FCC OET BULLETIN 65 SUPPLEMENT C 01-01
IEEE STD 1528:2003

SAR EVALUATION REPORT

For
Gobi2000 PCI Express Mini Card
(Tested inside of Panasonic Tablet PC CF-U1)

MODEL NUMBER: GOBI2000
FCC ID: N7NGOBI2
IC: 2417C-GOBI2

REPORT NUMBER: 11J13901-1

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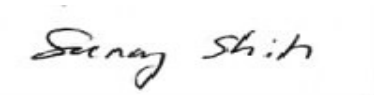
1. Attestation of Test Results

Applicant name:	Sierra Wireless Inc.		
EUT description:	The EUT is the Sierra Wireless Gobi2000 850/1900 GSM/WCDMA/GPRS/EDGE/CDMA Module (Tested inside of Panasonic Tablet PC, Model CF-U1)		
Model number:	Gobi2000		
Device category:	Portable		
Exposure category:	General Population/Uncontrolled Exposure		
Date tested:	July 28 – July 29 , 2011		
FCC / IC Rule Parts	Freq. Range [MHz]	Highest 1g SAR (mW/g)	Limit (mW/g)
22H / RSS-132	824 - 849	0.218 mW/g (Secondary Portrait)	1.6
24E / RSS-133	1850 - 1910	0.334 mW/g (Secondary Portrait)	
Applicable Standards			Test Results
OET Bulletin 65 Supplement C 01-01, IEEE STD 1528: 2003, RSS-102 Issue 4, March 2010, RSS-102 Supplementary Procedures (SPR)-001, January 1, 2011			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 CCS By:



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

Tested By:

Tomochika Sato
SAR Engineer
Compliance Certification Services (UL CCS)

2. Test Methodology

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C Edition 01-01, IEEE STD 1528:2003, and the following KDB Procedures.

- 447498 D01 Mobile Portable RF Exposure v04
- 941225 D01 SAR test for 3G devices v02
- 941225 D02 Guidance for 3GPP R6 and R7 HSPA v02v01
- 941225 D03 SAR Test Reduction GSM GPRS EDGE 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	S-0396	N/A		
DASY4 Measurement Server	SPEAG	SEUMS001BA	1246	N/A		
Probe Alignment Unit	SPEAG	LB5/ 80	SE UKS 030 AA	N/A		
SAM Twin Phantom	SPEAG	QDOOOP40CD	1629	N/A		
Oval Flat Phantom (ELI 5.0) A	SPEAG	QDOVA001BB	1120	N/A		
Oval Flat Phantom (ELI 5.0) B	SPEAG	QDOVA001BB	1118	N/A		
Dielectric Probe kit	HP	85070C	N/A	N/A		
ESA Series Network Analyzer	Agilent	E5071B	MY42100131	8	2	2011
Synthesized Signal Generator	HP	83732B	US34490599	7	14	2012
E-Field Probe	SPEAG	EX3DV4	3773	5	3	2012
Thermometer	ERTCO	639-1S	1718	8	19	2011
Data Acquisition Electronics	SPEAG	DAE4	1258	5	2	2012
System Validation Dipole	SPEAG	D835V2	4d117	4	15	2012
System Validation Dipole	SPEAG	D1900V2	5d140	4	11	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	M900	N/A	Within 24 hrs of first test		

