SAR Test Report on
ELITE S10OT1

FCC ID: WL6-RTL8188CUS

Report Reference: MCN_ELITE_1101_FCC SAR

Date: 3, 25, 2011

Test Laboratory:

Beijing 7 layers Huarui Communications Technology Co., Ltd.
No.11 Yue Tan Nan Street, Xi Cheng District
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China P.R.

检 测
CNAS L4320

GLOBAL SYSTEM FOR
MOBILE COMMUNICATIONS

Note:
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1 General Information

1.1 Tester

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Position: Engineer

Department: MPT

Signature: Cai Jing

Reviewed by:

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Position: Engineer

Department: MPT

Date: 2011-3-25

Signature: Mao Huan

Accreditation scope responsible person:

Name: Yao Bin

Position: Technical manager

Date: 2011-3-25

Signature:

1.2 Test laboratory information

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Registration number:	No. CNAS L4320

1.3 Details of applicant and manufacturer

Name:	ELITEGROUP COMPUTER SYSTEMS CO., LTD
Address:	No.239,Sec.2,Ti Ding Blvd., Taipei, Taiwan
Contact Person:	CK Huang
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E-mail:	ck.huang@ecs.com.tw

2 Object Under Test

2.1 General OUT Description

Manufacturer:	ELITEGROUP COMPUTER SYSTEMS CO., LTD
Model Name:	S10OT1 S10OTxxxxx;S10OTxxxxx series;S10 series (The X means 0-9,A-Z,or blank for any characteristic for marketing purpose)
Product Category:	Tablet computer
Serial Number:	N.A
HW version:	N.A
SW version:	N.A

2.2 Identification of OUT

Item	Description	Manufacturer	Type	Serial Number	Remark
1	adapter	ENG	3A-242WU12	N.A	N.A
2	adapter	Huntkey	HKA02412020-2C	N.A	N.A
3	adapter	Darfon	BU24-120	N.A	N.A
4	battery	ATL	S20-5159B5N-0100	N.A	N.A

2.3 OUT Photographs


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

3 Standard

In USA the recent FCC exposure criteria [OET 65] are based upon the IEEE Standard C95.1 [IEEE C95.1]. The IEEE standard C95.a sets limits for human exposure to radio frequency electromagnetic in the frequency range 3 kHz to 300GHz.

KDB 248227 D01 SAR meas for 802 11 a b g v01r02:SAR Measurement Procedures for 802.11a/b/g Transmitters

KDB 616217 D03 SAR Supp Note and Netbook laptop V01:SAR Evaluation Considerations for Laptop/Notebook/Netbook and Tablet Computers - Supplement to KDB 616217

KDB 447498 D01 Mobile Portable RF Exposure V04 Mobile and Portable Device

RF Exposure Procedures and Equipment Authorization Policies

3.1 Distinction between exposed population, duration of exposure and frequencies

The American standard [IEEE C95.1] distinguishes between controlled and uncontrolled environment. Controlled environments are locations where there is exposure that may be incurred by persons who are aware of the potential for exposure as a concomitant of employment or by other cognizant persons. Uncontrolled environments are locations where there is the exposure of individuals who have no knowledge or control of their exposure. The exposures may occur in living quarters or workplaces. For exposure in controlled environments higher field strengths are admissible. In addition the duration of exposure is considered.

Due to the influence of frequency on important parameters, as the penetration depth of the electromagnetic fields into the human body and the absorption capability of different tissues, the limits in general vary with frequency.

3.2 Distinction between Maximum Permissible Exposure and SAR Limits

The biological relevant parameter describing the effects of electromagnetic fields in the frequency range of interest is the specific absorption rate SAR (dimension: power/mass). It is a measure of the power absorbed per unit mass. The SAR may be spatially averaged over the total mass of an exposed body or its parts. The SAR is calculated from the R.M.S. electric filed strength E inside the human body, the conductivity σ and the mass density ρ of the biological tissue:

$$SAR = \sigma \frac{E^2}{\rho} = c \left. \frac{\partial T}{\partial t} \right|_{t \to 0+}$$

The specific absorption rate describes the initial rate of temperature rise $\partial T/\partial t$ as a function of the specific heat capacity c f the tissue. A limitation of the specific absorption rate perverts an excessive heating of the human body by electromagnetic energy.

As it is sometimes difficult to determine the SAR directly by measurement (e.g. whole body averaged SAR), the standard specifies more readily measurable maximum permissible exposures in terms of external electric E and magnetic field strength H and power density S, derived from the SAR limits. The limits for E, H and S have been fixed so that even under worst case conditions, the limits for the specific absorption rate SAR are not exceeded.

3.3 SAR limit

In this report the comparison between the American exposure limits and the measured data is made using the peak spatial-average SAR; the power level of the device under test guarantees that the whole body averaged SAR is not exceeded.

Having in mind a worst case consideration, the SAR limit is valid for uncontrolled environment and mobile respectively portable transmitters. According to table below the SAR values have to be averaged over a mass of 1g (SAR_{1g}) with the shape of a cube.

Relevant peak spatial-average SAR limit averaged over a mass of 1g.

Exposure limits	SAR(mw/g)	
	General Population/Uncontrolled Environment	Occupational/Controlled Exposure Environment
Spatial Average ANSI (Averaged over the whole body)	0.08	0.4
Spatial Peak ANSI (Averaged over any 1-g of tissue)	1.6	8.0
Spatial Peak ICNIRP/ANSI (hands/wrists/feet/ankles averaged over 10-g)	4.0	20.0
Localized SAR - ICNIRP - (Head and Trunk 10-g)	2.0	10.0

4 TEST REQUIREMENTS

IEEE has published a recommended practice for determining the peak spatial-average specific absorption rate (SAR) in the human body due to wireless communications devices [IEEE 1528-2003] for evaluation compliance of mobile phones with IEEE Standard C95.1 [IEEE C95.1].

