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Introduction

This Calibration Report has been produced in line with the SSI Dipole Calibration Procedure SSI-TP-018-ALSAS. The results contained within this report are for Validation Dipole BCL-141. The calibration routine consisted of a three-step process. Step 1 was a mechanical verification of the dipole to ensure that it meets the mechanical specifications. Step 2 was an Electrical Calibration for the Validation Dipole, where the SWR, Impedance, and the Return loss were assessed. Step 3 involved a System Validation using the ALSAS-10U, along with APREL E-020 130 MHz to 26 GHz E-Field Probe Serial Number 212.

References

SSI-TP-018-ALSAS Dipole Calibration Procedure
SSI-TP-016 Tissue Calibration Procedure
IEEE 1528 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"

Conditions

Dipole BCL-141 was received from customer in good condition for re-calibration, SMA connector required cleaning prior to calibration.

Ambient Temperature of the Laboratory: 22 °C +/- 0.5°C
Temperature of the Tissue: 20 °C +/- 0.5°C

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Dipole Calibration Results

Mechanical Verification

APREL Length	APREL Height	Measured Length	Measured Height
51.5 mm	30.4 mm	51.6 mm	30.5 mm

Tissue Validation

Head Tissue 2450 MHz	Measured
Dielectric constant, ε_r	39.2
Conductivity, σ [S/m]	1.80

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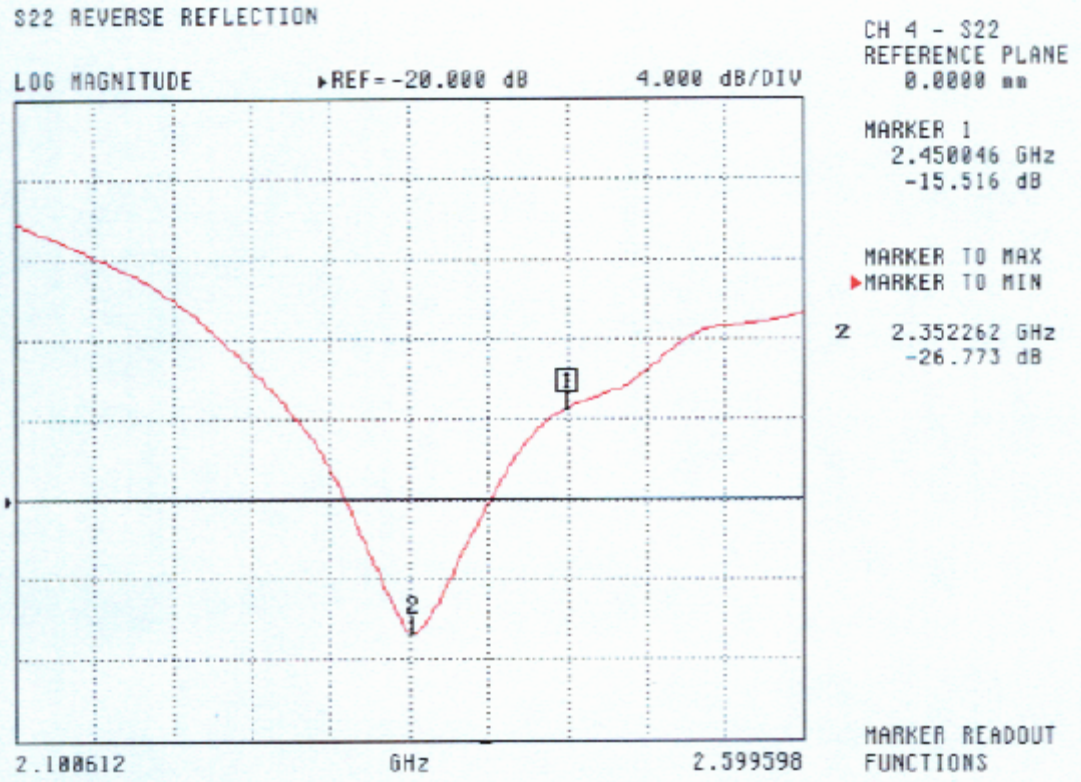
Electrical Calibration

Test	Result
S11 R/L	-26.77 dB to –15.52 dB
SWR	1.095 U to 1.397 U
Impedance	47.81 Ω to 63.37 Ω

The Following Graphs are the results as displayed on the Vector Network Analyzer.

