# FCC CFR47 PART 15 SUBPART C
# CLASS II PERMISSIVE CHANGE
# TEST REPORT

**FOR**

**WI-FI CELLULAR BASESTATION**

**MODEL NUMBER: 5110XXXX**

**FCC ID: P9J-51102100**

**REPORT NUMBER: 03U2355-1**

**ISSUE DATE: APRIL 15, 2004**

*Prepared for*
**TROPOS NETWORKS INCORPORATED**
**1710 SOUTH AMPHLETT BLVD., SUITE 304**
**SAN MATEO, CALIFORNIA 94402**
**U.S.A**

*Prepared by*
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# 1. TEST RESULT CERTIFICATION

**COMPANY NAME:** TROPOS NETWORKS, INC.
1710 S. AMPHLETT BLVD., SUITE 304
SAN MATEO, CALIFORNIA 94402, U.S.A

**EUT DESCRIPTION:** WI-FI CELLULAR BASESTATION

**MODEL:** 5110xxxx (See Description section below for model differences)

**DATE TESTED:** FEBRUARY 27 – MARCH 04, 2004

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| FCC PART 15 SUBPART C | NO NON-COMPLIANCE NOTED |

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note**: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Approved & Released For CCS By:

MIKE HECROTTE
CHIEF ENGINEER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

NEELESH RAJ
EMC TECHNICIAN
COMPLIANCE CERTIFICATION SERVICES

# 2. CLASS II PERMISSIVE CHANGE DESCRIPTION

The EUT is an 802.11b transceiver operating in the 2400-2483.5 MHz band.

The changes are as follows:
1. Larger capacity AC/DC power supply
2. Support for an optional internal Li-Ion based battery backup capability
3. Support for high gain antennas when operating at reduced TX power levels

The transmitter has a maximum peak conducted output power as follows:

| Frequency Range (MHz) | Mode | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|
| 2412 - 2462 | 802.11b | 23.95 | 248.31 |

The radio utilizes the following antennas and gain:

| Antenna Type | Gain (dBi) | Notes |
|---|---|---|
| OMNI | 12 | Point To Multipoint |
| PATCH | 17 | Point To Multipoint |

Model number differences:

Figure 31 U.S., Canada Antenna Configurations

| Order Number | Product Description | FCC Certified Antenna Configurations | | | | |
|---|---|---|---|---|---|---|
| | | Peak Conducted Output Power | Unit-Mounted 7.4dBi Omni : | Mast-Mounted Cable Attached up to 7.4dBi | Mast-Mounted Cable Attached up to 12dBi: | Mast-Mounted Cable Attached up to 17dBi: |
| 51102100 | Tropos 5110; (-35° to 55° C); N connectors; bracketry | 28 dBm | | Up to 35.4 dBm EIRP | | |
| 51103000 | Tropos 5110; (-35° to 55° C); 7.4dBi omni antennas; bracketry | 28 dBm | 35.4 dBm EIRP | | | |
| 51102200 | Tropos 5110B; (-35° to 55° C); Battery backup; N connectors; bracketry | 28 dBm | | Up to 35.4 dBm EIRP | | |
| 51103100 | Tropos 5110B; (-35° to 55° C); Battery backup, 7.4 dBi omni, antennas, bracketry | 28 dBm | 35.4 dBm EIRP | | | |
| 51102000 | Tropos 5110L; (-35° to 55° C); N connectors; bracketry | 24 dBm | | | Up to 36.0 dBm EIRP | |
| 51102400 | Tropos 5110LB; (-35° to 55° C); Battery backup; Battery backup; N connectors; bracketry | 24 dBm | 31.4 dBm EIRP | | Up to 36.0 dBm EIRP | |
| 51102001 | Tropos 5110L; (-35° to 55° C); N connectors; bracketry | 19 dBm | | | | Up to 36.0 dBm EIRP |
| 51102401 | Tropos 5110LB; (-35° to 55° C); Battery backup; Battery backup; N connectors; bracketry | 19 dBm | 26.4 dBm EIRP | | | Up to 36.0 dBm EIRP |

# 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/2001, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

# 4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

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No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

# 5. CALIBRATION AND UNCERTAINTY

## 5.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

## 5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER | UNCERTAINTY |
|---|---|
| Radiated Emission, 30 to 200 MHz | +/- 3.3 dB |
| Radiated Emission, 200 to 1000 MHz | +4.5 / -2.9 dB |
| Radiated Emission, 1000 to 2000 MHz | +4.5 / -2.9 dB |
| Power Line Conducted Emission | +/- 2.9 dB |

Uncertainty figures are valid to a confidence level of 95%.

## 5.3. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| TEST EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **Cal Due** |
| Peak Power Meter | Agilent | E4416A | GB41291160 | 11/7/2004 |
| Peak / Average Power Sensor | Agilent | E9327A | US40440755 | 11/7/04 |
| Spectrum Analyzer 20 Hz ~ 44 GHz | Agilent | E4446A | US42510266 | 7/23/04 |
| Spectrum Analyzer 3 Hz ~ 26.5 GHz | Agilent | E4440A | US41421507 | 5/8/04 |
| LISN, 10 kHz ~ 30 MHz | Solar | 8012-50-R-24-BNC | 8379443 | 10/13/04 |
| LISN, 10 kHz ~ 30 MHz | FCC | LISN-50/250-25-2 | 2023 | 10/13/04 |
| Site A Line Stabilizer / Conditioner | Tripplite | LC-1800a | A0051681 | CNR |
| EMI Test Receiver | R & S | ESHS 20 | 827129/006 | 7/17/04 |
| EMI Receiver, 9 kHz ~ 2.9 GHz | HP | 8542E | 3942A00286 | 11/21/04 |
| RF Filter Section | HP | 85420E | 3705A00256 | 11/21/04 |
| 30MHz - 2GHz Bilog | Sunol Sciences | JB1 Antenna | A121003 | 12/22/04 |
| Antenna, Horn 1 ~ 18 GHz | EMCO | 3115 | 9001-3245 | 2/4/05 |
| Preamplifier 1-26 GHz | MITEQ | NSP2600-SP | 924342 | 4/25/04 |
| Antenna, Horn 1 ~ 18 GHz | EMCO | 3117 | 29301 | 12/26/04 |
| Preamplifier, 1 ~ 26 GHz | Miteq | NSP10023988 | 646456 | 4/25/04 |
| Antenna, Horn 1 ~ 18 GHz | EMCO | 3115 | 6717 | 2/4/05 |
| Spectrum Analyzer 20 Hz ~ 44 GHz | Agilent | E4446A | US42070220 | 7/23/04 |
| 10dB Attenuator | Weinschel | 56-10 | K16148 | N/A |
| 2.4-2.5 GHz Reject Filter | Micro- Tronics | BRM50702 | 1 | N/A |

