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

SAR EVALUATION REPORT

For

Intel® Centrino® Advanced-N 6200
(Tested inside of Lenovo ThinkPad X200/X201 Tablet Series)

FCC ID: PD9622ANHU
IC: 1000M-622ANHU

FCC MODEL: 622ANHMW
IC MODEL: 622ANHU

REPORT NUMBER: 09U12796-3

ISSUE DATE: November 10, 2009

Prepared for

INTEL CORPORATION
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HILLSBORO, OR 97124, USA

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	November 10, 2009	Initial Issue	--

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	INTEL CORPORATION 2111 N.E. 25TH AVENUE HILLSBORO, OR 97124, USA
FCC ID:	PD9622ANHU
MODEL:	622ANHMW
IC:	1000M-622ANHU
MODEL:	622ANHU
DEVICE CATEGORY:	Portable
EXPOSURE CATEGORY:	General Population/Uncontrolled Exposure
DATE TESTED:	October 8, 11-12, 18, 25, 28, 2009

THE HIGHEST SAR VALUES:

FCC / IC Rule Parts	Frequency Range [MHz]	The Highest SAR Values (1g_mW/g)	Limit (mW/g)
15.247 / RSS-102	2400 – 2483.5	0.026 (Tablet - Lap-held)	1.6
	5725 – 5850	0.122 (Primary Portrait)	
15.407 / RSS-102	5150 – 5250	0.128 (Primary Landscape)	
	5250 – 5350	0.115 (Primary Portrait)	
	5470 – 5725	0.114 (Primary Portrait)	

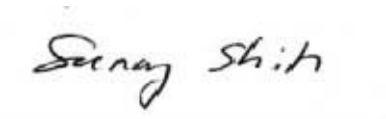
APPLICABLE STANDARDS AND TEST PROCEDURES:

STANDARD	TEST RESULTS
FCC OET BULLETIN 65 SUPPLEMENT C and the following specific Test Procedure: o KDB 248227 SAR measurement procedures for 802.11 a/b/g transmitters o KDB 447498 RF Exposure Requirements and Procedures for mobile and portable devices	Pass
RSS-102 ISSUE 3	Pass

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

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

Approved & Released For CCS By:



SUNNY SHIH
ENGINEERING SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

CHAO YEN LIN
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C, Specific FCC Procedure KDB 248227 SAR Measurement Procedure for 820.11abg Transmitters, 447498_RF Exposure Requirements and Procedures for mobile and portable devices and IC RSS 102 Issue 3.

3. FACILITIES AND ACCREDITATION

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due date		
				MM	DD	Year
Robot - Six Axes	Stäubli	RX90BL	N/A	N/A		
Robot Remote Control	Stäubli	CS7MB	3403-91535	N/A		
DASY4 Measurement Server	SPEAG	SEUMS001BA	1041	N/A		
Probe Alignment Unit	SPEAG	LB (V2)	261	N/A		
SAM Phantom (SAM1)	SPEAG	QD000P40CA	1185	N/A		
SAM Phantom (SAM2)	SPEAG	QD000P40CA	1050	N/A		
Oval Flat Phantom (ELI 4.0)	SPEAG	QD OVA001 B	1003	N/A		
Electronic Probe kit	HP	85070C	N/A	N/A		
S-Parameter Network Analyzer	Agilent	8753ES-6	MY40001647	11	14	2009
Signal Generator	Agilent	8753ES-6	MY40001647	11	14	2009
E-Field Probe	SPEAG	EX3DV4	3686	3	23	2010
Thermometer	ERTCO	639-1S	1718	5	1	2010
Data Acquisition Electronics	SPEAG	DAE3 V1	500	9	15	2010
System Validation Dipole	SPEAG	D835V2	4d002	4	23	2011
System Validation Dipole	SPEAG	D900V2	108	1	21	2010
System Validation Dipole	SPEAG	D1800V2	294	1	29	2010
System Validation Dipole	SPEAG	D1900V2	5d043	1	29	2010
System Validation Dipole	SPEAG	D2450V2	748	4	14	2010
System Validation Dipole	SPEAG	D5GHzV2	1003	11	21	2009
ESG Vector Signal Generator	Agilent	E4438C	US44271090	9	17	2010
Power Meter	Giga-tronics	8651A	8651404	1	11	2010
Power Sensor	Giga-tronics	80701A	1834588	1	11	2010
Amplifier	Mini-Circuits	ZVE-8G	90606	N/A		
Amplifier	Mini-Circuits	ZHL-42W	D072701-5	N/A		
Simulating Liquid	SPAEG	H2450	N/A	Within 24 hrs of first test		
Simulating Liquid	SPAEG	M2450	N/A	Within 24 hrs of first test		
Simulating Liquid	SPAEG	M5800	N/A	Within 24 hrs of first test		

4.2. MEASUREMENT UNCERTAINTY

Measurement uncertainty for 300 MHz – 3000 MHz

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

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

Measurement uncertainty for 3 GHz – 6 GHz

Uncertainty component	Tol. (±%)	Probe Dist.	Div.	Ci (1g)	Ci (10g)	Std. Unc.(±%)	
						Ui (1g)	Ui(10g)
Measurement System							
Probe Calibration	4.80	N	1	1	1	4.80	4.80
Axial Isotropy	4.70	R	1.732	0.707	0.707	1.92	1.92
Hemispherical Isotropy	9.60	R	1.732	0.707	0.707	3.92	3.92
Boundary Effects	1.00	R	1.732	1	1	0.58	0.58
Linearity	4.70	R	1.732	1	1	2.71	2.71
System Detection Limits	1.00	R	1.732	1	1	0.58	0.58
Readout Electronics	1.00	N	1	1	1	1.00	1.00
Response Time	0.80	R	1.732	1	1	0.46	0.46
Integration Time	2.60	R	1.732	1	1	1.50	1.50
RF Ambient Conditions - Noise	3.00	R	1.732	1	1	1.73	1.73
RF Ambient Conditions - Reflections	3.00	R	1.732	1	1	1.73	1.73
Probe Positioner Mechnical Tolerance	0.40	R	1.732	1	1	0.23	0.23
Probe Positioning With Respect to Phantom Shell	2.90	R	1.732	1	1	1.67	1.67
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	3.90	R	1.732	1	1	2.25	2.25
Test sample Related							
Test Sample Positioning	1.10	N	1	1	1	1.10	1.10
Device Holder Uncertainty	3.60	N	1	1	1	3.60	3.60
Power and SAR Drift Measurement	5.00	R	1.732	1	1	2.89	2.89
Phantom and Tissue Parameters							
Phantom Uncertainty	4.00	R	1.732	1	1	2.31	2.31
Liquid Conductivity - Target	5.00	R	1.732	0.64	0.43	1.85	1.24
Liquid Conductivity - Meas.	8.60	N	1	0.64	0.43	5.50	3.70
Liquid Permittivity - Target	5.00	R	1.732	0.6	0.49	1.73	1.41
Liquid Permittivity - Meas.	3.30	N	1	0.6	0.49	1.98	1.62
Combined Standard Uncertainty			RSS			11.66	10.73
Expanded Uncertainty (95% Confidence Interval)			K=2			23.32	21.46

