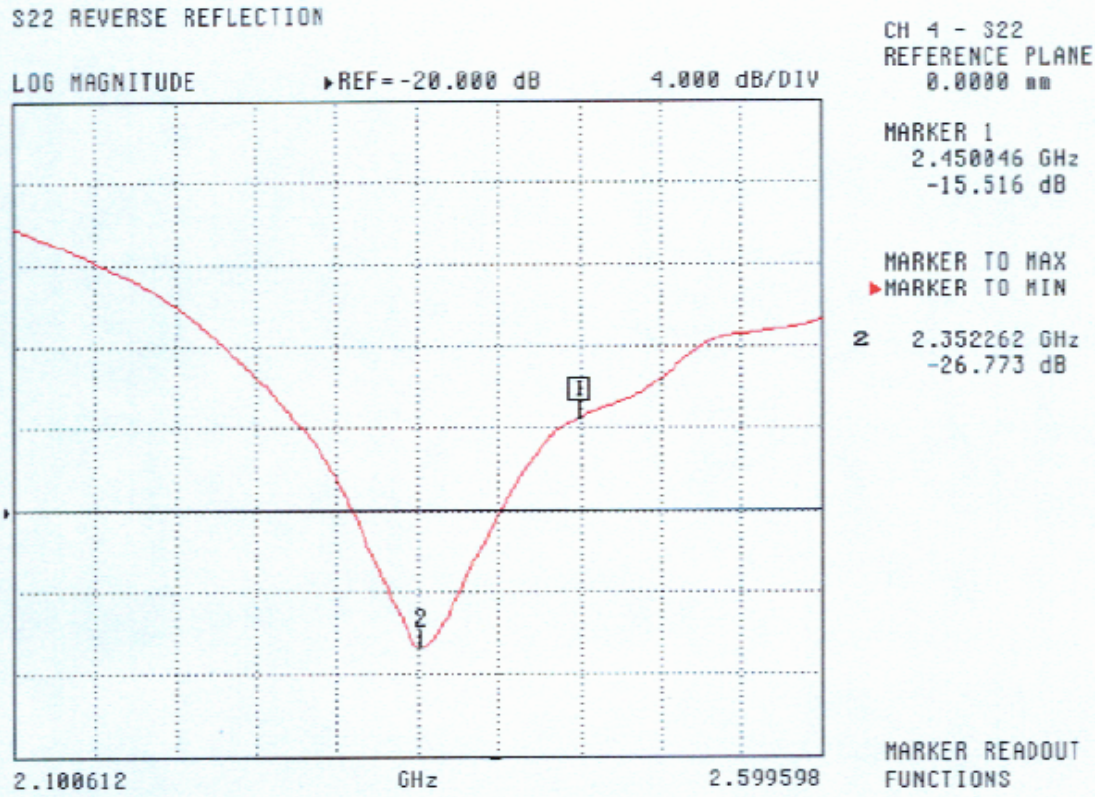
NCL Calibration Laboratories
Division of APREL Laboratories.

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



6

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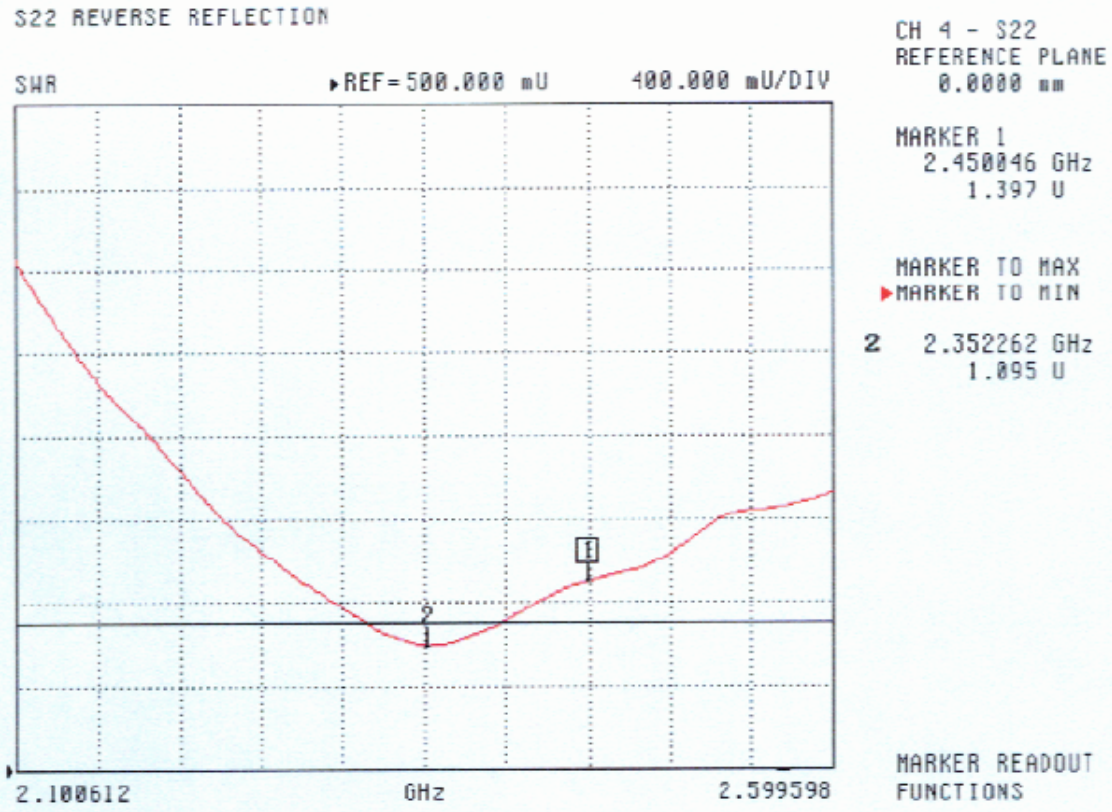
SWR



7

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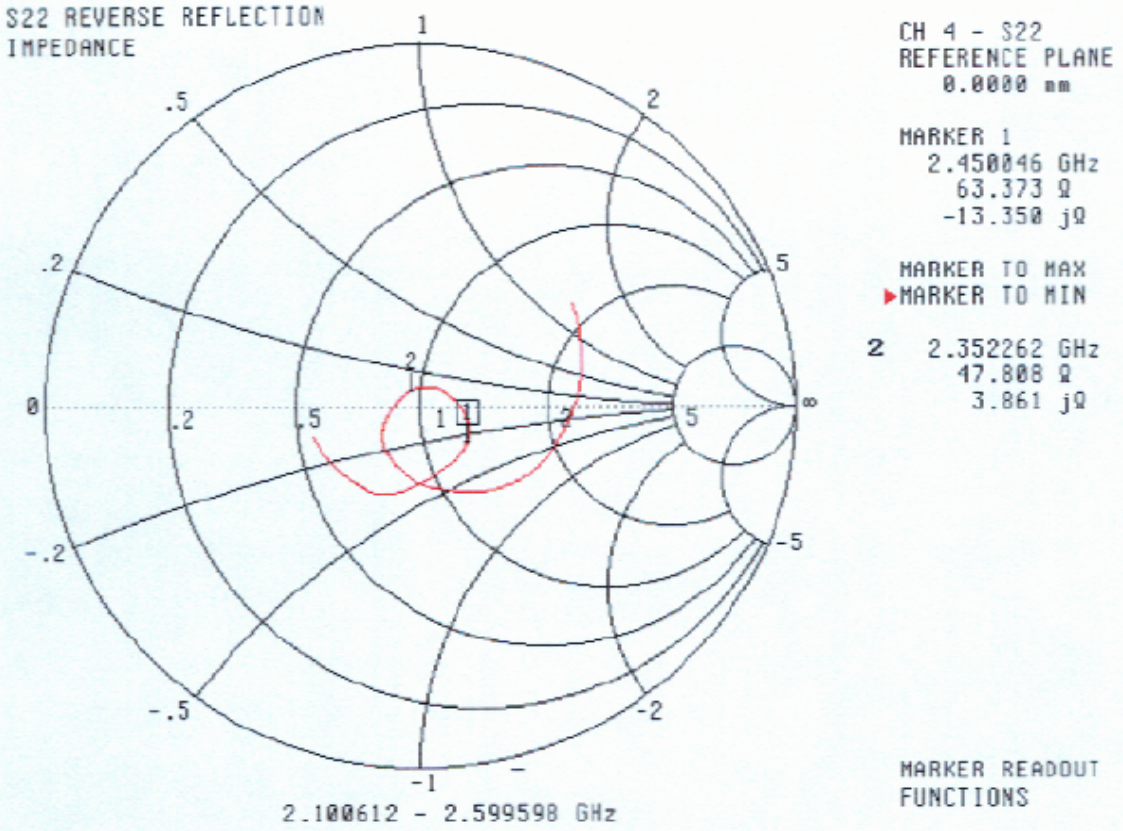
Smith Chart Dipole Impedance



