TEST REPORT

Equipment Under Test	:	Wireless TV compatible with 802.11b/g
Model No.	:	15LW1R
FCC ID	:	BEJ15LW1R
Applicant	:	LG Electronics Inc.
Address of Applicant	:	642, Jinpyeong-dong, Gumi-city, Gyeongsangbuk-do, 730-727, Korea
Date of Receipt	:	November 30, 2004
Date of Test(s)	:	December 2, 2004
Date of Issue	:	December 20, 2004

Standards:

FCC OET Bulletin 65 supplement C,

ANSI/IEEE C95.1, C95.3

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Testing Korea Co., Ltd. or testing done by SGS Testing Korea Co., Ltd. in connection with distribution or use of the product described in this report must be approved by SGS Testing Korea Co., Ltd. in writing.

Tested by	**:**	**Elvin Lee**		**December 2, 2004**
Approved by	**:**	**Albert Lim**		**December 20, 2004**

Contents

APPENDIX

1. DASY4 SAR Report
2. Uncertainty Analysis
3. Photographs of EUT & EUT's Test Setup
4. Calibration certificate

1. General Information

1.1 Testing Laboratory

SGS Testing Korea Co., Ltd.
Radio Div. 2FL, 18-34, Sanbon-dong, Gunpo-Si, Gyeonggi-do Korea 435-040
Telephone : +82 +31 428 5700
FAX : +82 +31 427 2371
Homepage : www.sgstesting.co.kr

1.2 Details of Applicant

Name : LG Electronics Inc.
Address : 642, Jinpyeong-dong, Gumi-city, Gyeongsangbuk-do, 730-727, Korea

1.3 Description of EUT(s)

Equipment Type	Wireless TV compatible with 802.11b/g	
Test Procedure	FCC OET Bulletin 65, Supplement C	
TX Frequency range	2412-2462 MHz	
FCC ID	BEJ15LW1R	
Model No.	15LW1R	
Number Of Channel	11	
Modulation	DSSS / OFDM	
Transfer Rate	802.11b	11Mbps
	802.11g	54 Mbps
Max.SAR Measured	802.11b	**0.200 W/kg (1g)**
	802.11g	0.027 W/kg (1g)
Antenna Gain (2437MHz)	3.01 dBi	
Antenna Type	DIPOLE	
I/O Port	Mini PCI	
Power Supply	16Vdc from AC adapter	

NOTE:

1. The mini PCI card, which brand is Intel and the model name is WM3B2200BG, is specified to this EUT.
2. The EUT is powered by following adapter:

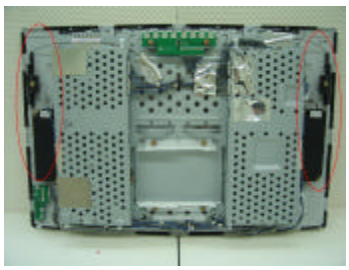
Brand	LIEN CHANG
Model	LCA02J
Input	AC 100~240V, 50/60Hz
Output	DC16V, 1.8A max

3. For more detailed features description, please refer to the manufacturer's specifications or User's Manual.

1.4 Test Environment

Ambient temperature	: 22.8 ° C
Tissue Simulating Liquid	: 22.1 ° C
Relative Humidity	: 52 %

1.5 Operation Configuration

Channel Frequency Under Test And Its Conducted Output Power	802.11b		802.11g	
	2412 MHz	18.20	2412 MHz	12.05
	2437 MHz	18.10	2437 MHz	12.10
	2462 MHz	18.10	2462 MHz	12.10
Antenna Configuration	Internal Antenna			
Antenna Position	The Antennas are located in both inner sides of the LCD			

The following test configurations have been applied in this test report:

Configuration to phantom

Configuration 1: The LCD panel side of EUT contact to the flat phantom. The transmitted antenna of the EUT located under the reference point of the flat phantom.(Fig.2)

Configuration 2: The back of the LCD Panel of EUT contact to the flat phantom. The transmitted antenna of the EUT located under the reference point of the flat phantom. (Fig.3)

Configuration 3: The top of the EUT contact to the flat phantom. The transmitted antenna of the EUT located under the reference point of the flat phantom. (Fig.4).

Configuration 4: The bottom of the EUT contact to the flat phantom. The transmitted antenna of the EUT located under the reference point of the flat phantom. (Fig.5).

Configuration 5: The left side of the EUT contact to the flat phantom. The transmitted antenna of the EUT located under the reference point of the flat phantom. (Fig.6).

Configuration 6: The right side of the EUT contact to the flat phantom. The transmitted antenna of the EUT located under the reference point of the flat phantom. (Fig.7).

NOTE:

1. Please reference "APPENDIX C" for the photos of test configuration.
2. All test Configuration have been complied with the body worn configuration.
3. The EUT is controlled channel, RF power, and bit rates by commander for Hyper Terminal utility. (RS232 is used for connection of EUT and PC) The commander is only for test, not for normal users.

1.6 EVALUATION PROCEDURES

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1. The extraction of the measured data (grid and values) from the Zoom Scan.
2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. The generation of a high-resolution mesh within the measured volume
4. The interpolation of all measured values from the measurement grid to the high-resolution grid
5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The

software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within –2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans. The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30x30x30mm contains about 30g of tissue. The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found. If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

1.7 The SAR Measurement System

A photograph of the SAR measurement System is given in Fig. a. This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (Speag Dasy 4 professional system). A Model ET3DV6 1782 E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= s (|Ei|2)/ ? where s and ? are the conductivity and mass density of the tissue-simulant. The DASY4 system for performing compliance tests consists of the following items:

? A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).

? A dosimeter 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.

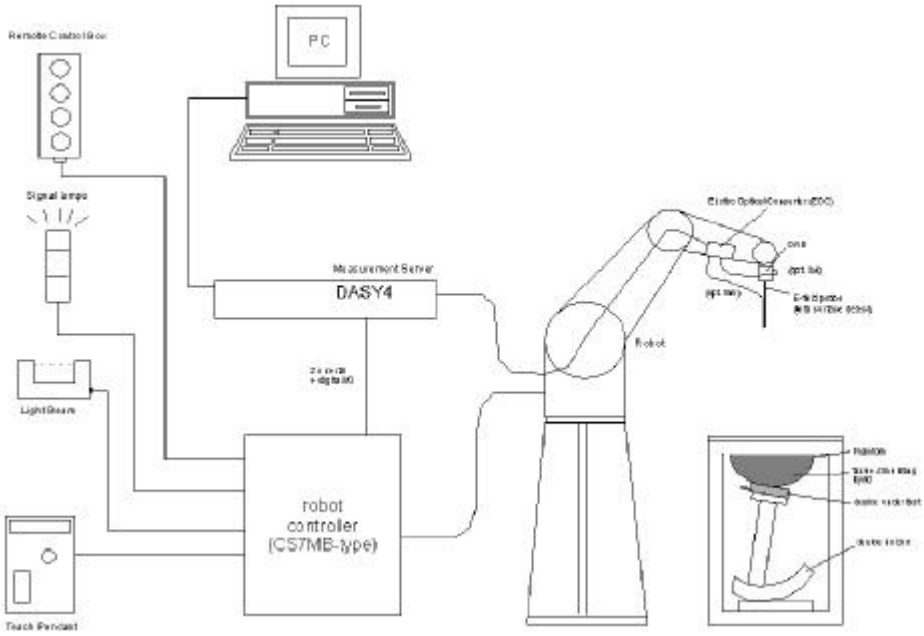


Fig a. The microwave circuit arrangement used for SAR system verification

? The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.