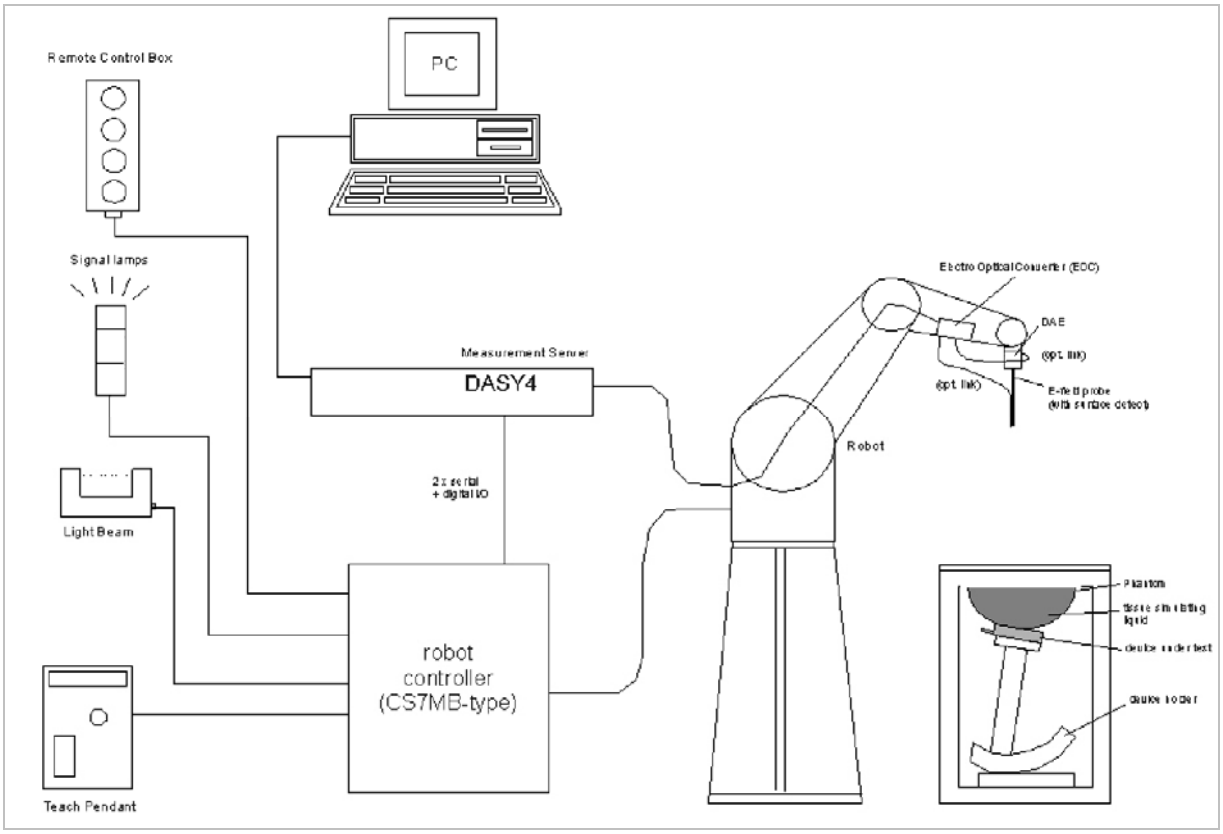
4.2. Measurement Uncertainty

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)	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	1.68	Normal	1	0.64	1.08
Liquid Permittivity - deviation from target	5.00	Rectangular	1.732	0.6	1.73
Liquid Permittivity - measurement	0.54	Normal	1	0.6	0.32
				Combined Standard Uncertainty Uc(y) =	9.51
				Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence = 19.01	%
				Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence = 1.51	dB

5. Equipment Under Test

The EUT is the Sierra Wireless Gobi 2000 850/1900 for GSM/WCDMA/GPRS/EDGE/CDMA Module. Tested inside Panasonic Tablet PC, CF-U1	
Normal operation:	Multiple display orientations supporting both portrait and landscape configurations.
Antenna tested:	Part number: ANTENNA WWAN MAIN：DFUP2071ZA(1)
Antenna-to-antenna/user separation distances:	See Section 15 for details of antenna locations and separation distances.
Simultaneous transmission:	• WWAN can transmit simultaneously with WiFi • WWAN can transmit simultaneously with Bluetooth • WiFi can transmit simultaneously with Bluetooth
Assessment for SAR evaluation for Simultaneous transmission:	**WiFi and BT** The Bluetooth's maximum output power is ≤ 60/$f_{(GHz)}$ mW. Therefore stand-alone SAR evaluation is not required. Thus, simultaneous transmission SAR testing is not required. (Bluetooth - FCC ID: ACJ9TGBT11A; IC: 216A-CFBT11A) **WWAN and BT** Same as WiFi and BT **WWAN and WiFi** SAR is not required due to $\sum$ (SAR_{1g}) < SAR limit.

