z-Axis PLOT for D1900V2

Date/Time: 9/12/2010 10:55:11 AM

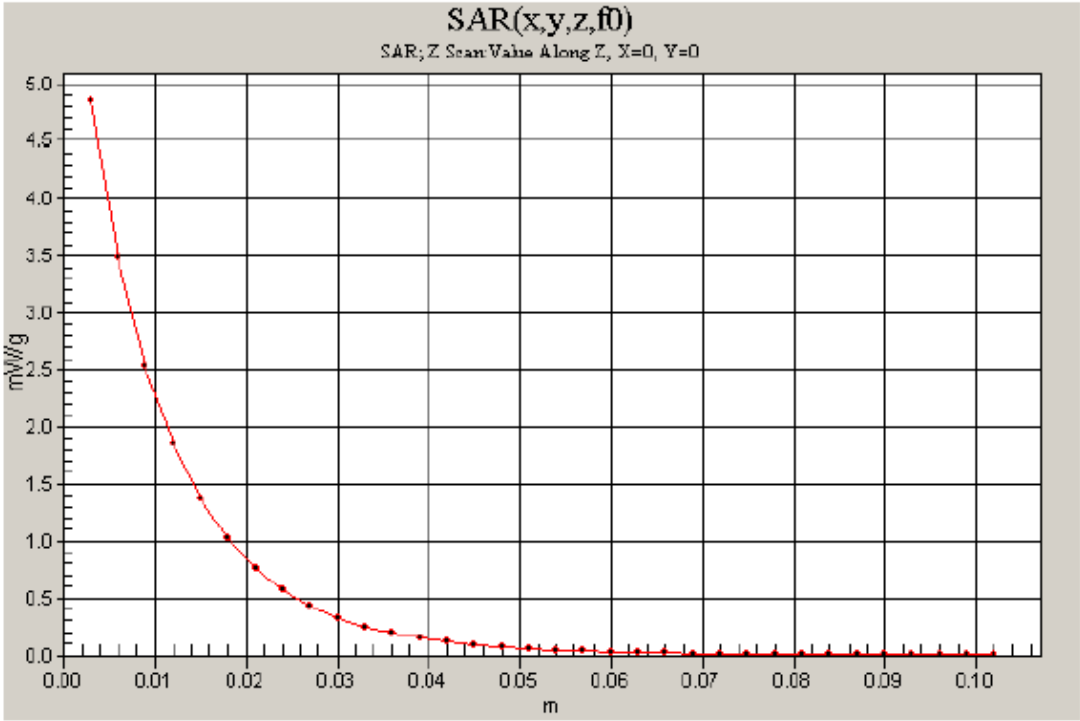
Test Laboratory: Compliance Certification Services

System Performance Check - D1900V2

DUT: Dipole; Type: D1900V2; Serial: 5d043

Communication System: System Check Signal - CW; Frequency: 1900 MHz;Duty Cycle: 1:1

d=10mm, Pin=100mW/Z Scan (1x1x34): Measurement grid: dx=20mm, dy=20mm, dz=3mm
Maximum value of SAR (measured) = 4.85 mW/g



SYSTEM CHECK PLOT for D1900V2

Date/Time: 9/13/2010 9:54:17 AM

Test Laboratory: Compliance Certification Services

System Performance Check - D1900V2

DUT: Dipole; Type: D1900V2; Serial: 5d043

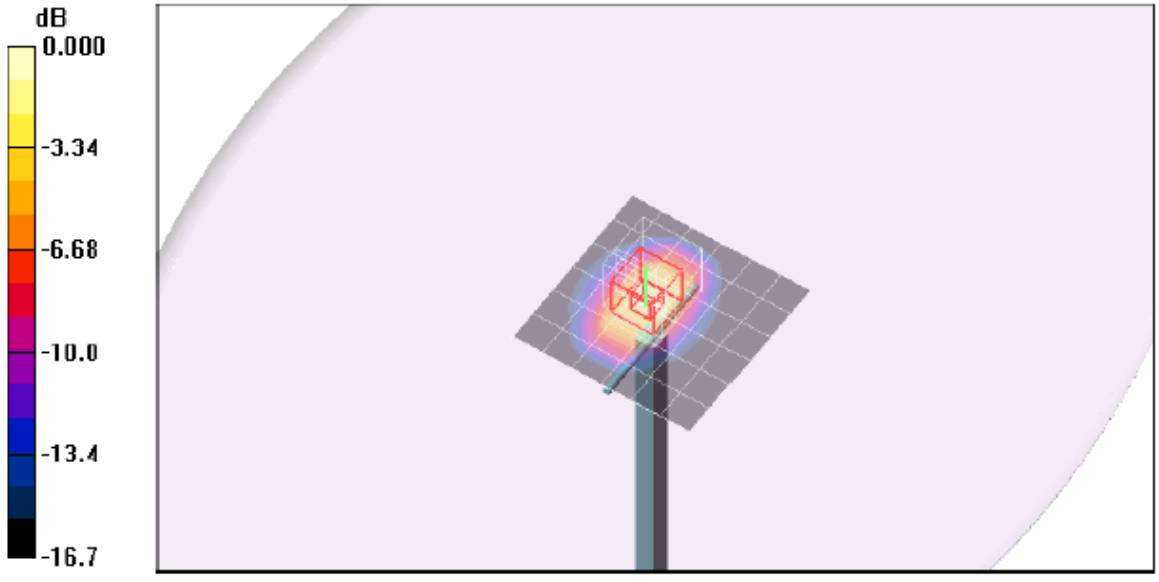
Communication System: System Check Signal - CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.5 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

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: EX3DV3 - SN3531; ConvF(8.04, 8.04, 8.04); Calibrated: 2/23/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 7/21/2010
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=100mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.75 mW/g

d=10mm, Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.8 V/m; Power Drift = 0.183 dB
Peak SAR (extrapolated) = 7.36 W/kg
SAR(1 g) = 4.15 mW/g; SAR(10 g) = 2.22 mW/g
Maximum value of SAR (measured) = 5.18 mW/g