# 6. SETUP OF EQUIPMENT UNDER TEST

## SETUP FOR RF TESTS (AC PWR AND BATTERY BACKUP)

## SUPPORT EQUIPMENT

| PERIPHERAL SUPPORT EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| OMNI DIRECTIONAL BASE ANTENNA (12dBi) | NCG COMPANY | GP-24-3 | N/A | N/A |
| PATCH ANTENNA (17dBi) | MAXRAD | MSP24013MB | N/A | N/A |
| 50 OHM TERMINATOR | N/A | N/A | N/A | N/A |

## I/O CABLES

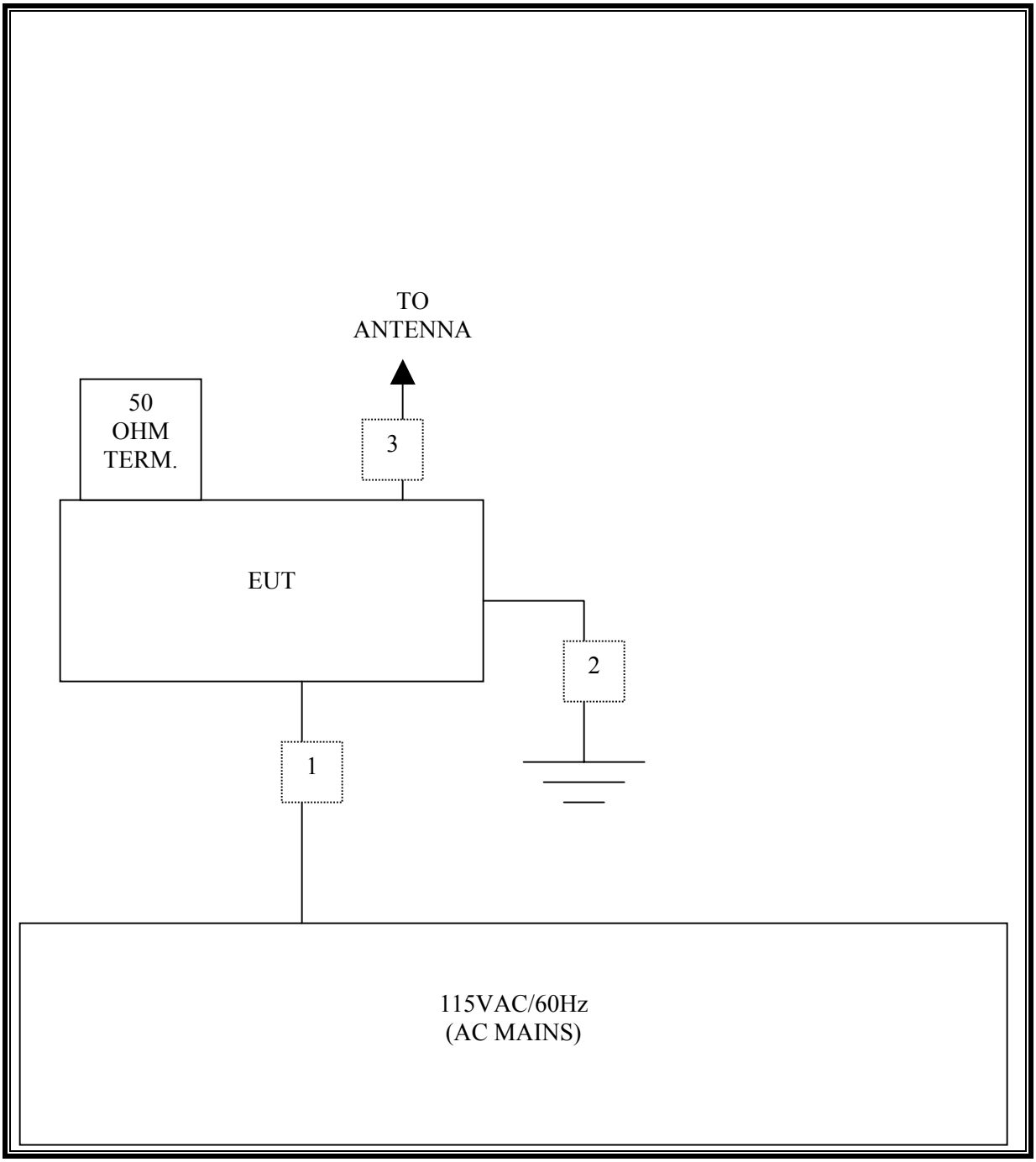
| I/O CABLE LIST | | | | | | |
|---|---|---|---|---|---|---|
| **Cable No.** | **Port** | **# of Identical Ports** | **Connector Type** | **Cable Type** | **Cable Length** | **Remarks** |
| 1 | AC PWR | 1 | AC PWR | UNSHIELDED | 1.9M | US (3 PRONG) |
| 2 | GROUND | 1 | SCREW | UNSHIELDED | 1.86M | GROUNDED TO GROUND PLANE |
| *3 | TX | 1 | N-TYPE | SHIELDED (RG58) | 1.86M | 1.33dB LOSS @ 2.4GHz |

*NOTE: Cable #3 was used only with the Patch Antenna; the Omni Antenna was mounted directly on the EUT.