S11 Parameter Return Loss



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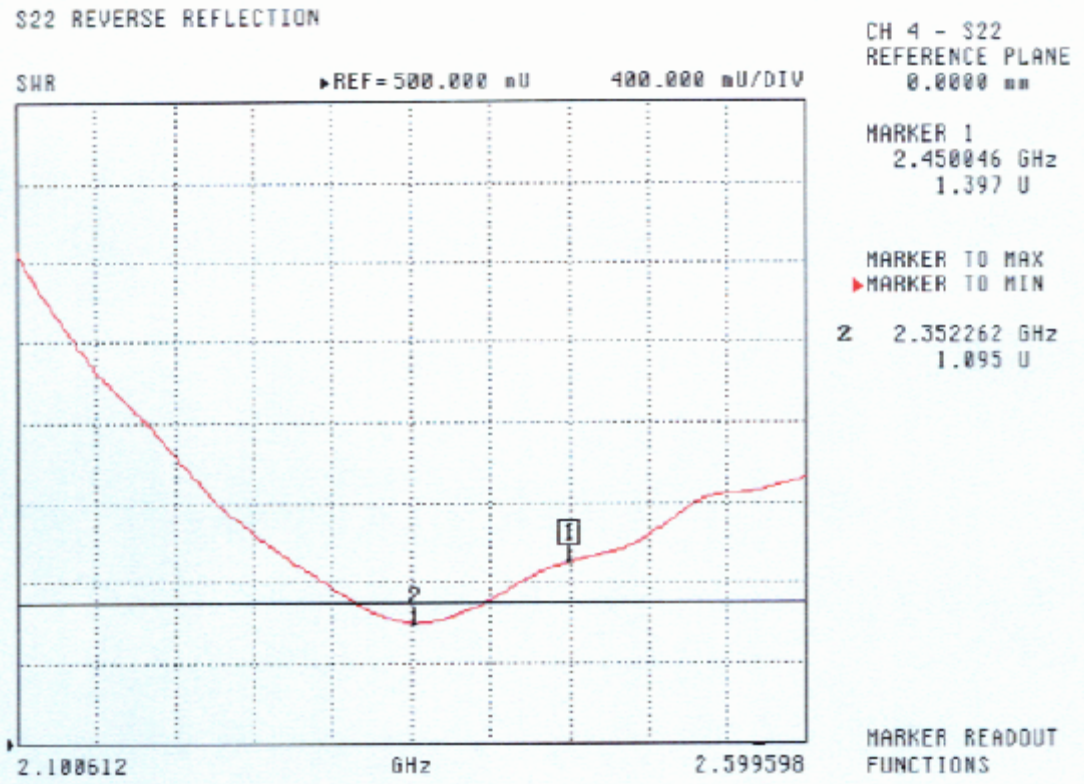
SWR



