

APPENDIX E - EUT SCANS

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

Low channel, EUT back touching flat phantom with belt clip

DUT Type: MZ220; Sample; Serial: XXMZ06-08-5104

Communication System: 802.11g; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.96$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

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: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

EUT back touching to flat phantom with belt clip/ Area Scan (81x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.041 mW/g

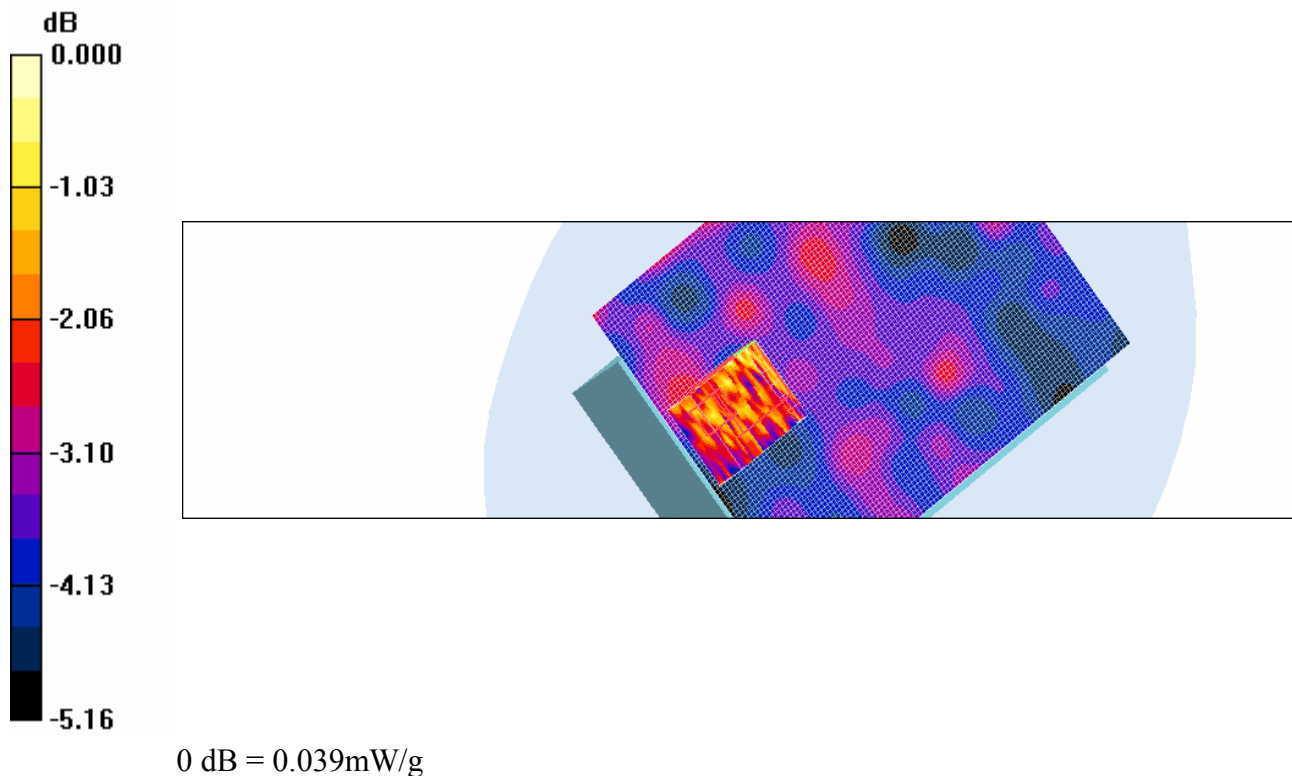
EUT back touching to flat phantom with belt clip/ Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.19 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.044 W/kg

SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.014 mW/g

Maximum value of SAR (measured) = 0.039 mW/g



Plot #1

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)**Low channel, EUT perpendicular to the flat phantom****DUT Type: MZ220; Serial: XXMZ06-08-5104**

Communication System: 802.11g; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.96$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

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: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

EUT perpendicular to flat phantom/Area Scan (81x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.043 mW/g

