

Electromagnetic Emissions Test Report and Application for Grant of Equipment Authorization pursuant to

Industry Canada RSS-Gen Issue 1 / RSS 210 Issue 6 FCC Part 15 Subpart C

on the Meshdynamics **Transmitter** Model: MD4000

UPN: 6935A-MD2 FCC ID: UZU-MD2

GRANTEE: Meshdynamics

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TEST SITE: Elliott Laboratories, Inc.

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REPORT DATE: January 9, 2007

FINAL TEST DATE: September 13, September 25, October 18,

October 23, October 25 and October 27, 2006

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Test Report Report Date: January 9, 2007

REVISION HISTORY

| Revision # | Date | Comments | Modified By |
|------------|----------------|---|----------------|
| 1 | March 26, 2007 | Initial Release | David Guidotti |
| 2 | May 2, 2007 | Changing Report to be a LMA so adding new FCC ID | Juan Martinez |
| 5 | June 21, 2007 | Correct error on table of contents | Juan Martinez |
| | | | |

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SCOPE

An electromagnetic emissions test has been performed on the Meshdynamics model MD4000 pursuant to the following rules:

Industry Canada RSS-Gen Issue 1 RSS 210 Issue 6 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment" FCC Part 15 Subpart C

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in Elliott Laboratories test procedures:

ANSI C63.4:2003 RSS-212 Issue 1 Test Facilities and Test Methods for Radio Equipment

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the Meshdynamics model MD4000 and therefore apply only to the tested sample. The sample was selected and prepared by Sriram Dayanandan of Meshdynamics

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OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, all unlicensed transmitters and transceivers require certification. Receive-only devices operating between 30 MHz and 960 MHz are subject to either certification or a manufacturer's declaration of conformity, with all other receive-only devices exempt from the technical requirements.

Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification. Class II devices are required to meet the appropriate technical requirements but are exempt from certification requirements.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

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STATEMENT OF COMPLIANCE

The tested sample of Meshdynamics model MD4000 complied with the requirements of the following regulations:

Industry Canada RSS-Gen Issue 1 RSS 210 Issue 6 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment" FCC Part 15 Subpart C

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

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TEST RESULTS SUMMARY

DIGITAL TRANSMISSION SYSTEMS (2400 - 2483.5MHz)

| FCC Rule Part | RSS Rule Part | Description | Measured Value / Comments | Limit / Requirement | Result |
|-----------------------|---------------------|--|---|--|----------|
| 15.247(a) | RSS 210 A8.2 | Digital Modulation | Systems uses OFDM / DSSS techniques | - | Complies |
| 15.247 (a) (2) | RSS 210 A8.2 (1) | 6dB Bandwidth | 802.11g = 16.6 MHz 802.11b = 11.1 MHz | >500kHz | Complies |
| | RSP100 | 99% Bandwidth | 802.11g = 17.5 MHz 802.11b = 16.1 MHz | Information only | Complies |
| 15.247 (b) (3) | RSS 210 A8.2 (4) | Output Power (multipoint systems) | 25 dBm (.326 Watts) EIRP = 2.06 W Note 1 | 1Watt, EIRP limited to 4 Watts. | Complies |
| 15.247(d) | RSS 210 A8.2 (2) | Power Spectral Density | 802.11g = 3 dBm / kHz 802.11b = -5.5 dBm / kHz | 8dBm/3kHz | Complies |
| 15.247(c) | RSS 210 A8.5 | Antenna Port Spurious Emissions 30MHz – 25 GHz | Refer to plots | 802.11b < -20dBc 802.11g <-30dBc Note 2 | Complies |
| 15.247(c) / 15.209 | RSS 210 A8.5 | Radiated Spurious Emissions 30MHz – 25 GHz | 73.5dBµV/m (4731.5µV/m) @ 7309.9MHz (- 0.5dB) | 15.207 in restricted bands, all others 802.11b < -20dBc 802.11g <-30dBc Note 2 | Complies |

Note 1: EIRP calculated using antenna gain of 8 dBi for the highest EIRP multi-point system.

Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst) / RMS averaging over a time interval, as permitted under RSS 210 section A8.4(4).

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GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

| FCC Rule Part | RSS Rule part | Description | Measured Value / Comments | Limit / Requirement | Result (margin) |
|------------------------------|-----------------------------|-----------------------------|--|---|---------------------|
| 15.203 | - | RF Connector | N-Type device is professionally installed | | Complies |
| 15.109 | RSS GEN 7.2.3 Table 1 | Receiver spurious emissions | 47.1dBμV/m (225.9μV/m) @ 7053.4MHz | | Complies (- 6.9 dB) |
| 15.207 | RSS GEN Table 2 | AC Conducted Emissions | N/A – EUT is DC operated | Refer to standard | Complies |
| 15.247 (b) (5) 15.407 (f) | RSS 102 | RF Exposure Requirements | Refer to MPE calculations in Exhibit 11, RSS 102 declaration and User Manual statements. | Refer to OET 65, FCC Part 1 and RSS 102 | Complies |
| | RSP 100 RSS GEN 7.1.5 | User Manual | | Statement required regarding detachable antenna | |

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MEASUREMENT UNCERTAINTIES

ISO Guide 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

| Measurement Type | Frequency Range (MHz) | Calculated Uncertainty (dB) |
|---------------------------------------|---------------------------|-----------------------------|
| Conducted Emissions | 0.15 to 30 | ± 2.4 |
| Radiated Emissions Radiated Emissions | 0.015 to 30 30 to 1000 | ± 3.0 ± 3.6 |
| Radiated Emissions | 1000 to 40000 | ± 6.0 |

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EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Meshdynamics model MD4000 is a Mesh Router which is designed to wirelessly route client data into the network. Normally, the EUT would be placed on a table top during operation. The EUT was, therefore, treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120/240 V, 50/60 Hz, 7.5 Amps.

The sample was received on September 13, 2006 and tested on September 13, September 25, October 18, October 23, October 25 and October 27, 2006. The EUT consisted of the following component(s):

| Manufacturer | Model | Description | Serial Number |
|--------------|-------------|---------------|---------------|
| Meshdynamics | MD4350-AA-G | Mesh Router | 14456 |
| Meshdynamics | MD2 | 2.4Ghz Module | - |

ANTENNA SYSTEM

The EUT antenna has one 8dBi antenna for both 2.4 and 5Ghz.

The external antenna will be professionally installed.

The antennas connect to the EUT via a standard N Female, thereby professional installation will be required.

ENCLOSURE

The EUT enclosure is primarily constructed of fabricated sheet steel. It measures approximately 8 cm wide by 6 cm deep by 2 cm high.

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with emissions specifications.

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SUPPORT EQUIPMENT

The following equipment was used as local support equipment for emissions testing:

Config 1

| Manufacturer | Model | Description | Serial Number |
|--------------|-------------|---------------------------------|---------------|
| Meshdynamics | MD4350-AA-G | Mesh Router | 14446 |
| | POE - 12i | Injector of Power over Ethernet | 181 |
| Airlink | AR504 | 4 port Switch Router | 3EE04B01314 |
| Dell | C840 | PC Laptop | 3J578 AJ1 |
| Sony | PCG-883L | PC Laptop | n/a |

Config 2

| | | Comig 2 | | |
|--------------|---------------|-----------------------|---------------|--------|
| Manufacturer | Model | Description | Serial Number | FCC ID |
| Unknown | POE - 24i | Power over Ethernet | 0560145 | DoC |
| | | Injector | | |
| Unknown | EZ500-S | GigaFast Ethernet Hub | 1338002375 | DoC |
| Unknown | MW41- | AC/DC Adaptor for | | - |
| | 0751000 | Hub | | |
| Dell | Inspiron 600m | Laptop Computer | Service Tag | DoC |
| | | | 90ZXC91 | |
| Dell | PA-1650-05D2 | AC Adapter for Laptop | CN-0F7970- | - |
| | | | 71615-5CD- | |
| | | | 225C | |

No remote support equipment was used during emissions testing.

EUT INTERFACE PORTS

The I/O cabling configuration during emissions testing was as follows:

Config 1

| | | Cable(s) | | |
|------|--------------|-----------------|------------------------|-----------|
| Port | Connected To | Description | Shielded or Unshielded | Length(m) |
| POE | Injector | Cat. 5 Ethernet | ushielded cat 5 | 10 |

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| Config 2 | | | | | |
|------------------------|--------------|-----------------|----------------|-----------|--|
| | | Cable(s) | | | |
| Port | Connected To | Description | Shielded or | Length(m) | |
| | | _ | Unshielded | _ | |
| EUT Connection | S | | | | |
| RF Port | Antonno | Direct | | | |
| Under Test | Antenna | Connection | - | - | |
| Other RF | Unterminated | | | | |
| Ports | Unterminated | - | - | - | |
| Ethernet Port | DOE Injector | Cots LITD | Unshielded | 1.0 | |
| #1 | POE Injector | Cat5 UTP | Unsmeided | 1.0 | |
| Ethernet Port | | | | | |
| #2 (Bridge | Not Cabled | - | - | - | |
| Port) | | | | | |
| Serial Port | Dell Laptop | Ribbon Cable to | Unshielded and | 1.0 | |
| Serial I oft | | Serial RS-232 | Shielded | 1.0 | |
| Additional Conn | ections | | | | |
| Dell Laptop, DC | External AC | DC Power Leads | Unshielded | 1.0 | |
| Input | Adapter | DC Tower Leads | Offshielded | 1.0 | |
| Dell External AC | 120V/60Hz | AC Power Cord | Unshielded | 1.0 | |
| Adapter | 120 V/0011Z | AC FOWEI COID | Ulisilicided | 1.0 | |
| Hub, DC Input | External AC | DC Power Leads | Unshielded | 1.0 | |
| | Adapter | DC I OWEI Leaus | Olishiciaca | 1.0 | |
| POE Injector, | 120V/60Hz | AC Power Cord | Unshielded | 1.0 | |
| AC Input | 120 170011Z | 710 TOWER COID | Olisilicided | 1.0 | |

Note: The Bridge port were not connected as the manufacturer stated that these are for peripheral devices purpose and therefore would not normally be connected.

Note 1: No Ethernet connection on the Injector of Power over Ethernet makes it Repeater mode.

EUT OPERATION

During emissions testing, the EUT was in Transmit or Receive Mode as noted in the test data.

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TEST SITE

GENERAL INFORMATION

Final test measurements were taken on September 13, September 25, October 18, October 23, October 25 and October 27, 2006at the Elliott Laboratories Open Area Test Site #1 located at 684 West Maude Avenue, Sunnyvale, California. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission.

ANSI C63.4:2003 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4:2003 and RSS 212.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4:2003 and RSS 212. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4:2003 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4:2003 / RSS 212.

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MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

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FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.4:2003 and RSS 212 specify that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

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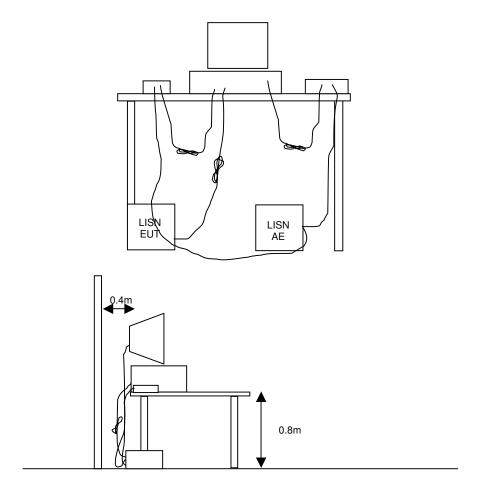
TEST PROCEDURES

EUT AND CABLE PLACEMENT

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4:2003, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.



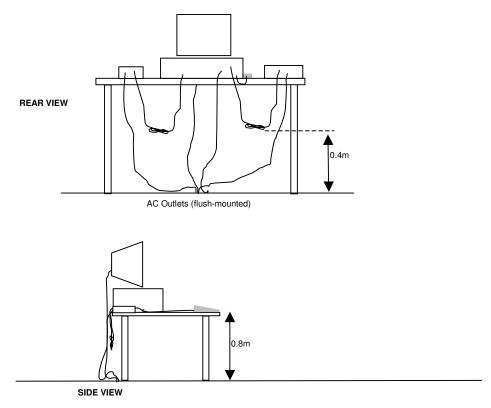
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RADIATED EMISSIONS

A preliminary scan of the radiated emissions is perfromed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

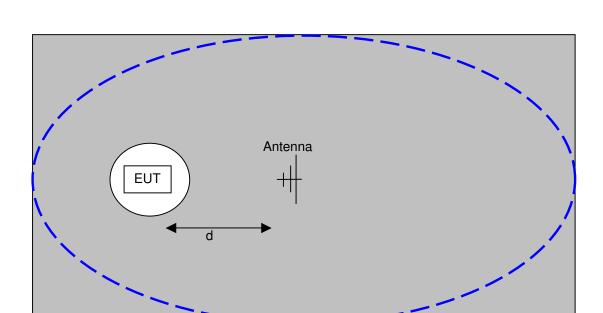
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

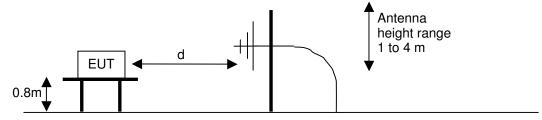


Typical Test Configuration for Radiated Field Strength Measurements

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The ground plane extends beyond the ellipse defined in CISPR 16 / CISPR 22 / ANSI C63.4 and is large enough to accommodate test distances (d) of 3m and 10m. Refer to the test data tables for the actual measurement distance.