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

5. EQUIPMENT UNDER TEST

Intel® Centrino® Advanced-N 6200 (Tested inside of Lenovo ThinkPad X200/X201 Tablet Series) 820.11abgn 2x2 with HT20 and HT40

Normal operation:

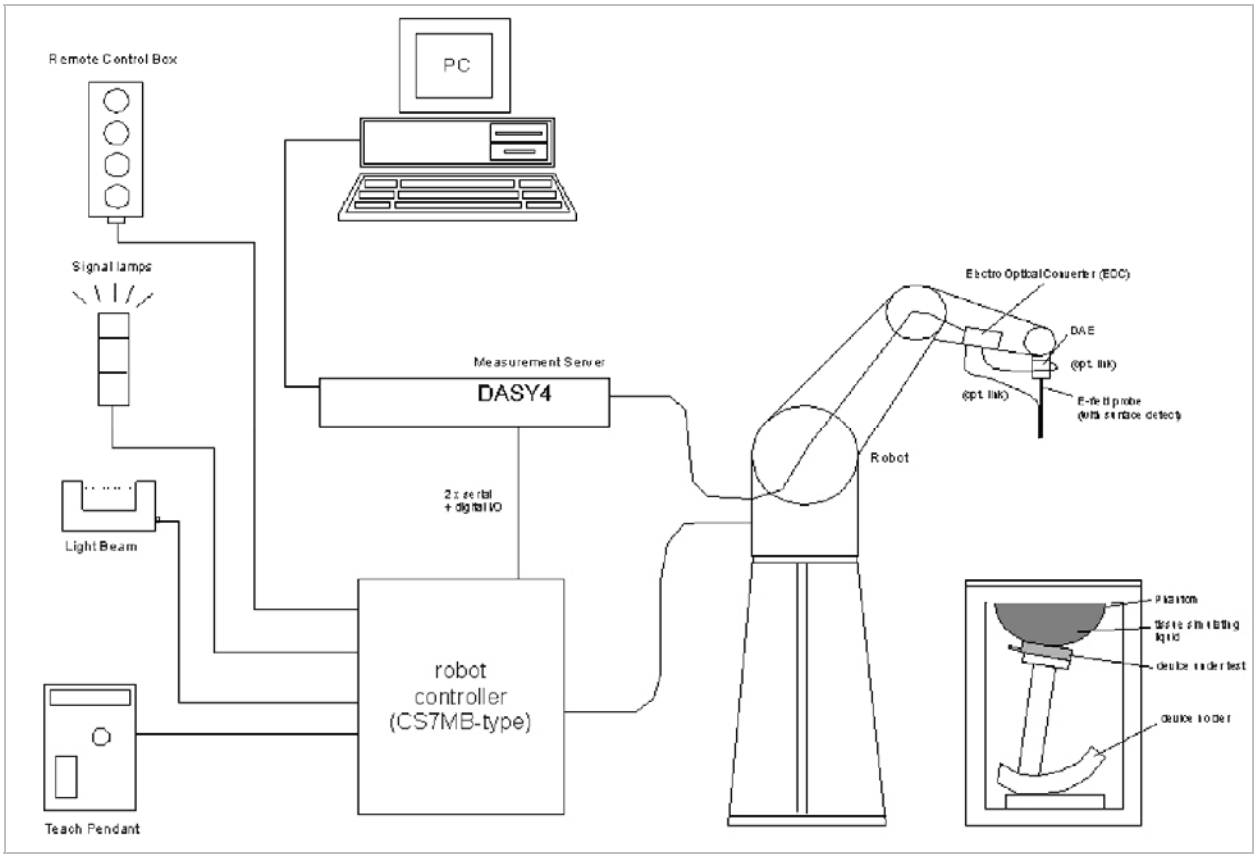
- Laptop - Lap-held,
- Tablet - Edge (underarm) & lap-held

Antenna tested:

Vendor	Antenna	Part Number	Test software ID
ACON	Main	25.90675.001	A
ACON	Auxiliary	25.90676.001	B
WNC	Main	25.90669.001	A
WNC	Auxiliary	25.90670.001	B

Power supply: Power supplied through laptop computer (host device)

6. SYSTEM SPECIFICATIONS



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

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

7. COMPOSITION OF INGREDIENTS FOR TISSUE SIMULATING LIQUIDS

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

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

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

8. LIQUID PARAMETERS CHECK

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

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

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in IEEE Standard 1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in IEEE Standard 1528.