## TEST SETUP

During the testing process the EUT was “connected” to the AC mains (115VAC/60Hz) for all AC power tests and “disconnected” from the AC mains for all battery backup tests (power cord was still connected to EUT). The EUT was set in continuously transmit mode and all antennas were tested accordingly.

**SETUP DIAGRAM FOR TESTS**



## SETUP FOR AC LINE CONDUCTION TESTS (AC PWR AND BATTERY BACKUP)

## SUPPORT EQUIPMENT

| PERIPHERAL SUPPORT EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| OMNI DIRECTIONAL BASE ANTENNA (12dBi) | NCG COMPANY | GP-24-3 | N/A | N/A |
| 50 OHM TERMINATOR | N/A | N/A | N/A | N/A |
| REMOTE LAPTOP | IBM | THINKPAD 2658 | N/A | N/A |

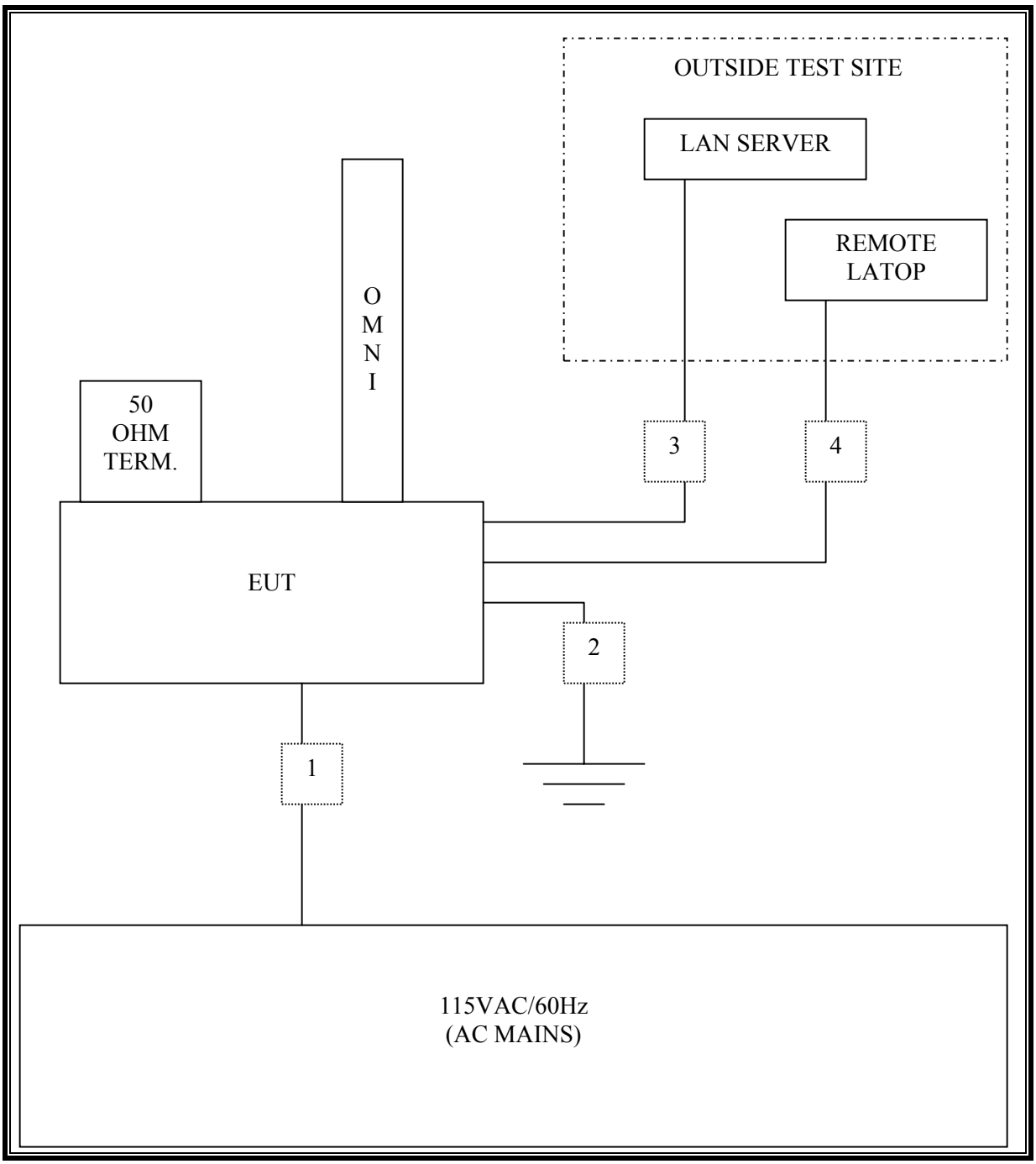
## I/O CABLES

| I/O CABLE LIST | | | | | | |
|---|---|---|---|---|---|---|
| **Cable No.** | **Port** | **# of Identical Ports** | **Connector Type** | **Cable Type** | **Cable Length** | **Remarks** |
| 1 | AC PWR | 1 | AC PWR | UNSHIELDED | 1.9M | US (3 PRONG) |
| 2 | GROUND | 1 | SCREW | UNSHIELDED | 1.86M | GROUNDED TO GROUND PLANE |
| 3 | ETHERNET | 1 | RJ45 | UNSHIELDED | 10M | N/A |
| 4 | ETHERNET | 1 | RJ45 | UNSHIELDED | 10M | N/A |

## TEST SETUP

During the testing process the EUT was “connected” to the AC mains (115VAC/60Hz) for all AC power tests and “disconnected” from the AC mains for all battery backup tests (power cord was still connected to EUT). The EUT was set in continuously transmit mode. The Omni Antenna was found to be worst case, and all testing was done with the Omni Antenna.

