SAR EVALUATION REPORT

Test Report No.	**W155R-D013**
Applicant	**ATLAIM Corporation** **(5F, SMART BAY, 123, Beolmal-ro, Dongan-gu, Anyang-si, Gyeonggi-do, 431-804, Korea**
Model Name	**ATAL9**
DUT Type	**Flat Panel Digital X-ray Detector**
Application Type	**Certification**
FCC ID	**KA2WA180A1**
Date of Report	**May 21, 2015**
Date of Test	**May 11, 2015 ~ May 19, 2015**
Test Laboratory	**ONETECH** **301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862, Korea**
Procedures	**KDB 865664** **IEEE 1528-2003** **ANSI/IEEE C95.1, C95.3** **FCC CFR §2.1093** **RSS-102 Issue 4**
Max SAR(1g)	**0.113 W/kg**
Test Opinion	**Satisfied to FCC requirements**

Report Author	**Jungwook Kim**	_____	**May 27, 2015**
Test Engineer	**Youngyong Kim**	_____	**May 27, 2015**

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.

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1. DUT INFORMATION

DUT Description	Flat Panel Digital X-ray Detector
Model Name	ATAL9
Serial Number	Identical Prototype
Mode of Operation	WLAN
TX Frequency Range	2 412 MHz ~ 2 462 MHz (802.11 b/g/n_HT20) 2 422 MHz ~ 2 452 MHz (802.11n_HT40) 5 180 MHz ~ 5 240 MHz (802.11 a/n_HT20) 5 260 MHz ~ 5 320 MHz (802.11 a/n_HT20) 5 500 MHz ~ 5 700 MHz (802.11 a/n_HT20) 5 745 MHz ~ 5 825 MHz (802.11 a/n_HT20) 5 190 MHz ~ 5 230 MHz (802.11a/n_HT40) 5 270 MHz ~ 5 310 MHz (802.11a/n_HT40) 5 510 MHz ~ 5 670 MHz (802.11a/n_HT40) 5 755 MHz ~ 5 795 MHz (802.11a/n_HT40) 5 170 MHz ~ 5 250 MHz (802.11ac_VHT80) 5 240 MHz ~ 5 290 MHz (802.11ac_VHT80) 5 490 MHz ~ 5 730 MHz (802.11ac_VHT80) 5 735 MHz ~ 5 815 MHz (802.11ac_VHT80)
Maximum Average Conducted Power	802.11b : 19.13 dBm (ch 6_Ant 1) 802.11a U-NII 1 : 14.16 dBm (ch40_Ant 1) 802.11a U-NII 2A : 16.42 dBm (ch60_Ant 0) 802.11a U-NII 2C : 17.48 dBm (ch124_Ant 1) 802.11a U-NII 3 : 16.57 dBm (ch153_Ant 1)
Summery of peak SAR	802.11b : 0.018 W/kg 802.11a U-NII 1 : 0.065 W/kg 802.11a U-NII 2A : 0.106 W/kg 802.11a U-NII 2C : 0.113 W/kg 802.11a U-NII 3 : 0.047 W/kg
Antenna Type & Gain	WLAN Antenna Type : PIFA 2 400 MHz : 0 dBi 5 GHz : 0 dBi
Antenna Operation	2 Antenna Transmit Together

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2. INTRODUCTION

The FCC and Industry Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.
The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz and Health Canada RF Exposure Guidelines Safety Code 6. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and
Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. 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.

2.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ).

$$SAR = \frac{d}{dt}\left(\frac{dW}{dm}\right) = \frac{d}{dt}\left(\frac{dW}{\rho dV}\right)$$

SAR is expressed in units of watts per kilogram (W/kg). SAR can be related to the electric field at a point by

$$SAR = \frac{\sigma \mid E \mid^2}{\rho}$$

where:

σ = conductivity of the tissue (S/m)
ρ = mass density of the tissue (kg/m^3)
E = rms electric field strength (V/m)

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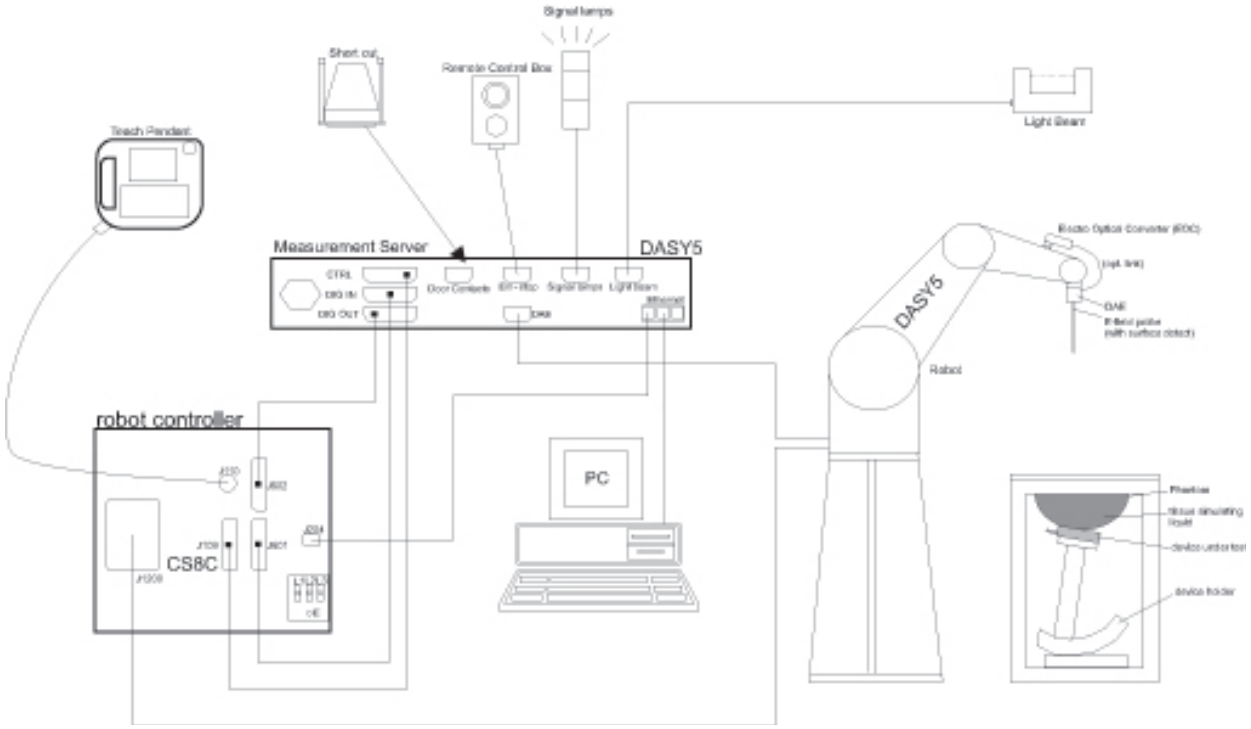
3. SAR MEASUREMENT SETUP

- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- 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 Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted 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.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.



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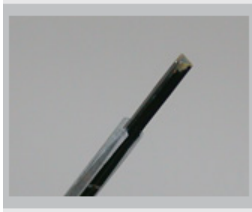
3.1 Dasy 5 system

DASY52 SAR	
	DASY52 SAR is a cost-effective package for demonstration of compliance of mobile phones with specific absorption rate (SAR) limits. The fastest and most accurate scanner on the market, it is fully compatible with all worldwide standards for transmitters operating at the ear or near the body (<200 mm from the skin).
Components (typical configuration)	1 **TX90XL** Stäubli Robot and Controller CS8c incl. Cabinet 1 **EOCx** Electro Optical Converter (mounted on robot arm) 1 Robot Stand for TX90XL 1 Robot Arm Extension and Adaptors 1 Robot Remote Control 1 **LB5** Light Beam Switch for Probe Tooling (incl. LB Adaptor) 1 Light Beam Mounting Plate 1 DASY5 Measurement Server 1 PC Intel Core 2 Dual / 3.16 GHz (or higher) incl. Color-Monitor 23" - 4 GB RAM, 220 GB HD (or larger) / Win7 1 **SAM Twin** Phantom V5.0 incl. Support DASY5 1 **MD4HHTV5** Mounting Device for Hand-Held Transmitters 1 **DAEx** Data Acquisition Electronics 1 **ES3DVx** SAR Probe (incl. ConvF for HSL at 900 and 1750 MHz)

3.2 E-Field Probe (EX3DV4)

EX3DV4 Smallest Isotropic E-Field Probe for Dosimetric Measurements (Preliminary Specifications)	
	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

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3.3 E-Field Probe(ES3DV3)

ES3DV3 Isotropic E-Field Probe for Dosimetric Measurements	
	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

3.4 ELI Phantom

ELI	
	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles. ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4, but has reinforced top structure.
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	approx. 30 liters
Wooden Support	SPEAG standard phantom table

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3.5 Mounting Device

Mounting Device for Laptops

MD4LAPV5 - Mounting Device for Laptops and other Body-Worn Transmitters

In combination with the Twin SAM V5.0/V5.0c or ELI Phantoms, the Mounting Device (Body-Worn) enables testing of ransmitter devices according to IEC 62209-2 specifications. The device holder can be locked for positioning at flat phantom section.

Material: Polyoxymethylene (POM), PET-G, Foam

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4. MEASUREMENT UNCERTAINTY

Uncertainty of SAR equipment for measurement Body 0.3 GHz to 3 GHz

No.		Error Description	Uncertainty Value (1 g) (%)	Uncertainty Value (10 g) (%)	Probe Dist.	Div.	C_i (1 g)	C_i (10 g)	$U_i(y)$ (1 g)	$U_i(y)$ (10 g)	V_i or V_{eff}
1	$U(PR_{CL})$	Probe Calibration	6.30	6.30	N	1.00	1.00	1.00	6.30	6.30	∞
2	$U(PR_{I})$	Isotropy	1.87	1.87	R	$\sqrt{3}$	1.00	1.00	1.08	1.08	∞
3	$U(L)$	Linearity	0.60	0.60	R	$\sqrt{3}$	1.00	1.00	0.35	0.35	∞
4	$U(PR_{MR})$	Probe modulation response	2.40	2.40	R	$\sqrt{3}$	1.00	1.00	1.39	1.39	∞
6	$U(DL)$	Detection Limits	1.00	1.00	R	$\sqrt{3}$	1.00	1.00	0.58	0.58	∞
5	$U(BE)$	Boundary effect	1.00	1.00	R	$\sqrt{3}$	1.00	1.00	0.58	0.58	∞
7	$U(RE)$	Readout Electronics	0.30	0.30	N	1.00	1.00	1.00	0.30	0.30	∞
8	$U(T_{RT})$	Response Time	0.80	0.80	R	$\sqrt{3}$	1.00	1.00	0.46	0.46	∞
9	$U(T_{IT})$	Integration Time	2.60	2.60	R	$\sqrt{3}$	1.00	1.00	1.50	1.50	∞
10	$U(A_{NO})$	RF ambient conditions--noise	3.00	3.00	R	$\sqrt{3}$	1.00	1.00	1.73	1.73	∞
11	$U(A_{RF})$	RF ambient conditions--reflections	3.00	3.00	R	$\sqrt{3}$	1.00	1.00	1.73	1.73	∞
12	$U(PR_{PO})$	Probe positioner mech. Restrictions	0.40	0.40	R	$\sqrt{3}$	1.00	1.00	0.23	0.23	∞
13	$U(PR_{PP})$	Probe positioning with respect to phantom	2.90	2.90	R	$\sqrt{3}$	1.00	1.00	1.67	1.67	∞
14	$U(PP_{MEA})$	Post-processing(for max. SAR evaluation)	2.00	2.00	R	$\sqrt{3}$	1.00	1.00	1.15	1.15	∞
15	$U(DH)$	Device Holder Uncertainty	3.60	3.60	N	1.00	1.00	1.00	3.60	3.60	5.00
16	$U(PO_{DUT})$	Test sample positioning	8.32	6.37	N	1.00	1.00	1.00	8.32	6.37	9.00
17	$U(PS)$	Power scaling	0.00	0.00	R	$\sqrt{3}$	1.00	1.00	0.00	0.00	∞
18	$U(PD)$	Drift of output power(measured SAR drift)	5.00	5.00	R	$\sqrt{3}$	1.00	1.00	2.89	2.89	∞
19	$U(PH)$	Phantom Uncertainty	6.10	6.10	R	$\sqrt{3}$	1.00	1.00	3.52	3.52	∞
20	$U(CS_{freq})$	Algorithm for correcting SAR for deviations in permittivity and	1.90	1.90	N	1.00	1.00	0.84	1.90	1.60	∞
21	$U(LC_{M})$	Liquid Conductivity (meas.)	1.53	1.53	N	1.00	0.78	0.71	1.19	1.09	5.00
22	$U(LP_{M})$	Liquid Permittivity (meas.)	3.07	3.07	N	1.00	0.23	0.26	0.71	0.80	5.00
23	$U(LC_{TU})$	Liquid conductivity(temperature uncertain	4.16	4.16	R	$\sqrt{3}$	0.78	0.71	1.87	1.71	∞
24	$U(LP_{TU})$	Liquid permittivity(temperature uncertaint	0.84	0.84	R	$\sqrt{3}$	0.23	0.26	0.11	0.13	∞
		$Uc(sar)$ Combined standard uncertainty (%)							**12.97**	11.74	**50**
		Extended uncertainty U(%)							**25.94**	23.48	

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Uncertainty of SAR equipment for measurement Body 3 GHz to 6 GHz

No.		Error Description	Uncertainty Value (1 g) (%)	Uncertainty Value (10 g) (%)	Probe Dist.	Div.	C_i (1 g)	C_i (10 g)	$U_i(y)$ (1 g)	$U_i(y)$ (10 g)	V_i or V_{eff}
1	$U(PR_{cl})$	Probe Calibration	6.30	6.30	N	1.00	1.00	1.00	6.30	6.30	∞
2	$U(PR_{i})$	Isotropy	1.87	1.87	R	$\sqrt{3}$	1.00	1.00	1.08	1.08	∞
3	$U(L)$	Linearity	0.60	0.60	R	$\sqrt{3}$	1.00	1.00	0.35	0.35	∞
4	$U(PR_{MR})$	Probe modulation response	2.40	2.40	R	$\sqrt{3}$	1.00	1.00	1.39	1.39	∞
6	$U(DL)$	Detection Limits	1.00	1.00	R	$\sqrt{3}$	1.00	1.00	0.58	0.58	∞
5	$U(BE)$	Boundary effect	2.00	2.00	R	$\sqrt{3}$	1.00	1.00	1.15	1.15	∞
7	$U(RE)$	Readout Electronics	0.30	0.30	N	1.00	1.00	1.00	0.30	0.30	∞
8	$U(T_{RT})$	Response Time	0.80	0.80	R	$\sqrt{3}$	1.00	1.00	0.46	0.46	∞
9	$U(T_{IT})$	Integration Time	2.60	2.60	R	$\sqrt{3}$	1.00	1.00	1.50	1.50	∞
10	$U(A_{NO})$	RF ambient conditions--noise	3.00	3.00	R	$\sqrt{3}$	1.00	1.00	1.73	1.73	∞
11	$U(A_{RF})$	RF ambient conditions--reflections	3.00	3.00	R	$\sqrt{3}$	1.00	1.00	1.73	1.73	∞
12	$U(PR_{PT})$	Probe positioner mech. Restrictions	0.80	0.80	R	$\sqrt{3}$	1.00	1.00	0.46	0.46	∞
13	$U(PR_{PP})$	Probe positioning with respect to phantom	6.70	6.70	R	$\sqrt{3}$	1.00	1.00	3.87	3.87	∞
14	$U(PP_{MEA})$	Post-processing(for max. SAR evaluation)	4.00	4.00	R	$\sqrt{3}$	1.00	1.00	2.31	2.31	∞
15	$U(DU)$	Device Holder Uncertainty	3.60	3.60	N	1.00	1.00	1.00	3.60	3.60	5.00
16	$U(PO_{DUT})$	Test sample positioning	7.76	6.03	N	1.00	1.00	1.00	7.76	6.03	9.00
17	$U(PS)$	Power scaling	0.00	0.00	R	$\sqrt{3}$	1.00	1.00	0.00	0.00	∞
18	$U(PD)$	Drift of output power(measured SAR drift)	5.00	5.00	R	$\sqrt{3}$	1.00	1.00	2.89	2.89	∞
19	$U(PU)$	Phantom Uncertainty	6.60	6.60	R	$\sqrt{3}$	1.00	1.00	3.81	3.81	∞
20	$U(CS_{adj})$	Algorithm for correcting SAR for deviations in permittivity and	1.90	1.90	N	1.00	1.00	0.84	1.90	1.60	∞
21	$U(LC_{M})$	Liquid Conductivity (meas.)	1.50	1.50	N	1.00	0.78	0.71	1.17	1.07	5.00
22	$U(LP_{M})$	Liquid Permittivity (meas.)	2.23	2.23	N	1.00	0.23	0.26	0.51	0.58	5.00
23	$U(LC_{TU})$	Liquid conductivity(temperature uncertain	2.12	2.12	R	$\sqrt{3}$	0.78	0.71	0.95	0.87	∞
24	$U(LP_{TU})$	Liquid permittivity(temperature uncertaint	0.40	0.40	R	$\sqrt{3}$	0.23	0.26	0.05	0.06	∞
		***Uc(sar)* Combined standard uncertainty (%)**							**13.26**	12.27	**71**
		Extended uncertainty *U*(%)							**26.52**	24.54	

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5. ANSI/IEEE C95.1-2005 RF EXPOSURE LIMIT

In order for users to be aware of the body-worn operating requirements for meeting RF exposure compliance, operating instructions and cautions statements are included in the user's manual.

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Human Exposure Limits

	UNCONTROLLED ENVIRONMENT General Population (W/kg) or (mW/g)	CONTROLLED ENVIROMENT Professional Population (W/kg) or (mW/g)
SPATIAL PEAK SAR[1] Brain	1.60	8.00
SPATIAL AVERAGE SAR[2] Whole Body	0.08	0.40
SPATIAL PEAK SAR[3] Hands, Feet, Ankles, Wrists	4.00	20.00

[1] The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
[2] The Spatial Average value of the SAR averaged over the whole body.
[3] The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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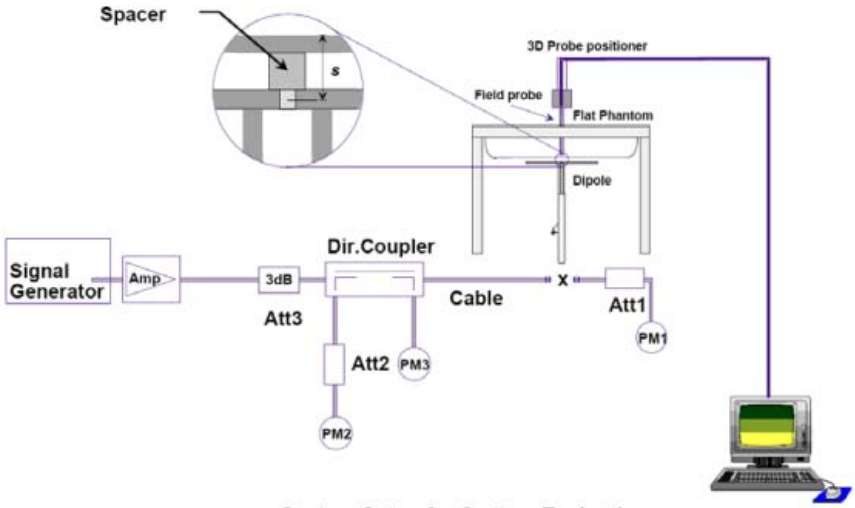
6. SYSTEM AND LIQUID VERIFICATION

6.1 System Verification setup



System Setup for System Evaluation

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

1. Signal Generator
2. Amplifier
3. Directional Coupler
4. Power Meter
5. Calibrated Dipole

The output power on dipole port must be calibrated to 30 dBm (1000 mW) before dipole is connected.

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Numerical reference SAR values (W/kg) for reference dipole and flat phantom

1	2	3	4	5	6
Frequency MHz	Phantom shell thickness mm	1 g SAR W/kg	10 g SAR W/kg	Local SAR at surface (above feedpoint) W/kg	Local SAR at surface (y = 2 cm offset from feedpoint) W/kg
300	6,3	3,02	2,04	4,40	2,10
300	2,0	2,85	1,94	4,14	2,00
450	6,3	4,92	3,28	7,20	3,20
450	2,0	4,58	3,06	6,75	2,98
750	2,0	8,49	5,55	12,6	4,59
835	2,0	9,56	6,22	14,1	4,90
900	2,0	10,9	6,99	16,4	5,40
1 450	2,0	29,0	16,0	50,2	6,50
1 800	2,0	38,4	20,1	69,5	6,80
1 900	2,0	39,7	20,5	72,1	6,60
1 950	2,0	40,5	20,9	72,7	6,60
2 000	2,0	41,1	21,1	74,6	6,50
2 450	2,0	52,4	24,0	104	7,70
2 585	2,0	55,9	24,4	119	7,90
2 600	2,0	55,3	24,6	113	8,29
3 000	2,0	63,8	25,7	140	9,50
3 500	2,0	67,1	25,0	169	12,1
3 700	2,0	67,4	24,2	178	12,7
5 000	2,0	77,9	22,1	305	15,1
5 200	2,0	76,5	21,6	310	15,9
5 500	2,0	83,3	23,4	349	18,1
5 800	2,0	78,0	21,9	341	20,3

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6.2 Liquid Validation

The dielectric parameters were checked prior to assessment using the DAK dielectric probe kit. The dielectric parameters measured are reported in each correspondent section.

6.3 Recommended Tissue Dielectric Parameters

The head and body tissue dielectric parameters recommended by KDB865664 have been incorporated in the following table.

Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

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

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6.4 Liquid Confirmation Results

6.4.1 System Verification

Frequency (MHz)	Tissue Type	Liquid Temp.(℃)	Parameter	Target Value	Measured Value	Deviation	Limit (%)	Date
2 450	Head	21.3	Permitivity	39.20	38.11	-2.77%	± 5	05/15/2015
			Conductivity	1.80	1.81	0.41%	± 5	
	Body	21.6	Permitivity	52.70	53.42	1.36%	± 5	05/17/2015
			Conductivity	1.95	1.94	-0.58%	± 5	
5 200	Head	20.5	Permitivity	36.00	35.63	-1.02%	± 5	05/11/2015
			Conductivity	4.66	4.50	-3.53%	± 5	
	Body	21.8	Permitivity	49.03	47.61	-2.90%	± 5	05/17/2015
			Conductivity	5.35	5.37	0.36%	± 5	
5 300	Head	21.1	Permitivity	35.90	34.99	-2.54%	± 5	05/12/2015
			Conductivity	4.76	4.65	-2.38%	± 5	
	Body	21.8	Permitivity	48.90	47.46	-2.94%	± 5	05/17/2015
			Conductivity	5.46	5.51	0.84%	± 5	
5 600	Head	20.9	Permitivity	35.50	34.47	-2.91%	± 5	05/13/2015
			Conductivity	5.07	4.95	-2.33%	± 5	
	Body	21.6	Permitivity	48.48	47.85	-1.31%	± 5	05/18/2015
			Conductivity	5.79	5.95	2.74%	± 5	
5 800	Head	21.1	Permitivity	35.30	34.90	-1.12%	± 5	05/14/2015
			Conductivity	5.27	5.14	-2.46%	± 5	
	Body	21.8	Permitivity	48.20	47.59	-1.26%	± 5	05/19/2015
			Conductivity	6.00	6.18	2.96%	± 5	

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6.5 System Verification Results

Freq. (MHz)	Tissue Type	Amb. Temp (℃)	Liquid Temp (℃)	Input Power (mW)	Dipole S/N	Probe S/N	Measured SAR 1g	1W Normalized SAR 1g	1W Target SAR 1g	Deviation	Date
2 450	Head	21.7	21.3	250	923	3716	12.1	48.4	52.4	-7.63%	05/15/2015
	Body	22.9	21.6	250	923	3716	11.8	47.2	50.6	-6.72%	05/16/2015
5 200	Head	20.7	20.5	250	1094	3716	19.9	79.6	76.3	4.33%	05/11/2015
	Body	22.1	21.8	250	1094	3716	18.9	75.6	74.6	1.34%	05/17/2015
5 300	Head	21.3	21.1	250	1094	3716	19.6	78.4	79.8	-1.75%	05/12/2015
	Body	22.1	21.8	250	1094	3716	18.9	75.6	76.3	-0.92%	05/17/2015
5 600	Head	21.3	20.9	250	1094	3716	19.1	76.4	80.2	-4.74%	05/13/2015
	Body	21.9	21.6	250	1094	3716	18.5	78.8	80.8	-2.48%	05/18/2015
5 800	Head	21.4	21.1	250	1094	3716	18.4	73.6	77.9	-5.52%	05/14/2015
	Body	22.0	21.8	250	1094	3716	18.2	72.8	75.2	-3.19%	05/19/2015

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7. SAR MEASUREMENT PROCEDURES

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing.

For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures 5x5x7 points within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Step 4: Power drift measurement

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

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Step 5: Z-Scan

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

* Z Scan Report on Liquid Measure the height ANNEX C. Liquid Depth photo to replace

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the area scan based *1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

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8. TEST EQUIPMENT LIST

Manufacturer	Model	Serial No.	CaL.Due	Used
STAUBLI	RX90XL	F07/56X0A1/A/01	N/A	V
STAUBLI	CS8C Speag TX90XL	F07/56X0A1/C/01	N/A	V
SPEAG	SE UMS 011 AA	1019	N/A	V
STAUBLI	RX90BL	F01/5J92A1/A/01	N/A	
STAUBLI	CS7MBsp RX90BL	F01/5J92A1/C/01	N/A	
SPEAG	SE UMS 001 BC	1164	N/A	
STAUBLI	SP1	D 211 421 02	N/A	V
STAUBLI	Manual Control III Operator	D 221 340 01	N/A	V
Di-Soric	LB5	80	N/A	
Di-Soric	LB2	270	N/A	
SPEAG	Twin Phantom	TP-1069	N/A	
SPEAG	Twin Phantom	TP-1086	N/A	
SPEAG	Twin Phantom	TP-1112	N/A	
SPEAG	Twin Phantom	TP-1155	N/A	
SPEAG	ELI4 Phantom	S 000 T01 DA	N/A	V
SPEAG	Triple Phantom	QD 000 P51 CA	N/A	
SPEAG	Mounting Device	N/A	N/A	V
SPEAG	Mounting Device	SM LH1 001 AC	N/A	
Agilent	85033E	N/A	N/A	V
SPEAG	DAE4	444	11/11/2015	V
SPEAG	DAE3	383	12/01/2014	
SPEAG	EX3DV4	3666	11/26/2014	
SPEAG	ES3DV3	3171	07/17/2015	
SPEAG	EX3DV4	3716	11/17/2015	V
SPEAG	D2450V2	923	11/12/2015	V
SPEAG	D5GHzV2	1094	12/15/2015	V
SPEAG	D835V2	4d172	07/08/2016	
SPEAG	D1750V2	1122	07/08/2016	
SPEAG	D1950V3	1156	07/08/2016	
SPEAG	DAK-3.5	1140	11/10/2015	V
HP	8665B	3744A01333	10/09/2015	V
EMPOWER	BBS3Q7ELU-2001	1009D/C0105	10/09/2015	V
VARIAN	VZC6961K11212	6673	10/09/2015	V
HP	778D	12679	10/07/2015	V
Agilent	772D	2839A01119	10/07/2015	V
Agilent	E4419B	MY41291366	10/07/2015	V
HP	437B	3125U25121	04/27/2016	V
HP	8481H	3318A18722	10/12/2015	V
HP	8481H	3318A17600	10/12/2015	V
HP	8481A	1550A14928	10/12/2015	
WAAINWRIGHT	WLJS1500-6EF	1	10/07/2015	
WAAINWRIGHT	WLJS3000-6EF	1	10/07/2015	
WAAINWRIGHT	WLJS6000-7EF	1	10/12/2015	V
Agilent	E8357A	US41070399	10/09/2015	V

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Rohde-Schwarz	FSP	100017	10/08/2015	V
LKM Electronic Gmbh	DTM3000-spezial	3247	10/10/2015	V
CAS	TE-201	14011777-2	10/09/2015	V
CAS	TE-201	14011777-1	10/10/2015	
Bird	50-6A-MFN-30	14100882-1	10/12/2015	
Bird	50-6A-MFN-30	14100882-2	10/12/2015	V
ANRITSU	MT8820A	6200270787	08/20/2015	
Agilent	WIRELESS COMMUNICATIONS TEST	E5515C	03/11/2016	
Agilent	WIRELESS COMMUNICATIONS TEST	E5515C	03/11/2016	

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9. RF CONDUCTED POWER

9.1 802.11b

Ant 0

Mode	Freq. (MHz)	CH	Conducted Power (dBm)				Tolerance (dBm)
			Data Rate (Mbps)				
			1	2	5.5	11	
802.11b	2 412	1	18.85	18.80	18.79	18.72	18.0 ± 2
	2 437	6	19.10	19.08	19.02	18.97	
	2 462	11	18.89	18.88	18.84	18.79	

Ant 1

Mode	Freq. (MHz)	CH	Conducted Power (dBm)				Tolerance (dBm)
			Data Rate (Mbps)				
			1	2	5.5	11	
802.11b	2 412	1	18.80	18.74	18.66	18.61	18.0 ± 2
	2 437	6	19.13	19.07	19.05	18.99	
	2 462	11	18.82	18.78	18.74	18.72	

9.2 802.11g

Ant 0

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			6	9	12	18	24	36	48	54	
802.11g	2 412	1	18.22	18.19	18.12	18.05	17.98	17.96	17.91	17.84	18.0 ± 2
	2 437	6	18.18	18.09	18.02	17.91	17.85	17.82	17.74	17.70	
	2 462	11	18.28	18.26	18.22	18.17	18.11	18.07	18.02	17.95	

Ant 1

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			6	9	12	18	24	36	48	54	
802.11g	2 412	1	18.02	17.97	17.91	17.89	17.88	17.82	17.76	17.71	18.0 ± 2
	2 437	6	18.14	18.14	18.10	18.05	18.01	17.96	17.89	17.84	
	2 462	11	18.20	18.17	18.10	18.02	17.95	17.89	17.87	17.83	

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9.3 802.11n HT20

Ant 0

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			6.5	13	19.5	26	39	52	58.5	65	
802.11n HT20	2 412	1	15.43	15.41	15.37	15.35	15.30	15.29	15.22	15.17	15.0 ± 2
	2 437	6	15.55	15.50	15.47	15.41	15.38	15.33	15.29	15.24	
	2 462	11	15.71	15.69	15.64	15.59	15.51	15.41	15.38	15.33	

Ant 1

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			6.5	13	19.5	26	39	52	58.5	65	
802.11n HT20	2 412	1	16.74	16.69	16.65	16.58	16.52	16.47	16.41	6.34	15.0 ± 2
	2 437	6	16.64	16.61	16.57	16.50	16.45	16.42	16.37	16.31	
	2 462	11	16.25	16.18	16.11	16.08	16.05	16.02	15.97	15.90	

9.4 802.11n HT40

Ant 0

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			13.5	27	40.5	54	81	108	121.5	135	
802.11n HT40	2 422	3	15.45	15.40	15.34	15.33	15.26	15.21	15.14	15.10	15.0 ± 2
	2 437	6	15.30	15.28	15.22	15.19	15.13	15.08	15.00	14.97	
	2 452	9	15.68	15.67	15.61	15.54	15.48	15.44	15.41	15.38	

Ant 1

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			13.5	27	40.5	54	81	108	121.5	135	
802.11n HT40	2 422	3	16.37	16.30	16.22	16.15	16.10	16.08	16.04	15.99	15.0 ± 2
	2 437	6	16.11	16.08	16.03	15.97	15.90	15.86	15.81	15.76	
	2 452	9	16.33	16.29	16.24	16.19	16.15	16.10	16.09	16.01	