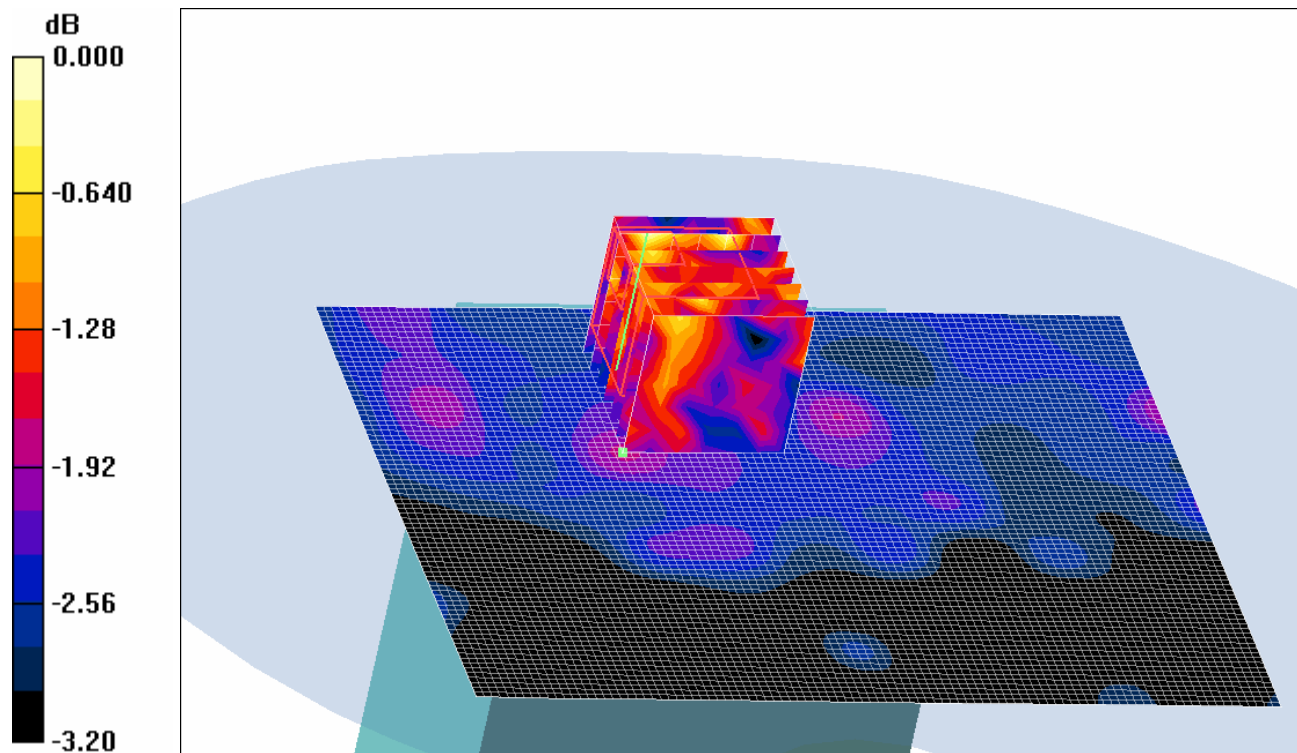
EUT perpendicular to flat phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.71 V/m; Power Drift = -0.092 dB

Peak SAR (extrapolated) = 0.068 W/kg

SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.035 mW/g

Maximum value of SAR (measured) = 0.066 mW/g



0 dB = 0.066mW/g

Plot #2

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)**Middle channel, EUT perpendicular to the flat phantom****DUT Type: MZ220; Serial: XXMZ06-08-5104**

Communication System: 802.11g; Frequency: 2442 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.96$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

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: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

EUT perpendicular to flat phantom/Area Scan (81x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.019 mW/g