**SETUP FOR AC LINE CONDUCTION TESTS (AC PWR AND BATTERY BACKUP)**



## SETUP FOR AC LINE CONDUCTION TESTS (POWER OVER ETHERNET)

### SUPPORT EQUIPMENT

| PERIPHERAL SUPPORT EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| OMNI DIRECTIONAL BASE ANTENNA (12dBi) | NCG COMPANY | GP-24-3 | N/A | N/A |
| 50 OHM TERMINATOR | N/A | N/A | N/A | N/A |
| REMOTE LAPTOP | IBM | THINKPAD 2658 | N/A | N/A |
| POWER OVER ETHERNET | 3COM | PW130 | N/A | N/A |

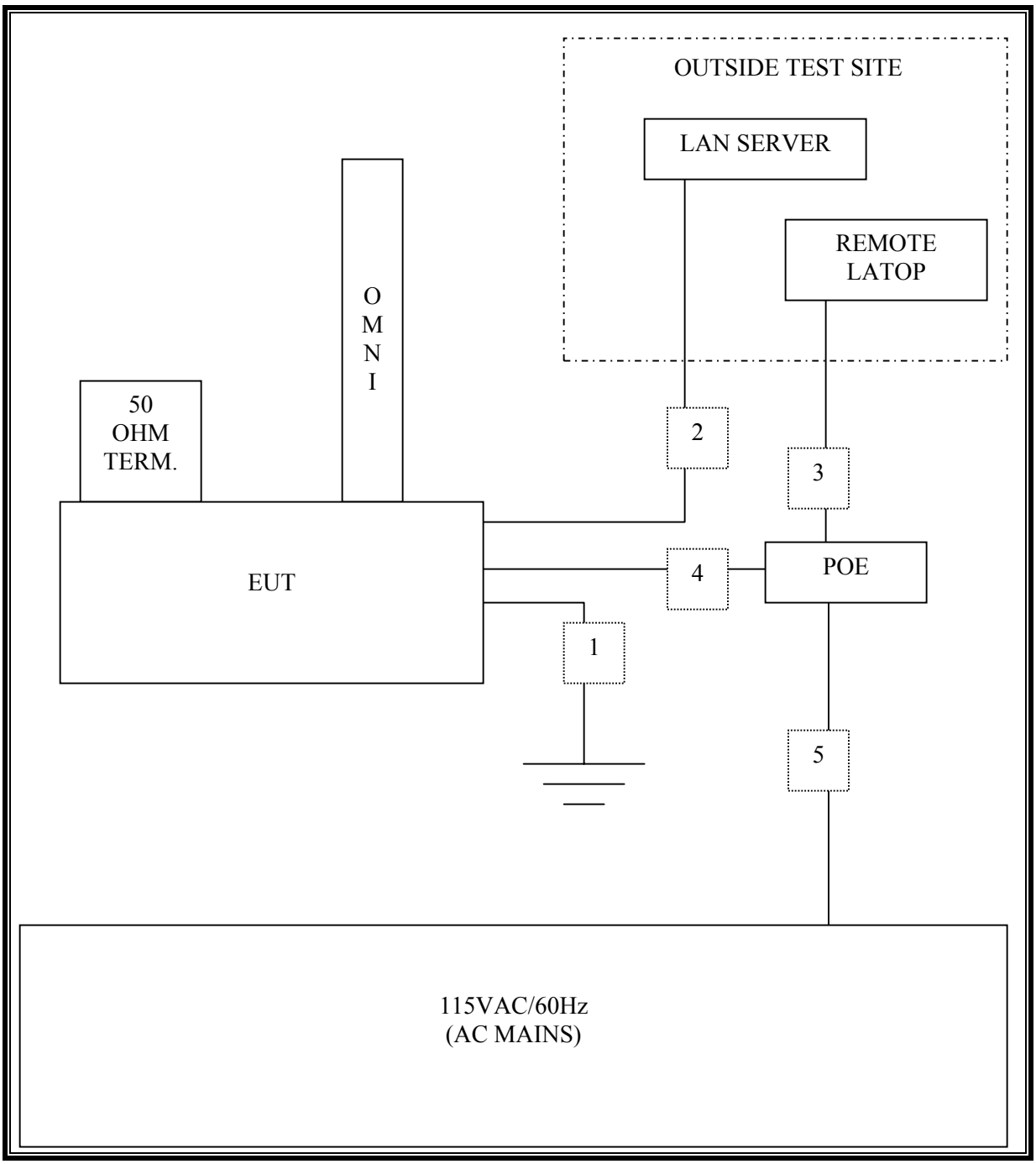
### I/O CABLES

| I/O CABLE LIST | | | | | | |
|---|---|---|---|---|---|---|
| **Cable No.** | **Port** | **# of Identical Ports** | **Connector Type** | **Cable Type** | **Cable Length** | **Remarks** |
| 1 | GROUND | 1 | SCREW | UNSHIELDED | 1.86M | GROUNDED TO GROUND PLANE |
| 2 | ETHERNET | 1 | RJ45 | UNSHIELDED | 10M | N/A |
| 3 | ETHERNET | 1 | RJ45 | UNSHIELDED | 10M | N/A |
| 4 | ETHERNET | 1 | RJ45 | UNSHIELDED | 10M | N/A |
| 5 | AC PWR | 1 | AC PWR | UNSHIELDED | 1.9M | US (3 PRONG) |

### TEST SETUP

During the testing process the EUT was powered by the P.O.E and was set in continuously transmit mode. The Omni Antenna was found to be worst case, and all testing was done with the Omni Antenna.

