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EMC Reference: M040214

Subject: Response to FCC Queries

2. The antenna listed on Page 7 of the EMC report does not match the Part# in appendix M "Antenna Information". Please clarify.

[Corrected EMC Test Report attached.](#)

4. In Appendix A "Measurement Instrumentation" some of the equipment seems to be out of calibration. Have they been used during testing. Please clarify.

All equipment was used before the applicable due calibration dates. For example, testing using the EMI receiver HP8574B (due for cal 12th Feb 2004) was completed with this instrument before the 12th February.

Any other similar tests were then performed using the second receiver listed in Appendix A (due for cal July 2004).

This process was applicable for all instrumentation used. Equipment was only used provided that it was used while it was still calibrated.

Q6. *The conducted power readings listed in the EMC report and SAR report are significantly different from each other. Also the ratings listed on Page 4 of the SAR report is around 6dB higher than what's been measured (Section 2.3 - Page 5). Has the device not been configured for maximum power during SAR test? This power difference is a major concern. Please clarify.*

As required by EMC Test Procedures, A Peak Power measurement is required. A Spectrum Analyser was used to measure the Peak Power level at the same antenna port.

As required by SAR Test Procedures, an average power measurement is required. A power meter was used to measure the average power level at the antenna port.

The average power at the conducted port has since been verified with two power meters and is repeatable to within 5% of the original values measured. The peak power levels have also been verified using a spectrum analyser and the results are within 5%. The duty cycle of the WLAN in DSSS and OFDM mode was measured and found to be 1:1.075 for the lowest data rates in each mode. This change in duty cycle has minimal effect on the SAR values. See re-evaluated plot number 3 (Lap Arm Held Position – CH#11 – Ant Main).

To ensure that the power levels satisfy the FCC requirements we will list the newly measured peak power levels in the SAR report. In future submissions we will use a peak power meter to ensure that the conducted power results are measured using the same method.

See updated report.

- Q7. *Please supply a description/data sheet of probe measurement errors and definitions. Probe calibration sheet does not address any probe measurement errors.*

See attached file.

- Q9. *Plot 5 of the SAR report shows some hot spots in Arm Held Position with AUX antenna during pre-scan. When this plot is compared to Plot 1, it actually seems to be worse. Please justify the reason why this configuration has not been investigated during final SAR measurements.*

See plots 1 and 2.

Test Date: 17th February 2004File Name: [Arm Held DSSS 2.45 GHz Mace 2 Calexico 11bg Antenna AUX Prescan 17-02-04.da4](#)**DUT: Fujitsu Tablet MACE/MACE2 with Calexico 11bg Module; Type: WM3B2200BG; Serial: 00561E463ADC55373203**

* Communication System: DSSS 2450 MHz; Frequency: 2437 MHz; Duty Cycle: 1:1

* Medium: Body 2450 MHz; Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(4.5, 4.5, 4.5)

- Phantom: Flat Phantom 10.1; Serial: P 10.1; Phantom section: Flat 2.2 Section

Channel 06 Test/Area Scan (131x161x1): Measurement grid: dx=20mm, dy=20mm

Reference Value = 7.04 V/m

Power Drift = 0.0 dB

Maximum value of SAR = 0.244 mW/g

Channel 06 Test/Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

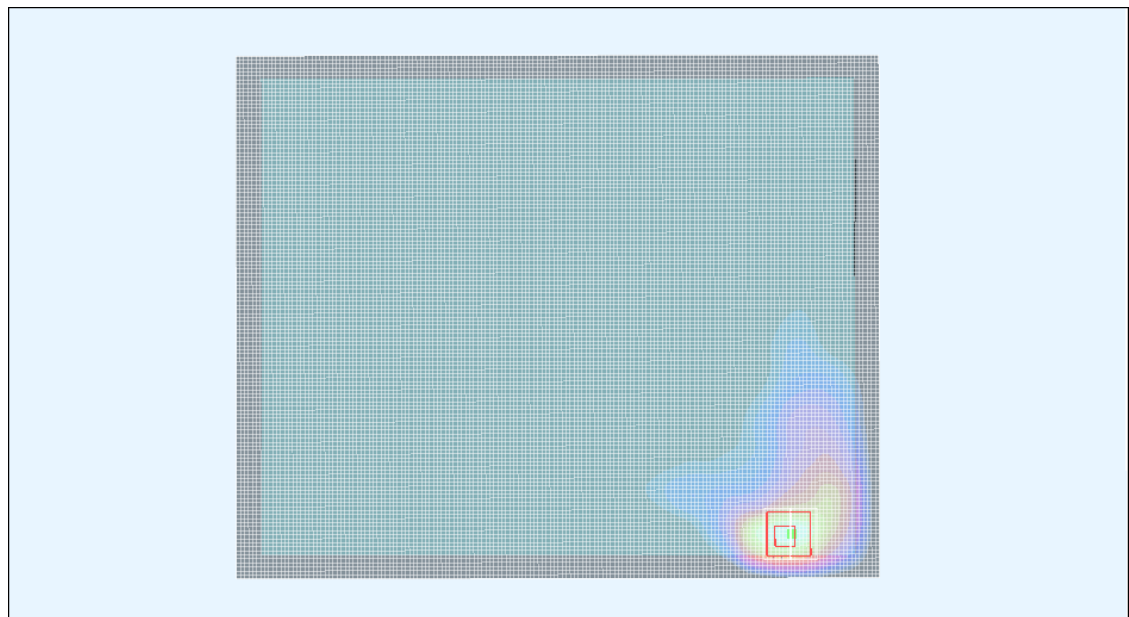
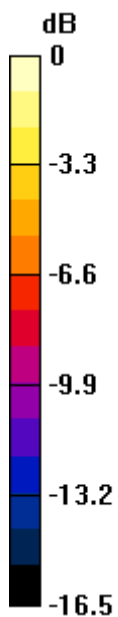
Peak SAR (extrapolated) = 0.443 W/kg