Target Frequency (MHz)	Head		Body	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.8
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.9	55.2	0.97
900	41.5	0.97	55	1.05
915	41.5	0.98	55	1.06
1450	40.5	1.2	54	1.3
1610	40.3	1.29	53.8	1.4
1800 – 2000	40	1.4	53.3	1.52
2450	39.2	1.8	52.7	1.95
3000	38.5	2.4	52	2.73
5800	35.3	5.27	48.2	6

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

8.1. LIQUID CHECK RESULTS FOR 2450 MHZ

Simulating Liquid Dielectric Parameters for Muscle 2450 MHz

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

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
2450	e'	52.26	Relative Permittivity (ε_r):	52.264	52.7	-0.83	± 5
	e"	13.98	Conductivity (σ):	1.906	1.95	-2.26	± 5

Liquid Temperature: 23 deg. C
October 8, 2009 8:16 AM

Frequency	e'	e"
2400000000	52.3604	13.736
2405000000	52.3483	13.8094
2410000000	52.3337	13.8746
2415000000	52.3301	13.9181
2420000000	52.3162	13.9443
2425000000	52.3116	13.9625
2430000000	52.3173	13.9558
2435000000	52.3015	13.9619
2440000000	52.2971	13.9764
2445000000	52.2681	14.0041
2450000000	**52.2642**	**13.9832**
2455000000	52.1952	13.9598
2460000000	52.1591	13.9317
2465000000	52.0953	13.8945
2470000000	52.0799	13.8469
2475000000	52.0648	13.8227
2480000000	52.0726	13.8298
2485000000	52.0658	13.8489
2490000000	52.0682	13.9062
2495000000	52.0701	13.98
2500000000	52.0652	14.0829

The conductivity (σ) can be given as:

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

where f = target f * 10^6

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

Simulating Liquid Dielectric Parameters for Muscle 2450 MHz

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

f (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
2450	e'	51.91	Relative Permittivity (ϵ_r):	51.914	52.7	-1.49	± 5
	e"	14.13	Conductivity (σ):	1.926	1.95	-1.22	± 5

Liquid Temperature: 23 deg. C
October 11, 2009 10:25 AM

Frequency	e'	e"
2400000000	52.0104	13.886
2405000000	51.9983	13.9594
2410000000	51.9837	14.0246
2415000000	51.9801	14.0681
2420000000	51.9662	14.0943
2425000000	51.9616	14.1125
2430000000	51.9673	14.1058
2435000000	51.9515	14.1119
2440000000	51.9471	14.1264
2445000000	51.9181	14.1541
2450000000	**51.9142**	**14.1332**
2455000000	51.8452	14.1098
2460000000	51.8091	14.0817
2465000000	51.7453	14.0445
2470000000	51.7299	13.9969
2475000000	51.7148	13.9727
2480000000	51.7226	13.9798
2485000000	51.7158	13.9989
2490000000	51.7182	14.0562
2495000000	51.7201	14.13
2500000000	51.7152	14.2329

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 5 GHZ

Simulating Liquid Dielectric Parameters for Muscle 5800 MHz

Room Ambient Temperature = 25°C; Relative humidity = 38% Measured by: Chaoyen Lin

f (MHz)	Muscle Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
5200	e'	50.4224	Relative Permittivity (ε_r):	50.4224	49.0	2.90	± 10
	e"	18.0400	Conductivity (σ):	5.21866	5.30	-1.53	± 5
5500	e'	49.8759	Relative Permittivity (ε_r):	49.8759	48.6	2.63	± 10
	e"	18.0726	Conductivity (σ):	5.52971	5.65	-2.13	± 5
5800	e'	49.1374	Relative Permittivity (ε_r):	49.1374	48.2	1.94	± 10
	e"	18.8833	Conductivity (σ):	6.09291	6.00	1.55	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
October 12, 2009 8:13 AM

Frequency	e'	e"
4600000000	51.1853	17.343
4650000000	51.2868	17.1424
4700000000	50.9818	17.359
4750000000	51.3921	17.4813
4800000000	50.9612	17.2467
4850000000	51.1591	17.7236
4900000000	50.9645	17.5029
4950000000	50.4509	17.8127
5000000000	50.8911	17.6834
5050000000	50.1139	17.7976
5100000000	50.5397	17.8679
5150000000	50.0216	17.5373
5200000000	**50.4224**	**18.04**
5250000000	50.5658	17.7742
5300000000	49.9923	18.2106
5350000000	50.6486	18.2376
5400000000	49.7922	18.1098
5450000000	50.2498	18.5024
5500000000	**49.8759**	**18.0726**
5550000000	49.5818	18.3567
5600000000	49.9074	18.2971
5650000000	49.4055	18.2953
5700000000	49.8329	18.9137
5750000000	49.5925	18.3471
5800000000	**49.1374**	**18.8833**
5850000000	50.0649	18.9516
5900000000	49.2971	18.6912
5950000000	49.4017	19.2231
6000000000	49.5773	19.2167

The conductivity (σ) can be given as:

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

where f = target f * 10^6

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

Simulating Liquid Dielectric Parameters for Muscle 5800 MHz

Room Ambient Temperature = 25°C; Relative humidity = 38% Measured by: Chaoyen Lin

f (MHz)	Muscle Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
5200	e'	50.284	Relative Permittivity (ε_r):	50.2840	49.0	2.62	± 10
	e"	18.1354	Conductivity (σ):	5.24626	5.30	-1.01	± 5
5500	e'	49.7375	Relative Permittivity (ε_r):	49.7375	48.6	2.34	± 10
	e"	18.1680	Conductivity (σ):	5.55890	5.65	-1.61	± 5
5800	e'	48.999	Relative Permittivity (ε_r):	48.9990	48.2	1.66	± 10
	e"	18.9787	Conductivity (σ):	6.12369	6.00	2.06	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
October 18, 2009 9:39 AM

Frequency	e'	e"
4600000000	51.0469	17.4384
4650000000	51.1484	17.2378
4700000000	50.8434	17.4544
4750000000	51.2537	17.5767
4800000000	50.8228	17.3421
4850000000	51.0207	17.819
4900000000	50.8261	17.5983
4950000000	50.3125	17.9081
5000000000	50.7527	17.7788
5050000000	49.9755	17.893
5100000000	50.4013	17.9633
5150000000	49.8832	17.6327
5200000000	**50.284**	**18.1354**
5250000000	50.4274	17.8696
5300000000	49.8539	18.306
5350000000	50.5102	18.333
5400000000	49.6538	18.2052
5450000000	50.1114	18.5978
5500000000	**49.7375**	**18.168**
5550000000	49.4434	18.4521
5600000000	49.769	18.3925
5650000000	49.2671	18.3907
5700000000	49.6945	19.0091
5750000000	49.4541	18.4425
5800000000	**48.999**	**18.9787**
5850000000	49.9265	19.047
5900000000	49.1587	18.7866
5950000000	49.2633	19.3185
6000000000	49.4389	19.3121