? 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 control 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.

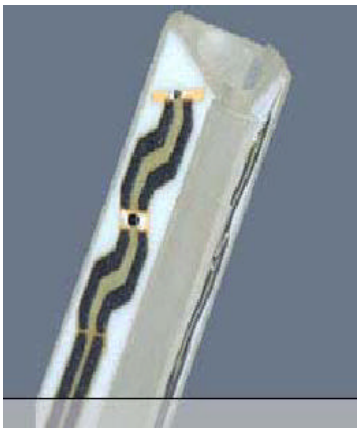
? Tissue simulating liquid mixed according to the given recipes.

? Validation dipole kits allowing to validate the proper functioning of the system.

1.8 System Components

ET3DV6 E-Field Probe

Construction	**:**	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g. glycol).
Calibration	**:**	In air from 10 MHz to 2.5 GHz In brain simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy ± 8%)
Frequency	**:**	10 MHz to >6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)
Directivity	**:**	±0.2 dB in brain tissue (rotation around probe axis) ±0.4 dB in brain tissue (rotation normal to probe axis)
Dynamic Range	**:**	5 µW/g to >100 mW/g; Linearity: ±0.2 dB
Srfce. Detect	**:**	±0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions	**:**	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	:	General dosimetry up to 3 GHz Compliance tests of mobile phone



ET3DV6 E-Field Probe

NOTE:

1. The Probe parameters have been calibrated by the SPEAG. Please reference “APPENDIX D” for the Calibration Certification Report.

FLAT PHANTOM V4.3L

Construction: The shell corresponds to the specifications of phantom defined in IEEE 1528-200X, CENELEC 50361 and IEC 62209. The FLATPHANTOM V4 is a phantom for dosimetric evaluations of body mounted usage and system performance check for the frequency up to 3 GHz.

Shell Thickness: 6.0 ± 0.2 mm

Filling Volume: Approx. 54 liters

PHANTOM v4.0C

DEVICE HOLDER

Construction In combination with the Twin SAM PhantomV4.0/V4.0C or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

Device Holder

1.9 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. These tests were done at 2450MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was in the range 21.6 °C, the relative humidity was in the range 61% and the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

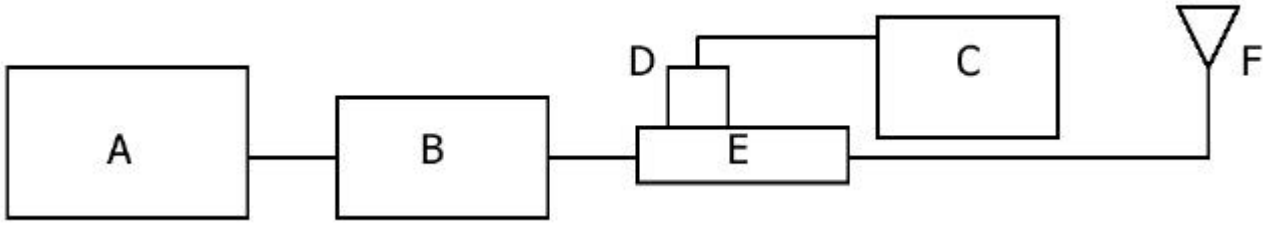


Fig b. The microwave circuit arrangement used for SAR system verification

A. Agilent Model 8648D Signal Generator
B. Mini circuits Model ZHL-42-SMA Amplifier
C. Agilent Model E4416A Power Meter
D. Agilent Model 8482H Power Sensor
E. Agilent Model 777D Dual directional coupling
F. Reference dipole Antenna

Validation Kit	Frequency	Target SAR 1g (250mW)	Target SAR 10g (250mW)	Measured SAR 1g	Measured SAR 10g	Measured Date
DT3DV6 S/N:1782	2450MHz	13.7 mW/g	6.02 mW/g	14.4 mW/g	6.8 mW/g	December 02, 2004

Table 1. Results system validation

1.10 Tissue Simulant Fluid for the Frequency Band 2.4 to 2.5 GHz

The dielectric properties for this body-simulant fluid were measured by using the Agilent Model 85070D Dielectric Probe (rates frequence band 200 MHz to 20 GHz) in conjunction with Agilent E5070B Network Analyzer(300 KHz-3000 MHz) by using a procedure detailed in Section V.

f (MHz)	Tissue type	Limites/Measured	Dielectric Parameters		
			Permittivity	Conductivity	Simulated Tissue Temp(℃)
2450	Body	Measured, December 2, 2004	53.7	2.14	22.1
		Recommended Limits	52.7	1.95	22.0

The composition of the brain tissue simulating liquid for 2450 MHz is:

Ingredient	2450Mhz(Body)
DGMBE	301.7ml.
Water	698.3ml
Total amount	1L(1.0kg)

1.11 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (‘‘SAR’’) in Section 4.2 of ‘‘IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,’’ ANSI/IEEE C95.1–1992, Copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in ‘‘Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields,’’ NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter. Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices

operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

(1) Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over an 10 grams of tissue (defined as a tissue volume in the shape of a cube). Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

(2) Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.(Table .4)

Human Exposure	Uncontrolled Environment General Populaion	Controlled Environment Occupational
Spatial Peak SAR (Brain)	1.60 m W/g	8.00 m W/g
Spatial Average SAR (Whole Body)	0.08 m W/g	0.40 m W/g
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 m W/g	20.00 m W/g

Table .4 RF exposure limits

Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.

