

SAR Evaluation Report

IN ACCORDANCE WITH THE REQUIREMENTS OF FCC OET BULLETIN 65 SUPPLEMENT C

FOR

PCMCIA CARD

MODEL: AC595

FCC ID: N7NAC595

REPORT NUMBER: 06U10234-10B

ISSUE DATE: MAY 22, 2006

Prepared for

SIERRA WIRELESS 2290 COSMOS COURT, CARLSBAD, CA 92009, USA

Prepared by

COMPLIANCE CERTIFICATION SERVICES 561F MONTEREY ROAD, MORGAN HILL, CA 95037, USA TEL: (408) 463-0885



DATE: May 22, 2006

Revision History

Rev.	Issued date	Revisions	Revised By
	May 11, 2006	Initial issue	HS
В	May 22, 2006	Corrected some typo in pages 20 and 22	HS

CERTIFICATE OF COMPLIANCE (SAR EVALUATION)

DATES OF TEST: May 4, 5 and 9, 2006								
APPLICANT:	SIERRA WIRELESS							
ADDRESS:	2290 COSMOS COURT, CARLSBAD, CA 92009, USA							
FCC ID:	N7NAC595							
MODEL:	AC595							
DEVICE CATEGORY:	Portable Device							
EXPOSURE CATEGORY:	General Population/Uncontrolled Exposure							

PCMCIA Card installed in three host laptops.									
Test Sample is a:	Production unit								
Host(s)	 Toshiba Satellite HP Pavilion dv4000 Compaq Presario v2000 								
FCC Rule Parts	Frequency range[MHz]	The highest SAR values 1xRTT RC3 SO32 (+F-SCH) mode		The highes 1xEV-DO	t SAR values Rev.0mode				
22H	824.7-848.31	<u>Host devices</u> Toshiba HP Compaq	<u>SAR (mW/g)</u> 1.201 1.345 1.284	<u>Host devices</u> Toshiba HP Compaq	<u>SAR (mW/g)</u> 1.195 1.321 1.323				
24E	1851.25-1908.75	<u>Host devices</u> Toshiba HP Compaq	<u>SAR (mW/g)</u> 0.638 0.785 0.853	<u>Host devices</u> Toshiba HP Compaq	<u>SAR (mW/g)</u> 0.628 0.915 0.886				

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for General Population/Uncontrolled Exposure limits specified in ANSI/IEEE Std. C95.1-1992 and had been tested in accordance with the measurement procedures specified in FCC OET 65 Supplement C (Edition 01-01).

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

Hsin-Fr. Shih

Hsin Fu Shih Senior Engineer Compliance Certification Services Tested By:

Winay Dorouch

Ninous Davoudi EMC Engineer Compliance Certification Services

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1 EQUIPMENT UNDER TEST (EUT) DESCRIPTION

PCMCIA Card is installed in three host laptops.								
Normal operation:	Lap-held position							
Host Device(s):	 Toshiba Satellite HP Pavilion dv4000 Compaq Presario v2000 							
Power supply:	Power supplied through the laptop computer (host device).							

2 FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



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

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

3 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 allowing to validate the proper functioning of the system.

3.1 COMPOSITION OF INGREDIENTS FOR TISSUE SIMULATIG 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		Frequency (MHz)								
(% by weight)	4	50	83	835		915		00	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

4 SIMULATING LIQUID PARAMETERS CHECK

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameters are within the tolerances of the specified target values. The relative permittivity and conductivity of the tissue material should be within \pm 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)	He	ad	Bo	ody
raiget requency (Miriz)	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	<mark>55.2</mark>	<mark>0.97</mark>
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	<mark>53.3</mark>	<mark>1.52</mark>
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/m³)

4.1 SIMULATING LIQUID PARAMETER CHECK RESULT

Simulating Liquid Dielectric Parameters Check Result @ Muscle 835 MHz

Room Ambient Temperature = 23°C; Relative humidity = 40%

Simulating Liquid			Parameters	Target	Measured	Deviation (%)	Limit (%)	
t (MHz)	Temp. (°C)	Depth (cm)	o"	Polotivo Pormittivity (o.):	55.2	52 0241	2.02	+ 5
835	21.7	15	E		0.07	0.05447	-3.92	± 5
			20.5409	Conductivity (σ):	0.97	0.95417	-1.63	± 5
Liquid Che	ck							
Ambient te	emperature	e: 23.0 deg	J. C; Liqu	id temperature: 21.7 o	deg C			
May 04, 20	06 08:09	AM .						
Frequency	-	e'		e"				
80000000).	53.36	583	20.7039				
80500000).	53.33	369	20.6951				
81000000	Э.	53.29	922	20.6292				
81500000	Э.	53.24	192	20.6137				
82000000	Э.	53.19	923	20.6031				
82500000	Э.	53.13	397	20.5858				
83000000).	53.08	399	20.5732				
<mark>83500000</mark>).	53.03	341	20.5409				
84000000).	52.98	337	20.5508				
84500000	Э.	52.93	396	20.5149				
85000000	Э.	52.88	377	20.5147				
85500000	Э.	52.84	154	20.4787				
86000000	Э.	52.79	945	20.4462				
86500000	Э.	52.67	788	20.4381				
87000000	Э.	52.65	568	20.4488				
87500000	Э.	52.6	159	20.4347				
88000000	Э.	52.55	504	20.4089				
88500000	Э.	52.49	930	20.4015				
89000000	Э.	52.45	548	20.3869				
89500000).	52.42	231	20.3596				
90000000	Э.	52.38	848	20.3402				
The condu	ctivity (σ)	can be giv	en as:					
$\sigma = \omega \varepsilon_{ heta}$ e	"=2πfε	<i>₀</i> e″						
where $f =$	target f *	10^{6}						
E Ø =	= 8.854 * 1	0 ⁻¹²						