**SETUP FOR AC LINE CONDUCTION TESTS (POWER OVER ETHERNET)**



# 7. APPLICABLE LIMITS AND TEST RESULTS

## 7.1. 99% BANDWIDTH

**LIMIT**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

**RESULTS**

No non-compliance noted:

802.11b Mode (OMNI ANTENNA)

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2412 | 15.0225 |
| Middle | 2437 | 15.4648 |
| High | 2462 | 14.8115 |

802.11b Mode (PATCH ANTENNA)

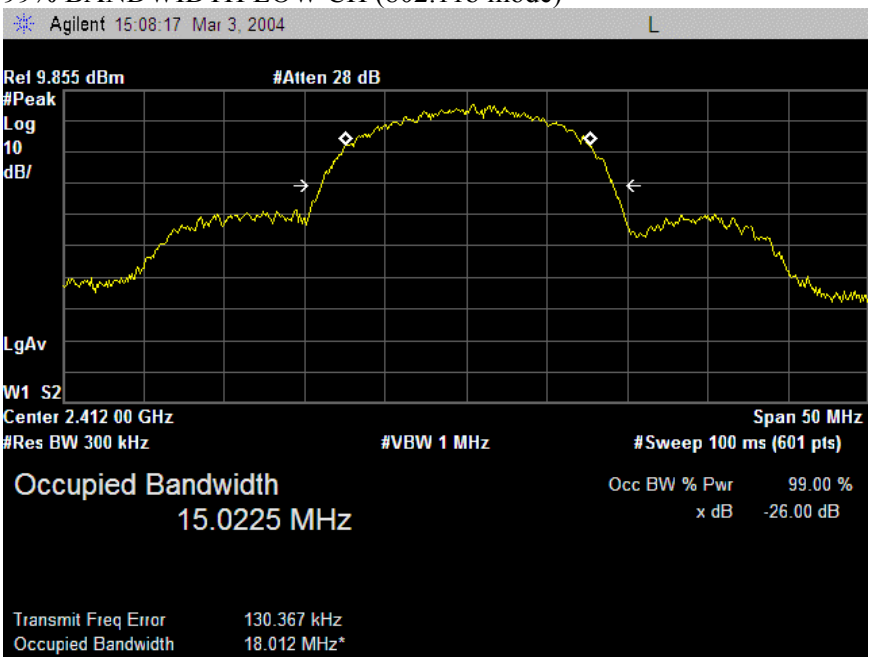
| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2412 | 14.9666 |
| Middle | 2437 | 14.9608 |
| High | 2462 | 14.7482 |

NOTE: 99% Bandwidth was measured for each different antenna type due to the TX output power difference between the antenna's.

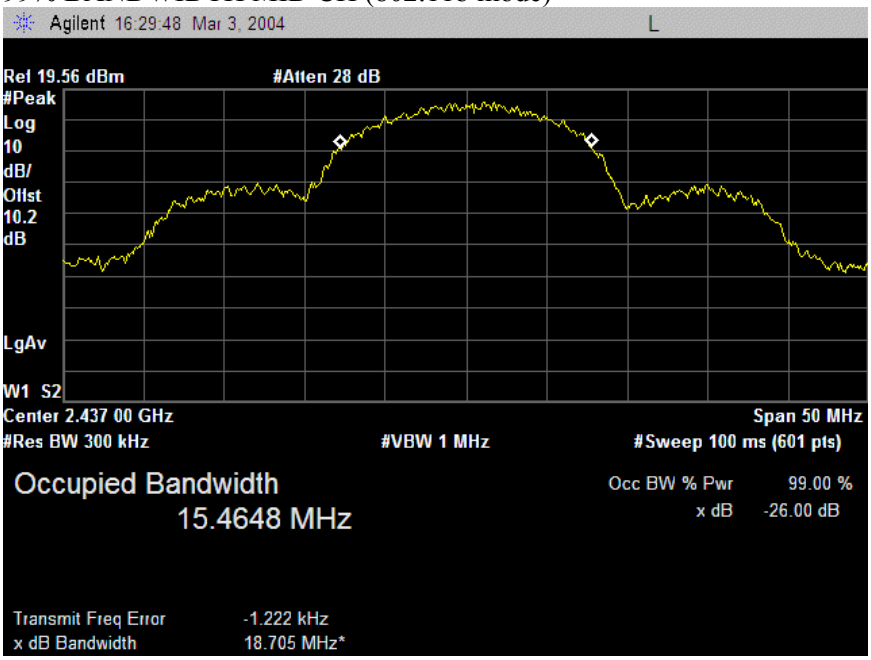
**OMNI ANTENNA**

**99% BANDWIDTH (802.11b MODE)**

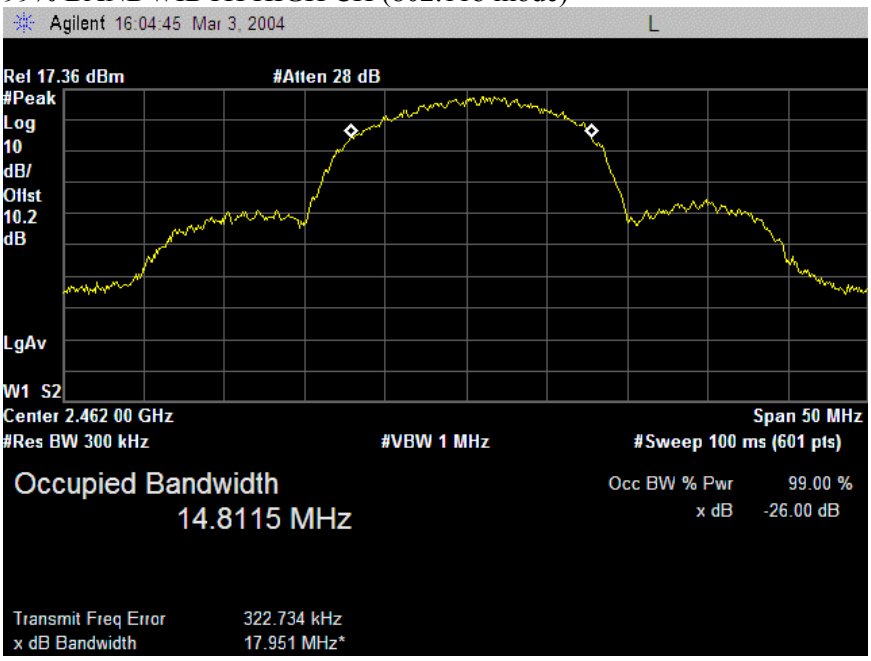
99% BANDWIDTH LOW CH (802.11b mode)