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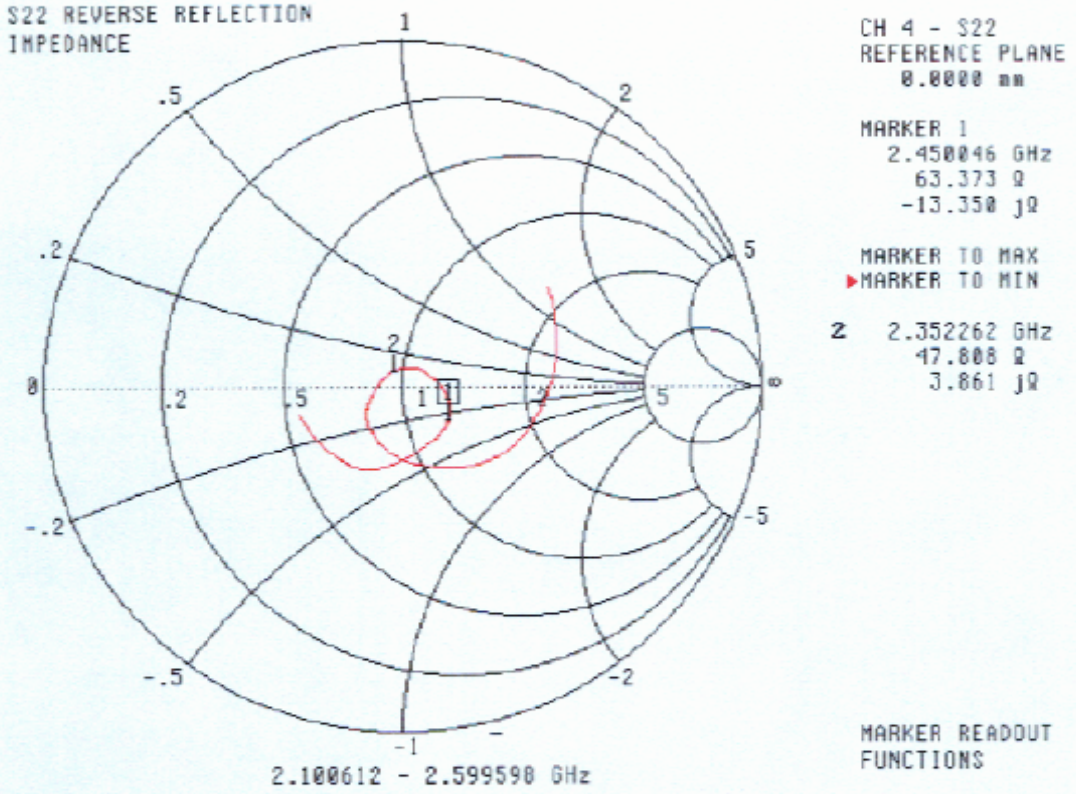
Smith Chart Dipole Impedance



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Test Equipment

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List

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APPENDIX D - TEST SYSTEM VERIFICATIONS SCANS

Liquid and system validation Result

2007-08-07

Simulant	Freq. [MHz]	Parameters	Liquid Temp [°C]	Target Value	Measured Value	Deviation [%]	Limits [%]
Head	2450	ε_r	22	39.2	38.8	-1.02	±5
		σ	22	1.80	1.84	2.22	±5
		1g SAR	22	52.4	51.9	-0.95	±10

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

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

System Performance Check

Dipole 2450 MHz; Type: D-2450-S-1; Serial: BCL-141

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.84 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

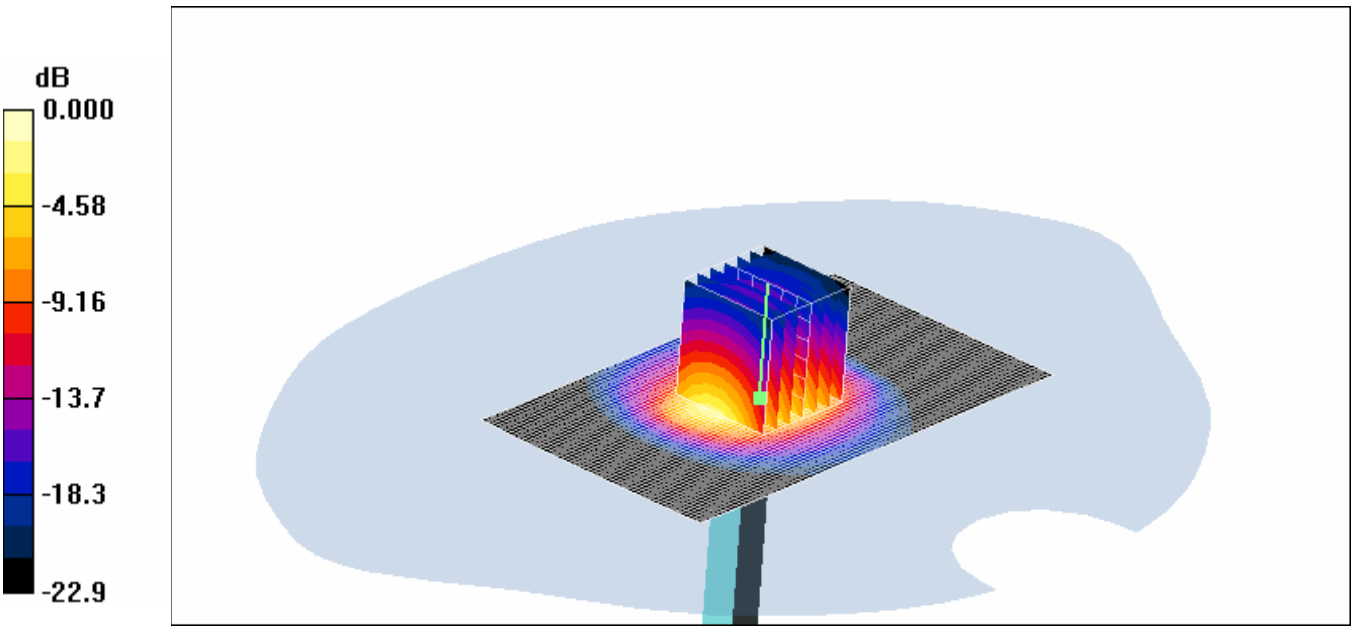
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.6, 4.6, 4.6); Calibrated: 5/02/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