4.1 General requirements

The test shall be performed in a laboratory with an environment which avoids influence on SAR measurements by ambient EM sources and any reflection from the environment itself. The ambient temperature shall be in the range of 20°C to 24°C during the test.

4.2 Phantom requirements

A flat phantom should be used with the recommended tissue-equivalent liquid for system check and system validation purposes only The minimum transverse dimensions (width and length) should be such that the SAR results are not affected by more than 1% compared to a phantom with larger dimensions. For a half-wavelength dipole source, the length should be at least 0.6 times the wavelength in air in the major dimension, and width should be at least 0.4 times the wavelength in air in the minor dimension, withthe bottom surface area larger than a corresponding ellipse For 800 MHz–3 GHz, the dimensions of the flat phantom should be 22.5 cm × 15 cm in the major and minor axes, respectively (corresponding to minimum transverse dimensions at 800 MHz). The relative permittivity of the phantom shell material should be less than 5 and the loss tangent less than 0.05. The thickness of the flat phantom bottom section shall be 2 mm for the frequency range of 800 MHz–3 GHz and less than6.5 mm for frequencies below 800 MHz. The thickness shall be uniform within a tolerance of ± 0.2 mm.

4.3 Brain & Muscle Simulating Mixture Characterization

The brain and muscle mixtures consist of a viscous gel using hydroxethylcellullose (HEC) gelling agent and saline solution. Preservation with a bacteriacide is added and visual inspection is made to make sure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 have been incorporated in the following table. Other head and body tissue parameters that have not bee specified in P1528 are derived from the issue dielectric parameters computed from the 4-Cole-Cole equations.

Composition of the Brain & Muscle Tissue Equivalent Matter

INGREDIENTS	SIMULATING TISSUE	
	2450MHz Brain	2450MHz Muscle
Water	62.7	73.2
DGBE	0	26.7
Sugar	0	0
Salt	0.5	0.1
Triton X-100	36.8	0
Cellulose	0	0
Preventol	0	0

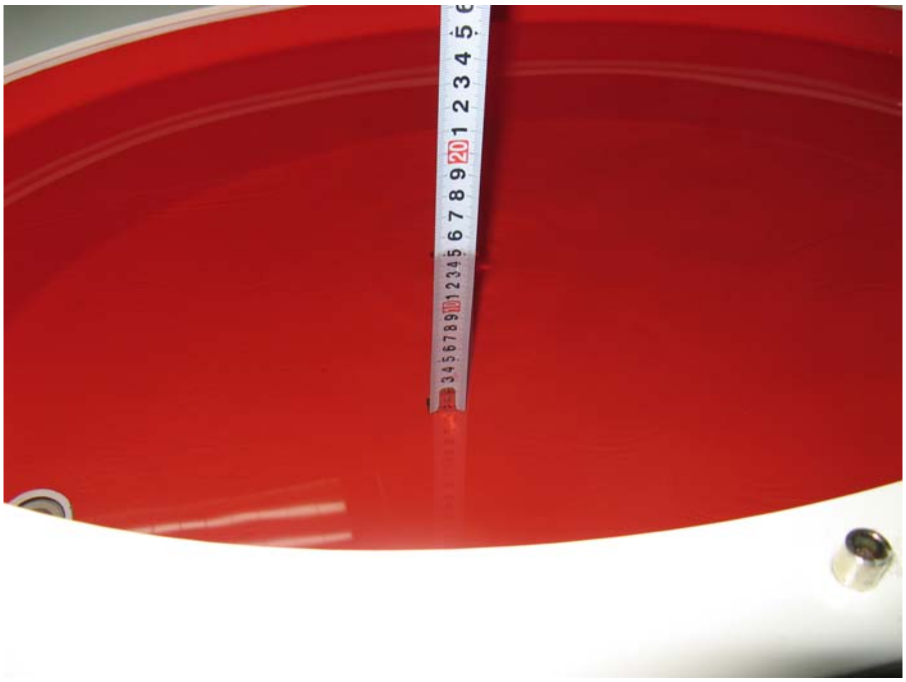
4.4 Test positions

According to KDB 447498 4)ii)(2)SAR is required for both back and edge in direct contact with a flat phantom with the most conservative exposure condition.

The test positions are shown in the chapter 5.5 below.

4.5 Liquid Depth

The liquid depth of body phantom is large than 15cm, as shown below:



5 Test Procedure

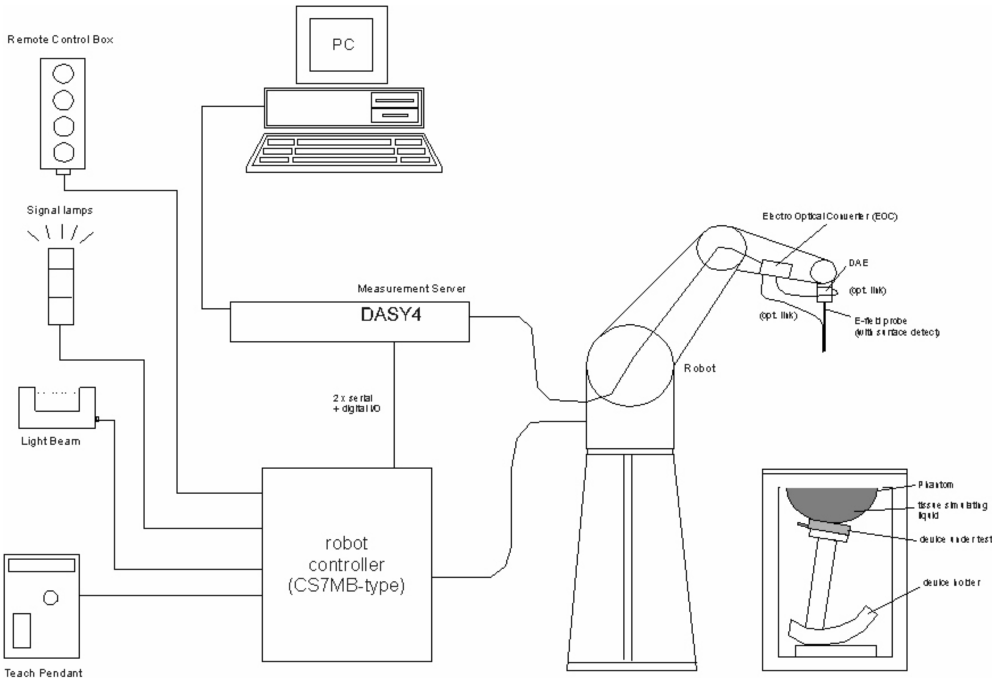
5.1 Test Equipment List

DASY is an abbreviation of "**D**osimetric **A**ssessment **Sy**stem" and describes a system that is able to determine the SAR distribution inside a phantom of a human being according to different standards. The DASY4 system consists of the following items:

TYPE	ITEM	S/N	CALIBRATION DATE	DUE DATE
CMU200	Wireless Communication Test Set	109172	2010-7-23	2011-7-23
ES3DV3	Probe	3109	2010-8-25	2011-8-25
SD000D04 BC	DAE4	685	2010-8-19	2011-8-19
D2450V2	dipole	787	2010-8-26	2011-8-26
NRVD	Power Meter	835843/014	2011-1-12	2012-1-12
E4438C	Signal Generator	MY42082163	N.A	N.A
NRV-Z4	Power Sensor	100381	N.A	N.A
NRV-Z2	Power Sensor	100211	N.A	N.A
778D	Dual directional coupler	20040	N.A	N.A
E3640A	DC Power Supply	MY40008487	N.A	N.A
85070E	Probe kit	MY44300214	N.A	N.A
E5071B	Network Analyzer	MY42404001	2011-1-14	2012-1-14

5.2 Test System Setup

Tests are performed in setup according to the scheme below:



5.3 Measurement Procedure

The following steps are used for each test position:

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures 5x5x7 points with step size 8, 8 and 5 mm. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 1 g. For any secondary peaks found in the area scan which are within 2 dB of the maximum peak and are not within this zoom scan, the Step 3 zoom scan should be repeated. The DASY4 software can automatically detect the second hot point if there is and make multiple zoom scan to choose the maximum SAR value measured.

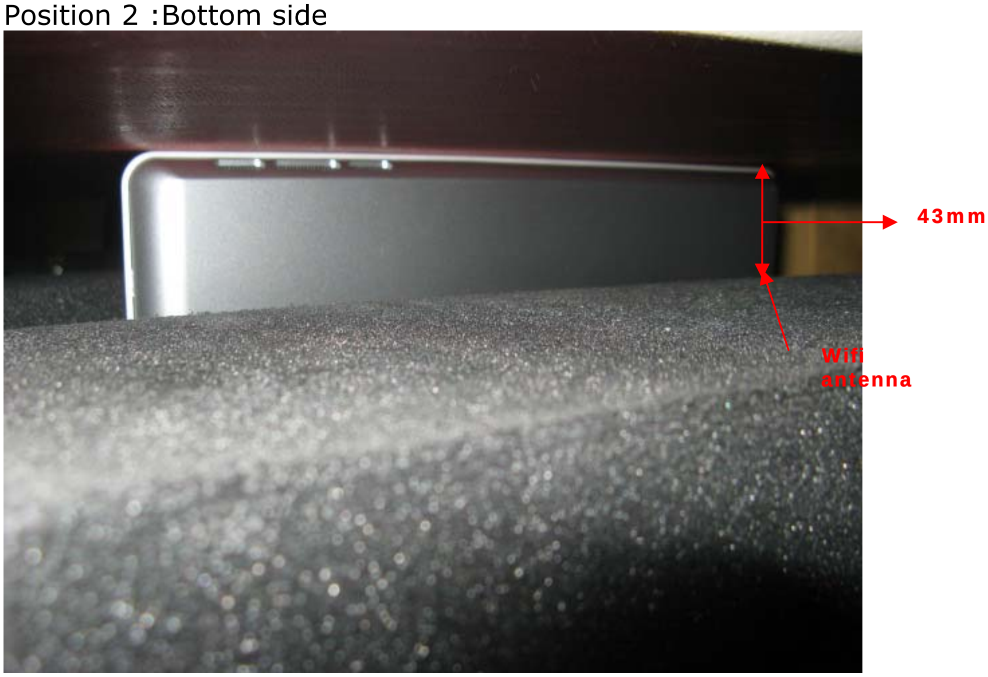
5.4 Test to be performed

The SAR test shall be performed with all applicable positions described above, using the centre frequency of each available operating band and mode with the maximum peak power level. Then the configuration giving rise to the maximum mass-averaged SAR shall be used to test the low-end and the high-end frequencies for each transmitting band and mode respectively.