Simulating Liquid Dielectric Parameters Check Result @ Muscle 835 MHz

Room Ambient Temperature = 23°C; Relative humidity = 45%

$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	± 5 ± 5
21.3 13 20.4400 Conductivity (g): 0.07 0.04049 2.40	± 5
20.4400 Conductivity (0). 0.97 0.94948 -2.12	
Liquid Check	
Ambient temperature: 23.0 deg. C; Liquid temperature: 21.3 deg C	
May 05, 2006 10:03 AM	
Frequency e' e"	
80000000. 52.9646 20.5831	
80500000. 52.9116 20.5725	
81000000. 52.8727 20.5347	
815000000. 52.8119 20.5273	
82000000. 52.7783 20.4994	
825000000. 52.7361 20.4913	
830000000. 52.6356 20.4710	
835000000. 52.5820 20.4400 840000000 52.520 20.4400	
840000000. 52.5329 20.4187	
845000000 52.4943 20.3938	
050000000. 52.4200 20.3792	
000000000. 52,3339 20,3363	
870000000 52.2707 20.3435	
875000000 52.2249 20.3434 875000000 52.1511 20.3233	
88000000 52 1131 20 3003	
885000000 52.0552 20.3095	
80000000 52.0002 20.0240	
895000000 51 9710 20 2920	
90000000. 51.9313 20.2646	
The conductivity (σ) can be given as:	
$\sigma = \omega \varepsilon_0 \mathbf{e}^{-} = 2 \pi J \varepsilon_0 \mathbf{e}^{-}$	
where $f = target f * 10^{\circ}$ $s_{0} = 8.854 * 10^{12}$	

Simulating Liquid Dielectric Parameters Check Result @ Muscle 835 MHz

Room Ambient Temperature = 23°C; Relative humidity = 40%

S f (MHz)	imulating Liqu Temp. (°C)	uid Depth (cm)		Parameters	Target	Measured	Deviation (%)	Limit (%)
835	22	15	с"	Relative Permittivity (ε_r):	55.2	53.0065	-3.97	± 5
000	22	15	20.6166	Conductivity (o):	0.97	0.95768	-1.27	± 5
Liquid Che Ambient te	eck emperature	e: 23.0 deg	J. C; Liqu	id temperature: 22.0 d	deg C			
Frequency	,	Alvi o'		٥"				
80000000	้า	53 36	387	C 20 7377				
805000000	ן. ר	53 32	307 304	20.7377				
81000000	ן. ר	53.25	533	20.7000				
81500000	5.)	53.20)36	20.6744				
82000000).	53.16	622	20.6749				
82500000).	53.13	358	20.6369				
83000000).	53.03	383	20.6136				
83500000	Э.	53.00)65	20.6166				
84000000	Э.	52.94	194	20.6069				
84500000	Э.	52.9 ²	160	20.5995				
85000000	Э.	52.85	599	20.5572				
85500000	Э.	52.80)24	20.5375				
86000000	Э.	52.73	364	20.5212				
86500000	Э.	52.68	309	20.5014				
87000000	Э.	52.63	381	20.4558				
87500000	Э.	52.56	695	20.4521				
88000000	Э.	52.5	135	20.4228				
88500000	Э.	52.46	532	20.4337				
89000000	Э.	52.43	378	20.4247				
89500000	Э.	52.39	993	20.3791				
90000000	Э.	52.36	518	20.3750				
The condu	ctivity (ơ)	can be giv	en as:					
$\sigma = \omega \varepsilon_{\theta} e^{i\theta}$	"=2πfε	₀e″						
where $f = $ $\mathcal{E}_{0} = $	= target f * = 8 854 * 1	10^{6} 0^{-12}						

Simulating Liquid Dielectric Parameters Check Result @ Muscle 1900 MHz

Room Ambient Temperature = 23°C; Relative humidity = 40%

S	imulating Liq	uid		Parameters	Target	Measured	Deviation (%)	Limit (%)	
f (MHz)	Temp. (°C)	Depth (cm)		Falameters	Target	Measureu	Deviation (78)	Linin (70)	
1900	21.6	15	с"	Relative Permittivity (ε_r):	53.3	50.8912	-4.52	± 5	
			14.0783	Conductivity (o):	1.52	1.48807	-2.10	± 5	
Liquid Che	eck								
Ambient temperature: 23.0 deg. C; Liquid temperature: 21.6 deg C									
May 04, 20	006 08:42	AM			-				
Frequency	,	e'		e"					
17100000	00.	51.63	311	13.4211					
17200000	00.	51.59	966	13.4599					
17300000	00.	51.54	416	13.4793					
17400000	00.	51.5 ⁻	135	13.5166					
17500000	00.	51.46	695	13.5669					
17600000	00.	51.42	278	13.6084					
17700000	00.	51.38	395	13.6473					
17800000	00.	51.33	363	13.6914					
17900000	00.	51.3 ⁻	102	13.7314					
18000000	00.	51.27	770	13.7560					
18100000	00.	51.23	381	13.7927					
18200000	00.	51.18	337	13.8001					
18300000	00.	51.14	490	13.8373					
18400000	00.	51.12	223	13.8608					
18500000	00.	51.09	909	13.9097					
18600000	00.	51.04	445	13.9470					
18700000	00.	50.99	922	13.9791					
18800000	00.	50.95	565	14.0323					
18900000	00.	50.94	497	14.0397					
19000000	00.	50.89	912	14.0783					
19100000	00.	50.86	614	14.1236					
The condu	ctivity (ơ)	can be giv	en as:						
$\sigma = \omega \varepsilon_{\theta} \mathbf{e}$	"=2πfε	<i>₀</i> e″							
where $f =$	= target f *	10^{6}							
E _{()} =	= 8.854 * 1	0-12							