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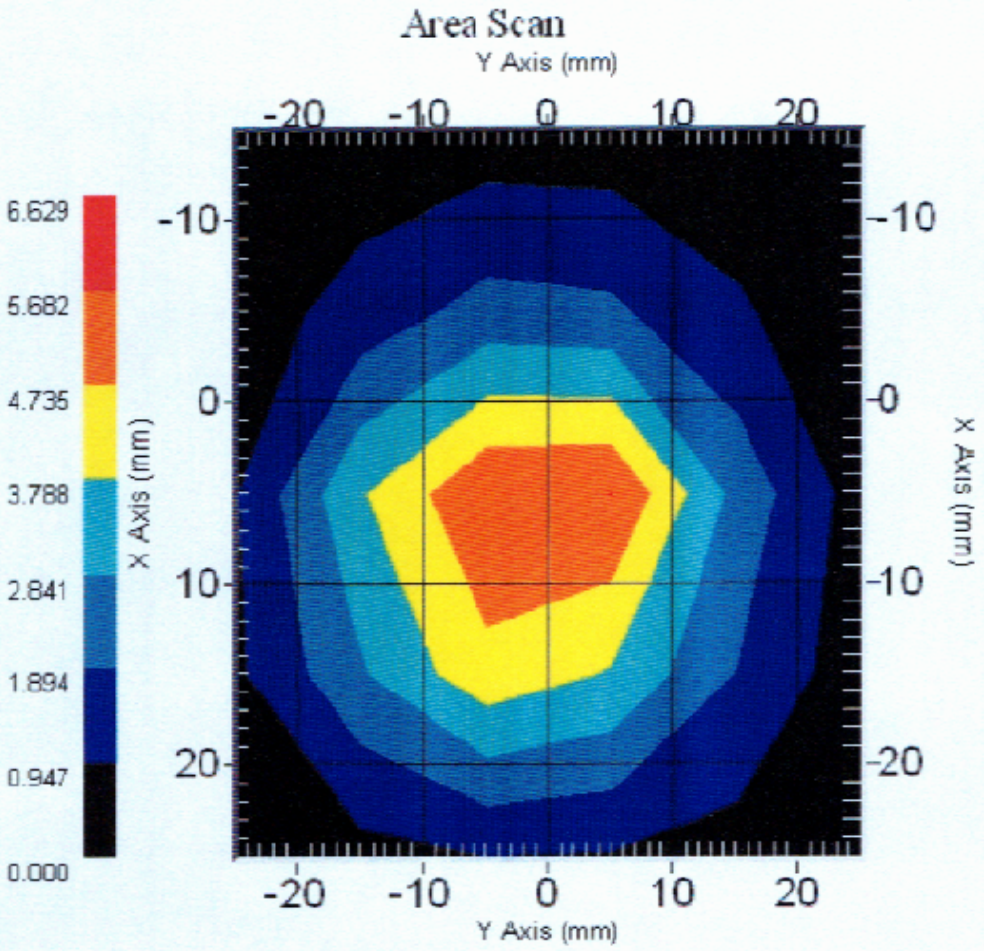
System Validation Results Using the Electrically Calibrated Dipole

Head Tissue Frequency	1 Gram	10 Gram	Peak Above Feed Point
2450 MHz	5.31	2.44	10.18



9

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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 Measurement Result

Testing was performed by Dan Coronia on 2007-10-16.

Simulant	Freq [MHz]	Parameters	Liquid Temp [ºC]	Target Value	Measured Value	Deviation [%]	Limits [%]
Head	2450	εr	22	39.2	40.2	2.55	±5
		σ	22	1.80	1.83	1.67	±5
		1g SAR	22	52.4	49.26	-5.99	±10

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

System Performance Check for Head

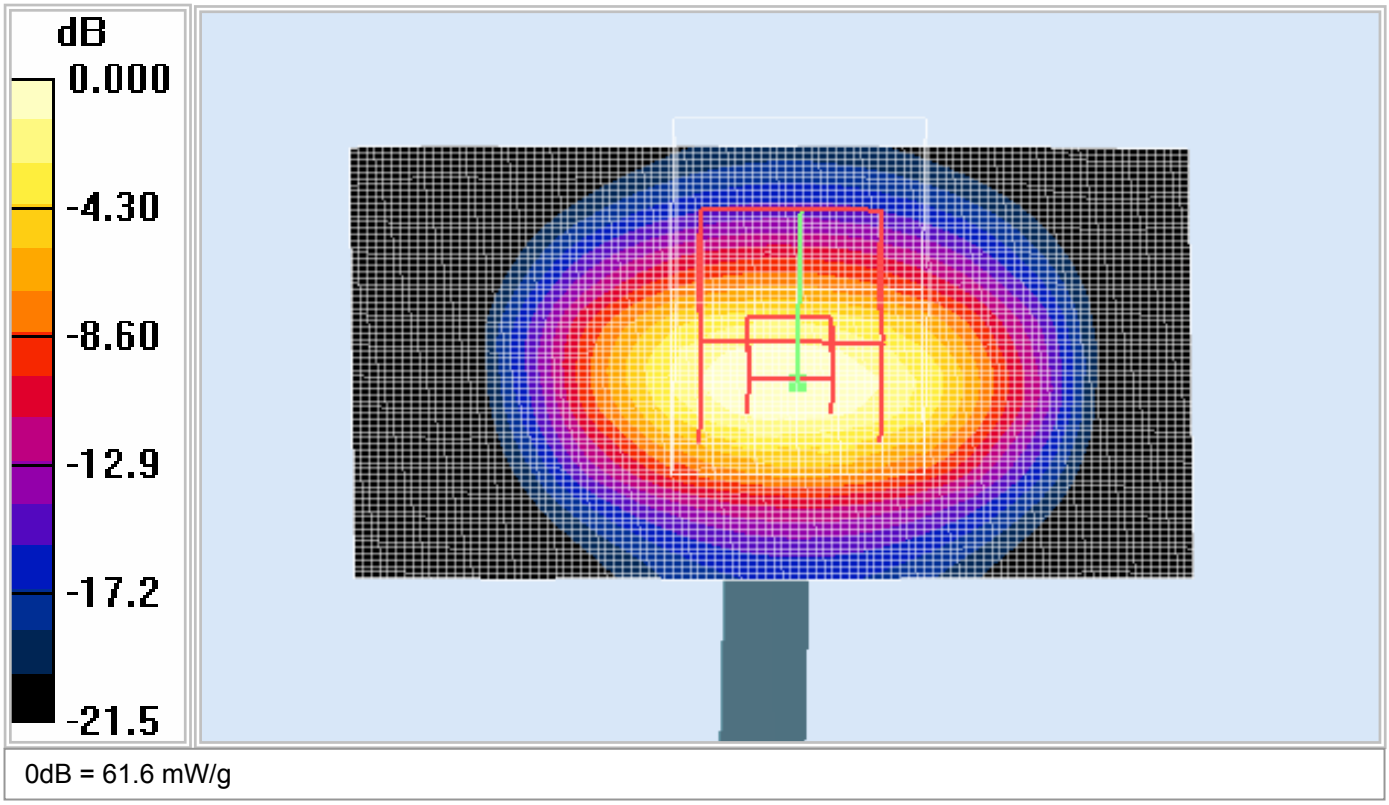
EUT: Dipole Antenna 2450 MHz; Type: D2450-S-1; Serial Number: BCL-141

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.74, 4.74, 4.74); Calibrated: 8/28/2007
- 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

System Performance Check 1W / Area Scan (71x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 63.4 mW/g
System Performance Check 1W / Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 140.9 V/m; Power Drift = -0.022 dB
Peak SAR (extrapolated) = 98.6 W/kg
SAR(1 g) = 49.26 mW/g; SAR(10 g) = 23.05 mW/g
Maximum value of SAR (measured) = 61.6 mW/g



System Validation for Head Tissue

APPENDIX E - EUT SCANS

EUT body position back touching to the flat phantom (2412 MHz - Low Channel)