99% BANDWIDTH MID CH (802.11b mode)



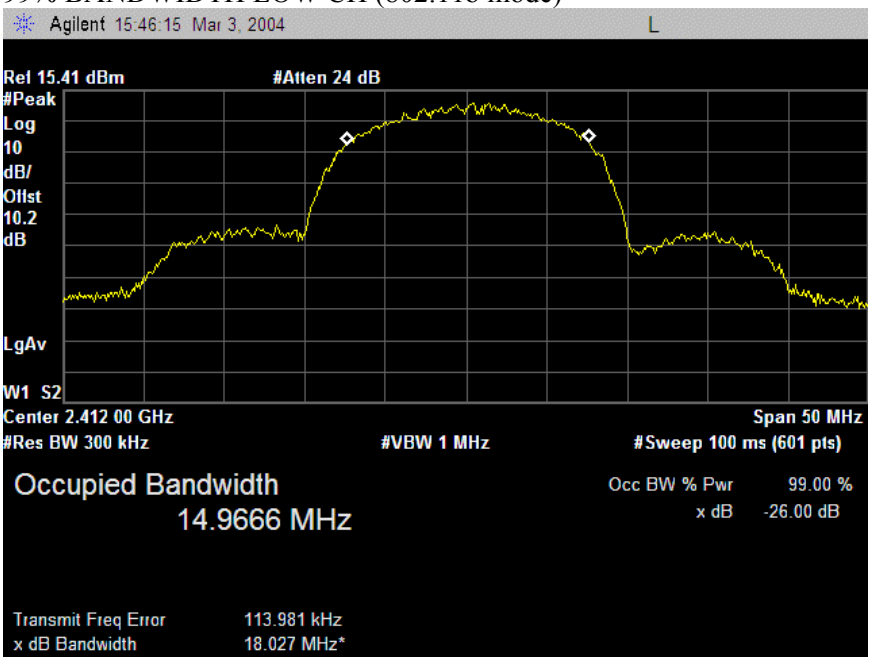
99% BANDWIDTH HIGH CH (802.11b mode)



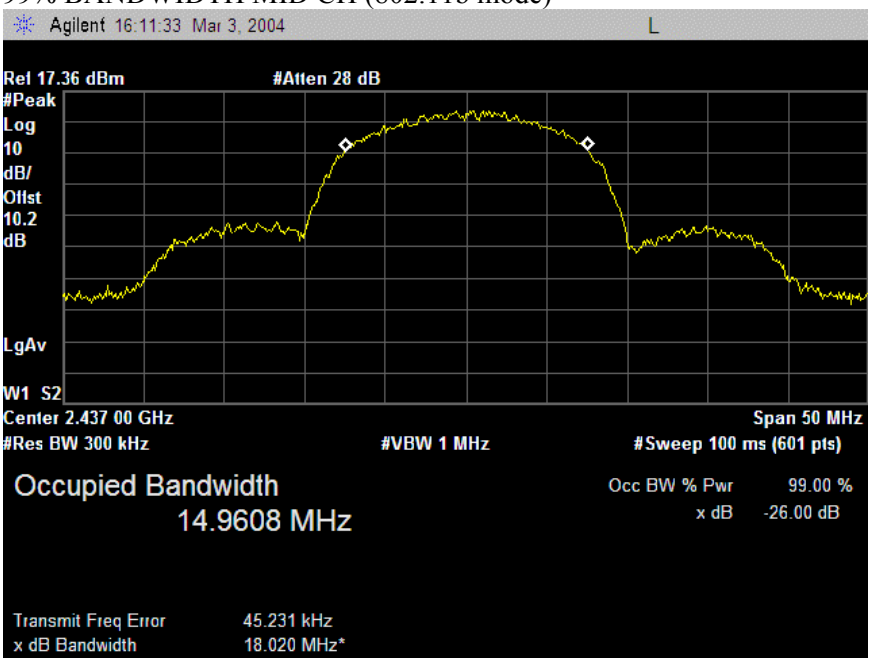
## PATCH ANTENNA

### 99% BANDWIDTH (802.11b MODE)

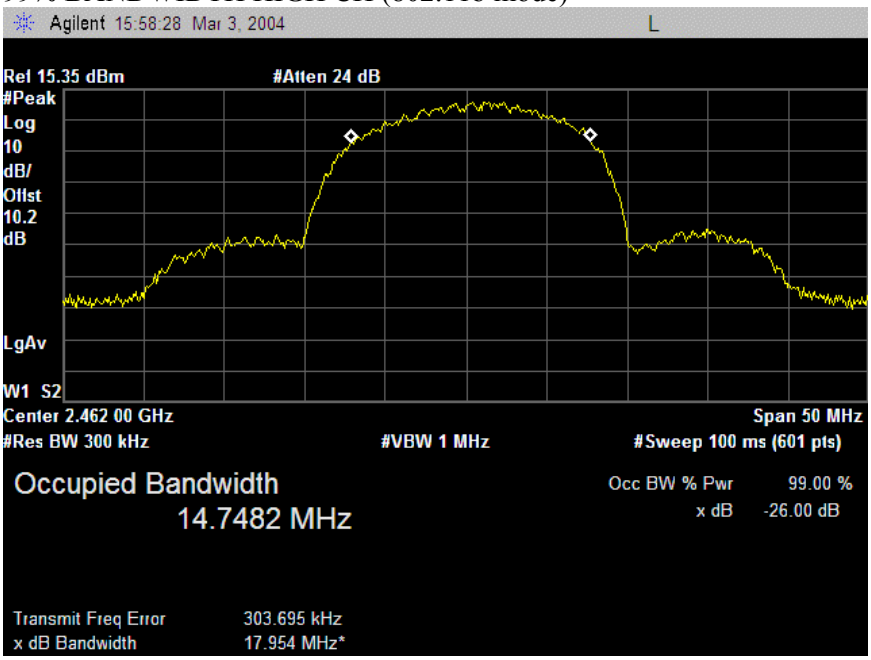
99% BANDWIDTH LOW CH (802.11b mode)



99% BANDWIDTH MID CH (802.11b mode)



99% BANDWIDTH HIGH CH (802.11b mode)



## 7.2. PEAK OUTPUT POWER

**PEAK POWER LIMIT**

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz , and 5725-5850 MHz bands: 1 watt.