Simulating Liquid Dielectric Parameters Check Result @ Muscle 1900 MHz

Room Ambient Temperature = 23°C; Relative humidity = 45%

S	imulating Liqu	uid		Parameters	Target	Measured	Deviation (%)	Limit (%)			
t (IVIHZ)	Temp. (°C)	Depth (cm)			50.0	50.0045	4.50				
1900	21.8	15	£"	Relative Permittivity (ε_r):	53.3	50.8845	-4.53	± 5			
			14.0104	Conductivity (σ):	1.52	1.48089	-2.57	± 5	ł		
Liquid Check											
Ambient te	emperature	e: 23.0 deg	g. C; Liqu	id temperature: 21.8 o	deg C						
May 05, 20	006 12:17	PM									
Frequency	1	e'		e"							
17100000	00.	51.60)77	13.3502							
17200000	00.	51.57	713	13.3692							
17300000	00.	51.53	353	13.4130							
17400000	00.	51.48	376	13.4307							
17500000	00.	51.43	383	13.4925							
17600000	00.	51.40	015	13.5232							
17700000	00.	51.35	594	13.5796							
17800000	00.	51.30)94	13.6107							
17900000	00.	51.27	793	13.6506							
18000000	00.	51.24	473	13.6815							
18100000	00.	51.22	263	13.6894							
18200000	00.	51.18	326	13.7270							
18300000	00.	51.14	417	13,7448							
18400000	00.	51.10	066	13.7756							
18500000	00.	51.07	715	13.8207							
18600000	00.	51.04	400	13.8594							
18700000	0	50.98	340	13 8878							
18800000	00.	50.95	504	13,9358							
18900000	0	50.92	246	13 9703							
19000000	00.	50.88	345	14,0104							
19100000	00.	50.84	489	14.0295							
The condu	ctivity (σ)	can be giv	en as:								
$\sigma = \omega \varepsilon_{\theta} e^{i\theta}$	"= 2 π f ε	₀e″									
where $f =$	= target f *	10 ⁶									
E _{()} =	= 8.854 * 1	0-12									

Simulating Liquid Dielectric Parameters Check Result @ Muscle 1900 MHz

Room Ambient Temperature = 23°C; Relative humidity = 40%

f (MHZ)	imulating Liq	uid Dopth (cm)		Parameters	Target	Measured	Deviation (%)	Limit (%)	
1 (10112)			с"	Relative Permittivity (c,):	53.3	51.2893	-3.77	± 5	
1900	22	15	14.0069	Conductivity (σ):	1.52	1.48052	-2.60	± 5	
Liquid Che	eck								-
Ambient te	emperature	e: 23.0 deg	g. C; Liqu	id temperature: 22.0 o	deg C				
May 09, 20	006 09:27	AM							
Frequency	1	e'		e"					
17100000	00.	51.99	908	13.3775					
17200000	00.	51.9	579	13.4058					
17300000	00.	51.9 ⁻	171	13.4441					
17400000	00.	51.87	742	13.4770					
17500000	00.	51.82	270	13.5066					
17600000	00.	51.78	339	13.5473					
17700000	00.	51.75	569	13.5964					
17800000	00.	51.70)70	13.6324					
17900000	00.	51.6	557	13.6557					
18000000	00.	51.63	320	13.6883					
18100000	00.	51.59	903	13.7183					
18200000	00.	51.5	554	13.7499					
18300000	00.	51.5	198	13.7575					
18400000	00.	51.48	330	13.7948					
18500000	00.	51.4	503	13.8429					
18600000	00.	51.40)92	13.8667					
18700000	00.	51.37	764	13.8977					
18800000	00.	51.38	532	13.9417					
18900000	00.	51.32	220	13.9541					
<mark>19000000</mark>	00.	51.28	393	14.0069					
19100000	00.	51.2	558	14.0288					
The condu	ctivity (σ)	can be giv	en as:						
$\sigma = \omega \varepsilon_{\theta} \mathbf{e}$	"=2πfε	₀e″							
where $f =$	target f *	10^{6}							
E _{()} =	= 8.854 * 1	0-12							

5 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 $\pm 10\%$.

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 5 x 5 x 7 fine cube was chosen for cube integration(dx=dy=7.5mm; dz=5mm).
 For 5 GHz band Special 8x8x8 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	<mark>9.71</mark>	<mark>6.38</mark>	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	<mark>39.8</mark>	<mark>20.8</mark>	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.

5.1 SYSTEM PERFORMANCE CHECK RESULTS

System Validation Dipole: D835V2 SN:4d002

Date: May 4, 2006

Room Ambient Temperature = 23°C; Relative humidity = 40%

Measured by: Ninous Davoudi

Body Simulating Liquid		Mrasured		Target	Deviation[%]	Limit [%]	
f(MHz)	Temp.[°C]	Depth [cm]	1 g	Normalized to 1 W	Target_1g	Devlation[%]	L III II [/0]
			2.42	9.68	9.71	-0.31	± 10
835	21.7	15	10g	Normalized to 1 W	Target_10g	Deviation[%]	Limit [%]
			1.59	6.36	6.38	-0.31	± 10