d=10mm, Pin=1W/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 52.4 mW/g

d=10mm, Pin=1W/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 162.0 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 93.2 W/kg
SAR(1 g) = 51.9 mW/g; SAR(10 g) = 23.6 mW/g

Maximum value of SAR (measured) = 52.1 mW/g



0 dB = 52.1 mW/g

APPENDIX E– EUT SAR MEASUREMENT

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

Low Channel

Darim Vision Corp.; Type: PVE400M24

Communication System: DTS; Frequency: 2410 MHz; Duty Cycle: 1:2
Medium parameters used (interpolated): f = 2450 MHz; σ = 1.91 mho/m; ε_r = 51.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

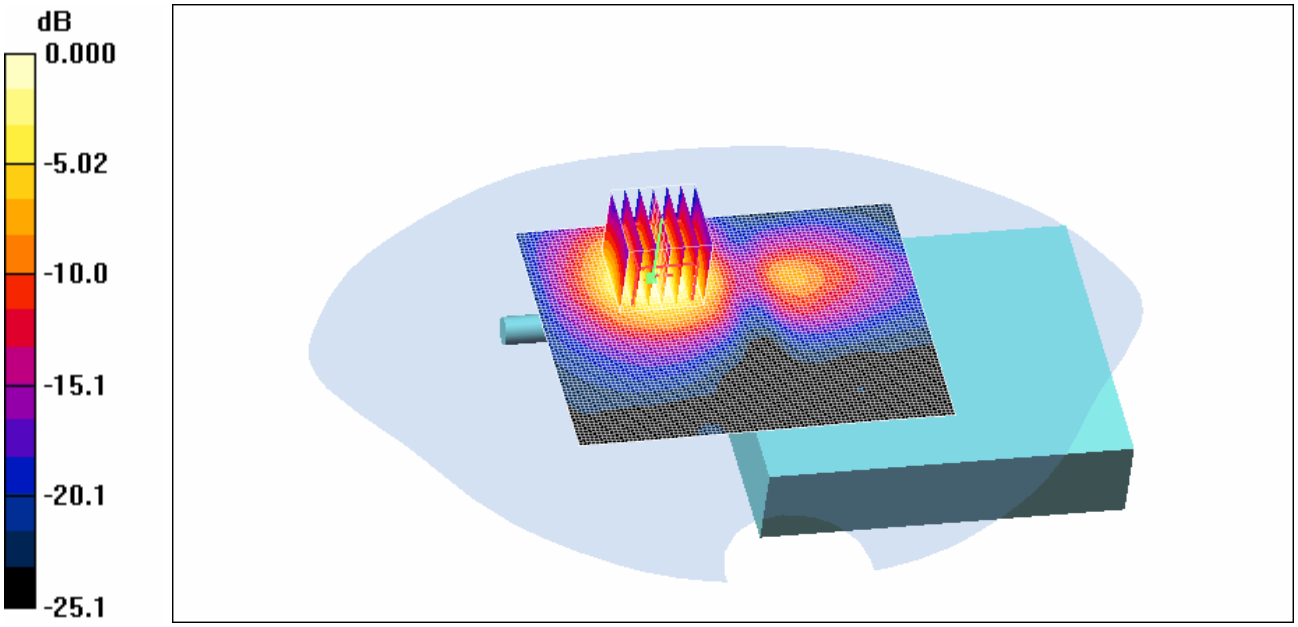
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.27, 4.27, 4.27); Calibrated: 5/2/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Post processing SW: SEMCAD, V1.8 Build 161