The conductivity (σ) can be given as:

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

where f = target f * 10^6

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

Simulating Liquid Dielectric Parameters for Muscle 5800 MHz

Room Ambient Temperature = 25°C; Relative humidity = 38% Measured by: Chaoyen Lin

f (MHz)	Muscle Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
5200	e'	50.1601	Relative Permittivity (ϵ_r):	50.1601	49.0	2.37	± 10
	e"	18.2250	Conductivity (σ):	5.27218	5.30	-0.52	± 5
5500	e'	49.6136	Relative Permittivity (ϵ_r):	49.6136	48.6	2.09	± 10
	e"	18.2576	Conductivity (σ):	5.58631	5.65	-1.13	± 5
5800	e'	48.8751	Relative Permittivity (ϵ_r):	48.8751	48.2	1.40	± 10
	e"	19.0683	Conductivity (σ):	6.15260	6.00	2.54	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
October 25, 2009 9:35 AM

Frequency	e'	e"
4600000000	50.923	17.528
4650000000	51.0245	17.3274
4700000000	50.7195	17.544
4750000000	51.1298	17.6663
4800000000	50.6989	17.4317
4850000000	50.8968	17.9086
4900000000	50.7022	17.6879
4950000000	50.1886	17.9977
5000000000	50.6288	17.8684
5050000000	49.8516	17.9826
5100000000	50.2774	18.0529
5150000000	49.7593	17.7223
5200000000	**50.1601**	**18.225**
5250000000	50.3035	17.9592
5300000000	49.73	18.3956
5350000000	50.3863	18.4226
5400000000	49.5299	18.2948
5450000000	49.9875	18.6874
5500000000	**49.6136**	**18.2576**
5550000000	49.3195	18.5417
5600000000	49.6451	18.4821
5650000000	49.1432	18.4803
5700000000	49.5706	19.0987
5750000000	49.3302	18.5321
5800000000	**48.8751**	**19.0683**
5850000000	49.8026	19.1366
5900000000	49.0348	18.8762
5950000000	49.1394	19.4081
6000000000	49.315	19.4017

The conductivity (σ) can be given as:

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

where f = target f * 10^6

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

Simulating Liquid Dielectric Parameters for Muscle 5800 MHz

Room Ambient Temperature = 25°C; Relative humidity = 38% Measured by: Chaoyen Lin

f (MHz)	Muscle Liquid Parameters			Measured	Target	Delta (%)	Limit (%)
5200	e'	50.0252	Relative Permittivity (ε_r):	50.0252	49.0	2.09	± 10
	e"	18.1881	Conductivity (σ):	5.26150	5.30	-0.73	± 5
5500	e'	49.4787	Relative Permittivity (ε_r):	49.4787	48.6	1.81	± 10
	e"	18.2207	Conductivity (σ):	5.57502	5.65	-1.33	± 5
5800	e'	48.7402	Relative Permittivity (ε_r):	48.7402	48.2	1.12	± 10
	e"	19.0314	Conductivity (σ):	6.14070	6.00	2.34	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
October 28, 2009 8:15 AM

Frequency	e'	e"
4600000000	50.7881	17.4911
4650000000	50.8896	17.2905
4700000000	50.5846	17.5071
4750000000	50.9949	17.6294
4800000000	50.564	17.3948
4850000000	50.7619	17.8717
4900000000	50.5673	17.651
4950000000	50.0537	17.9608
5000000000	50.4939	17.8315
5050000000	49.7167	17.9457
5100000000	50.1425	18.016
5150000000	49.6244	17.6854
5200000000	**50.0252**	**18.1881**
5250000000	50.1686	17.9223
5300000000	49.5951	18.3587
5350000000	50.2514	18.3857
5400000000	49.395	18.2579
5450000000	49.8526	18.6505
5500000000	**49.4787**	**18.2207**
5550000000	49.1846	18.5048
5600000000	49.5102	18.4452
5650000000	49.0083	18.4434
5700000000	49.4357	19.0618
5750000000	49.1953	18.4952
5800000000	**48.7402**	**19.0314**
5850000000	49.6677	19.0997
5900000000	48.8999	18.8393
5950000000	49.0045	19.3712
6000000000	49.1801	19.3648

The conductivity (σ) can be given as:

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

where f = target f * 10^6

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

9. SYSTEM CHECK

The system performance check is performed prior to any usage of the system in order to guarantee reproducible results. The system performance check verifies that the system operates within its specifications of ±10%.

System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the SAM twin phantom filled with Head or Body simulating liquid of the following parameters.
- The DASY4 system with an Isotropic E-Field Probe EX3DV4 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 fine cube was chosen for cube
- Distance between probe sensors and phantom surface was set to 3 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 250 mW±3%.
- The results are normalized to 1 W input power.

450 to 2450 MHz Reference SAR Values for Body-tissue (From SPEAG)

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

Reference SAR Values for HEAD & BODY-tissue from calibration certificate of SPEAG. Certificate no: D5GHzV2-1003_Nov07 and D2450V2-748_Apr08

f (MHz)	Head Tissue		Body Tissue	
	SAR_{1g}	SAR_{10g}	SAR_{1g}	SAR_{10g}
2450			49.5	23.3
5200	78.6	22.1	74.7	21.1
5500	80.4	22.7	80.1	22.5
5800	79.9	22.4	70.8	19.8

9.1. SYSTEM CHECK RESULTS FOR D2450V2

System Validation Dipole: D2450V2 SN: 748

Date: October 8, 2009

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

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Body	2450	250	1g SAR:	52.7	49.5	6.46	±10
			10g SAR:	24.8	23.3	6.44	

Date: October 11, 2009

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

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Body	2450	250	1g SAR:	52.2	49.5	5.45	±10
			10g SAR:	24.3	23.3	4.29	