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9.5 802.11a

Ant 0

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			6	9	12	18	24	36	48	54	
U-NII 1	5 180	36	14.00	13.97	13.92	13.89	13.82	13.80	13.76	13.72	13.0 ± 2
	5 200	40	13.95	13.92	13.90	13.86	13.81	13.74	13.69	13.64	
	5 220	44	**14.03**	14.00	13.95	13.91	13.86	13.84	13.81	13.77	
	5 240	48	13.98	13.97	13.94	13.90	13.87	13.82	13.79	13.72	
U-NII 2A	5 260	52	16.10	16.04	15.99	15.96	15.91	15.85	15.83	15.78	15.0 ± 2
	5 280	56	16.15	16.11	16.08	16.05	16.00	15.97	15.93	15.89	
	5 300	60	**16.42**	16.40	16.34	16.29	16.22	16.20	16.15	16.11	
	5 320	64	16.00	15.99	15.93	15.89	15.86	15.82	15.79	15.76	
U-NII 2C	5 500	100	15.57	15.50	15.47	15.44	15.40	15.39	15.33	15.25	16.0 ± 2
	5 520	104	**17.46**	17.44	17.39	17.37	17.36	17.30	17.27	17.22	
	5 540	108	17.35	17.30	17.28	17.28	17.20	17.15	17.11	17.08	
	5 560	112	17.40	17.33	17.32	17.28	17.24	17.19	17.14	17.10	
	5 580	116	17.39	17.37	17.36	17.32	17.29	17.25	17.20	17.17	
	5 600	120	**17.46**	17.40	17.38	17.34	17.32	17.27	17.21	17.18	
	5 620	124	17.41	17.40	17.37	17.36	17.33	17.31	17.24	17.20	
	5 640	128	17.36	17.33	17.29	17.24	17.19	17.18	17.13	17.08	
	5 660	132	17.22	17.20	17.17	17.13	17.09	17.08	17.04	17.00	
	5 680	136	17.40	17.38	17.34	17.30	17.30	17.28	17.25	17.20	
	5 700	140	17.33	17.30	17.28	17.24	17.21	17.19	17.15	17.13	
U-NII 3	5 745	149	**16.46**	16.40	16.38	16.34	16.32	16.27	16.20	16.15	15.0 ± 2
	5 765	153	16.45	16.41	16.38	16.33	16.31	16.29	16.25	16.22	
	5 785	157	16.41	16.39	16.34	16.27	16.22	16.20	16.17	16.13	
	5 805	161	16.39	16.37	16.35	16.30	16.22	16.20	16.15	16.12	
	5 825	165	16.39	16.35	16.33	16.30	16.25	16.21	16.18	16.16	

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Ant 1

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			6	9	12	18	24	36	48	54	
U-NII 1	5 180	36	14.07	13.99	13.91	13.89	13.83	13.80	13.77	13.71	13.0 ± 2
	5 200	40	**14.16**	14.14	14.12	14.07	13.99	13.91	13.87	13.84	
	5 220	44	14.11	14.09	14.05	14.02	13.96	13.88	13.86	13.84	
	5 240	48	14.00	13.95	13.93	13.89	13.86	13.84	13.78	13.74	
U-NII 2A	5 260	52	16.06	16.04	16.01	15.99	15.97	15.87	15.81	15.80	15.0 ± 2
	5 280	56	16.28	16.25	16.23	16.17	16.13	16.05	15.97	15.94	
	5 300	60	**16.37**	16.32	16.28	16.22	16.21	16.19	16.11	16.06	
	5 320	64	15.98	15.95	15.90	15.82	15.79	15.75	15.73	15.68	
U-NII 2C	5 500	100	15.70	15.64	15.56	15.48	15.43	15.40	15.34	15.32	16.0 ± 2
	5 520	104	17.39	17.36	17.34	17.32	17.27	17.23	17.21	17.17	
	5 540	108	17.44	17.42	17.32	17.28	17.26	17.16	17.10	17.09	
	5 560	112	17.37	17.32	17.28	17.22	17.18	17.10	17.05	17.03	
	5 580	116	17.36	17.32	17.24	17.19	17.18	17.16	17.14	17.10	
	5 600	120	17.42	17.38	17.33	17.31	17.28	17.24	17.22	17.14	
	5 620	124	**17.48**	17.41	17.38	17.36	17.34	17.32	17.22	17.20	
	5 640	128	17.33	17.27	17.25	17.15	17.11	17.03	17.01	16.97	
	5 660	132	17.42	17.37	17.33	17.25	17.17	17.15	17.09	17.03	
	5 680	136	17.40	17.35	17.34	17.32	17.28	17.26	17.20	17.19	
	5 700	140	17.47	17.44	17.41	17.37	17.31	17.27	17.19	17.16	
U-NII 3	5 745	149	16.48	16.47	16.42	16.39	16.34	16.33	16.27	16.22	15.0 ± 2
	5 765	153	**16.57**	16.55	16.50	16.46	16.44	16.41	16.39	16.34	
	5 785	157	16.44	16.40	16.36	16.31	16.27	16.25	16.19	16.17	
	5 805	161	16.43	16.35	16.28	16.26	16.23	16.19	16.14	16.12	
	5 825	165	16.35	16.33	16.28	16.20	16.16	16.10	16.08	16.04	

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9.6 802.11an HT20

Ant 0

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			6.5	13	19.5	26	39	52	58.5	65	
U-NII 1	5 180	36	12.29	12.22	12.18	12.16	12.10	12.07	12.04	12.02	13.0 ± 2
	5 200	40	12.37	12.33	12.33	12.28	12.20	12.12	12.09	12.03	
	5 220	44	**12.42**	12.37	12.35	12.32	12.26	12.18	12.17	12.12	
	5 240	48	12.39	12.37	12.34	12.30	12.27	12.25	12.23	12.21	
U-NII 2A	5 260	52	9.42	9.38	9.33	9.31	9.29	9.19	9.15	9.08	8.0 ± 2
	5 280	56	9.36	9.31	9.28	9.22	9.18	9.10	9.02	8.96	
	5 300	60	**9.50**	9.47	9.43	9.37	9.36	9.34	9.32	9.27	
	5 320	64	9.44	9.38	9.32	9.24	9.21	9.17	9.13	9.11	
U-NII 2C	5 500	100	14.28	14.26	14.22	14.14	14.09	14.06	14.00	13.98	14.0 ± 2
	5 520	104	14.25	14.21	14.20	14.18	14.13	14.09	14.07	14.03	
	5 540	108	**14.48**	14.43	14.40	14.36	14.32	14.27	14.25	14.24	
	5 560	112	14.30	14.25	14.17	14.09	14.02	14.00	13.97	13.95	
	5 580	116	14.40	14.37	14.31	14.24	14.18	14.15	14.13	14.09	
	5 600	120	14.32	14.28	14.23	14.19	14.14	14.09	14.05	13.97	
	5 620	124	14.43	14.33	14.26	14.24	14.20	14.17	14.12	14.10	
	5 640	128	14.22	14.14	14.08	14.05	14.00	13.96	13.90	13.86	
	5 660	132	14.29	14.27	14.22	14.17	14.13	14.05	14.00	13.94	
	5 680	136	14.42	14.38	14.34	14.31	14.27	14.22	14.20	14.17	
	5 700	140	14.38	14.35	14.33	14.23	14.16	14.14	14.11	14.09	
U-NII 3	5 745	149	14.97	14.91	14.85	14.77	14.71	14.68	14.66	14.62	15.0 ± 2
	5 765	153	14.92	14.90	14.86	14.78	14.73	14.68	14.64	14.63	
	5 785	157	15.07	15.03	15.02	15.00	14.96	14.93	14.88	14.85	
	5 805	161	15.14	15.09	15.06	15.02	14.97	14.93	14.87	14.85	
	5 825	165	**15.29**	15.24	15.16	15.08	15.05	14.99	14.91	14.87	

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Ant 1

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			6.5	13	19.5	26	39	52	58.5	65	
U-NII 1	5 180	36	13.37	13.32	13.30	13.28	13.22	13.19	13.16	13.14	13.0 ± 2
	5 200	40	13.74	13.72	13.69	13.64	13.56	13.48	13.46	13.40	
	5 220	44	13.80	13.73	13.71	13.68	13.62	13.55	13.51	13.45	
	5 240	48	**13.94**	13.88	13.85	13.81	13.76	13.72	13.72	13.70	
U-NII 2A	5 260	52	**8.20**	8.15	8.10	8.08	8.06	8.01	7.99	7.96	8.0 ± 2
	5 280	56	8.09	8.05	8.02	7.96	7.89	7.87	7.84	7.80	
	5 300	60	8.12	8.07	8.03	7.97	7.91	7.84	7.80	7.80	
	5 320	64	8.15	8.12	8.06	7.98	7.93	7.89	7.89	7.86	
U-NII 2C	5 500	100	14.94	14.88	14.85	14.82	14.80	14.75	14.73	14.71	14.0 ± 2
	5 520	104	15.10	15.02	14.94	14.92	14.87	14.84	14.80	14.76	
	5 540	108	15.14	15.08	15.01	14.97	14.94	14.88	14.80	14.79	
	5 560	112	15.06	15.01	14.97	14.97	14.95	14.92	14.90	14.88	
	5 580	116	**15.18**	15.16	15.11	15.09	15.06	15.04	14.94	14.90	
	5 600	120	15.04	14.99	14.96	14.92	14.90	14.86	14.78	14.70	
	5 620	124	14.99	14.98	14.95	14.90	14.86	14.85	14.83	14.81	
	5 640	128	15.12	15.10	15.09	15.03	14.98	14.95	14.91	14.87	
	5 660	132	15.07	15.02	14.99	14.91	14.87	14.82	14.79	14.76	
	5 680	136	15.03	15.01	14.98	14.96	14.92	14.87	14.84	14.82	
	5 700	140	14.89	14.86	14.84	14.74	14.67	14.65	14.62	14.57	
U-NII 3	5 745	149	16.37	16.35	16.31	16.23	16.17	16.14	16.10	16.07	15.0 ± 2
	5 765	153	**16.51**	16.47	16.46	16.44	16.39	16.34	16.32	16.30	
	5 785	157	16.28	16.23	16.20	16.16	16.12	16.09	16.03	16.00	
	5 805	161	16.33	16.26	16.20	16.15	16.10	16.06	16.00	15.98	
	5 825	165	16.29	16.27	16.22	16.20	16.17	16.11	16.03	15.99	

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9.7 802.11an HT40

Ant 0

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			13.5	27	40.5	54	81	108	121.5	135	
U-NII 1	5 190	38	12.26	12.23	12.22	12.20	12.15	12.12	12.10	12.04	13.0 ± 2
	5 230	46	12.50	12.48	12.45	12.41	12.39	12.31	12.29	12.26	
U-NII 2A	5 270	54	9.20	9.15	9.14	9.10	9.08	9.00	8.96	8.94	8.0 ± 2
	5 310	62	9.36	9.33	9.30	9.23	9.19	9.17	9.16	9.12	
U-NII 2C	5 510	102	14.05	14.04	13.99	13.93	13.90	13.86	13.83	13.79	14.0 ± 2
	5 550	110	14.21	14.19	14.14	14.12	14.10	14.06	14.04	14.03	
	5 590	118	14.29	14.25	14.21	14.17	14.15	14.07	14.03	14.00	
	5 630	126	14.40	14.30	14.28	14.25	14.15	14.13	14.12	14.07	
	5 670	134	14.48	14.42	14.34	14.26	14.24	14.20	14.18	14.13	
U-NII 3	5 755	151	15.12	15.09	15.07	15.05	14.99	14.93	14.89	14.85	15.0 ± 2
	5 795	159	15.26	15.24	15.14	15.10	15.04	15.03	14.95	14.88	

Ant 1

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			13.5	27	40.5	54	81	108	121.5	135	
U-NII 1	5 190	38	13.48	13.46	13.41	13.37	13.35	13.31	13.29	13.21	13.0 ± 2
	5 230	46	13.62	13.58	13.54	13.50	13.48	13.46	13.36	13.34	
U-NII 2A	5 270	54	7.90	7.80	7.78	7.71	7.67	7.59	7.57	7.53	8.0 ± 2
	5 310	62	8.19	8.13	8.05	7.99	7.96	7.95	7.89	7.83	
U-NII 2C	5 510	102	15.14	15.11	15.09	15.07	15.05	15.02	14.96	14.95	14.0 ± 2
	5 550	110	15.29	15.27	15.17	15.13	15.11	15.09	15.01	14.98	
	5 590	118	15.37	15.36	15.32	15.29	15.19	15.15	15.09	15.04	
	5 630	126	15.31	15.29	15.28	15.24	15.22	15.21	15.19	15.14	
	5 670	134	15.48	15.44	15.41	15.37	15.33	15.31	15.27	15.25	
U-NII 3	5 755	151	16.41	16.33	16.31	16.30	16.27	16.23	16.19	16.17	15.0 ± 2
	5 795	159	16.35	16.33	16.29	16.26	16.22	16.16	16.08	16.04	

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9.8 802.11ac VHT80

Ant 0

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			29.3	58.5	87.8	117	175.5	234	263.3	292.5	
U-NII 1	5 210	42	12.21	12.13	12.11	12.09	12.04	12.02	11.94	11.88	13.0 ± 2
U-NII 2A	5 290	58	9.17	9.13	9.03	9.01	8.98	8.92	8.91	8.88	8.0 ± 2
U-NII 2C	5 530	106	13.99	13.95	13.93	13.91	13.89	13.81	13.78	13.76	14.0 ± 2
	5 610	122	13.95	13.89	13.85	13.75	13.71	13.65	13.63	13.57	
	5 690	138	14.97	14.96	14.88	14.84	14.78	14.70	14.66	14.64	
U-NII 3	5 775	155	15.18	15.15	15.13	15.07	15.05	15.03	14.99	14.92	15.0 ± 2

Ant 1

Mode	Freq. (MHz)	CH	Conducted Power (dBm)								Tolerance (dBm)
			Data Rate (Mbps)								
			29.3	58.5	87.8	117	175.5	234	263.3	292.5	
U-NII 1	5 210	42	14.10	14.04	13.98	13.94	13.86	13.83	13.81	13.76	13.0 ± 2
U-NII 2A	5 290	58	8.33	8.30	8.25	8.17	8.11	8.06	8.04	8.00	8.0 ± 2
U-NII 2C	5 530	106	15.57	15.56	15.55	15.50	15.48	15.40	15.38	15.30	14.0 ± 2
	5 610	122	15.51	15.48	15.46	15.43	15.37	15.36	15.26	15.21	
	5 690	138	15.88	15.86	15.82	15.80	15.72	15.69	15.57	15.53	
U-NII 3	5 775	155	16.37	16.31	16.23	16.21	16.18	16.17	16.11	16.04	15.0 ± 2

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Justification for reduced test configurations for WIFI channels per KDB Publication 248227 D01v01r02 and October 2012/April 2013 FCC/TCB Meeting Notes:

- For 2.4 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11b were selected for SAR evaluation. Other IEEE 802.11 modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
- For 5 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11a were selected for SAR evaluation. Other IEEE 802.11 modes (including 802.11n 20 MHz and 40 MHz) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11a mode.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the reported 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The bolded data rate and channel above were tested for SAR.

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10.SAR TEST RESULTS

< 802.11b Head SAR >

Mode	Freq. (MHz)	Antenna	CH	Conducted Power (dBm)	Max Allowed Power (dBm)	Scaling Factor	Measured 1g SAR (W/kg)	Reported SAR (W/kg)	Sum
802.11b	2 412	0	1	18.85	20.00	1.30	0.009	0.012	0.014
		1		18.80	20.00	1.32	0.002	0.003	
	2 437	0	6	19.10	20.00	1.23	0.011	0.014	**0.017**
		1		19.13	20.00	1.22	0.003	0.004	
	2 462	0	11	18.89	20.00	1.29	0.010	0.013	0.017
		1		18.82	20.00	1.31	0.003	0.004	

< 802.11b Body SAR >

Mode	Freq. (MHz)	Antenna	CH	Conducted Power (dBm)	Max Allowed Power (dBm)	Scaling Factor	Measured 1g SAR (W/kg)	Reported SAR (W/kg)	Sum
802.11b	2 412	0	1	18.85	20.00	1.30	0.010	0.013	0.018
		1		18.80	20.00	1.32	0.004	0.005	
	2 437	0	6	19.10	20.00	1.23	0.011	0.014	**0.018**
		1		19.13	20.00	1.22	0.004	0.005	
	2 462	0	11	18.89	20.00	1.29	0.009	0.012	0.016
		1		18.82	20.00	1.31	0.003	0.004	

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< 802.11a Head SAR >

Mode	Freq. (MHz)	Antenna	CH	Conducted Power (dBm)	Max Allowed Power (dBm)	Scaling Factor	Measured 1g SAR (W/kg)	Reported SAR (W/kg)	Sum
802.11a	5 180	0	36	14.00	15.00	1.26	0.013	0.016	**0.065**
		1		14.07	15.00	1.24	0.039	0.048	
	5 240	0	48	13.98	15.00	1.26	0.010	0.013	0.063
		1		14.00	15.00	1.26	0.040	0.050	
	5 260	0	52	16.10	17.00	1.23	0.013	0.016	0.100
		1		16.06	17.00	1.24	0.068	0.084	
	5 320	0	64	16.00	17.00	1.26	0.015	0.019	**0.106**
		1		15.98	17.00	1.26	0.069	0.087	
	5 520	0	104	17.46	18.00	1.13	0.012	0.014	**0.113**
		1		17.39	18.00	1.15	0.086	0.099	
	5 580	0	116	17.39	18.00	1.15	0.007	0.008	0.078
		1		17.36	18.00	1.16	0.060	0.070	
	5 620	0	124	17.41	8.00	0.11	0.009	0.001	0.052
		1		17.48	18.00	1.13	0.045	0.051	
	5 680	0	136	17.40	18.00	1.15	0.000	0.000	0.047
		1		17.40	18.00	1.15	0.041	0.047	
	5 745	0	149	16.46	17.00	1.13	0.005	0.006	0.044
		1		16.48	17.00	1.13	0.034	0.038	
	5 805	0	161	16.39	17.00	1.15	0.005	0.006	**0.047**
		1		16.43	17.00	1.14	0.036	0.041	

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< 802.11a Body SAR >

Mode	Freq. (MHz)	Antenna	CH	Conducted Power (dBm)	Max Allowed Power (dBm)	Scaling Factor	Measured 1g SAR (W/kg)	Reported SAR (W/kg)	Sum
802.11a	5 180	0	36	14.00	15.00	1.26	0.012	0.015	**0.056**
		1		14.07	15.00	1.24	0.033	0.041	
	5 240	0	48	13.98	15.00	1.26	0.008	0.011	0.045
		1		14.00	15.00	1.26	0.027	0.034	
	5 260	0	52	16.10	17.00	1.23	0.013	0.016	0.087
		1		16.06	17.00	1.24	0.057	0.071	
	5 320	0	64	16.00	17.00	1.26	0.015	0.019	**0.092**
		1		15.98	17.00	1.26	0.058	0.073	
	5 520	0	104	17.46	18.00	1.13	0.014	0.016	**0.106**
		1		17.39	18.00	1.15	0.078	0.090	
	5 580	0	116	17.39	18.00	1.15	0.010	0.012	0.068
		1		17.36	18.00	1.16	0.049	0.057	
	5 620	0	124	17.41	18.00	1.15	0.002	0.002	0.054
		1		17.48	18.00	1.13	0.046	0.052	
	5 680	0	136	17.40	18.00	1.15	0.006	0.007	0.039
		1		17.40	18.00	1.15	0.028	0.032	
	5 745	0	149	16.46	17.00	1.13	0.000	0.000	0.027
		1		16.48	17.00	1.13	0.024	0.027	
	5 805	0	161	16.39	17.00	1.15	0.000	0.000	**0.029**
		1		16.43	17.00	1.14	0.025	0.029	

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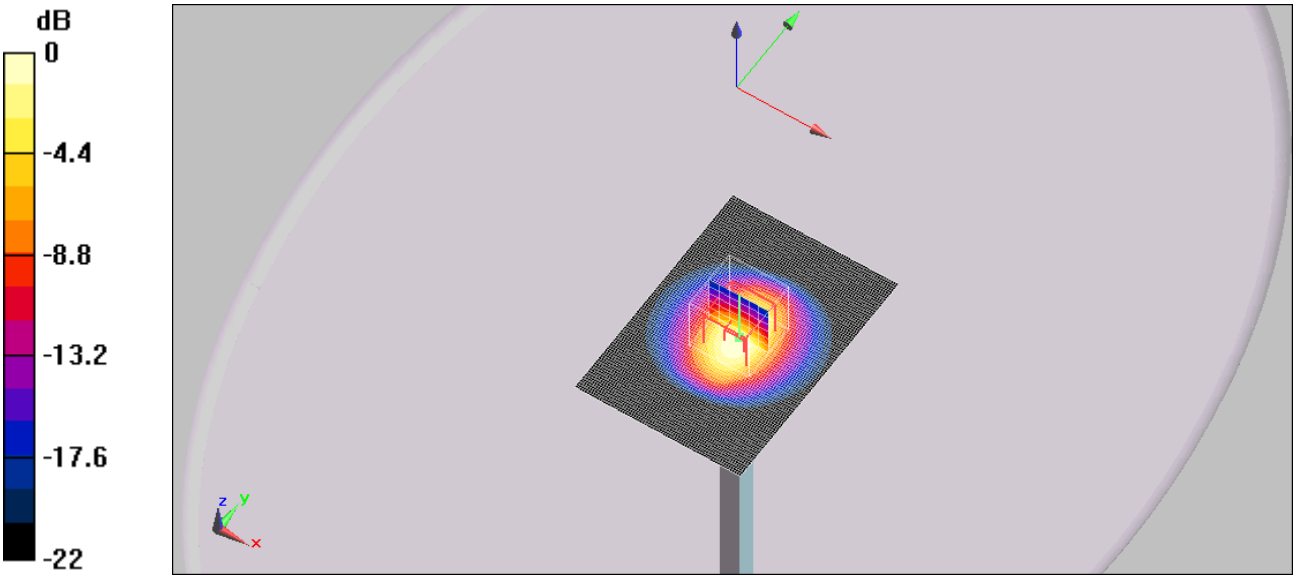
ANNEX A. SYSTEM VERIFICATION PLOTS

< 2 450 MHz Head / Date : May 15, 2015 >

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:923
Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; εr = 38.1; ρ = 1000 kg/m3
Phantom section: Flat Section
DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(6.94, 6.94, 6.94); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

2450MHz SPC/Area Scan (71x101x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 19 mW/g

2450MHz SPC/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.6 V/m; Power Drift = -0.024 dB
Peak SAR (extrapolated) = 25 W/kg
SAR(1 g) = 12.1 mW/g; SAR(10 g) = 5.6 mW/g
Maximum value of SAR (measured) = 18.5 mW/g



0 dB = 18.5mW/g

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< 2 450 MHz Body / Date : May 16, 2015 >

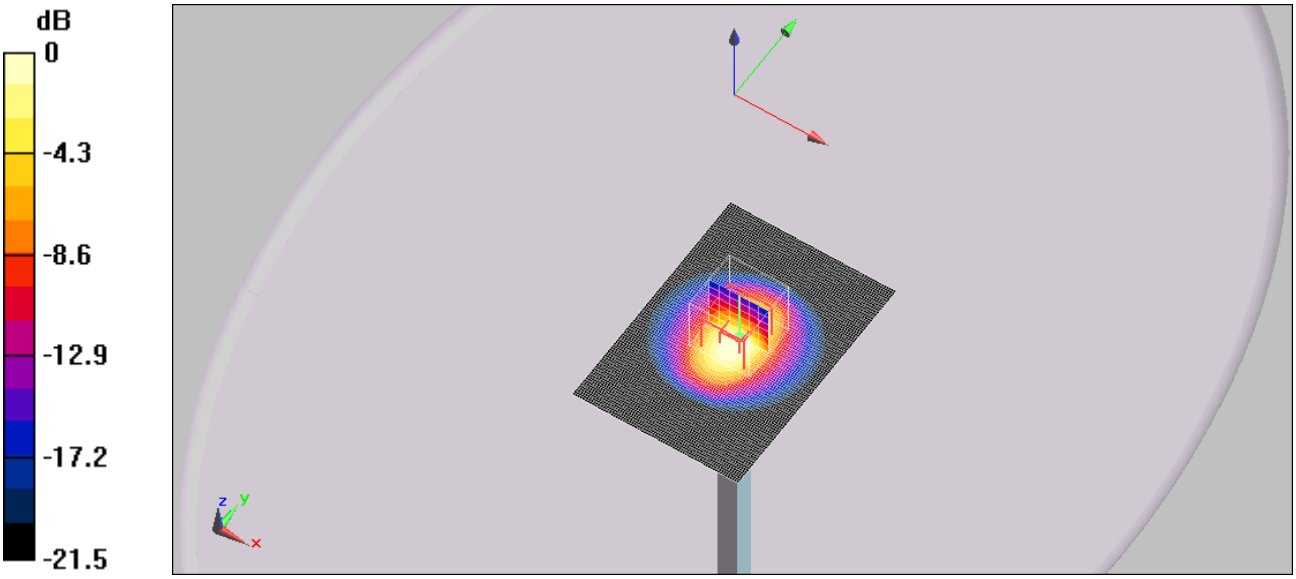
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:923

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.94 mho/m; εr = 53.4; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(7.13, 7.13, 7.13); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

2450MHz SPC/Area Scan (71x101x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 18.6 mW/g

2450MHz SPC/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.2 V/m; Power Drift = -0.046 dB
Peak SAR (extrapolated) = 23.7 W/kg
SAR(1 g) = 11.8 mW/g; SAR(10 g) = 5.55 mW/g
Maximum value of SAR (measured) = 17.6 mW/g



0 dB = 17.6mW/g

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< 5 200 MHz Head / Date : May 11, 2015 >

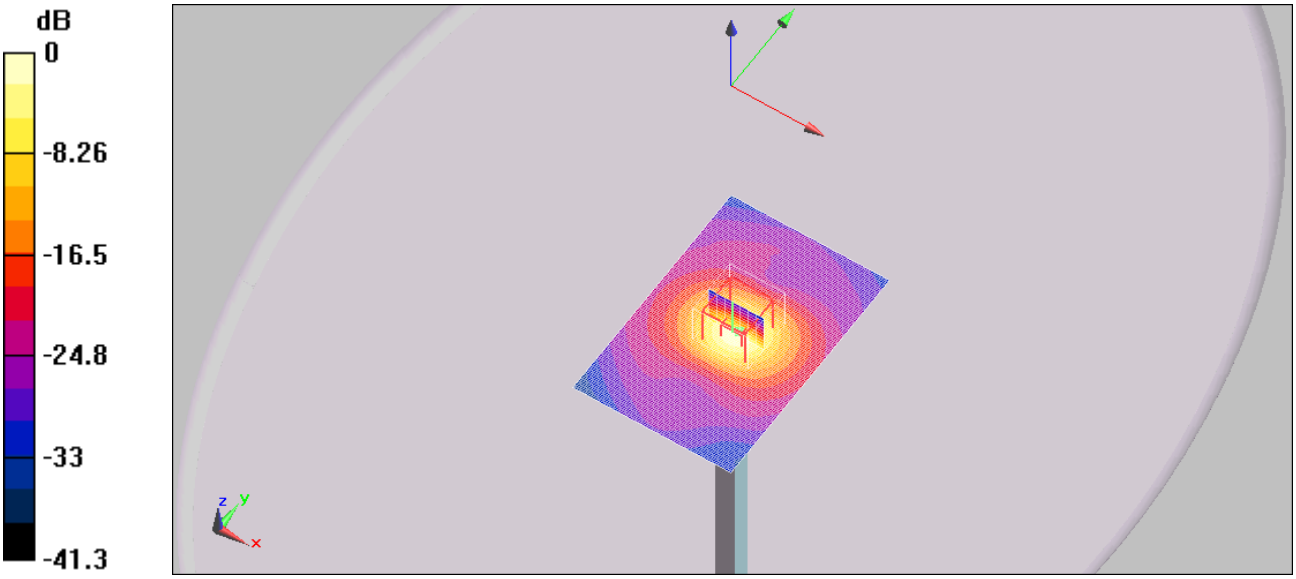
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1094

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 4.5 mho/m; εr = 35.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.97, 4.97, 4.97); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

5200MHz SPC/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 41.5 mW/g

5200MHz SPC/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 97.1 V/m; Power Drift = -0.076 dB
Peak SAR (extrapolated) = 81.3 W/kg
SAR(1 g) = 19.9 mW/g; SAR(10 g) = 5.68 mW/g
Maximum value of SAR (measured) = 38.3 mW/g



0 dB = 38.3mW/g

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< 5 200 MHz Body / Date : May 17, 2015 >

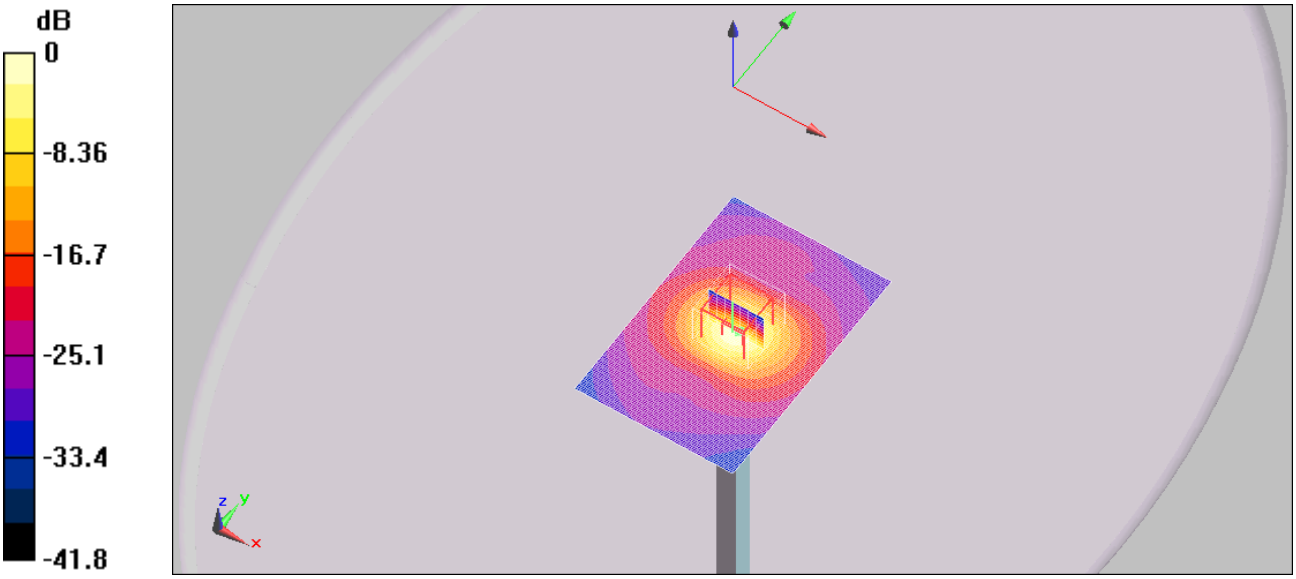
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1094

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.37 mho/m; εr = 47.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.41, 4.41, 4.41); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

5200MHz SPC/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 40.2 mW/g

5200MHz SPC/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 89.5 V/m; Power Drift = -0.098 dB
Peak SAR (extrapolated) = 77.1 W/kg
SAR(1 g) = 18.9 mW/g; SAR(10 g) = 5.39 mW/g
Maximum value of SAR (measured) = 36.7 mW/g



0 dB = 36.7mW/g

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< 5 300 MHz Head / Date : May 12, 2015 >