2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

2. Instruments List

Maunfacturer	Device	Type	Serial Number	Date of last Calibration
Schmid& Partner Engineering AG	Dosimetric E-Field Probe	ET3DV6	1782	April 28, 2004
Schmid& Partner Engineering AG	2450 MHz System Validation Dipole	D2450V2	734	July 22, 2003
Schmid& Partner Engineering AG	Data acquisition Electronics	DAE3	567	April 30, 2004
Schmid& Partner Engineering AG	Software	DASY 4 V4.1c Build	---	N/A
Schmid& Partner Engineering AG	Phantom	FLAT	---	N/A
Agilent	Network Analyzer	E5070B	MY42100282	November 21, 2004
Agilent	Dielectric Probe Kit	85070D	2184	N/A

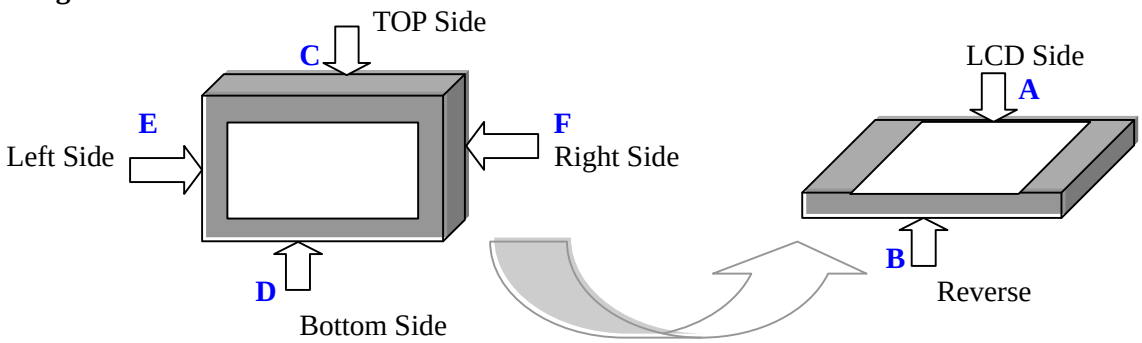
3.Summary of Results

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the EUT are reported in 4.Measurements

Stage #1

Crest factor: 1(Duty cycle:100%) Depth of Liquid: 150mm

EUT Configuration



EUT Set-up conditions		Frequency		Mode (IEEE 802.11x)	Conducted Output Power(dBm)	Liquid Temp[℃]	1g SAR (W/kg)	Limit (W/kg)
Sep.[cm]	Position	CH	MHz					
0	A	6	2437	11b	18.1	22.1	0.100	1.6
0	B	6	2437	11b	18.1	22.1	0.029	
0	C	6	2437	11b	18.1	22.1	0.014	
0	D	6	2437	11b	18.1	22.2	0.063	
0	E	6	2437	11b	18.1	22.2	0.200	
0	F	6	2437	11b	18.1	22.1	0.042	

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the EUT are reported in 4.Measurements

Stage #2

Crest factor: 1(Duty cycle:100%) Depth of Liquid: 150mm

EUT Set-up conditions		Frequency		Mode (IEEE 802.11x)	Conducted Output Power (dBm)	Liquid Temp[℃]	1g SAR (W/kg)	Limit (W/kg)
Sep.[cm]	Position	CH	MHz					
0.0	E	1	2412	11b	18.20	22.1	0.179	1.6
		6	2437	11b	18.10	22.2	0.200	
		11	2462	11b	18.10	22.2	0.188	

EUT Set-up conditions		Frequency		Mode (IEEE 802.11x)	Conducted Output Power (dBm)	Liquid Temp[℃]	1g SAR (W/kg)	Limit (W/kg)
Sep.[cm]	Position	CH	MHz					
0.0	E	1	2412	11g	12.05	22.2	0.023	1.6
		6	2437	11g	12.10	22.1	0.027	
		11	2462	11g	12.10	22.1	0.025	

Measured Mixture Type	Body	Relative Humidity	52 %
Ambient Temperature	22.8℃	Fluid Temperature	22.1℃

Appendix

List

Appendix A	DASY4 Report (Measurement Plots)	
Appendix B	Uncertainty Analysis	
Appendix C	Photographs	-Validation Test - EUT - Test Setup
Appendix D	Calibration Certificate	- PROBE - DAE - DIPOLE

Appendix A

DASY4 Report

Date/Time: 12/02/04 11:07:44

Test Laboratory: SGS Testing Korea

VALIDATION

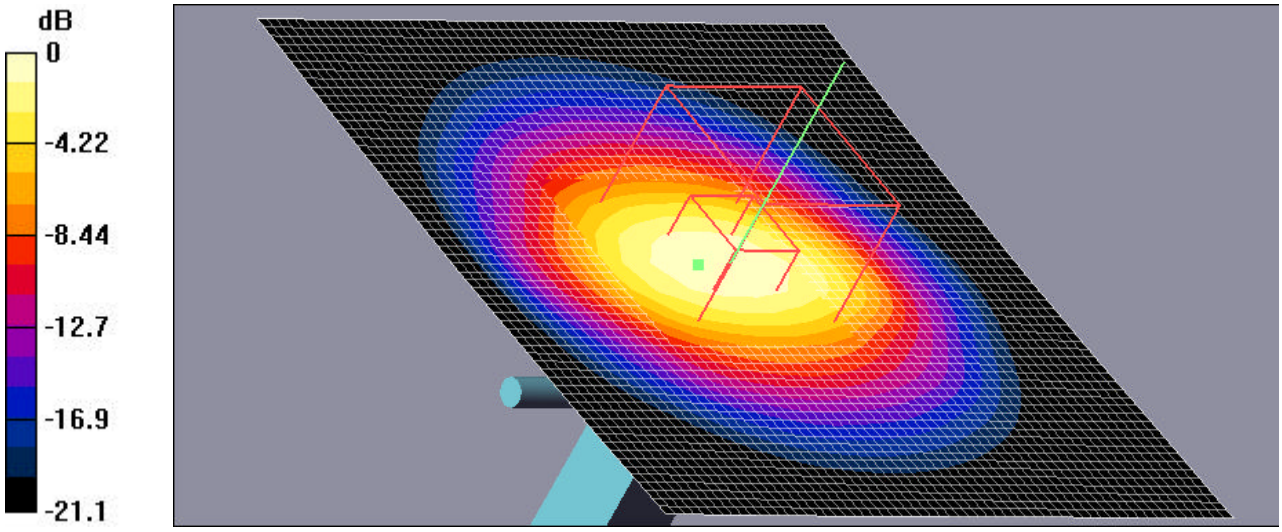
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:734

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2450 MHz; s = 2.14 mho/m; e_r = 53.7; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