9.2. SYSTEM CHECK RESULTS FOR D5GHzV2

System Validation Dipole: D5GHzV2 SN 1003

Date: October 12, 2009

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

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Muscle	5200	250	1g SAR:	77.3	74.7	3.48	±10
			10g SAR:	22.2	21.1	5.21	
Muscle	5500	250	1g SAR:	75.9	80.1	-5.24	±10
			10g SAR:	21.4	22.5	-4.89	
Muscle	5800	250	1g SAR:	69.6	70.8	-1.69	±10
			10g SAR:	19.5	19.8	-1.52	

Date: October 18, 2009

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

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Muscle	5200	250	1g SAR:	77.7	74.7	4.02	±10
			10g SAR:	22.3	21.1	5.69	
Muscle	5500	250	1g SAR:	76.9	80.1	-4.00	±10
			10g SAR:	21.8	22.5	-3.11	
Muscle	5800	250	1g SAR:	69.9	70.8	-1.27	±10
			10g SAR:	19.6	19.8	-1.01	

System Validation Dipole: D5GHzV2 SN 1003

Date: October 25, 2009

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

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Muscle	5200	250	1g SAR:	78.2	74.7	4.69	±10
			10g SAR:	22.4	21.1	6.16	
Muscle	5500	250	1g SAR:	76.8	80.1	-4.12	±10
			10g SAR:	21.6	22.5	-4.00	
Muscle	5800	250	1g SAR:	70.5	70.8	-0.42	±10
			10g SAR:	19.7	19.8	-0.51	

Date: October 28, 2009

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

Medium	CW Signal (MHz)	Forward power (mW)	Measured (Normalized to 1 W)		Target	Delta (%)	Tolerance (%)
Muscle	5200	250	1g SAR:	78.0	74.7	4.42	±10
			10g SAR:	22.4	21.1	6.16	
Muscle	5500	250	1g SAR:	76.7	80.1	-4.24	±10
			10g SAR:	21.6	22.5	-4.00	
Muscle	5800	250	1g SAR:	70.4	70.8	-0.56	±10
			10g SAR:	19.7	19.8	-0.51	

10. OUTPUT POWER VERIFICATION

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

The client provided a special driver and program, CRTU v5.10.25.0, which enable a user to control the frequency and output power of the module.

The modes with highest output power channel were chosen for the conducted output power measurement.

Results:

802.11bgn mode (2.4 GHz band)

Mode	Channel	f (MHz)	Antenn			Duty Cycle (%)
			A	B	A+B	
802.11b	6	2437	16.70			100
802.11b	6	2437		16.60		100
802.11n 20 MHz	6	2437	13.60	13.62	16.62	99

802.11an mode (5 GHz band)

Mode	Channel	f (MHz)	Antenna			Duty Cycle (%)
			A	B	A+B	
5.2GHz Band						
802.11a	40	5200	16.75			100
802.11a	40	5200		16.80		100
802.11n 20 MHz	40	5200	13.66	13.62	16.65	99
5.3GHz Band						
802.11a	56	5280	16.72			100
802.11a	56	5280		16.81		100
802.11n 20 MHz	56	5280	13.90	13.90	16.91	99
5.5GHz Band						
802.11a	120	5600	16.82			100
802.11a	120	5600		16.65		100
802.11n 20 MHz	120	5600	13.65	13.90	16.79	99
5.8GHz Band						
802.11a	157	5785	16.68			100
802.11a	157	5785		16.82		100
802.11n 20 MHz	157	5785	13.68	13.66	16.68	99

11. SUMMARY OF TEST RESULTS

WORST-CASE CONFIGURATIONS

WNC antenna is used for all SAR testing. Additional SAR testing with ACON antenna is performed at worst-case test configuration.

11.1. SAR TEST RESULT FOR THE 2.4 GHZ BAND

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

Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
802.11b	6	2437	A	0.0180

2) Tablet Mode 1: Edge - Primary Landscape

Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
802.11b	6	2437	A	0.0009

3) Tablet Mode 2: Edge - Secondary Landscape

Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
802.11b	6	2437	A	0.0210

4) Tablet Mode 3: Edge – Primary Portrait

Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
802.11b	6	2437	B	0.0240

5) Tablet Mode 4: Edge – Secondary Portrait

Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
802.11b	6	2437	B	0.0190

6) Tablet Mode 5: Bottom Face - Lap-held

Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
802.11b	6	2437	A	0.0260
802.11b (with Acon antenna)	6	2437	A	0.0258
802.11b	6	2437	B	0.0170

11.2. SAR TEST RESULT FOR THE 5 GHZ BAND

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

Band	Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
5.2GHz Band	802.11a	40	5200	A	0.000276
5.3GHz Band	802.11n 20 MHz	56	5280	A	0.016000
5.5GHz Band	802.11n 20 MHz	120	5600	A	0.021000
5.8GHz Band	802.11n 20 MHz	157	5785	A	0.019000

2) Laptop Tablet Mode 1: Edge - Primary Landscape

Band	Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
5.2GHz Band	802.11a	40	5200	A	0.1280
	802.11a (with Acon Antenna)	40	5200	A	0.1260
5.3GHz Band	802.11n 20 MHz	56	5280	A	0.0780
5.5GHz Band	802.11n 20 MHz	120	5600	A	0.0490
5.8GHz Band	802.11n 20 MHz	157	5785	A	0.0510

3) Laptop Tablet Mode 2: Edge - Secondary Landscape

Band	Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
5.2GHz Band	802.11a	40	5200	A	0.033000
5.3GHz Band	802.11n 20 MHz	56	5280	A	0.018000
5.5GHz Band	802.11n 20 MHz	120	5600	A	0.000509
5.8GHz Band	802.11n 20 MHz	157	5785	A	0.000496

4) Laptop Tablet Mode 3: Edge - Primary Portrait

Band	Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
5.2GHz Band	802.11a	40	5200	B	0.0760
5.3GHz Band	802.11a	56	5280	B	0.1150
	802.11a (with Acon Antenna)	56	5280	B	0.1120
5.5GHz Band	802.11a	120	5600	B	0.1140
	802.11a (with Acon Antenna)	120	5600	B	0.1020
5.8GHz Band	802.11a	157	5785	B	0.1220
	802.11a (with Acon Antenna)	157	5785	B	0.1150