§15.247 (b) (4) Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§15.247 (3) (i) Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed , point to point operation may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

**TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.

The cable assembly insertion loss of 10.20 dB (including 10 dB pad and 0.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power. The cable assembly insertion loss does not include cable loss from EUT to antenna, which is documented on the following page.

**RESULTS**

No non-compliance noted:

The maximum antenna gain of the Omni Antenna (point to multipoint) is 12.0 dBi, therefore the limit is 24.0 dBm.

802.11b Mode

| Channel | Frequency (MHz) | Final Peak Power (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|
| Low | 2412 | 23.81 | 24 | -0.19 |
| Middle | 2437 | 23.95 | 24 | -0.05 |
| High | 2462 | 23.86 | 24 | -0.14 |

The maximum antenna gain of the Patch Antenna (point to multipoint) is 17.0 dBi, therefore the limit is 19.0 dBm.

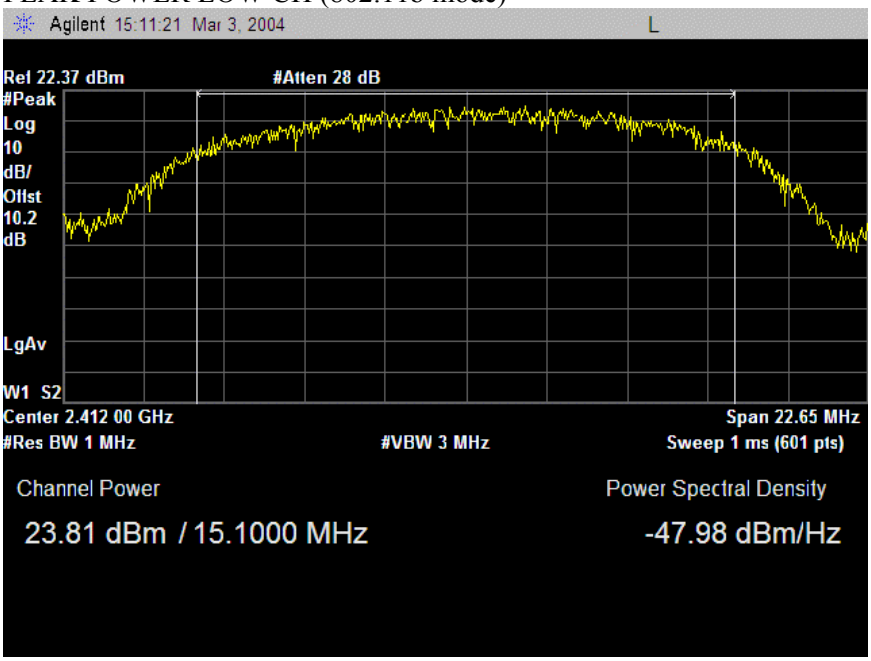
802.11b Mode

| Channel | Frequency (MHz) | Peak Power (dBm) | Cable Loss (dB) | Final Peak Power (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2412 | 20.23 | 1.33 | 18.90 | 19 | -0.10 |
| Middle | 2437 | 20.18 | 1.33 | 18.85 | 19 | -0.15 |
| High | 2462 | 20.30 | 1.33 | 18.97 | 19 | -0.03 |