6. System Specification



The DASY 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.
- DASY 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

Simulating Liquids for 5 GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	78
Mineral oil	11
Emulsifiers	9
Additives and Salt	2

8. Tissue Dielectric Parameters

The simulating liquids are checked at the beginning of a series of SAR measurements to determine if the dielectric parameters are within the tolerances of the specified target values. For frequencies in 300 MHz to just under 2 GHz, the measured conductivity and relative permittivity were within ± 5% of the target values. For frequencies above 2 GHz the measured conductivity was within ± 5% of the target values. The measured relative permittivity tolerance was within ± 10% of the target value.

Reference Values of Tissue Dielectric Parameters for Head & Body Phantom

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

Target Frequency (MHz)	Head		Body	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.8
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
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)

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

In the current guidelines and draft standards for compliance testing of mobile phones (i.e., IEEE P1528, OET 65 Supplement C), the dielectric parameters suggested for head and body tissue simulating liquid are given only at 3.0 GHz and 5.8 GHz. As an intermediate solution, dielectric parameters for the frequencies between 5 to 5.8 GHz were obtained using linear interpolation (see table below).

SPEAG has developed suitable head and body tissue simulating liquids consisting of the following ingredients: de-ionized water, salt and a special composition including mineral oil and an emulsifier. Dielectric parameters of these liquids were measured using an HP 8570C Dielectric Probe Kit in conjunction with an HP 8753ES Network Analyzer (30 kHz – 6G Hz). The differences with respect to the interpolated values were well within the desired ±5% for the whole 5 to 5.8 GHz range.

f (MHz)	Body Tissue		Reference
	rel. permitivity	conductivity	
3000	52.0	2.73	Standard
5100	49.1	5.18	Interpolated
5200	49.0	5.30	Interpolated
5300	48.9	5.42	Interpolated
5400	48.7	5.53	Interpolated
5500	48.6	5.65	Interpolated
5600	48.5	5.77	Interpolated
5700	48.3	5.88	Interpolated
5800	48.2	6.00	Standard

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

8.1. Liquid Check Results

Measured by: Tomochika Sato

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
7/28/2011	Body 835	e'	55.5002	Relative Permittivity (ϵ_r):	55.50	55.20	0.54	5
		e"	21.2443	Conductivity (σ):	0.99	0.97	1.68	5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C; Relative humidity = 40%
July 28, 2011 06:26 PM

Frequency	e'	e"
800000000.	55.7850	21.4189
805000000.	55.7387	21.3919
810000000.	55.6927	21.3656
815000000.	55.6517	21.3437
820000000.	55.6110	21.3191
825000000.	55.5716	21.2925
830000000.	55.5399	21.2691
835000000.	**55.5002**	**21.2443**
840000000.	55.4614	21.2201
845000000.	55.4223	21.1969
850000000.	55.3854	21.1746
855000000.	55.3381	21.1495
860000000.	55.2960	21.1244
865000000.	55.2488	21.1021
870000000.	55.2010	21.0774
875000000.	55.1519	21.0568
880000000.	55.1007	21.0376
885000000.	55.0495	21.0172
890000000.	54.9986	21.0014
895000000.	54.9477	20.9846
900000000.	54.8977	20.9660

The conductivity (σ) can be given as:

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

where f = target f * 10^6

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

Measured by: David Rodgers

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
7/28/2011	Body 1900	e'	53.4800	Relative Permittivity (ε_r):	53.48	53.30	0.34	5
		e"	14.3271	Conductivity (σ):	1.51	1.52	-0.42	5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C; Relative humidity = 40%
July 28, 2011 09:00 AM