5) Laptop Tablet Mode 4: Edge - Secondary Portrait

Band	Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
5.2GHz Band	802.11a	40	5200	B	0.00094
5.3GHz Band	802.11a	56	5280	B	0.04200
5.5GHz Band	802.11a	120	5600	B	0.01200
5.8GHz Band	802.11a	157	5785	B	0.01220

6) Laptop Tablet Mode 5: Bottom Face - Lap-held (Antenna B)

Band	Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
5.2GHz Band	802.11a	40	5200	B	0.000445
5.3GHz Band	802.11a	56	5280	B	0.000068
5.5GHz Band	802.11a	120	5600	B	0.005690
5.8GHz Band	802.11a	157	5785	B	0.001220

7) Laptop Tablet Mode 5: Bottom Face - Lap-held (Antenna A)

Band	Mode	Channel	f (MHz)	Antenna	Measured SAR 1g (mW/g)
5.2GHz Band	802.11a	40	5200	A	0.000141
5.3GHz Band	802.11a	56	5280	A	0.000132
5.5GHz Band	802.11a	120	5600	A	0.000176
5.8GHz Band	802.11a	157	5785	A	0.000172

12. Enhanced Energy Coupling (KDB 447498)

According to KDB 447498, the test configuration with the highest 1-g SAR must be used to determine if additional SAR evaluation is required due to enhanced energy coupling at increased separation distances.

From the test results below, additional 1-g SAR evaluation is not required.

Worst-case test configuration	Band	Antenna-to-person distance (cm)		Peak SAR (mW/g)	E-field (V/m)	Lower than Initial (%)
Tablet - Lap-held	2.4 GHz	Initial	3.5	0.03	4.21	
		1	4	0.01	1.89	20.2%
Primary Landscape	5.2 GHz	Initial	14	0.21	4.98	
		1	14.5	0.15	4.23	72.1%
		2	15	0.14	4.08	67.1%
		3	15.5	0.08	3.52	36.0%
Primary Portrait	5.3 GHz	Initial	7.8	0.23	4.11	
		1	8.3	0.14	3.25	62.5%
		2	8.8	0.09	2.57	39.1%
Primary Portrait	5.5 GHz	Initial	8.8	0.21	3.25	
		1	7.8	0.18	3.02	86.3%
		2	8.3	0.08	2.03	39.0%
Primary Portrait	5.8 GHz	Initial	8.8	0.26	4.35	
		1	7.8	0.23	4.12	89.7%
		2	8.3	0.09	2.53	33.8%

13. WORST-CASE SAR TEST PLOTS

WORST-CASE SAR PLOT for 2.4 GHz Band

Date/Time: 10/11/2009 2:38:23 PM

Test Laboratory: Compliance Certification Services

Bottom Face - Lapheld

DUT: Lenovo; Type: X200 Tablet; Serial: NA

Communication System: 802.11bgn; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.91 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

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

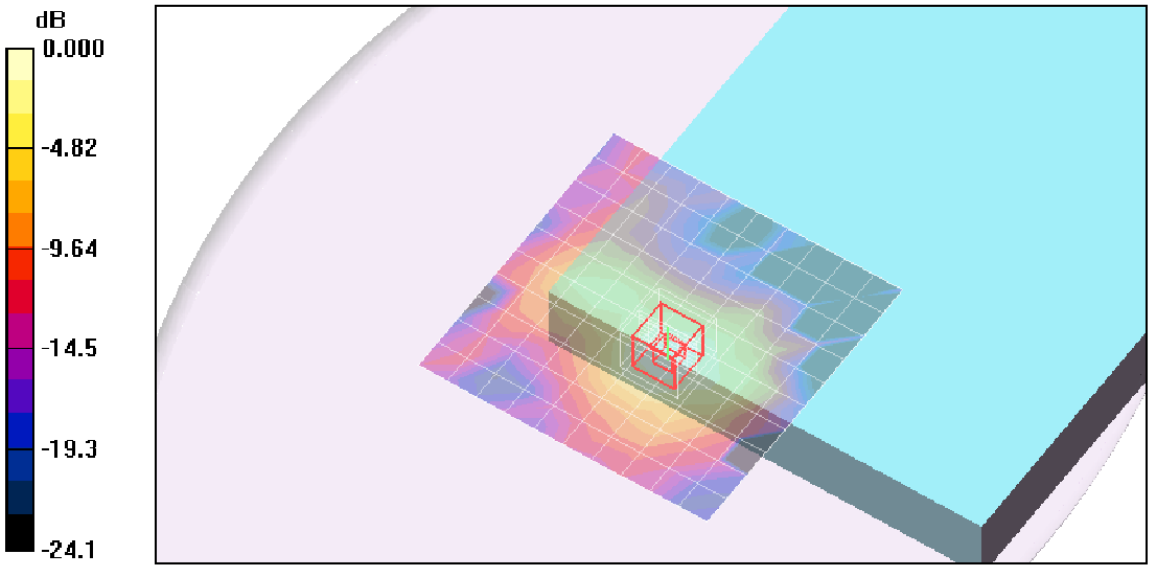
DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(6.48, 6.48, 6.48); Calibrated: 3/23/2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Lapheld, 802.11b M-ch_A Antenna/Area Scan (11x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.030 mW/g

Lapheld, 802.11b M-ch_A Antenna/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 3.43 V/m; Power Drift = 0.698 dB
Peak SAR (extrapolated) = 0.049 W/kg
SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.014 mW/g

Maximum value of SAR (measured) = 0.032 mW/g



0 dB = 0.032mW/g

WORST-CASE SAR PLOT for 5.2 GHz Band

Date/Time: 10/18/2009 2:21:27 PM

Test Laboratory: Compliance Certification Services

Primary Landscape_5.2GHz

DUT: Lenovo; Type: X200 Tablet; Serial: NA

Communication System: 802.11abgn; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.25 mho/m; ε_r = 50.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