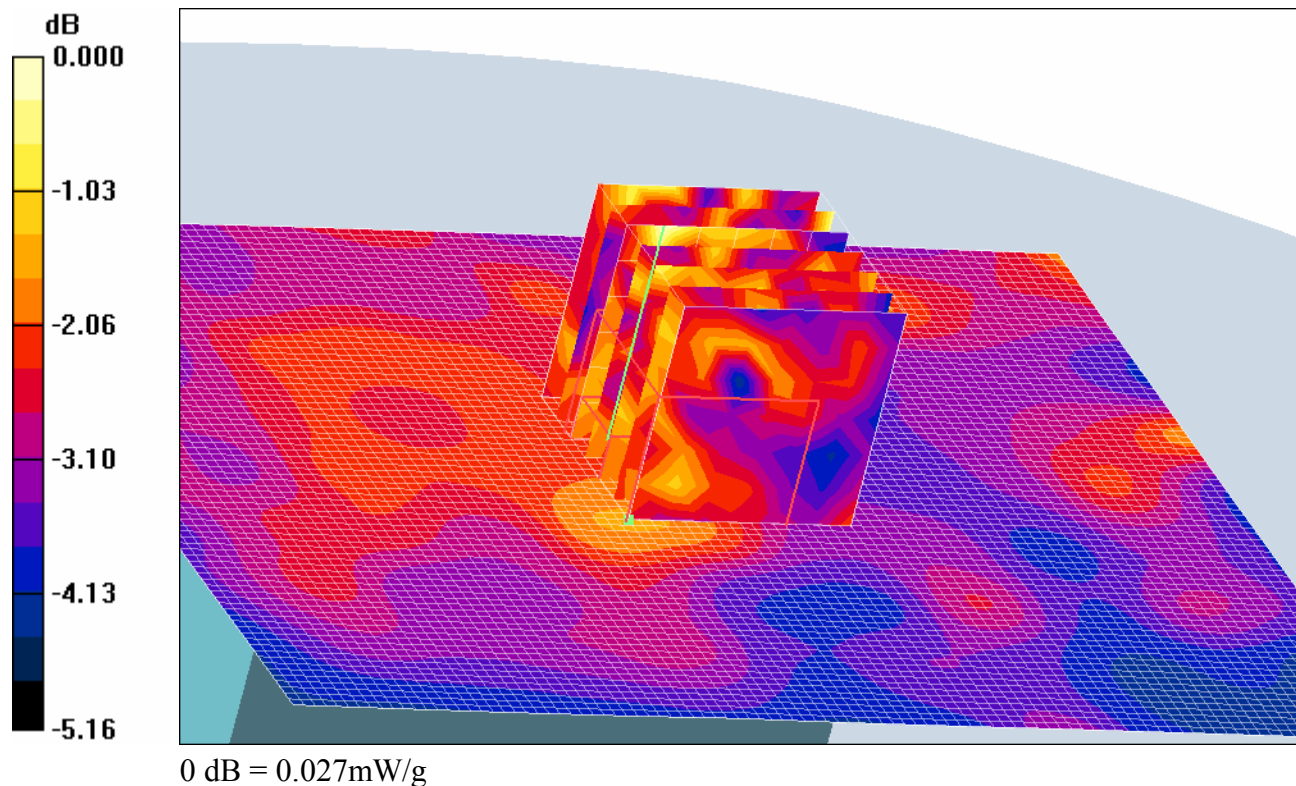
EUT perpendicular to flat phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.19 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.074 W/kg

SAR(1 g) = 0.017 mW/g; SAR(10 g) = 0.011 mW/g

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

**Plot #3**

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)**High channel, EUT perpendicular to the flat phantom****DUT Type: MZ220; Serial: XXMZ06-08-5104**

Communication System: 802.11g; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.96$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

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: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

EUT perpendicular to flat phantom/Area Scan (81x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.060 mW/g

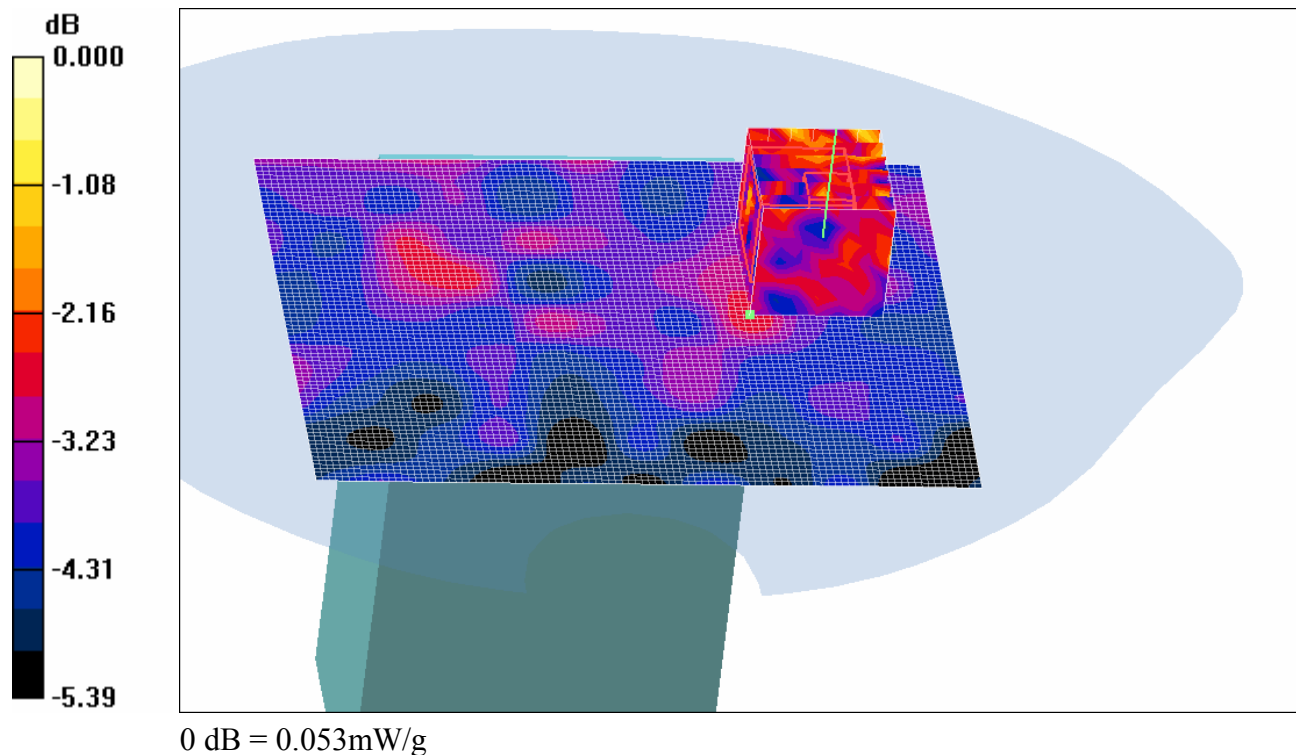
EUT perpendicular to flat phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.92 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.068 W/kg