<u>Test Configuration for Radiated Field Strength Measurements</u>
OATS- Plan and Side Views

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BANDWIDTH MEASUREMENTS

The 6dB, 20dB and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4. When required, the 99% bandwidth is measured using the methods detailed in RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

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GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands¹ (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

| Frequency Range (MHz) | Limit (uV/m) | Limit (dBuV/m @ 3m) |
|-----------------------|------------------------------|--|
| 0.009-0.490 | 2400/F _{KHz} @ 300m | 67.6-20*log ₁₀ (F _{KHz}) @ 300m |
| 0.490-1.705 | 24000/F _{KHz} @ 30m | 87.6-20*log ₁₀ (F _{KHz}) @ 30m |
| 1.705 to 30 | 30 @ 30m | 29.5 @ 30m |
| 30 to 88 | 100 @ 3m | 40 @ 3m |
| 88 to 216 | 150 @ 3m | 43.5 @ 3m |
| 216 to 960 | 200 @ 3m | 46.0 @ 3m |
| Above 960 | 500 @ 3m | 54.0 @ 3m |

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109, RSS 210 Table 2, RSS GEN Table 1 and RSS 310 Table 3. Note that receivers operating outside of the frequency range 30 MHz – 960 MHz are exempt from the requirements of 15.109.

| Frequency Range (MHz) | Limit (uV/m @ 3m) | Limit (dBuV/m @ 3m) |
|-----------------------------|----------------------|---------------------|
| 30 to 88 | 100 | 40 |
| 88 to 216 | 150 | 43.5 |
| 216 to 960 | 200 | 46.0 |
| Above 960 | 500 | 54.0 |

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¹ The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

OUTPUT POWER LIMITS - DIGITAL TRANSMISSION SYSTEMS

The table below shows the limits for output power and output power density. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

| Operating Frequency (MHz) | Output Power | Power Spectral Density |
|---------------------------|-----------------|------------------------|
| 902 – 928 | 1 Watt (30 dBm) | 8 dBm/3kHz |
| 2400 – 2483.5 | 1 Watt (30 dBm) | 8 dBm/3kHz |
| 5725 – 5850 | 1 Watt (30 dBm) | 8 dBm/3kHz |

The maximum permitted output power is reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5850 MHz band are not subject to this restriction.

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

The limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands are those specified in the general limits sections of FCC Part 15 and RSS 210. All other unwanted (spurious) emissions shall be at least 20dB below the level of the highest in-band signal level (30dB if the power is measured using the sample detector/power averaging method).

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SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - S = M$$

where:

 R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

 F_d = Distance Factor in dB

 D_m = Measurement Distance in meters

 D_S = Specification Distance in meters

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40*LOG_{10} (D_m/D_s)$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

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The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_C - L_S$$

where:

 R_r = Receiver Reading in dBuV/m

 F_d = Distance Factor in dB

 R_C = Corrected Reading in dBuV/m

 L_S = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of 3m from the equipment under test:

E =
$$\frac{1000000 \sqrt{30 P}}{3}$$
 microvolts per meter
3
where P is the eirp (Watts)

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EXHIBIT 1: Test Equipment Calibration Data

1 Page

File: R66621 Rev 5 Exhibit Page 1 of 10

| Radiated Emissions | , Band-Edge Measurements, | 18-Oct-06 |
|---------------------|---------------------------|-----------|
| Engineer: Conrad Ch | NII | |

| Radiated Emissions, Band-Edge Measurements, 18-Oct-06 | | | | |
|--|---|-------------------|-----------------|--|
| Engineer: Conrad Chu | Description | NA1 - 1 - 4 | A (# O - I D | |
| Manufacturer ENGO | <u>Description</u> | Model # | Asset # Cal Due | |
| EMCO | Antenna, Horn, 1-18GHz | 3115 | 868 26-Apr-08 | |
| Rohde & Schwarz | Power Meter, Dual Channel | NRVD | 1539 19-Apr-07 | |
| Rohde & Schwarz | Power Sensor 100 uW - 10 Watts | NRV-Z53 | 1555 28-Oct-06 | |
| Rohde & Schwarz | Attenuator, 20 dB , 50 • , 10W, DC-18 GHz | 20dB, 10W, Type N | 1556 28-Oct-06 | |
| Rohde & Schwarz | EMI Test Receiver, 20 Hz-7 GHz | ESIB7 | 1630 28-Dec-06 | |
| RE, 1-18 GHz, 25-Oct-06 | | | | |
| Engineer: Conrad Chu | | | | |
| <u>Manufacturer</u> | <u>Description</u> | Model # | Asset # Cal Due | |
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 870 13-Jan-07 | |
| EMCO | Antenna, Horn, 1-18 GHz (SA40, 30 Hz) | 3115 | 1142 07-Jun-08 | |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 19-May-07 | |
| Micro-Tronics | Band Reject Filter, 5470-5725 MHz | BRC50704-02 | 1681 14-Dec-06 | |
| Radio Antenna Port (Powe | r and Spurious Emissions), 30-Oct-06 | | | |
| Engineer: Juan Martinez | | | | |
| <u>Manufacturer</u> | <u>Description</u> | Model # | Asset # Cal Due | |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, Purple (SA40) | 8564E (84125C) | 1771 04-Nov-06 | |
| Radiated Emissions, 30 - 1 | 2,750 MHz, 27-Nov-06 | | | |
| Engineer: Mehran Birgani | • | | | |
| <u>Manufacturer</u> | <u>Description</u> | Model # | Asset # Cal Due | |
| Elliott Laboratories | Log Periodic Antenna 300-1000 MHz | EL300.1000 | 55 28-Dec-06 | |
| Hewlett Packard | EMC Spectrum Analyzer, 9 KHz - 22 GHz | 8593EM | 1319 17-Apr-07 | |
| EMCO | Antenna, Horn, 1-18 GHz (SA40) | 3115 | 1386 11-Jul-08 | |
| EMCO | Biconical Antenna, 30-300 MHz | 3110B | 1498 03-Mar-07 | |
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 1780 15-Nov-07 | |
| Hewlett Packard | Preamplifier | 8447D OPT 010 | 1826 02-May-07 | |
| Radio Antenna Port (Power | r and Spurious Emissions), 30-Nov-06 | | | |
| Engineer: David Bare | , , | | | |
| <u>Manufacturer</u> | <u>Description</u> | Model # | Asset # Cal Due | |
| Hewlett Packard | EMC Spectrum Analyzer, 9 kHz - `6.5 GHz | 8595EM | 780 05-Sep-07 | |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, FMT (SA40) Blue | 8564E (84125C) | 1393 04-Dec-06 | |
| Tektronix | 1 GHz Oscilloscope | TDS5104 | 1435 10-Apr-07 | |
| Rohde & Schwarz | Power Meter, Dual Channel | NRVD | 1787 31-Jan-07 | |
| Rohde & Schwarz | Power Sensor, 1 nW-20 mW, 10 MHz-18 GHz, | | 1798 17-Apr-07 | |
| Agilent Vector Signal Generator (250kHz - 20GHz) | | E8267C | 1877 23-Nov-07 | |
| 3 | , | | | |
| Radiated Emissions, 30 - 1 | ,000 MHz, 04-Dec-06 | | | |
| Engineer: Mehran Birgani | | | | |
| <u>Manufacturer</u> | <u>Description</u> | Model # | Asset # Cal Due | |
| Elliott Laboratories Log Periodic Antenna 300-1000 MHz | | EL300.1000 | 297 31-Jan-07 | |
| Rohde & Schwarz Test Receiver, 9 kHz-2750 MHz | | ESCS 30 | 1337 25-Jul-07 | |
| EMCO | Biconical Antenna, 30-300 MHz | 3110B | 1497 26-Jun-07 | |

EXHIBIT 2: Test Measurement Data

39 Pages

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| Ellion | t | EMC Test Data | | |
|-----------------|------------------------------|------------------|---------------------|--|
| Client: | Meshdynamics | Job Number: | J64662 | |
| Model: | MD2 and MD5 | T-Log Number: | T65034 | |
| | | Account Manager: | Sheareen Washington | |
| Contact: | Francis Da Costa | | | |
| Emissions Spec: | EN55022, FCC, 15.247, 15.407 | Class: | Radio / A | |
| Immunity Spec: | EN301-489-1; EN301-489-17 | Environment: | - | |

EMC Test Data

For The

Meshdynamics

Model

MD2 and MD5

Date of Last Test: 3/26/2007

| Elliot | t | EM | EMC Test Data | | |
|-----------------|---------------------------|------------------|---------------------|--|--|
| Client: | Meshdynamics | Job Number: | J64662 | | |
| Model: | MD2 and MD5 | T-Log Number: | T65034 | | |
| | | Account Manager: | Sheareen Washington | | |
| Contact: | Francis Da Costa | | | | |
| Emissions Spect | EN55022 ECC 15 247 15 407 | Class. | Radio / A | | |

EUT INFORMATION

Environment:

General Description

The EUT is a Mesh Router which is designed to wirelessly route client data into the network. Normally, the EUT would be placed on a table top during operation. The EUT was, therefore, treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120/240 V, 50/60 Hz, 7.5 Amps.

Equipment Under Test

| Manufacturer | Model | Description | Serial Number | FCC ID |
|--------------|-------------|---------------|---------------|---------|
| Meshdynamics | MD4350-AA-G | Mesh Router | 14456 | - |
| Meshdynamics | MD2 | 2.4GHz module | - | UZU-MD2 |
| Meshdynamics | MD5 | 5Ghz module | - | UZU-MD5 |

Other EUT Details

None

EUT Antenna

The EUT antenna has one 8dBi antenna for both 2.4 and 5Ghz.

Immunity Spec: EN301-489-1; EN301-489-17

The external antenna will be professionally installed.

The antennas connect to the EUT via a standard N Female, thereby professional installation will be required.

EUT Enclosure

The EUT enclosure is primarily constructed of fabricated sheet steel. It measures approximately 20cm wide by 15cm cm deep by 5 cm high.

Modification History

| Mod.# | Test | Date | Modification |
|-------|------|----------|--|
| 1 | ESD | 1/5/2006 | Wrapped and attached to the enclosure of EUT the copper tape |
| | | | around the Ethernet connector to pass ESD test. |
| 2 | | | |

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.

| $\mathbf{E}_{\mathbf{j}}$ | lio | tt |
|---------------------------|-----------|-------|
| | Ol: a sal | . 11. |

EMC Test Data

| Client: | Meshdynamics | Job Number: | J64662 |
|-----------------|------------------------------|------------------|---------------------|
| Model: | MD2 and MD5 | T-Log Number: | T65034 |
| | | Account Manager: | Sheareen Washington |
| Contact: | Francis Da Costa | | |
| Emissions Spec: | EN55022, FCC, 15.247, 15.407 | Class: | Radio / A |
| Immunity Spec: | EN301-489-1; EN301-489-17 | Environment: | - |

Test Configuration #1

Local Support Equipment

| Manufacturer Model | | Description | Serial Number | FCC ID | |
|--------------------|--------------------------------------|------------------------|---------------|--------|--|
| Meshdynamics | Meshdynamics MD4350-AA-G Mesh Router | | 14446 | DoC | |
| | POE - 12i | Injector of Power over | 181 | DoC | |
| | 1 OL - 121 | Ethernet | 101 | D00 | |
| Airlink | AR504 | 4 port Switch Router | 3EE04B01314 | DoC | |
| Dell | C840 | PC Laptop | 3J578 AJ1 | DoC | |
| Sony | PCG-883L | PC Laptop | n/a | DoC | |

Remote Support Equipment

| | Manufacturer | Model | Description | Serial Number | FCC ID |
|--|--------------|-------|-------------|---------------|--------|
| | None | - | - | - | - |

Interface Cabling and Ports

| Port | Connected To | Cable(s) | | |
|------|--------------|-----------------|------------------------|-----------|
| FUIL | Connected To | Description | Shielded or Unshielded | Length(m) |
| POE | Injector | Cat. 5 Ethernet | unshielded cat 5 | 10 |

Note: The Bridge port were not connected as the manufacturer stated that these are for peripherial devices purpose and therefore would not normally be connected.

Note: 1 No Ethernet connection on the Injector of Power over Ethernet makes it Repeater mode.

EUT Operation During Emissions Tests

| Elliot | t | EMC Test Data | | |
|-----------------|------------------------------|------------------|---------------------|--|
| Client: | Meshdynamics | Job Number: | J64662 | |
| Model: | MD2 and MD5 | T-Log Number: | T65034 | |
| | | Account Manager: | Sheareen Washington | |
| Contact: | Francis Da Costa | | | |
| Emissions Spec: | EN55022, FCC, 15.247, 15.407 | Class: | Radio / A | |
| Immunity Spec: | EN301-489-1; EN301-489-17 | Environment: | - | |

EUT Operation During Immunity Tests

The EUT was transmitting two frequencies one at 5.26GHz and one at 2.412GHz and receiving one frequency at 5.32GHz.

The transmitting frequencies were monitored by pinging the EUT thru laptop PC software. The receiving frequency was monitored by a spectrum analyzer at 5.32GHz for any receiving emissions that might occur.