ValidationTest/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 17 mW/g

ValidationTest/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.3 V/m; Power Drift = -0.0 dB
Peak SAR (extrapolated) = 30.8 W/kg
SAR(1 g) = 14.4 mW/g; SAR(10 g) = 6.8 mW/g
Maximum value of SAR (measured) = 16.8 mW/g



0 dB = 16.8mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type: Wireless LCD; Serial: 15LW1T200412010001

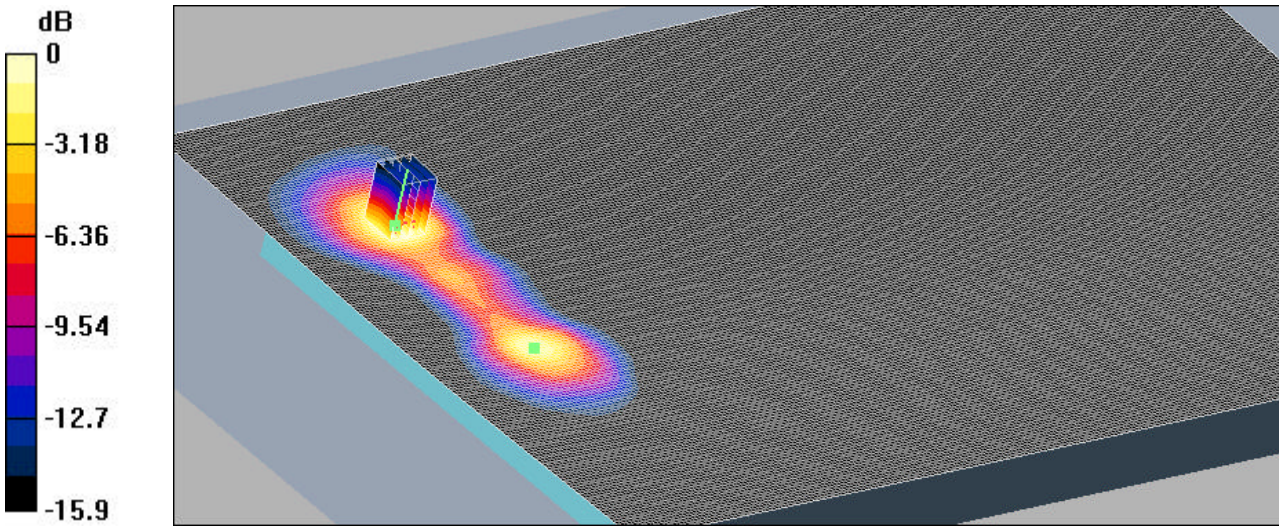
Communication System: WLAN; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2437 MHz; s = 2.09 mho/m; e_r = 53.6; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

LCD Side/Area Scan (181x281x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.109 mW/g

LCD Side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.571 V/m; Power Drift = 0.6 dB
Peak SAR (extrapolated) = 0.201 W/kg
SAR(1 g) = 0.100 mW/g

Maximum value of SAR (measured) = 0.105 mW/g



0 dB = 0.105mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type: Wireless LCD; Serial: 15LW1T200412010001

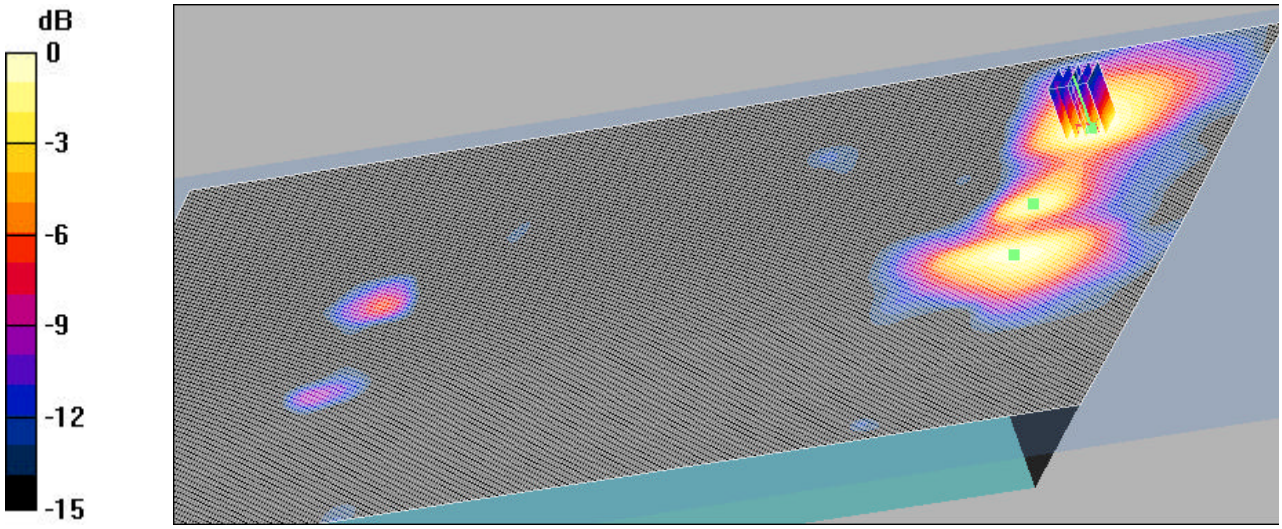
Communication System: WLAN; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2437 MHz; s = 2.09 mho/m; e_r = 53.6; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

Reverse Side/Area Scan (181x281x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.033 mW/g

Reverse Side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.627 V/m; Power Drift = -0.2 dB
Peak SAR (extrapolated) = 0.057 W/kg
SAR(1 g) = 0.029 mW/g

Maximum value of SAR (measured) = 0.031 mW/g



0 dB = 0.031mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type; Wireless LCD; Serial: 15LW1T200412010001