0 dB = 5.18mW/g

Z-Axis PLOT for D1900V2

Date/Time: 9/13/2010 10:11:25 AM

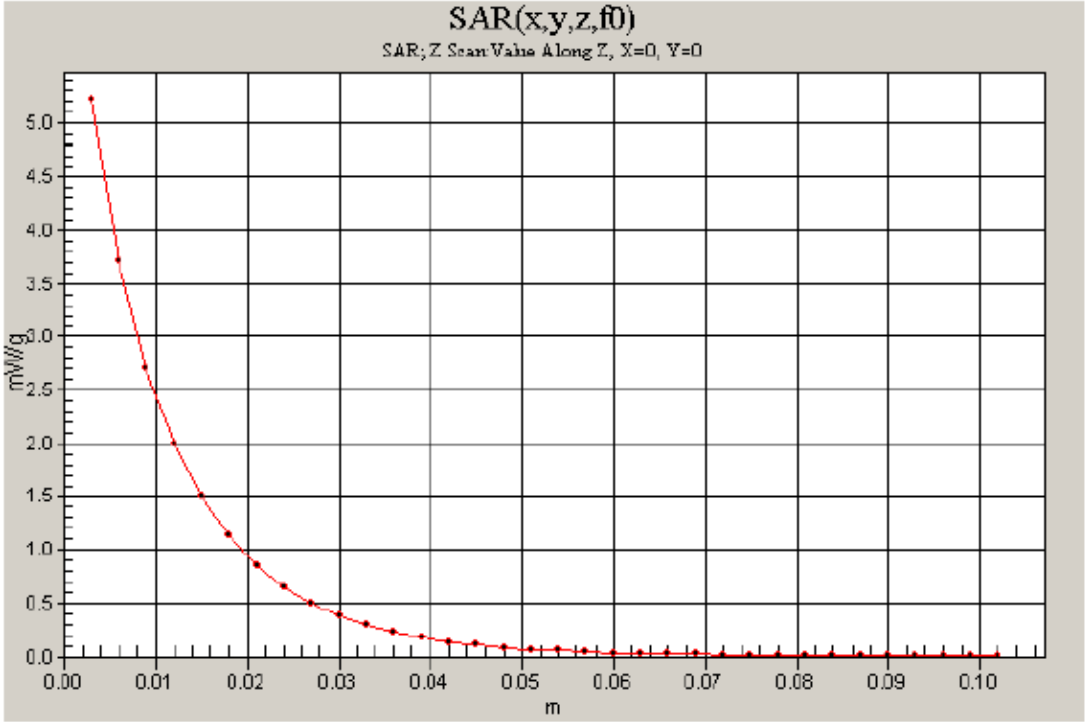
Test Laboratory: Compliance Certification Services

System Performance Check - D1900V2

DUT: Dipole; Type: D1900V2; Serial: 5d043

Communication System: System Check Signal - CW; Frequency: 1900 MHz;Duty Cycle: 1:1

d=10mm, Pin=100mW/Z Scan (1x1x34): Measurement grid: dx=20mm, dy=20mm, dz=3mm
Maximum value of SAR (measured) = 5.22 mW/g



SYSTEM CHECK PLOT for D1900V2

Date/Time: 9/14/2010 7:43:39 AM

Test Laboratory: Compliance Certification Services

System Performance Check - D1900V2

DUT: Dipole; Type: D1900V2; Serial: 5d043

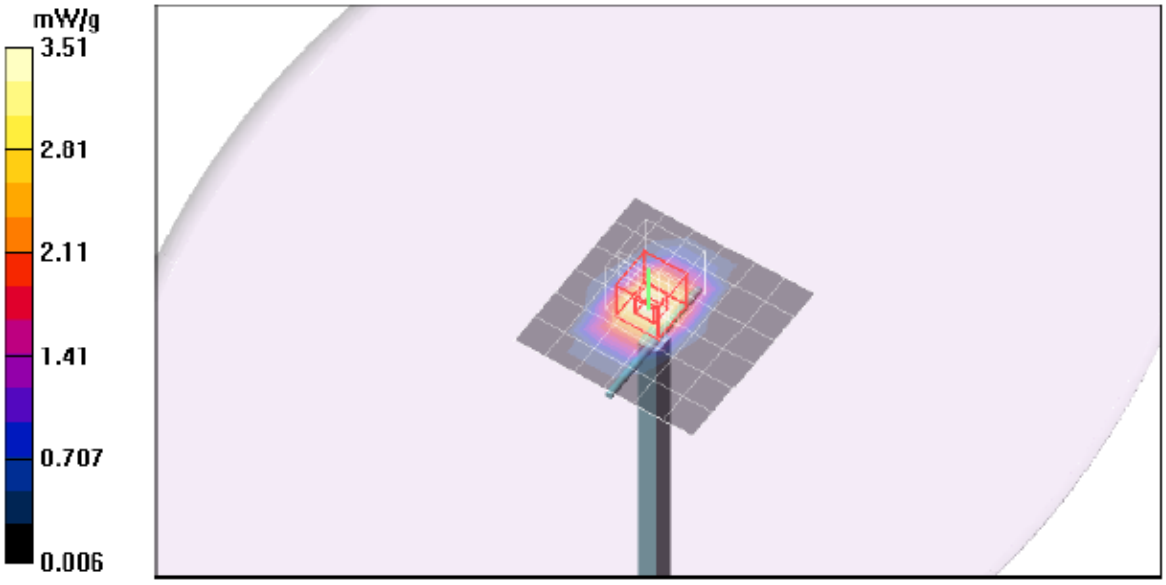
Communication System: System Check Signal - CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.5 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

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: EX3DV3 - SN3531; ConvF(8.04, 8.04, 8.04); Calibrated: 2/23/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 7/21/2010
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=100mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.51 mW/g

d=10mm, Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.7 V/m; Power Drift = 0.122 dB
Peak SAR (extrapolated) = 7.33 W/kg
SAR(1 g) = 4.09 mW/g; SAR(10 g) = 2.16 mW/g
Maximum value of SAR (measured) = 5.14 mW/g



Z-Axis PLOT for D1900V2

Date/Time: 9/14/2010 8:00:39 AM

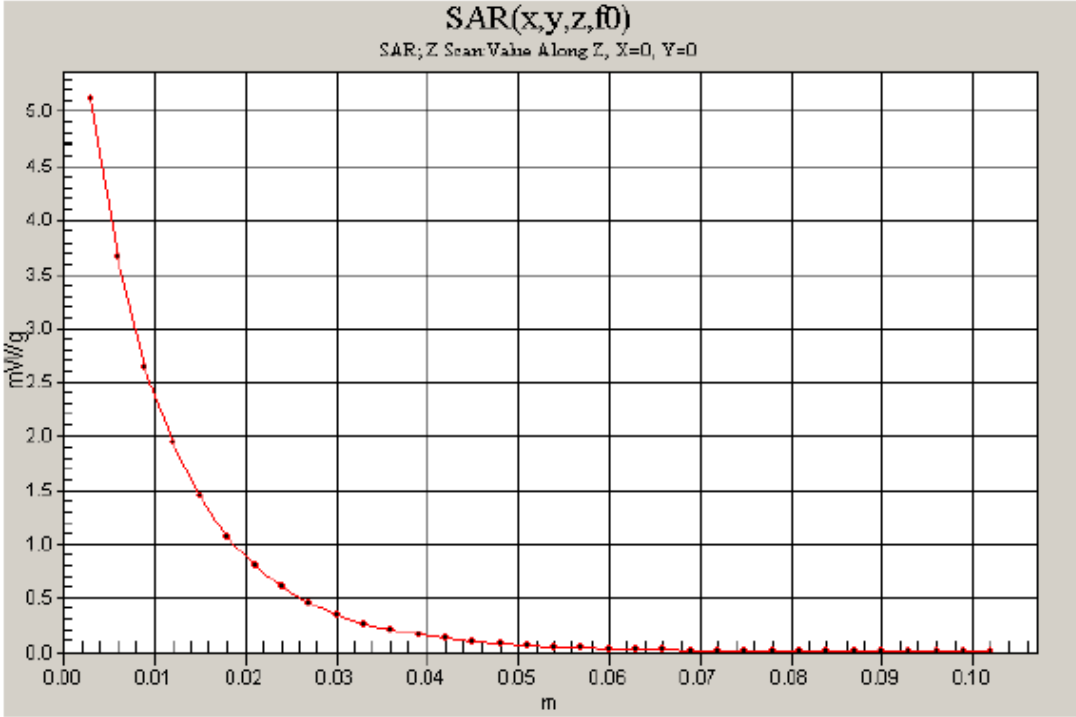
Test Laboratory: Compliance Certification Services