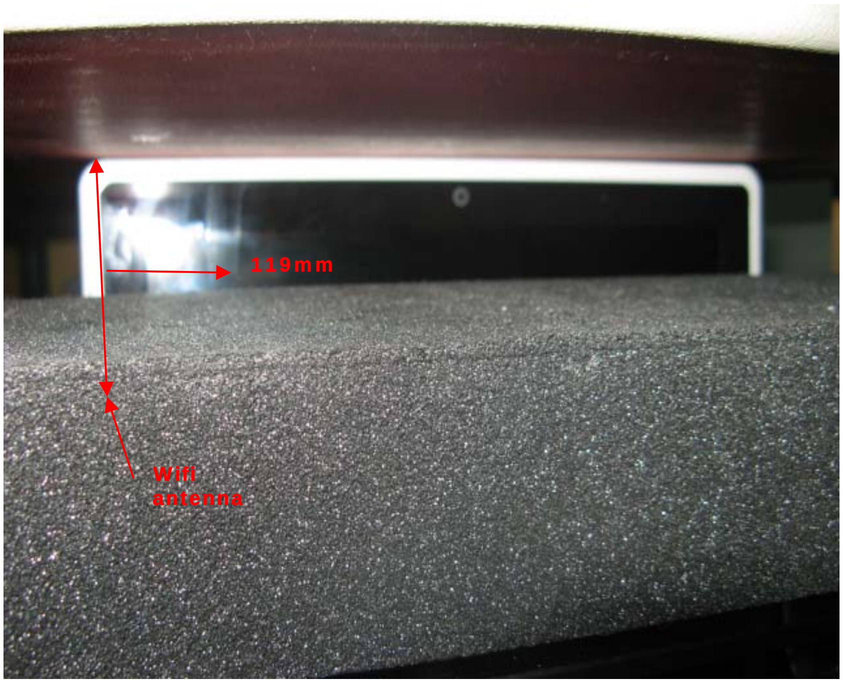
5.5 Test positions for device under test

Position 1 :Back side

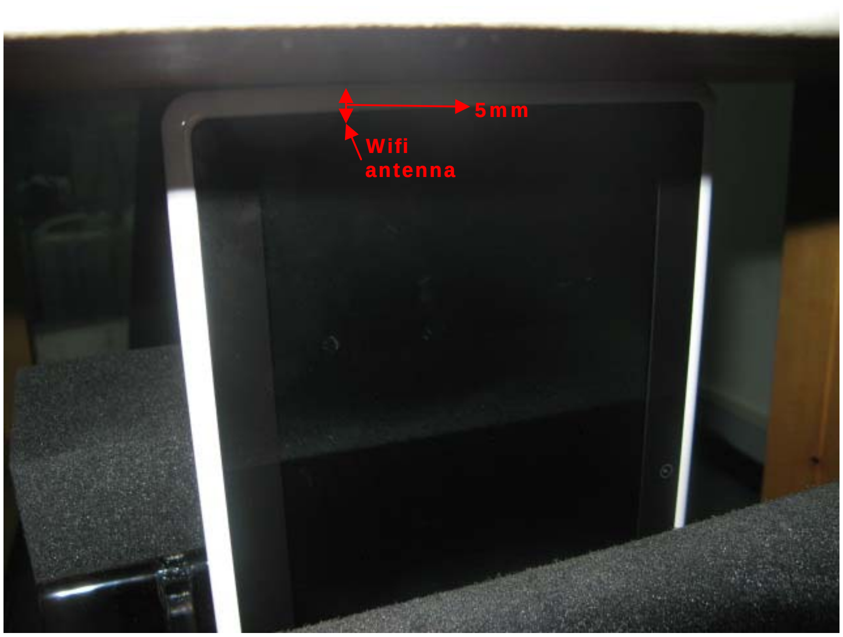
Position 2 :Bottom side



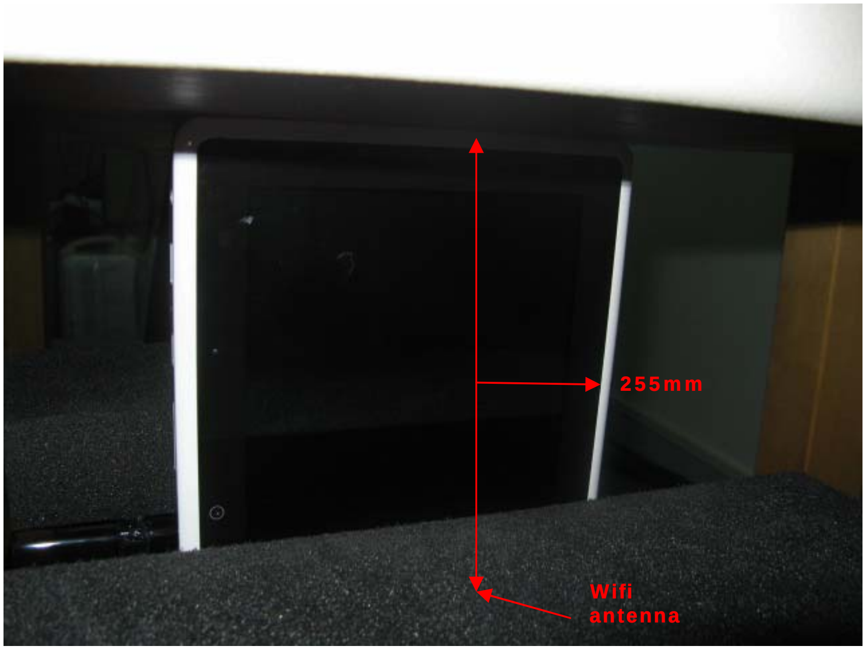
Position 3 :Top side



Position4 :Left side



Position5 :Right side



According to KDB 447498 4)ii)(2)SAR is required only for the edge with the most conservative exposure condition. No SAR at this position.