Frequency	e'	e"
1650000000.	54.2723	13.6133
1660000000.	54.2447	13.6235
1670000000.	54.2173	13.6191
1680000000.	54.1908	13.6145
1690000000.	54.1609	13.6161
1700000000.	54.1262	13.6287
1710000000.	54.0948	13.6618
1720000000.	54.0650	13.7113
1730000000.	54.0347	13.7724
1740000000.	54.0064	13.8351
1750000000.	53.9799	13.8968
1760000000.	53.9540	13.9444
1770000000.	53.9256	13.9739
1780000000.	53.8943	13.9899
1790000000.	53.8588	13.9976
1800000000.	53.8208	14.0033
1810000000.	53.7801	14.0165
1820000000.	53.7383	14.0418
1830000000.	53.6944	14.0797
1840000000.	53.6537	14.1288
1850000000.	53.6166	14.1824
1860000000.	53.5829	14.2342
1870000000.	53.5545	14.2783
1880000000.	53.5305	14.3084
1890000000.	53.5077	14.3244
1900000000.	**53.4800**	**14.3271**
1910000000.	53.4552	14.3262
1920000000.	53.4223	14.3261
1930000000.	53.3885	14.3384
1940000000.	53.3553	14.3640
1950000000.	53.3194	14.4079
1960000000.	53.2915	14.4684
1970000000.	53.2672	14.5320
1980000000.	53.2496	14.5897
1990000000.	53.2339	14.6398
2000000000.	53.2214	14.6728

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 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 Body simulating liquid of the following parameters.
- The DASY5 system with an Isotropic E-Field Probe EX3DV4-SN: 3773 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 (2.4 GHz) fine cube was chosen for cube integration and Special 8x8x10 (5 GHz) fine cube was chosen for cube integration
- Distance between probe sensors and phantom surface was set to 2.5 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input powers (forward power) were 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:	Freq.	Head	Body
D835V2 SN: 4d117	D835V2-4d117_Apr11	4/15/11	1g SAR:	835 MHz	9.64	10.1
			10g SAR:		6.28	6.6
D1900V2 SN: 5d140	D1900V2-5d140_Apr11	4/18/11	1g SAR:	1.9 GHz	41.6	41.2
			10g SAR:		21.5	21.6

9.1. System Check Results

System validation dipole	Date Tested	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
		Tissue:	Body			
D835V2 SN: 4d002	07/28/11	1g SAR:	10.8	10.1	6.93	±10
		10g SAR:	7.13	6.6	8.03	
D1900V2 SN: 5d140	07/28/11	1g SAR:	42.1	41.2	2.18	±10
		10g SAR:	22.2	21.6	2.78	

10. SAR Measurement Procedures

Step 1: Power Reference Measurement
The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties (for example, 1.2 mm for an EX3DV3 probe type).

Step 2: Area Scan
The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY5 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 ≥ 7x7x9 (above 4.5 GHz) or 5x5x7 (below 3 GHz) points within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Step 4: Power drift measurement
The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan
The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation, the extrapolated distance should not be larger than the step size in Z-direction.

11. RF Output Power Verification

11.1. GSM

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	32.1	23.1	32.0	**26.0**
	190	836.6	32.2	23.2	32.0	**26.0**
	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	30.0	21.0	29.8	**23.8**
	810	1909.8	29.8	20.8	29.8	**23.8**

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	27.9	18.9	27.7	21.7
	190	836.6	27.9	18.9	27.8	21.8
	251	848.8	27.9	18.9	27.8	21.8
GSM1900	512	1850.2	26.7	17.7	26.7	20.7
	661	1880	26.7	17.7	26.7	20.7
	810	1909.8	26.3	17.3	26.3	20.3

Note:

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

11.2. 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 (12.2kps RMC)

Band	Mode	UL Ch No.	DL Ch No.	f (MHz)	Avg Tx Pwr (dBm)
UMTS850 (Band V)	Rel 99 12.2kbps RMC	4132	4357	826.4	24.6
		4183	4408	836.6	25.0
		4233	4458	846.6	24.9
UMTS1900 (Band II)	Rel 99 12.2kps RMC	9262	9662	1852.4	24.7
		9400	9800	1880.0	25.1
		9538	9938	1907.6	24.7