System Performance Check - D1900V2

DUT: Dipole; Type: D1900V2; Serial: 5d043

Communication System: System Check Signal - CW; Frequency: 1900 MHz;Duty Cycle: 1:1

d=10mm, Pin=100mW/Z Scan (1x1x34): Measurement grid: dx=20mm, dy=20mm, dz=3mm
Maximum value of SAR (measured) = 5.11 mW/g



10. RF OUTPUT POWER VERIFICATION

10.1. GPRS & EGPRS

GPRS (GMSK) - Coding Scheme: CS1

Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slot	Frame Avg Pwr
GSM850	128	824.2	32.0	23.0	31.9	25.9
	190	836.6	32.0	23.0	31.9	25.9
	251	848.8	32.0	23.0	31.9	25.9
GSM1900	512	1850.2	30.0	21.0	29.9	23.9
	661	1880.0	29.7	20.7	29.7	23.7
	810	1909.8	29.5	20.5	29.5	23.5

EGPRS (8PSK) - Coding Scheme: MCS5

Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slot	Frame Avg Pwr
GSM850	128	824.2	27.8	18.8	27.8	21.8
	190	836.6	27.8	18.8	27.8	21.8
	251	848.8	27.8	18.8	27.8	21.8
GSM1900	512	1850.2	26.6	20.6	26.6	20.6
	661	1880.0	26.3	20.3	26.3	20.3
	810	1909.8	26.2	20.2	26.2	20.2

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

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

10.2. UMTS RELEASE 99

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

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

Results

Rel 99 (12.2kbps RMC)

Band	Mode	UL Ch No.	DL Ch No.	f (MHz)	Avg Pwr (dBm)
UMTS850 (Band V)	Rel 99 12.2kbps RMC	4132	4357	826.4	24.90
		4182	4407	836.4	25.10
		4233	4458	846.6	25.00
UMTS1900 (Band II)	Rel 99 12.2kbps RMC	9262	9662	1852.4	25.00
		9400	9800	1880.0	25.30
		9538	9938	1907.6	24.40

10.3. UMTS HSDPA

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

	Mode	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

Results

Rel 6 HSDPA

Band	Mode	UL Ch No.	DL Ch No.	f (MHz)	Avg Pwr (dBm)
UMTS850 (Band V)	Subtest 1	4132	4357	826.4	24.50
		4182	4407	836.4	24.60
		4233	4458	846.6	24.50
	Subtest 2	4132	4357	826.4	24.50
		4182	4407	836.4	24.60
		4233	4458	846.6	24.50
	Subtest 3	4132	4357	826.4	24.00
		4182	4407	836.4	24.10
		4233	4458	846.6	23.90
	Subtest 4	4132	4357	826.4	23.90
		4182	4407	836.4	24.00
		4233	4458	846.6	23.80
UMTS1900 (Band II)	Subtest 1	9262	9662	1852.4	24.70
		9400	9800	1880.0	24.80
		9538	9938	1907.6	24.30
	Subtest 2	9262	9662	1852.4	24.40
		9400	9800	1880.0	24.80
		9538	9938	1907.6	23.90
	Subtest 3	9262	9662	1852.4	24.20
		9400	9800	1880.0	24.30
		9538	9938	1907.6	24.80
	Subtest 4	9262	9662	1852.4	24.20
		9400	9800	1880.0	24.30
		9538	9938	1907.6	23.80

Note: KDB 941225 D01 – Body SAR is not required for HSDPA when the maximum average output of each RF channel with HSDPA active is less than ¼ dB higher than that measured without HSDPA using 12.2 kbps RMC or the maximum SAR for 12.2 kbps RMC is < 75% (1.2 W/kg) of the SAR limit.

10.4. UMTS Rel 6 HSPA (HSDPA & HSUPA)

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

	Mode	Rel6 HSPA	Rel6 HSPA	Rel6 HSPA	Rel6 HSPA	Rel6 HSPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	15/15
	βec	209/225	12/15	30/15	2/15	24/15
	βc/βd	11/15	6/15	15/9	2/15	15/15
	βhs	22/15	12/15	30/15	4/15	30/15
	βed	1309/225	94/75	47/15 47/15	56/75	134/15
	CM (dB)	1.0	3.0	2.0	3.0	1.0
	MPR (dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27	

Results

Rel 6 HSDPA/HSUPA

Band	Mode	UL Ch No.	DL Ch No.	f (MHz)	Avg Tx Pwr (dBm)
UMTS850 (Band V)	Subtest 1	4132	4357	826.4	23.80
		4182	4407	836.4	23.90
		4233	4458	846.6	23.60
	Subtest 2	4132	4357	826.4	22.00
		4182	4407	836.4	22.10
		4233	4458	846.6	21.80
	Subtest 3	4132	4357	826.4	23.00
		4182	4407	836.4	23.10
		4233	4458	846.6	22.80
	Subtest 4	4132	4357	826.4	22.10
		4182	4407	836.4	22.20
		4233	4458	846.6	21.90
	Subtest 5	4132	4357	826.4	23.60
		4182	4407	836.4	23.70
		4233	4458	846.6	23.80
UMTS1900 (Band II)	Subtest 1	9262	9662	1852.4	23.90
		9400	9800	1880.0	23.80
		9538	9938	1907.6	23.60
	Subtest 2	9262	9662	1852.4	22.10
		9400	9800	1880.0	22.00
		9538	9938	1907.6	21.80
	Subtest 3	9262	9662	1852.4	23.00
		9400	9800	1880.0	22.90
		9538	9938	1907.6	22.80
	Subtest 4	9262	9662	1852.4	22.20
		9400	9800	1880.0	22.10
		9538	9938	1907.6	21.90
	Subtest 5	9262	9662	1852.4	23.80
		9400	9800	1880.0	23.70
		9538	9938	1907.6	23.60

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

10.5. CDMA2000 1xRTT

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.

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

Application	Rev, License
CDMA2000 Mobile Test	B.15.18

- Protocol Rev > 6 (IS-2000-0)
- System ID: 8 (Cell) & 4183 (PCS); NID: 65535 (Cell & PCS); Reg. Ch. #.: 384 (Cell) & 600 (PCS)
- Radio Config (RC) > Please see following table for 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 > All Up bits (Maximum TxPout)

Cellular Band

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)					
		Ch. 1013 / 824.7MHz		Ch. 384 / 836.52 MHz		Ch. 777 / 848.31 MHz	
		Average	Peak	Average	Peak	Average	Peak
RC1	2 (Loopback)	24.56		24.30		24.40	
	55 (Loopback)	24.55		24.61		24.45	
RC2	9 (Loopback)	24,52		24.60		24.50	
	55 (Loopback)	24.55		24.65		24.49	
RC3	55 (Loopback)	24.56		24.68		24.57	
	32 (+ F-SCH)	**24.58**		**24.77**		**24.59**	