SAR(1 g) = 0.027 mW/g; SAR(10 g) = 0.020 mW/g

Maximum value of SAR (measured) = 0.053 mW/g

**Plot #4**

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)**Low channel, EUT back touching to the flat phantom with belt clip****DUT Type: MZ220; Sample; Serial: XXMZ06-08-5104**

Communication System: 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.96$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

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: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

EUT back touching to the flat phantom/Area Scan (81x101x1): Measurement grid: dx=15mm, dy=15mm

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

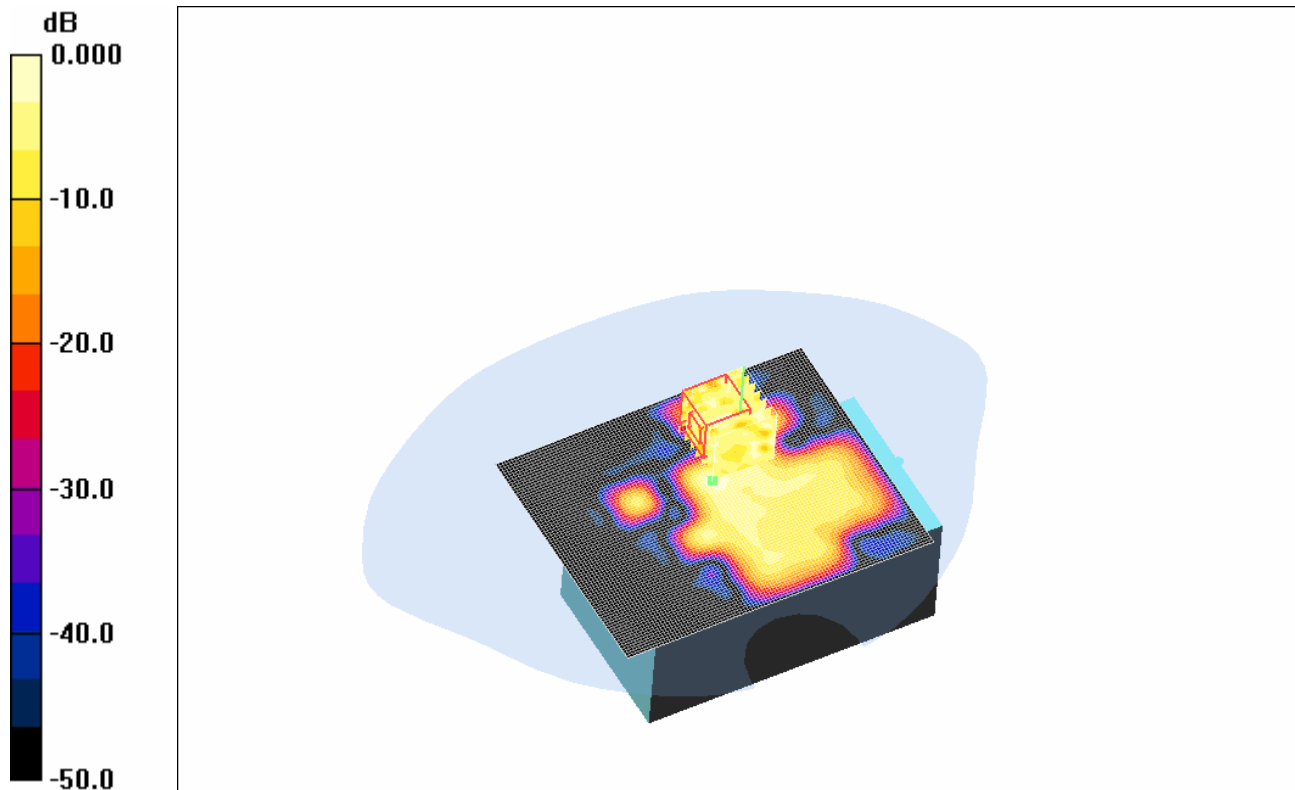
EUT back touching to the flat phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.42 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.033 W/kg