Gray Hill Inc.; Type: PDA with Wi-Fi Model Number: M1YY1023-3; Serial: B1338

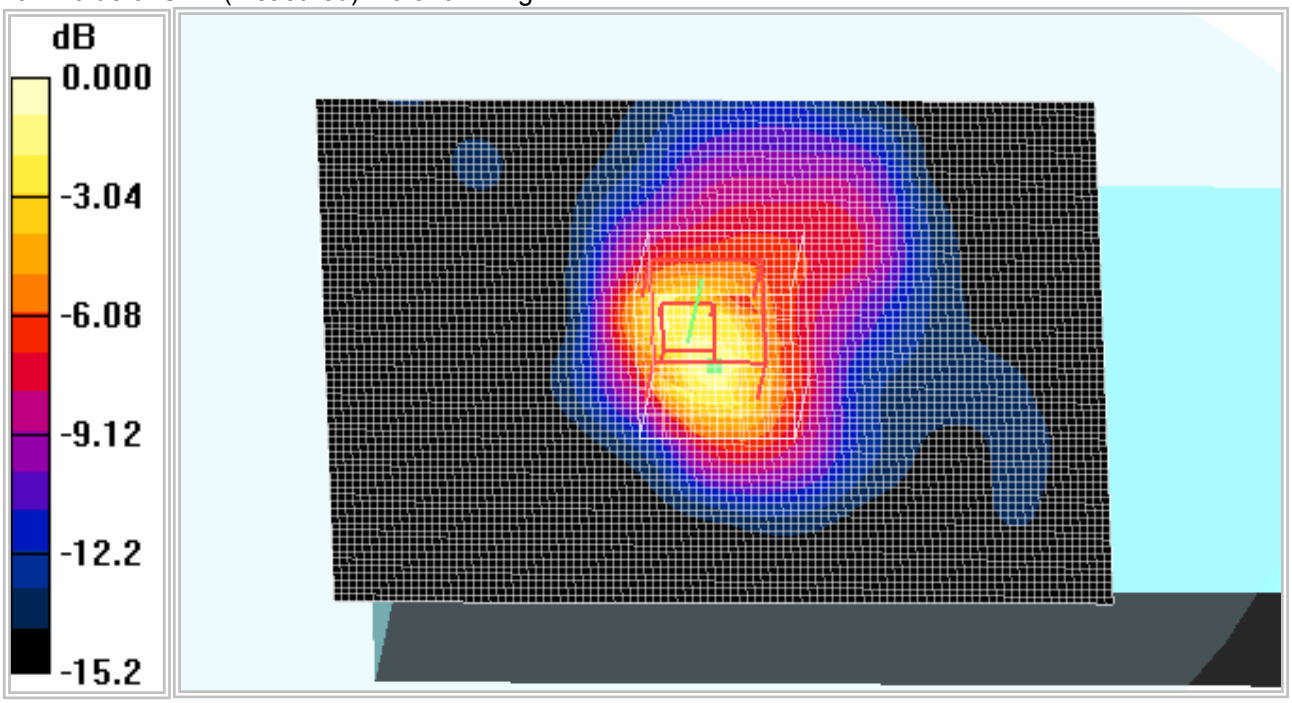
Simultaneous Transmit with the Co-located Bluetooth

Communication System: CW.; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF (4.11, 4.11, 4.11); Calibrated: 8/28/2007
- 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

Body Position EUT Back touching to the Flat Phantom / Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.247 mW/g
Body Position EUT Back touching to the Flat Phantom / Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.5 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 0.740 W/kg
SAR(1 g) = 0.275 mW/g; SAR(10 g) = 0.117 mW/g
Maximum value of SAR (measured) = 0.323 mW/g



0dB = 0.323 mW/g

Plot 1#

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

EUT body position back touching to the flat phantom (2437 MHz - Middle Channel)

Gray Hill Inc.; Type: PDA with Wi-Fi Model Number: M1YY1023-3; Serial: B1338

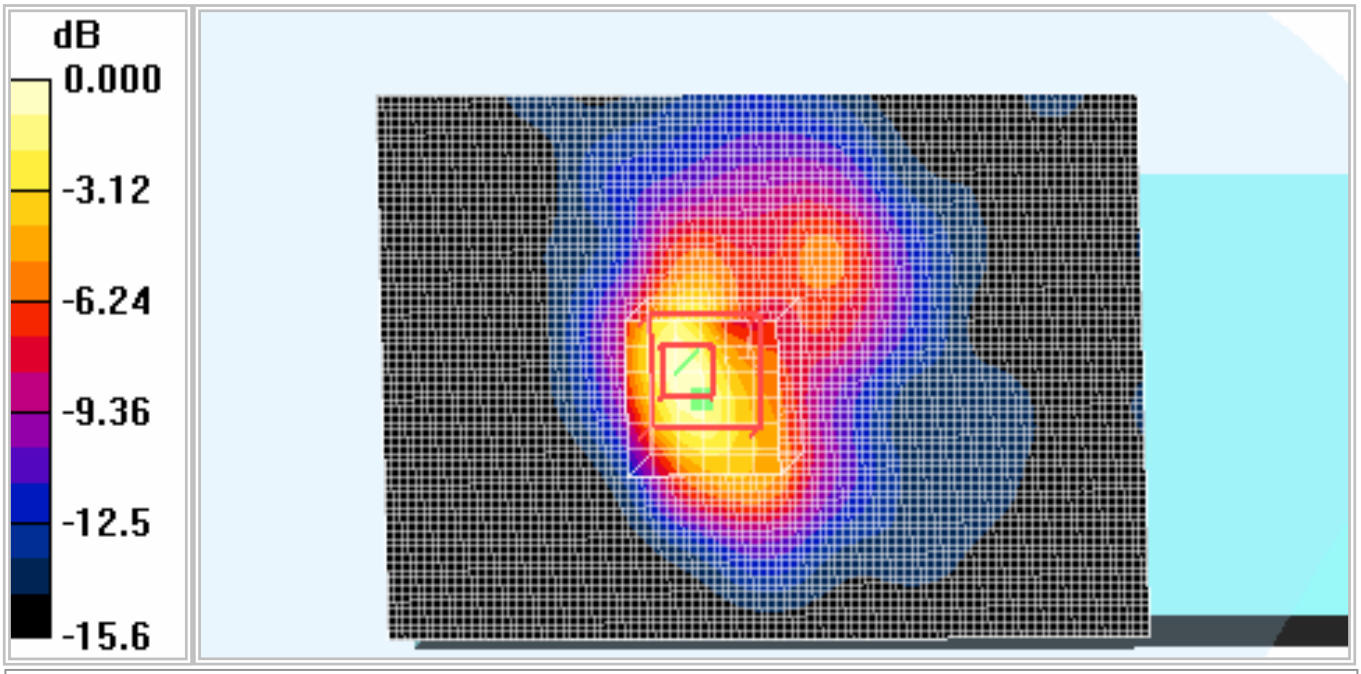
Simultaneous Transmit with the Co-located Bluetooth

Communication System: CW; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.11, 4.11, 4.11); Calibrated: 8/28/2007
- 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

Body Position EUT Back touching to the Flat Phantom / Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.344 mW/g
Body Position EUT Back touching to the Flat Phantom / Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = -0.101 dB
Peak SAR (extrapolated) = 0.803 W/kg
SAR(1 g) = 0.286 mW/g; SAR(10 g) = 0.121 mW/g
Maximum value of SAR (measured) = 0.334 mW/g



0dB = 0.334 mW/g

Plot 2#

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

EUT body position back touching to the flat phantom (2462 MHz - High Channel)