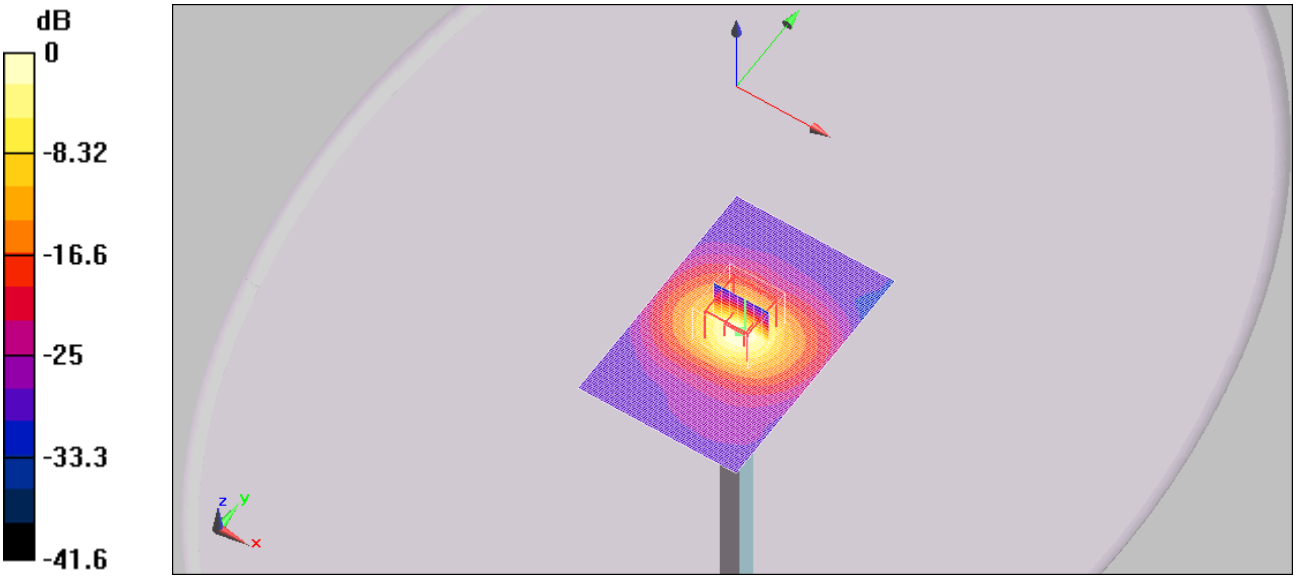
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1094

Communication System: CW; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5300 MHz; σ = 4.65 mho/m; εr = 35; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.74, 4.74, 4.74); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

5300MHz SPC/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 42.7 mW/g

5300MHz SPC/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 96.6 V/m; Power Drift = 0.037 dB
Peak SAR (extrapolated) = 84.7 W/kg
SAR(1 g) = 19.6 mW/g; SAR(10 g) = 5.58 mW/g
Maximum value of SAR (measured) = 38.7 mW/g



0 dB = 38.7mW/g

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< 5 300 MHz Body / Date : May 17, 2015 >

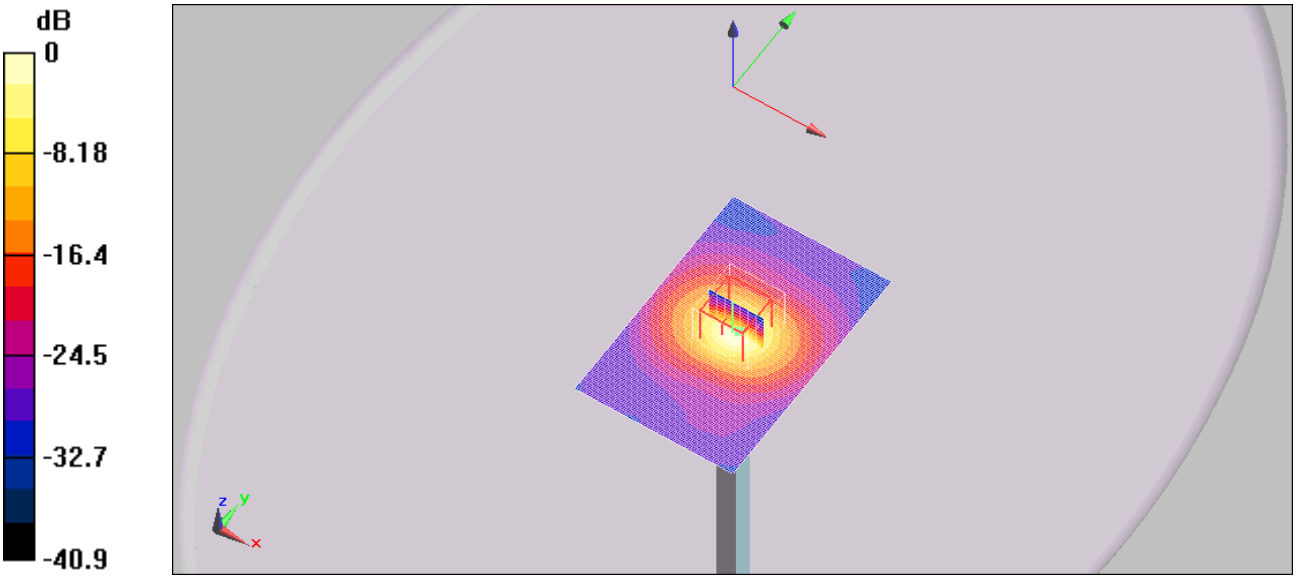
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1094

Communication System: CW; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5300 MHz; σ = 5.51 mho/m; εr = 47.5; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.22, 4.22, 4.22); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

5300MHz SPC/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 40.1 mW/g

5300MHz SPC/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 88.6 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 78.7 W/kg
SAR(1 g) = 18.9 mW/g; SAR(10 g) = 5.39 mW/g
Maximum value of SAR (measured) = 37 mW/g



0 dB = 37mW/g

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< 5 600 MHz Head / Date : May 13, 2015 >

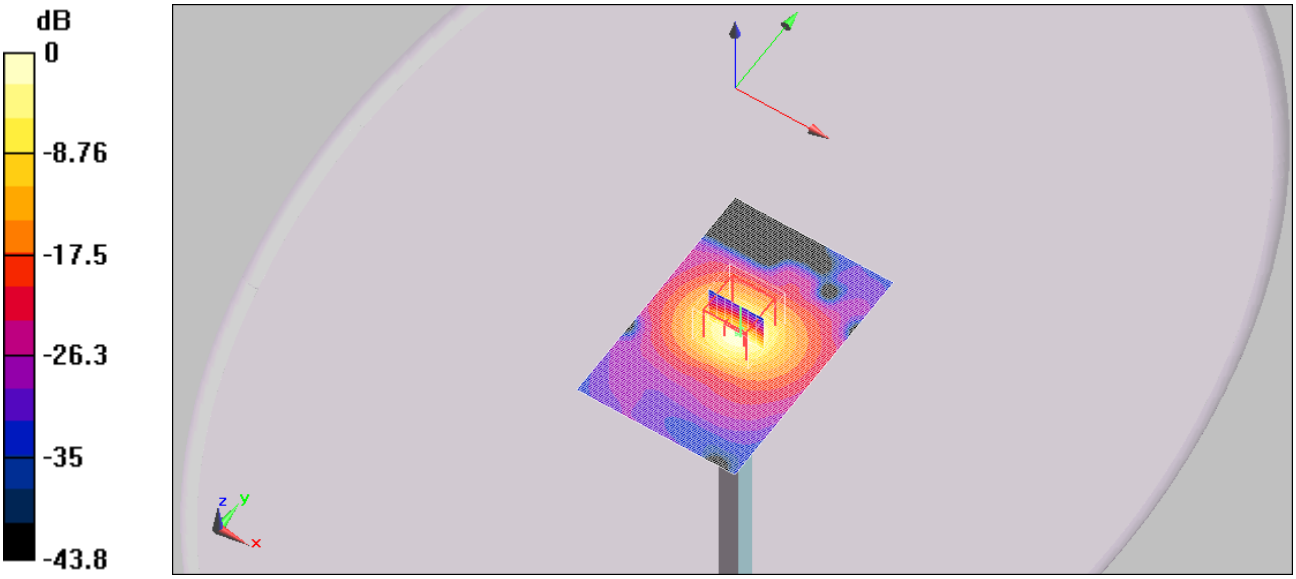
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1094

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5600 MHz; σ = 4.95 mho/m; εr = 34.5; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.3, 4.3, 4.3); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

5600MHz SPC/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 42.4 mW/g

5600MHz SPC/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 94.4 V/m; Power Drift = -0.153 dB
Peak SAR (extrapolated) = 86 W/kg
SAR(1 g) = 19.1 mW/g; SAR(10 g) = 5.43 mW/g
Maximum value of SAR (measured) = 38 mW/g



0 dB = 38mW/g

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< 5 600 MHz Body / Date : May 18, 2015 >

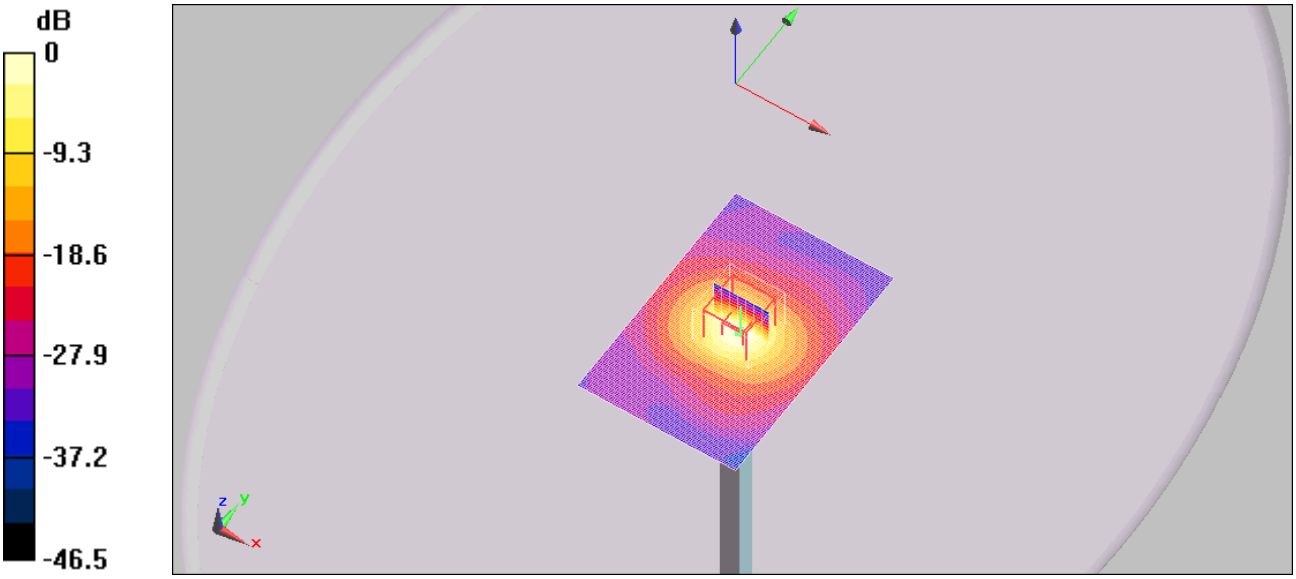
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1094

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5600 MHz; σ = 5.95 mho/m; εr = 47.8; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(3.85, 3.85, 3.85); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

5600MHz SPC/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 39.9 mW/g

5600MHz SPC/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 90.3 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 80.2 W/kg
SAR(1 g) = 18.5 mW/g; SAR(10 g) = 5.16 mW/g
Maximum value of SAR (measured) = 35.9 mW/g



0 dB = 35.9mW/g

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< 5 800 MHz Head / Date : May 14, 2015 >

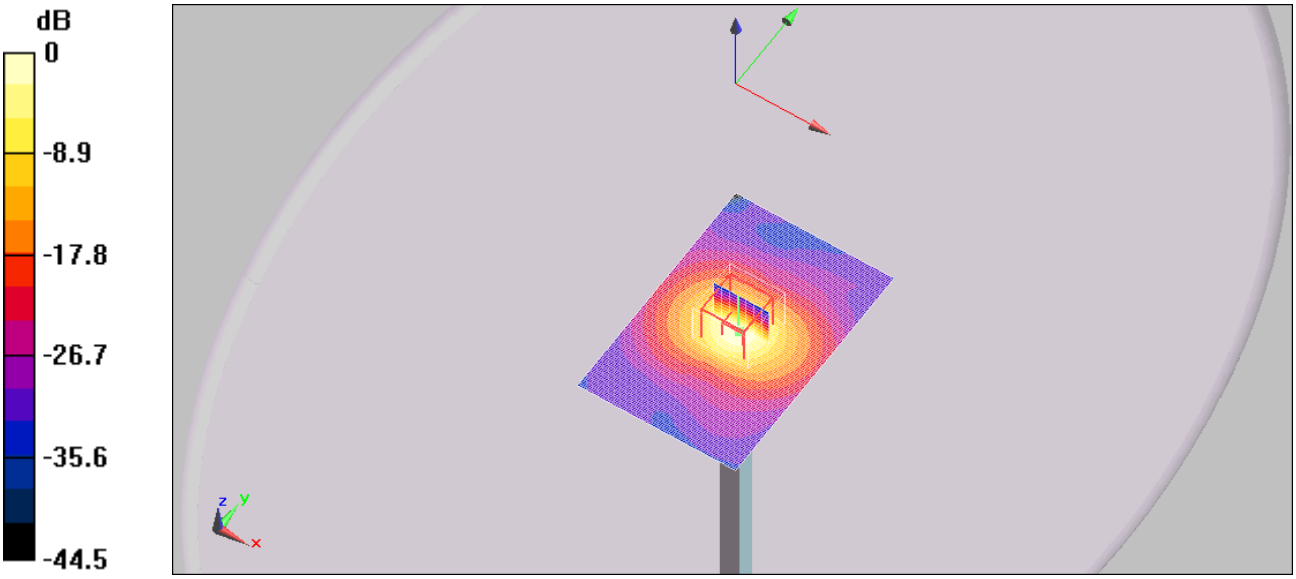
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1094

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 5.18 mho/m; εr = 34.7; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.29, 4.29, 4.29); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

5800MHz SPC/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 39.7 mW/g

5800MHz SPC/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 93.8 V/m; Power Drift = -0.182 dB
Peak SAR (extrapolated) = 83.6 W/kg
SAR(1 g) = 18.4 mW/g; SAR(10 g) = 5.21 mW/g
Maximum value of SAR (measured) = 36.1 mW/g



0 dB = 36.1mW/g

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< 5 800 MHz Body / Date : May 19, 2015 >

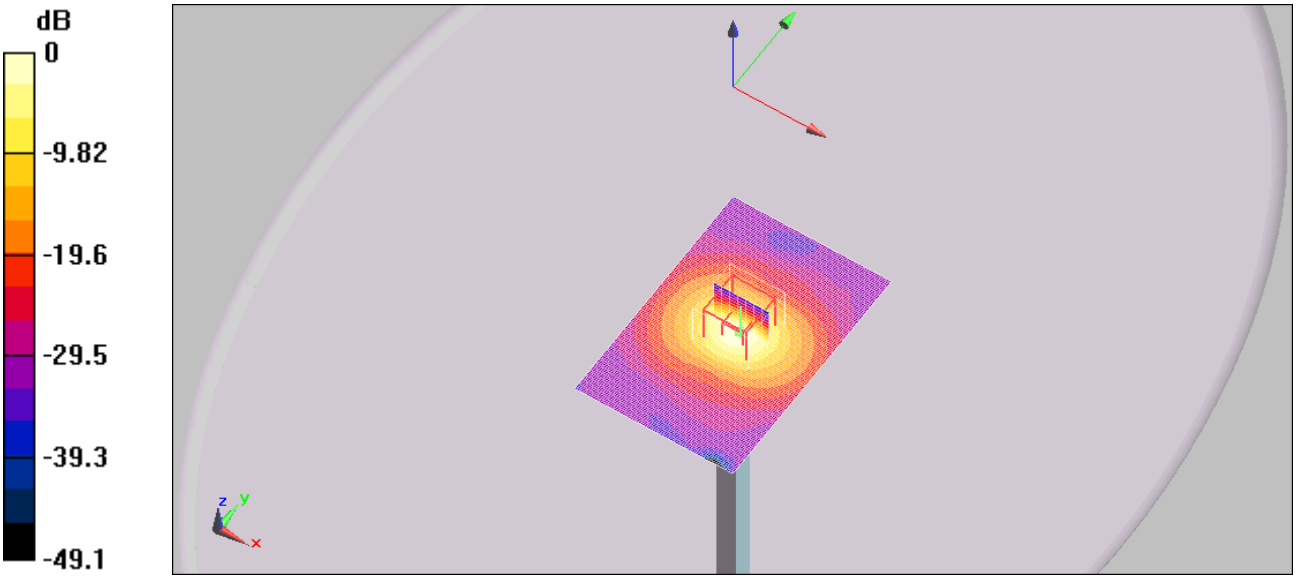
DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1094

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 6.18 mho/m; εr = 47.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.03, 4.03, 4.03); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

5800MHz SPC/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 39.5 mW/g

5800MHz SPC/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 82.3 V/m; Power Drift = -0.096 dB
Peak SAR (extrapolated) = 81.3 W/kg
SAR(1 g) = 18.2 mW/g; SAR(10 g) = 5.14 mW/g
Maximum value of SAR (measured) = 36.1 mW/g



0 dB = 36.1mW/g

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EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

ANNEX B. SAR TEST PLOTS

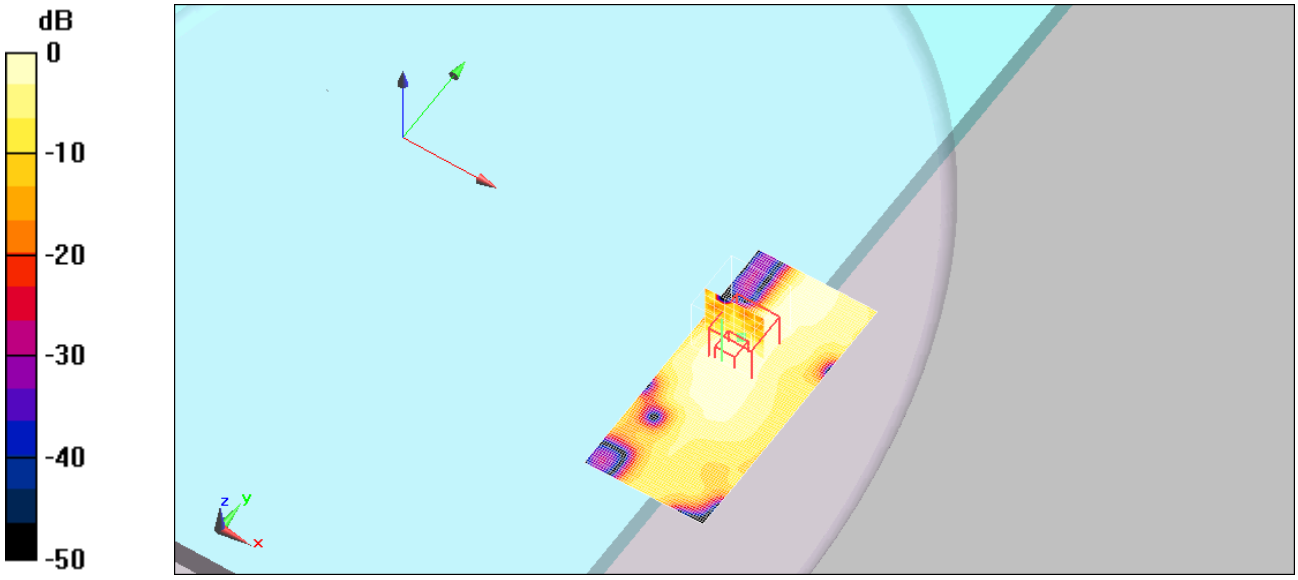
< 802.11b Head CH1 2 412 MHz Front Ant 0 / Date : May 15, 2015 >

DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2412 MHz; σ = 1.76 mho/m; εr = 38.2; ρ = 1000 kg/m3
Phantom section: Flat Section
DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(6.94, 6.94, 6.94); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11b_ch1_2 412 MHz_1 Mbps_Front_Ant 0/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.016 mW/g

Head_802.11b_ch1_2 412 MHz_1 Mbps_Front_Ant 0/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.69 V/m; Power Drift = -0.180 dB
Peak SAR (extrapolated) = 0.021 W/kg
SAR(1 g) = 0.00883 mW/g; SAR(10 g) = 0.004 mW/g
Maximum value of SAR (measured) = 0.014 mW/g



0 dB = 0.014mW/g

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< 802.11b Head CH1 2 412 MHz Front Ant 1 / Date : May 15, 2015 >

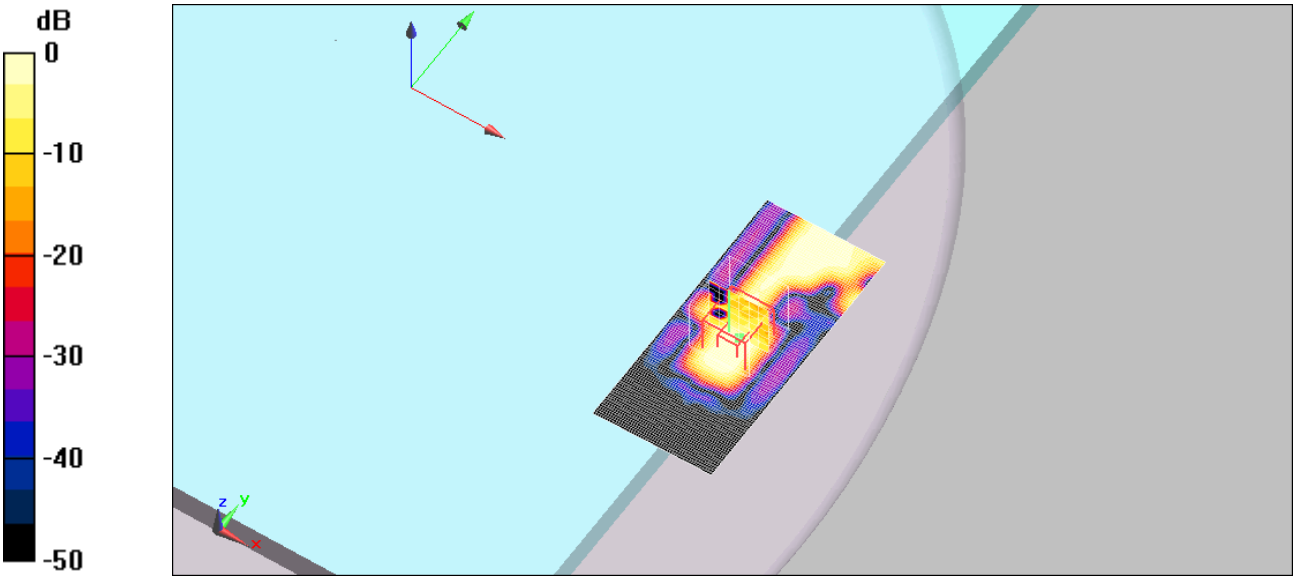
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2412 MHz; σ = 1.76 mho/m; εr = 38.2; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(6.94, 6.94, 6.94); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11b_ch1_2 412 MHz_1 Mbps_Front_Ant 1/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.013 mW/g

Head_802.11b_ch1_2 412 MHz_1 Mbps_Front_Ant 1/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.84 V/m; Power Drift = -0.117 dB
Peak SAR (extrapolated) = 0.012 W/kg
SAR(1 g) = 0.00235 mW/g; SAR(10 g) = 0.000721 mW/g
Maximum value of SAR (measured) = 0.0052 mW/g



0 dB = 0.0052mW/g

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< 802.11b Head CH6 2 437 MHz Front Ant 0 / Date : May 15, 2015 >

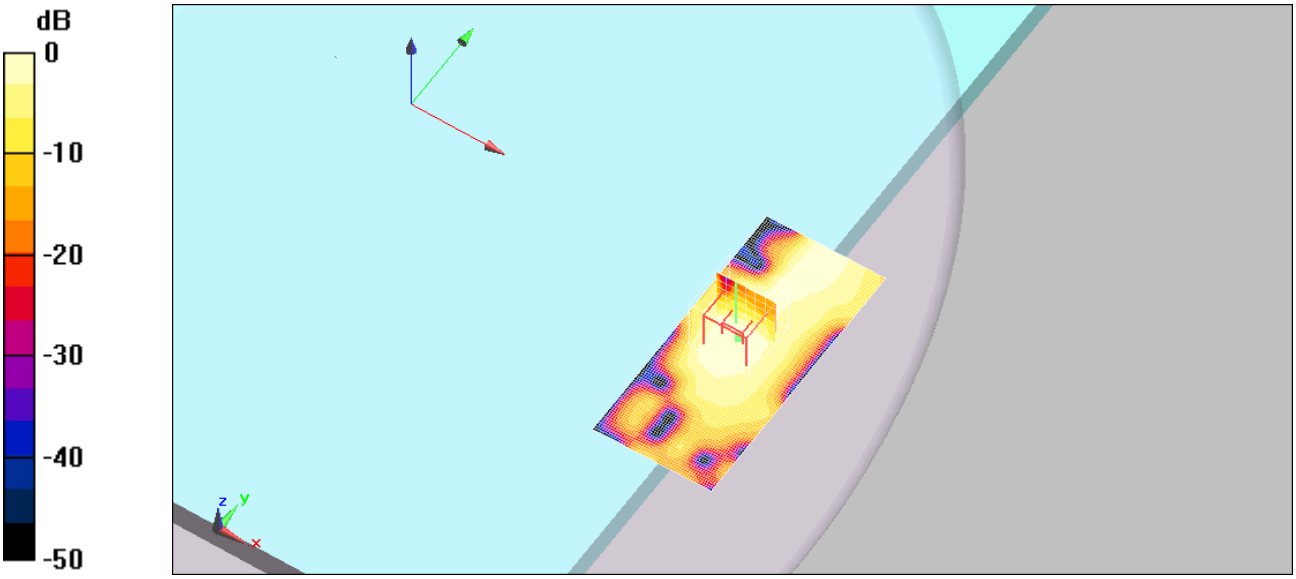
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2437 MHz; σ = 1.79 mho/m; εr = 38.2; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(6.94, 6.94, 6.94); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11b_ch6_2 437 MHz_1 Mbps_Front_Ant 0/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.016 mW/g

Head_802.11b_ch6_2 437 MHz_1 Mbps_Front_Ant 0/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.81 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 0.041 W/kg
SAR(1 g) = 0.011 mW/g; SAR(10 g) = 0.00504 mW/g
Maximum value of SAR (measured) = 0.017 mW/g



0 dB = 0.017mW/g

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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< 802.11b Head CH6 2 437 MHz Front Ant 1 / Date : May 15, 2015 >

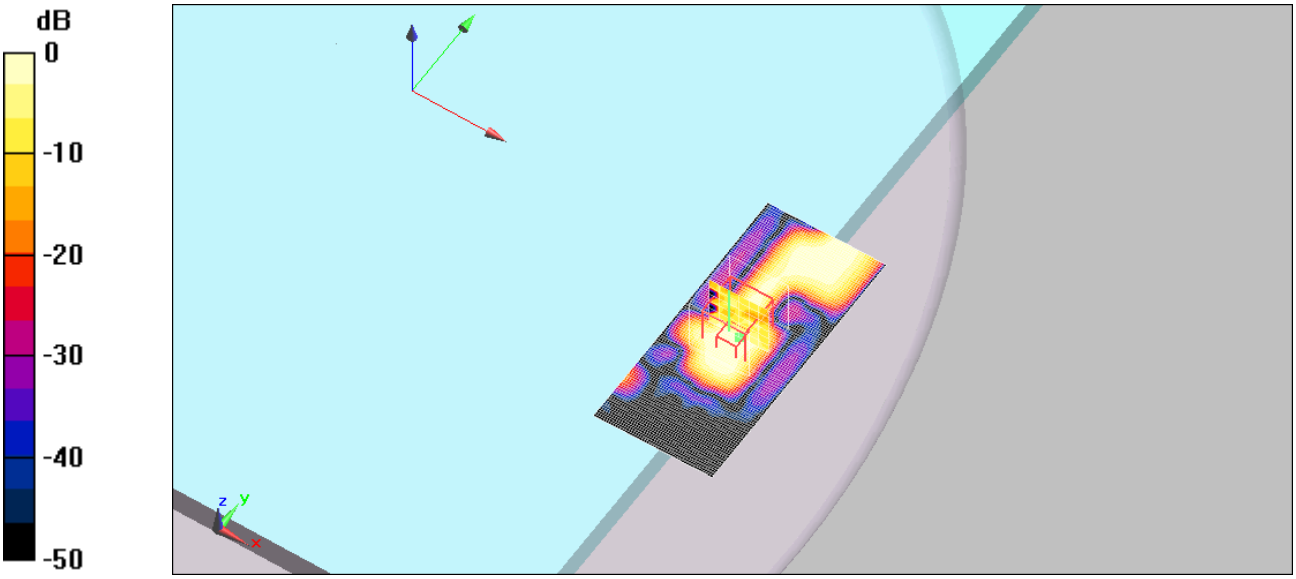
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2437 MHz; σ = 1.79 mho/m; εr = 38.2; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(6.94, 6.94, 6.94); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11b_ch6_2 437 MHz_1 Mbps_Front_Ant 1/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.015 mW/g

Head_802.11b_ch6_2 437 MHz_1 Mbps_Front_Ant 1/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.79 V/m; Power Drift = 0.157 dB
Peak SAR (extrapolated) = 0.011 W/kg
SAR(1 g) = 0.00316 mW/g; SAR(10 g) = 0.00125 mW/g
Maximum value of SAR (measured) = 0.00574 mW/g



0 dB = 0.00574mW/g

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< 802.11b Head CH11 2 462 MHz Front Ant 0 / Date : May 15, 2015 >

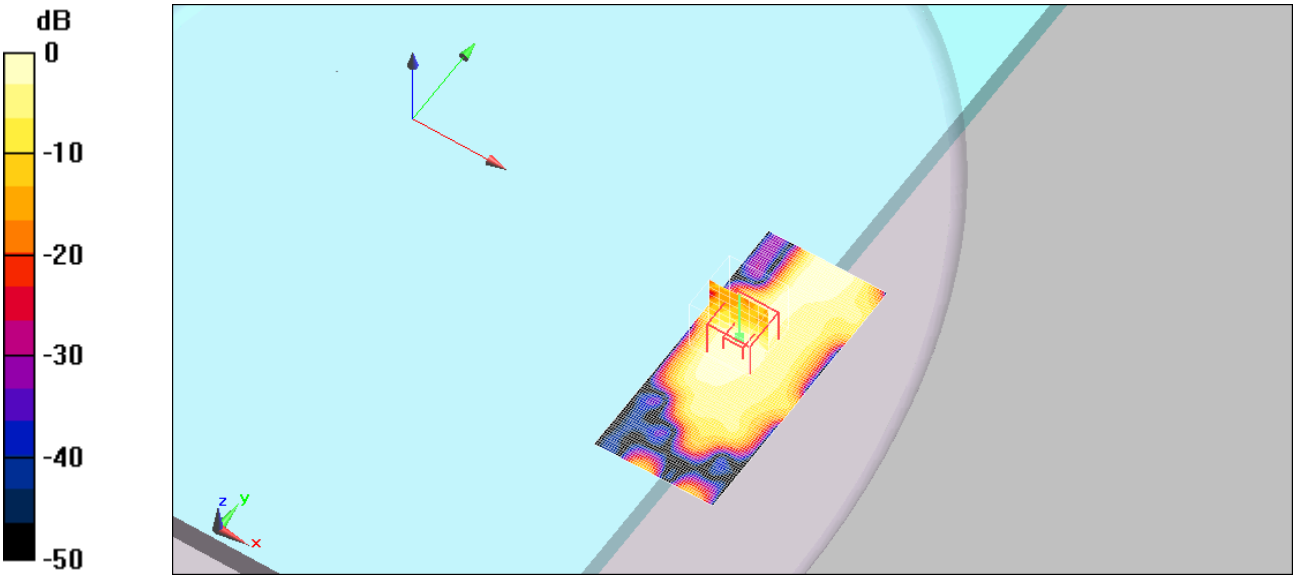
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2462 MHz; σ = 1.82 mho/m; εr = 38.1; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(6.94, 6.94, 6.94); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11b_ch11_2 462 MHz_1 Mbps_Front_Ant 0/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.015 mW/g