Performance Criteria for Immunity Tests

Criterion A:

| During and after the test the apparatus shall continue to operate as intended. No degradation or loss of function is allowed |
|--|
| below a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases |
| this permissible performance level may be replaced by a permissible loss of performance. During the test the EUT shall not |
| unintentionally transmit or change its actual operating state and stored data. |

| Elliott |
|----------------|
|----------------|

EMC Test Data

| Client: | Meshdynamics | Job Number: | J64662 |
|-----------------|------------------------------|------------------|---------------------|
| Model: | MD2 and MD5 | T-Log Number: | T65034 |
| | | Account Manager: | Sheareen Washington |
| Contact: | Francis Da Costa | | |
| Emissions Spec: | EN55022, FCC, 15.247, 15.407 | Class: | Radio / A |
| Immunity Spec: | EN301-489-1; EN301-489-17 | Environment: | - |

Test Configuration #2

Local Support Equipment

| | = | | | | |
|--------------|---------------|-----------------------------|----------------------|--------|--|
| Manufacturer | Model | Description | Serial Number | FCC ID | |
| Unknown | POE - 24i | Power over Ethernet 0560145 | | DoC | |
| | | Injector | | | |
| Unknown | EZ500-S | GigaFast Ethernet Hub | 1338002375 | DoC | |
| Unknown | MW41-0751000 | AC/DC Adaptor for Hub | - | - | |
| Dell | Inspiron 600m | Laptop Computer | Service Tag 90ZXC91 | DoC | |
| Dell | PA-1650-05D2 | AC Adapter for Laptop | CN-0F7970-71615-5CD- | - | |
| | | | 225C | | |

Remote Support Equipment

| Manufacturer | Model | Description | Serial Number | FCC ID |
|--------------|-------|-------------|---------------|--------|
| None | - | - | - | - |

Interface Cabling and Ports

| Connected To | | Cable(s) | |
|---------------------|--|--|--|
| Connected 10 | Description | Shielded or Unshielded | Length(m) |
| | • | | - |
| Antenna | Direct Connection | - | - |
| Unterminated | - | - | - |
| POE Injector | Cat5 UTP | Unshielded | 1.0 |
| Not Cabled | - | - | - |
| Dell Laptop | Ribbon Cable to Serial | Unshielded and Shielded | 1.0 |
| | | | |
| External AC Adapter | DC Power Leads | Unshielded | 1.0 |
| 120V/60Hz | AC Power Cord | Unshielded | 1.0 |
| External AC Adapter | DC Power Leads | Unshielded | 1.0 |
| 120V/60Hz | AC Power Cord | Unshielded | 1.0 |
| | Unterminated POE Injector Not Cabled Dell Laptop External AC Adapter 120V/60Hz External AC Adapter | Antenna Direct Connection Unterminated - POE Injector Cat5 UTP Not Cabled - Dell Laptop Ribbon Cable to Serial External AC Adapter DC Power Leads 120V/60Hz AC Power Cord External AC Adapter DC Power Leads | Antenna Direct Connection - Unterminated POE Injector Cat5 UTP Unshielded Not Cabled Dell Laptop Ribbon Cable to Serial Unshielded and Shielded External AC Adapter DC Power Leads Unshielded External AC Adapter DC Power Leads Unshielded External AC Adapter DC Power Leads Unshielded External AC Adapter DC Power Leads Unshielded |

Note: The Bridge port were not connected as the manufacturer stated that these are for peripherial devices purpose and therefore would not normally be connected.

Note: 1 No Ethernet connection on the Injector of Power over Ethernet makes it Repeater mode.

| Elliot | t | EM | C Test Date |
|----------------------------|--|-------------------------|---------------------|
| | Meshdynamics | Job Number: | |
| | MD2 and MD5 | T-Log Number: | T65034 |
| | | Account Manager: | Sheareen Washingtor |
| | Francis Da Costa | 01 | D 1: / A |
| | EN55022, FCC, 15.247, 15.407 EN301-489-1; EN301-489-17 | Class: Environment: | Radio / A - |
| During emissions testing | EUT Operation During Emisg, the EUT was in Transmit or Receive Mode as EUT Operation During Imn | noted in the test data. | |
| TBD riterion A: TBD | Performance Criteria for Im | - | |
| riterion B: TBD | | | |
| r iterion C: TBD | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Elliott | | EMC Test Data | |
|----------------|------------------------------|--|---------------------|
| Client: | Meshdynamics | Job Number: | J64662 |
| Model: | MD2 and MD5 | Job Number: J64662 T-Log Number: T65034 Account Manager: Sheareen Washington Class: N/A | T65034 |
| | INDZ AND INDS | | Sheareen Washington |
| Contact: | Francis Da Costa | | |
| Standard: | EN55022, FCC, 15.247, 15.407 | Class: | N/A |

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

specification listed above.

Date of Test: 10/18/2006 Config. Used: 2

Test Engineer: Conrad Chu Config Change: None

Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane or routed in overhead in the GR-1089 test configuration.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 18 °C

Rel. Humidity: 45 %

Summary of Results

| Run# | Test Performed | Limit | Pass / Fail | Result / Margin |
|---------|------------------------|-------------|-------------|---|
| 1 and 2 | Band Edge Measurements | FCC Part 15 | Pass | 53.3dBµV/m (462.4µV/m) @ 4824.0MHz (-0.7dB) |

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Additional Test Notes:

Actual EUT tested was labelled with s/n 21204 on bottom of case



EMC Test Data

| • | | | |
|-----------|------------------------------|----------------------|---------------------|
| Client: | Meshdynamics | Job Number: | J64662 |
| Model: | MD2 and MD5 | T-Log Number: T65034 | |
| | | Account Manager: | Sheareen Washington |
| Contact: | Francis Da Costa | | |
| Standard: | EN55022, FCC, 15.247, 15.407 | Class: | N/A |

Run #1: Radiated Spurious Emissions, Operating Mode: 802.11b

Run #1a: Low Channel @ 2412 MHz (21 dBm AVG power output via power meter)

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|-----------|-------------|-----|-----------------|--------|-----------|---------|--------|----------------------|
| MHz | $dB\mu V/m$ | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2412.000 | 121.4 | ٧ | - | - | Pk | 100 | 1.0 | RB = VB = 1MHz |
| 2412.000 | 97.3 | ٧ | - | - | Avg | 100 | 1.0 | RB = 1MHz, VB = 10Hz |
| 2412.000 | 106.5 | h | - | - | Pk | 66 | 1.0 | RB = VB = 1MHz |
| 2412.000 | 86.0 | h | - | - | Avg | 66 | 1.0 | RB = 1MHz, VB = 10Hz |

Band Edge Signal Field Strength

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments | | | | |
|-----------|-------------|-----|-----------------|--------|-----------|---------|--------|----------|--|--|--|--|
| MHz | $dB\mu V/m$ | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | | | | | |
| 2390.000 | 65.7 | ٧ | 74.0 | -8.3 | Pk | 100 | 1.0 | | | | | |
| 2390.000 | 52.8 | ٧ | 54.0 | -1.2 | Avg | 100 | 1.0 | | | | | |
| 2390.000 | 54.7 | h | 74.0 | -19.3 | Pk | 66 | 1.0 | | | | | |
| 2390.000 | 42.9 | h | 54.0 | -11.2 | Avg | 66 | 1.0 | | | | | |

EMC Test Data Job Number: J64662 Client: Meshdynamics T-Log Number: T65034 Model: MD2 and MD5 Account Manager: Sheareen Washington Contact: Francis Da Costa Standard: EN55022, FCC, 15.247, 15.407 Class: N/A (Continued) Run #1a: Low Channel @ 2412 MHz (21 dBm AVG power output via power meter) Vertical Max/Ref Lvl Marker 4 [T2] RBW 1 MHz RF Att 10 dB 158.2 dB**y**V 97.26 dB**y**V VBW 10 Hz 113.2 dB**y**V 2.41126754 GHz 19 s Unit db**y**v SWT 158 32.4 dB Offset ▼4 [T2] 97.26 dB**y** 150 $\mathbf{v}_1|_{[T1]}$ 65.66 dB 3900d000 CH: 140 [T1] 121.39 dB [T2] 52. 76 dB**y**1 IN1 39000000 GHz 120 1VIEW 1MA 2VIEW 2MA 110 100 P20 90 -D1 74 dB**y**v 70 Center 2.39 GHz 7.5 MHz/ Span 75 MHz Date: 18.OCT.2006 09:06:01

| CI | ient: Mesh | dynamics | | | | | | Job Nu | nber: | J6466 | 2 | |
|----|---------------------------|------------------|------------|------------|--|-------------|---|-----------|--------------|-------|-------------------|------|
| Мс | odel: MD2 | and MD5 | | | | | | T-Log Nur | | | | |
| Λn | tact: Franc | is Da Costa | | | | | Acc | count Man | ager: | Shear | een Washin | igto |
| | | 022, FCC, 1 | | 407 | | | | (| class: | N/A | | |
| #1 | nued) a: Low C ntal | hannel @ 2 | :412 MHz (| 21 dBm AV0 | 3 power ou | tput via po | wer meter) | | | | | |
| 1 | Max/Ref | Lvl | Marker | 2 [T1] | | RBW | 1 M | Hz F | RF A | tt | 10 dB | |
| > | 146.2 | | | | 51 dB y V | VBW | 10 | Hz | | | | |
| 6 | 101.2 | dB y V | | 2.411868 | 374 GHz | SWT | 19 | s (| Jnit | | dB y ' | V |
| 0 | 32.4 | dB Offs | et | | | | ▼ 2 | [T1] | | 106 | | _ |
| | | | | | | | \mathbf{v}_1 | [T1] | 2. | | 874 GHz | |
| 0 | | | | | | | | [11] | 2.3 | | 000 GHz | |
| 0 | | | | | | | ⊽ 3 | [T2] | | | .85 dB y 7 | |
| | | | | | | | ∇_4 | [T2] | 2.3 | | 000 GHz | |
| 0 | | | | + | | | - | | 22. | | /174 GHz | I |
| 0 | 1VIEW 2VIEW | | | | | | | | مسر | M | | 2 |
| | | | | | | | | ſ | | | | |
| 0 | | | | | | | - | | 4 | | \ | P |
| 0 | | | | | | | | July | $\sqrt[4]{}$ | 1/4. | | |
| Ŭ | _D1 74 | dB y V | | | | | / | | | 1 Vi | | |
| 0 | | | | | | ,,,/V | ~ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | | | | \(\) | |
| 0 | | | | | | <i></i> | | | | | 1 | 4 |
| | <u>₩</u> ₽,2, | 54,dB y X | 7 | anne Allem | i Marakan | w w | ~ | | | | | |
| 0 | | | | | | | <u> </u> | | | | ~~~ | L. |
| 0 | | | | | خـــــــــــــــــــــــــــــــــــــ | | | | | | | |
| | | | | | | | | | | | | |
| 0 | | | | | F | 1 | | | | | | |
| _ | Center | 2.39 GH | [z | • | 7.5 | MHz/ | | | | Spar | n 75 MH2 | z |
| | | 18.OCT.2 | 2006 0 | 9:15:51 | | | | | | | | |