PCS Band

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)					
		Ch. 25 / 1851.25 MHz		Ch. 600 / 1880 MHz		Ch. 1175 / 1908.75 MHz	
		Average	Peak	Average	Peak	Average	Peak
RC1	2 (Loopback)	24.91		25.02		24.54	
	55 (Loopback)	24.74		25.05		24.52	
RC2	9 (Loopback)	24.67		24.97		24.46	
	55 (Loopback)	24.59		24.92		24.45	
RC3	55 (Loopback)	24.68		25.11		24.53	
	32 (+ F-SCH)	**25.00**		**25.12**		**25.10**	

10.6. CDMA200 1xEv-Do

Maximum output power is verified on the Low, Middle and High channels according to procedures in 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

10.6.1. Release 0 (Rel. 0)

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

EVDO Release 0 - RTAP

- Call Setup > Shift & Preset
- Call Control:
  - Access Network Info > Cell Parameters > Sector ID > 00800580 (Cell, Reg. # 589): 00000000 : 00000000 : 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 > 00840AC0 : 00000000 : 00000000 : 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

Band	FTAP Rate	RTAP Rate	Channel	f (MHz)	Conducted power (dBm)	
					Average	Peak
Cellular	307.2 kbps (2 slot, QPSK)	153.6 kbps	1013	824.70	24.40	
			384	836.52	24.50	
			777	848.31	24.30	
PCS	307.2 kbps (2 slot, QPSK)	153.6 kbps	25	1851.25	24.50	
			600	1880.00	24.70	
			1175	1908.75	24.30	

10.6.2. Revision A (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.09.13

EVDO Rev. A – RETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2 > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00800580 (Cell, Reg # 589): 00000000: 00000000: > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Rev. A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2 > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00840AC0: 00000000: 00000000: 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

Band	FETAP Traffic Format	RETAP Data Payload Size	Channel	f (MHz)	Conducted power (dBm)	
					Average	Peak
Cellular	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	1013	824.70	24.10	
			384	836.52	24.20	
			777	848.31	24.10	
PCS	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	25	1851.25	24.26	
			600	1880.00	24.28	
			1175	1908.75	24.00	

11. SUMMARY OF SAR TEST RESULTS

11.1. GPRS850

According to KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE vo1, SAR test reduction requirements are applicable for this device to demonstrate RF exposure compliance.

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

1. Laptop Mode - Lap-held (with the display open at 90° to the keyboard)

Separation distance: 19.5 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM850	GPRS 2 slots	Retracted	128	824.2		
			190	836.6	0.00748	0.00717
			251	848.8		
		Extended	128	824.2		
			190	836.6	0.018	0.015
			251	848.8		

2. Tablet Mode – Bottom face

Separation distance: 2.6 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM850	GPRS 2 slots	Retracted	128	824.2		
			190	836.6	0.00899	0.00846
			251	848.8		
		Extended	128	824.2		
			190	836.6	**0.390**	0.267
			251	848.8		

3. Tablet Mode - Primary Landscape (No SAR)

Separation distance: 17.5 cm from Main antenna-to-phantom

This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

4. Tablet Mode - Secondary Landscape

Separation distance: 0.4 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM850	GPRS 2 slots	Retracted	128	824.2		
			190	836.6	0.290	0.122
			251	848.8		

5. Tablet Mode - Primary Portrait

Separation distance: 1.8 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM850	GPRS 2 slots	Retracted	128	824.2		
			190	836.6	0.021	0.012
			251	848.8		

Separation distance: 6.9 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM850	GPRS 2 slots	Extended	128	824.2		
			190	836.6	0.360	0.237
			251	848.8		

6. Tablet Mode - Secondary Portrait (No SAR)

Separation distance: 19.0 cm from Main antenna-to-phantom

This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

11.2. GPRS1900

Note: According to KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE vo1, SAR test reduction requirements are applicable for this device to demonstrate RF exposure compliance.

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

1. Laptop Mode - Lap-held (with the display open at 90° to the keyboard)

Separation distance: 19.5 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM1900	GPRS 2 slots	Retracted	512	1850.2		
			661	1880.0	0.018	0.018
			810	1909.8		
		Extended	512	1850.2		
			661	1880.0	0.026	0.023
			810	1909.8		

2. Tablet – Bottom face

Separation distance: 2.6 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM1900	GPRS 2 slots	Retracted	512	1850.2		
			661	1880.0	0.028	0.023
			810	1909.8		
		Extended	512	1850.2		
			661	1880.0	0.144	0.100
			810	1909.8		

3. Tablet Mode - Primary Landscape (No SAR)

Separation distance: 17.5 cm from Main antenna-to-phantom

This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

4. Tablet Mode - Secondary Landscape

Separation distance: 0.4 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM1900	GPRS 2 slots	Retracted	512	1850.2		
			661	1880.0	**0.548**	0.219
			810	1909.8		

5. Tablet Mode - Primary Portrait

Separation distance: 1.8 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM1900	GPRS 2 slots	Retracted	512	1850.2		
			661	1880.0	0.062	0.033
			810	1909.8		

Separation distance: 6.9 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM1900	GPRS 2 slots	Extended	512	1850.2		
			661	1880.0	0.397	0.221
			810	1909.8		

6. Tablet Mode - Secondary Portrait (No SAR)

Separation distance: 19.0 cm from Main antenna-to-phantom
This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

11.3. UMTS BAND V

Test reduction considerations:

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

1. Laptop Mode - Lap-held (with the display open at 90° to the keyboard)

Separation distance: 19.5 cm from Main antenna-to-phantom

Band	Mode	Antenna position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band V	R99 12.2kbps RMC	Retracted	4132	4357	826.4		
			4183	4408	836.6	0.0075	0.00719
			4233	4458	846.6		
		Extended	4132	4357	826.4		
			4183	4408	836.6	0.017	0.014
			4233	4458	846.6		

2. Tablet – Bottom face

Separation distance: 2.6 cm from Main antenna-to-phantom

Band	Mode	Antenna position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band V	R99 12.2kbps RMC	Retracted	4132	4357	826.4		
			4183	4408	836.6	0.00866	0.00827
			4233	4458	846.6		
		Extended	4132	4357	826.4		
			4183	4408	836.6	0.297	0.206
			4233	4458	846.6		

3. Tablet Mode - Primary Landscape (No SAR)

Separation distance: 17.5 cm from Main antenna-to-phantom

This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

4. Tablet Mode - Secondary Landscape

Separation distance: 0.4 cm from Main antenna-to-phantom

Band	Mode	Antenna position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band V	R99 12.2kbps RMC	Retracted	4132	4357	826.4		
			4183	4408	836.6	0.252	0.112
			4233	4458	846.6		

5. Tablet Mode - Primary Portrait

Separation distance: 1.8 cm from Main antenna-to-phantom

Band	Mode	Antenna position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band V	R99 12.2kbps RMC	Retracted	4132	4357	826.4		
			4183	4408	836.6	0.023	0.013
			4233	4458	846.6		

Separation distance: 6.9 cm from Main antenna-to-phantom

Band	Mode	Antenna position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band V	R99 12.2kbps RMC	Extended	4132	4357	826.4		
			4183	4408	836.6	0.276	0.178
			4233	4458	846.6		

6. Tablet Mode - Secondary Portrait (No SAR)

Separation distance: 19.0 cm from Main antenna-to-phantom

This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

11.4. UMTS BAND II

Test reduction considerations:

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

1. Laptop Mode - Lap-held (with the display open at 90° to the keyboard)

Separation distance: 19.5 cm from Main antenna-to-phantom

Band	Mode	Antenna position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band II	R99 12.2kbps RMC	Retracted	9262	9662	1850.2		
			9400	9800	1880.0	0.018	0.017
			9538	9938	1907.6		
Band II	R99 12.2kbps RMC	Extended	9262	9662	1850.2		
			9400	9800	1880.0	0.025	0.023
			9538	9938	1907.6		

2. Tablet – Bottom face

Separation distance: 2.6 cm from Main antenna-to-phantom

Band	Mode	Antenna position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band II	R99 12.2kbps RMC	Retracted	9262	9662	1850.2		
			9400	9800	1880.0	0.025	0.021
			9538	9938	1907.6		
Band II	R99 12.2kbps RMC	Extended	9262	9662	1850.2		
			9400	9800	1880.0	0.141	0.097
			9538	9938	1907.6		

3. Tablet Mode - Primary Landscape (No SAR)

Separation distance: 17.5 cm from Main antenna-to-phantom
This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

4. Tablet Mode - Secondary Landscape

Separation distance: 0.4 cm from Main antenna-to-phantom

Band	Mode	Antenna position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band II	R99 12.2kbps RMC	Retracted	9262	9662	1850.2		
			9400	9800	1880.0	0.419	0.168
			9538	9938	1907.6		

5. Tablet Mode - Primary Portrait

Separation distance: 1.8 cm from Main antenna-to-phantom

Band	Mode	Antenna position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band II	R99 12.2kbps RMC	Retracted	9262	9662	1850.2		
			9400	9800	1880.0	0.041	0.022
			9538	9938	1907.6		

Separation distance: 6.9 cm from Main antenna-to-phantom

Band	Mode	Antenna position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band II	R99 12.2kbps RMC	Extended	9262	9662	1850.2		
			9400	9800	1880.0	0.351	0.197
			9538	9938	1907.6		

6. Tablet Mode - Secondary Portrait (No SAR)

Separation distance: 19.0 cm from Main antenna-to-phantom

This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

11.5. CDMA Cellular

Due to the maximum average output of 1x RTT (RC3, SO32) is greater than ¼ dB higher than that measured for Rel. 0 and Rev A, thus Body SAR measurement procedures in the CDMA 200 1 x Handsets section should be applied.

1. Laptop Mode - Lap-held (with the display open at 90° to the keyboard)

Separation distance: 19.5 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
Cellular	1xRTT (RC3, SO32)	Retracted	1013	824.70		
			384	836.52	0.00742	0.00703
			777	848.31		
		Extended	1013	824.70		
			384	836.52	0.017	0.014
			777	848.31		

2. Tablet – Bottom face

Separation distance: 2.6 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
Cellular	1xRTT (RC3, SO32)	Retracted	1013	824.70		
			384	836.52	0.00982	0.00903
			777	848.31		
		Extended	1013	824.70		
			384	836.52	0.357	0.247
			777	848.31		

3. Tablet Mode - Primary Landscape (No SAR)

Separation distance: 17.5 cm from Main antenna-to-phantom
This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

4. Tablet Mode - Secondary Landscape

Separation distance: 0.4 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
Cellular	1xRTT (RC3, SO32)	Retracted	1013	824.70		
			384	836.52	0.304	0.126
			777	848.31		
	1xRTT (RC3, SO55)	Retracted	384	836.52	0.275	0.115

5. Tablet Mode - Primary Portrait

Separation distance: 1.8 cm from Main antenna-to-phantom

Band	Mode	Antenna	Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
Cellular	1xRTT (RC3, SO32)	Retracted	1013	824.70		
			384	836.52	0.023	0.016
			777	848.31		

Separation distance: 6.9 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
Cellular	1xRTT (RC3, SO32)	Extended	1013	824.70		
			384	836.52	0.390	0.234
			777	848.31		

6. Tablet Mode - Secondary Portrait (No SAR)

Separation distance: 19.0 cm from Main antenna-to-phantom

This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

11.6. CDMA PCS

Due to the maximum average output of 1x RTT (RC3, SO32) is greater than ¼ dB higher than that measured for Rel. 0 and Rev A, thus Body SAR measurement procedures in the CDMA 200 1 x Handsets section should be applied.

1. Laptop Mode - Lap-held (with the display open at 90° to the keyboard)

Separation distance: 19.5 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
PCS	1xRTT (RC3, SO32)	Retracted	25	1851.25		
			600	1880.00	0.020	0.018
			1175	1908.75		
		Extended	25	1851.25		
			600	1880.00	0.037	0.027
			1175	1908.75		

2. Tablet – Bottom face

Separation distance: 2.6 cm from Main antenna-to-phantom

Antenna position	Mode	Antenna position	Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
PCS	1xRTT (RC3, SO32)	Retracted	25	1851.25		
			600	1880.00	0.039	0.026
			1175	1908.75		
		Extended	25	1851.25		
			600	1880.00	0.202	0.132
			1175	1908.75		

3. Tablet Mode - Primary Landscape (No SAR)

Separation distance: 17.5 cm from Main antenna-to-phantom

This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

4. Tablet Mode - Secondary Landscape

Separation distance: 0.4 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
PCS	1xRTT (RC3, SO32)	Retracted	25	1851.25	0.581	0.236
			600	1880.00	0.648	0.257
			1175	1908.75	**0.901**	0.356
	1xRTT (RC3, SO55)	Retracted	1175	1908.75	0.87	0.345

5. Tablet Mode - Primary Portrait

Separation distance: 1.8 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
PCS	1xRTT (RC3, SO32)	Retracted	25	1851.25		
			600	1880.00	0.186	0.100
			1175	1908.75		

Separation distance: 6.9 cm from Main antenna-to-phantom

Band	Mode	Antenna position	Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
PCS	1xRTT (RC3, SO32)	Extended	25	1851.25		
			600	1880.00	0.675	0.377
			1175	1908.75		

6. Tablet Mode - Secondary Portrait (No SAR)

Separation distance: 19.0 cm from Main antenna-to-phantom

This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2), SAR is required only for the edge with the most conservative exposure conditions.