SAR(1 g) = 0.027 mW/g; SAR(10 g) = 0.011 mW/g

Maximum value of SAR (measured) = 0.029 mW/g



0 dB = 0.029 mW/g

Plot#5

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)**Low channel, EUT perpendicular to the flat phantom****DUT Type: MZ220; Sample; Serial: XXMZ06-08-5104**

Communication System: 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.96$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

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: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

EUT perpendicular to flat phantom/Area Scan (81x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.037 mW/g

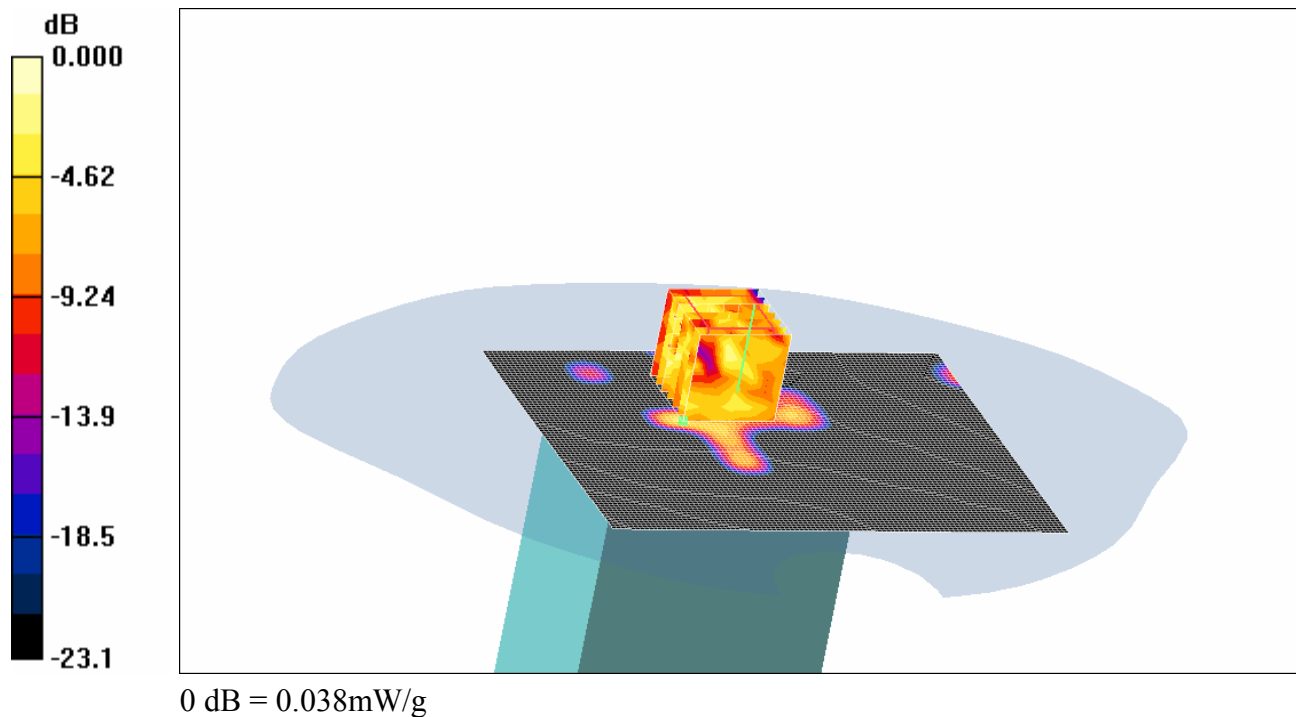
EUT perpendicular to flat phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.66 V/m; Power Drift = -0.043 dB