Gray Hill Inc.; Type: PDA with Wi-Fi Model Number: M1YY1023-3; Serial: B1338

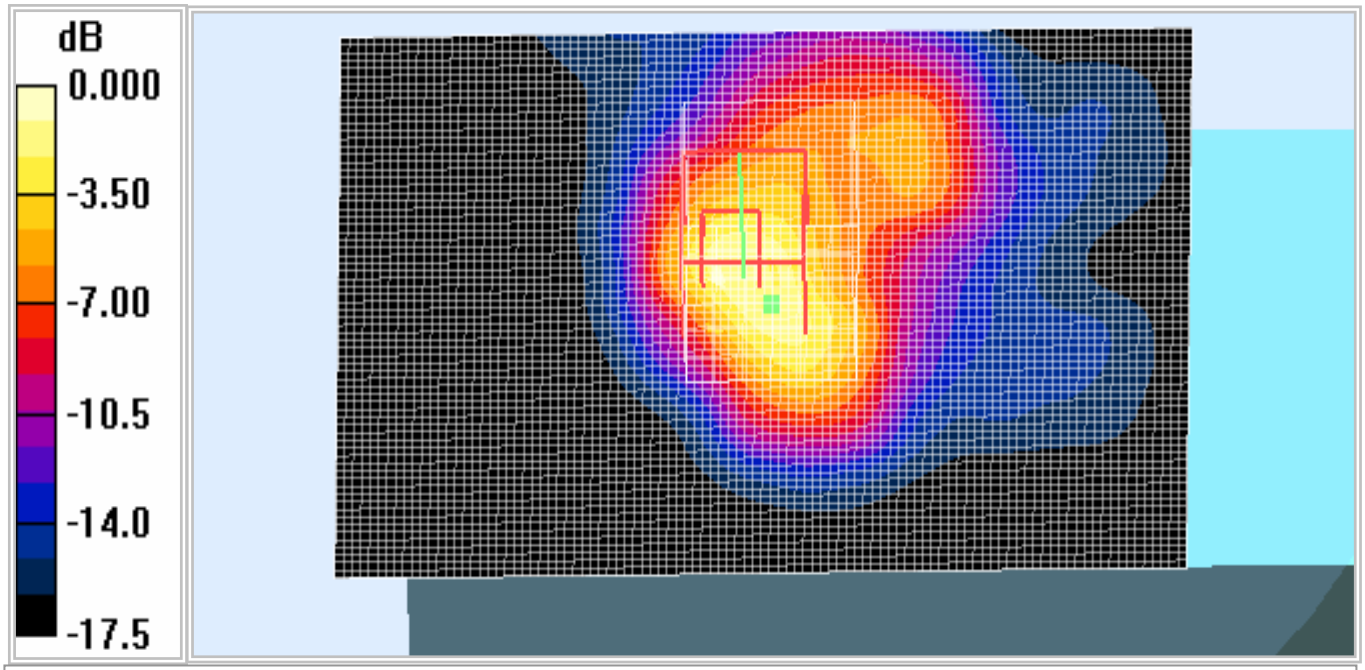
Simultaneous Transmit with the Co-located Bluetooth

Communication System: CW; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.11, 4.11, 4.11); Calibrated: 8/28/2007
- 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

Body Position EUT Back touching to the Flat Phantom / Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.656 mW/g
Body Position EUT Back touching to the Flat Phantom / Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.6 V/m; Power Drift = -0.073 dB
Peak SAR (extrapolated) = 0.910 W/kg
SAR(1 g) = 0.569 mW/g; SAR(10 g) = 0.225 mW/g
Maximum value of SAR (measured) = 0.631 mW/g



0dB = 0.631 mW/g

Plot 3#

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

EUT body position front touching to the flat phantom (2412 MHz - Low Channel)

Gray Hill Inc.; Type: PDA with Wi-Fi Model Number: M1YY1023-3; Serial: B1338

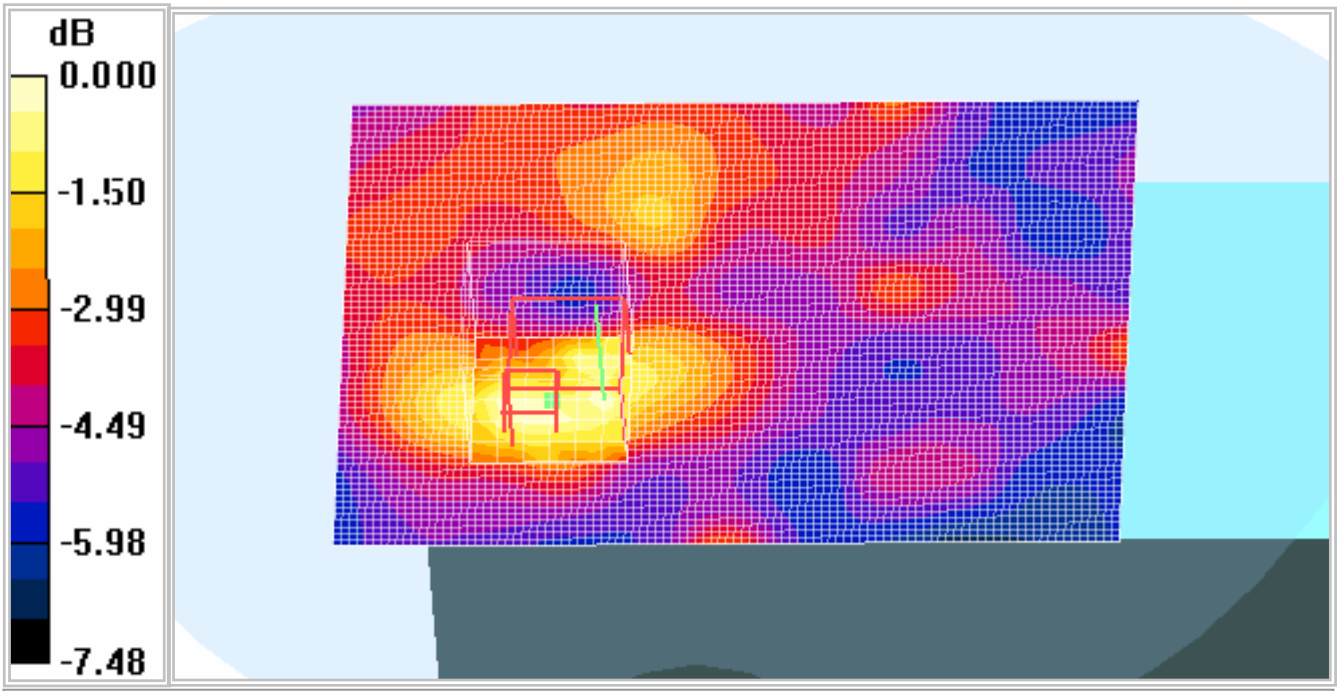
Simultaneous Transmit with the Co-located Bluetooth

Communication System: CW; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.11, 4.11, 4.11); Calibrated: 8/28/2007
- 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

Body Position EUT Front touching to the Flat Phantom / Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.033 mW/g
Body Position EUT Front touching to the Flat Phantom / Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.58 V/m; Power Drift = -0.309 dB
Peak SAR (extrapolated) = 0.037 W/kg
SAR(1 g) = 0.038 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.033 mW/g



0dB = 0.033 mW/g

Plot 4#

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

EUT body position front touching to the flat phantom (2437 MHz - Middle Channel)

Gray Hill Inc.; Type: PDA with Wi-Fi Model Number: M1YY1023-3; Serial: B1338

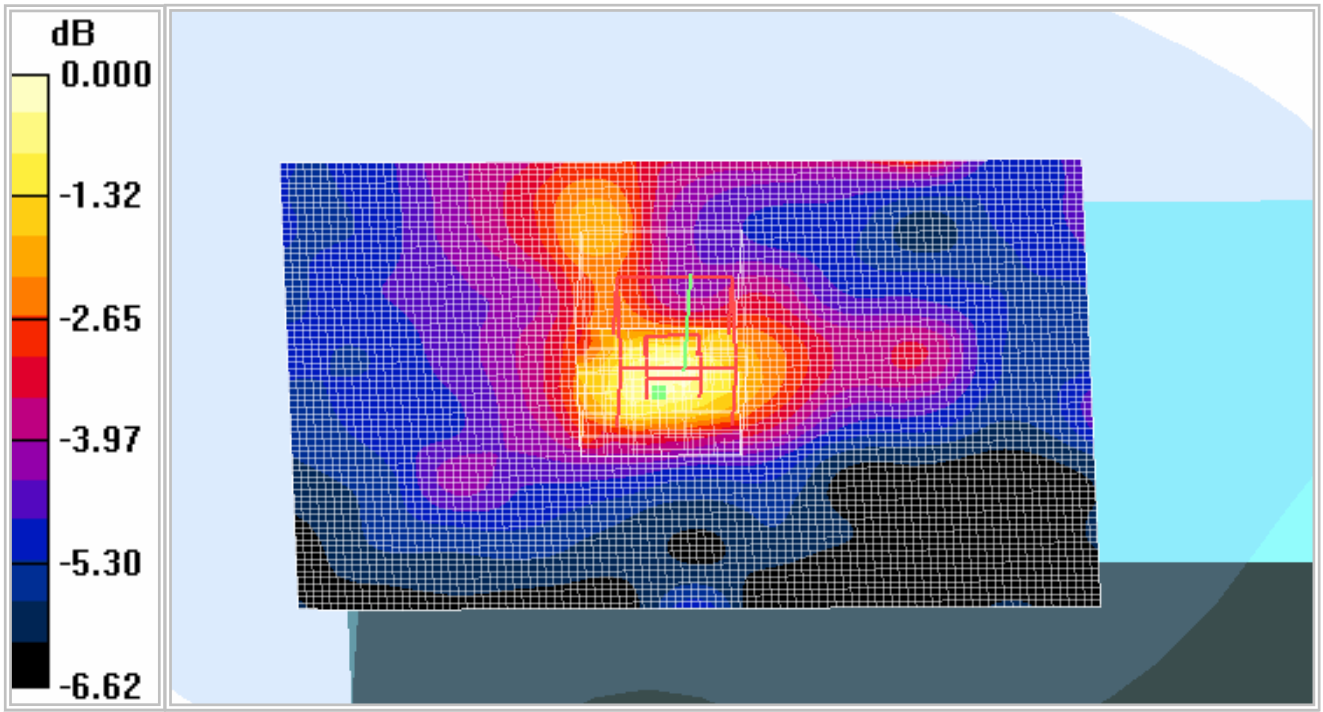
Simultaneous Transmit with the Co-located Bluetooth