| | Ellic | IIC | | | | | | EM | C Test Dat |
|--|---|--|--|--|--|---|---|--|---------------------------|
| | Meshdyna | | | | | | J | lob Number: | J64662 |
| | | | | | | | T-L | og Number: | T65034 |
| Model: | MD2 and | MD5 | | | | | | • | Sheareen Washington |
| Contact: | Francis Da | a Costa | | | | | | | - |
| Standard: | EN55022, | FCC, 15 | 5.247, 15.40 |)7 | | | | Class: | N/A |
| _ | rious Emis | | 15 200 | / 15.247 | Datastas | مالد دمد نام | Haimbi | ICammanta | |
| Frequency MHz | Level | Pol V/H | | T | Detector | Azimuth | Height | Comments | |
| 4823.980 | dBμV/m 53.3 | V/П V | Limit 54.0 | Margin -0.7 | Pk/QP/Avg AVG | degrees 103 | meters 1.9 | Restricted | |
| 4823.980 | 55.1 | V | 74.0 | -0. <i>1</i> -18.9 | PK | 103 | 1.9 | Restricted | |
| 4824.010 | 44.2 | H | 54.0 | -9.8 | AVG | 269 | 1.1 | Restricted | |
| 4824.010 | 47.6 | H | 74.0 | -26.4 | PK | 269 | 1.1 | Restricted | |
| 7236.870 | 34.4 | H | 54.0 | -19.6 | AVG | 284 | 1.2 | Non-Restri | rted |
| 7236.870 | 46.6 | H | 74.0 | -27.4 | PK | 284 | 1.2 | Non-Restri | |
| 7236.700 | 36.4 | V | 54.0 | -17.6 | AVG | 290 | 1.0 | Non-Restri | |
| 7236.700 | 46.3 | V | 74.0 | -27.7 | PK | 290 | 1.0 | Non-Restri | |
| | | of the fun | damental ar | nd measure | d in 100kHz. | t restricted ba | | | e limit was set 20dB be |
| Note 2: | Signal is r | of the fun not in a re | damental ar | nd measure nd but the m | d in 100kHz. | | | | e iiiiiit was set 2005 be |
| Note 2: | Signal is r | of the fun not in a re | damental ar estricted bar 2437 MHz, | nd measure nd but the m | d in 100kHz. nore stringen | t restricted ba | | | e iiiiiit was set 2005 be |
| Note 2: | Signal is r Center Cha | of the funnot in a rea | damental ar | nd measure and but the m (20dBm) | d in 100kHz. nore stringen | | and limit wa | s used. | oower measurement) |
| Run #1b: (Fundame Limi | Signal is r Center Cha ntal emissi t for emissi Level | on level ons outs | 2437 MHz, @ 3m in 10 ide of restricted | (20dBm) OkHz RBW: cted bands: | d in 100kHz. nore stringent 111.1 91.1 Detector | dBμV/m dBμV/m | and limit wa Limit is -20 Height | s used. | oower measurement) |
| Run #1b: (Fundame Limi Frequency MHz | Signal is r Center Chantal emissing the for emissing the Level dBµV/m | annel @ on level ons outs Pol V/H | 2437 MHz, @ 3m in 10 ide of restricted bare | d measure nd but the m (20dBm) 0kHz RBW: cted bands: / 15.247 Margin | d in 100kHz. nore stringent 111.1 91.1 Detector Pk/QP/Avg | dBμV/m dBμV/m Azimuth degrees | Limit is -20 Height meters | s used. dBc (Peak p | oower measurement) |
| Run #1b: (Fundame Limi Frequency MHz 4873.920 | Center Chantal emissint for emissint deput/m 51.4 | annel @ on level ons outs Pol V/H V | 2437 MHz, @ 3m in 10 ide of restriction 15.209 Limit 54.0 | (20dBm) OkHz RBW: cted bands: / 15.247 Margin -2.6 | d in 100kHz. nore stringent 111.1 91.1 Detector Pk/QP/Avg AVG | dBμV/m dBμV/m Azimuth degrees | Limit is -20 Height meters 1.9 | dBc (Peak p | oower measurement) |
| Run #1b: (Fundame Limi Frequency MHz 4873.920 | Center Chantal emissist for emisside BµV/m 51.4 53.9 | annel @ on level ons outs Pol V/H V | 2437 MHz, @ 3m in 10 ide of restriction 15.209 Limit 54.0 74.0 | (20dBm) OkHz RBW: cted bands: / 15.247 Margin -2.6 -20.1 | 111.1 91.1 Detector Pk/QP/Avg AVG PK | dBμV/m dBμV/m Azimuth degrees 102 102 | Limit is -20 Height meters 1.9 1.9 | dBc (Peak p | oower measurement) |
| Fundame Limi -requency MHz 4873.920 7310.710 | Center Chantal emissing to for emissing the depth of the | annel @ on level ons outs Pol V/H V V V | 2437 MHz, @ 3m in 10 ide of restriction 15.209 Limit 54.0 74.0 54.0 | (20dBm) OkHz RBW: cted bands: / 15.247 Margin -2.6 -20.1 -18.9 | d in 100kHz. nore stringen 111.1 91.1 Detector Pk/QP/Avg AVG PK AVG | dBμV/m dBμV/m Azimuth degrees 102 102 200 | Limit is -20 Height meters 1.9 1.0 | dBc (Peak p Comments Restricted Restricted Restricted | nower measurement) |
| Fundame Limi -requency MHz 4873.920 7310.710 | Center Chantal emissist for emissist dBμV/m 51.4 53.9 35.1 45.7 | annel @ on level ons outs Pol V/H V V V | 2437 MHz, @ 3m in 10 ide of restriction 15.209 Limit 54.0 74.0 74.0 74.0 | (20dBm) OkHz RBW: cted bands: / 15.247 Margin -2.6 -20.1 -18.9 -28.3 | 111.1 91.1 Detector Pk/QP/Avg AVG PK AVG PK | dBμV/m dBμV/m Azimuth degrees 102 102 200 200 | Limit is -20 Height meters 1.9 1.0 1.0 | dBc (Peak p Comments Restricted Restricted Restricted Restricted | nower measurement) |
| Fundame Limi -requency MHz 4873.920 4873.920 7310.710 7310.710 4873.960 | Center Chantal emissist for emissist dBμV/m 51.4 53.9 35.1 45.7 44.2 | annel @ on level ons outs Pol V/H V V V H | 2437 MHz, @ 3m in 10 ide of restriction 15.209 Limit 54.0 74.0 54.0 54.0 | (20dBm) (20dBm) (20dBm) (30dBm) (40dBm) (40dBm) (40dBm) (50dBm) (40dBm) (40 | 111.1 91.1 Detector Pk/QP/Avg AVG PK AVG PK AVG | dBμV/m dBμV/m Azimuth degrees 102 102 200 200 249 | Limit is -20 Height meters 1.9 1.0 1.0 1.3 | dBc (Peak page 1) Comments Restricted Restricted Restricted Restricted Restricted Restricted | nower measurement) |
| Fundame Limi Frequency MHz 4873.920 7310.710 7310.710 4873.960 | Center Chantal emissist for emissist MBμV/m 51.4 53.9 35.1 45.7 44.2 47.7 | annel @ on level ons outs Pol V/H V V V V H H H | 2437 MHz, @ 3m in 10 ide of restri 15.209 Limit 54.0 74.0 54.0 74.0 74.0 | (20dBm) (20dBm) OkHz RBW: cted bands: / 15.247 Margin -2.6 -20.1 -18.9 -28.3 -9.8 -26.3 | 111.1 91.1 Detector Pk/QP/Avg AVG PK AVG PK AVG PK AVG PK AVG PK | dBμV/m dBμV/m dBμV/m Azimuth degrees 102 102 200 200 249 249 | Limit is -20 Height meters 1.9 1.0 1.0 1.3 1.3 | s used. dBc (Peak p Comments Restricted Restricted Restricted Restricted Restricted Restricted | nower measurement) |
| Fundame Limi -requency MHz 4873.920 7310.710 7310.710 4873.960 4873.960 7310.130 | Center Chantal emissist for emissist MBµV/m 51.4 53.9 35.1 45.7 44.2 47.7 34.1 | annel @ on level ons outs Pol V/H V V V V H H H H H | 2437 MHz, @ 3m in 10 ide of restricted 54.0 74.0 54.0 74.0 54.0 74.0 54.0 | (20dBm) (20dBm) OkHz RBW: cted bands: / 15.247 Margin -2.6 -20.1 -18.9 -28.3 -9.8 -26.3 -19.9 | 111.1 91.1 Detector Pk/QP/Avg AVG PK AVG PK AVG PK AVG PK AVG PK AVG | dBμV/m dBμV/m dBμV/m Azimuth degrees 102 102 200 200 249 249 266 | Height meters 1.9 1.0 1.0 1.3 1.3 | s used. dBc (Peak p Comments Restricted Restricted Restricted Restricted Restricted Restricted Restricted Restricted | oower measurement) |
| Fundame Limi -requency MHz 4873.920 7310.710 7310.710 4873.960 4873.960 7310.130 | Center Chantal emissist for emissist MBμV/m 51.4 53.9 35.1 45.7 44.2 47.7 | annel @ on level ons outs Pol V/H V V V V H H H | 2437 MHz, @ 3m in 10 ide of restri 15.209 Limit 54.0 74.0 54.0 74.0 74.0 | (20dBm) (20dBm) OkHz RBW: cted bands: / 15.247 Margin -2.6 -20.1 -18.9 -28.3 -9.8 -26.3 | 111.1 91.1 Detector Pk/QP/Avg AVG PK AVG PK AVG PK AVG PK AVG PK | dBμV/m dBμV/m dBμV/m Azimuth degrees 102 102 200 200 249 249 | Limit is -20 Height meters 1.9 1.0 1.0 1.3 1.3 | s used. dBc (Peak p Comments Restricted Restricted Restricted Restricted Restricted Restricted | oower measurement) |
| Fundame Limi Frequency MHz 4873.920 7310.710 7310.710 4873.960 7310.130 7310.130 | Center Chantal emissist for emissist for emissist 45.7 44.2 47.7 34.1 45.4 | annel @ on level ons outs Pol V/H V V V H H H H H H H H H H H H H H H | 2437 MHz, @ 3m in 10 ide of restricted 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0 | (20dBm) (20dBm) (20dBm) (00dBm) (00dBm) (00dBm) (15.247 | 111.1 91.1 Detector Pk/QP/Avg AVG PK AVG PK AVG PK AVG PK AVG PK AVG PK AVG | dBµV/m dBµV/m Azimuth degrees 102 102 200 200 249 249 266 266 ras used. Fo | Height meters 1.9 1.0 1.3 1.3 1.3 | s used. dBc (Peak p Comments Restricted Restricted Restricted Restricted Restricted Restricted Restricted Restricted Restricted | oower measurement) |
| Fundame Limi Frequency | Center Chantal emissist for emissist for emissist 45.7 44.2 47.7 34.1 45.4 For emiss the level of VBW = 1k | annel @ on level ons outs Pol V/H V V V H H H H H H H H H H H H H H And R | 2437 MHz, @ 3m in 10 ide of restricted bare 15.209 Limit 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0 stricted bare adamental are BW = 1MHz | (20dBm) (20dBm) OkHz RBW: cted bands: / 15.247 Margin -2.6 -20.1 -18.9 -28.3 -9.8 -26.3 -19.9 -28.6 adds, the limited measure of or average | d in 100kHz. nore stringent 111.1 91.1 Detector Pk/QP/Avg AVG PK | dBµV/m dBµV/m Azimuth degrees 102 102 200 249 249 249 266 266 ras used. Fo | Limit is -20 Height meters 1.9 1.0 1.0 1.3 1.3 1.3 1.3 | dBc (Peak page 1) Comments Restricted | oower measurement) |

| | | iott dynamics | | | | | | Job Nu | ımber: | J6466 | 2 | |
|--------------------|--|---|-------------|-----------|------------------|-------------|----------------|----------|----------|------------|-------------------|------------|
| | | and MD5 | | | | | | T-Log Nu | | | | _ |
| | | is Da Costa | | | | | Ac | count Ma | nager: | Sheare | een Washir | ıgto |
| | | 022, FCC, 1 | | 07 | | | | | Class: | N/A | | |
| #1c: H | ligh C | hannel @ 2 | 2462 MHz (2 | 21 dBm AV | 'G output po | ower via po | wer meter |) | | | | |
| Max | /Ref | Lvl | Marker | 2 [T1] | | RBW | 1 M | Hz | RF A | tt | 10 dB | |
| > | | dB y V | | | 62 dB y V | VBW | 10 | | | | | |
| | 4.4 | dB y V | 2 | 2.46178 | 156 GHz | SWT | 19 | s | Unit | | dВ У | V |
| 3 | 2.4 | dB Offs | et | | | | ▼ 2 | [T1] | 2. | | .62 dB y v | |
| | | | | | | | \mathbf{v}_1 | [T1] | | | 13 dB | |
| 10 | | | | | | | ⊽ 3 | [T2] | | | .86 db | _ |
| 3 0 | | | | | | | | . , | 2. | | 000 GH2 | |
| , 0 | | | | | | | ∇_4 | [T2] | | 98. | ע dB 17 | V |
| 20 101 | MENTO. | | 2 | | | | | | 2. | 46343 | 487 GH2 | z |
| 2V1 | | مسلمهم | word | | | | | | | | | |
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| 90 | / | White the same of | - Cary | | | | | | | | | |
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| 80 | | | | 4 | | | | | | | | |
| /\ _ —D1 | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | db y V | | | | | | | | | | |
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| m | \sim | | | | Μ, : | | | | | | | |
| 0 | | | | h | | W/W | <u> </u> | .M | | | | 1 |
| | <u>—</u> D2 | 54 dB y V | | | V., | z | | May | 1.0 | MM L M | . ^ | - |
| 50 | | | | | F | 1 | ~~~~~ | | ***** | المراج الم | Way Com | - ∧ |
| 4 | | | | | F | ± | | | <u> </u> | ~~~ | ~~~ | |
| | ter | 2.4835 | GHz | | 7.5 | MHz/ | | | | Spar | n 75 MH2 | z |
| ٠. | | 18 OCT 1 | 2006 00 | .33.40 | | | | | | - | | |
| e: | | 18.OCT.2 | 2006 09 | :33:40 | | | | | | | | |

EMC Test Data Job Number: J64662 Client: Meshdynamics T-Log Number: T65034 Model: MD2 and MD5 Account Manager: Sheareen Washington Contact: Francis Da Costa Standard: EN55022, FCC, 15.247, 15.407 Class: N/A (continued) Run #1b: High Channel @ 2462 MHz (21 dBm AVG output power via power meter) Horizontal Max/Ref Lvl Marker 4 [T2] RBW 1 MHz RF Att 10 dB 143.8 dB**y**V 85.67 dB**y**V VBW 10 Hz 98.8 dB**y**V 2.46253307 GHz SWT 19 s Unit dB**y**V 32.4 dB Offset V4 [T2] 140 2.46253307 GHz $\nabla_1|_{[T1]}$ 106.36 dB**y**Y 130 2.46193186 GHz **∇**₂ [T1] 120 2.49161623 GHz **∇**₃|_[T2] 41.51 dB 110 ⊽ IN1 2.48350000 GHz 1MA 100 2MA P20 80 -D1 54 dB**y**1 4 (30 Center 2.4835 GHz 7.5 MHz/ Span 75 MHz 18.OCT.2006 09:43:18 Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz $dB\mu V/m$ v/h Limit Margin Pk/QP/Avg degrees meters 1.1 RB = VB = 1MHz 2462.000 118.6 Pk 101 ٧ -Avg 1.1 RB = 1MHz, VB = 10Hz 2462.000 98.2 ٧ 101 2462.000 106.4 Pk 256 1.4 RB = VB = 1MHz h 1.4 RB = 1MHz, VB = 10Hz 2462.000 85.7 256 h -Avg