Head_802.11b_ch11_2 462 MHz_1 Mbps_Front_Ant 0/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.71 V/m; Power Drift = -0.113 dB
Peak SAR (extrapolated) = 0.022 W/kg
SAR(1 g) = 0.00981 mW/g; SAR(10 g) = 0.00439 mW/g
Maximum value of SAR (measured) = 0.015 mW/g



0 dB = 0.015mW/g

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< 802.11b Head CH11 2 462 MHz Front Ant 1 / Date : May 15, 2015 >

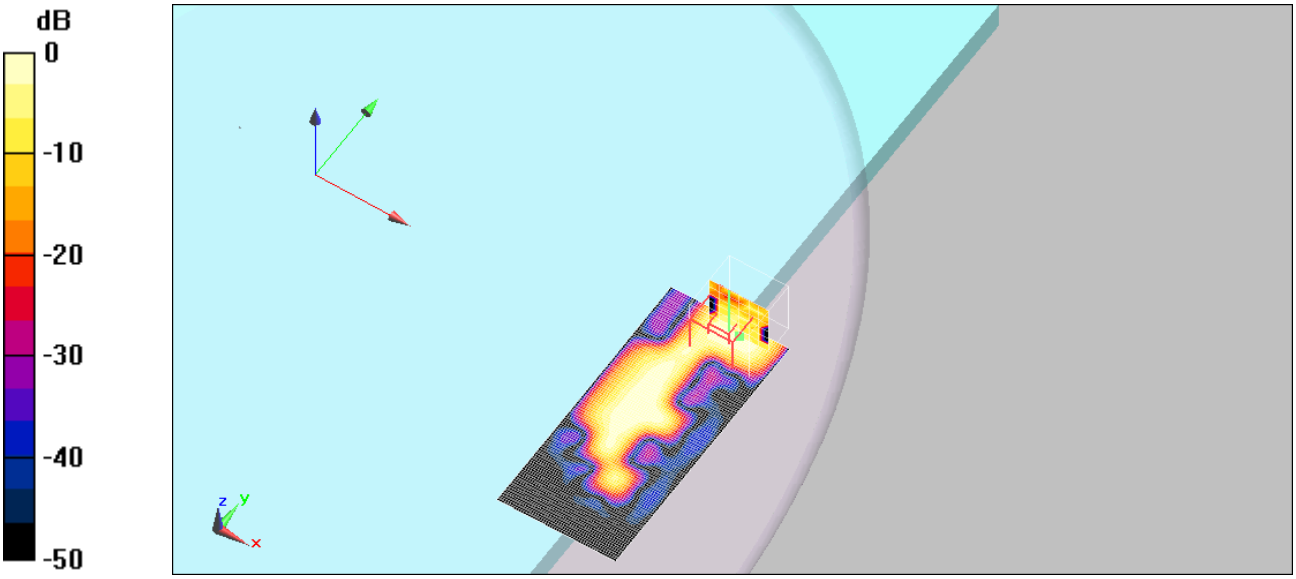
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2462 MHz; σ = 1.82 mho/m; εr = 38.1; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(6.94, 6.94, 6.94); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11b_ch11_2 462 MHz_1 Mbps_Front_Ant 1/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.00725 mW/g

Head_802.11b_ch11_2 462 MHz_1 Mbps_Front_Ant 1/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.68 V/m; Power Drift = -0.208 dB
Peak SAR (extrapolated) = 0.00878 W/kg
SAR(1 g) = 0.00338 mW/g; SAR(10 g) = 0.000992 mW/g
Maximum value of SAR (measured) = 0.00547 mW/g



0 dB = 0.00547mW/g

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< 802.11b Body CH1 2 412 MHz Front Ant 0 / Date : May 16, 2015 >

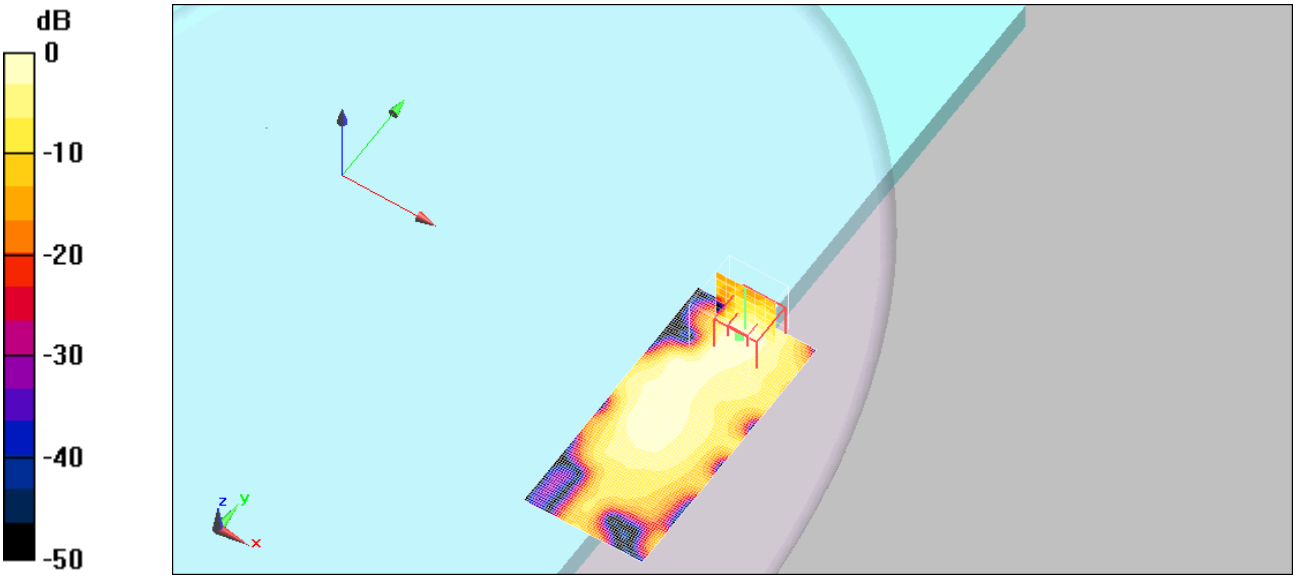
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2412 MHz; σ = 1.89 mho/m; εr = 53.5; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(7.13, 7.13, 7.13); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11b_ch1_2 412 MHz_1 Mbps_Front_Ant 0/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.016 mW/g

Body_802.11b_ch1_2 412 MHz_1 Mbps_Front_Ant 0/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.48 V/m; Power Drift = 0.137 dB
Peak SAR (extrapolated) = 0.023 W/kg
SAR(1 g) = 0.00972 mW/g; SAR(10 g) = 0.00441 mW/g
Maximum value of SAR (measured) = 0.014 mW/g



0 dB = 0.014mW/g

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< 802.11b Body CH1 2 412 MHz Front Ant 1 / Date : May 16, 2015 >

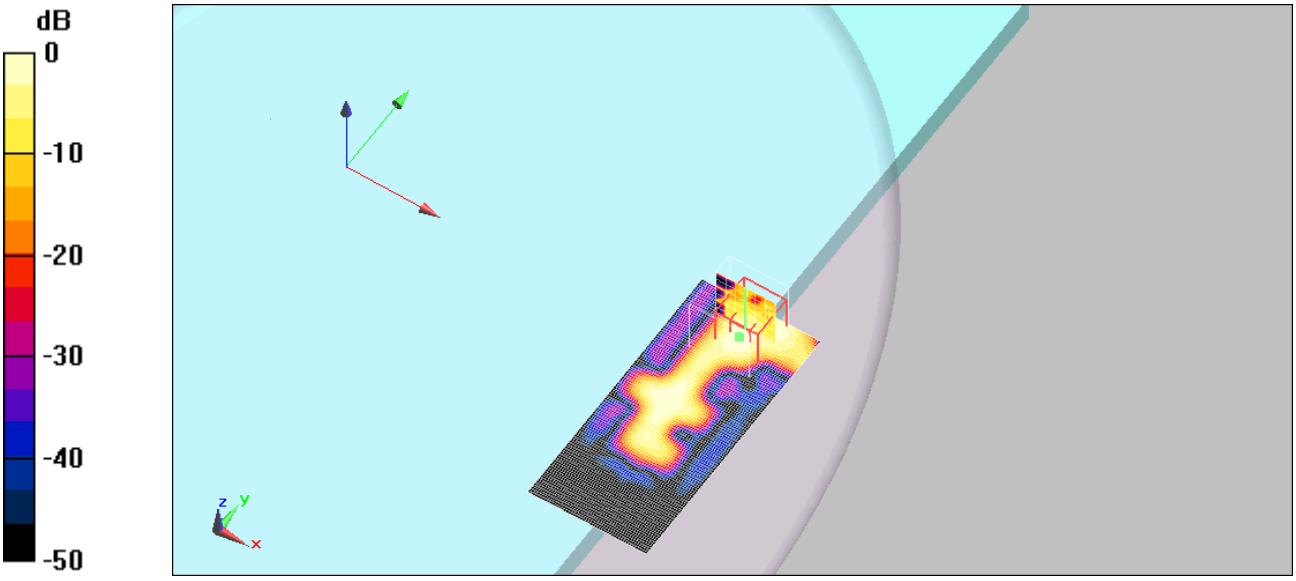
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2412 MHz; σ = 1.89 mho/m; εr = 53.5; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(7.13, 7.13, 7.13); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11b_ch1_2 412 MHz_1 Mbps_Front_Ant 1/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.00694 mW/g

Body_802.11b_ch1_2 412 MHz_1 Mbps_Front_Ant 1/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.57 V/m; Power Drift = 0.189 dB
Peak SAR (extrapolated) = 0.00801 W/kg
SAR(1 g) = 0.0038 mW/g; SAR(10 g) = 0.00146 mW/g
Maximum value of SAR (measured) = 0.00661 mW/g



0 dB = 0.00661mW/g

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EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< 802.11b Body CH6 2 437 MHz Front Ant 0 / Date : May 16, 2015 >

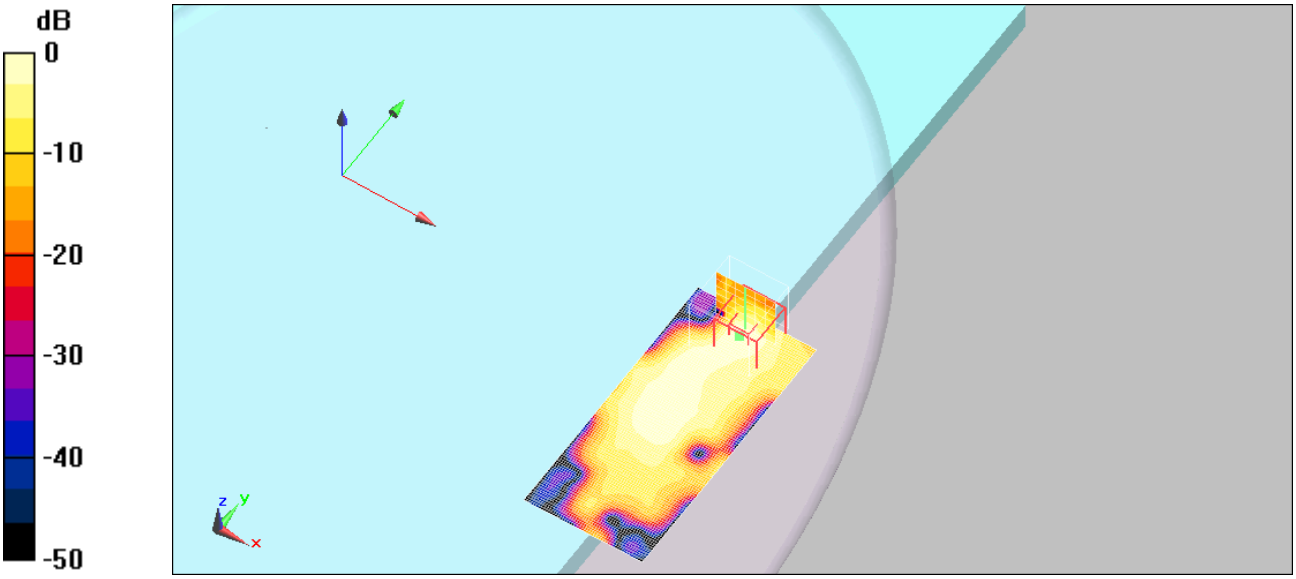
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2437 MHz; σ = 1.92 mho/m; εr = 53.5; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(7.13, 7.13, 7.13); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11b_ch6_2 437 MHz_1 Mbps_Front_Ant 0/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.017 mW/g

Body_802.11b_ch6_2 437 MHz_1 Mbps_Front_Ant 0/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.74 V/m; Power Drift = 0.143 dB
Peak SAR (extrapolated) = 0.045 W/kg
SAR(1 g) = 0.011 mW/g; SAR(10 g) = 0.00469 mW/g
Maximum value of SAR (measured) = 0.016 mW/g



0 dB = 0.016mW/g

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EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< 802.11b Body CH6 2 437 MHz Front Ant 1 / Date : May 16, 2015 >

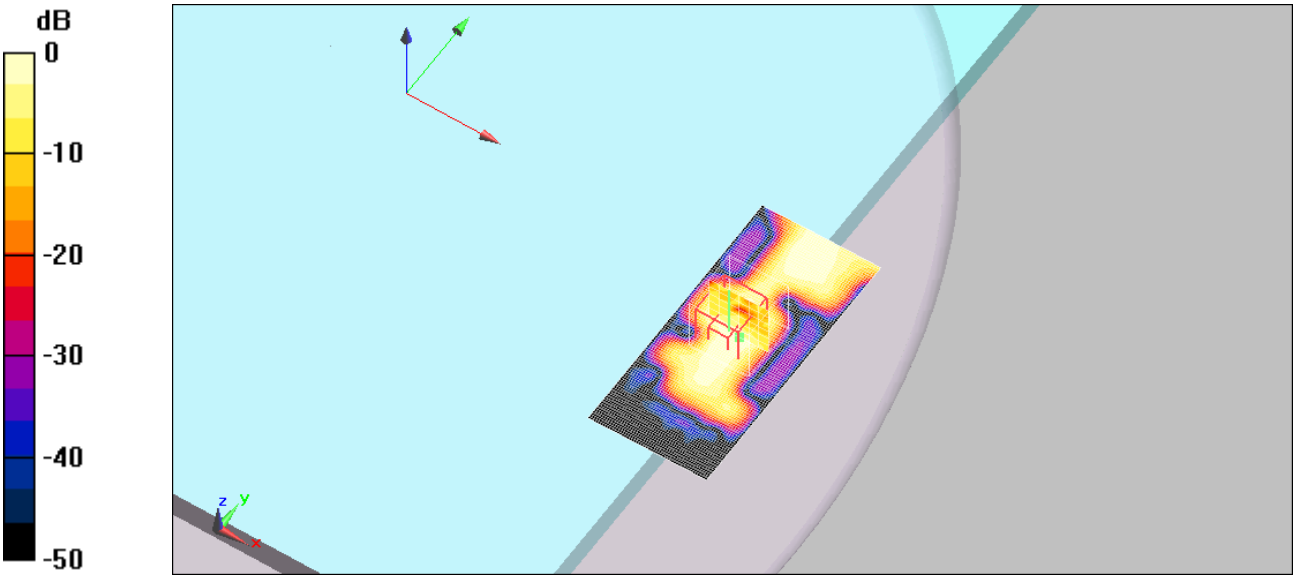
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2437 MHz; σ = 1.92 mho/m; εr = 53.5; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(7.13, 7.13, 7.13); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11b_ch6_2 437 MHz_1 Mbps_Front_Ant 1/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.00848 mW/g

Body_802.11b_ch6_2 437 MHz_1 Mbps_Front_Ant 1/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.82 V/m; Power Drift = 0.191 dB
Peak SAR (extrapolated) = 0.00875 W/kg
SAR(1 g) = 0.00377 mW/g; SAR(10 g) = 0.0015 mW/g
Maximum value of SAR (measured) = 0.00605 mW/g



0 dB = 0.00605mW/g

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EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< 802.11b Body CH11 2 462 MHz Front Ant 0 / Date : May 16, 2015 >

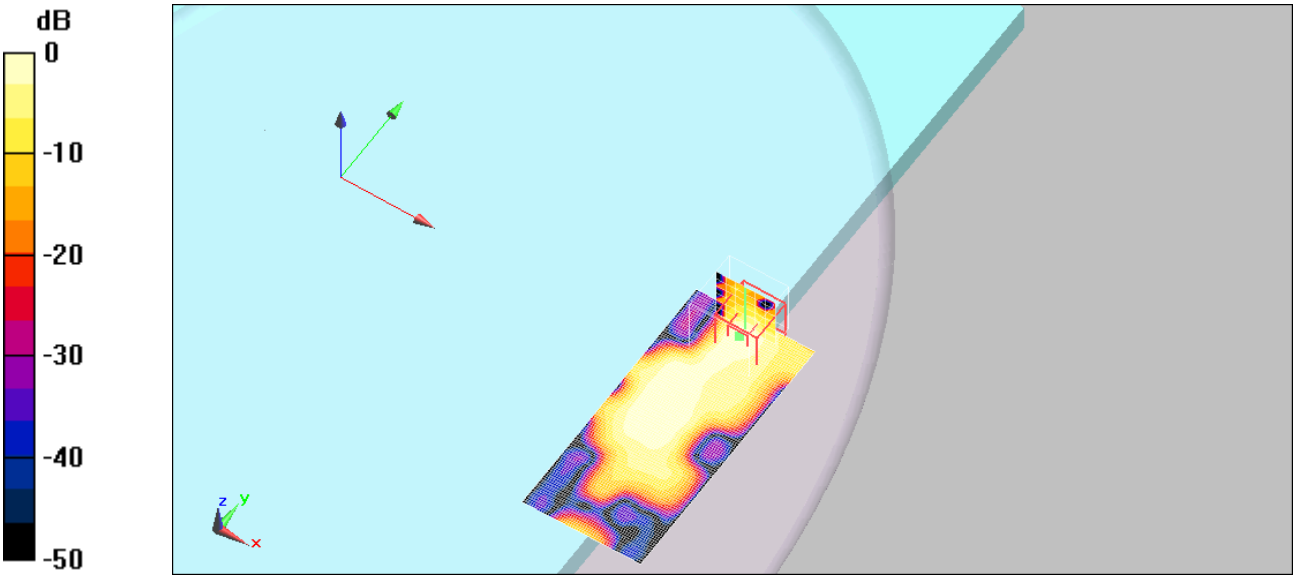
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2462 MHz; σ = 1.95 mho/m; εr = 53.4; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(7.13, 7.13, 7.13); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11b_ch11_2 462 MHz_1 Mbps_Front_Ant 0/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.016 mW/g

Body_802.11b_ch11_2 462 MHz_1 Mbps_Front_Ant 0/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.54 V/m; Power Drift = 0.220 dB
Peak SAR (extrapolated) = 0.018 W/kg
SAR(1 g) = 0.00902 mW/g; SAR(10 g) = 0.00367 mW/g
Maximum value of SAR (measured) = 0.014 mW/g



0 dB = 0.014mW/g

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EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< 802.11b Body CH11 2 462 MHz Front Ant 1 / Date : May 16, 2015 >

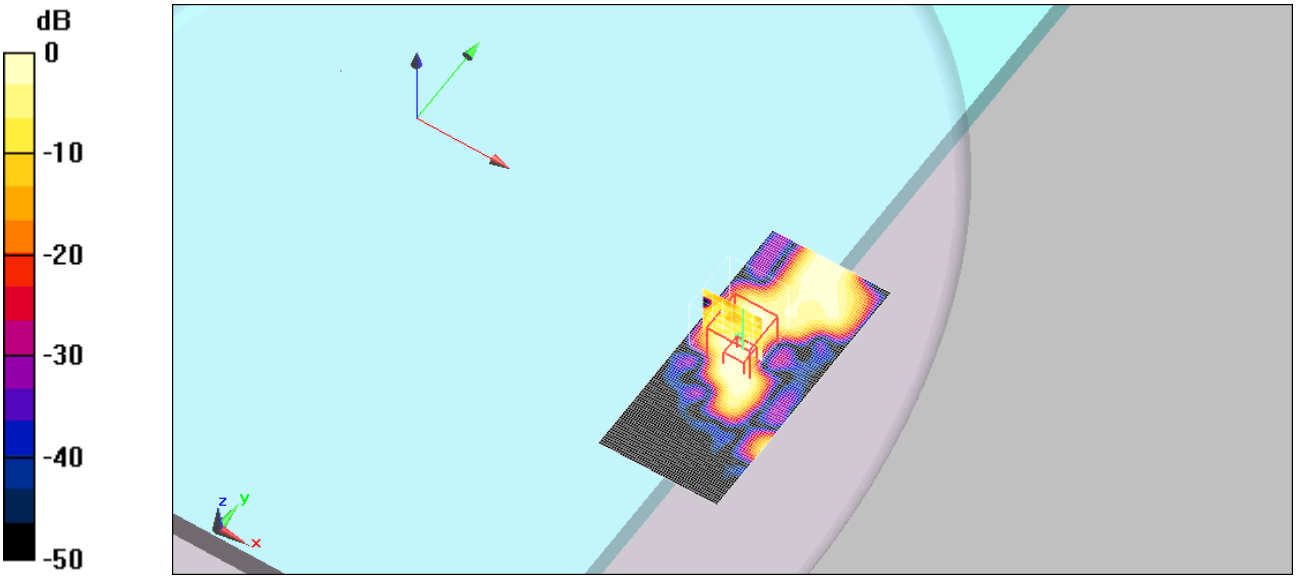
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11 b/g/n; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2462 MHz; σ = 1.95 mho/m; εr = 53.4; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(7.13, 7.13, 7.13); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11b_ch11_2 462 MHz_1 Mbps_Front_Ant 1/Area Scan (51x111x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR = 0.011 mW/g

Body_802.11b_ch11_2 462 MHz_1 Mbps_Front_Ant 1/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.812 V/m; Power Drift = 0.199 dB
Peak SAR (extrapolated) = 0.011 W/kg
SAR(1 g) = 0.00315 mW/g; SAR(10 g) = 0.00125 mW/g
Maximum value of SAR (measured) = 0.00556 mW/g



0 dB = 0.00556mW/g

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< 802.11a Head CH36 5 180 MHz Front Ant 0 / Date : May 11, 2015 >

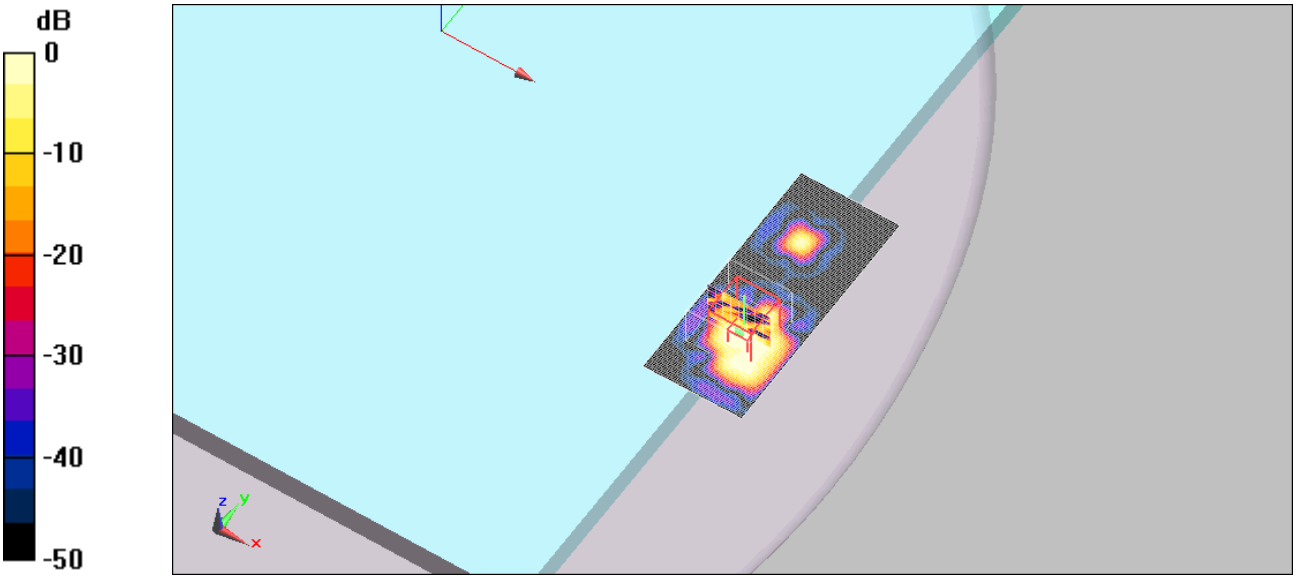
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 4.48 mho/m; εr = 35.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.97, 4.97, 4.97); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch36_5 180 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.051 mW/g

Head_802.11a_ch36_5 180 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.68 V/m; Power Drift = 0.150 dB
Peak SAR (extrapolated) = 0.166 W/kg
SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00375 mW/g
Maximum value of SAR (measured) = 0.026 mW/g



0 dB = 0.026mW/g

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< 802.11a Head CH36 5 180 MHz Front Ant 1 / Date : May 11, 2015 >

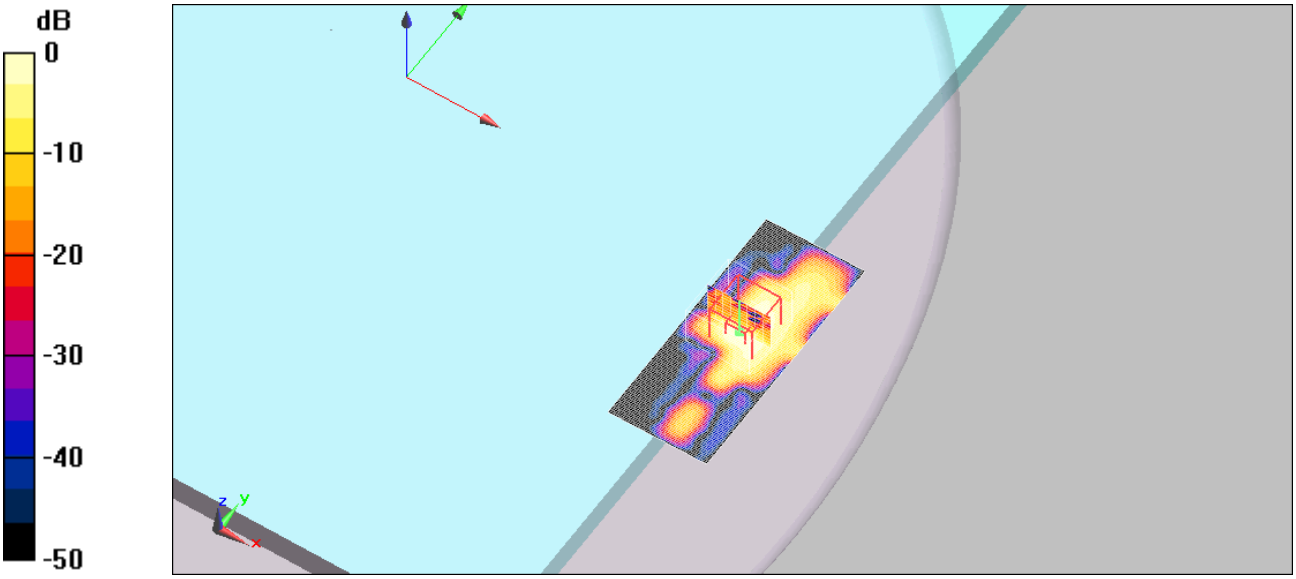
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 4.48 mho/m; εr = 35.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.97, 4.97, 4.97); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch36_5 180 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.138 mW/g

Head_802.11a_ch36_5 180 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4 V/m; Power Drift = 0.214 dB
Peak SAR (extrapolated) = 0.155 W/kg
SAR(1 g) = 0.039 mW/g; SAR(10 g) = 0.013 mW/g
Maximum value of SAR (measured) = 0.084 mW/g



0 dB = 0.084mW/g

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< 802.11a Head CH48 5 240 MHz Front Ant 0 / Date : May 11, 2015 >

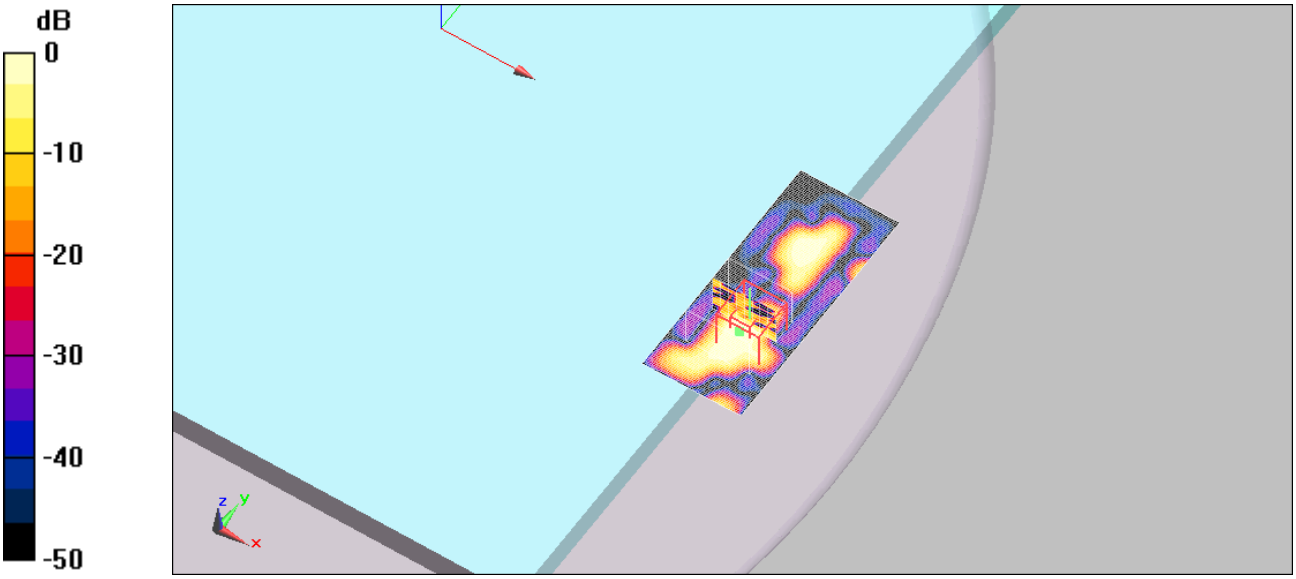
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5240 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5240 MHz; σ = 4.52 mho/m; εr = 35.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.97, 4.97, 4.97); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch48_5 240 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.075 mW/g

Head_802.11a_ch48_5 240 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2 V/m; Power Drift = 0.077 dB
Peak SAR (extrapolated) = 0.084 W/kg
SAR(1 g) = 0.00995 mW/g; SAR(10 g) = 0.00392 mW/g
Maximum value of SAR (measured) = 0.026 mW/g



0 dB = 0.026mW/g

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< 802.11a Head CH48 5 240 MHz Front Ant 1 / Date : May 11, 2015 >