SAR(1 g) = 0.210 mW/g; SAR(10 g) = 0.093 mW/g

Reference Value = 7.04 V/m

Power Drift = 0.0 dB

Maximum value of SAR = 0.254 mW/g



0 dB = 0.254mW/g

SAR MEASUREMENT PLOT 1

Ambient Temperature
Liquid Temperature
Humidity

21.7 Degrees Celsius
20.1 Degrees Celsius
61 %

Test Date: 17 February 2004File Name: [Tablet DSSS 2.45 GHz Mace 2 Calexico 11bg Antenna MAIN Prescan 17-02-04.da4](#)**DUT: Fujitsu Tablet MACE/MACE2 with Calexico 11bg Module; Type: WM3B2200BG; Serial: 00561E463ADC55373203**

* Communication System: DSSS 2450 MHz; Frequency: 2437 MHz; Duty Cycle: 1:1

* Medium: Body 2450 MHz; ($\sigma = 1.96768$ mho/m, $\epsilon_r = 52.9592$, $\rho = 1000$ kg/m³)

- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(4.5, 4.5, 4.5)

- Phantom: Flat Phantom 10.1; Serial: P 10.1; Phantom section: Flat 2.2 Section

Channel 06 Test/Area Scan (131x161x1): Measurement grid: dx=20mm, dy=20mm

Reference Value = 1.26 V/m

Power Drift = -5 dB

Maximum value of SAR = 0.00402 mW/g

Channel 06 Test/Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

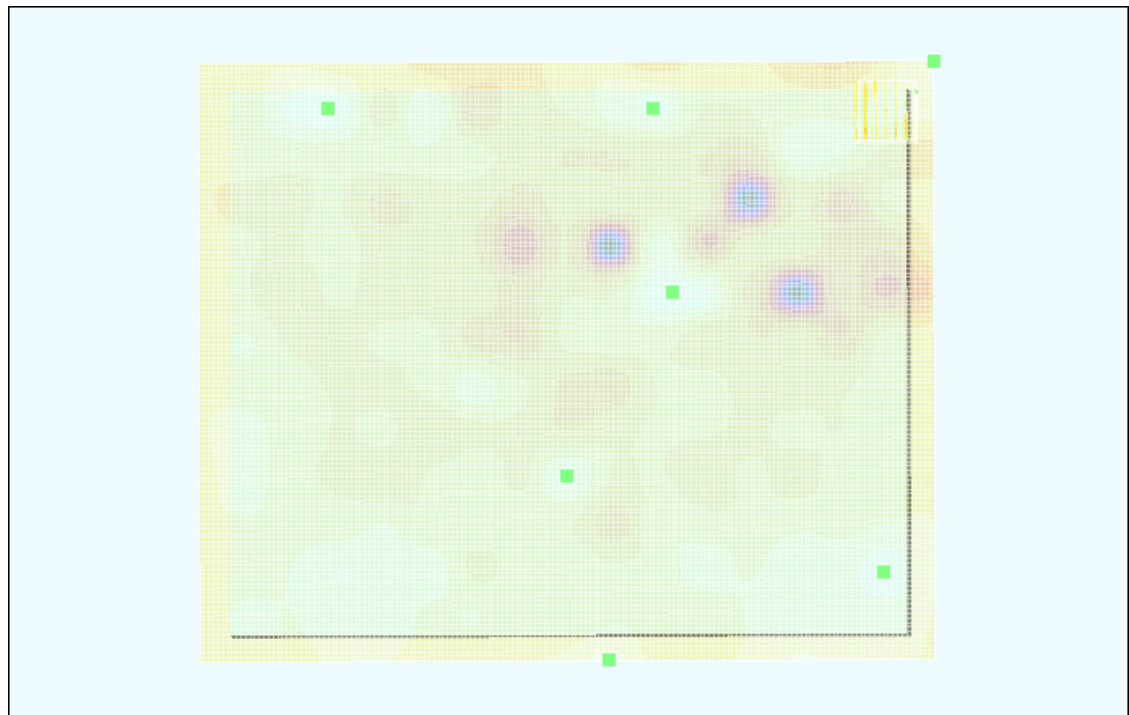
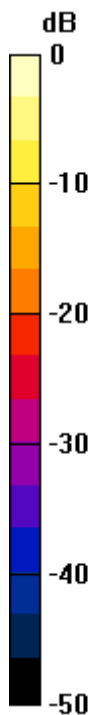
Peak SAR (extrapolated) = 0.026 W/kg