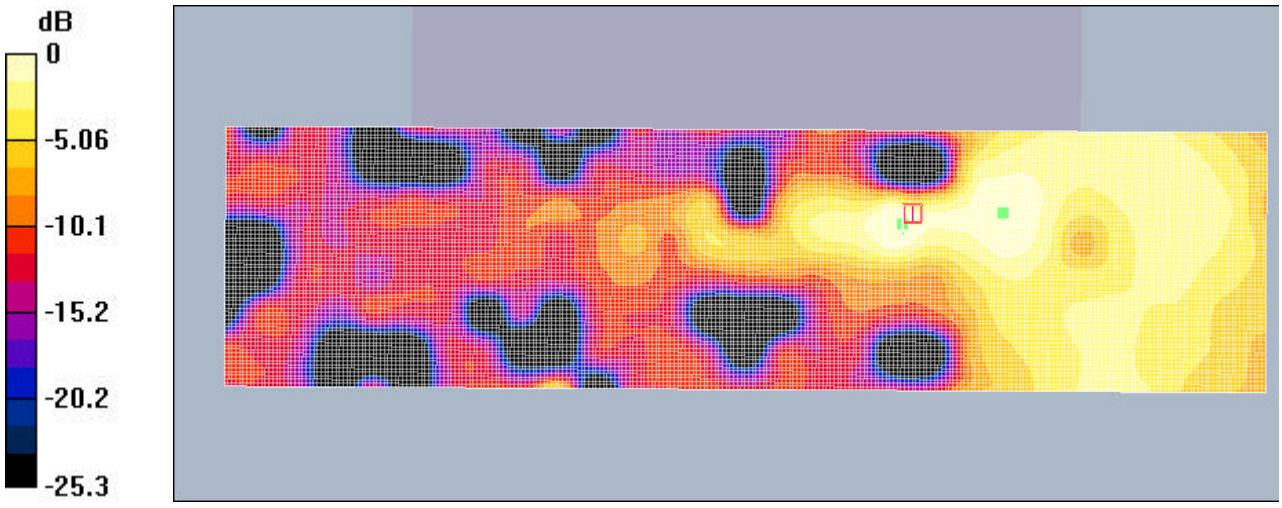
Communication System: WLAN; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2437 MHz; s = 2.09 mho/m; e_r = 53.6; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

Top side/Area Scan (71x281x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.013 mW/g

Top side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.477 V/m; Power Drift = -0.8 dB
Peak SAR (extrapolated) = 21.6 W/kg
SAR(1 g) = 0.014 mW/g

Maximum value of SAR (measured) = 0.011 mW/g



0 dB = 0.011mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type: Wireless LCD; Serial: 15LW1T200412010001

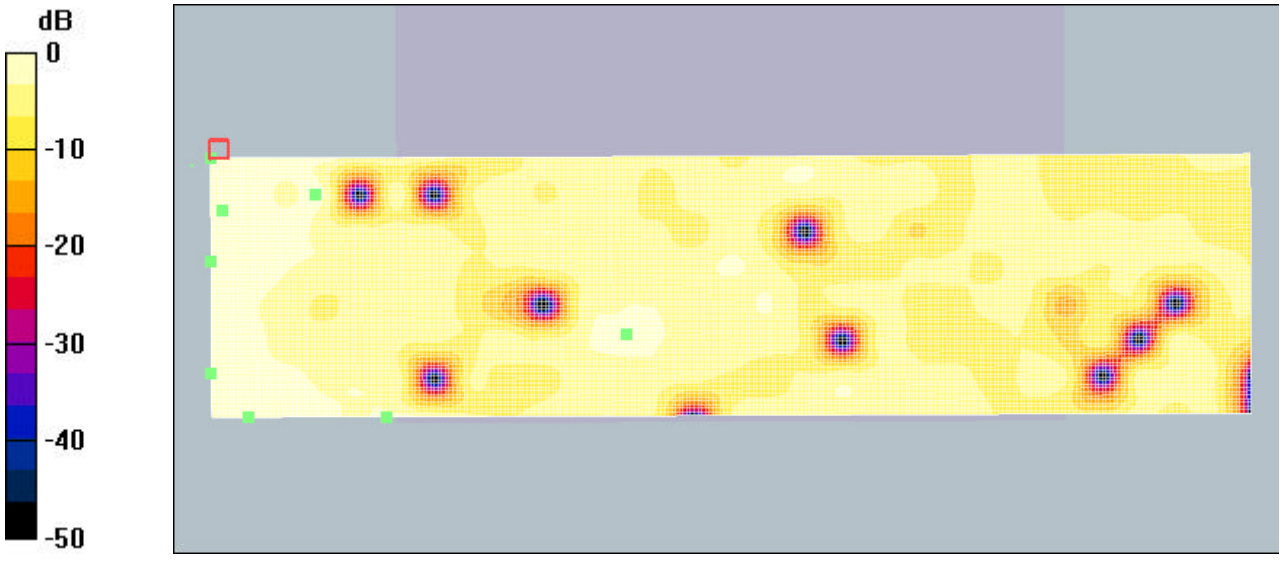
Communication System: WLAN; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2437 MHz; s = 2.09 mho/m; e_r = 53.6; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

Bottom Side/Area Scan (71x281x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.00227 mW/g

Bottom Side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.587 V/m; Power Drift = -0.7 dB
Peak SAR (extrapolated) = 4174.1 W/kg
SAR(1 g) = 0.063 mW/g

Maximum value of SAR (measured) = 0.00265 mW/g



0 dB = 0.00265mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type: Wireless LCD; Serial: 15LW1T200412010001

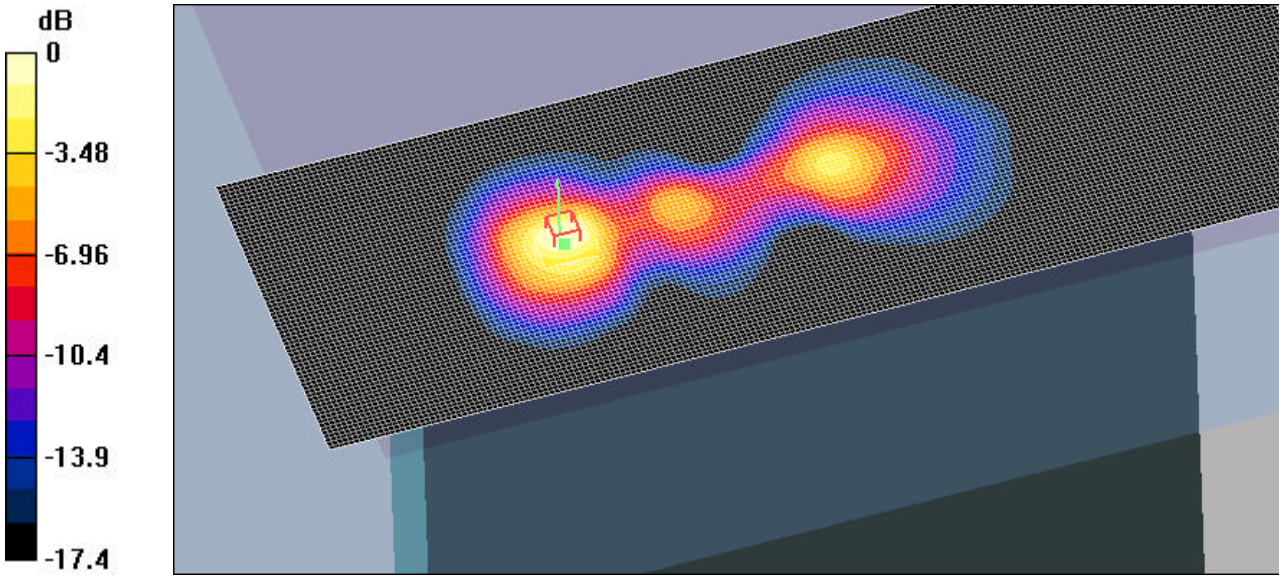
Communication System: WLAN; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2437 MHz; s = 2.09 mho/m; e_r = 53.6; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