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|-----------|-------------------|--------------|----------------|---------------|----------------|-----------------|---------------|------------------|----------------------------|
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| Model: | MD2 and | MD5 | | | | | | og Number: | Sheareen Washington |
| 01-1 | From siz D | - C1- | | | | | ACCOU | it ivianager: | Sheareen washington |
| | Francis Da | | - 0.1 - 1 - 10 | | | | | | |
| Standard: | EN55022, | FCC, 18 | 5.247, 15.40 | 17 | • | | | Class: | N/A |
| Band Edge | Signal Fi | eld Strei | ngth | | | | | | |
| requency | Level | Pol | 15.209 | / 15.247 | Detector | Azimuth | Height | Comments | |
| MHz | dBμV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | | |
| 2483.500 | 60.1 | ٧ | 74.0 | -13.9 | Pk | 101 | 1.1 | | |
| 2483.500 | | ٧ | 54.0 | -3.1 | Avg | 101 | 1.1 | | |
| 2483.500 | | h | 74.0 | -18.1 | Pk | 256 | 1.4 | | |
| 2483.500 | 41.5 | h | 54.0 | -12.5 | Avg | 256 | 1.4 | | |
| ther Snur | ious Emis | sions | | | | | | | |
| requency | Level | Pol | 15.209 | / 15.247 | Detector | Azimuth | Height | Comments | |
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | | |
| 4923.870 | 33.5 | Н | 54.0 | -20.5 | AVG | 243 | 1.7 | Restricted | |
| 4923.870 | 49.3 | Н | 74.0 | -24.7 | PK | 243 | 1.7 | Restricted | |
| 7394.200 | 35.3 | Н | 54.0 | -18.7 | AVG | 190 | 1.0 | Restricted | |
| 7394.200 | 47.0 | Н | 74.0 | -27.0 | PK | 190 | 1.0 | Restricted | |
| 4924.070 | 40.7 | V | 54.0 | -13.3 | AVG | 228 | 1.9 | Restricted | |
| 4924.070 | 58.6 | V | 74.0 | -15.4 | PK | 228 | 1.9 | Restricted | |
| 7394.770 | 34.6 | V | 54.0 | -19.4 | AVG | 186 | 1.2 | Restricted | |
| 7394.770 | 46.0 | V | 74.0 | -28.0 | PK | 186 | 1.2 | Restricted | |
| | For emiss | ions in re | estricted har | nds the limi | t of 15 209 w | as used. For | all other er | nissions the | e limit was set 20dB belo |
| lote 1: | | | | | d in 100kHz. | ao aooa. 1 oi | an other or | 1110010110, 1110 | S III III WAO OOL ZOAD DOI |
| lote 2: | | | | | | t restricted ba | ind limit was | s used. | |
| 010 2. | olgilai lo i | 101 111 4 11 | Journal Dar | 14 541 110 11 | ioro ourrigori | TOOLITOLOG DO | ina inini wa | o dood. | |
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| C | Elliott | EM | C Test Data |
|-----------|------------------------------|------------------|---------------------|
| Client: | Meshdynamics | Job Number: | J64662 |
| Model | MD2 and MD5 | T-Log Number: | T65034 |
| wodei. | MID2 and MID3 | Account Manager: | Sheareen Washington |
| Contact: | Francis Da Costa | | |
| Standard: | EN55022, FCC, 15.247, 15.407 | Class: | N/A |

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, Bandwidth and Spurious Emissions (802.11g)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

specification listed above.

Date of Test: 9/13/2006 Config. Used: 1
Test Engineer: Juan Martinez Config Change: None
Test Location: SVOATS #1 EUT Voltage: 12Vdc

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 18 °C

Rel. Humidity: 35 %

Summary of Results

| Run# | Test Performed | Limit | Pass / Fail | Result / Margin |
|------|------------------------------|-----------|-------------|-----------------|
| 1 | Output Power | 15.247(b) | Pass | 25 dBm |
| 2 | Power spectral Density (PSD) | 15.247(d) | Pass | 3dBm/3kHz |
| 3 | 6dB Bandwidth | 15.247(a) | Pass | 16.6 MHz |
| 3 | 99% Bandwidth | RSS GEN | - | 17.5 MHz |
| 4 | Spurious emissions | 15.247(b) | Pass | Refer to plots |

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Elliott Client: Meshdynamics

EMC Test Data

| Client: | Meshdynamics | Job Number: | J64662 |
|-----------|------------------------------|------------------|---------------------|
| Model | MD2 and MD5 | T-Log Number: | T65034 |
| wodei. | INDZ and INDS | Account Manager: | Sheareen Washington |
| Contact: | Francis Da Costa | | |
| Standard: | EN55022, FCC, 15.247, 15.407 | Class: | N/A |

Run #1: Output Power

| Power | Frequency (MHz) | Output | Power | Antenna | Result | EIRF | Note 2 | Output | Power |
|----------------------|-----------------|--------------------|-------|------------|--------|------|--------|--------------------|-------|
| Setting ² | Frequency (MHZ) | (dBm) ¹ | mW | Gain (dBi) | Result | dBm | W | (dBm) ³ | mW |
| | 2412 | 13.2 | 20.9 | 8.0 | Pass | 21.2 | 0.132 | 14.0 | 25.0 |
| | 2437 | 25.1 | 326.6 | 8.0 | Pass | 33.1 | 2.061 | 28.6 | 724.4 |
| | 2462 | 13.0 | 20.0 | 8.0 | Pass | 21.0 | 0.126 | 13.8 | 23.9 |

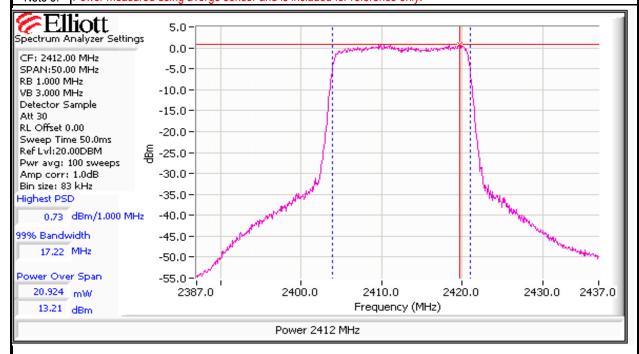
Output power measured using a spectrum analyzer (see plots below):

Note 1: RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz

The output power limit is 30dBm

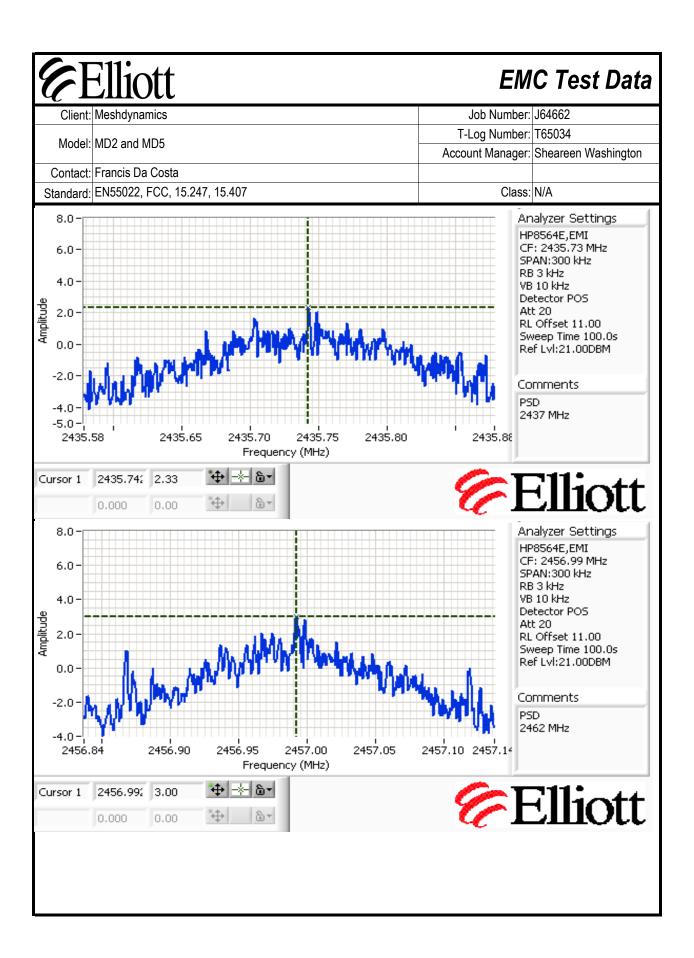
Power setting - the software power setting used during testing, included for reference only.

Note 2: Power setting - the software power setting used during testing, included Note 3: Power measured using averge sensor and is included for reference only

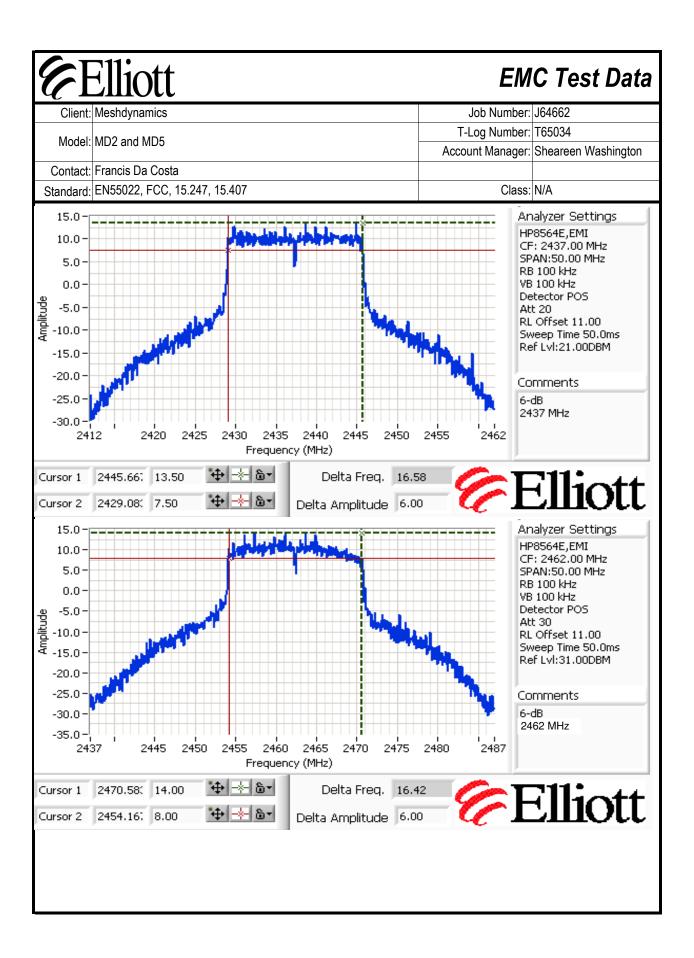


Elliott EMC Test Data Client: Meshdynamics Job Number: J64662 T-Log Number: T65034 Model: MD2 and MD5 Account Manager: Sheareen Washington Contact: Francis Da Costa Standard: EN55022, FCC, 15.247, 15.407 Class: N/A **Elliott** 15.0 ectrum Analyzer Settings 10.0-CF: 2437.00 MHz SPAN:50,00 MHz RB 1.000 MHz 5.0-VB 3,000 MHz Detector Sample 0.0 Att 30 RL Offset 11.00 Sweep Time 50.0ms -5.0 Ref Lvl:31.00DBM Pwr avg: 100 sweeps -10.0 Amp corr: 0.0dB Bin size: 83 kHz -15.0Highest PSD 12.29 dBm/1.000 MHz -20.0 99% Bandwidth -25.0 17.47 MHz Power Over Span -30.0 2450.0 2462.0 326,640 mW/ 2412.0 2420.0 2430.0 2440.0 Frequency (MHz) 25.14 dBm Power (Option 2, Method# 2) 2437 MHz 5.0 Spectrum Analyzer Settings 0.0 CF: 2462,00 MHz -5.0 SPAN:50,00 MHz RB 1.000 MHz -10.0 VB 3,000 MHz Detector Sample -15.0-Att 30 RL Offset 0.00 -20.0 Sweep Time 50.0ms Ref Lvl:20.00DBM -25.0 Pwr avg: 100 sweeps Amp corr: 1.0dB -30.0Bin size: 83 kHz -35.0 Highest PSD -40.0 0.68 dBm/1.000 MHz 99% Bandwidth -45.0 16.89 MHz -50.0 Power Over Span -55.0 ⁻¹ 18.129 mW 2437.0 2450.0 2460.0 2470.0 2480.0 2487.0 Frequency (MHz) 12.58 dBm Power 2462 MHz