11.3. CDMA2000

CDMA2000 1xRTT

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

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

- Protocol Rev > 6 (IS-2000-0)
- System ID: 2004 (Cell & 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)

RF Output Power for Cellular Band

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power (dBm)		
		Ch. 1013/824.7 MHz	Ch. 384/836.52 MHz	Ch. 777/848.31 MHz
		Average	Average	Average
RC1	55 (Loopback)	24.5	24.5	24.5
RC3	55 (Loopback)	24.6	24.5	24.6
	32 (+ F-SCH)	24.5	24.5	24.6

RF Output Power for 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	Average	Average
RC1	55 (Loopback)	24.7	25.0	24.7
RC3	55 (Loopback)	24.7	25.1	24.8
	32 (+ F-SCH)	24.9	25.1	25.0

12. Summary of Test Results

Summary of test configurations

Configuration	Antenna-to-User distance	SAR Require	Comments
Primary Portrait	100 mm From antenna-to-user	No	This is not the most conservative position.
(1) Secondary Portrait	22 mm From antenna-to-user	Yes	
Primary Landscape	142 mm From antenna-to-user	No	This is not the most conservative position.
Secondary Landscape	7.5 mm From antenna-to-user	No	This side is disabled to use by manufacturer.
(2) Base	44 mm From antenna-to-user	Yes	

12.1. SAR Test Results for GPRS 850 & 1900

(1) Secondary Portrait

Band	Mode	Ch No.	Freq. (MHz)	SAR (mW/g)	
				1-g	10-g
GPRS850	2 slot CS1	128	824.2		
		190	836.6	0.131	0.071
		251	848.8		
GPRS1900	2 slot CS1	512	1850.2		
		661	1880.0	0.244	0.147
		810	1909.8		

(2) Base

Band	Mode	Ch No.	Freq. (MHz)	SAR (mW/g)	
				1-g	10-g
GPRS850	2 slot CS1	128	824.2		
		190	836.6	0.071	0.039
		251	848.8		
GPRS1900	2 slot CS1	512	1850.2		
		661	1880.0	0.126	0.077
		810	1909.8		

12.2. SAR Test Results for UMTS BAND V & II

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.

(1) Secondary Portrait

Band	Mode	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
Band V	R99	4132	4357	826.4		
	12.2kbps	4183	4408	836.6	**0.218**	**0.156**
	RMC	4233	4458	846.6		
Band II	R99	9262	9662	1850.2		
	12.2kbps	9400	9800	1880.0	**0.334**	**0.2**
	RMC	9538	9938	1907.6		

(2) Base

Band	Mode	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
					1-g	10-g
Band V	R99	4132	4357	826.4		
	12.2kbps	4183	4408	836.6	0.17	0.122
	RMC	4233	4458	846.6		
Band II	R99	9262	9662	1850.2		
	12.2kbps	9400	9800	1880.0	0.171	0.106
	RMC	9538	9938	1907.6		

12.3. SAR Test Results for CDMA2000 Cell & PCS Band

(1) Secondary Portrait

Band	Mode	Ch No.	f (MHz)	SAR (mW/g)	
				1-g	10-g
Cellular	1xRTT (RC3, SO32)	1013	824.70		
		384	836.52	**0.218**	**0.155**
		777	848.31		
PCS	1xRTT (RC3, SO32)	25	1851.25		
		600	1880.00	0.312	0.189
		1175	1908.75		

(2) Base

Band	Mode	Ch No.	f (MHz)	SAR (mW/g)	
				1-g	10-g
Cellular	1xRTT (RC3, SO32)	1013	824.70		
		384	836.52	0.184	0.132
		777	848.31		
PCS	1xRTT (RC3, SO32)	25	1851.25		
		600	1880.00	0.164	0.101
		1175	1908.75		

13. Appendixes

13.1. Appendix A: System Check Plots

13.2. Appendix B: SAR Test Plots

13.3. Appendix C: Calibration Certificate for EX3DV4 SN 3773

13.4. Appendix D: Calibration Certificate for D835V2 SN 4d117

13.5. Appendix E: Calibration Certificate for D1900V2 SN 4d140