Left Side/Area Scan (71x201x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.203 mW/g

Left Side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.959 V/m; Power Drift = -0.2 dB
Peak SAR (extrapolated) = 0.420 W/kg
SAR(1 g) = 0.200 mW/g

Maximum value of SAR (measured) = 0.217 mW/g



0 dB = 0.217mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type: Wireless LCD; Serial: 15LW1T200412010001

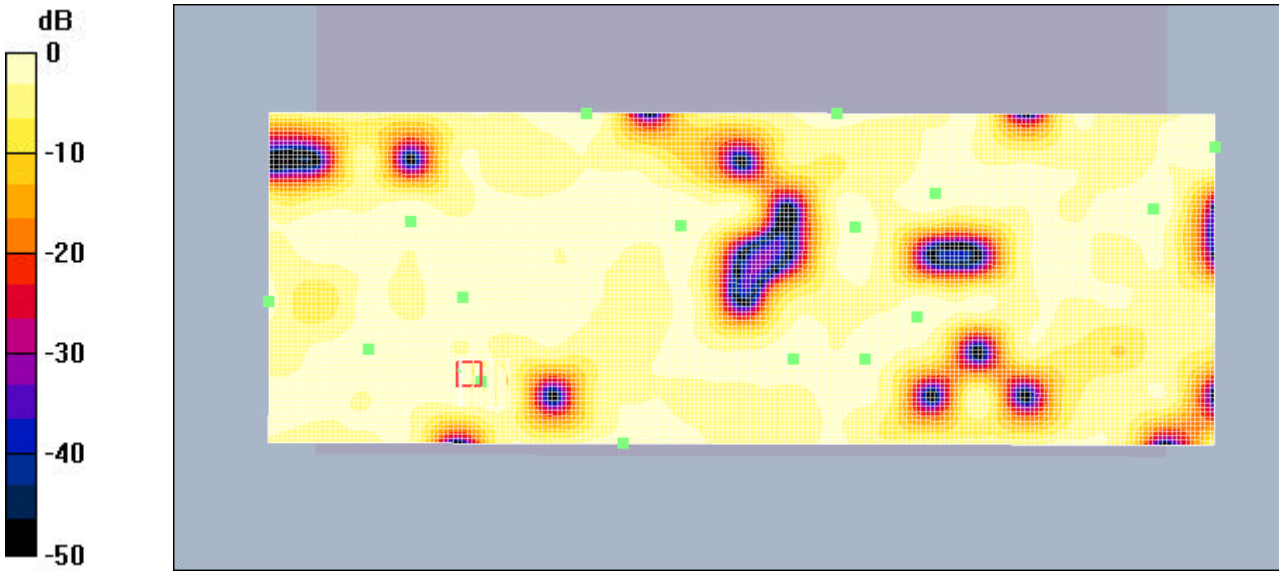
Communication System: WLAN; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2437 MHz; s = 2.09 mho/m; e_r = 53.6; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

Right Side/Area Scan (71x201x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.00169 mW/g

Right Side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.553 V/m; Power Drift = 0.3 dB
Peak SAR (extrapolated) = 257.8 W/kg
SAR(1 g) = 0.042 mW/g

Maximum value of SAR (measured) = 0.00157 mW/g



0 dB = 0.00157mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type: Wireless LCD; Serial: 15LW1T200412010001

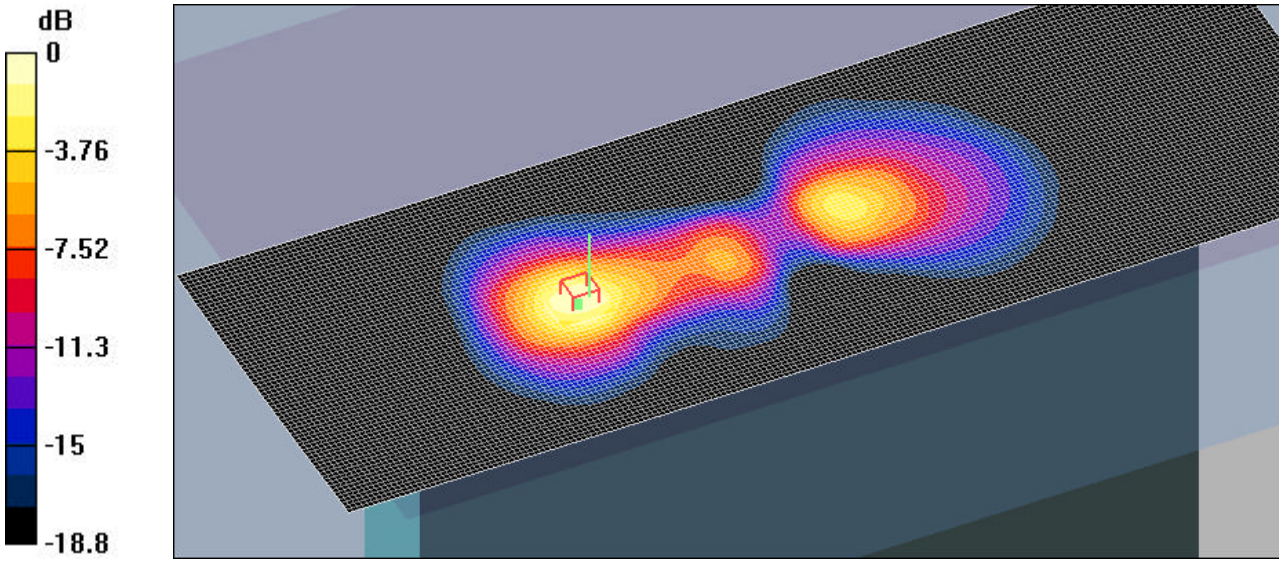
Communication System: WLAN; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2412 MHz; s = 1.96 mho/m; e_r = 53.8; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

11b_Low/Area Scan (71x201x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.170 mW/g

11b_Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.626 V/m; Power Drift = -0.2 dB
Peak SAR (extrapolated) = 0.381 W/kg
SAR(1 g) = 0.179 mW/g

Maximum value of SAR (measured) = 0.192 mW/g



0 dB = 0.192mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type: Wireless LCD; Serial: 15LW1T200412010001