5.6 Test environment

	Ambient humidity (%)	Ambient temperature (°C)	Liquid temperature (°C)
standard	30~~70	20~~25	20~~24
Date: 2011-3-07	35	22.5	21.2

5.7 Liquid parameters

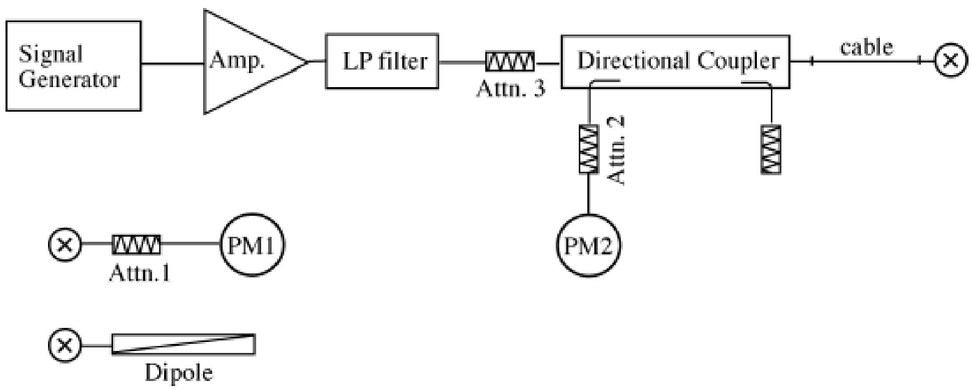
Prior to conducting SAR measurements, the relative permittivity ε_r, and the conductivity σ of the tissue simulating liquids were measured with the Dielectric Probe Kit. These values of the tissue simulate are shown in the table below. The recommended limits for permittivity and minimum conductivity are also shown.

Date: 2011-03-07

Frequency	Tissue Type	Type	Dielectric Parameters	
			permittivity	conductivity
2450MHz	Body	Target	52.7	1.95
		±5% window	50.07-53.227	1.85-2.05
		Measured	50.92	1.89

5.8 System performance check

A system check measurement was made following the determination of the dielectric parameters of the tissue simulating liquids using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. For power setup, please see the following pictures:



The figure shows the recommended setup. The PM1 (incl. Att1) measures the forward power at the location of the system performance check dipole connector. The signal generator is adjusted for the desired forward power at the dipole connector and the power meter PM2 is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2. The system checking results are given in the table below. Please see Annex B for detailed report.

Date:	Tissue	Input Power (mW)	Targeted SAR(1g) (mW/g)	Measured SAR(1g) (mW/g)	Normalized to 1W SAR(1g) (mW/g)	Deviation (%) (<±10%)
3/07/2011	2450MHZ Body	250	13.7	13.1	54.8	-4.4%

5.9 Conducted power

The conducted power has been compensated with cable loss and connector loss.

Model	Channel	Date rate	average power (dBm)	Peak power(dBm)
802.11b	1	1	15.9	18.35
		2	15.87	18.32
		5.5	15.86	18.30
		11	15.81	18.29
	6	1	15.9	18.62
		2	15.86	18.61
		5.5	15.80	18.58
		11	15.78	18.57
	11	1	15.87	18.67
		2	15.85	18.65
		5.5	15.82	18.62
		11	15.80	18.6
802.11g	1	6	13.91	20.45
		9	13.90	20.43
		12	13.87	20.42
		18	13.86	20.40
		24	13.85	20.38
		36	13.82	20.37
		48	13.81	20.35
		54	13.8	20.34
	6	6	14.05	20.84
		9	14.03	20.83
		12	14.02	20.80
		18	13.99	20.79
		24	13.98	20.78
		36	13.97	20.76

		48	13.95	20.75
		54	13.94	20.73
	11	6	14.14	20.78
		9	14.13	20.76
		12	14.09	20.75
		18	14.07	20.74
		24	14.04	20.72
		36	14.03	20.71
		48	14.02	20.7
		54	14.01	20.69
802.11n 20M	1	MCS0	13.31	20.25
		MCS1	13.30	20.23
		MCS2	13.29	20.21
		MCS3	13.27	20.2
		MCS4	13.26	20.19
		MCS5	13.25	20.18
		MCS6	13.23	20.16
		MCS7	13.2	20.15
	6	MCS0	13.29	20.21
		MCS1	13.28	20.2
		MCS2	13.27	20.19
		MCS3	13.25	20.17
		MCS4	13.24	20.15
		MCS5	13.21	20.13
		MCS6	13.20	20.11
		MCS7	13.18	20.1
	11	MCS0	13.13	20.04
		MCS1	13.12	20.03
		MCS2	13.10	20.02
		MCS3	13.09	19.99