Darim Vision Corp., mode: PVE400M24, 2410 MHz (Low Channel)/Area Scan (71x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.28 mW/g

Darim Vision Corp., mode: PVE400M24, 2410 MHz (Low Channel)/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.90 V/m; Power Drift = -1.37 dB
Peak SAR (extrapolated) = 2.67 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.584 mW/g

Maximum value of SAR (measured) = 1.26 mW/g



0 dB = 1.26 mW/g

Plot#1

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

High Channel

Darim Vision Corp.; Type: PVE400M24

Communication System: DTS; Frequency: 2470 MHz; Duty Cycle: 1:2
Medium parameters used: f = 2450 MHz; σ = 1.92 mho/m; ε_r = 51.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

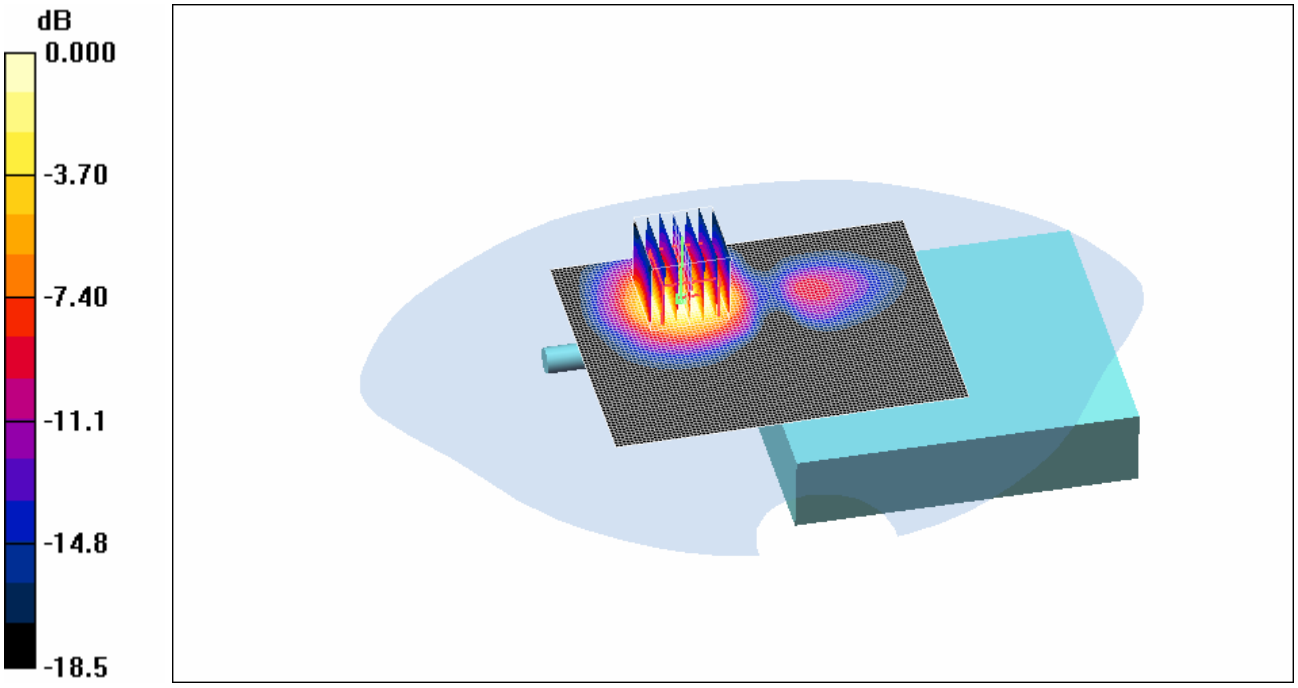
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.27, 4.27, 4.27); Calibrated: 5/2/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Post processing SW: SEMCAD, V1.8 Build 161

Darim Vision Corp., Model: PVE400M24, 2470 MHz (High Channel)/Area Scan (71x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.13 mW/g

Darim Vision Corp., Model: PVE40024, 2470 MHz (High Channel)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.97 V/m; Power Drift = 1.23 dB
Peak SAR (extrapolated) = 2.26 W/kg
SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.493 mW/g