Date: May 5, 2006

Room Ambient Temperature = 23°C; Relative humidity = 45%

Measured by: Ninous Davoudi

Body Simulating Liquid		Mrasured		Target .	Deviation[%]	limit [%]	
f(MHz)	Temp.[°C]	Depth [cm]	1 g	Normalized to 1 W	Target_1g	Devlation[%]	L III II [/0]
			2.40	9.6	9.71	-1.13	± 10
835	21.3	15	10g	Normalized to 1 W	Target_10g	Deviation[%]	Limit [%]
			1.58	6.32	6.38	-0.94	± 10

Date: May 9, 2006

Room Ambient Temperature = 23°C; Relative humidity = 40%

Body Simulating Liquid		Mrasured		Target	Deviation[%]	Limit [%]	
f(MHz)	Temp.[°C]	Depth [cm]	1 g	Normalized to 1 W	Target_1g	Deviation[%]	L III II [/0]
			2.42	9.68	9.71	-0.31	± 10
835	22	15	10g	Normalized to 1 W	Target_10g	Deviation[%]	Limit [%]
			1.6	6.4	6.38	0.31	± 10

System Validation Dipole: D1900V2 SN:5d043

Date: May 4, 2006

Room Ambient Temperature = 23°C; Relative humidity = 40%

Measured by: Ninous Davoudi

Body Simulating Liquid		Mrasured		Target ,	Deviation[%]	Limit [%]	
f(MHz)	Temp.[°C]	Depth [cm]	1 g	Normalized to 1 W	Target_1g	Devlation[%]	L III II [//]
			10.20	40.8	39.8	2.51	± 10
1900	21.6	15	10g	Normalized to 1 W	Target_10g	Deviation[%]	Limit [%]
			5.39	21.56	20.8	3.65	± 10

Date: May 5, 2006

Room Ambient Temperature = 23°C; Relative humidity = 45%

Measured by: Ninous Davoudi

Body Simulating Liquid		Mrasured		Target ,	Deviation[%]	Limit [%]	
f(MHz)	Temp.[°C]	Depth [cm]	1 g	Normalized to 1 W	Target_1g	Devlation[%]	L III I [/0]
			10.20	40.8	39.8	2.51	± 10
1900	21.8	15	10g	Normalized to 1 W	Target_10g	Deviation[%]	Limit [%]
			5.36	21.44	20.8	3.08	± 10

Date: May 9, 2006

Room Ambient Temperature = 23°C; Relative humidity = 40%

Body Simulating Liquid		Mrasured		Target	Deviation[%]	Limit [%]	
f(MHz)	Temp.[°C]	Depth [cm]	1 g	Normalized to 1 W	Target_1g	Deviation[%]	L III II [/0]
			10.20	40.8	39.8	2.51	± 10
1900	22	15	10g	Normalized to 1 W	Target_10g	Deviation[%]	Limit [%]
			5.36	21.44	20.8	3.08	± 10

6 SAR MEASURMENT PROCEDURE

A summary of the procedure follows:

- a) A measurement of the SAR value at a fixed location is used as a reference value for assessing the power drop of the EUT. The SAR at this point is measured at the start of the test, and then again at the end of the test.
- b) The SAR distribution at the exposed flat section of the flat phantom is measured at a distance of 4 mm from the inner surface of the shell. The area covers the entire dimension of the EUT and the horizontal grid spacing is 15 mm x 15 mm. Based on this data, the area of the maximum absorption is determined by Spline interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

For 5 GHz band - The SAR distribution at the exposed flat section of the flat phantom is measured at a distance of 2.0 mm from the inner surface of the shell. The area covers the entire dimension of the EUT and the horizontal grid spacing is 10 mm x 10 mm. Based on this data, the area of the maximum absorption is determined by Spline interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

c) Around this point, a volume of X=Y= 30 and Z=21 mm is assessed by measuring 5 x 5 x 7 mm points. On the basis of this data set, the spatial peak SAR value is evaluated with the following procedure:

For 5 GHz band - Around this point, a volume of X=Y=Z=30 mm is assessed by measuring 8 x 8 x 8 mm points. On the basis of this data set, the spatial peak SAR value is evaluated with the following procedure:

- (i) The data at the surface are extrapolated, since the centre of the dipoles is 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation is based on a least square algorithm. A polynomial of the fourth order is calculated through the points in z-axes. This polynomial is then used to evaluate the points between the surface and the probe tip.
- (ii) The maximum interpolated value is searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g and 10 g) are computed using the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one-dimensional splines with the "Not a knot"- condition (in x, y and z-direction). The volume is integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) are interpolated to calculate the averages.
- (iii) All neighbouring volumes are evaluated until no neighbouring volume with a higher average value is found.
- (iv) The SAR value at the same location as in Step (a) is again measured to evaluate the actual power drift.

6.1 DASY4 SAR MEASURMENT PROCEDURE

Step 1: Power Reference Measurement

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

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY4 software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Step 3: Zoom Scan

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

For 5 GHz band – Same as above except the Zoom Scan measures 8 x 8 x 8 points.

Step 4: Power drift measurement

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

Step 5: Z-Scan

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

7 PROCEDURE USED TO ESTABLISH TEST SIGNAL

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

Agilent 8960 Communication Test Set was used to control the channel and measure the conducted power. The cable loss of 0.4 dB (Cell band) and 0.6 dB (PCS band) were entered as an offset in the Agilent 8960 Communication Test Set to mmeasure the channel power.