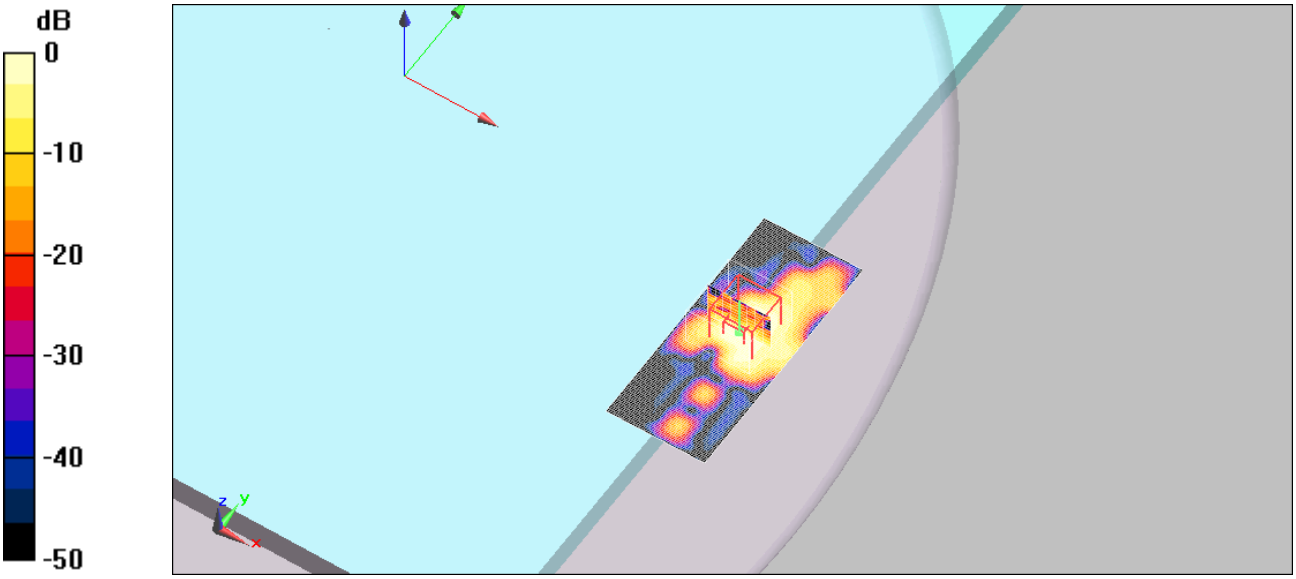
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5240 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5240 MHz; σ = 4.52 mho/m; εr = 35.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.97, 4.97, 4.97); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch48_5 240 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.124 mW/g

Head_802.11a_ch48_5 240 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.83 V/m; Power Drift = -0.068 dB
Peak SAR (extrapolated) = 0.165 W/kg
SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.013 mW/g
Maximum value of SAR (measured) = 0.079 mW/g



0 dB = 0.079mW/g

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< 802.11a Head CH52 5 260 MHz Front Ant 0 / Date : May 12, 2015 >

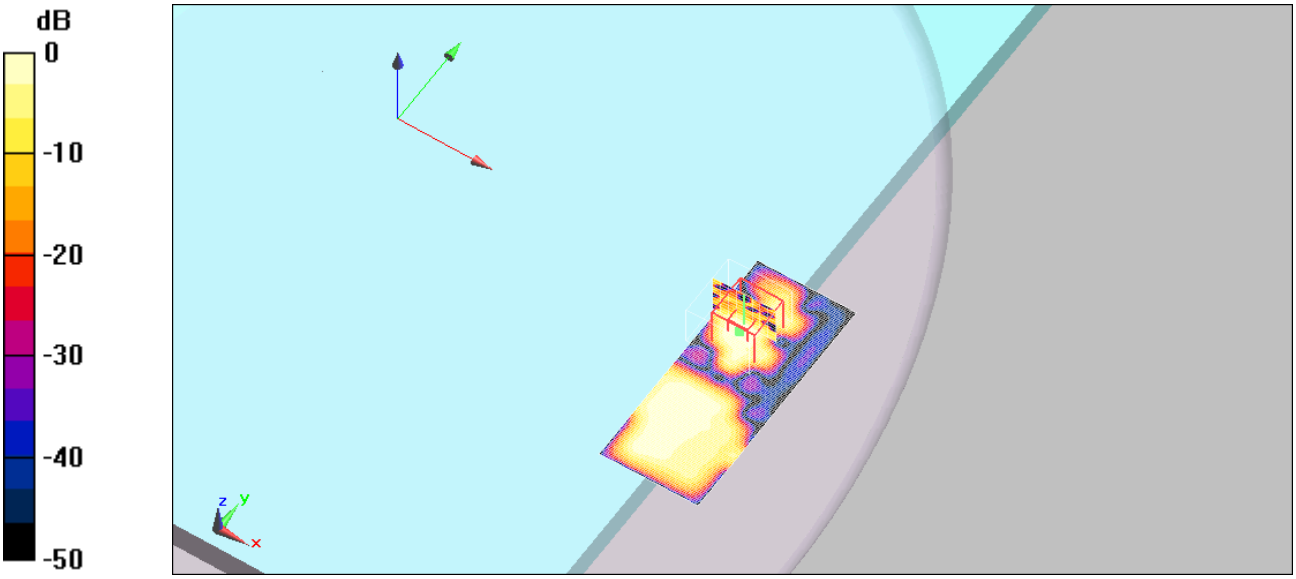
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 4.58 mho/m; εr = 35; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.74, 4.74, 4.74); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch52_5 260 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.050 mW/g

Head_802.11a_ch52_5 260 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.29 V/m; Power Drift = 0.00873 dB
Peak SAR (extrapolated) = 0.130 W/kg
SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00386 mW/g
Maximum value of SAR (measured) = 0.029 mW/g



0 dB = 0.029mW/g

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< 802.11a Head CH52 5 260 MHz Front Ant 1 / Date : May 12, 2015 >

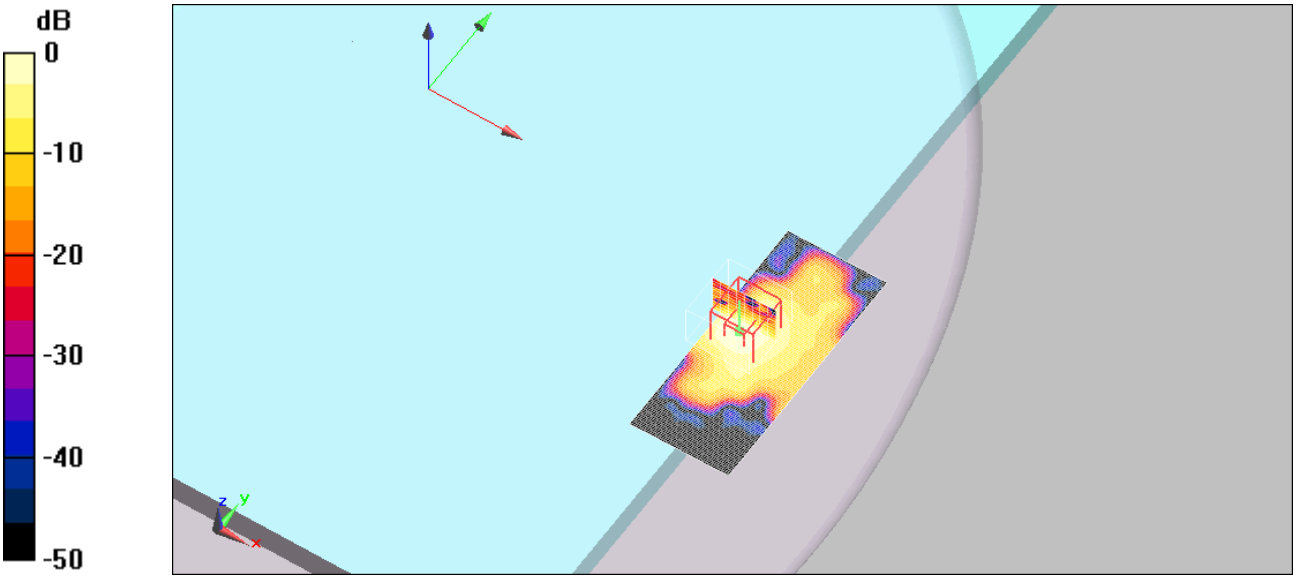
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 4.58 mho/m; εr = 35; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.74, 4.74, 4.74); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch52_5 260 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.156 mW/g

Head_802.11a_ch52_5 260 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.58 V/m; Power Drift = 0.041 dB
Peak SAR (extrapolated) = 0.254 W/kg
SAR(1 g) = 0.068 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.136 mW/g



0 dB = 0.136mW/g

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< 802.11a Head CH64 5 320 MHz Front Ant 0 / Date : May 12, 2015 >

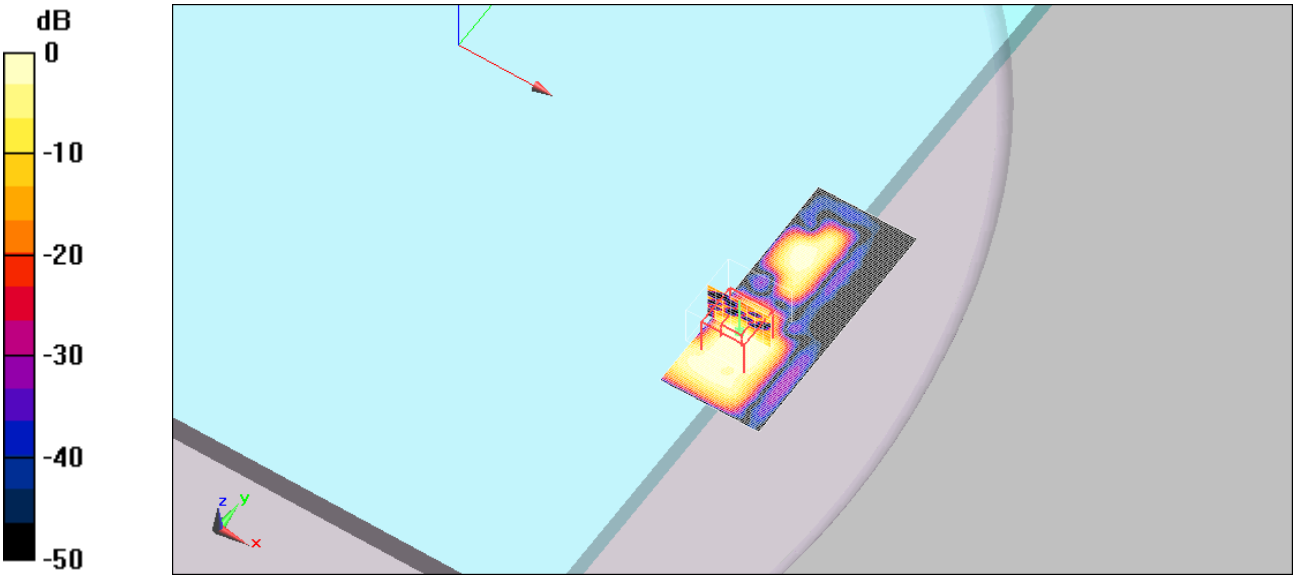
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5320 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5320 MHz; σ = 4.68 mho/m; εr = 35; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.74, 4.74, 4.74); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch64_5 320 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.057 mW/g

Head_802.11a_ch64_5 320 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.42 V/m; Power Drift = 0.183 dB
Peak SAR (extrapolated) = 0.114 W/kg
SAR(1 g) = 0.015 mW/g; SAR(10 g) = 0.00519 mW/g
Maximum value of SAR (measured) = 0.036 mW/g



0 dB = 0.036mW/g

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< 802.11a Head CH64 5 320 MHz Front Ant 1 / Date : May 12, 2015 >

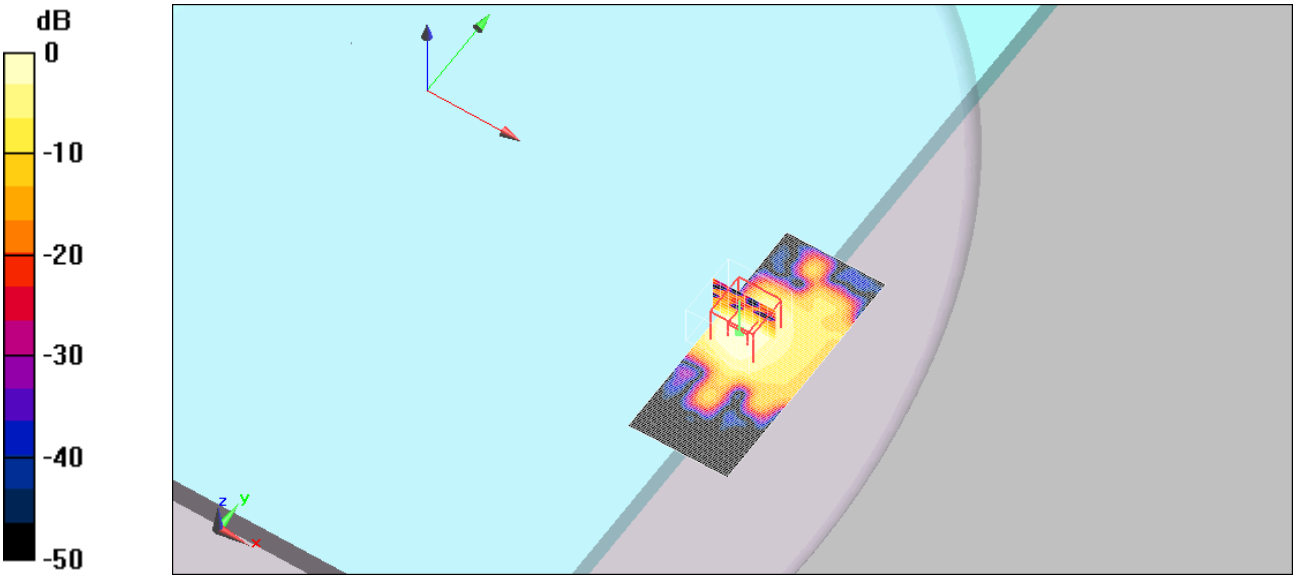
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5320 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5320 MHz; σ = 4.68 mho/m; εr = 35; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.74, 4.74, 4.74); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch64_5 320 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.153 mW/g

Head_802.11a_ch64_5 320 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.79 V/m; Power Drift = 0.017 dB
Peak SAR (extrapolated) = 0.255 W/kg
SAR(1 g) = 0.069 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.140 mW/g



0 dB = 0.140mW/g

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< 802.11a Head CH104 5 520 MHz Front Ant 0 / Date : May 13, 2015 >

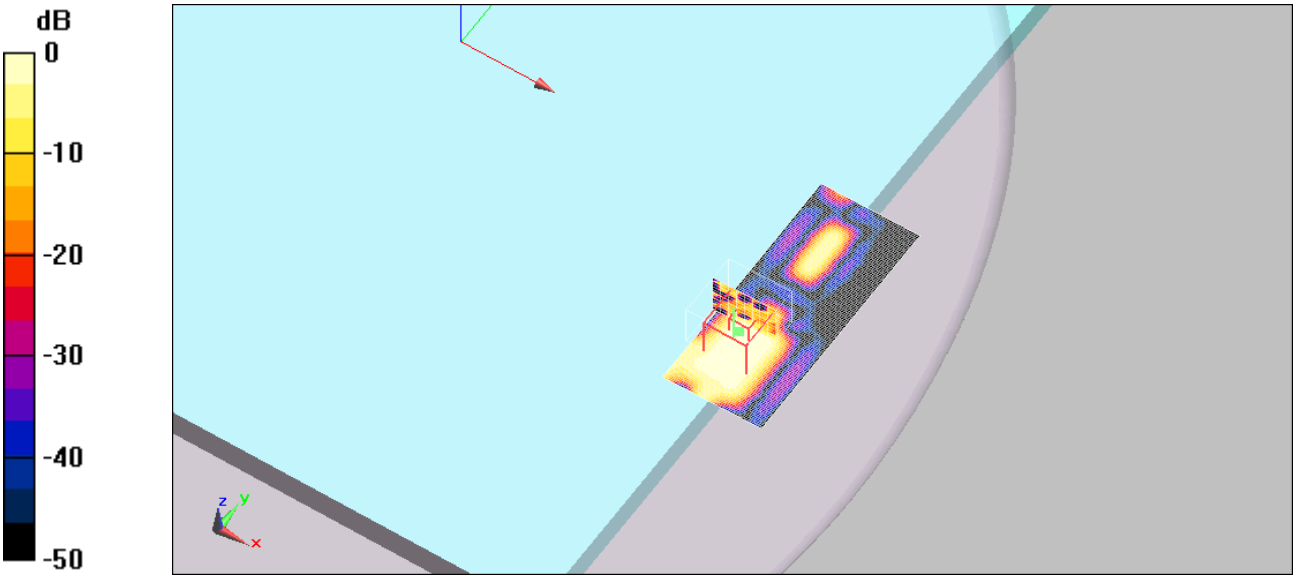
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5520 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5520 MHz; σ = 4.88 mho/m; εr = 34.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.56, 4.56, 4.56); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch104_5 520 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.047 mW/g

Head_802.11a_ch104_5 520 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.19 V/m; Power Drift = 0.203 dB
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.012 mW/g; SAR(10 g) = 0.00431 mW/g
Maximum value of SAR (measured) = 0.027 mW/g



0 dB = 0.027mW/g

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< 802.11a Head CH104 5 520 MHz Front Ant 1 / Date : May 13, 2015 >

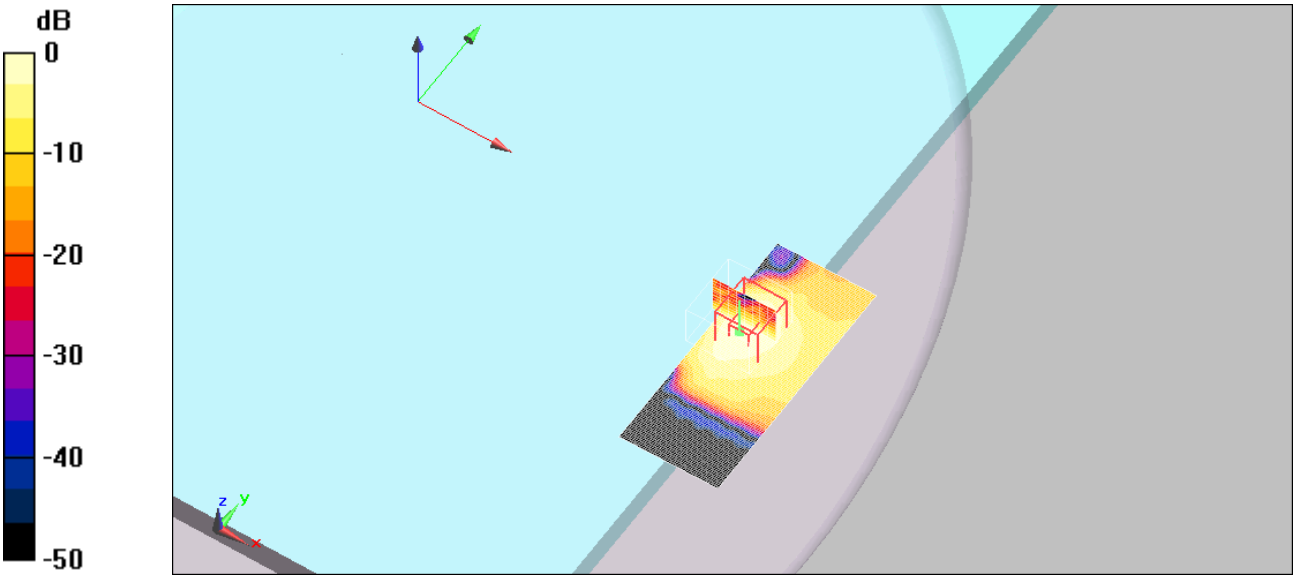
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5520 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5520 MHz; σ = 4.88 mho/m; εr = 34.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.56, 4.56, 4.56); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch104_5 520 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.162 mW/g

Head_802.11a_ch104_5 520 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.31 V/m; Power Drift = 0.139 dB
Peak SAR (extrapolated) = 0.926 W/kg
SAR(1 g) = 0.086 mW/g; SAR(10 g) = 0.032 mW/g
Maximum value of SAR (measured) = 0.171 mW/g



0 dB = 0.171mW/g

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EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< 802.11a Head CH116 5 580 MHz Front Ant 0 / Date : May 13, 2015 >

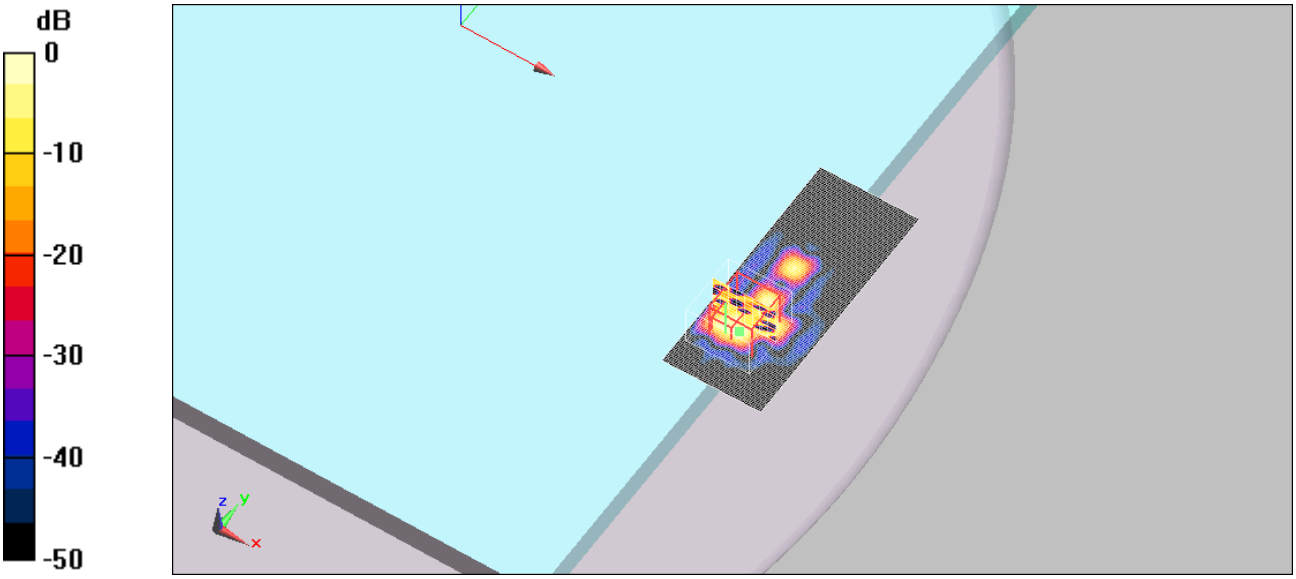
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5580 MHz; σ = 4.93 mho/m; εr = 34.5; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.3, 4.3, 4.3); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch116_5 580 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.013 mW/g

Head_802.11a_ch116_5 580 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.43 V/m; Power Drift = -0.065 dB
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.00692 mW/g; SAR(10 g) = 0.00113 mW/g
Maximum value of SAR (measured) = 0.016 mW/g



0 dB = 0.016mW/g

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< 802.11a Head CH116 5 580 MHz Front Ant 1 / Date : May 13, 2015 >

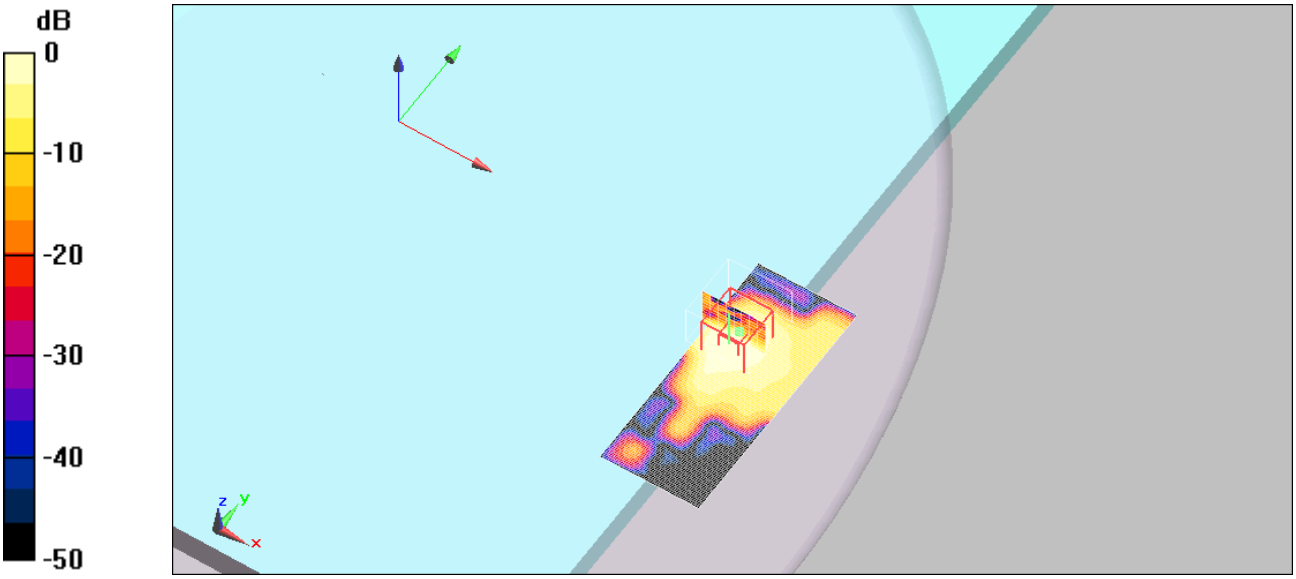
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5580 MHz; σ = 4.93 mho/m; εr = 34.5; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.3, 4.3, 4.3); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch116_5 580 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.128 mW/g

Head_802.11a_ch116_5 580 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.02 V/m; Power Drift = -0.089 dB
Peak SAR (extrapolated) = 0.236 W/kg
SAR(1 g) = 0.060 mW/g; SAR(10 g) = 0.022 mW/g
Maximum value of SAR (measured) = 0.118 mW/g



0 dB = 0.118mW/g

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< 802.11a Head CH124 5 620 MHz Front Ant 0 / Date : May 13, 2015 >

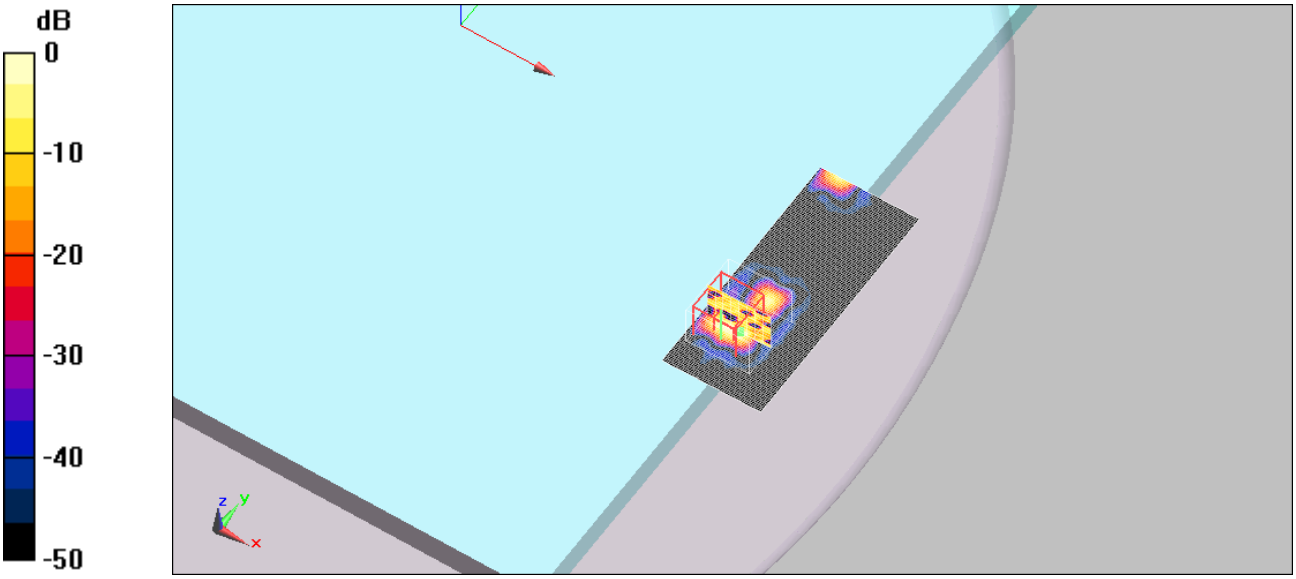
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5620 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5620 MHz; σ = 4.97 mho/m; εr = 34.4; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.3, 4.3, 4.3); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch124_5 620 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.013 mW/g

Head_802.11a_ch124_5 620 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.45 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 0.131 W/kg
SAR(1 g) = 0.009 mW/g; SAR(10 g) = 0.00204 mW/g
Maximum value of SAR (measured) = 0.017 mW/g



0 dB = 0.017mW/g

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< 802.11a Head CH124 5 620 MHz Front Ant 1 / Date : May 13, 2015 >

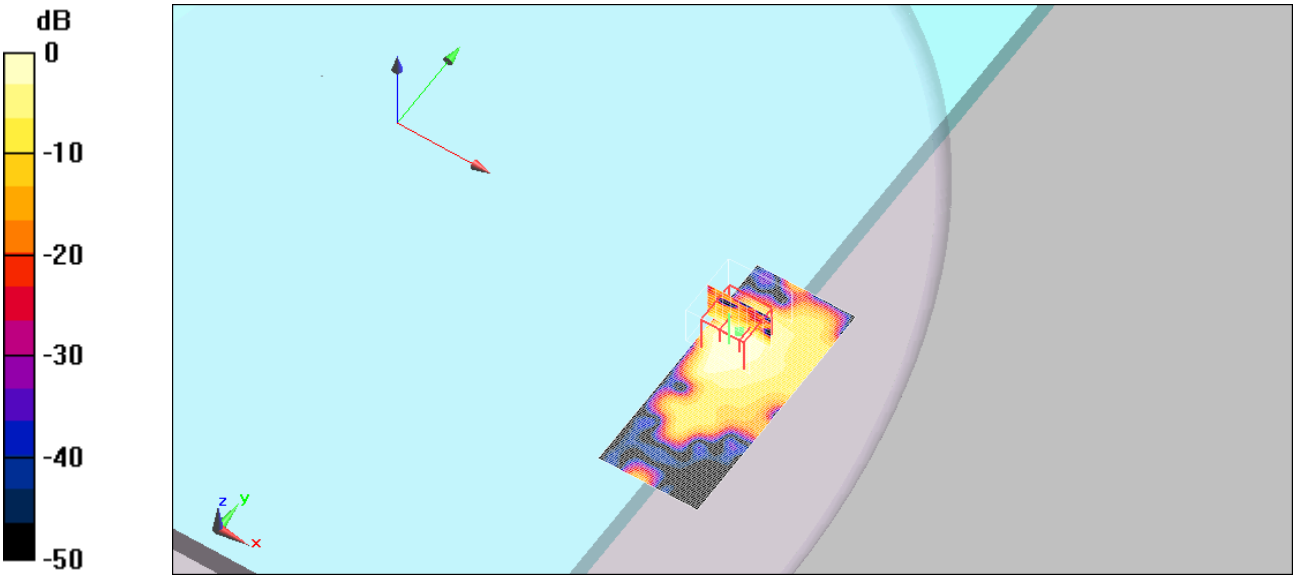
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5620 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5620 MHz; σ = 4.97 mho/m; εr = 34.4; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.3, 4.3, 4.3); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch124_5 620 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.142 mW/g

Head_802.11a_ch124_5 620 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.9 V/m; Power Drift = 0.185 dB
Peak SAR (extrapolated) = 0.234 W/kg
SAR(1 g) = 0.045 mW/g; SAR(10 g) = 0.016 mW/g
Maximum value of SAR (measured) = 0.094 mW/g