Peak SAR (extrapolated) = 0.031 W/kg

SAR(1 g) = 0.036 mW/g; SAR(10 g) = 0.018 mW/g

Maximum value of SAR (measured) = 0.038 mW/g

**Plot#6**

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)**Middle channel, EUT perpendicular to the flat phantom****DUT Type: MZ220; Sample; Serial: XXMZ06-08-5104**

Communication System: 802.11b; Frequency: 2442 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 2442 \text{ MHz}$; $\sigma = 1.96 \text{ mho/m}$; $\epsilon_r = 52.8$; $\rho = 1000 \text{ kg/m}^3$

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: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

EUT perpendicular to flat phantom/Area Scan (81x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.028 mW/g

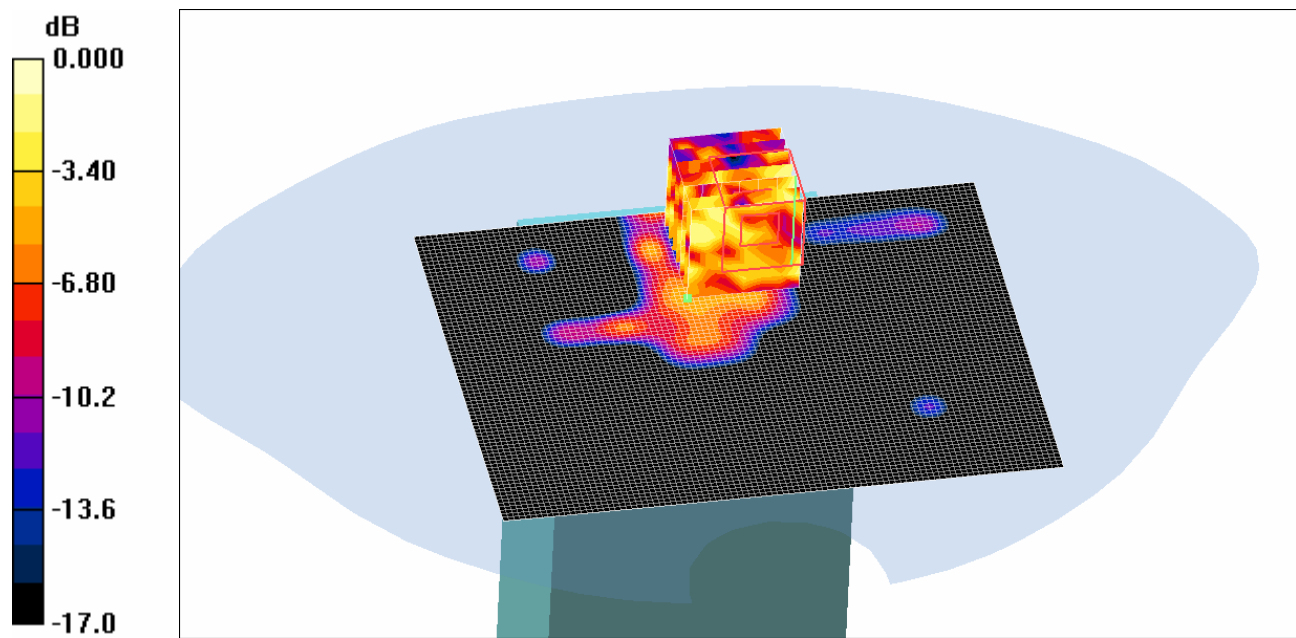
EUT perpendicular to flat phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 1.87 V/m; Power Drift = -0.047 dB

Peak SAR (extrapolated) = 0.029 W/kg

SAR(1 g) = 0.032 mW/g; SAR(10 g) = 0.015 mW/g

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



0 dB = 0.025mW/g

Plot#7

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)**High channel, EUT perpendicular to the flat phantom****DUT Type: MZ220; Sample; Serial: XXMZ06-08-5104**

Communication System: 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.96$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

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: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

EUT perpendicular to flat phantom/Area Scan (81x101x1): Measurement grid: dx=15mm, dy=15mm