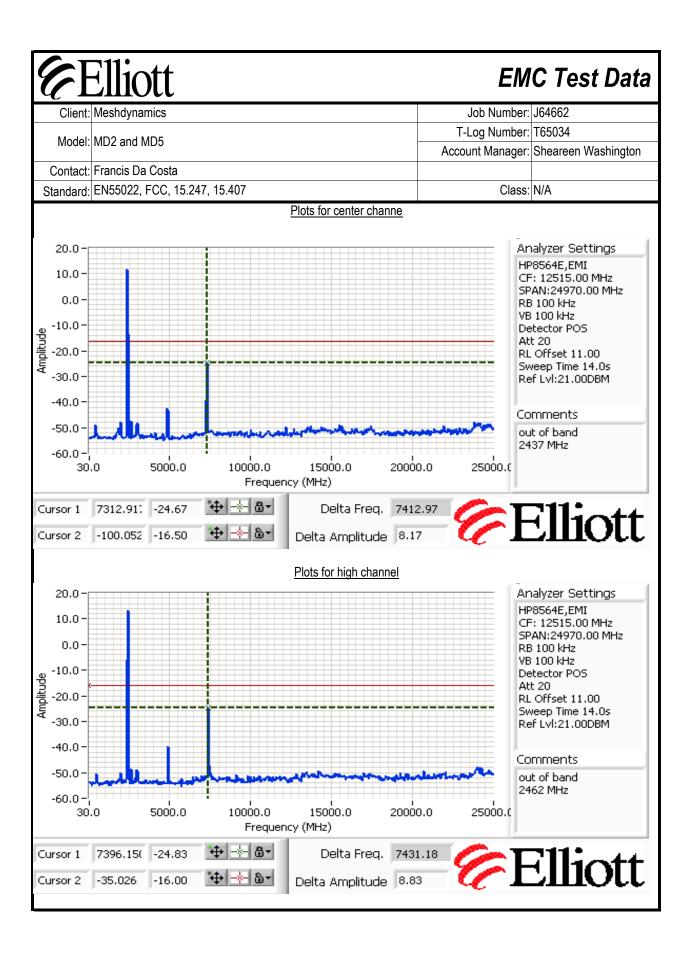
EMC Test Data Client: Meshdynamics J64662 Job Number: T-Log Number: T65034 Model: MD2 and MD5 Account Manager: Sheareen Washington Contact: Francis Da Costa Standard: EN55022, FCC, 15.247, 15.407 Class: N/A Run #2: Power spectral Density Power **PSD** Limit Result Frequency (MHz) Setting (dBm/3kHz) dBm/3kHz 2412 Pass 8.0 2437 2.3 8.0 Pass 2462 3.0 8.0 Pass Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD Note 1: determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal. 8.0 Analyzer Settings HP8564E,EMI 6.0 CF: 2419.48 MHz SPAN:300 kHz RB 3 kHz 4.0 VB 10 kHz Detector POS 2.0 Att 30 RL Offset 11.00 0.0 Sweep Time 100.0s Ref Lvl:31.00DBM Comments PSD 2412 MHz -6.0 2419.40 2419.45 2419.50 2419.55 2419.33 Frequency (MHz) -*- 6-2419.47: 1.33 Cursor 1 0.000 0.00



Elliott EMC Test Data Client: Meshdynamics Job Number: J64662 T-Log Number: T65034 Model: MD2 and MD5 Account Manager: Sheareen Washington Contact: Francis Da Costa Standard: EN55022, FCC, 15.247, 15.407 Class: N/A Run #3: Signal Bandwidth Bandwidth (MHz) Power Resolution Frequency (MHz) Setting Bandwidth 6dB 99% 2412 100 kHz 16.5 17.3 2437 100 kHz 16.6 17.5 2462 16.4 100 kHz 17.5 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB Note 1: Analyzer Settings 15.0 HP8564E,EMI 10.0 CF: 2412,00 MHz 5.0 SPAN:50.00 MHz RB 100 kHz 0.0 VB 100 kHz Detector POS -5.0· -5.0--10.0 --15.0-Att 30 RL Offset 11.00 Sweep Time 50.0ms Ref Lvl:31.00DBM -20.0° -25.0 Comments 6-dB BW 2412 MHz -35.0 2405 2410 2415 2425 2400 2420 2387 Frequency (MHz) **♦** -×- 6-2420.580 13.17 Cursor 1 Delta Freq. 16.50 **Elliott** Cursor 2 2404.08: 7.17 Delta Amplitude 6.00



Elliott EMC Test Data Client: Meshdynamics Job Number: J64662 T-Log Number: T65034 Model: MD2 and MD5 Account Manager: Sheareen Washington Contact: Francis Da Costa Standard: EN55022, FCC, 15.247, 15.407 Class: N/A Run #4: Out of Band Spurious Emissions Frequency (MHz) Limit Result 2412 -30dBc Refer to plots 2437 -30dBc Refer to plots 2462 -30dBc Refer to plots Plots for low channel 15.0 Analyzer Settings HP8564E,EMI 10.0 CF: 12515.00 MHz 5.0 SPAN:24970.00 MHz 0.0-RB 100 kHz VB 100 kHz -5.0 Detector POS 9 -10.0 --15.0 --20.0 -Att 30 RL Offset 11.00 Sweep Time 14.0s Ref Lvl:31.00DBM -25.0 -30.0 Comments -35.0 Out of Band -40.0 2412 MHz -45.0 -¦ 5000.0 10000.0 15000.0 20000.0 25000.0 30.0 Frequency (MHz) **◆** ->- 8-Cursor 1 7229.68: -23.33 Delta Freq. 7264.71 Elliott Cursor 2 -35.026 -16.83 Delta Amplitude 6.50



| E | Elliott | El | MC Test Data |
|-----------|------------------------------|------------------|---------------------|
| Client: | Meshdynamics | Job Number: | J64662 |
| Model | MD2 and MD5 | T-Log Number: | T65034 |
| Model. | INDZ and INDS | Account Manager: | Sheareen Washington |
| Contact: | Francis Da Costa | | |
| Standard: | EN55022, FCC, 15.247, 15.407 | Class: | N/A |

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test standard(s)ifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

specification listed above.

Date of Test: 8/18/2006 Config. Used: 1

Test Engineer: Mehran Birgani Config Change: None

Test Location: Fremont Chamber #4 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane or routed in overhead in the GR-1089 test configuration.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 20 °C

Rel. Humidity: 49 %

Summary of Results

| Run# | Test Performed | Limit | Pass / Fail | Result / Margin |
|------------------|---------------------|-------------------|-------------|-------------------------|
| 1 (902 11a Mada) | RE, 30 - 26,500 MHz | FCC Part 15.209 / | Door | 73.5dBµV/m (4731.5µV/m) |
| 1 (802.11g Mode) | Spurious Emissions | 15.247(c) | Pass | @ 7309.9MHz (-0.5dB) |

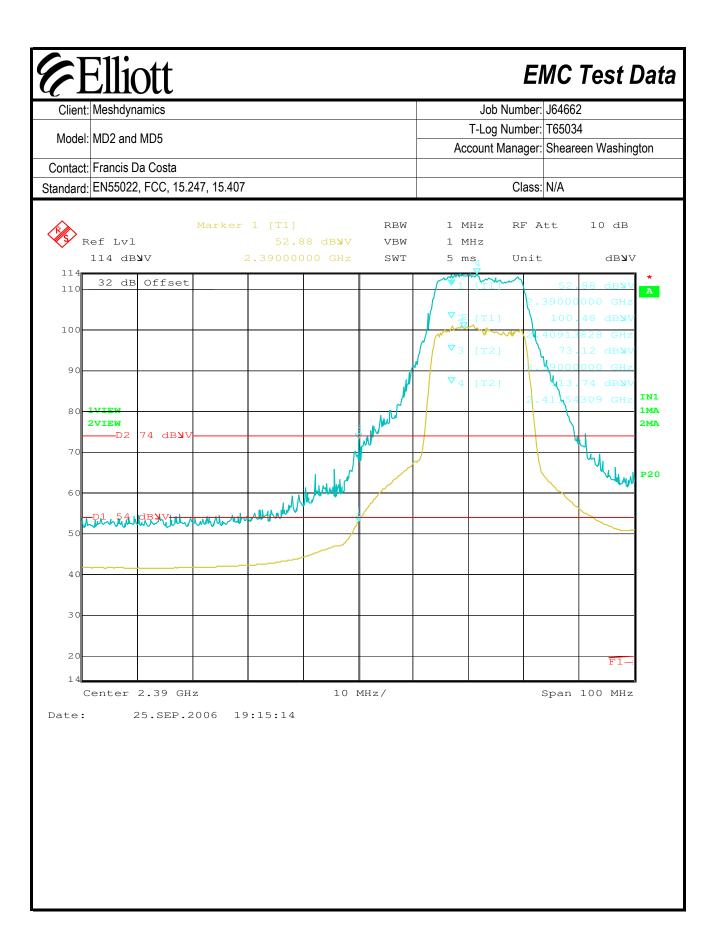
Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

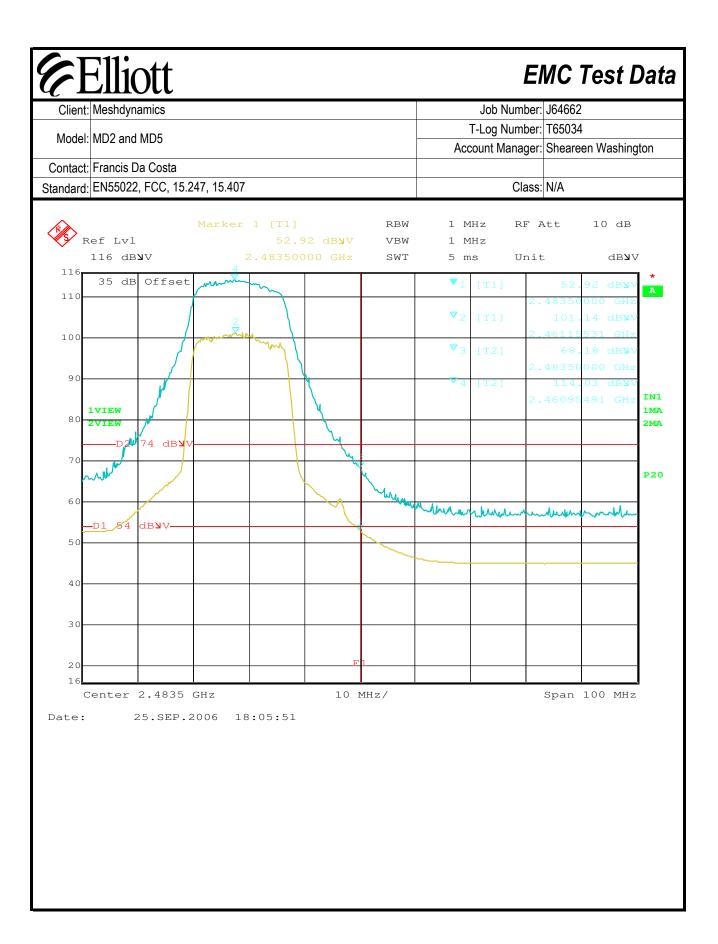
No deviations were made from the requirements of the standard.

| Model: M Contact: F Standard: E | | | | | | | | Job Number: J64662 | |
|---------------------------------------|-------------------------|-----------------------------------|--------------------------|-----------------------------|-----------------------|-----------------------------|------------------------|---|--------|
| Contact: F Standard: E | rancis Da | /IU5 | | | | | | T-Log Number: T65034 | |
| Standard: E | | | | | | | | ount Manager: Sheareen Wash | ington |
| | N55022 | Costa | | | | | | | |
| | 1100022, | FCC, 15 | .247, 15.40 | 7 | | | | Class: N/A | |
| Run #1a: Lo | w Chann I Signal I | el @ 24 [,] Field Str | 12 MHz wit ength: Pea | h 8.0 dBi O ak and avera | age values m | a (14 dBm a easured in 1 | nd setting MHz, and | peak value measured in 100kHz | 2 |
| Frequency | Level | Pol | | / 15.247 | Detector | Azimuth | Height | Comments | |
| | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | DD 4441 \/D 4441 | |
| | 100.2 | V | - | - | AVG | 138 | 1.1 | RB = 1MHz, VB = 1KHz | |
| | 113.7 | V | - | - | PK | 138 | 1.1 | RB = VB = 1MHz | |
| 2410.341 | 86.8 | Н | - | - | AVG | 240 | 1.1 | RB = 1MHz, VB = 1KHz | |
| 2409.539 | 99.7 | Н | | - | PK | 240 | 1.1 | RB = VB = 1MHz | |
| Frequency | Level | Pol | 1 | / 15.247 | Detector | Azimuth | Height | dBc (Peak power measurement | |
| | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | DD - VD - 4MU- | |
| 2390.000 2390.000 | 73.1 52.9 | V | 74.0 54.0 | -0.9 -1.1 | PK AVG | 138 138 | 1.1 1.1 | RB = VB = 1MHz RB = 1MHz, VB = 10KHz | |
| 2390.000 | 52.9 | V | 34.0 | -1.1 | AVG | 130 | 1.1 | RD - IIVINZ, VD - IUNNZ | |
| Note 1: C | Calculated | • | racting the r | narker delta | | | | rength measurements. | |
| Other Spurio | | | 15 209 | / 15 247 | Detector | Azimuth | Height | IComments | |
| Frequency | Level | Pol | | / 15.247 Margin | Detector Pk/QP/Ava | Azimuth degrees | Height meters | Comments | |
| Frequency | Level dBµV/m | | Limit | / 15.247 Margin -4.4 | Pk/QP/Avg | degrees | meters | Comments | |
| Frequency MHz county 4823.670 | Level dBµV/m 49.6 | Pol V/H | Limit 54.0 | Margin -4.4 | Pk/QP/Avg AVG | degrees 97 | meters 1.0 | Comments | |
| Frequency MHz d | Level dBµV/m | Pol V/H V | Limit | Margin | Pk/QP/Avg | degrees | meters | Comments | |