0 dB = 0.094mW/g

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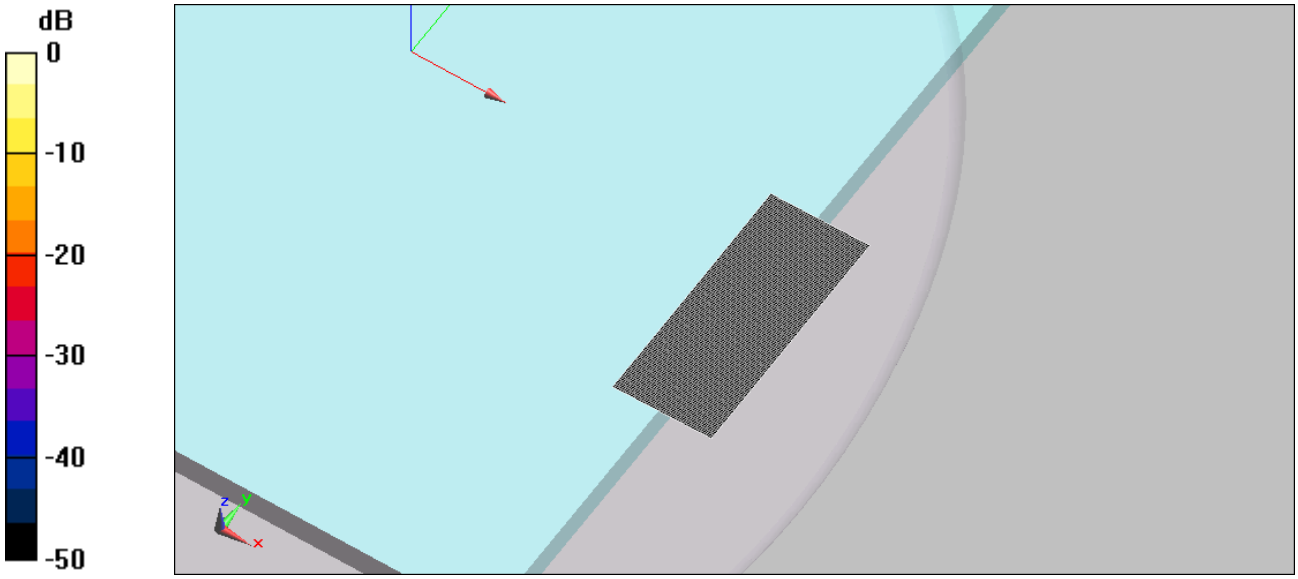
< 802.11a Head CH136 5 680 MHz Front Ant 0 / Date : May 13, 2015 >

DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5680 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5680 MHz; σ = 5.03 mho/m; εr = 34.3; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.3, 4.3, 4.3); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch136_5 680 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0 mW/g



0 dB = 0mW/g

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< 802.11a Head CH136 5 680 MHz Front Ant 1 / Date : May 13, 2015 >

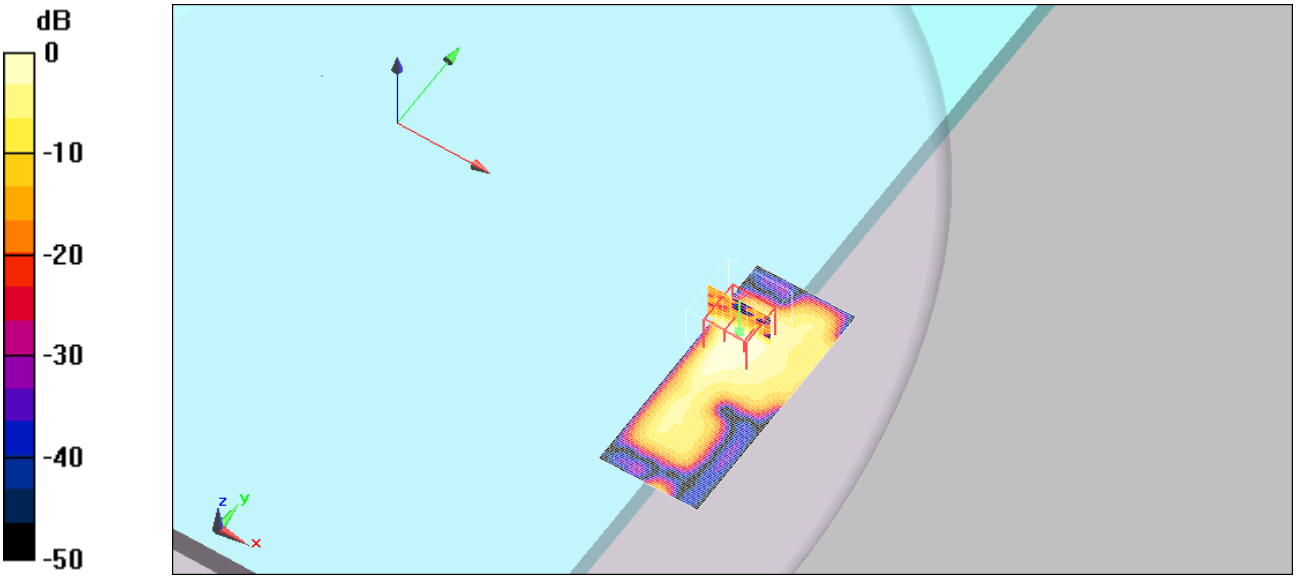
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5680 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5680 MHz; σ = 5.03 mho/m; εr = 34.3; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.3, 4.3, 4.3); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch136_5 680 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.128 mW/g

Head_802.11a_ch136_5 680 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.83 V/m; Power Drift = 0.00377 dB
Peak SAR (extrapolated) = 0.165 W/kg
SAR(1 g) = 0.041 mW/g; SAR(10 g) = 0.015 mW/g
Maximum value of SAR (measured) = 0.086 mW/g



0 dB = 0.086mW/g

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< 802.11a Head CH149 5 745 MHz Front Ant 0 / Date : May 14, 2015 >

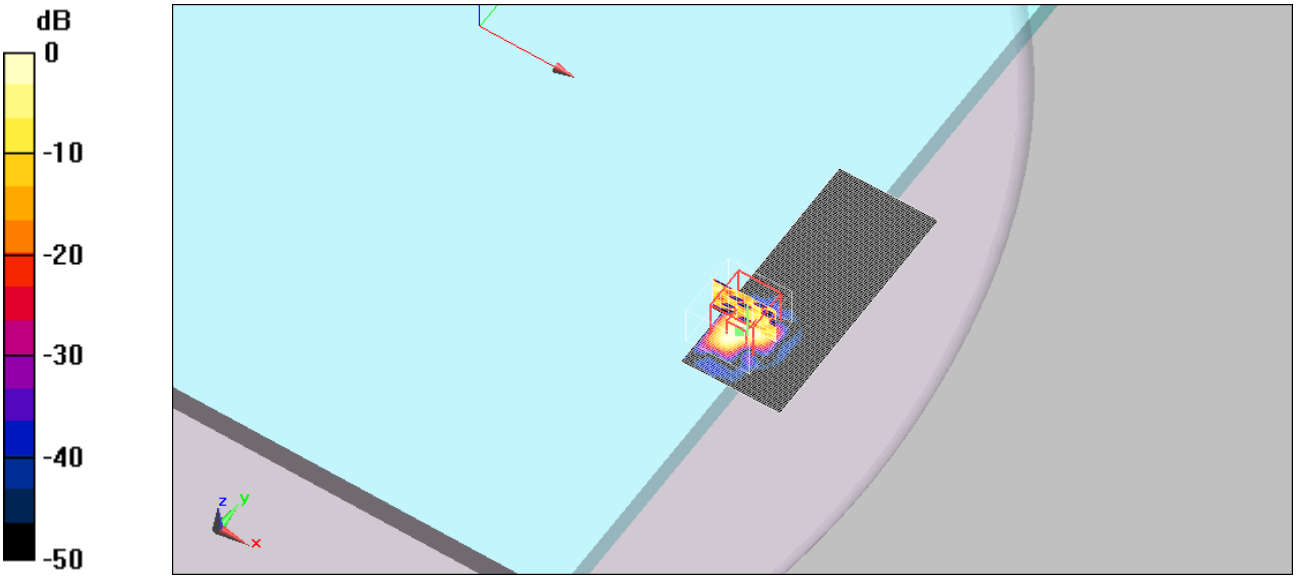
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium parameters used : f = 5745 MHz; σ = 5.13 mho/m; εr = 34.8; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.29, 4.29, 4.29); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch149_5 745 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.018 mW/g

Head_802.11a_ch149_5 745 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.13 V/m; Power Drift = -0.049 dB
Peak SAR (extrapolated) = 0.101 W/kg
SAR(1 g) = 0.00506 mW/g; SAR(10 g) = 0.000713 mW/g
Maximum value of SAR (measured) = 0.012 mW/g



0 dB = 0.012mW/g

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< 802.11a Head CH149 5 745 MHz Front Ant 1 / Date : May 14, 2015 >

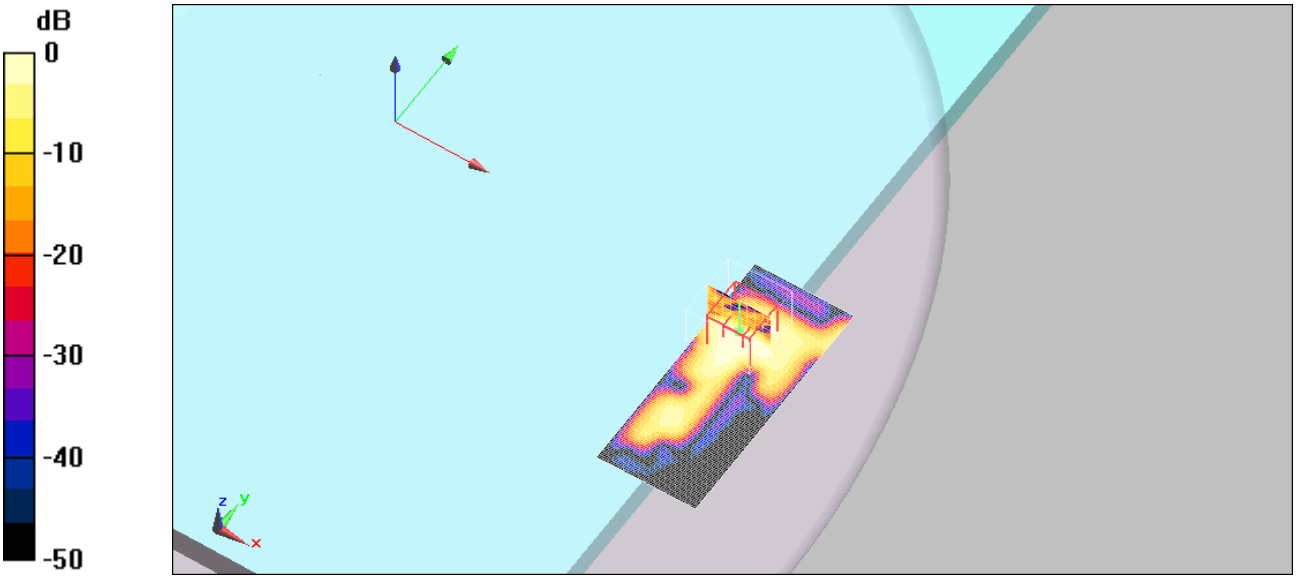
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium parameters used : f = 5745 MHz; σ = 5.13 mho/m; εr = 34.8; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.29, 4.29, 4.29); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch149_5 745 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.091 mW/g

Head_802.11a_ch149_5 745 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.49 V/m; Power Drift = 0.084 dB
Peak SAR (extrapolated) = 0.131 W/kg
SAR(1 g) = 0.034 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.073 mW/g



0 dB = 0.073mW/g

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< 802.11a Head CH161 5 805 MHz Front Ant 0 / Date : May 14, 2015 >

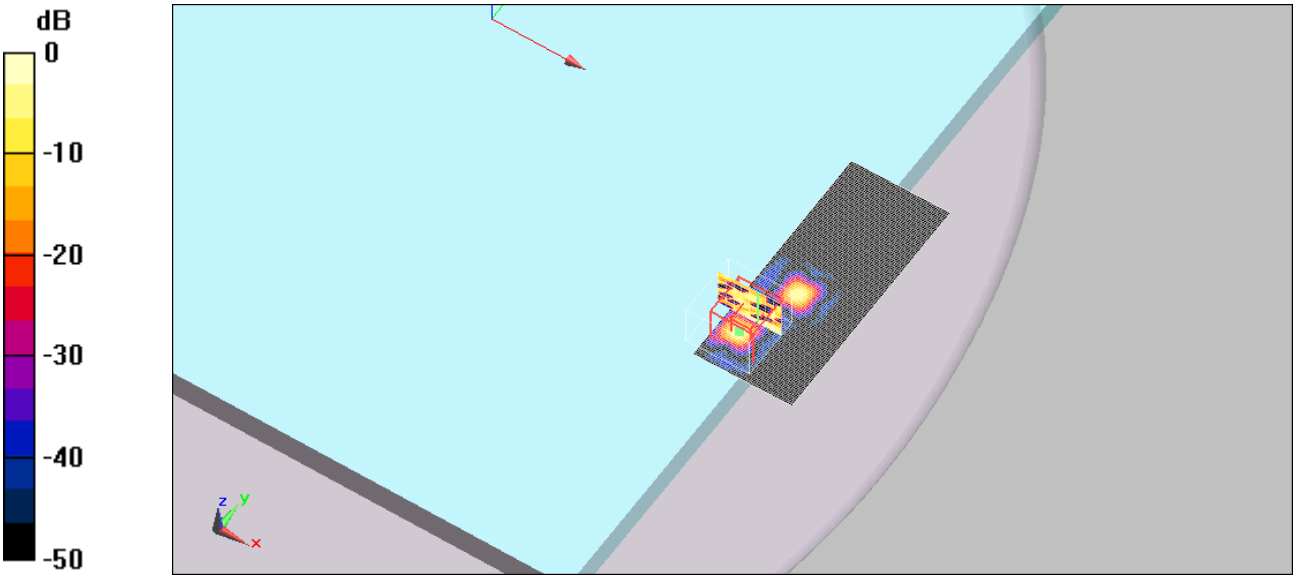
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used : f = 5805 MHz; σ = 5.19 mho/m; εr = 34.7; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.29, 4.29, 4.29); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch161_5 805 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.00848 mW/g

Head_802.11a_ch161_5 805 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.836 V/m; Power Drift = 0.189 dB
Peak SAR (extrapolated) = 0.087 W/kg
SAR(1 g) = 0.00549 mW/g; SAR(10 g) = 0.00083 mW/g
Maximum value of SAR (measured) = 0.012 mW/g



0 dB = 0.012mW/g

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< 802.11a Head CH161 5 805 MHz Front Ant 1 / Date : May 14, 2015 >

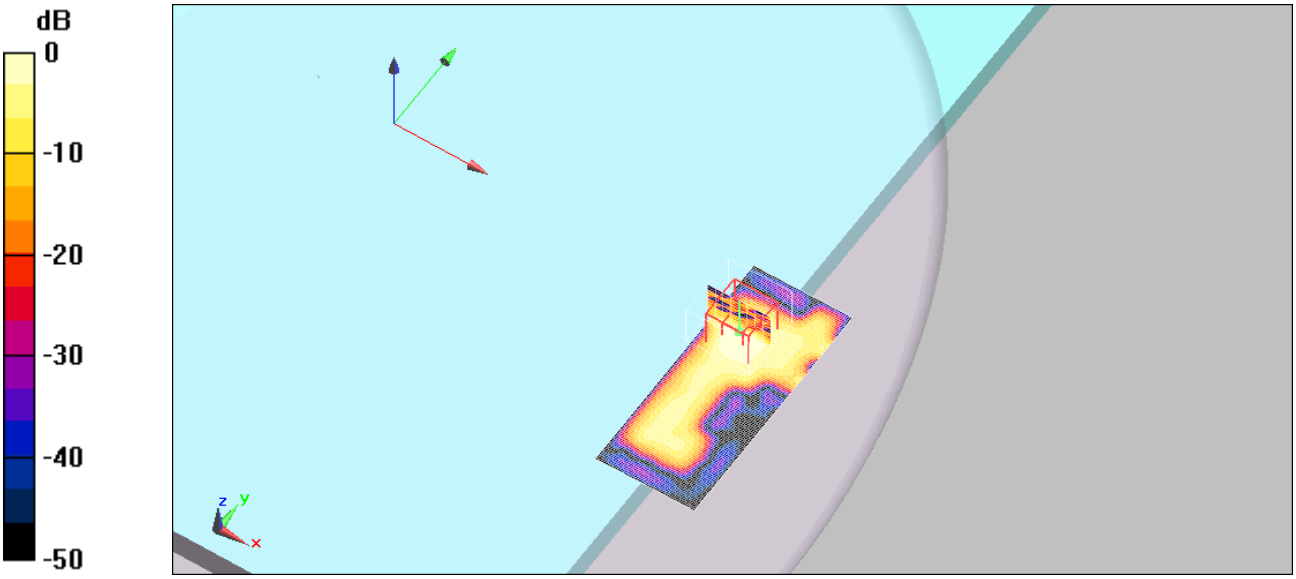
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used : f = 5805 MHz; σ = 5.19 mho/m; εr = 34.7; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.29, 4.29, 4.29); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Head_802.11a_ch161_5 805 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.112 mW/g

Head_802.11a_ch161_5 805 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.74 V/m; Power Drift = -0.118 dB
Peak SAR (extrapolated) = 0.155 W/kg
SAR(1 g) = 0.036 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.080 mW/g



0 dB = 0.080mW/g

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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< 802.11a Body CH36 5 180 MHz Front Ant 0 / Date : May 17, 2015 >

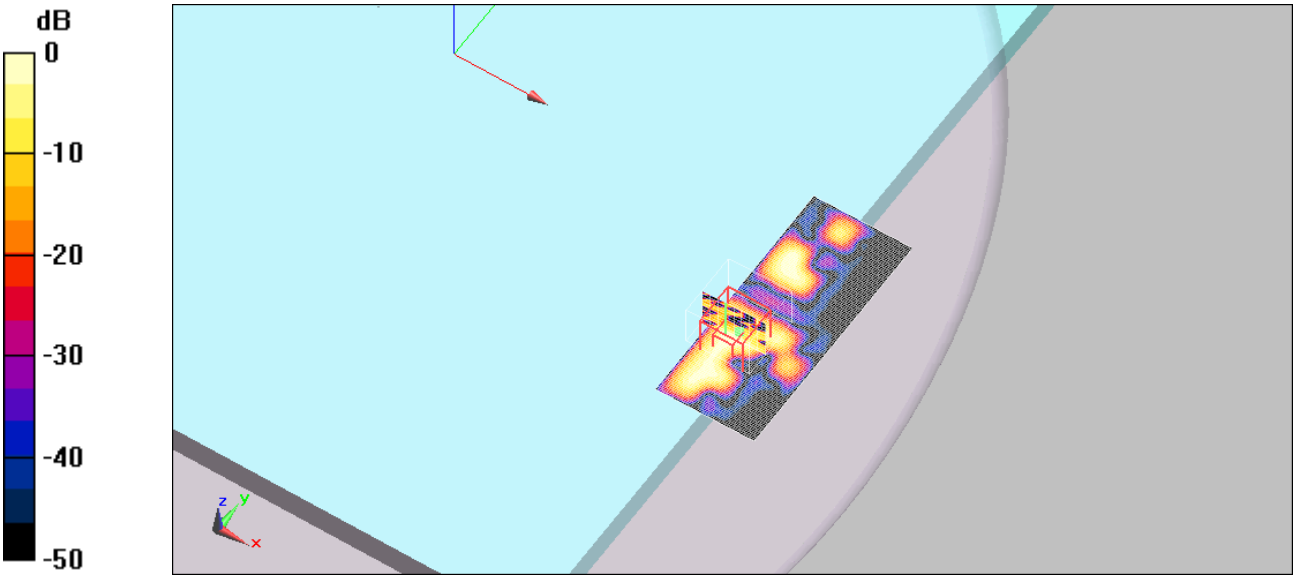
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 5.35 mho/m; εr = 47.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.41, 4.41, 4.41); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch36_5 180 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.037 mW/g

Body_802.11a_ch36_5 180 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.29 V/m; Power Drift = 0.044 dB
Peak SAR (extrapolated) = 0.150 W/kg
SAR(1 g) = 0.012 mW/g; SAR(10 g) = 0.00286 mW/g
Maximum value of SAR (measured) = 0.020 mW/g



0 dB = 0.020mW/g

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< 802.11a Body CH36 5 180 MHz Front Ant 1 / Date : May 17, 2015 >

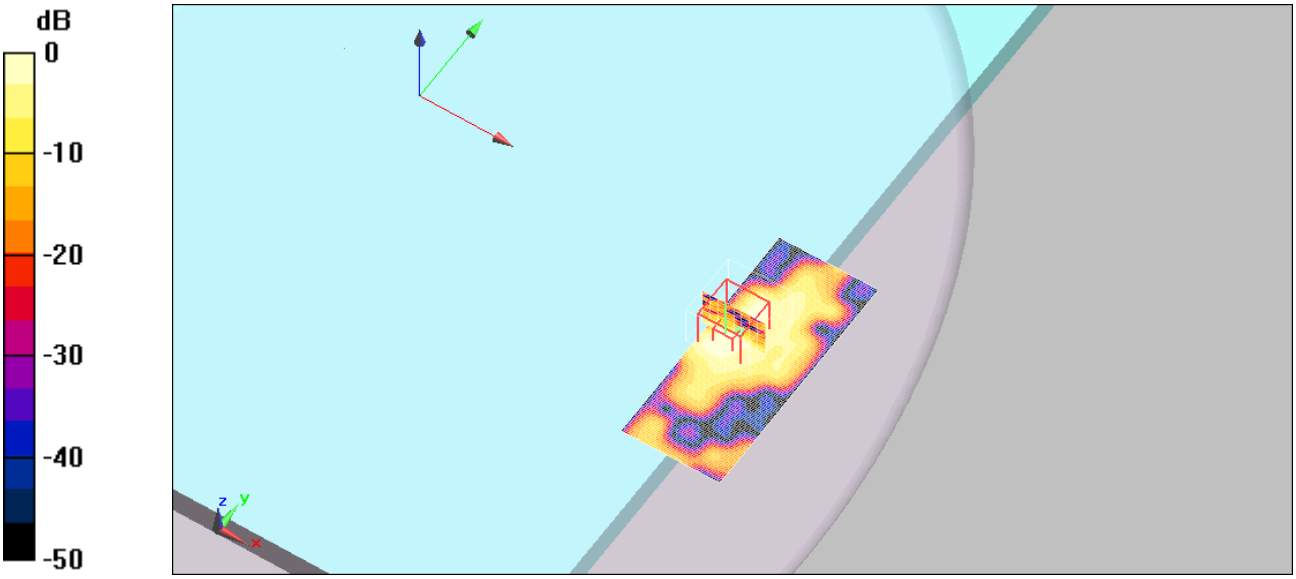
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5180 MHz; σ = 5.35 mho/m; εr = 47.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.41, 4.41, 4.41); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch36_5 180 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.104 mW/g

Body_802.11a_ch36_5 180 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.08 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 0.187 W/kg
SAR(1 g) = 0.033 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.071 mW/g



0 dB = 0.071mW/g

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< 802.11a Body CH48 5 240 MHz Front Ant 0 / Date : May 17, 2015 >

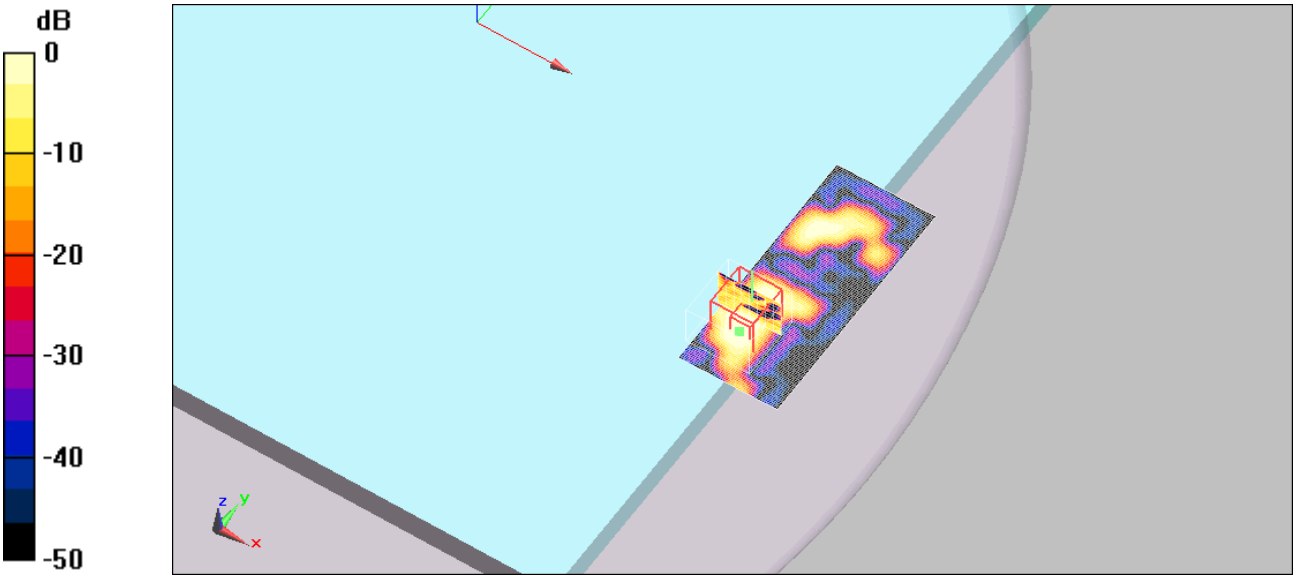
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5240 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5240 MHz; σ = 5.43 mho/m; εr = 47.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.41, 4.41, 4.41); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch48_5 240 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.038 mW/g

Body_802.11a_ch48_5 240 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.601 V/m; Power Drift = -0.136 dB
Peak SAR (extrapolated) = 0.095 W/kg
SAR(1 g) = 0.0084 mW/g; SAR(10 g) = 0.00254 mW/g
Maximum value of SAR (measured) = 0.021 mW/g



0 dB = 0.021mW/g

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< 802.11a Body CH48 5 240 MHz Front Ant 1 / Date : May 17, 2015 >

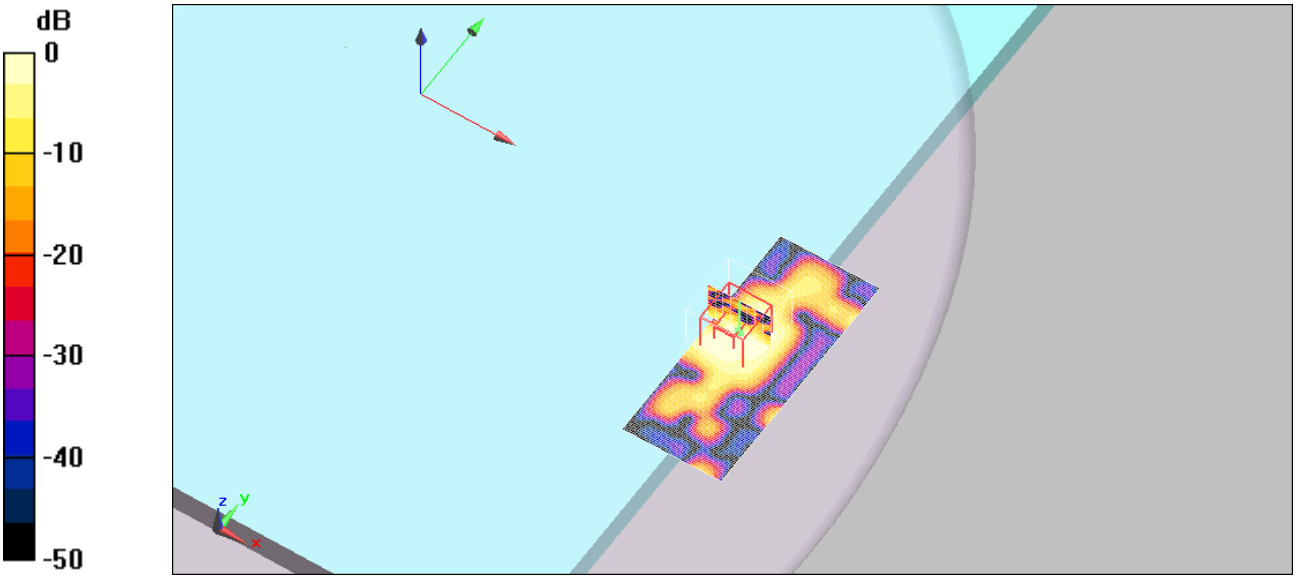
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5240 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5240 MHz; σ = 5.43 mho/m; εr = 47.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.41, 4.41, 4.41); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch48_5 240 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.094 mW/g

Body_802.11a_ch48_5 240 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.75 V/m; Power Drift = 0.134 dB
Peak SAR (extrapolated) = 0.209 W/kg
SAR(1 g) = 0.027 mW/g; SAR(10 g) = 0.00981 mW/g
Maximum value of SAR (measured) = 0.063 mW/g



0 dB = 0.063mW/g

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< 802.11a Body CH52 5 260 MHz Front Ant 0 / Date : May 17, 2015 >

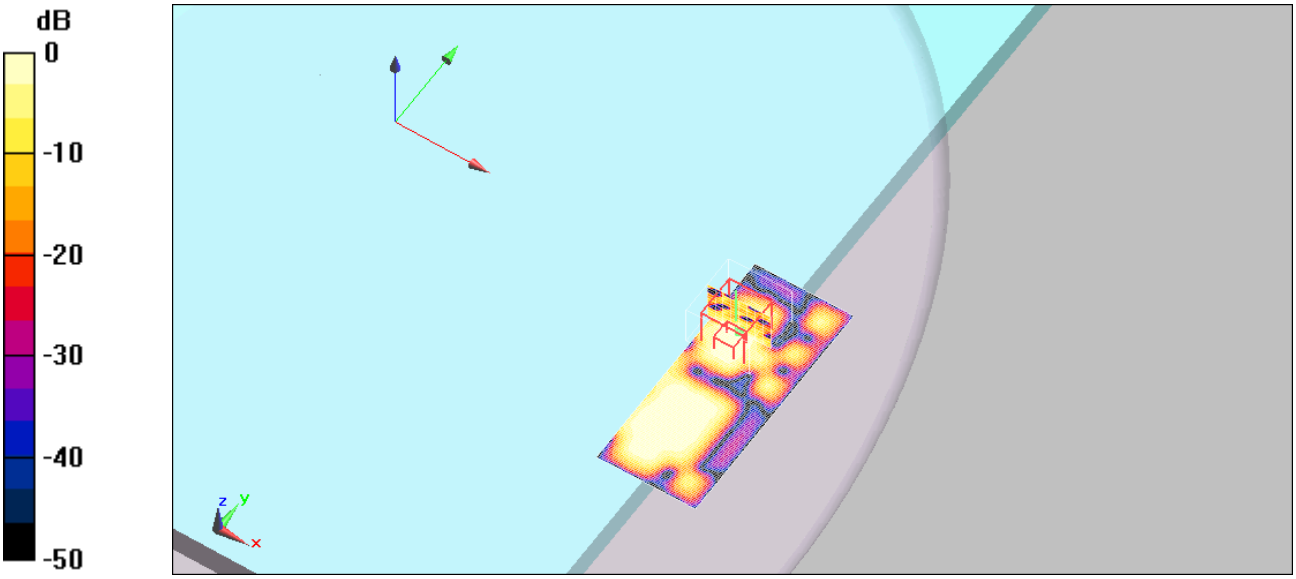
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.45 mho/m; εr = 47.5; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.22, 4.22, 4.22); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch52_5 260 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.051 mW/g

Body_802.11a_ch52_5 260 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.28 V/m; Power Drift = -0.012 dB
Peak SAR (extrapolated) = 0.147 W/kg
SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00482 mW/g
Maximum value of SAR (measured) = 0.029 mW/g



0 dB = 0.029mW/g

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< 802.11a Body CH52 5 260 MHz Front Ant 1 / Date : May 17, 2015 >