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

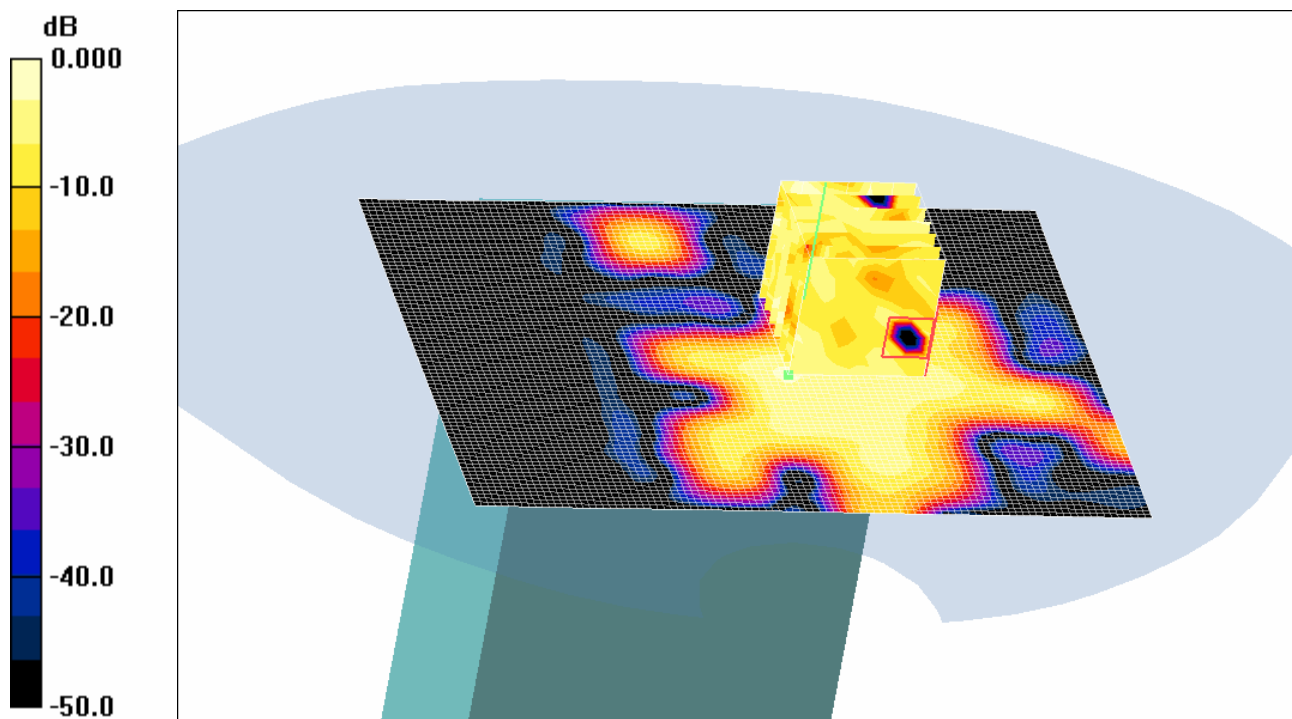
EUT perpendicular to flat phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.45 V/m; Power Drift = 0.015 dB