12. WORST-CASE SAR TEST PLOTS

Worst-case SAR Plot for Part 22

Date/Time: 9/17/2010 9:56:34 AM

Test Laboratory: Compliance Certification Services

Cellular 850_Bottom face

DUT: Fujitsu-Australia; Type: NA; Serial: NA

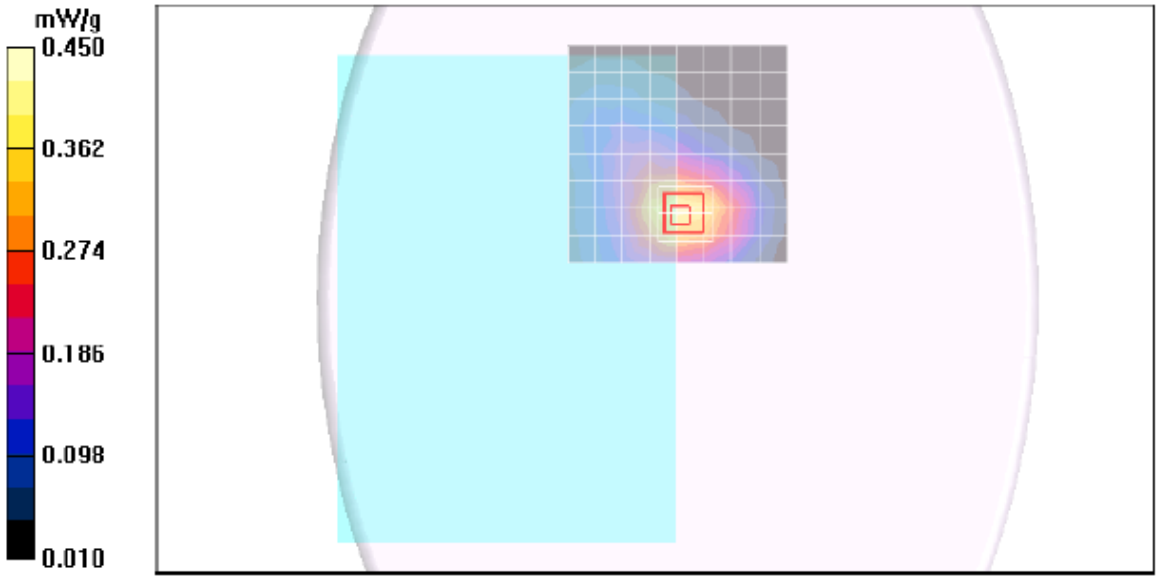
Communication System: GSM850; Frequency: 836.6 MHz;Duty Cycle: 1:4
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.986 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

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: EX3DV3 - SN3531; ConvF(10.18, 10.18, 10.18); Calibrated: 2/23/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 7/21/2010
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

2 slot_M-ch_Ant extracted/Area Scan (9x9x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.415 mW/g

2 slot_M-ch_Ant extracted/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 20.6 V/m; Power Drift = 0.072 dB
Peak SAR (extrapolated) = 0.559 W/kg
SAR(1 g) = 0.390 mW/g; SAR(10 g) = 0.267 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.449 mW/g



Worst-case SAR Plot for Part 22 – Z plot

Date/Time: 9/17/2010 10:19:23 AM

Test Laboratory: Compliance Certification Services

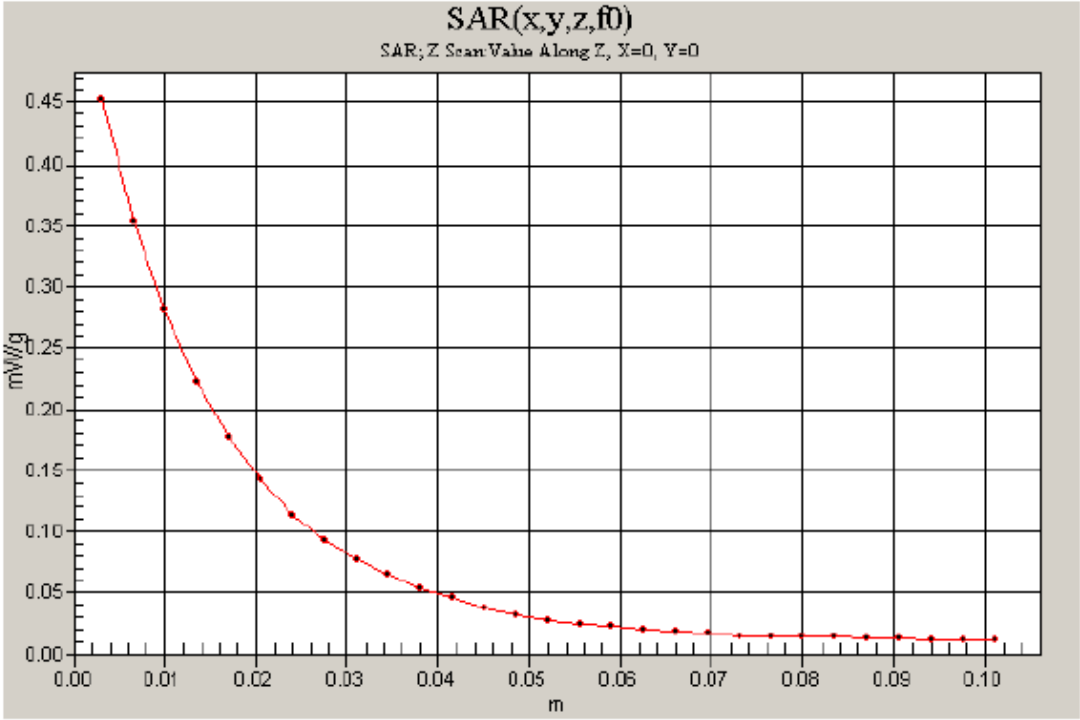
Cellular 850_Bottom face

DUT: Fujitsu-Australia; Type: NA; Serial: NA

Communication System: GSM850; Frequency: 836.6 MHz;Duty Cycle: 1:4

2 slot_M-ch_Ant extracted/Z Scan (1x1x29): Measurement grid: dx=20mm, dy=20mm, dz=3.5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.453 mW/g



Worst-case SAR Plot for Part 24

Date/Time: 9/13/2010 3:54:24 PM

Test Laboratory: Compliance Certification Services

PCS 1900_Secondary Landscape

DUT: Fujitsu-Australia; Type: NA; Serial: NA

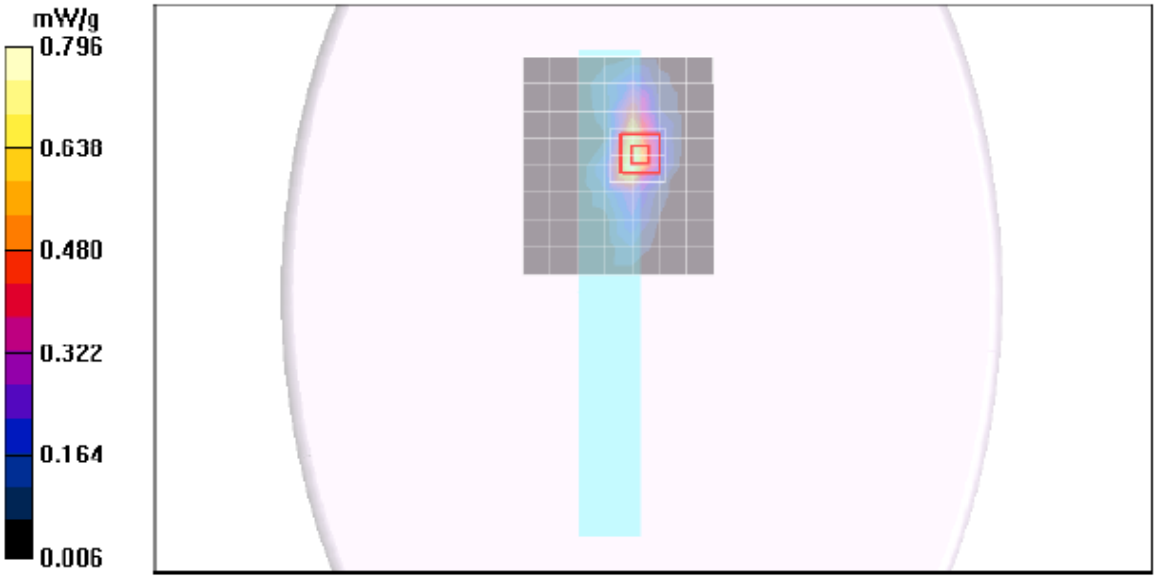
Communication System: CDMA PCS Band; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1908.75 MHz; σ = 1.52 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