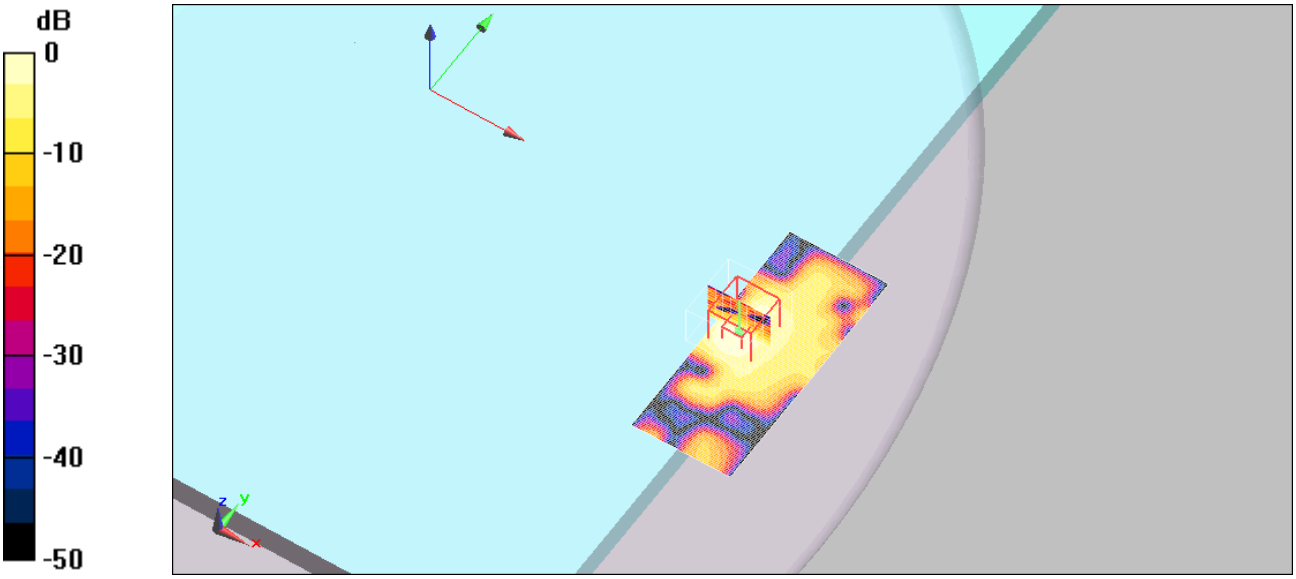
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.45 mho/m; εr = 47.5; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.22, 4.22, 4.22); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch52_5 260 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.139 mW/g

Body_802.11a_ch52_5 260 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.86 V/m; Power Drift = -0.163 dB
Peak SAR (extrapolated) = 0.226 W/kg
SAR(1 g) = 0.057 mW/g; SAR(10 g) = 0.019 mW/g
Maximum value of SAR (measured) = 0.121 mW/g



0 dB = 0.121mW/g

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< 802.11a Body CH64 5 320 MHz Front Ant 0 / Date : May 17, 2015 >

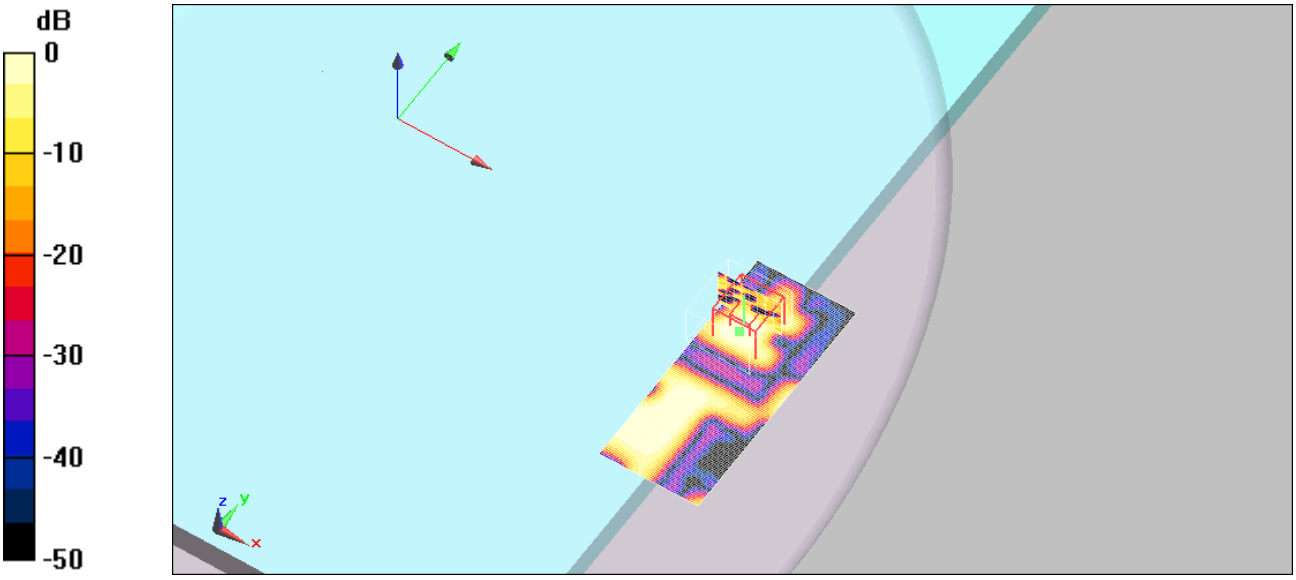
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5320 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5320 MHz; σ = 5.54 mho/m; εr = 47.4; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.22, 4.22, 4.22); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch64_5 320 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.065 mW/g

Body_802.11a_ch64_5 320 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.25 V/m; Power Drift = 0.088 dB
Peak SAR (extrapolated) = 0.184 W/kg
SAR(1 g) = 0.015 mW/g; SAR(10 g) = 0.00447 mW/g
Maximum value of SAR (measured) = 0.026 mW/g



0 dB = 0.026mW/g

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< 802.11a Body CH64 5 320 MHz Front Ant 1 / Date : May 17, 2015 >

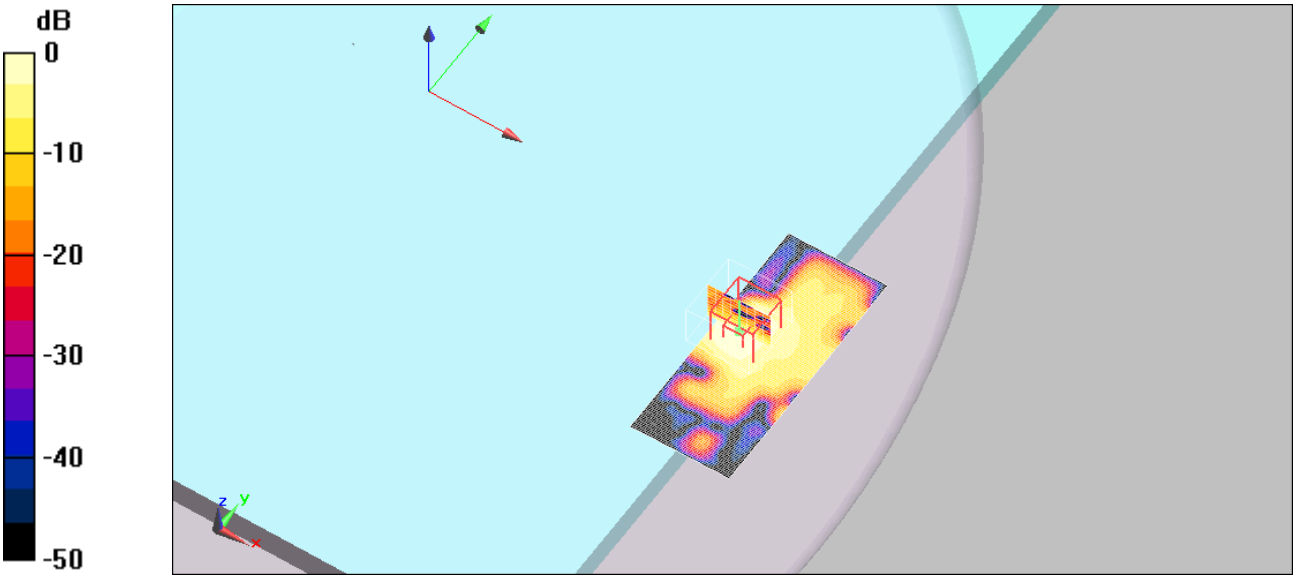
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5320 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5320 MHz; σ = 5.54 mho/m; εr = 47.4; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.22, 4.22, 4.22); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch64_5 320 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.149 mW/g

Body_802.11a_ch64_5 320 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.09 V/m; Power Drift = -0.122 dB
Peak SAR (extrapolated) = 0.224 W/kg
SAR(1 g) = 0.058 mW/g; SAR(10 g) = 0.020 mW/g
Maximum value of SAR (measured) = 0.123 mW/g



0 dB = 0.123mW/g

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< 802.11a Body CH104 5 520 MHz Front Ant 0 / Date : May 18, 2015 >

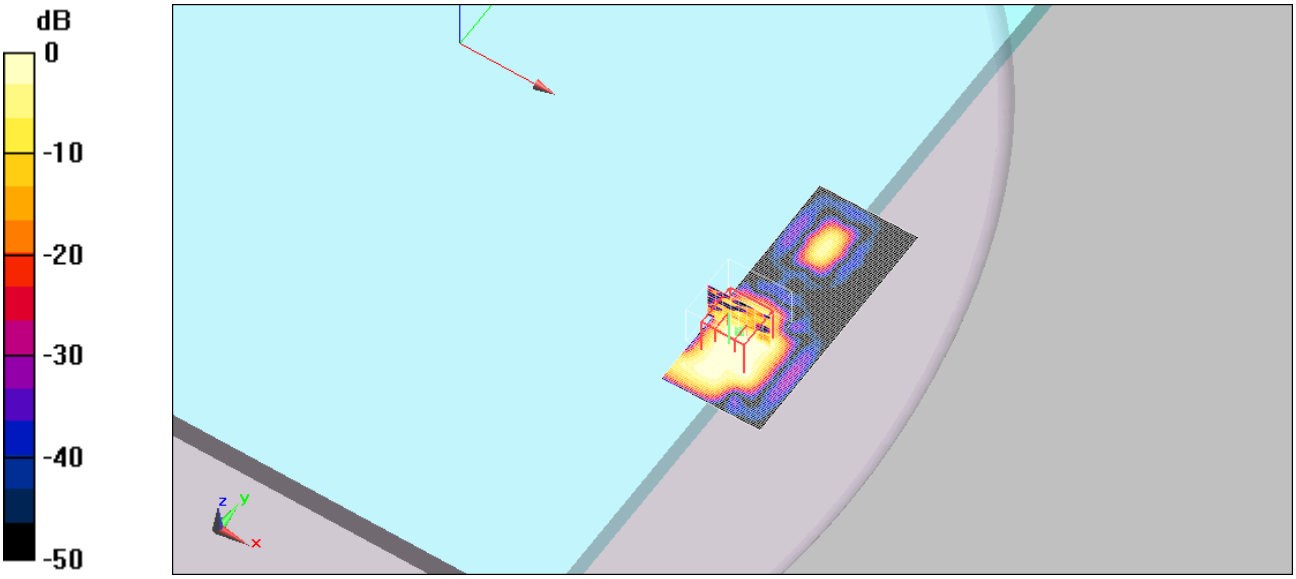
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5520 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5520 MHz; σ = 5.82 mho/m; εr = 48; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(3.89, 3.89, 3.89); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch104_5 520 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.069 mW/g

Body_802.11a_ch104_5 520 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.34 V/m; Power Drift = -0.168 dB
Peak SAR (extrapolated) = 0.122 W/kg
SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.0052 mW/g
Maximum value of SAR (measured) = 0.038 mW/g



0 dB = 0.038mW/g

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< 802.11a Body CH104 5 520 MHz Front Ant 1 / Date : May 18, 2015 >

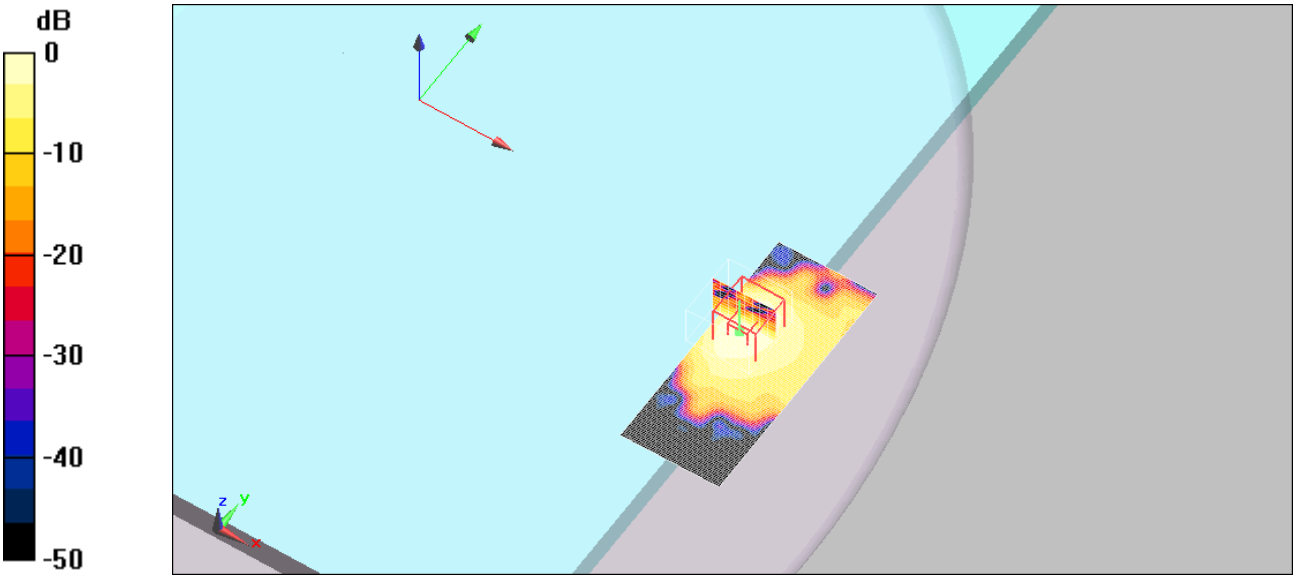
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5520 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5520 MHz; σ = 5.82 mho/m; εr = 48; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(3.89, 3.89, 3.89); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch104_5 520 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.152 mW/g

Body_802.11a_ch104_5 520 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.72 V/m; Power Drift = 0.071 dB
Peak SAR (extrapolated) = 0.288 W/kg
SAR(1 g) = 0.078 mW/g; SAR(10 g) = 0.029 mW/g
Maximum value of SAR (measured) = 0.161 mW/g



0 dB = 0.161mW/g

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< 802.11a Body CH116 5 580 MHz Front Ant 0 / Date : May 18, 2015 >

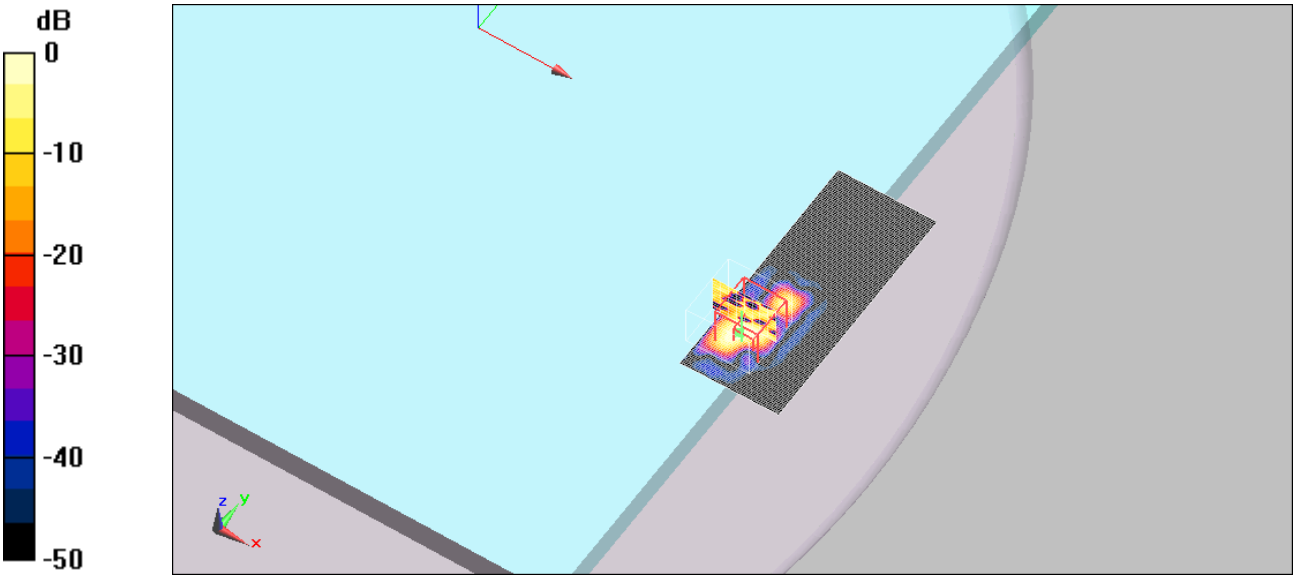
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium parameters used : f = 5580 MHz; σ = 5.91 mho/m; εr = 47.9; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(3.85, 3.85, 3.85); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch116_5 580 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.026 mW/g

Body_802.11a_ch116_5 580 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.56 V/m; Power Drift = 0.177 dB
Peak SAR (extrapolated) = 0.110 W/kg
SAR(1 g) = 0.010 mW/g; SAR(10 g) = 0.00254 mW/g
Maximum value of SAR (measured) = 0.019 mW/g



0 dB = 0.019mW/g

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< 802.11a Body CH116 5 580 MHz Front Ant 1 / Date : May 18, 2015 >

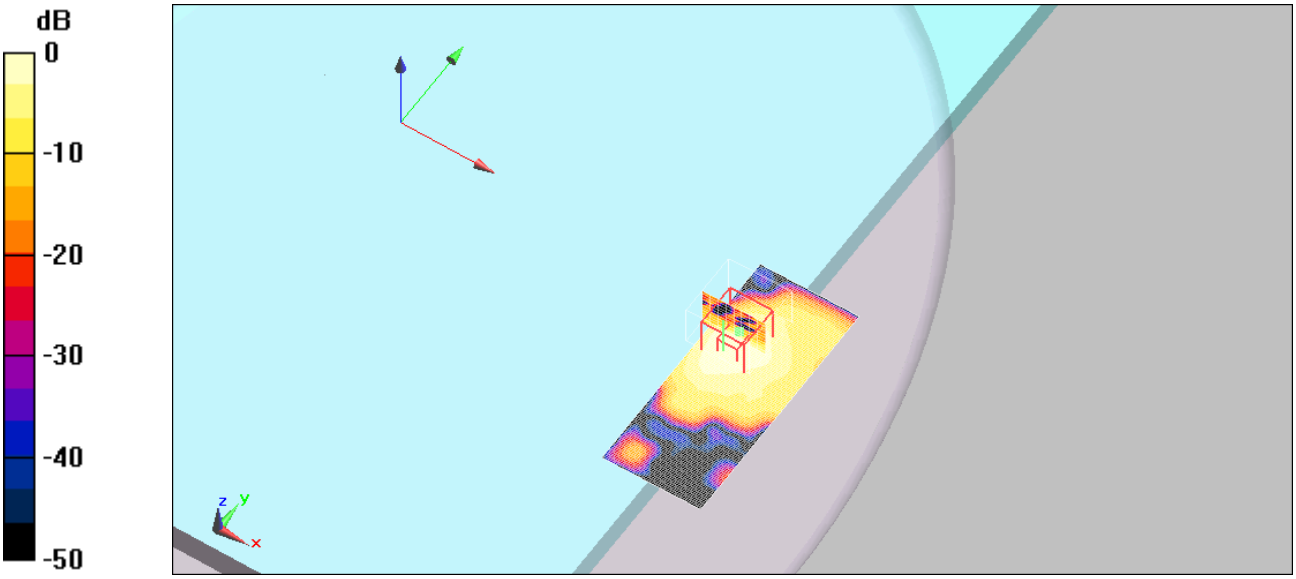
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium parameters used : f = 5580 MHz; σ = 5.91 mho/m; εr = 47.9; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(3.85, 3.85, 3.85); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch116_5 580 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.111 mW/g

Body_802.11a_ch116_5 580 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.68 V/m; Power Drift = 0.040 dB
Peak SAR (extrapolated) = 0.257 W/kg
SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.017 mW/g
Maximum value of SAR (measured) = 0.105 mW/g



0 dB = 0.105mW/g

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EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< 802.11a Body CH124 5 620 MHz Front Ant 0 / Date : May 18, 2015 >

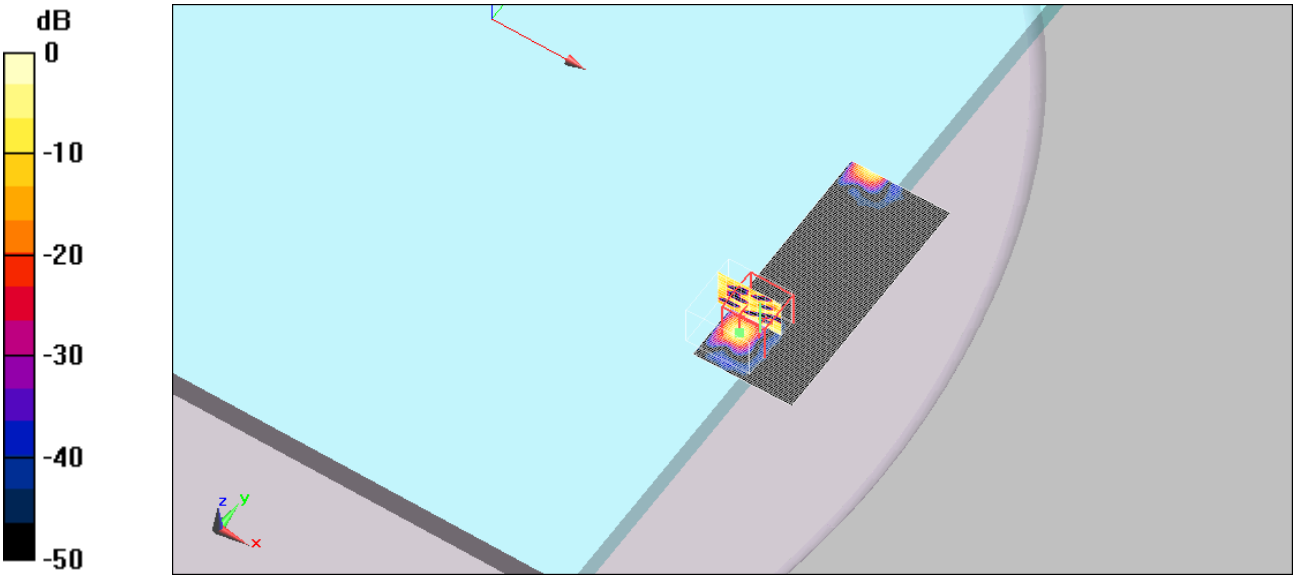
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5620 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5620 MHz; σ = 5.99 mho/m; εr = 47.9; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(3.85, 3.85, 3.85); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch124_5 620 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.011 mW/g

Body_802.11a_ch124_5 620 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.65 V/m; Power Drift = -0.139 dB
Peak SAR (extrapolated) = 0.052 W/kg
SAR(1 g) = 0.00245 mW/g; SAR(10 g) = 0.000501 mW/g
Maximum value of SAR (measured) = 0.015 mW/g



0 dB = 0.015mW/g

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< 802.11a Body CH124 5 620 MHz Front Ant 1 / Date : May 18, 2015 >

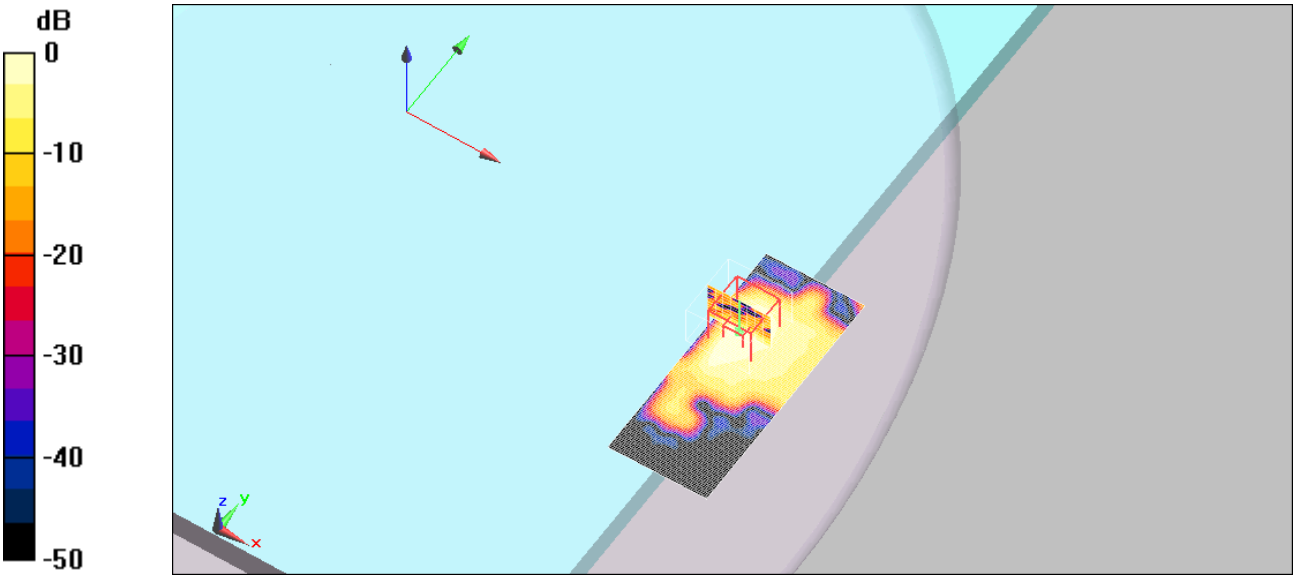
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5620 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5620 MHz; σ = 5.99 mho/m; εr = 47.9; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(3.85, 3.85, 3.85); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch124_5 620 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.139 mW/g

Body_802.11a_ch124_5 620 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.58 V/m; Power Drift = -0.086 dB
Peak SAR (extrapolated) = 0.221 W/kg
SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.017 mW/g
Maximum value of SAR (measured) = 0.095 mW/g



0 dB = 0.095mW/g

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< 802.11a Body CH136 5 680 MHz Front Ant 0 / Date : May 18, 2015 >

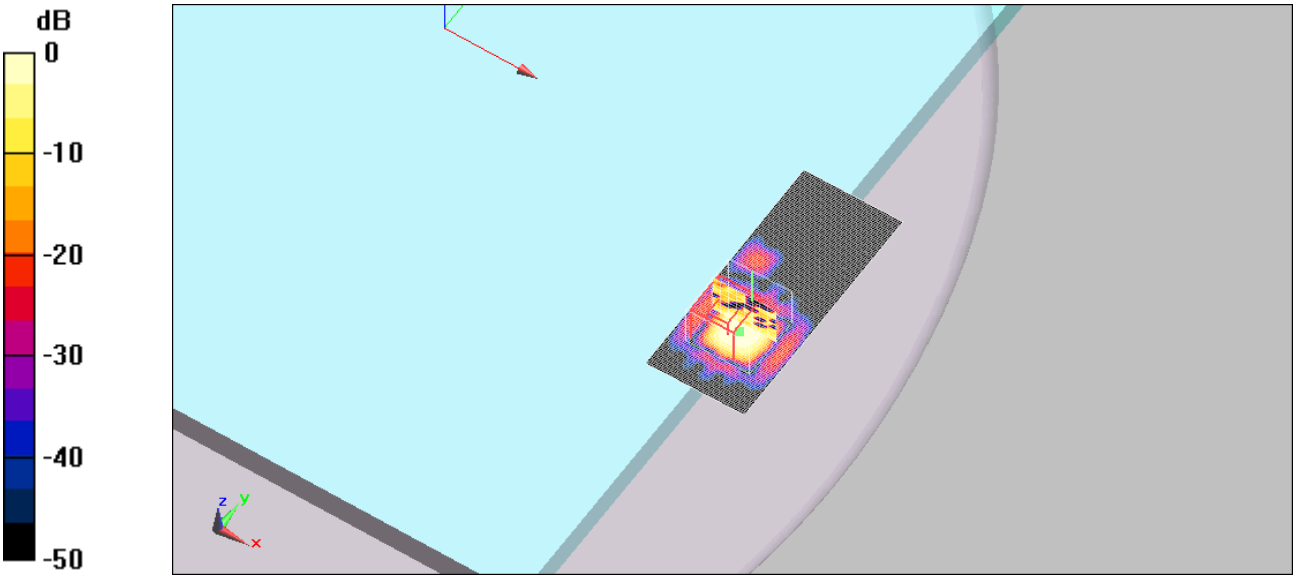
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5680 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5680 MHz; σ = 6.06 mho/m; εr = 47.7; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(3.85, 3.85, 3.85); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch136_5 680 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.019 mW/g

Body_802.11a_ch136_5 680 MHz_6 Mbps_Front_Ant 0/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.63 V/m; Power Drift = -0.00406 dB
Peak SAR (extrapolated) = 0.093 W/kg
SAR(1 g) = 0.00628 mW/g; SAR(10 g) = 0.00113 mW/g
Maximum value of SAR (measured) = 0.017 mW/g



0 dB = 0.017mW/g

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< 802.11a Body CH136 5 680 MHz Front Ant 1 / Date : May 18, 2015 >

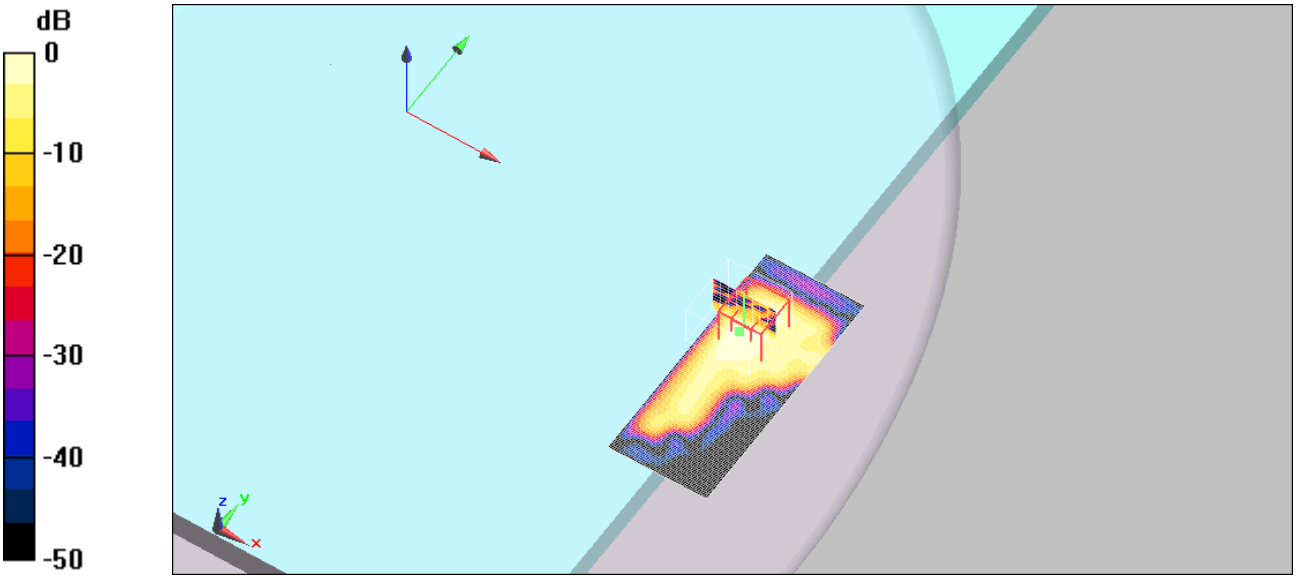
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5680 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5680 MHz; σ = 6.06 mho/m; εr = 47.7; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(3.85, 3.85, 3.85); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch136_5 680 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.107 mW/g

Body_802.11a_ch136_5 680 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.1 V/m; Power Drift = -0.068 dB
Peak SAR (extrapolated) = 0.201 W/kg
SAR(1 g) = 0.028 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.075 mW/g