Communication System: CW; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.11, 4.11, 4.11); Calibrated: 8/28/2007
- 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

Body Position EUT Front touching to the Flat Phantom / Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.027 mW/g
Body Position EUT Front touching to the Flat Phantom / Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.54 V/m; Power Drift = -0.192 dB
Peak SAR (extrapolated) = 0.079 W/kg
SAR(1 g) = 0.030 mW/g; SAR(10 g) = 0.019 mW/g
Maximum value of SAR (measured) = 0.032 mW/g



0dB = 0.032 mW/g

Plot 5#

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

EUT body position front touching to the flat phantom (2462 MHz - High Channel)

Gray Hill Inc.; Type: PDA with Wi-Fi Model Number: M1YY1023-3; Serial: B1338

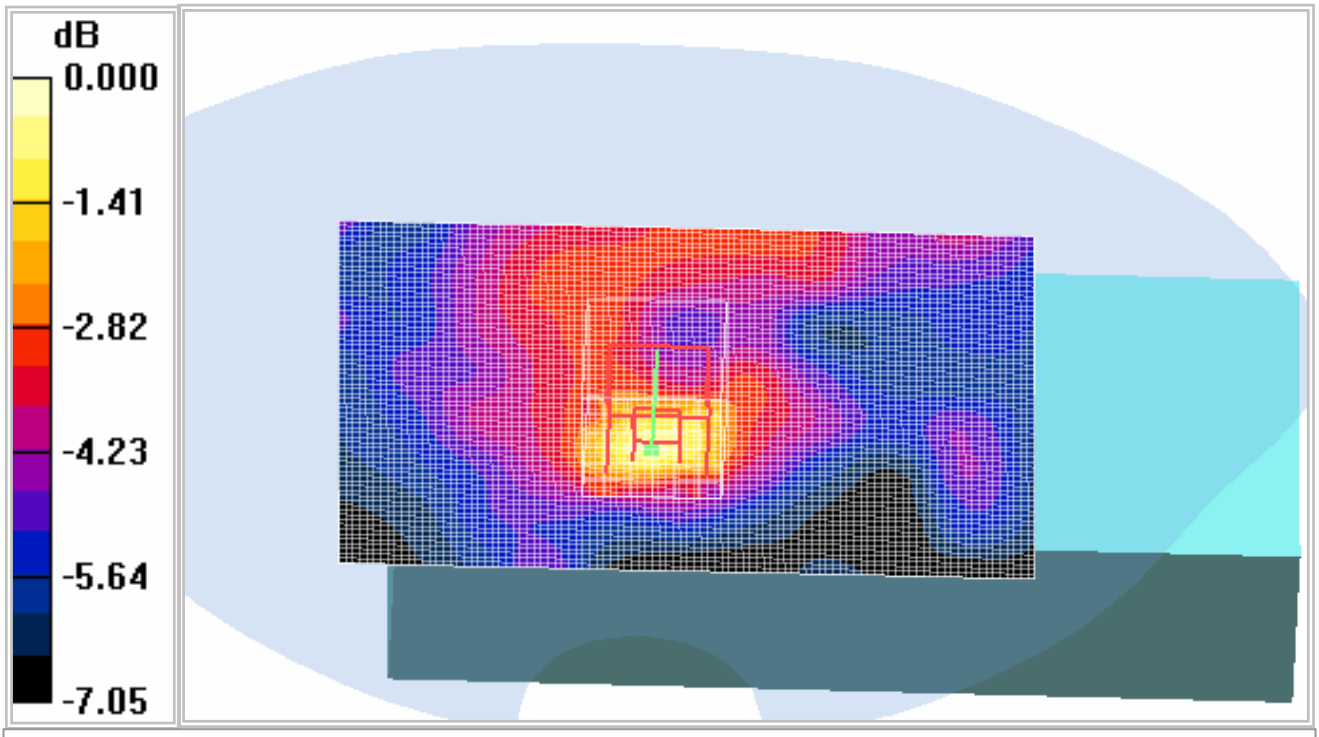
Simultaneous Transmit with the Co-located Bluetooth

Communication System: Grayhill Inc.; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.11, 4.11, 4.11); Calibrated: 8/28/2007
- 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

Body Position EUT Front touching to the Flat Phantom / Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.031 mW/g
Body Position EUT Front touching to the Flat Phantom / Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.09 V/m; Power Drift = -0.523 dB
Peak SAR (extrapolated) = 0.091 W/kg
SAR(1 g) = 0.033 mW/g; SAR(10 g) = 0.020 mW/g
Maximum value of SAR (measured) = 0.037 mW/g



0dB = 0.037 mW/g

Plot 6#

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

EUT body position Side touching to the flat phantom (2412 MHz - Low Channel)

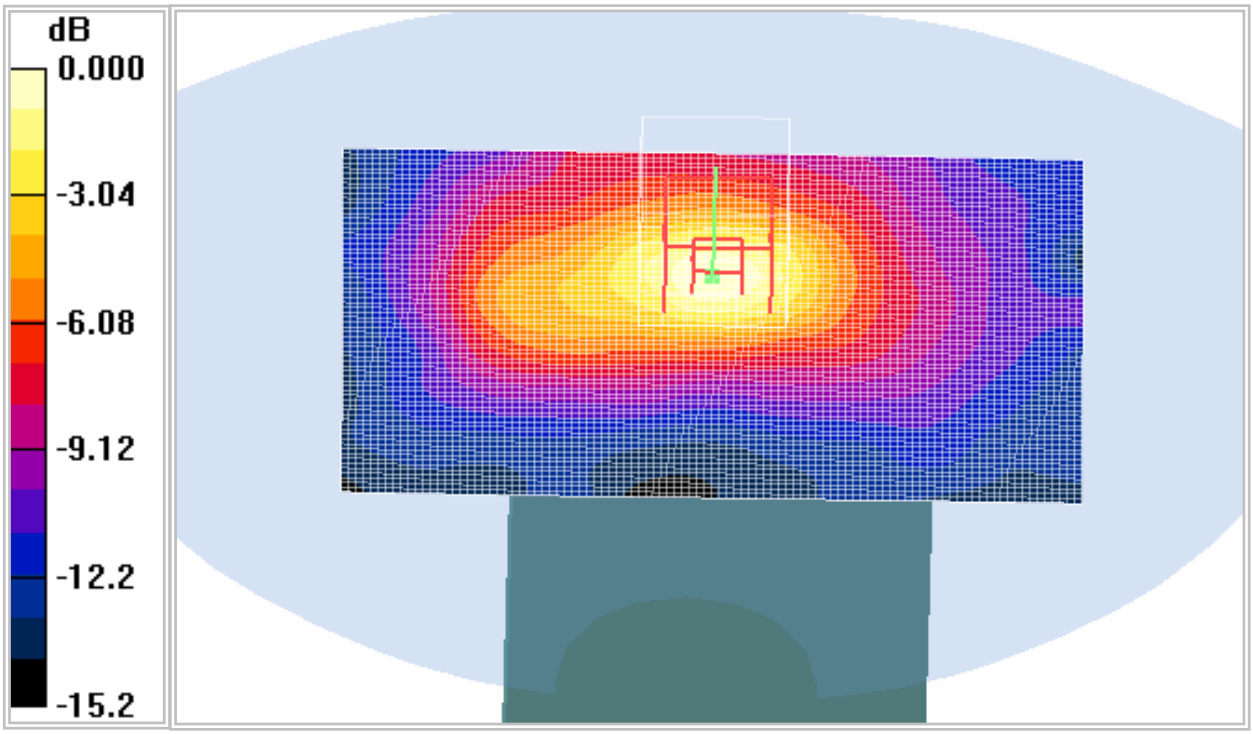
Gray Hill Inc.; Type: PDA with Wi-Fi Model Number: M1YY1023-3; Serial: B1338
Simultaneous Transmit with the Co-located Bluetooth