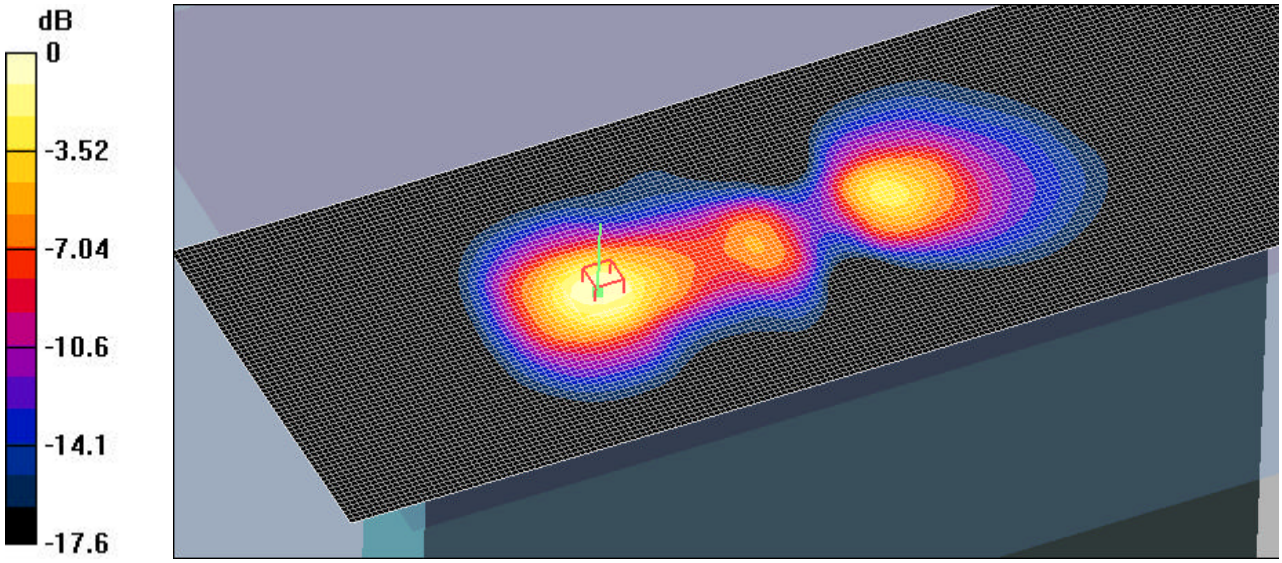
Communication System: WLAN; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2462 MHz; s = 2.13 mho/m; e_r = 53.9; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

11b_High/Area Scan (71x201x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.175 mW/g

11b_High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.828 V/m; Power Drift = -0.1 dB
Peak SAR (extrapolated) = 0.409 W/kg
SAR(1 g) = 0.188 mW/g

Maximum value of SAR (measured) = 0.204 mW/g



0 dB = 0.204mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type: Wireless LCD; Serial: 15LW1T200412010001

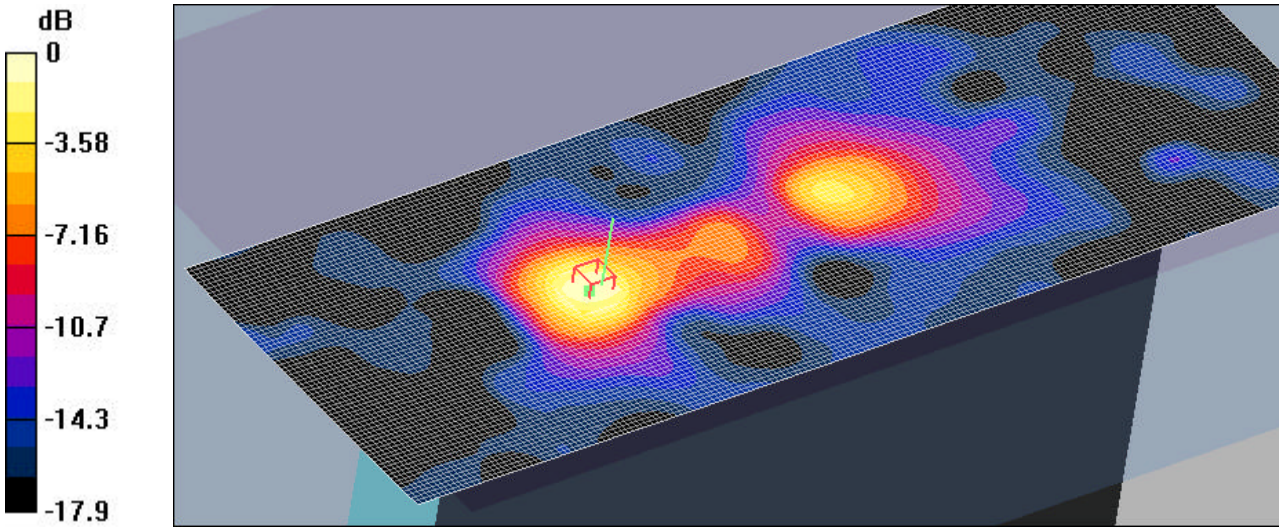
Communication System: WLAN; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2412 MHz; s = 1.96 mho/m; e_r = 53.8; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

11g_Low/Area Scan (71x201x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.022 mW/g

11g_Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.777 V/m; Power Drift = -0.4 dB
Peak SAR (extrapolated) = 0.050 W/kg
SAR(1 g) = 0.023 mW/g

Maximum value of SAR (measured) = 0.025 mW/g



0 dB = 0.025mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type: Wireless LCD; Serial: 15LW1T200412010001