Maximum value of SAR (measured) = 1.12 mW/g



0 dB = 1.12 mW/g

Plot#2

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

Mid Channel

Darim Vision Corp.; Type: PVE400M24

Communication System: DTS; Frequency: 2430 MHz; Duty Cycle: 1:2
Medium parameters used (interpolated): f = 2430 MHz; σ = 1.92 mho/m; ε_r = 51.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

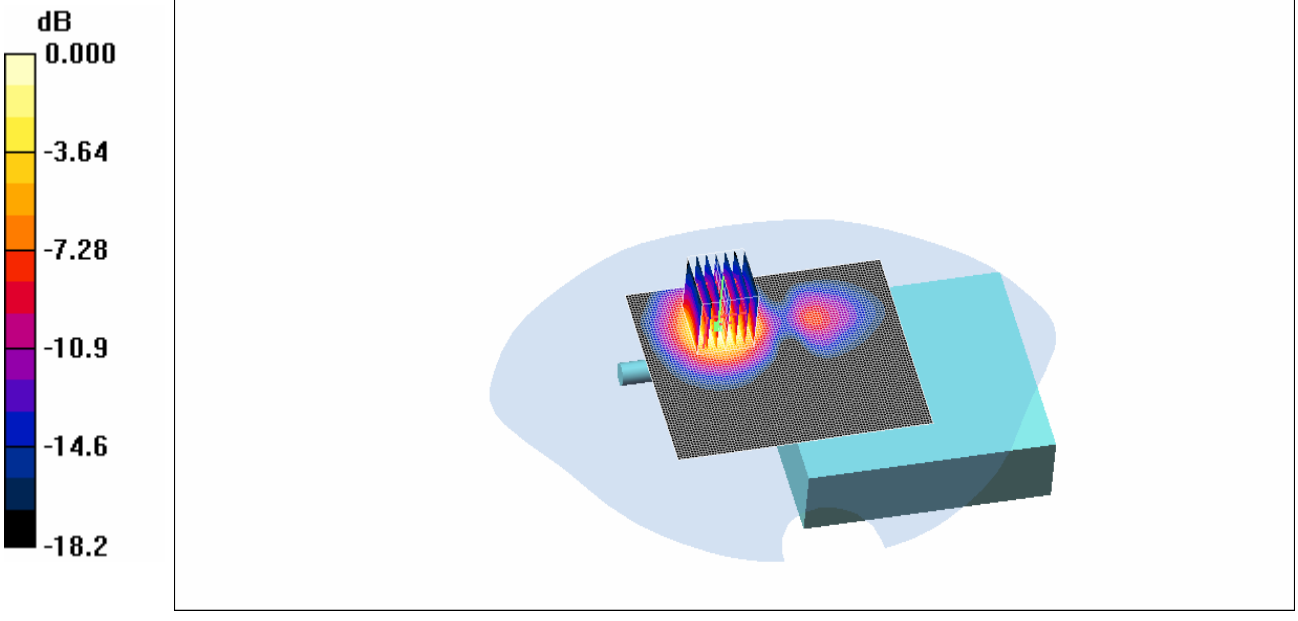
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.27, 4.27, 4.27); Calibrated: 5/2/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Post processing SW: SEMCAD, V1.8 Build 161

Darim Vision Corp., mode: PVE40024, 2430 MHz (Mid Channel)/Area Scan (71x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.32 mW/g

Darim Vision Corp., mode: PVE40024, 2430 MHz (Mid Channel)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.11 V/m; Power Drift = -0.420 dB
Peak SAR (extrapolated) = 2.60 W/kg
SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.576 mW/g

Maximum value of SAR (measured) = 1.32 mW/g



0 dB = 1.32 mW/g

Plot#3

APPENDIX F – CONDUCTED OUTPUT POWER MEASUREMENT

Provision Applicable

The measured peak output power should be greater and within 5% than EMI measurement.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Test equipment