Communication System: CW; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.11, 4.11, 4.11); Calibrated: 8/28/2007
- 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

Body Position EUT Side touching to the Flat Phantom / Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.059 mW/g
Body Position EUT Side to Flat Phantom / Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.55 V/m; Power Drift = -0.090 dB
Peak SAR (extrapolated) = 0.121 W/kg
SAR(1 g) = 0.101 mW/g; SAR(10 g) = 0.030 mW/g
Maximum value of SAR (measured) = 0.061 mW/g



0dB = 0.061 mW/g

Plot 7#

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

EUT body position Side touching to the flat phantom (2437 MHz - Middle Channel)

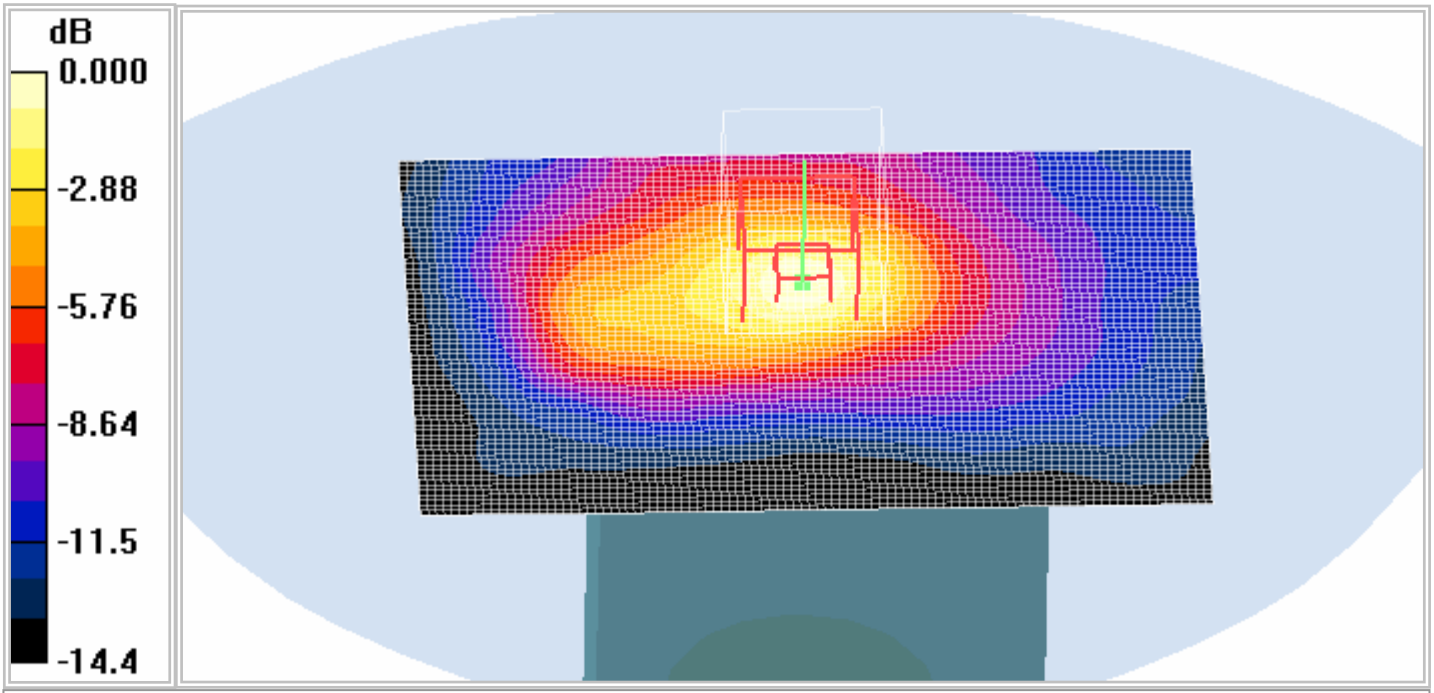
Gray Hill Inc.; Type: PDA with Wi-Fi Model Number: M1YY1023-3; Serial: B1338
Simultaneous Transmit with the Co-located Bluetooth

Communication System: CW; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.11, 4.11, 4.11); Calibrated: 8/28/2007
- 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

Body Position EUT Side touching to the Flat Phantom / Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.089 mW/g
Body Position EUT Side touching to the Flat Phantom / Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.78 V/m; Power Drift = -0.093 dB
Peak SAR (extrapolated) = 0.183 W/kg
SAR(1 g) = 0.086 mW/g; SAR(10 g) = 0.045 mW/g
Maximum value of SAR (measured) = 0.093 mW/g



0dB = 0.093 mW/g

Plot 8#

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

EUT body position Side touching to the flat phantom (2462 MHz - High Channel)

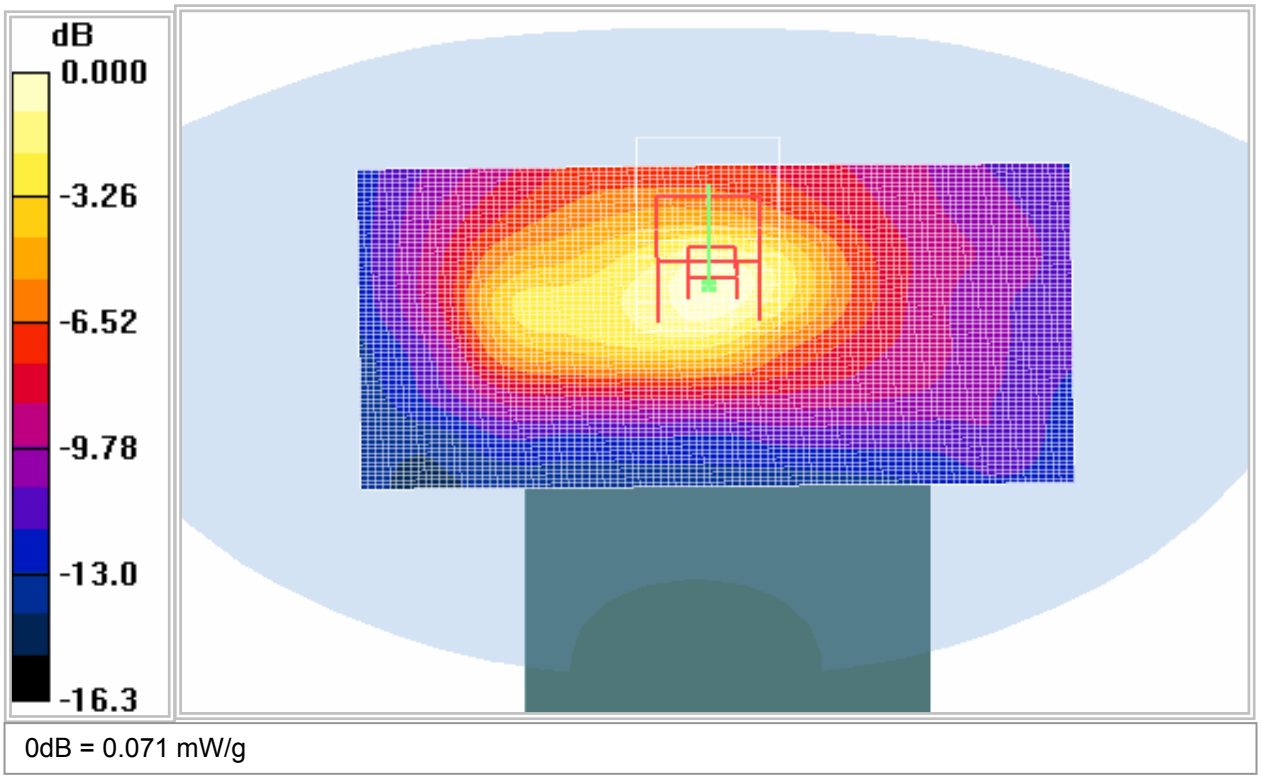
Gray Hill Inc.; Type: PDA with Wi-Fi Model Number: M1YY1023-3; Serial: B1338
Simultaneous Transmit with the Co-located Bluetooth