0 dB = 0.075mW/g

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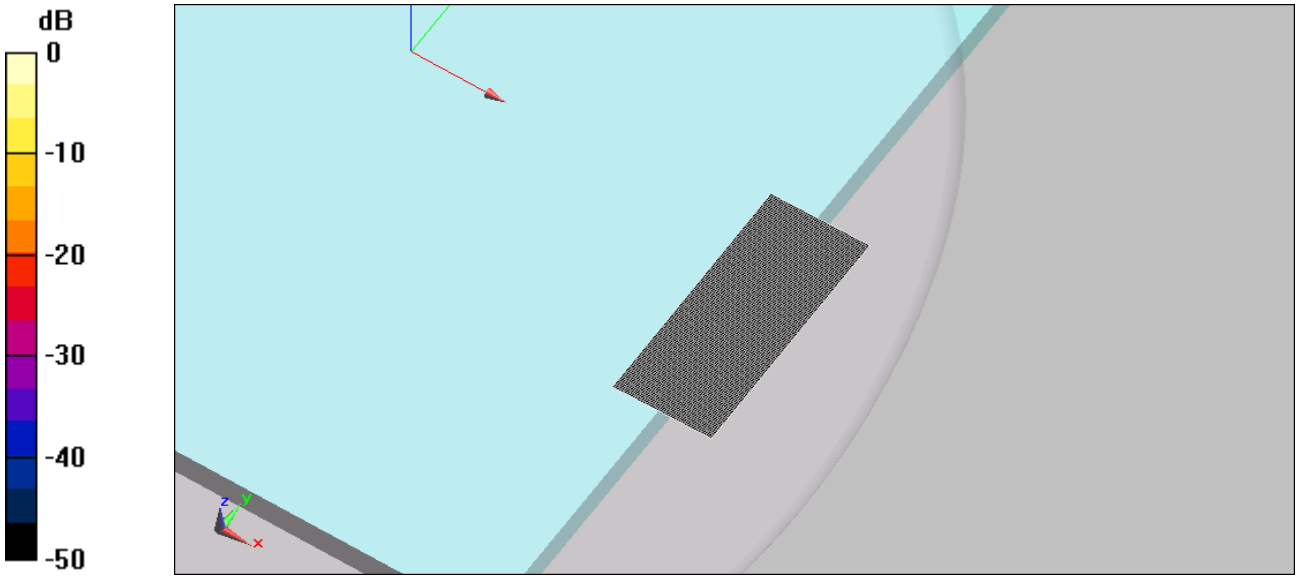
< 802.11a Body CH149 5 745 MHz Front Ant 0 / Date : May 19, 2015 >

DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium parameters used : f = 5745 MHz; σ = 6.14 mho/m; εr = 47.7; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.03, 4.03, 4.03); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch149_5 745 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0 mW/g



0 dB = 0mW/g

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EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< 802.11a Body CH149 5 745 MHz Front Ant 1 / Date : May 19, 2015 >

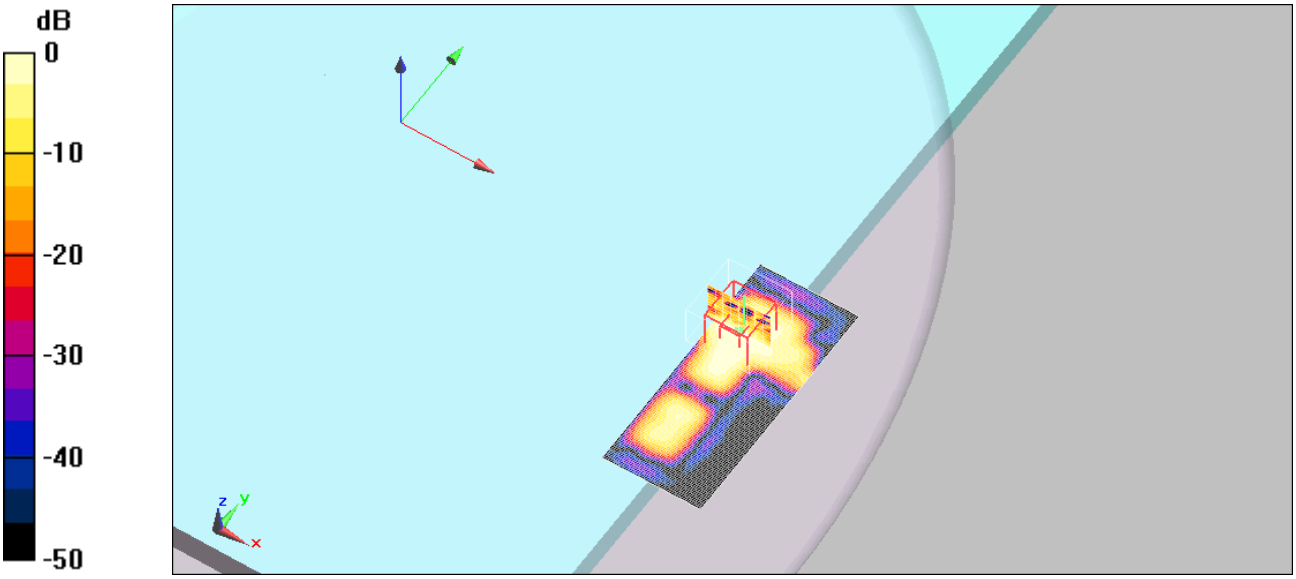
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium parameters used : f = 5745 MHz; σ = 6.14 mho/m; εr = 47.7; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.03, 4.03, 4.03); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch149_5 745 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.072 mW/g

Body_802.11a_ch149_5 745 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.88 V/m; Power Drift = -0.026 dB
Peak SAR (extrapolated) = 0.170 W/kg
SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.00873 mW/g
Maximum value of SAR (measured) = 0.057 mW/g



0 dB = 0.057mW/g

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EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

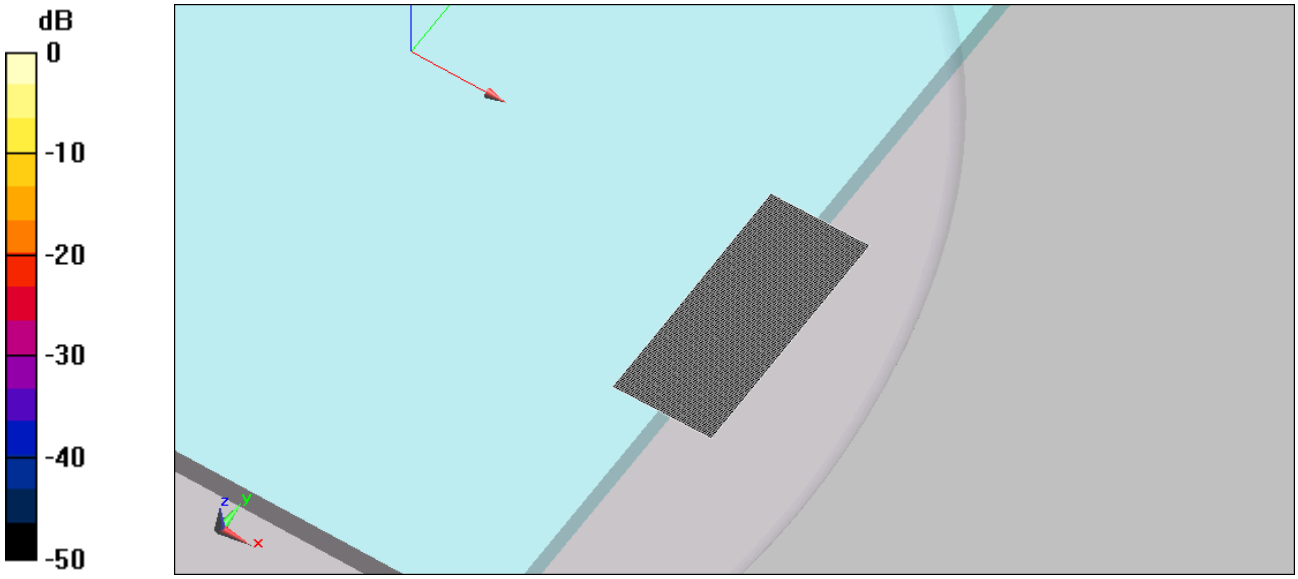
< 802.11a Body CH161 5 805 MHz Front Ant 0 / Date : May 19, 2015 >

DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used : f = 5805 MHz; σ = 6.19 mho/m; εr = 47.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.03, 4.03, 4.03); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch161_5 805 MHz_6 Mbps_Front_Ant 0/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0 mW/g



0 dB = 0mW/g

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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< 802.11a Body CH161 5 805 MHz Front Ant 1 / Date : May 19, 2015 >

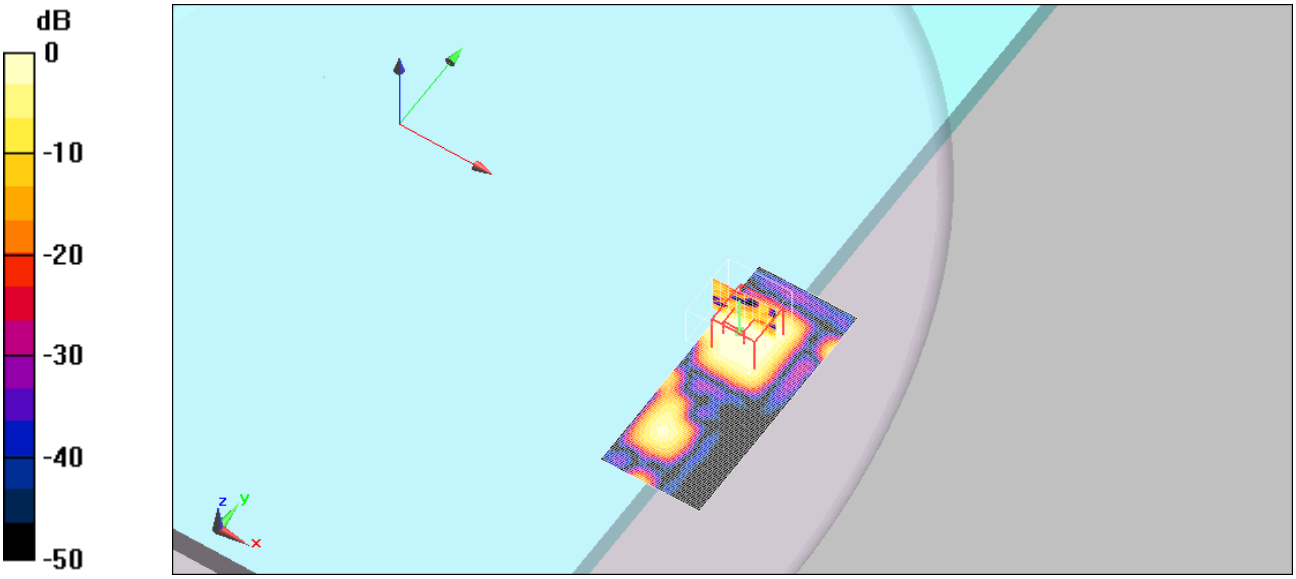
DUT: ATAL9; Type: Sample; Serial: Not Specified

Communication System: 802.11a; Frequency: 5805 MHz;Duty Cycle: 1:1
Medium parameters used : f = 5805 MHz; σ = 6.19 mho/m; εr = 47.6; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3716; ConvF(4.03, 4.03, 4.03); Calibrated: 2014-11-18
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn444; Calibrated: 2014-11-12
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1030
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Body_802.11a_ch161_5 805 MHz_6 Mbps_Front_Ant 1/Area Scan (51x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR = 0.085 mW/g

Body_802.11a_ch161_5 805 MHz_6 Mbps_Front_Ant 1/Zoom Scan (9x9x12)/Cube 0:
Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.83 V/m; Power Drift = 0.184 dB
Peak SAR (extrapolated) = 0.218 W/kg
SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.00921 mW/g
Maximum value of SAR (measured) = 0.063 mW/g



0 dB = 0.063mW/g

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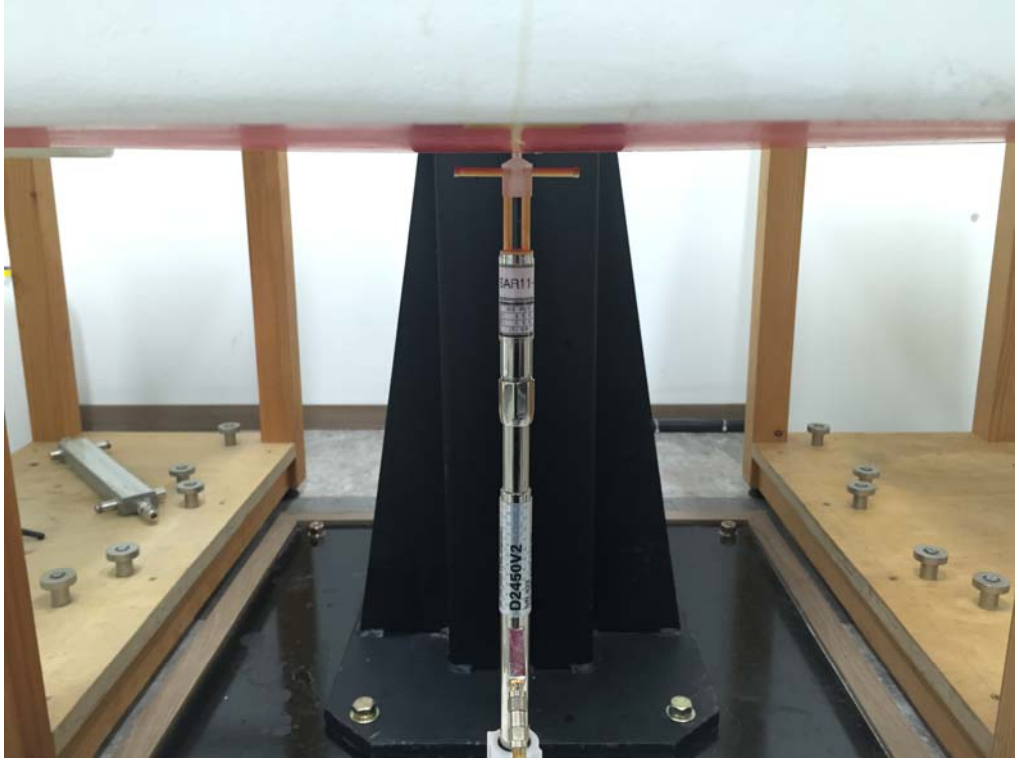
ANNEX C. PHOTOGRAPHS

< System Verification >



< 2 450 MHz >

< 5 GHz >

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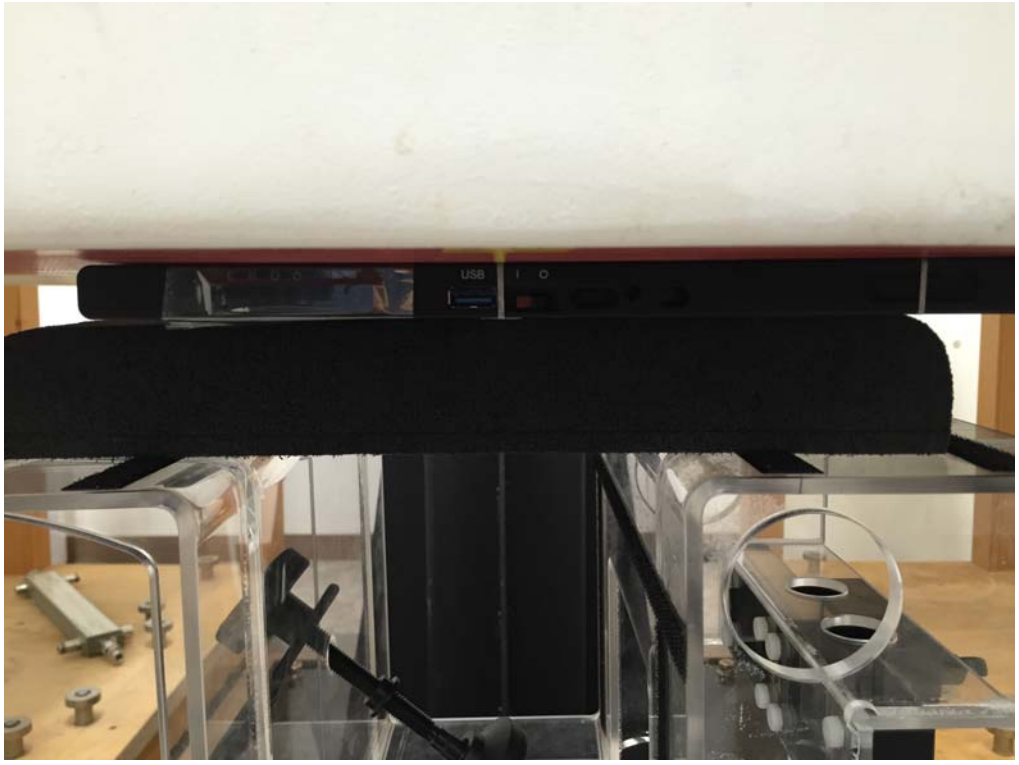
< Test position >



Front view (Front of DUT)

Side view (Front of DUT)

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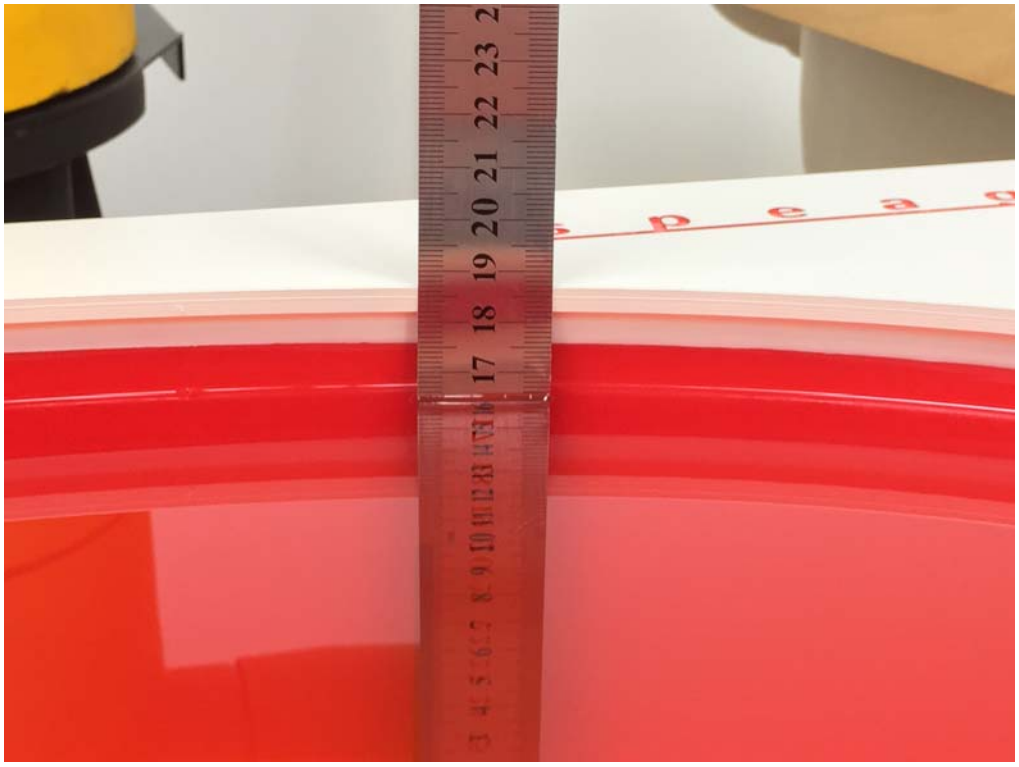
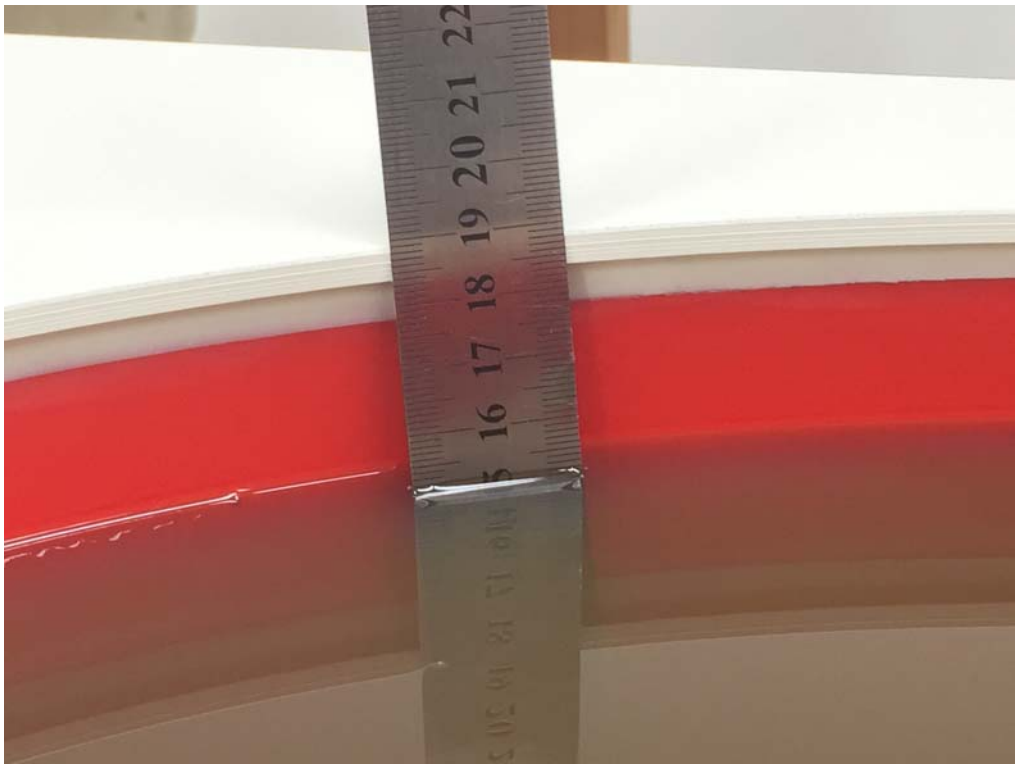
< Liquid Depth >

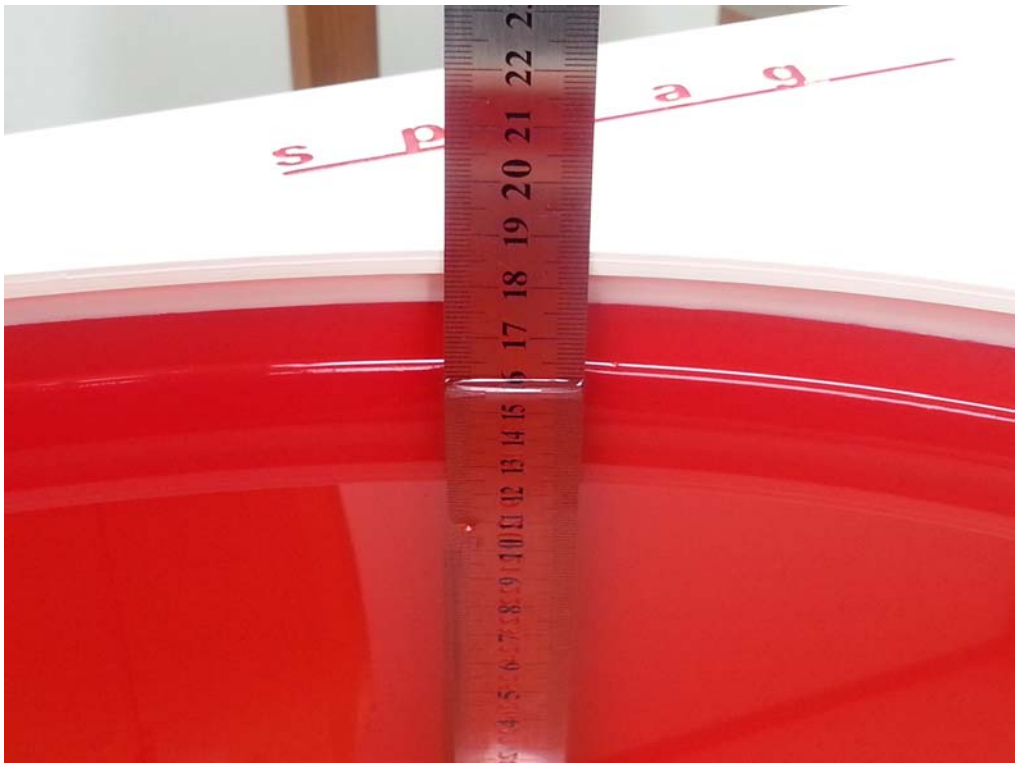


< Head 2 450 MHz >



< Head 5 GHz >

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)



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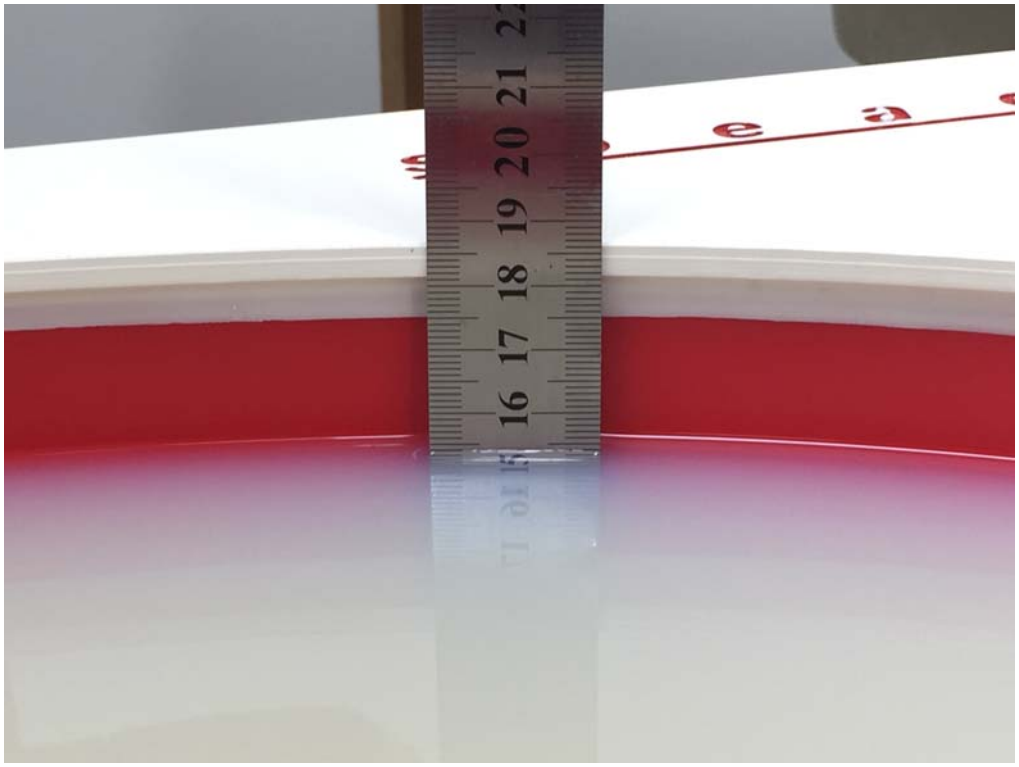

< Body 5 GHz >

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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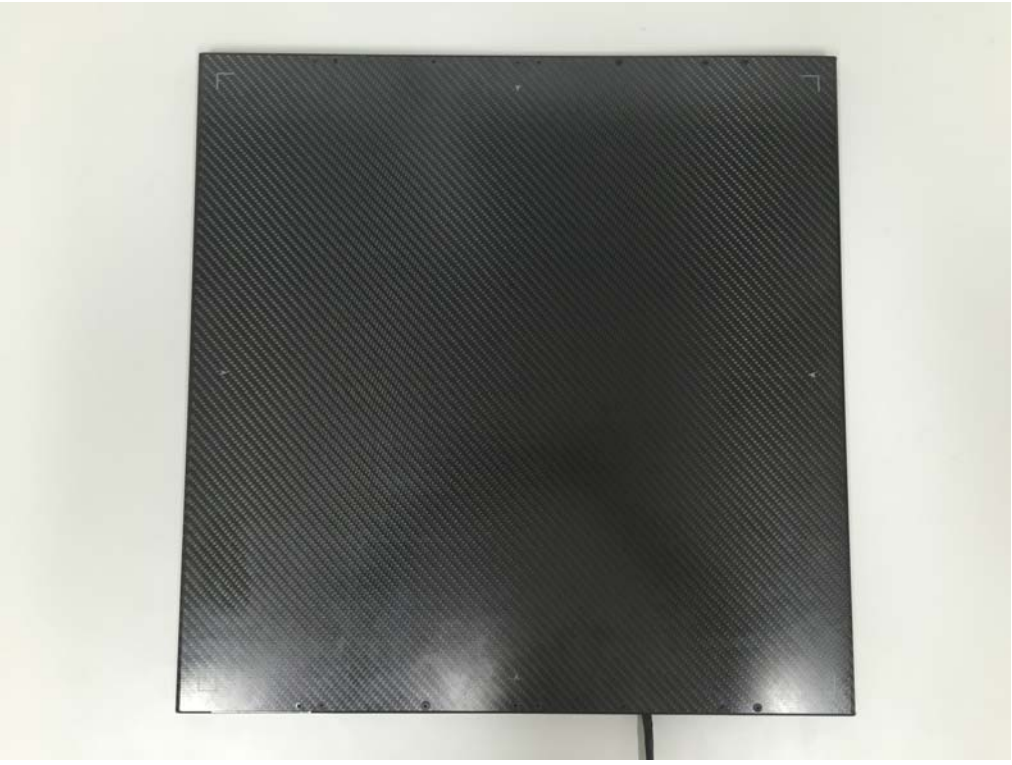
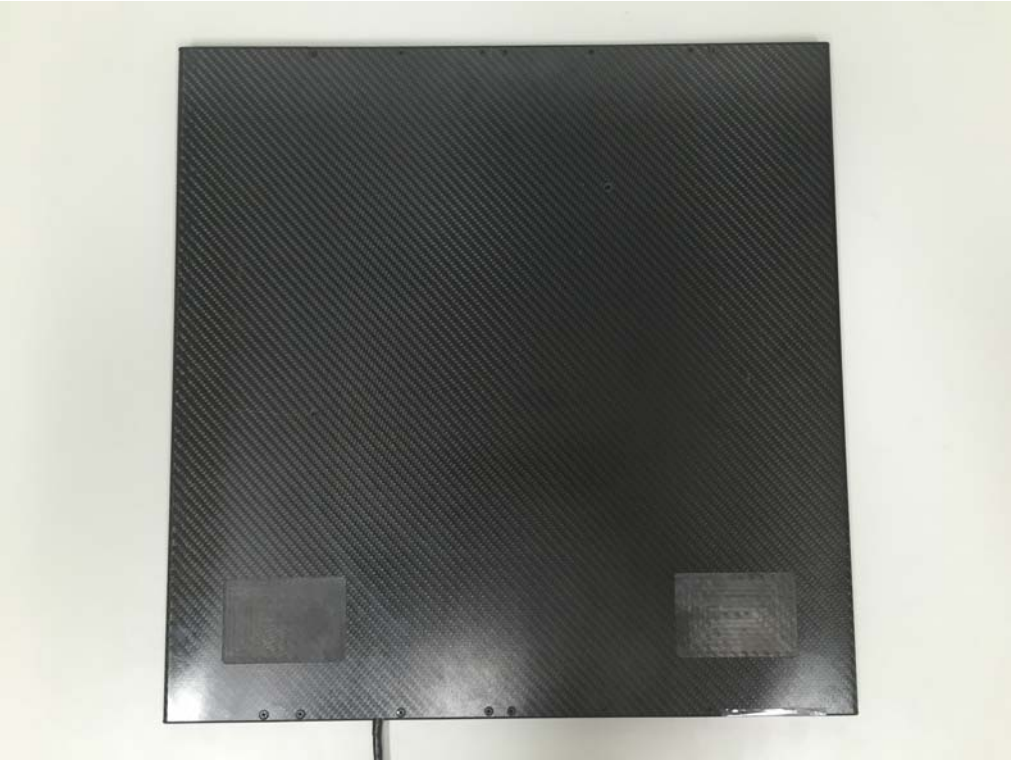
< DUT Photograph >



< Front >



< Back >

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EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

< Top >

< Bottom >

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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< Left >

< Right >

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

ANNEX D. ANTENNA INFORMATION

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