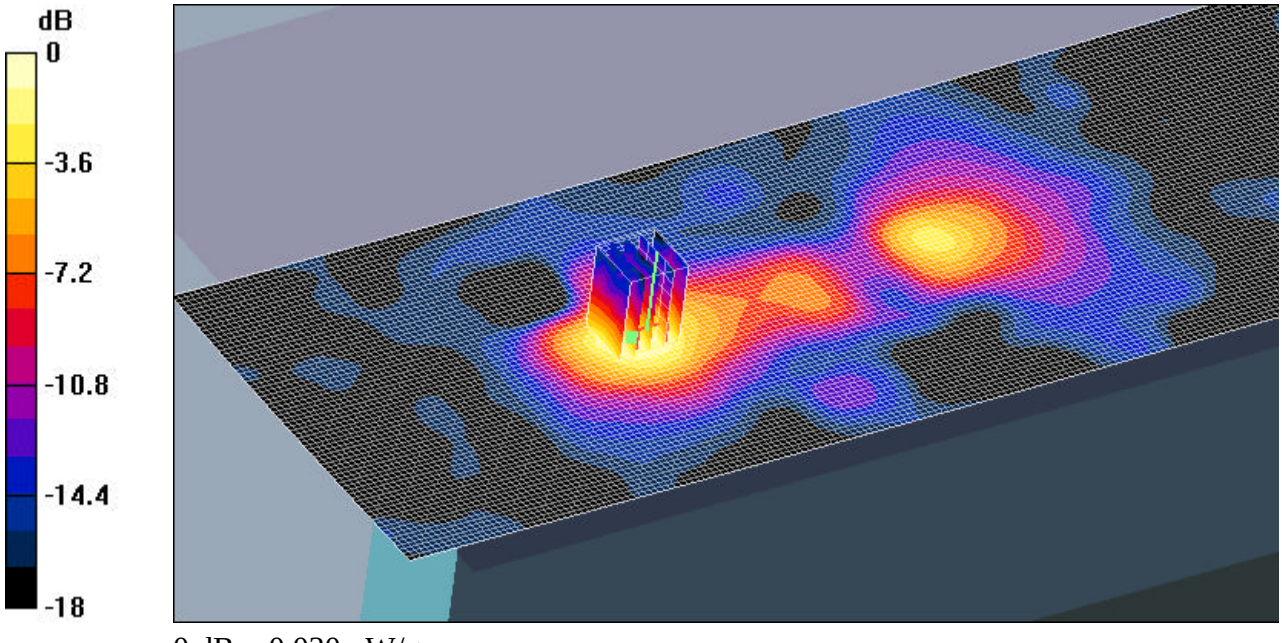
Communication System: WLAN; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2437 MHz; s = 2.09 mho/m; e_r = 53.6; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

11g_Mid/Area Scan (71x201x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.027 mW/g

11g_Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.448 V/m; Power Drift = -0.2 dB
Peak SAR (extrapolated) = 0.058 W/kg
SAR(1 g) = 0.027 mW/g

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



0 dB = 0.030mW/g

Date/Time: 12/02/04 20:40:50

Test Laboratory: SGS Testing Korea

LCD

DUT: 15LW/R; Type: Wireless LCD; Serial: 15LW1T200412010001

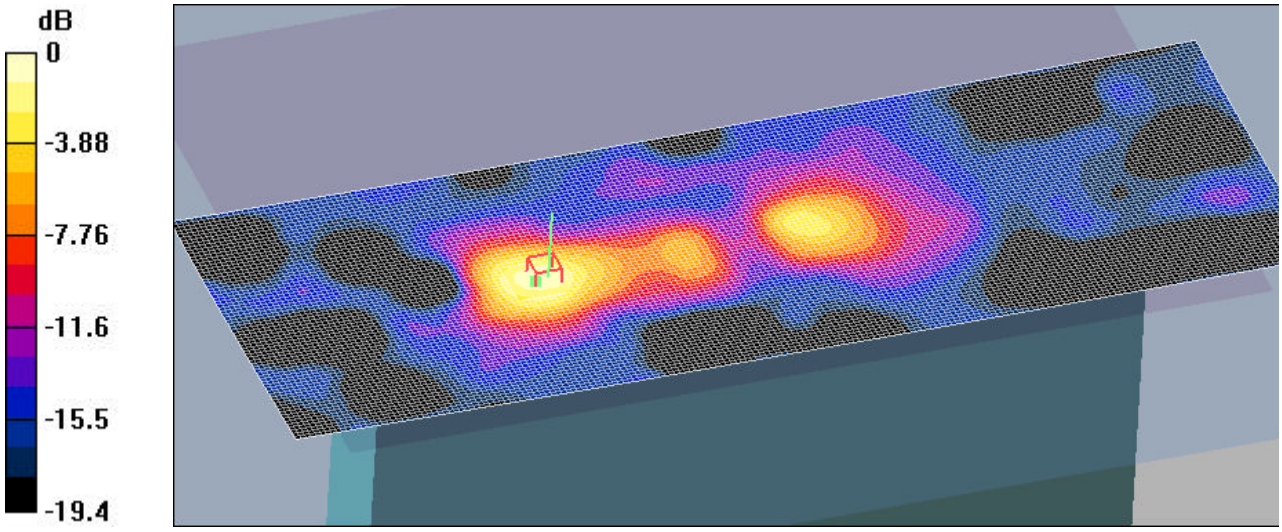
Communication System: WLAN; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2462 MHz; s = 2.13 mho/m; e_r = 53.9; ? = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2004-04-30
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1003
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

11g_High/Area Scan (71x201x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.024 mW/g

11g_High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.515 V/m; Power Drift = -0.3 dB
Peak SAR (extrapolated) = 0.056 W/kg
SAR(1 g) = 0.025 mW/g

Maximum value of SAR (measured) = 0.027 mW/g



0 dB = 0.027mW/g

Appendix B

Uncertainty Analysis

Uncertainty according to IEEE Std 1528 for DASY4 system.

Items	Factors of Uncertainty x_i	Type A/ Type B	Probability Distribution	Standard Uncertainty $u(x_i)$	Coverage Factor(k)
1	Probe calibration	A	normal	4.8%	2
2	Axial isotropy	B	rectangualr	1.9%	2
3	Hemispherical isotropy	B	rectangualr	3.9%	2
4	Boundary effects	B	rectangualr	0.6%	2
5	Linearity	B	rectangualr	2.7%	2
6	System Detection limits	B	rectangualr	0.6%	2
7	Readout Electronics	A	normal	1.0%	2
8	Response time	B	rectangualr	0.5%	2
9	Integration time	B	rectangualr	1.5%	2
10	RF Ambient Conditions	B	rectangualr	1.7%	2
11	Mech. Constrains of robot	B	rectangualr	0.2%	2
12	Probe positioning	B	rectangualr	1.7%	2
13	Extrap. and integration	B	rectangualr	0.6%	2
14	Device positioning	A	normal	2.9%	2
15	Device holder uncertainty	A	normal	3.6%	2
16	Power drift	B	rectangualr	2.9%	2
17	Phantom uncertainty	B	rectangualr	2.3%	2
18	Liquid conductivity(target)	B	rectangualr	1.8%	2
19	Liquid conductivity(meas.)	A	normal	3.2%	2
20	Liquid permittivity(target)	B	rectangualr	1.7%	2
21	Liquid permittivity(meas.)	A	normal	3.0%	2
Combined Standard Uncertainty $u_c(Y)$: 11.0%					
Expanded Uncertainty(95%confidence interval)$U_{exp} = k x u_c(y)$: 22.0%					