The following setting was used during test for 1x RTT RC3 SO32 (+F-SCH):

Call Parms

Radio config: FWD3, RVS3

Service option: SO32 (+F-SCH)

Pwr Ctrl Parms: Active bits (Select "All Up bits" after linked to get maximum power) Protocol Rev.: 6 (IS-2000-0)

CDMA 1x RTT RC3 SO 32 (+F-SCH) Cell Band

Channel	Frequency	Channel Power
	(MHz)	(dBm)
1013	824.70	24.80
384	836.52	24.85
777	848.31	24.81

CDMA 1x RTT RC3 SO 32 (+F-SCH) PCS Band

Channel	Frequency	Channel Power
	(MHz)	(dBm)
25	1851.25	24.70
600	1880.00	24.90
1175	1908.75	24.20

Agilent settings for 1x RTT RC3 SO32 (+F-SCH)

- The state of the second second	Lall Se		I Description
Call Control	Active Cell	Operating Mode	Call Parms
Operating flode			Cell Pouer
Active Cell	nobile Stat	tion Information	-64.00
	ESN (Hex):	0x60325FC5	dBm/1.23 IIH
Qualan Tuno	ESN (Dec):	096-03301317	Cell Band
System Type	HCC:	000	US Cellular
13-2000	ngin-	8585551515	
	Slot Class:	Slotted	Channel
End	Slot Cycle Index:	2	Channel
Call	Protocol Revision:		384
	Band Class:	Contraction of the second second second	
Contraction and	IIS Operating flode:		Protocol Rev
Paging IMSI	Hax EIRP (dBll):		6 (IS-2000-0)
setup Q	Registration Type:	lles	
	UPCH Supported:	Yes	Radio Config
Handoff	this Power Control Step:	Unknoun	(Fud3, Rus3)
Setup $ abla$	IIS Called Party Number:		S032 (+ F-SCH)
Western Burger	MEID Supported:	No	P R State Barries
	MEID (Hex):		FCH Service
	HEID (Dec):		Uption Setup V
	Active Cell	Sys Type: IS-2000	
	Connected	+ Data	1.064
1 of 3	IntRe	f Offset	1 01 4



The following setting was used during test for 1xEV-DO Rev.0 **Call Parms:** Application Config: RTAP FTAP Rate: 307.2 Kbps RTAP Rate: 153.6 Kbps Pwr Ctrl Parms: Active bits (Select "All Up bits" after linked to get maximum power) Protocol Rev.: 0 (1xEV-DO)

Call Control:

Cell Parameters → Sector ID, Upper (Hex): 00800580 Sector ID, Lower (Hex): 00000000 AT Max Power: 23 dBm/1.23 MHz

CDMA 1xEV-DO Rev.0 Cell Band

Channel	Frequency	Channel Power
	(MHz)	(dBm)
1013	824.70	24.70
384	836.52	24.71
777	848.31	24.65

CDMA 1xEV-DO Rev.0 PCS Band

Channel	Frequency	Channel Power
	(MHz)	(dBm)
25	1851.25	24.70
600	1880.00	24.60
1175	1908.75	24.10

Agilent Settings for 1xEV-DO Rev.0

		Call Parms
Operating Node	Access Terminal Information (AT Reported)	Cell Pouer
Active Cell	Session Seed: 0x9A74684C	-55.00
	Harduare ID Type (Hex): 0x010000 ESN	dBm/1.23 m
	Harduare ID (Hex): 0x60325FC5	Cell Band
	Harduare ID (Decimal): 096-03301317	US Cellular
	Access Terminal Information (AN Assigned)	
	UATI 024: 3	Channel
End Data Connection	UATI Color Code: 64	384
Connection	TAC Index: 5	
	Access Terminal Information (User Entered)	
Session	AT Nax Power: 23 dBm/1.23 NHz	Application Config
	Application Configuration	ETAD D 4
Handoff	Session Application Type: Test Application	FIAP Rate
Setup 🗸	Test Application Protocol: RTAP	307.2 KUPS
Charles and the second	Limited TAP: Off	(2 S10t, UP5K
AT Nax Pouer	AT Directed Packets: 50 %	RTAP Rate
23 dBm/1.23 HHz	ACK Channel Bit Fixed Node Attribute: On	153.6 kbps
	Active Cell Sus Tupe: IS-856	-
	Connected	
1 of 2	IntRef Offset RTA	P 1 of 3



CONTRACTOR OF THE OWNER	Call Setup Screen	NT IN THE REAL PROPERTY	Carativitication and the
AN Info	Access Network Informat	tion	Call Parms
	Cell Parameters		Rvs Pouer Ctr1
Configurable Attribute Ctrl .	Sector ID (Hex): 0080:0580:0000:0000:000	00:000:0000:0000:00	All Up bits
	Country Code: 310 Color Code: 64 Subpet Hask: 104		Pur Ctrl Step
Cell Parameters	Control Channel Data Rate: 76.8 kbps	1.0 dB	
	Preferred Control Channel Cycle: Off Pilot Drop: 18 (-9.0 dB)		Call Drop Time
Channel Gain Parameters	Configurable Attributes In L	Jse	Off
	Cell Parameters	Value	
	Sector ID, Hoper (Hex)	00800580	Call Limit flode
Parameters	Sector ID, Upper Hiddle (Hex)	00000000	Off
	Sector ID, Louer Niddle (Hex)	00000000	
PDHO Cuotos	Sector ID, Louer (Hex)	00000000	Protocol Rev
Time Info	Country Code	310	0 (1xEU-D0)
Charles and and	Color Code	64	
Close	Subnet Hask	104	
llenu	Control Channel Data Rate	76.8 kbps	
	Active Cell Connected	Sys Type: IS-856	
	IntRef Offset	RTAP	2 of 3