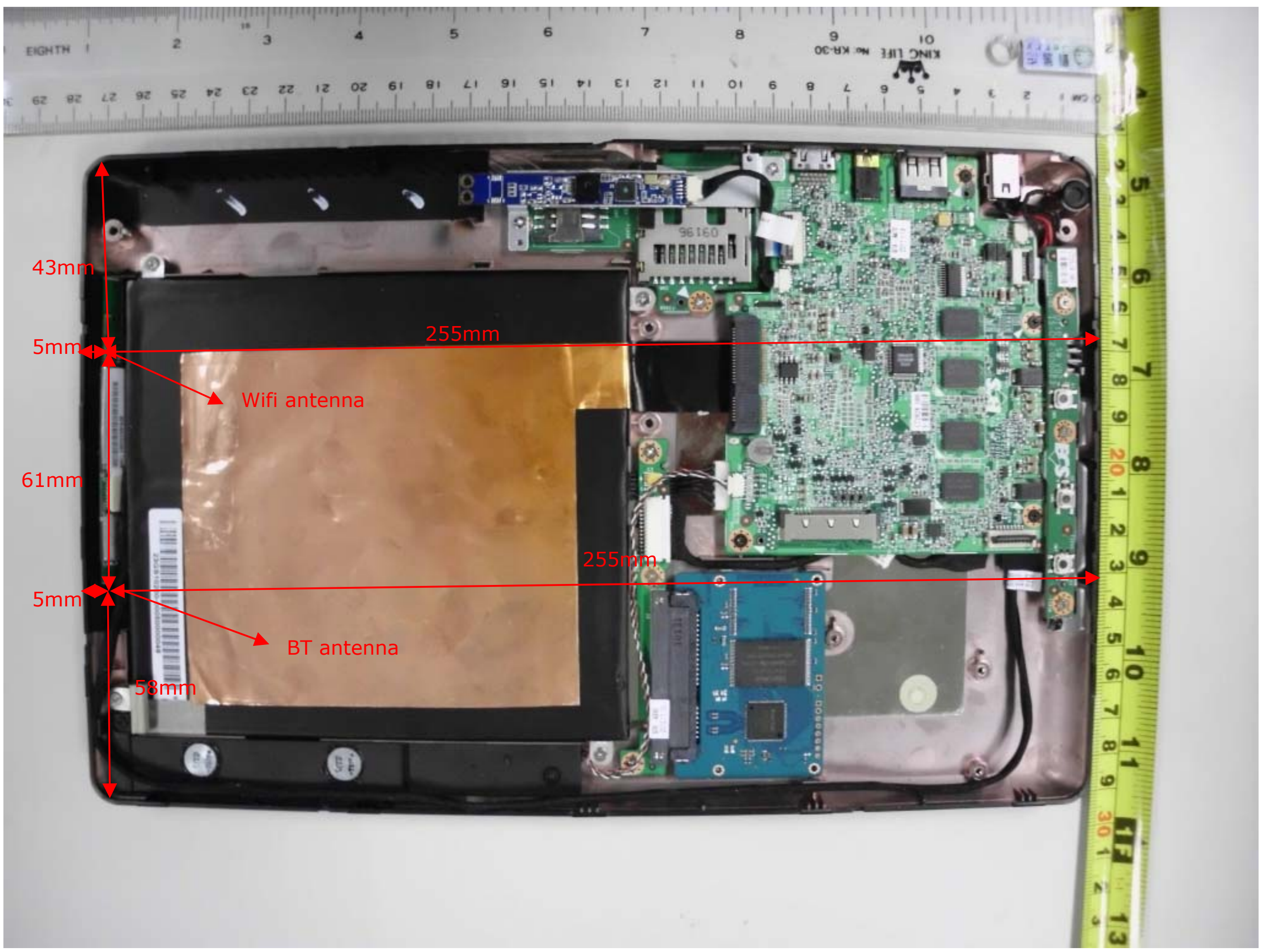
		MCS4	12.07	19.98
		MCS5	12.06	19.96
		MCS6	12.04	19.94
		MCS7	12.03	19.91
802.11n 40M	3	MCS0	13.02	18.1
		MCS1	13.01	18.08
		MCS2	12.98	18.07
		MCS3	12.96	18.05
		MCS4	12.95	18.02
		MCS5	12.94	18.01
		MCS6	12.91	17.99
		MCS7	12.90	17.96
	6	MCS0	12.93	17.97
		MCS1	12.90	17.96
		MCS2	12.89	17.95
		MCS3	12.87	17.93
		MCS4	12.85	17.91
		MCS5	12.83	17.90
		MCS6	12.80	17.89
		MCS7	12.79	17.87
	9	MCS0	12.91	17.96
		MCS1	12.9	17.95
		MCS2	12.89	17.93
		MCS3	12.87	17.91
		MCS4	12.86	17.90
		MCS5	12.85	17.87
		MCS6	12.83	17.86
		MCS7	12.80	17.84

5.10 Antenna Seperation

According to FCC KDB 447498 section 4 requirements:

1) and the separation of the Wifi and BT antenna is 61mm, large than 50mm, as specified in the documents.
2) The sum of the 1-g SAR is < 1.6 W/kg for all of all simultaneous transmitting antennas that require stand-alone SAR evaluation.
3) the conducted power of Bluetooth is is 3.56 mW less than 60/f(GHz)， so the stand-alone SAR for BT is not required

So the SAR is not required for the simultaneous transmission.



6 SAR test results and evaluation

6.1 Measurement Result

The device should be tested on all applicable positions. each configuration should be tested with the antenna in its fully extended and fully retracted positions. These test configurations should be tested at the high, middle and low frequency channels of each operating mode.

6.1.1 Body SAR test results

Test was performed on date 2011-3-7

802.11b

Test configuration	Test position	SAR_{1g} [W/kg] / Power Drift [dB]		
		Channel 1 [low] 2412MHz	Channel 6 [mid] 2437 MHz	Channel 11 [high] 2462 MHz
Back side	Position 1	1.36 / 0.182	1.35 / 0.166	**1.4 / 0.104**
Bottom side	Position 2	- / -	0.013 / 0.0913	/
Top side	Position 3	- / -	0.00401 / -0.164	- / -
Left side	Position 4	- / -	0.547 / 0.0432	- / -
Right side	Position 5	- / -	- / -	- / -

SAR is not required for 802.11g/n channel when the maximum average output power is less than 0.25dB higher than that measure on the corresponding 802.11b channels.

6.2 Summary and comparison to the limit

All test results are passed the uncontrolled SAR limit of 1.6W/kg.