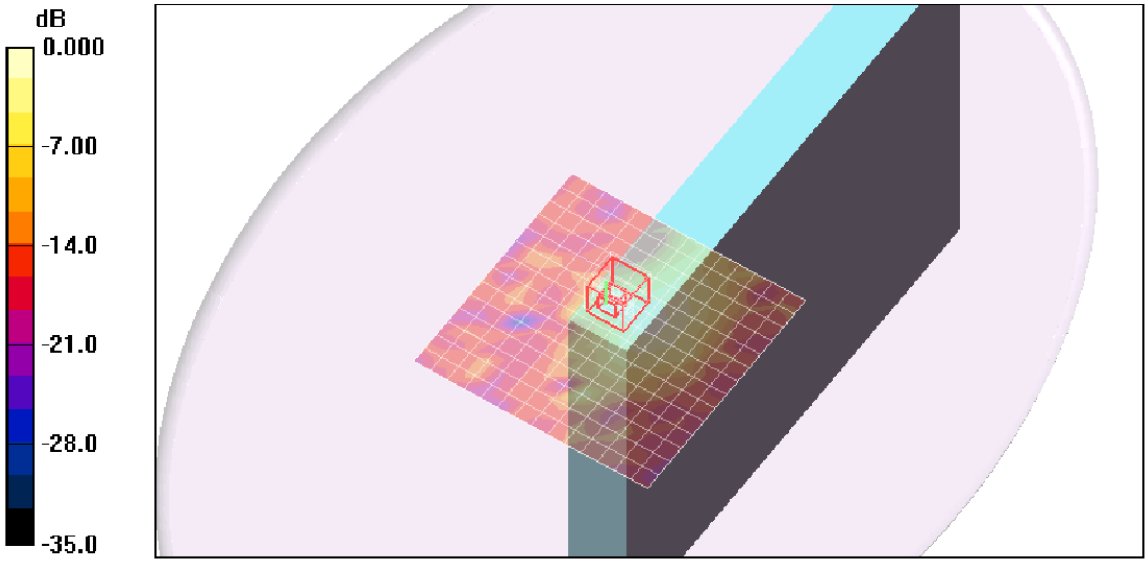
Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(4.08, 4.08, 4.08); Calibrated: 3/23/2009
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Lapheld - 802.11a_5.2G_A Antenna/Area Scan (15x15x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.200 mW/g

Lapheld - 802.11a_5.2G_A Antenna/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 4.21 V/m; Power Drift = 0.253 dB
Peak SAR (extrapolated) = 0.508 W/kg
SAR(1 g) = 0.128 mW/g; SAR(10 g) = 0.041 mW/g

Maximum value of SAR (measured) = 0.211 mW/g



0 dB = 0.211mW/g

WORST-CASE SAR PLOT for 5.3 GHz Band

Date/Time: 10/25/2009 3:32:59 PM

Test Laboratory: Compliance Certification Services

Primary Portrait_5.3GHz

DUT: Lenovo; Type: X200 Tablet; Serial: NA

Communication System: 802.11abgn; Frequency: 5280 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5280 MHz; σ = 5.35 mho/m; ε_r = 50; ρ = 1000 kg/m^3
Phantom section: Flat Section

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

DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(3.81, 3.81, 3.81); Calibrated: 3/23/2009
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 9/15/2009
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

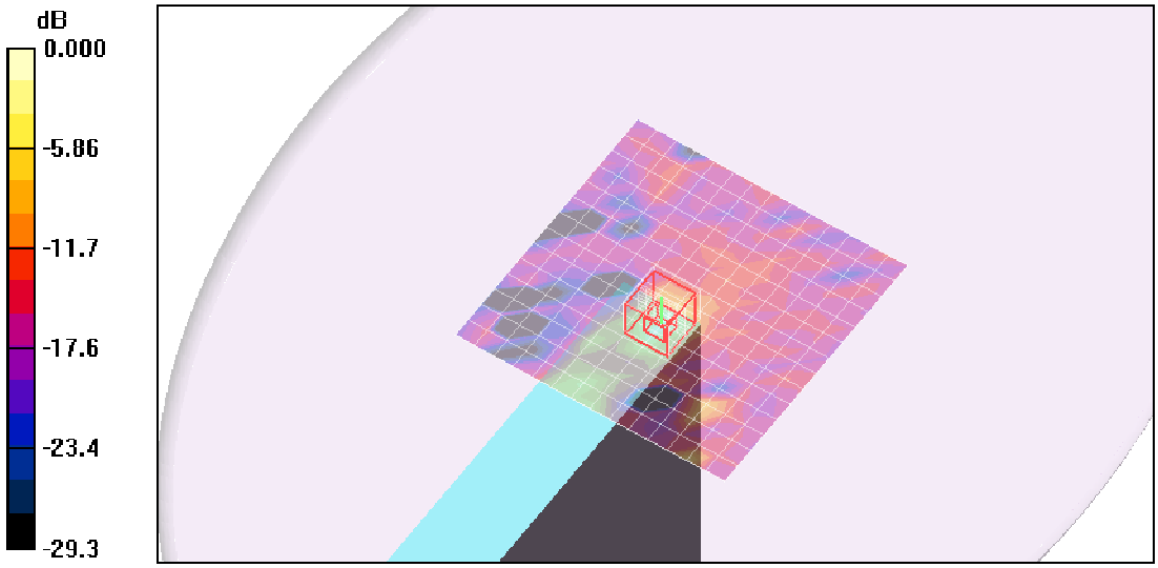
Lapheld - 802.11a_5.3G_B Antenna/Area Scan (15x15x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.199 mW/g

Lapheld - 802.11a_5.3G_B Antenna/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 1.48 V/m; Power Drift = 2.80 dB
Peak SAR (extrapolated) = 0.416 W/kg
SAR(1 g) = 0.115 mW/g; SAR(10 g) = 0.030 mW/g

Maximum value of SAR (measured) = 0.225 mW/g



0 dB = 0.225mW/g

WORST-CASE SAR PLOT for 5.5 GHz Band

Date/Time: 10/25/2009 4:10:44 PM

Test Laboratory: Compliance Certification Services

Primary Portrait_5.5GHz

DUT: Lenovo; Type: X200 Tablet; Serial: NA

Communication System: 802.11abgn; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5600 MHz; σ = 5.76 mho/m; ε_r = 49.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