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: EX3DV3 - SN3531; ConvF(8.04, 8.04, 8.04); Calibrated: 2/23/2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 7/21/2010
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

H-ch_Ant retracted/Area Scan (8x9x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.796 mW/g

H-ch_Ant retracted/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 23.3 V/m; Power Drift = -0.028 dB
Peak SAR (extrapolated) = 2.16 W/kg
SAR(1 g) = 0.901 mW/g; SAR(10 g) = 0.356 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.27 mW/g



Worst-case SAR Plot for Part 24 - Z plot

Date/Time: 9/13/2010 4:24:44 PM

Test Laboratory: Compliance Certification Services

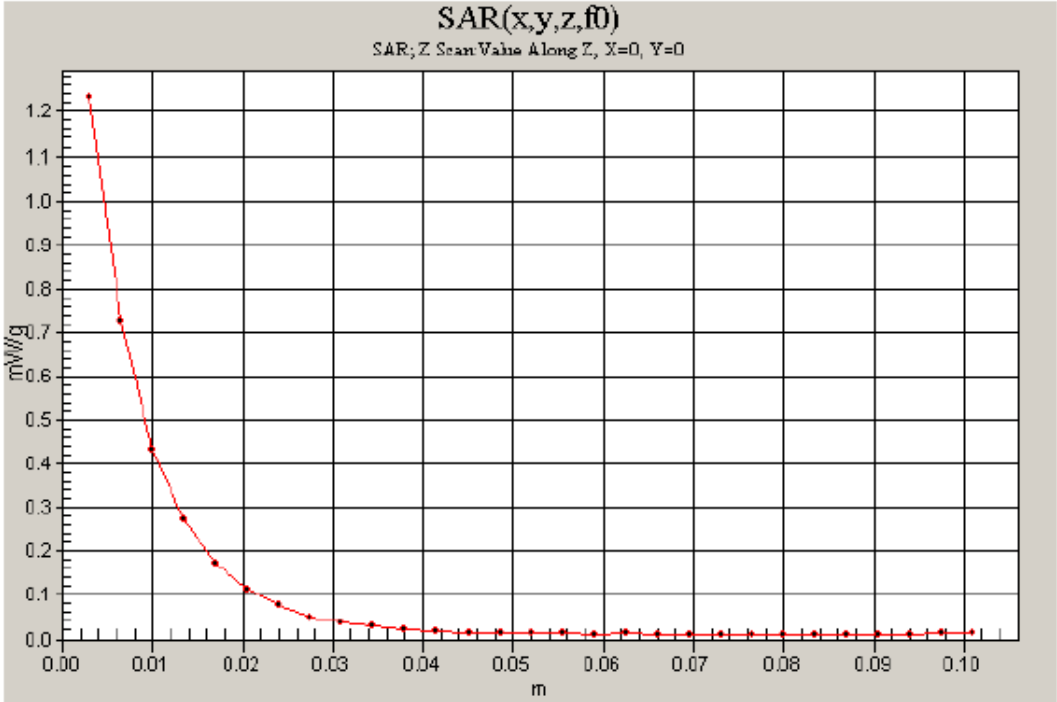
PCS 1900_Secondary Landscape

DUT: Fujitsu-Australia; Type: NA; Serial: NA

Communication System: CDMA PCS Band; Frequency: 1908.75 MHz;Duty Cycle: 1:1

H-ch_Ant retracted/Z Scan (1x1x29): Measurement grid: dx=20mm, dy=20mm, dz=3.5mm

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



13. KDB 447498 SIMULTANEOUS TRANSMISSION SAR EVAULATION

Acc. to KDB 447498 4) b)
iii) For each edge positioned closest to the user, simultaneous transmission SAR evaluation is not required when the simultaneous transmitting antennas along that edge are:
(1) located < 5 cm from the edge and the sum of the stand-alone SAR is < the SAR limit for these antennas or the SAR to peak location separation ratios are < 0.3 for all antenna pairs.

Finding: When the EUT is positioned at the edge (Secondary Landscape) configuration, WWAN and WiFi antenna are within 5 cm to the body of user.

The sum of the stand-alone SAR and the SAR to peak location separation ratios
WWAN (Gobi2000) & WiFi (Fujitsu, FCC ID: EJE-WB0083/EJE-WL0023, Dated of Grant: 10/12/2010)

WWAM PCS Band + WiFi						
Tes position	Highest 1-g SAR (W/kg)			∑ 1g SAR (W/kg)	SAR to peak location	
	WWAN		WiFi 2.4G		Separation (cm)	Ratio
Edge - Secondary Landscape	GPRS1900	0.548	0.278	0.826	n/a	n/a
	UMTS B II	0.419		0.697	n/a	n/a
	CDMA PCS	0.901		1.179	n/a	n/a
	Highest 1-g SAR (W/kg)			∑ 1g SAR (W/kg)	SAR to peak location	
	WWAN		WiFi 5G		Separation (cm)	Ratio
	GPRS1900	0.548	1.10	**1.648**	7.7	0.214
	UMTS B II	0.419		1.519	7.7	0.197
	CDMA PCS	0.901		**2.001**	7.7	0.260
WWAN Cell Band + WiFi						
Tes position	Highest 1-g SAR (W/kg)			∑ 1g SAR (W/kg)	SAR to peak location	
	WWAN		WiFi 2.4G		Separation (cm)	Ratio
Edge - Secondary Landscape	GPRS850	0.290	0.278	0.568	n/a	n/a
	UMTS B V	0.252		0.530	n/a	n/a
	CDMA Cell	0.304		0.582	n/a	n/a
	Highest 1-g SAR (W/kg)			∑ 1g SAR (W/kg)	SAR to peak location	
	WWAN		WiFi 5 G		Separation (cm)	Ratio
	GPRS850	0.290	1.10	1.390	9	0.154
	UMTS B V	0.252		1.352	9	0.150
	CDMA Cell	0.304		1.404	9	0.156

CONCLUSIONS:

WWAN – WiFi (EJE-WL0023): Simultaneous transmission is SAR not required for WWAN & WiFi because the sum of the 1-g SA is < 1.6 W/kg or the SAR to peak location separation ratios are < 0.3 for all antenna pairs.

WWAN – WiFi/BT (EJE-WB0023): Simultaneous transmission is SAR not required for WWAN & WiFi/BT because the sum of the 1-g SA is < 1.6 W/kg or the SAR to peak location separation ratios are < 0.3 for all antenna pairs.