7 Reports of DASY4 system

7.1 Detailed Measurement Report

7.1.1 Maximum body SAR of 802.11b

File Name: MCN_ELITE_1101_S10_WIFI_Back Side_11CH 20110307.da4

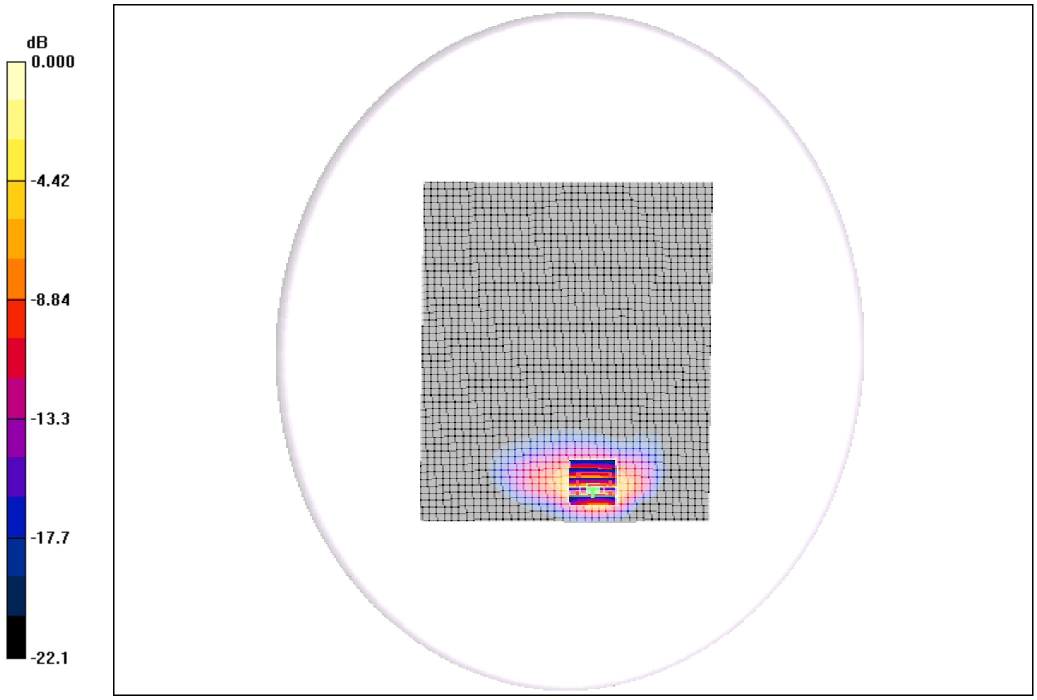
DUT: 11020032;

Communication System: 802.11b/g; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2462 MHz; σ = 1.91 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3 ;
Medium Notes: Ambient humidity:35; Ambient temperature: 22.5; Liquid temperature: 21.2;
Phantom section: Flat Section ;Phantom: Flat Phantom ELI4.0;Type: QDOVA001BA

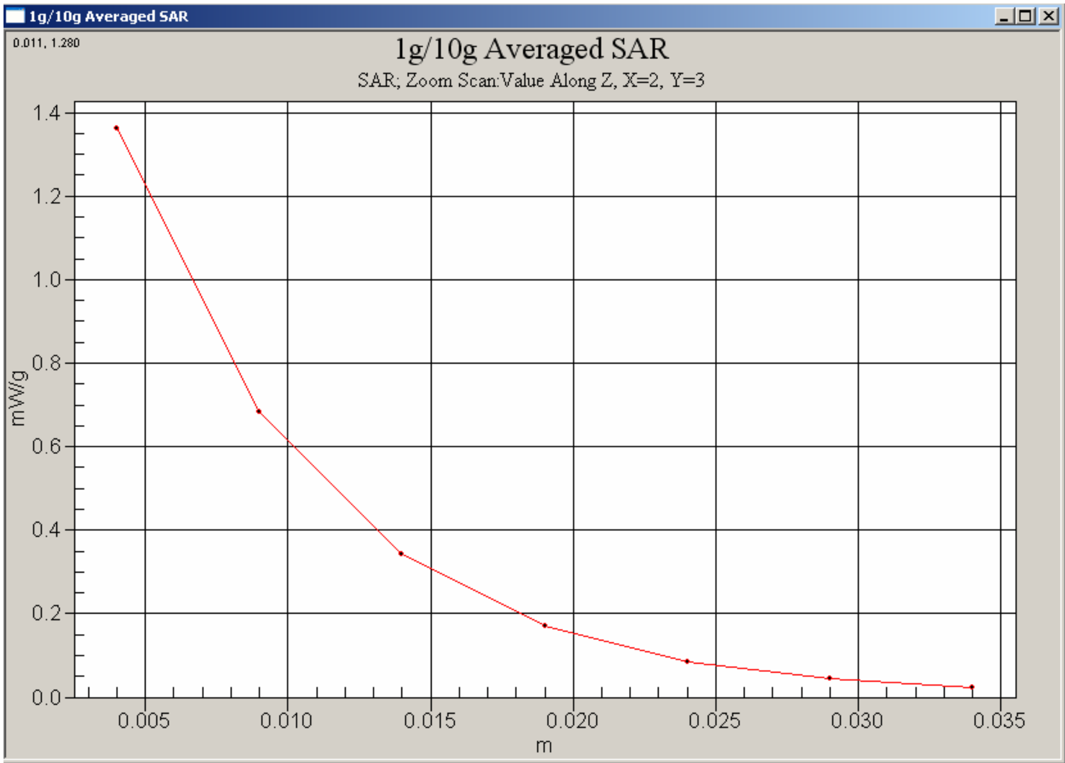
DASY4 Configuration:
- Probe: ES3DV3 - SN3109; ConvF(4.26, 4.26, 4.26); Calibrated: 2010-8-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn685; Calibrated: 2010-8-19
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 171

high/Area Scan (131x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.37 mW/g

high/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.14 V/m; Power Drift = 0.104 dB
Peak SAR (extrapolated) = 3.45 W/kg
SAR(1 g) = 1.4 mW/g; SAR(10 g) = 0.564 mW/g
Maximum value of SAR (measured) = 1.36 mW/g