8 SAR MEASURMENT RESULTS

8.1 1x RTT RC3 SO32 (+F-SCH) MODE

8.1.1 TOSHIBA SATELLITE

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	CDMA 1x RTT	r RC3 SO 32	(+F-SCH) Cell I	Band		Ī
			Measured SAR	Power Drift	Extrapolated ¹⁾ SAR	
	Channel	f (MHz)	1g (mW/g)	(dB)	1g (mW/g)	
	1013	824.70	0.992	-0.165	1.030	
	384 777	848 31	0.833	-0.190	0.864	
	CDMA 1x RTT	RC3 SO 32	(+F-SCH) PCS E	Band	0.004	
			Measured SAR	Power Drift	Extrapolated ¹⁾ SAR	
	Channel	f (MHz)	1g (mW/g)	(dB)	1g (mW/g)	
	25	1851.25				
	600	1880.00	0.613	-0.176	0.638	
	1175	1908.75				
lotes:	e evact mothod of	extrapolation in		(_drift/10) The SAU	P reported at the end of the m	asurement
pr	ocess by the DASY	4 system can b	e scaled up by the Po	wer drift to determin	ne the SAR at the beginning of	of the
m 2) T	easurement proces	S. ht the middle sh	annal for this configure	tion is at least 2 d	P lower (0.8 m)///a) then SAR	limit (1 6
∠) Ir m	W/g), thus testing a	t low & high cha	annel is optional.	auon is at least 3 de	b iower (0.6 mivv/g) than SAR	
3) PI	ease see attachme	nts for the detail	led measurement data	and plots showing	the maximum SAR location	of the EUT.

8.1.2 HP PAVILION DV4000

	CDMA 1x RT	RC3 SO 32	(+F-SCH) Cell E	Band	4)	
			Measured SAR	Power Drift	Extrapolated ¹⁾ SAR	
	Channel	f (MHz)	1g (mW/g)	(dB)	1g (mW/g)	
	1013	824.70	1.050	-0.184	1.095	
	384	836.52	1.310	-0.113	1.345	
	777	848.31	0.992	-0.116	1.019	
	CDMA 1x RT	<u>r RC3 SO 32</u>	<u>(+F-SCH) PCS I</u>	Band		
			Measured SAR	Power Drift	Extrapolated ¹⁾ SAR	
	Channel	f (MHz)	1g (mW/g)	(dB)	1g (mW/g)	
	25	1851.25	0.635	-0.185	0.663	
	600	1880.00	0.756	-0.163	0.785	
		-				
	1175	1908.75	0.536	-0.124	0.552	
Notes: 1) 2)	1175 The exact method of process by the DASY measurement process The SAR measured a	1908.75 extrapolation is '4 system can b s. at the middle cha	0.536 Measured SAR x 10^ e scaled up by the Po annel for this configura	-0.124 (-drift/10). The SAI wer drift to determin ation is at least 3 df	0.552 R reported at the end of the m he the SAR at the beginning o 3 lower (0.8 mW/g) than SAR	easurement f the limit (1.6

8.1.3 COMPAQ PRESARIO V2000

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	CDMA 1x RT	T RC3 SO 32	(+E-SCH) Cell F	Rand		
			Measured SAR	Power Drift	Extrapolated ¹⁾ SAR	
	Channel	f (MHz)	1g (mW/g)	(dB)	1g (mW/g)	
	1013	824.70	1.110	-0.175	1.156	
	384	836.52	1.250	-0.117	1.284	
	CDMA 1x RT	RC3 SO 32	(+F-SCH) PCS I	-0.204 Band	1.039	
			Measured SAR	Power Drift	Extrapolated ¹⁾ SAR	
	Channel	f (MHz)	1g (mW/g)	(dB)	1g (mW/g)	
	25	1851.25	0.623	-0.139	0.643	
	600	1880.00	0.818	-0.182	0.853	
	1175	1908.75	0.622	-0.061	0.631	
Notes:		ovtropolation !-				
1)	re exact method of process by the DASY	extrapolation is 4 system can b	e scaled up by the Po	(-arint/10). The SAI wer drift to determi	< reported at the end of the magnetic the magnetic reported at the end of the magnetic reported at the beginning of the magnetic reported at the second of the magnetic reported at	f the
	measurement proces	S.				-
2)	The SAR measured a mW/a) thus testing a	at the middle cha at low & high cha	annel for this configura	ation is at least 3 dl	B lower (0.8 mW/g) than SAR	limit (1.6
3)	Please see attachme	nts for the detai	led measurement data	a and plots showing	the maximum SAR location	of the EUT.

8.2 1xEV-DO Rev.0 MODE

8.3 **TOSHIBA SATELLITE**

	CDMA 1×EV-E	20 20 20 20 20 20 20 20 20 20 20 20 20 2	II Band	10mm		
	Channel	f (\\147)	Measured SAR	Power Drift	Extrapolated ¹⁾ SAR	
	1013	824 70	0.972	-0 136	1 003	+
	384	836 52	1,160	-0.130	1,195	
	777	848.31	0.841	-0.156	0.872	
F	CDMA 1xEV-D	DO Rev.0 PC	S Band			1
			Measured SAR	Power Drift	Extrapolated ¹⁾ SAR]
	Channel	f (MHz)	1g (mW/g)	(dB)	1g (mW/g)	
Γ	25	1851.25]
	600	1880.00	0.603	-0.179	0.628	
	1175	1908.75				
Notes: 1) The pro- mea 2) The	e exact method of o cess by the DASY asurement process	extrapolation is 4 system can be s.	Measured SAR x 10 ^A e scaled up by the Po	(-drift/10). The SAI wer drift to determine	R reported at the end of the n ne the SAR at the beginning	neasurement of the
mW 3)Plea	l/g), thus testing at ase see attachmer	t low & high cha	innel is optional.	and plots showing	the maximum SAR location	of the EUT.