SAR(1 g) = 0.00133 mW/g; SAR(10 g) = 0.000967 mW/g

Reference Value = 1.26 V/m

Power Drift = -5 dB

Maximum value of SAR = 0.0046 mW/g



0 dB = 0.0046mW/g

SAR MEASUREMENT PLOT 2

Ambient Temperature
Liquid Temperature
Humidity

21.7 Degrees Celsius
20.1 Degrees Celsius
61 %

Test Date: 17th February 2004File Name: [Arm Held DSSS 2.45 GHz Mace 2 Calexico 11bg Antenna MAIN 17-02-04 #2.da4](#)**DUT: Fujitsu Tablet MACE/MACE2 with Calexico 11bg Module; Type: WM3B2200BG; Serial: 00561E463ADC55373203**

* Communication System: DSSS 2450 MHz; Frequency: 2462 MHz; Duty Cycle: 1:1.075

* Medium: Body 2450 MHz; Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.99$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³

- Electronics: DAE3 Sn359; Probe: ET3DV6 - SN1380; ConvF(4.5, 4.5, 4.5)

- Phantom: Flat Phantom 10.1; Serial: P 10.1; Phantom section: Flat 2.2 Section

Channel 11 Test/Area Scan (61x81x1): Measurement grid: dx=20mm, dy=20mm

Reference Value = 12.3 V/m

Power Drift = 0.5 dB

Maximum value of SAR = 0.261 mW/g

Channel 11 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

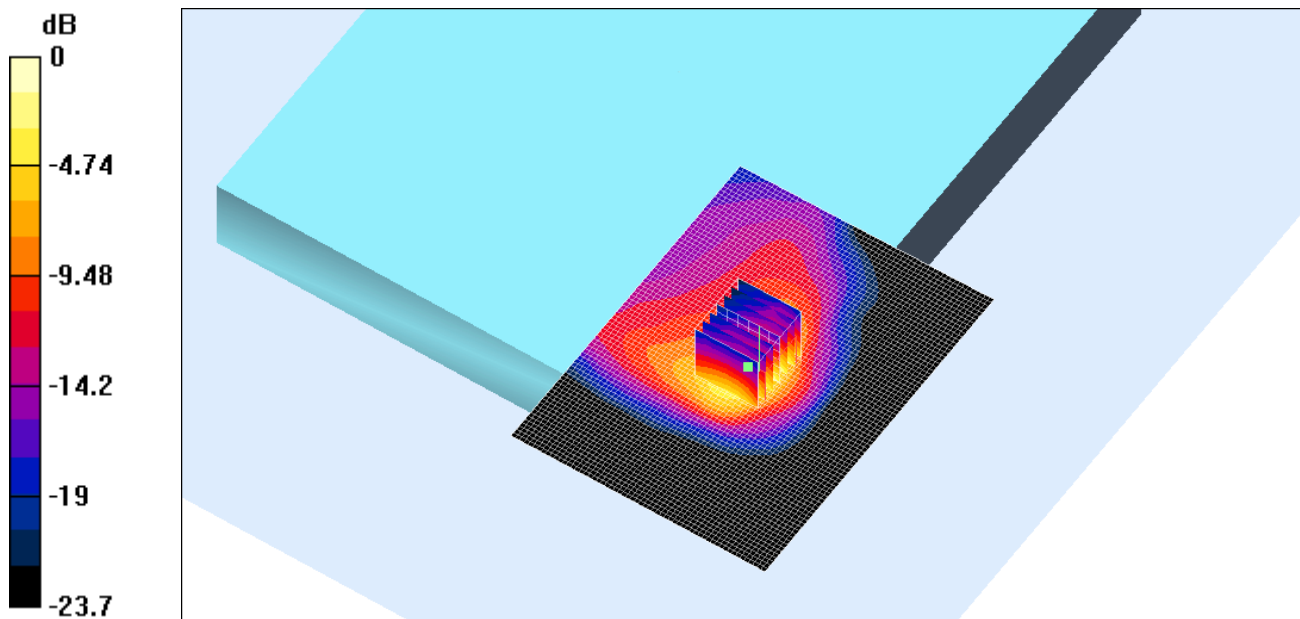
Peak SAR (extrapolated) = 0.671 W/kg

SAR(1 g) = 0.260 mW/g; SAR(10 g) = 0.109 mW/g

Reference Value = 12.3 V/m

Power Drift = 0.5 dB

Maximum value of SAR = 0.294 mW/g



0 dB = 0.294mW/g

SAR MEASUREMENT PLOT 3

Ambient Temperature
Liquid Temperature
Humidity

21.7 Degrees Celsius
20.1 Degrees Celsius
61 %