Communication System: CW; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.11, 4.11, 4.11); Calibrated: 8/28/2007
- 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

Body Position EUT Side touching to the Flat Phantom / Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.070 mW/g
Body Position EUT Side touching to the Flat Phantom / Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.99 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 0.147 W/kg
SAR(1 g) = 0.066 mW/g; SAR(10 g) = 0.036 mW/g
Maximum value of SAR (measured) = 0.071 mW/g



Plot 9#

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	Description	Model No.	Serial No.	Calibration Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26

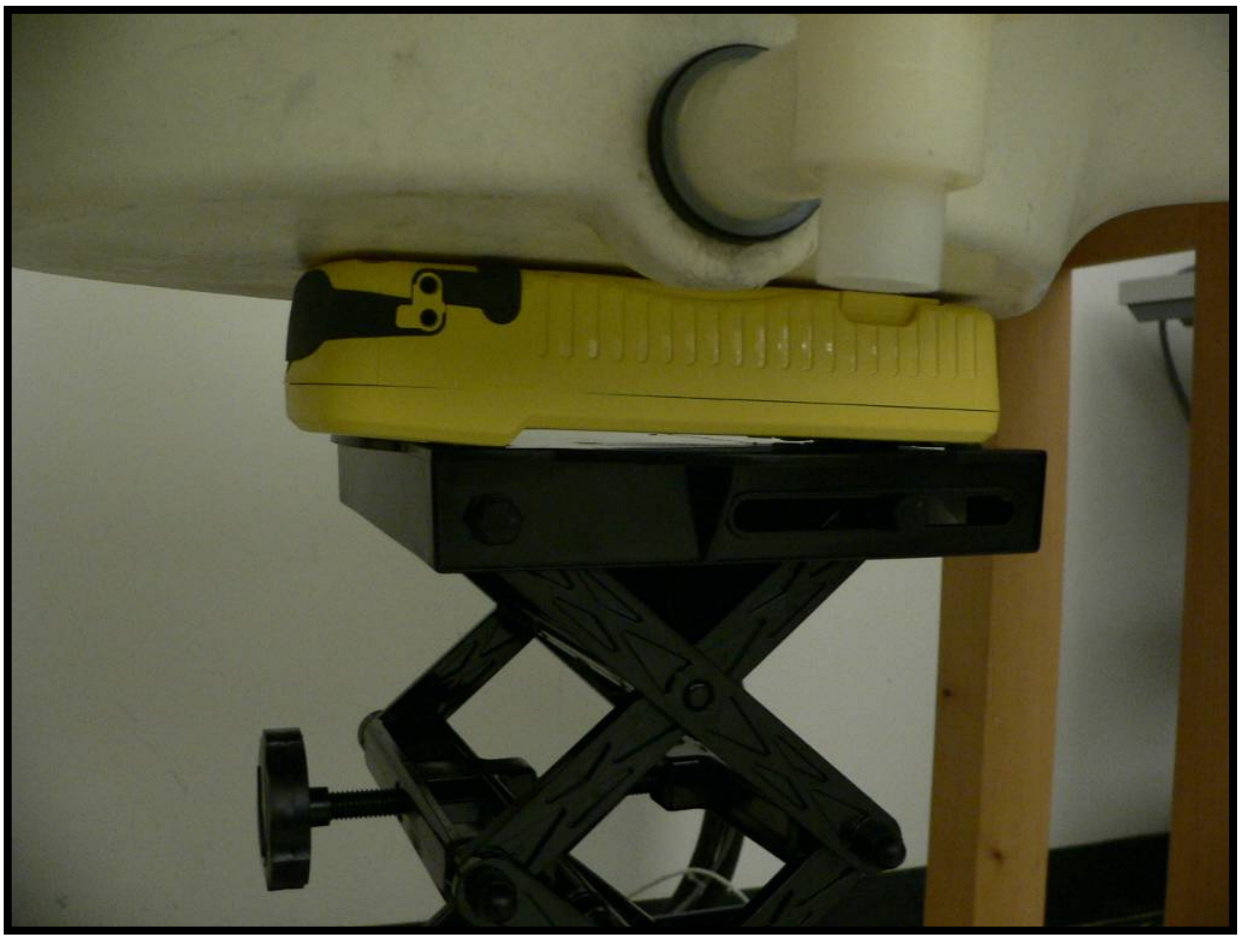
Test Results

802.11b (2.4GHz):

Channel No.	Frequency (MHz)	Measured Output Power	
		(dBm)	(mW)
1	2412	14.67	29.31
6	2437	15.26	33.56
11	2462	13.98	25.00

APPENDIX G – EUT TEST POSITION PHOTOS

EUT Back touching to the flat phantom



EUT Front touching to the flat phantom

EUT Side touching to the flat phantom

APPENDIX H– EUT PHOTO

EUT – Front View

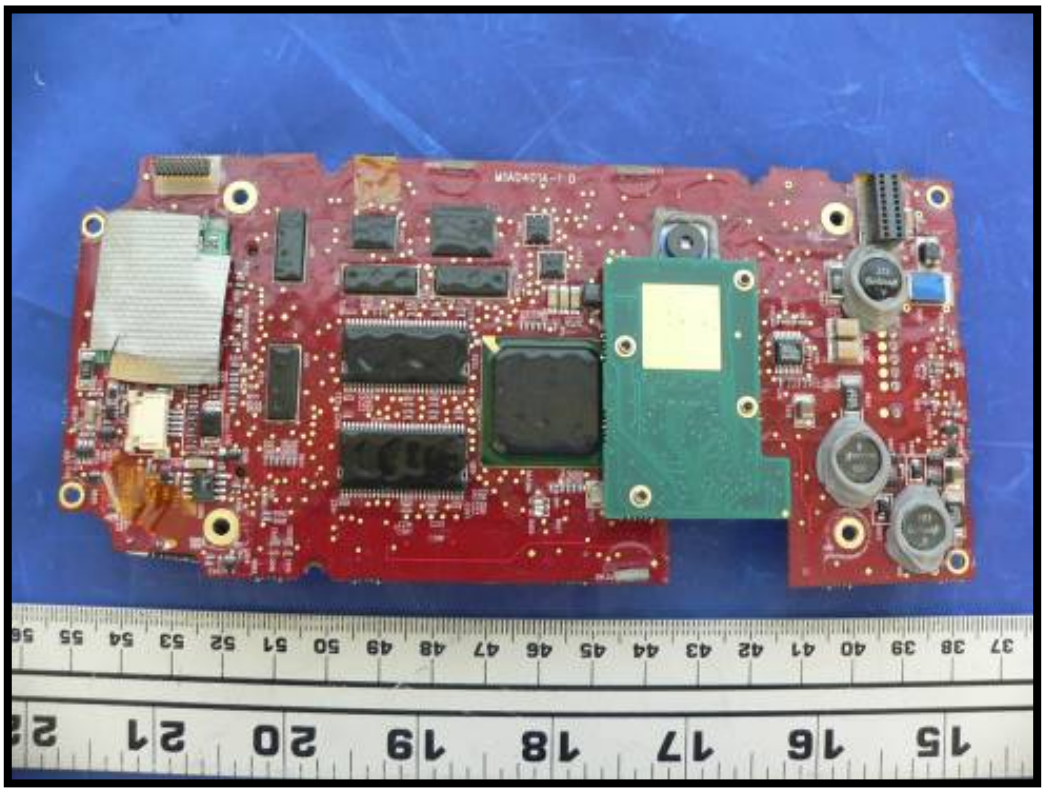
EUT – Bottom Side View

EUT – Right Side View (GPS port with cover)