8.4 **HP PAVILION DV4000**

CDMA 1xEV-DO Rev.0 Cell Band
Measured SAR Power Drift Extrapolated SAR
Chapped f (MHz) 1a (m) M/a (dB) 1a (m) M/a
Channel f (MHz) 1g (mW/g) (dB) 1g (mW/g) 1013 824 70 1 040 -0 148 1 076
Channel f (MHz) 1g (mW/g) (dB) 1g (mW/g) 1013 824.70 1.040 -0.148 1.076 384 836.52 1.290 -0.104 1.321
Channel f (MHz) 1g (mW/g) (dB) 1g (mW/g) 1013 824.70 1.040 -0.148 1.076 384 836.52 1.290 -0.104 1.321 777 848.31 1.060 -0.136 1.094
Channel f (MHz) 1g (mW/g) (dB) 1g (mW/g) 1013 824.70 1.040 -0.148 1.076 384 836.52 1.290 -0.104 1.321 777 848.31 1.060 -0.136 1.094 CDMA 1xEV-DO Rev.0 PCS Band
Channel f (MHz) 1g (mW/g) (dB) 1g (mW/g) 1013 824.70 1.040 -0.148 1.076 384 836.52 1.290 -0.104 1.321 777 848.31 1.060 -0.136 1.094 CDMA 1xEV-DO Rev.0 PCS Band Measured SAR Power Drift Extrapolated ¹⁾ SAR
Channel f (MHz) 1g (mW/g) (dB) 1g (mW/g) 1013 824.70 1.040 -0.148 1.076 384 836.52 1.290 -0.104 1.321 777 848.31 1.060 -0.136 1.094 CDMA 1xEV-DO Rev.0 PCS Band Measured SAR Power Drift Extrapolated ¹⁾ SAR Channel f (MHz) 1g (mW/g) (dB) 1g (mW/g)
Channel f (MHz) 1g (mW/g) (dB) 1g (mW/g) 1013 824.70 1.040 -0.148 1.076 384 836.52 1.290 -0.104 1.321 777 848.31 1.060 -0.136 1.094 CDMA 1xEV-DO Rev.0 PCS Band Measured SAR Power Drift Extrapolated ¹⁾ SAR Channel f (MHz) 1g (mW/g) (dB) 1g (mW/g) 25 1851.25 0.747 -0.122 0.768
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$

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 2) mW/g), thus testing at low & high channel is optional. Please see attachments for the detailed measurement data and plots showing the maximum SAR location of the EUT.

3)