0 dB = 1.36mW/g


1g/10g Averaged SAR
0.011, 1.280
1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=2, Y=3
mW/g
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.005
0.010
0.015
0.020
0.025
0.030
0.035
m

7.2 System performance check report

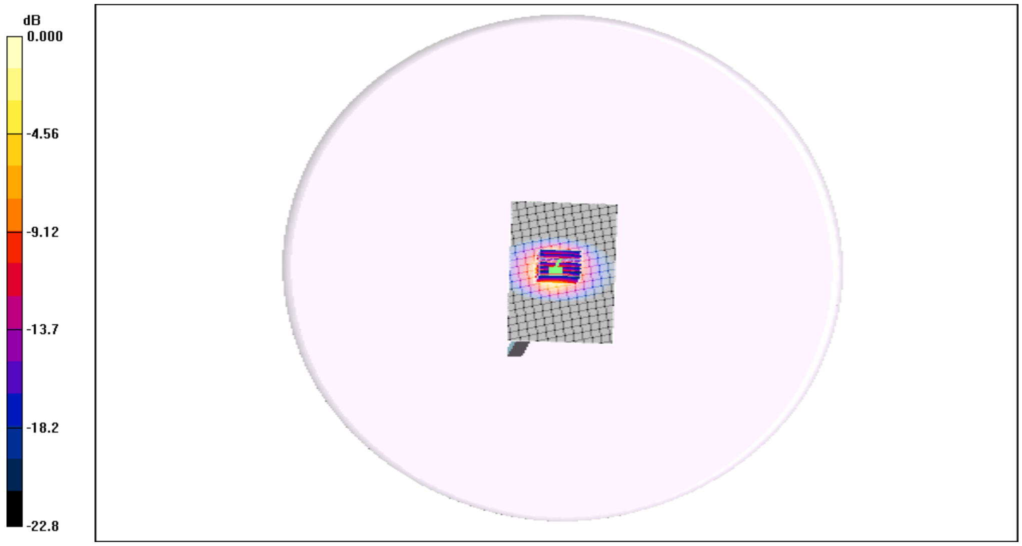
File Name: Systemcheck MSL2450 201103007.da4

DUT: Dipole 2450 MHz

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.89 mho/m; ε_r = 50; ρ = 1000 kg/m^3 ;
Medium Notes: Ambient humidity:35; Ambient temperature: 22.5; Liquid temperature: 21.2;
Phantom section: Flat Section ;Phantom: Flat Phantom ELI4.0;Type: QDOVA001BA

DASY4 Configuration:
- Probe: ES3DV3 - SN3109; ConvF(4.26, 4.26, 4.26); Calibrated: 2010-8-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn685; Calibrated: 2010-8-19
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 171

2450/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 16.1 mW/g
2450/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 78.6 V/m; Power Drift = -0.061 dB
Peak SAR (extrapolated) = 27.9 W/kg
SAR(1 g) = 13.1 mW/g; SAR(10 g) = 5.98 mW/g
Maximum value of SAR (measured) = 14.9 mW/g



0 dB = 14.9mW/g

8 Uncertainty budget

It includes the uncertainty budget suggested by the [IEEE P1528] and determined by Schmid & Partner Engineering AG. **The expanded uncertainty (K=2) is assessed to be ±22.0%.**

Error Source	Type	Uncertainty Value (%)	Probability Distribution	ci	Standard Uncertainty (%) u_i' (%)	Degree of freedom Veff or vi
System repetivity	A	0.5	N	1	1.5	4
Measurement system						
—probe calibration	B	5.9	N	1	5.9	∞
—axial isotropy of the probe	B	4.7	R	0.7	1.9	∞
—hemisphere isotropy of the probe	B	9.6	R	0.7	3.9	
—probe linearity	B	4.7	R	1	2.7	∞
—detection limit	B	1.0	R	1	0.6	∞
—boundary effect	B	1.0	R	1	0.6	∞
—Readout Electronics	B	0.3	N	1	0.3	∞
—response time	B	0.8	N	1	0.8	∞
—Noise	B	0	N	1	0	∞
—Integration Time	B	2.6	N	1	2.6	∞
Mechanical constraints						
—Scanning System	B	0.4	R	1	0.2	∞
—Phantom Shell	B	4.0	R	1	2.3	∞
—Probe Positioning	B	2.9	R	1	1.7	∞
—Device Positioning	B	2.0	N	1	2.9	145
Physical Parameters						
—liquid conductivity (deviation from target)	B	5.0	R	0.5	1.4	∞
—liquid conductivity(measurement error)	B	4.3	R	0.5	1.2	∞

—liquid permittivity(deviation from target)	B	5.0	R	0.5	1.4	∞
—liquid permittivity(measurement error)	B	4.3	R	0.5	1.2	∞
—Power Drift	B	5.0	R	1	2.9	∞
—RF Ambient Conditions	B	3.0	R	1	1.7	∞
Post-Processing						
—Extrap. and Integration	B	1.0	R	1	0.6	∞
—Combined Std. Uncertainty					11.0	∞
Expanded STD Uncertainty					22.0	∞

9 Reference Document

[1] Federal Communications Commission: Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields, Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01), FCC, 2001.

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[3] IEEE Std 1528-2003: IEEE Recommended Practice for Determining the Peak Spatial-Average Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques. 1528-2003, December 19, 2003.the Institute of Electrical and Electronics Engineers.

[4] Schmid & Partner Engineering AG, DASY4 Manual, February 2004 17-5