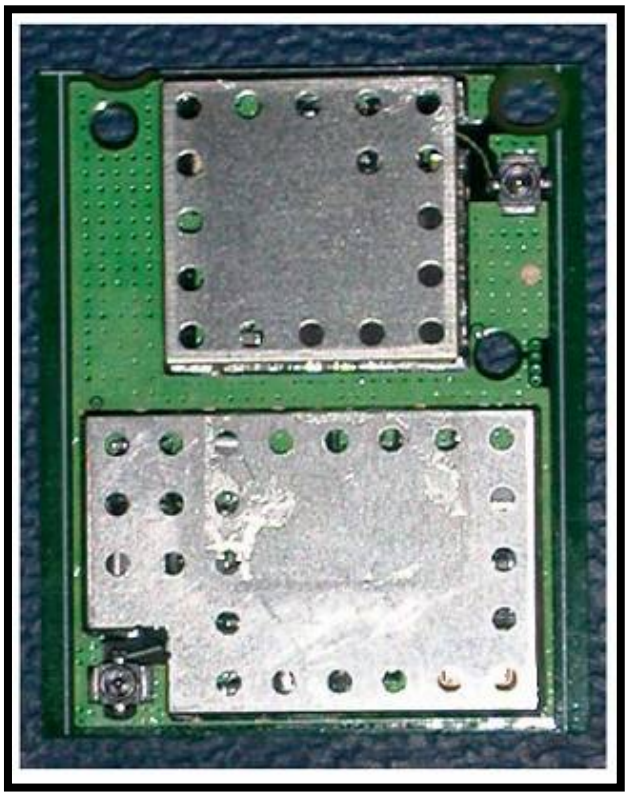
EUT – Read Side View (AC/DC port without cover)

EUT – Cover off 1

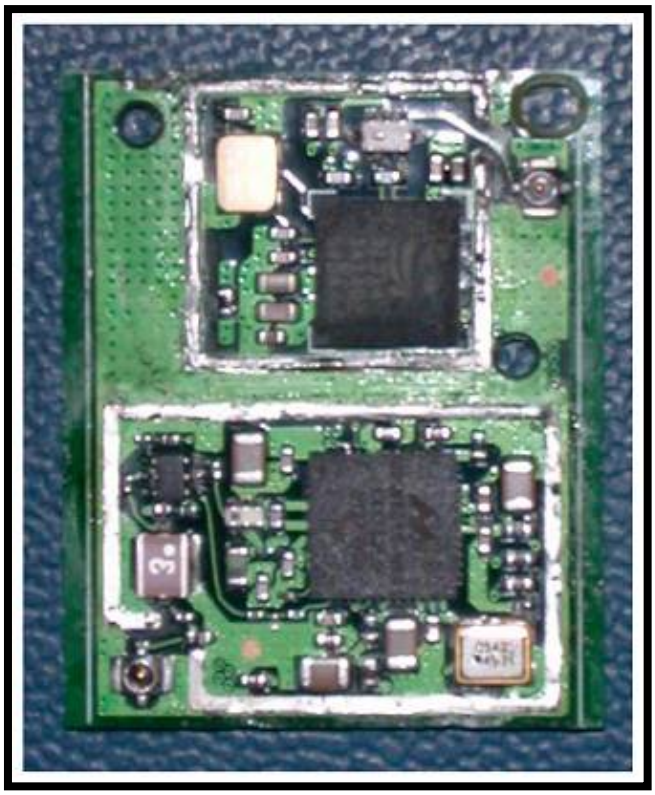
EUT – Main PCBA Component View 1



EUT – Wi-Fi Transmitter Board

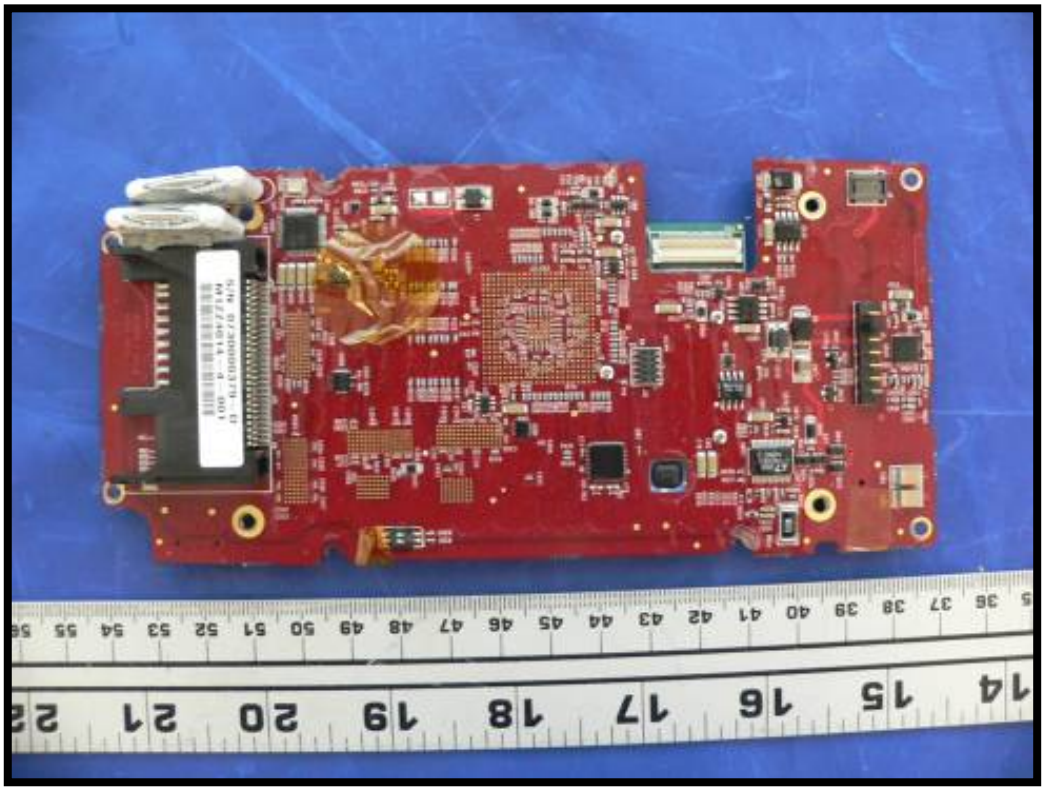


Shields ON

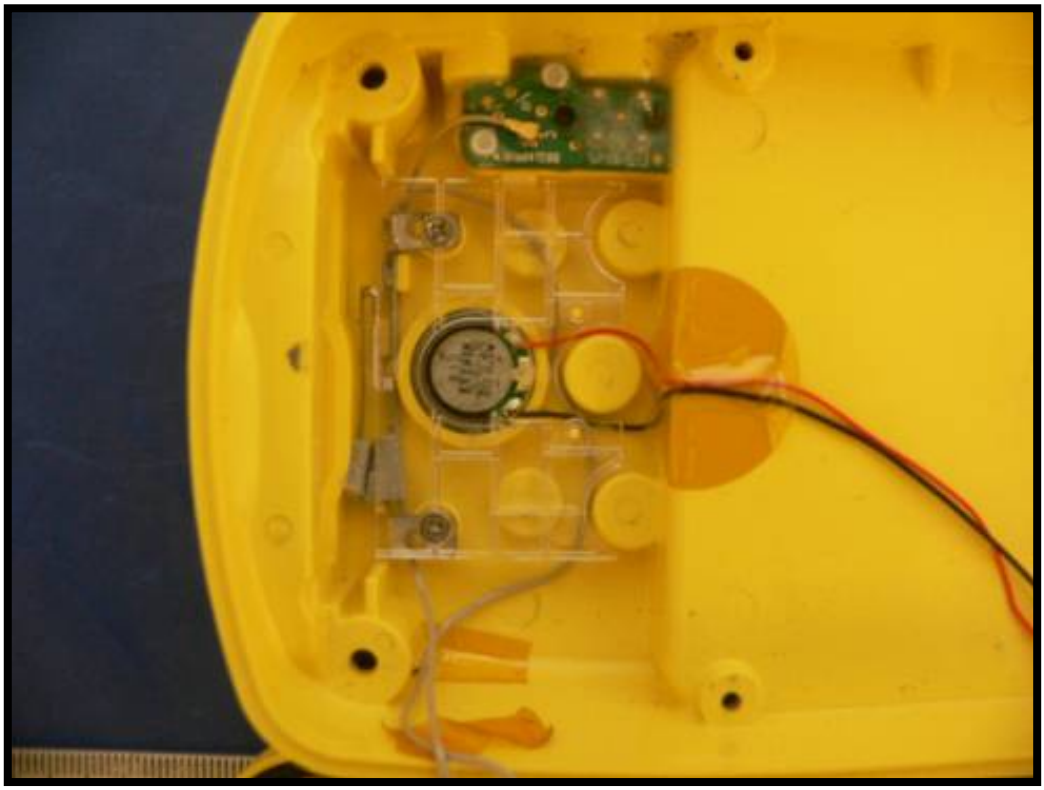


Shields OFF

EUT – Main PCBA Solder View 4



EUT – Antenna View



EUT – Battery view

EUT – AC/DC Adaptor view

APPENDIX I - INFORMATIVE REFERENCES

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