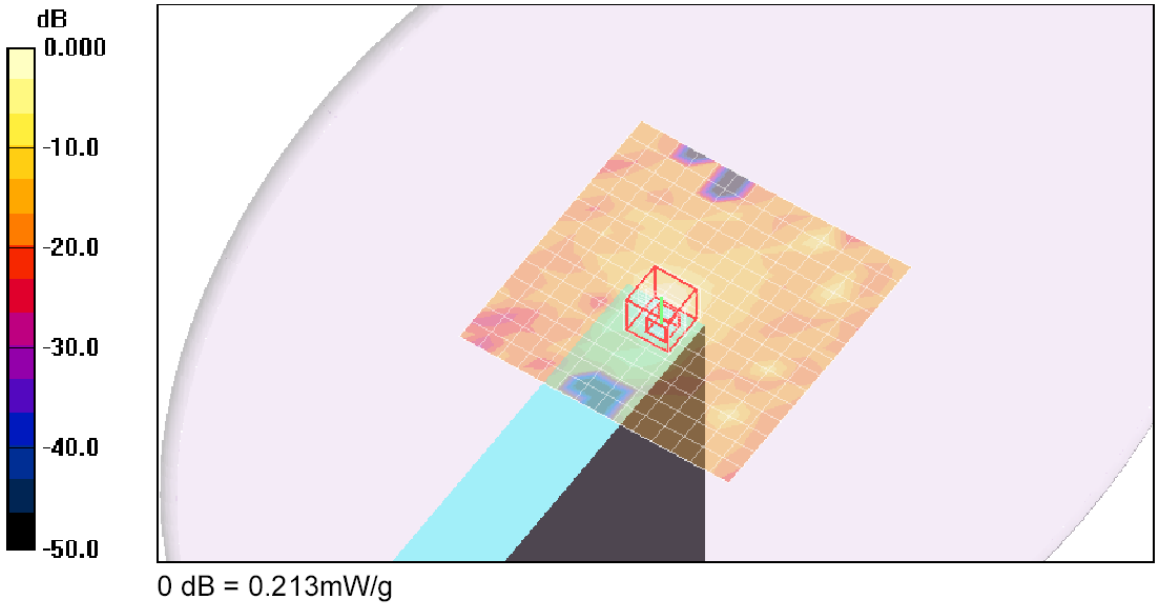
Room Ambient Temperature: 24.0 deg. C; Liquid Temperature: 23.0 deg. C

DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(3.61, 3.61, 3.61); Calibrated: 3/23/2009
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 9/15/2009
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Lapheld - 802.11a_5.5G_B Antenna/Area Scan (15x15x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.203 mW/g

Lapheld - 802.11a_5.5G_B Antenna/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.14 V/m; Power Drift = 6.97 dB
Peak SAR (extrapolated) = 0.437 W/kg
SAR(1 g) = 0.114 mW/g; SAR(10 g) = 0.036 mW/g

Maximum value of SAR (measured) = 0.213 mW/g



0 dB = 0.213mW/g

WORST-CASE SAR PLOT for 5.8 GHz Band

Date/Time: 10/25/2009 4:55:36 PM

Test Laboratory: Compliance Certification Services

Primary Portrait_5.8GHz

DUT: Lenovo; Type: X200 Tablet; Serial: NA

Communication System: 802.11abgn; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5785 MHz; σ = 6.09 mho/m; ε_r = 49; ρ = 1000 kg/m^3
Phantom section: Flat Section

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

DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV4 - SN3686; ConvF(3.84, 3.84, 3.84); Calibrated: 3/23/2009
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn500; Calibrated: 9/15/2009
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1003
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

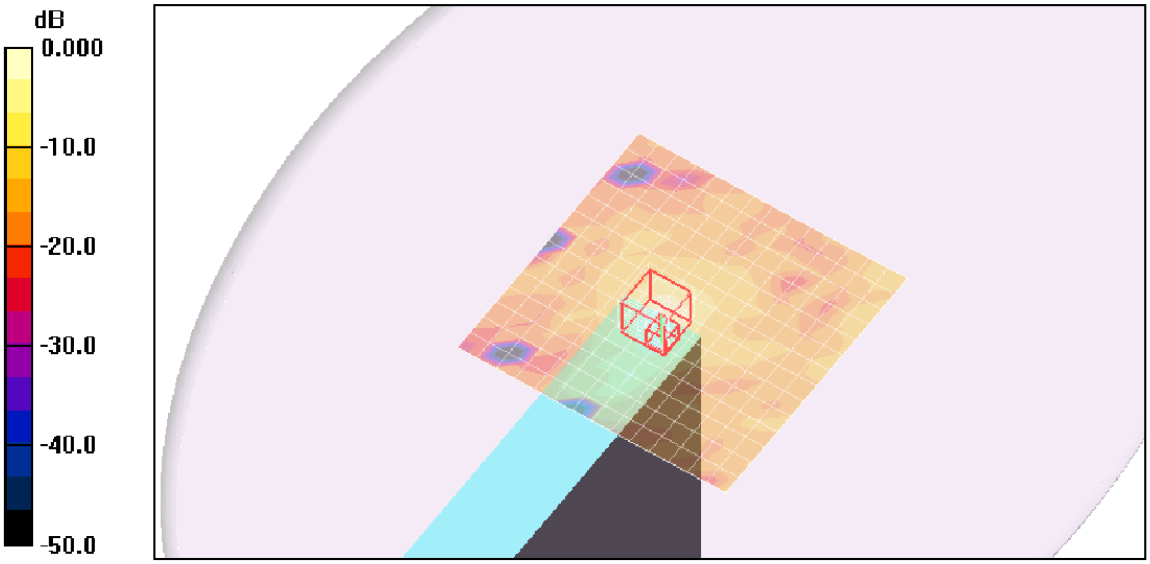
Lapheld - 802.11a_5.8G_B Antenna/Area Scan (15x15x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.202 mW/g

Lapheld - 802.11a_5.8G_B Antenna/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 2.96 V/m; Power Drift = -3.66 dB
Peak SAR (extrapolated) = 0.825 W/kg
SAR(1 g) = 0.122 mW/g; SAR(10 g) = 0.038 mW/g

Maximum value of SAR (measured) = 0.261 mW/g



0 dB = 0.261mW/g

14. ATTACHMENTS

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