| Client: | Meshdyna | amics | | | | | | Job Number: | J64662 |
|-------------------------------|--------------------------|---------------------|------------------------------|-------------------------|-----------------------|------------|-----------------|--------------------------|------------------------|
| | | | | | | | - | Γ-Log Number: | T65034 |
| Model: | MD2 and | MD5 | | | | | Acc | ount Manager: | Sheareen Washington |
| Contact: | Francis Da | a Costa | | | | | | _ | |
| Standard: | EN55022, | FCC, 15 | 5.247, 15.40 | 7 | | | | Class: | N/A |
| | | | 2437 MHz, @ 3m in 100 | | | dΒμV/m | 1 | | |
| Limi | t for emissi | ons outs | ide of restric | ted bands: | | dBμV/m | Limit is -20 | dBc (Peak pow | ver measurement) |
| | | | | | | | _ | 1 | |
| requency | Level | Pol | | 15.247 | Detector | Azimuth | Height | Comments | |
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | | meters | Dootsistad | |
| 7309.850 | 73.5 | V | 74.0 | -0.5 5.0 | PK AVG | 251 | 1.0 | Restricted | |
| 7309.850 | 49.0 34.0 | <u>V</u> | 54.0 54.0 | -5.0 -20.0 | AVG AVG | 251 | 1.0 1.4 | Restricted | |
| 4874.250 4874.250 | 50.3 | <u>п</u> Н | 74.0 | -20.0 | PK | 208 208 | 1.4 | Restricted Restricted | |
| 7314.670 | 41.8 | <u>п</u> Н | 54.0 | -23. <i>1</i> -12.2 | AVG | 15 | 1.4 | Restricted | |
| 7314.670 | 65.5 | H | 74.0 | -8.5 | PK | 15 | 1.0 | Restricted | |
| 1873.110 | 42.7 | V | 54.0 | -11.3 | AVG | 251 | 1.9 | Restricted | |
| 4873.110 | 60.5 | V | 74.0 | -13.5 | PK | 251 | 1.9 | Restricted | |
| lote 1: | | | | | | | i dii otiloi di | | mit was set 20dB below |
| Note 1: Note 3: Note 2: | level of the VBW = 1k | e fundan H and R | nental and m BW = 1MHz | neasured in for average | 100kHz. e measurme | | | | THE Was Set ZOUD DEIOW |

| ~ - | Ellic | ott | | | | | | EMC Test Da | |
|--|--|---|--|---|---|---|---|--|--|
| | Meshdyna | | | | | | | Job Number: J64662 | |
| | | | | | | | T-Log Number: T65034 | | |
| Model | MD2 and | MD5 | | | | | | count Manager: Sheareen Washington | |
| Contact | Francis Da | a Costa | | | | | | | |
| Standard | EN55022, FCC, 15.247, 15.407 | | | | | | | Class: N/A | |
| | tal Signal | _ | ength: Pea | | Detector | neasured in 1 Azimuth | _ | 2) peak value measured in 100kHz Comments | |
| MHz | $dB\mu V/m$ | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | | |
| 2461.130 | 103.5 | V | - | - | AVG | 245 | 1.0 | RB = 1MHz, VB = 3kHz | |
| 2462.730 | 117.0 | V | - | - | PK | 245 | 1.0 | RB = VB = 1MHz | |
| 2467.230 | 108.0 | V | - | - | Pk | 245 | 1.0 | RB = VB = 100kHz | |
| 2461.370 | 90.3 | Н | - | - | AVG | 307 | 1.2 | RB = 1MHz, VB = 3kHz | |
| 2460.100 | 100.5 | Н | - | - | PK | 307 | 1.2 | RB = VB = 1MHz | |
| 2464.970 | 91.3 | Н | - | - | Pk | 307 | 1.2 | RB = VB = 100kHz | |
| requency | | ons outs Pol | ide of restric | / 15.247 | Detector | dBμV/m Azimuth | Height | dBc (Peak power measurement) Comments | |
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | | |
| 2483.530 | 52.9 | V | 54.0 | -1.1 | AVG | 245 | 1.0 | RB = 1MHz, VB = 1kHz | |
| 2483.530 | 68.2 | V | 74.0 | -5.8 | PK | 245 | 1.0 | RB = VB = 1MHz | |
| 2403.330 | | | | | | | | | |
| lote 1: Other Spu | rious Emis | sions | | | | | | trength measurements. | |
| lote 1: Other Spure | rious Emis Level | sions Pol | 15.209 | / 15.247 | Detector | Azimuth | Height | crength measurements. Comments | |
| Note 1: Other Spure Frequency MHz | rious Emis | sions | | | | | | | |
| Other Spure Trequency MHz 4924.520 | rious Emis Level dBµV/m | Pol V/H | 15.209 Limit | / 15.247 Margin | Detector Pk/QP/Avg | Azimuth degrees | Height meters | Comments | |
| Other Spure Frequency MHz 4924.520 4924.520 | rious Emis Level dBµV/m 36.3 | Pol V/H V | 15.209 Limit 54.0 | / 15.247 Margin -17.7 | Detector Pk/QP/Avg AVG | Azimuth degrees 279 | Height meters | Comments Restricted | |
| Other Spur Frequency MHz 4924.520 4924.520 7395.830 7395.830 | rious Emis Level dBμV/m 36.3 49.7 34.1 45.2 | sions Pol V/H V V V V | 15.209 Limit 54.0 74.0 54.0 74.0 | / 15.247 Margin -17.7 -24.3 -19.9 -28.8 | Detector Pk/QP/Avg AVG PK AVG PK | Azimuth degrees 279 279 360 360 | Height meters 1.0 1.0 1.0 1.0 | Comments Restricted Restricted | |
| Other Spure Frequency MHz 4924.520 4924.520 7395.830 4926.400 | rious Emis Level dBμV/m 36.3 49.7 34.1 45.2 30.8 | sions Pol V/H V V V V H | 15.209 Limit 54.0 74.0 54.0 74.0 54.0 | / 15.247 Margin -17.7 -24.3 -19.9 -28.8 -23.2 | Detector Pk/QP/Avg AVG PK AVG PK AVG | Azimuth degrees 279 279 360 360 264 | Height meters 1.0 1.0 1.0 1.0 1.0 1.0 | Comments Restricted Restricted Restricted Restricted Restricted Restricted | |
| Note 1: Prequency MHz 4924.520 4924.520 7395.830 7395.830 4926.400 4926.400 | rious Emis Level dBμV/m 36.3 49.7 34.1 45.2 30.8 42.2 | sions Pol V/H V V V V H H | 15.209 Limit 54.0 74.0 54.0 74.0 54.0 74.0 | / 15.247 Margin -17.7 -24.3 -19.9 -28.8 -23.2 -31.8 | Detector Pk/QP/Avg AVG PK AVG PK AVG PK AVG | Azimuth degrees 279 279 360 360 264 264 | Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Comments Restricted Restricted Restricted Restricted Restricted Restricted Restricted Restricted | |
| Other Spurification (Control of Control of C | rious Emis Level dBμV/m 36.3 49.7 34.1 45.2 30.8 42.2 33.9 | Sions Pol V/H V V V V H H H H H | 15.209 Limit 54.0 74.0 54.0 74.0 54.0 74.0 54.0 | / 15.247 Margin -17.7 -24.3 -19.9 -28.8 -23.2 -31.8 -20.1 | Detector Pk/QP/Avg AVG PK AVG PK AVG PK AVG AVG AVG AVG AVG AVG | Azimuth degrees 279 279 360 360 264 264 279 | Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Comments Restricted | |
| ther Spur requency MHz 4924.520 7395.830 7395.830 4926.400 4926.400 7390.370 | rious Emis Level dBμV/m 36.3 49.7 34.1 45.2 30.8 42.2 | sions Pol V/H V V V V H H | 15.209 Limit 54.0 74.0 54.0 74.0 54.0 74.0 | / 15.247 Margin -17.7 -24.3 -19.9 -28.8 -23.2 -31.8 | Detector Pk/QP/Avg AVG PK AVG PK AVG PK AVG | Azimuth degrees 279 279 360 360 264 264 | Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Comments Restricted Restricted Restricted Restricted Restricted Restricted Restricted Restricted | |
| Note 1: Other Spure Frequency | rious Emis Level dBμV/m 36.3 49.7 34.1 45.2 30.8 42.2 33.9 45.8 For emiss level of the Signal is r For average | sions Pol V/H V V V H H H H cions in ree | 15.209 Limit 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0 setricted bar ental and nestricted bar urment RBV | / 15.247 Margin -17.7 -24.3 -19.9 -28.8 -23.2 -31.8 -20.1 -28.2 ands, the limit neasured in the but the neasured in the limit of the | Detector Pk/QP/Avg AVG PK | Azimuth degrees 279 279 360 360 264 264 279 279 279 trestricted b | Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Comments Restricted | |



| 6 | Elliott | EMC Test Data | | |
|-----------|------------------------------|------------------|---------------------|--|
| Client: | Meshdynamics | Job Number: | J64662 | |
| Model | MD2 and MD5 | T-Log Number: | T65034 | |
| wodei. | INDZ AND INDS | Account Manager: | Sheareen Washington | |
| Contact: | Francis Da Costa | | | |
| Standard: | EN55022, FCC, 15.247, 15.407 | Class: | N/A | |

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, Bandwidth and Spurious Emissions (802.11b)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

specification listed above.

Date of Test: 9/13/2006 Config. Used: 2 Test Engineer: Juan Martinez Config Change: None Test Location: SVOATS #1 EUT Voltage: 12Vdc

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 18 °C

> Rel. Humidity: 35 %

Summary of Results

| Run# | Test Performed | Limit | Pass / Fail | Result / Margin |
|------|------------------------------|-----------|-------------|-----------------|
| 1 | Output Power | 15.247(b) | Pass | 23.4 dBm |
| 2 | Power spectral Density (PSD) | 15.247(d) | Pass | -5.5 dBm/3kHz |
| 3 | 6dB Bandwidth | 15.247(a) | Pass | 11.167 MHz |
| 3 | 99% Bandwidth | RSS GEN | - | 16.14 MHz |
| 4 | Spurious emissions | 15.247(b) | Pass | Refer to plots |

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

| F | Elliott | | | | | | EM | C Test L | Data |
|---------------------|---|--------------------|--------------|-------------|----------------|---------------|-------------|--------------------|--------|
| | Meshdynamics | | | | | Jo | ob Number: | J64662 | |
| | | | | | | | | T65034 | |
| Model: | MD2 and MD5 | | | | | Accour | nt Manager: | Sheareen Wash | ington |
| Contact: | Francis Da Costa | | | | | | | | |
| tandard: | EN55022, FCC, 15 | 5.247, 15.40 |)7 | | | | Class: | N/A | |
| n #1: O | utput Power | | | | | | | | |
| Power | Output Power Antenna Du | | | | EIRP | Note 2 | Output Po | wer | |
| etting ² | Frequency (MHz) | (dBm) ¹ | mW | Gain (dBi) | Result | dBm | W | (dBm) ³ | mW |
| J | 2412 | 23.3 | | | Pass | 31.3 | 1.355 | 21.2 | 13 |
| | 2437 | 23.2 | | | Pass | 31.2 | 1.318 | 21.1 | 12 |
| | 2462 | 23.4 | 218.8 | 8.0 | Pass | 31.4 | 1.380 | 21.4 | 13 |
| ote 1: ote 2: | Used a Peak Power Power setting - the | | ower setting | used during | testing, inclu | ided for refe | rence only. | | |
| | Power setting - the Power measured u | | | | | | rence only. | | |
| lote 3: | | | | | | y- | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |



EMC Test Data

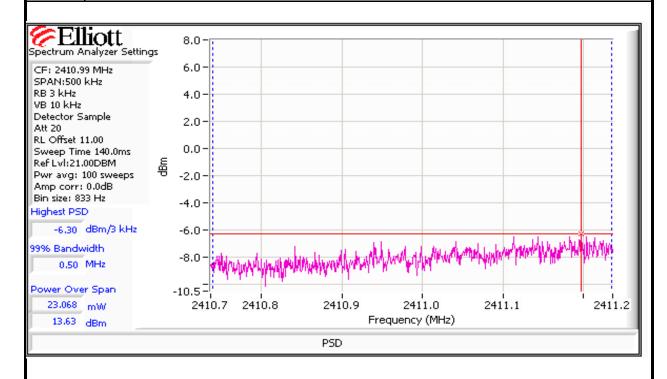
| Client: | Meshdynamics | Job Number: | J64662 |
|-----------|------------------------------|------------------|---------------------|
| Model | MD2 and MD5 | T-Log Number: | T65034 |
| wodei. | INDZ and INDS | Account Manager: | Sheareen Washington |
| Contact: | Francis Da Costa | | |
| Standard: | EN55022, FCC, 15.247, 15.407 | Class: | N/A |

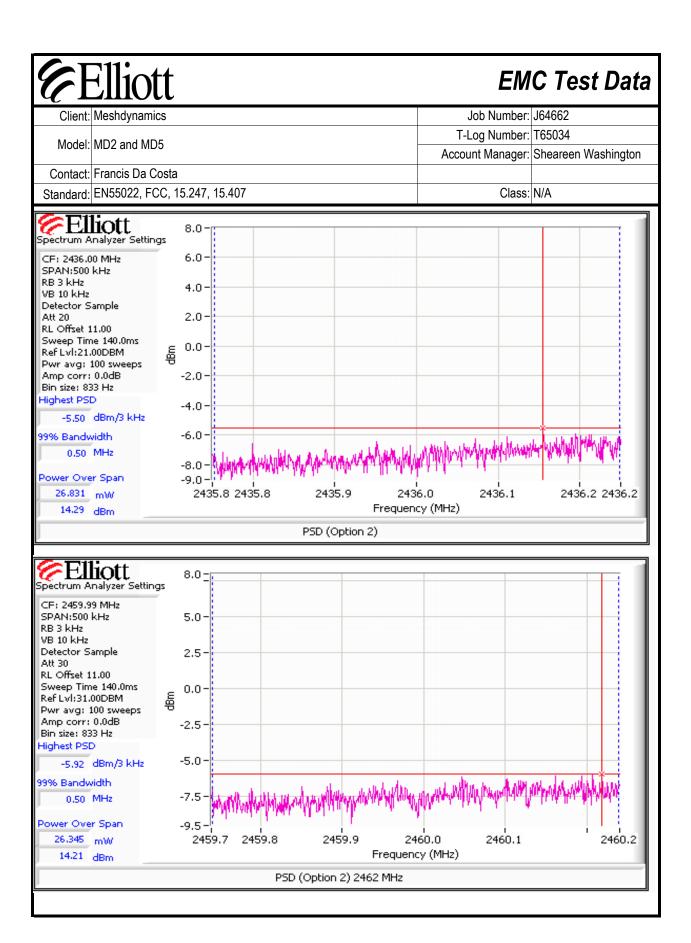
Run #2: Power spectral Density

| Power | Frequency (MHz) PSD | | Limit | Result |
|---------|---|-------------------|----------|--------|
| Setting | riequency (Miliz) | (dBm/3kHz) Note 1 | dBm/3kHz | |
| | 2412 | -6.3 | 8.0 | Pass |
| | 2437 | -5.5 | 8.0 | Pass |
| | 2462 | -5.9 | 8.0 | Pass |