Peak SAR (extrapolated) = 0.026 W/kg

SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.014 mW/g

Maximum value of SAR (measured) = 0.026 mW/g



0 dB = 0.026mW/g

Plot#8

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

Agilent 8565EC Spectrum Analyzer, Calibration Due Date: 2007-01-11

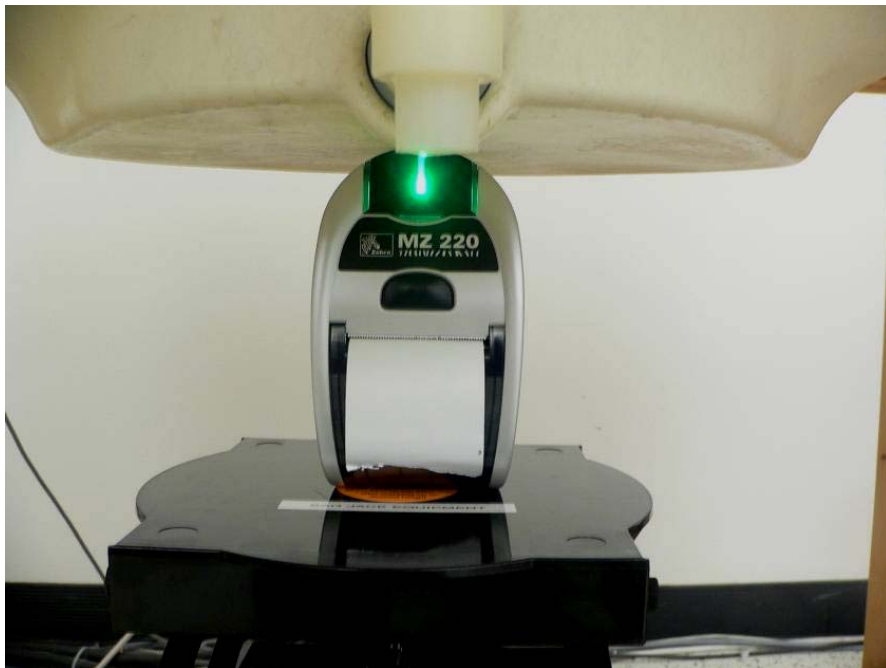
Test Results

802.11g conducted output power		
Frequency (MHz)	Output Power in dBm	Output Power in mw
2412	15.0	31.6
2442	15.0	31.6
2472	14.9	30.9

802.11b conducted output power		
Frequency (MHz)	Output Power in dBm	Output Power in mw
2412	18.8	75.9
2442	18.4	69.2
2472	18.6	72.4

APPENDIX H – EUT TEST POSITION PHOTOS

Model MZ220 perpendicular to the flat phantom



Model MZ220 back touching to the flat phantom with belt clip



APPENDIX I – EUT & ACCESSORIES PHOTOS

EUT – Front View



EUT – Rear View



APPENDIX J - INFORMATIVE REFERENCES

- [1] Federal Communications Commission, "Report and order: Guidelines for evaluating the environmental effects of radiofrequency radiation", Tech. Rep. FCC 96-326, FCC, Washington, D.C. 20554, 1996.
- [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, Office of Engineering & Technology, Washington, DC, 1997.
- [3] Thomas Schmid, Oliver Egger, and Niels Kuster, "Automated E-field scanning system for dosimetric assessments", IEEE Transactions on Microwave Theory and Techniques, vol. 44, pp. 105-113, Jan. 1996.
- [4] Niels Kuster, Ralph Kastle, and Thomas Schmid, "Dosimetric evaluation of mobile communications equipment with known precision", IEEE Transactions on Communications, vol. E80-B, no. 5, pp. 645-652, May 1997.
- [5] CENELEC, "Considerations for evaluating of human exposure to electromagnetic fields (EMFs) from mobile telecommunication equipment (MTE) in the frequency range 30MHz - 6GHz", Tech. Rep., CENELEC, European Committee for Electrotechnical Standardization, Brussels, 1997.
- [6] ANSI, ANSI/IEEE C95.1-1992: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz, The Institute of Electrical and Electronics Engineers, Inc., New York, NY 10017, 1992.
- [7] Katja Pokovic, Thomas Schmid, and Niels Kuster, "Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies", in ICECOM '97, Dubrovnik, October 15-17, 1997, pp. 120-24.
- [8] Katja Pokovic, Thomas Schmid, and Niels Kuster, "E-field probe with improved isotropy in brain simulating liquids", in Proceedings of the ELMAR, Zadar, Croatia, 23-25 June, 1996, pp. 172-175.
- [9] Volker Hombach, Klaus Meier, Michael Burkhardt, Eberhard Kuhn, and Niels Kuster, "The dependence of EM energy absorption upon human head modeling at 900 MHz", IEEE Transactions on Microwave Theory and Techniques, vol. 44, no. 10, pp. 1865-1873, Oct. 1996.
- [10] Klaus Meier, Ralf Kastle, Volker Hombach, Roger Tay, and Niels Kuster, "The dependence of EM energy absorption upon human head modeling at 1800 MHz", IEEE Transactions on Microwave Theory and Techniques, Oct. 1997, in press.
- [11] W. Gander, Computermathematik, Birkhaeuser, Basel, 1992.
- [12] W. H. Press, S. A. Teukolsky, W. T. Vetterling, and B. P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second Edition, Cambridge University Press, 1992. Dosimetric Evaluation of Sample device, month 1998 9
- [13] NIS81 NAMAS, "The treatment of uncertainty in EMC measurement", Tech. Rep., NAMAS Executive, National Physical Laboratory, Teddington, Middlesex, England, 1994.
- [14] Barry N. Taylor and Christ E. Kuyatt, "Guidelines for evaluating and expressing the uncertainty of NIST measurement results", Tech. Rep., National Institute of Standards and Technology, 1994. Dosimetric Evaluation of Sample device, month 1998 10.