8.5 **COMPAQ PRESARIO V2000**

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CDMA 1xEV-I	DO Rev.0 Ce	II Band			
CDMA 1xEV-I	DO Rev.0 Ce	<i>II Band</i> Measured SAR	Power Drift	Extrapolated ¹⁾ SAR	
CDMA 1xEV-I	DO Rev.0 Ce	<i>II Band</i> Measured SAR 1g (mW/g)	Power Drift (dB)	Extrapolated ¹⁾ SAR 1g (mW/g)	
CDMA 1xEV-I Channel 1013	DO Rev.0 Ce f (MHz) 824.70	II Band Measured SAR 1g (mW/g) 1.090	Power Drift (dB) -0.169	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133	
CDMA 1xEV-I Channel 1013 384	DO Rev.0 Ce f (MHz) 824.70 836.52	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280	Power Drift (dB) -0.169 -0.143	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323	
CDMA 1xEV-1 Channel 1013 384 777	DO Rev.0 Ce f (MHz) 824.70 836.52 848.31	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280 0.919	Power Drift (dB) -0.169 -0.143 -0.150	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323 0.951	
CDMA 1xEV- Channel 1013 384 777 CDMA 1xEV-	DO Rev.0 Ce f (MHz) 824.70 836.52 848.31 DO Rev.0 PC	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280 0.919 S Band	Power Drift (dB) -0.169 -0.143 -0.150	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323 0.951	
CDMA 1xEV-1 Channel 1013 384 777 CDMA 1xEV-1	DO Rev.0 Ce f (MHz) 824.70 836.52 848.31 DO Rev.0 PC	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280 0.919 : S Band Measured SAR	Power Drift (dB) -0.169 -0.143 -0.150 Power Drift	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323 0.951 Extrapolated ¹⁾ SAR	
CDMA 1xEV-1 Channel 1013 384 777 CDMA 1xEV-1 Channel	DO Rev.0 Ce f (MHz) 824.70 836.52 848.31 DO Rev.0 PC f (MHz)	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280 0.919 :S Band Measured SAR 1g (mW/g)	Power Drift (dB) -0.169 -0.143 -0.150 Power Drift (dB)	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323 0.951 Extrapolated ¹⁾ SAR 1g (mW/g)	
CDMA 1xEV-1 Channel 1013 384 777 CDMA 1xEV-1 Channel 25	DO Rev.0 Ce f (MHz) 824.70 836.52 848.31 DO Rev.0 PC f (MHz) 1851.25	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280 0.919 <i>S Band</i> Measured SAR 1g (mW/g) 0.662	Power Drift (dB) -0.169 -0.143 -0.150 Power Drift (dB) 0.000	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323 0.951 Extrapolated ¹⁾ SAR 1g (mW/g) 0.662	
CDMA 1xEV-I Channel 1013 384 777 CDMA 1xEV-I Channel 25 600	DO Rev.0 Ce f (MHz) 824.70 836.52 848.31 DO Rev.0 PC f (MHz) 1851.25 1880.00	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280 0.919 S Band Measured SAR 1g (mW/g) 0.662 0.856	Power Drift (dB) -0.169 -0.143 -0.150 Power Drift (dB) 0.000 -0.149	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323 0.951 Extrapolated ¹⁾ SAR 1g (mW/g) 0.662 0.886	
CDMA 1xEV-1 Channel 1013 384 777 CDMA 1xEV-1 Channel 25 600 1175	DO Rev.0 Ce f (MHz) 824.70 836.52 848.31 DO Rev.0 PC f (MHz) 1851.25 1880.00 1908.75	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280 0.919 :S Band Measured SAR 1g (mW/g) 0.662 0.856 0.646	Power Drift (dB) -0.169 -0.143 -0.150 Power Drift (dB) 0.000 -0.149 0.000	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323 0.951 Extrapolated ¹⁾ SAR 1g (mW/g) 0.662 0.886 0.646	
CDMA 1xEV-1 Channel 1013 384 777 CDMA 1xEV-1 Channel 25 600 1175	DO Rev.0 Ce f (MHz) 824.70 836.52 848.31 DO Rev.0 PC f (MHz) 1851.25 1880.00 1908.75	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280 0.919 : S Band Measured SAR 1g (mW/g) 0.662 0.856 0.646	Power Drift (dB) -0.169 -0.143 -0.150 Power Drift (dB) 0.000 -0.149 0.000	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323 0.951 Extrapolated ¹⁾ SAR 1g (mW/g) 0.662 0.886 0.646	
 CDMA 1xEV-1 Channel 1013 384 777 CDMA 1xEV-1 Channel 25 600 1175	DO Rev.0 Ce f (MHz) 824.70 836.52 848.31 DO Rev.0 PC f (MHz) 1851.25 1880.00 1908.75	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280 0.919 S Band Measured SAR 1g (mW/g) 0.662 0.856 0.646 Measured SAR x 10/0	Power Drift (dB) -0.169 -0.143 -0.150 Power Drift (dB) 0.000 -0.149 0.000	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323 0.951 Extrapolated ¹⁾ SAR 1g (mW/g) 0.662 0.886 0.646	asuren
 CDMA 1xEV-1 Channel 1013 384 777 CDMA 1xEV-1 Channel 25 600 1175 he exact method of rocess by the DASY	DO Rev.0 Ce f (MHz) 824.70 836.52 848.31 DO Rev.0 PC f (MHz) 1851.25 1880.00 1908.75 extrapolation is (4 system can be	<i>II Band</i> Measured SAR 1g (mW/g) 1.090 1.280 0.919 S Band Measured SAR 1g (mW/g) 0.662 0.856 0.646 Measured SAR x 10^(e scaled up by the Pop	Power Drift (dB) -0.169 -0.143 -0.150 Power Drift (dB) 0.000 -0.149 0.000 (-drift/10). The SAI wer drift to determine	Extrapolated ¹⁾ SAR 1g (mW/g) 1.133 1.323 0.951 Extrapolated ¹⁾ SAR 1g (mW/g) 0.662 0.886 0.646 R reported at the end of the mean the SAR at the beginning of	asuren

mW/g), thus testing at low & high channel is optional. Please see attachments for the detailed measurement data and plots showing the maximum SAR location of the EUT. 3)

9 MEASURMENT UNCERTAINTY

9.1 MEASURMENT UNCERTAINTY FOR 300 MHz - 3000 MHz

	Tol (2) Probe		Disc	C : (4 - r)	C: (40 m)	Std. Unc.(?)	
Uncertainty component	101. (?)	Dist.	DIV.	CI (1g)	CI (10g)	Ui (1g)	Ui(10g)
Measurement System							
Probe Calibration	4.80	Ν	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	Ν	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	Ν	1	1	1	1.10	1.10
Device Holder Uncertainty	3.60	Ν	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	Ν	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	Ν	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

10 EQUIPMENT LIST AND CALIBRATION

Name of Equipment	Manufacturer	Type/Model	Serial Number	Cal. Due date
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
S-Parameter Network Analyzer	Agilent	8753ES-6	US39173569	2/9/07
Electronic Probe kit	Hewlett Packard	85070C	N/A	N/A
E-Field Probe	SPEAG	EX3DV3	3531	7/21/06
Thermometer	ERTCO	639-1S	1718	1/11/07
SAM Phantom (SAM1)	SPEAG	TP-1185	QD000P40CA	N/A
SAM Phantom (SAM2)	SPEAG	TP-1015	N/A	N/A
Data Acquisition Electronics	SPEAG	DAE4	558	1/20/07
System Validation Dipole	SPEAG	D835V2	4d002	1/23/08
System Validation Dipole	SPEAG	D1900V2	5d043	1/29/08
Power Meter	Giga-tronics	8651A	8651404	12/27/06
Power Sensor	Giga-tronics	80701A	1834588	12/27/07
Amplifier	Mini-Circuits	ZHL-42W	D072701-5	N/A
Radio Communication Tester	Rohde & Schwarz	CMU 200	838114/032	3/21/07
Wireless Conmmunication test set	Agilent	E5515C	GB44051094	4/8/07
Simulating Liquid	CCS	M835	N/A	Within 24 hrs of first test
Simulating Liquid	CCS	M1900	N/A	Within 24 hrs of first test

11 EUT PHOTOS

PCMCIA MODEM CARD CDMA





Toshiba Satellite





HP Pavilion dv4000







Compaq Presario v2000





12 ATTACHMENTS

No.	Contents	No. Of Pages
1	System Performance Check Plots	12
2-1	SAR Test Plots-Cell Band	20
2-2	SAR Test Plots-PCS Band	16
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

END OF REPORT