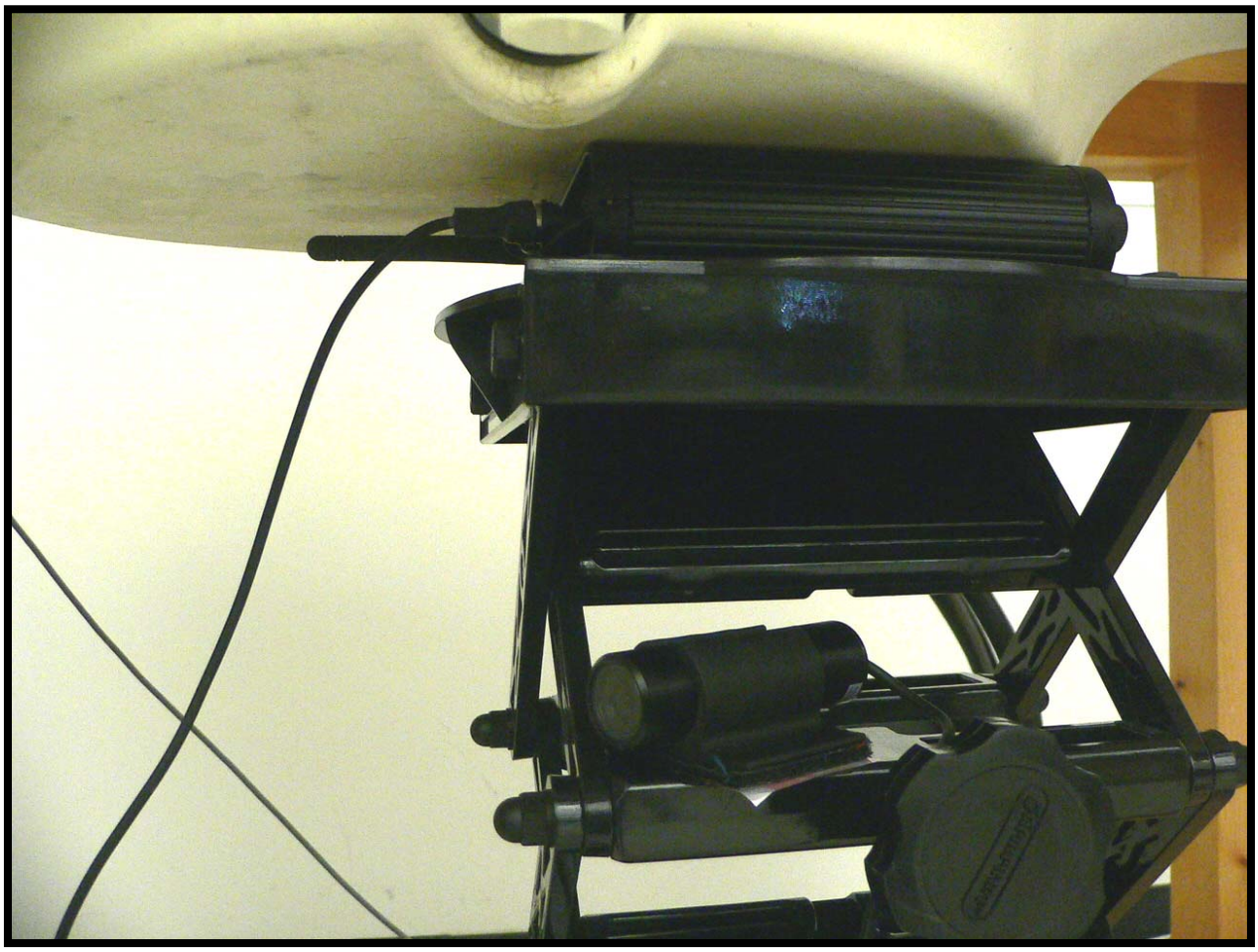
Manufacturer	Equipment Description	Model No.	Serial No.	Calibration Due
Agilent	Analyzer, Spectrum	E4446A	US44300386	2008-04-26

Test Results

Frequency (MHz)	Output Power (dBm)
2410	24.81
2430	24.90
2470	24.62

APPENDIX H – EUT TEST SET UP PHOTOS

Body-worn EUT back touching to the flat phantom



APPENDIX I– EUT PHOTO

EUT with Camera & AC/DC Power Adaptor - Front View

EUT Front View

EUT Bottom View

EUT Port View

RF Camera View

APPENDIX J - INFORMATIVE REFERENCES

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[2] David L. Means Kwok Chan, Robert F. Cleveland, \Evaluating compliance with FCC guidelines for human exposure to radiofrequency electromagnetic fields", Tech. Rep., Federal Communication Commission, O_ce of Engineering & Technology, Washington, DC, 1997.

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***** END OF REPORT *****