The sum of the stand-alone SAR and the SAR to peak location separation ratios
WWAN (Gobi2000) & WiFi (Atheros, FCC ID: PPD-AR5BHB92-F, dated of Grant: 10/19/10)

WWAM PCS Band + WiFi						
Tes position	Highest 1-g SAR (W/kg)			∑ 1g SAR (W/kg)	SAR to peak location	
	WWAN		WiFi 2.4G		Separation (cm)	Ratio
Edge - Secondary Landscape	GPRS1900	0.548	0.240	0.788	n/a	n/a
	UMTS B II	0.419		0.659	n/a	n/a
	CDMA PCS	0.901		1.141	n/a	n/a
	Highest 1-g SAR (W/kg)			∑ 1g SAR (W/kg)	SAR to peak location	
	WWAN		WiFi 5G		Separation (cm)	Ratio
	GPRS1900	0.548	1.04	1.588	7.7	0.206
	UMTS B II	0.419		1.459	7.7	0.189
	CDMA PCS	0.901		**1.941**	7.7	0.252
WWAM Cell Band + WiFi						
Tes position	Highest 1-g SAR (W/kg)			∑ 1g SAR (W/kg)	SAR to peak location	
	WWAN		WiFi 2.4G		Separation (cm)	Ratio
Edge - Secondary Landscape	GPRS850	0.290	0.240	0.530	n/a	n/a
	UMTS B V	0.252		0.492	n/a	n/a
	CDMA Cell	0.304		0.544	n/a	n/a
	Highest 1-g SAR (W/kg)			∑ 1g SAR (W/kg)	SAR to peak location	
	WWAN		WiFi 5 G		Separation (cm)	Ratio
	GPRS850	0.290	1.04	1.330	9	0.148
	UMTS B V	0.252		1.292	9	0.144
	CDMA Cell	0.304		1.344	9	0.149

CONCLUSIONS:

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

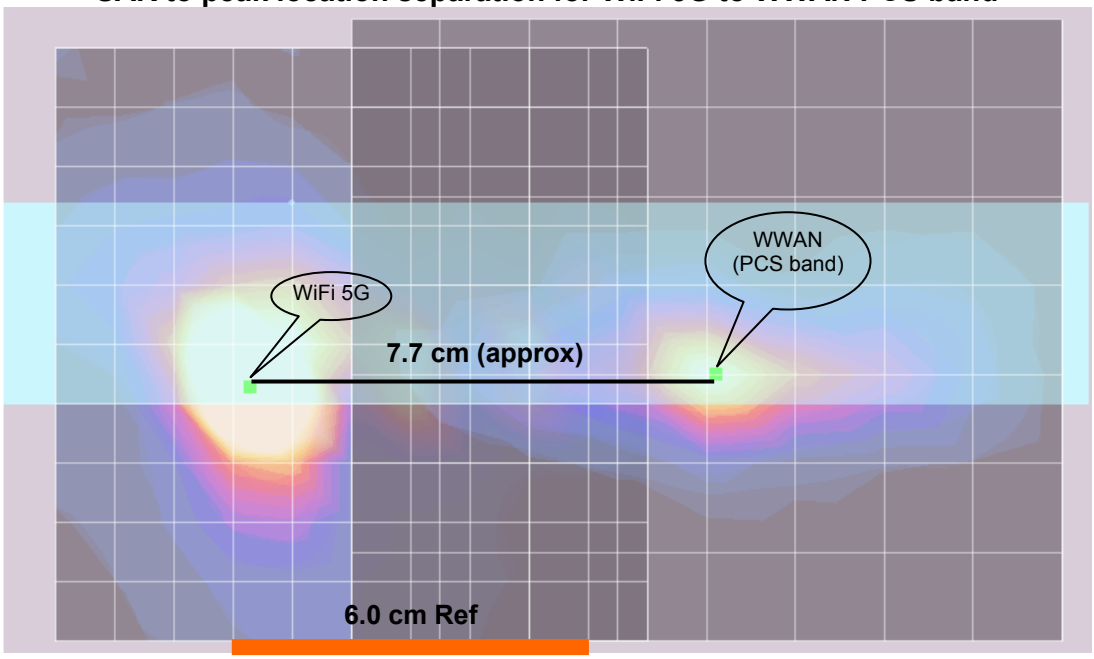
The sum of the stand-alone SAR & the SAR to peak location separation ratios
WWAN (Gobi2000) & WiFi (Atheros. FCC ID: PPD-AR5B97-F)

WWAM PCS Band + WiFi						
Tes position	Highest 1-g SAR (W/kg)			∑ 1g SAR (W/kg)	SAR to peak location	
	WWAN		WiFi 2.4G		Separation (cm)	Ratio
Edge - Secondary Landscape	GPRS1900	0.548	0.368	0.916	n/a	n/a
	UMTS B II	0.419		0.787	n/a	n/a
	CDMA PCS	0.901		1.269	n/a	n/a
WWAM Cell Band + WiFi						
Tes position	Highest 1-g SAR (W/kg)			∑ 1g SAR (W/kg)	SAR to peak location	
	WWAN		WiFi 2.4G		Separation (cm)	Ratio
Edge - Secondary Landscape	GPRS850	0.290	0.368	0.658	n/a	n/a
	UMTS B V	0.252		0.620	n/a	n/a
	CDMA Cell	0.304		0.672	n/a	n/a

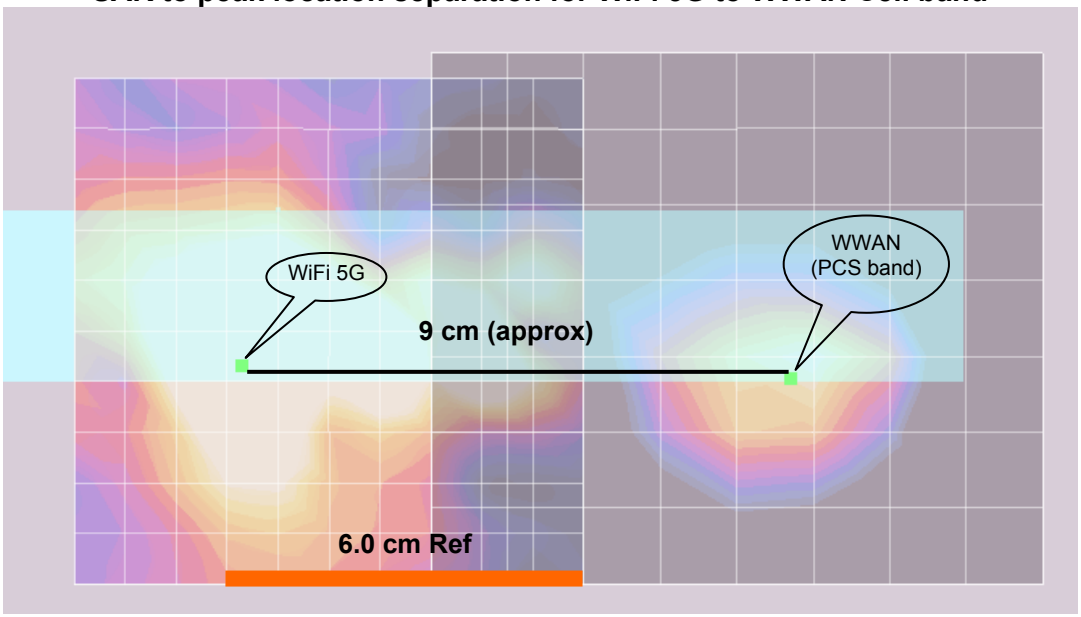
CONCLUSIONS:

Simultaneous transmission is SAR not required for WWAN & WiFi because the sum of the 1-g SAR is < 1.6 W/kg.

SAR to peak location separation for WiFi 5G to WWAN PCS band



SAR to peak location separation for WiFi 5G to WWAN Cell band



14. ATTACHMENTS

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