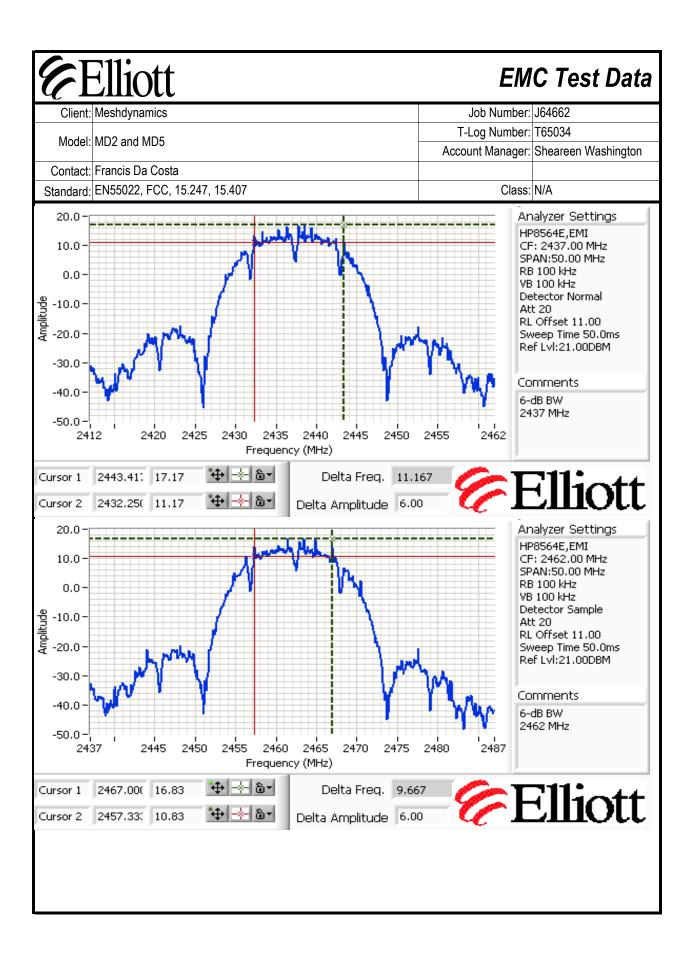
Note 1:

Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with sample detector, power averaging enabled. The span is set to ensure there are at least two sample points per resolution bandwidth (with 601 points the span < 900kHz). The frequency with the highest PPSD is first determined using a peak detector with the same resolution and video bandwidth settings but over the 6dB bandwidth of the transmitted signal.

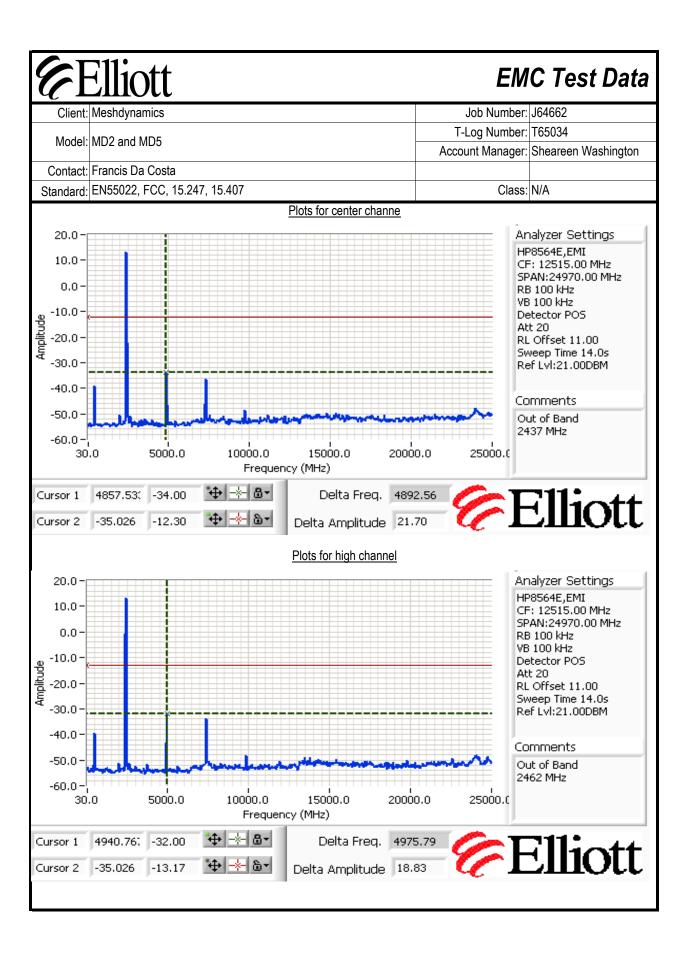




EMC Test Data Client: Meshdynamics Job Number: J64662 T-Log Number: T65034 Model: MD2 and MD5 Account Manager: Sheareen Washington Contact: Francis Da Costa Standard: EN55022, FCC, 15.247, 15.407 Class: N/A Run #3: Signal Bandwidth Bandwidth (MHz) Power Resolution Frequency (MHz) Setting Bandwidth 6dB 99% 2412 100 kHz 9.83 16.06 2437 100 kHz 11.167 16.14 2462 9.667 100 kHz 15.56 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB Note 1: Analyzer Settings 20.0 HP8564E,EMI CF: 2412,00 MHz 10.0 SPAN:50.00 MHz RB 100 kHz 0.0 VB 100 kHz Detector Sample -10.0 -20.0 Att 20 RL Offset 11.00 Sweep Time 50.0ms Ref Lvl:21.00DBM -30.0 Comments -40.0 6-dB BW 2412 MHz -50.0 2405 2410 2415 2425 2400 2420 2387 2395 Frequency (MHz) **♦** -≽- 6-2417.417 16.83 Delta Freq. 9.833 Cursor 1 Cursor 2 2407.58: 10.83 Delta Amplitude 6.00



EMC Test Data Client: Meshdynamics Job Number: J64662 T-Log Number: T65034 Model: MD2 and MD5 Account Manager: Sheareen Washington Contact: Francis Da Costa Standard: EN55022, FCC, 15.247, 15.407 Class: N/A Run #4: Out of Band Spurious Emissions Frequency (MHz) Limit Result 2412 -30dBc Refer to plots 2437 -30dBc Refer to plots 2462 -30dBc Refer to plots Plots for low channel 20.0 Analyzer Settings HP8564E,EMI 10.0 CF: 12515.00 MHz SPAN:24970.00 MHz 0.0-RB 100 kHz VB 100 kHz -10.0 Detector POS Amplitude Att 20 -20.0 RL Offset 11.00 Sweep Time 14.0s -30.0 Ref Lvl:21.00DBM -40.0 Comments -50.0 Out of Band 2412 MHz -60.0 -lT 10000.0 15000.0 -10Ö.1 5000.0 20000.0 24869.9 Frequency (MHz) **↔** -*- 8-Cursor 1 7229.68: -34.83 Delta Freq. 7394.76 **♣ 6** Cursor 2 -165.078 -14.67 Delta Amplitude 20.16



| 6 | Elliott | EMC Test Data | | |
|-----------|------------------------------|------------------|---------------------|--|
| Client: | Meshdynamics | Job Number: | J64662 | |
| Model: | MD2 and MD5 | T-Log Number: | T65034 | |
| wodei. | | Account Manager: | Sheareen Washington | |
| Contact: | Francis Da Costa | | | |
| Standard: | EN55022, FCC, 15.247, 15.407 | Class: | Radio / A | |

Radiated Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

specification listed above.

Date of Test: 1/13/2007 9:07 Config. Used: 1
Test Engineer: Juan Martinez Config Change: None
Test Location: SVOATS #2 EUT Voltage: -48Vdc

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated emissions testing.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, **preliminary** testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. **Maximized** testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, <u>and</u> manipulation of the EUT's interface cables.

Ambient Conditions: Temperature: 18 °C

Rel. Humidity: 35 %

Summary of Results

| Run# | Test Performed | Limit | Result | Margin |
|------|--|---------|--------|---|
| 1 | RE, 1000 - 10000 MHz, Maximized Emissions | RSS 210 | Pass | 47.1dBµV/m (225.9µV/m) @ 7053.4MHz (-6.9dB) |

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

| E | Elliott | EM | EMC Test Data | | |
|-----------|------------------------------|------------------|---------------------|--|--|
| Client: | Meshdynamics | Job Number: | J64662 | | |
| Model: | MD2 and MD5 | T-Log Number: | T65034 | | |
| Model. | | Account Manager: | Sheareen Washington | | |
| Contact: | Francis Da Costa | | | | |
| Standard: | EN55022, FCC, 15.247, 15.407 | Class: | Radio / A | | |

Run #1: Radiated Spurious Emissions, 1000 - 10000 MHz (Receiver spurious)

All radios receiving continuously on channels 2437 and 5785

Note that all significant emissions below 1GHz were from the digital device (as demonstarted by preliminary scans with the transmitters operating, receivers operating and radios in stand-by) and are covered in a separate test session.

| Frequency | Level | Pol | FCC C | lass B | Detector | Azimuth | Height | Comments |
|-----------|-------------|-----|-------|--------|-----------|---------|--------|----------|
| MHz | $dB\mu V/m$ | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 7053.367 | 47.1 | V | 54.0 | -6.9 | AVG | 300 | 2.1 | |
| 7000.020 | 45.6 | V | 54.0 | -8.5 | AVG | 140 | 1.3 | |
| 7053.366 | 43.8 | Н | 54.0 | -10.2 | AVG | 0 | 1.0 | |
| 2309.998 | 43.6 | Н | 54.0 | -10.4 | AVG | 300 | 1.6 | |
| 7000.022 | 43.5 | Н | 54.0 | -10.5 | AVG | 180 | 1.0 | |
| 2309.998 | 39.5 | V | 54.0 | -14.5 | AVG | 96 | 1.3 | |
| 7026.689 | 38.0 | Н | 54.0 | -16.0 | AVG | 40 | 1.2 | |
| 7080.180 | 36.5 | Н | 54.0 | -17.5 | AVG | 300 | 1.7 | |
| 2501.251 | 35.5 | V | 54.0 | -18.5 | AVG | 20 | 1.3 | |
| 2500.095 | 35.4 | Н | 54.0 | -18.6 | AVG | 350 | 1.6 | |
| 1253.183 | 33.2 | V | 54.0 | -20.9 | AVG | 14 | 1.0 | |
| 1249.665 | 32.6 | Н | 54.0 | -21.4 | AVG | 172 | 1.0 | |
| 7053.367 | 52.6 | V | 74.0 | -21.4 | PK | 300 | 2.1 | |
| 7000.020 | 50.5 | V | 74.0 | -23.5 | PK | 140 | 1.3 | |
| 7053.366 | 50.0 | Н | 74.0 | -24.1 | PK | 0 | 1.0 | |
| 7000.022 | 49.3 | Н | 74.0 | -24.7 | PK | 180 | 1.0 | |
| 2309.998 | 49.2 | Н | 74.0 | -24.8 | PK | 300 | 1.6 | |
| 7026.689 | 47.5 | Н | 74.0 | -26.5 | PK | 40 | 1.2 | |
| 2309.998 | 47.4 | V | 74.0 | -26.6 | PK | 96 | 1.3 | |
| 2501.251 | 46.6 | V | 74.0 | -27.4 | PK | 20 | 1.3 | |
| 7080.180 | 46.6 | Н | 74.0 | -27.4 | PK | 300 | 1.7 | |
| 1253.183 | 44.3 | V | 74.0 | -29.7 | PK | 14 | 1.0 | |
| 2500.095 | 44.2 | Н | 74.0 | -29.8 | PK | 350 | 1.6 | |
| 1249.665 | 44.1 | Н | 74.0 | -30.0 | PK | 172 | 1.0 | |

Report Date: January 9, 2007 **EXHIBIT 3: Photographs of Test Configurations**

Pages

File: R66621 Rev 5 Exhibit Page 3 of 10

EXHIBIT 4: Proposed FCC ID Label & Label Location

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Report Date: January 9, 2007

EXHIBIT 5: Detailed Photographs of Meshdynamics Model MD4000Construction

Pages

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EXHIBIT 6: Operator's Manual for Meshdynamics Model MD4000

Pages

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EXHIBIT 7: Block Diagram of Meshdynamics Model MD4000

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EXHIBIT 8: Schematic Diagrams for Meshdynamics Model MD4000

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Report Date: January 9, 2007

EXHIBIT 9: Theory of Operation for Meshdynamics Model MD4000

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EXHIBIT 10: RF Exposure Information

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