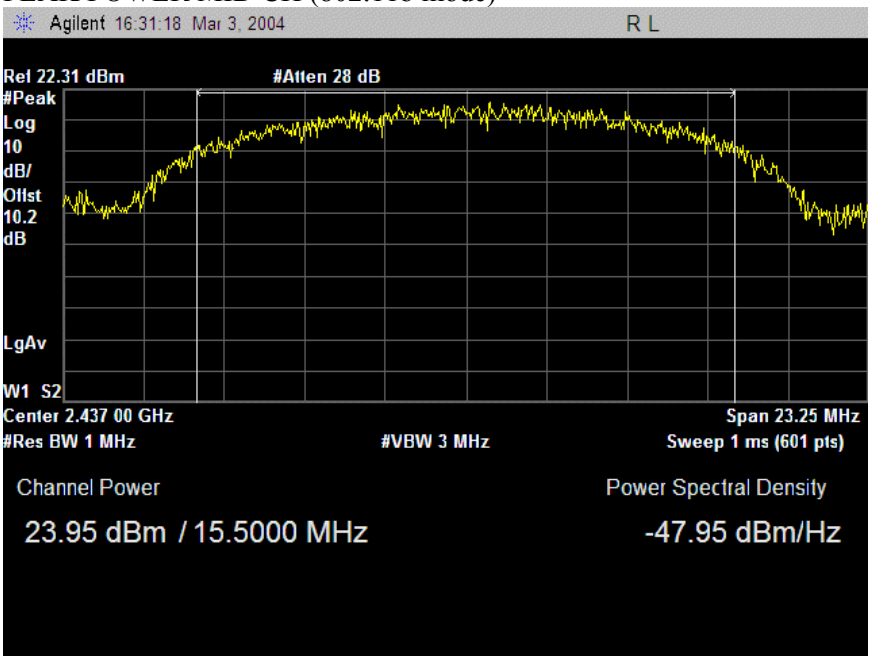
Note: cable loss is from EUT to antenna

**OUTPUT POWER FOR OMNI ANTENNA (802.11b MODE)**

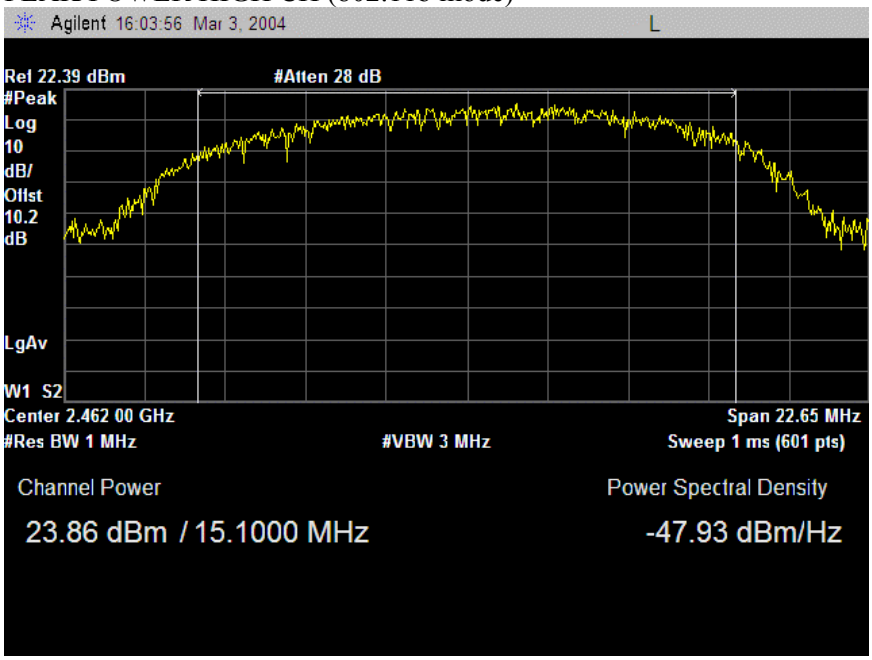
PEAK POWER LOW CH (802.11b mode)



PEAK POWER MID CH (802.11b mode)

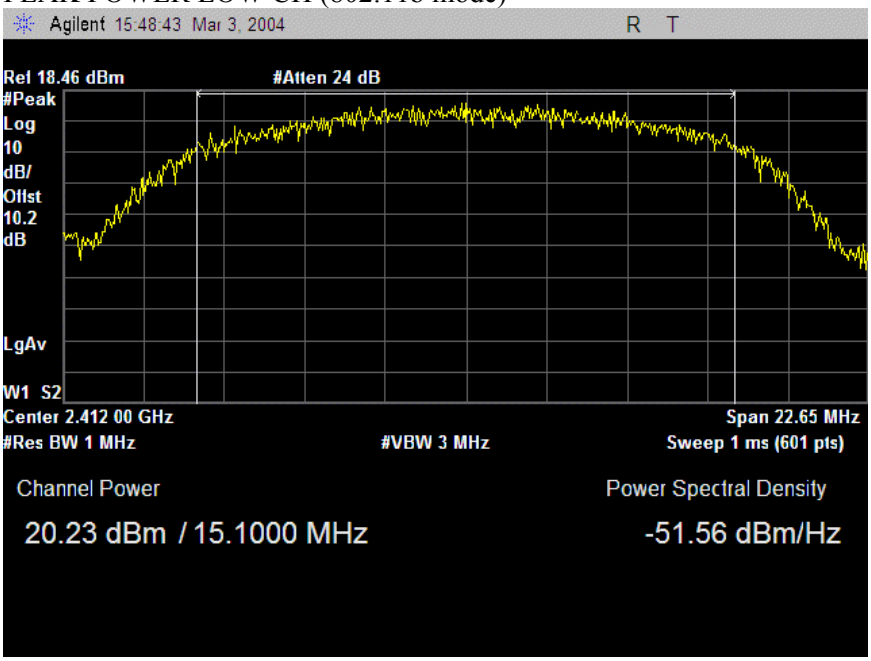


PEAK POWER HIGH CH (802.11b mode)

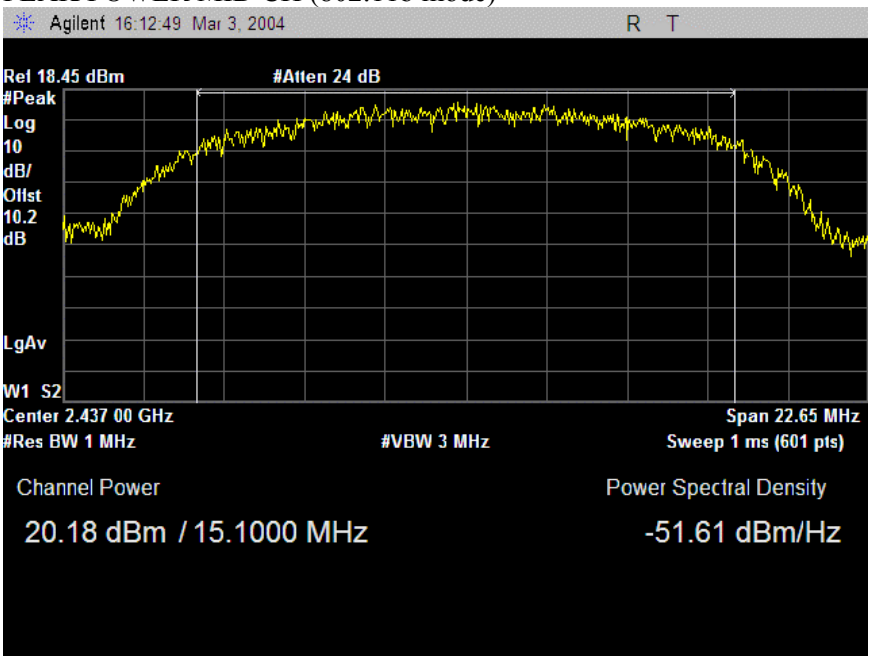


**OUTPUT POWER FOR PATCH ANTENNA (802.11b MODE)**

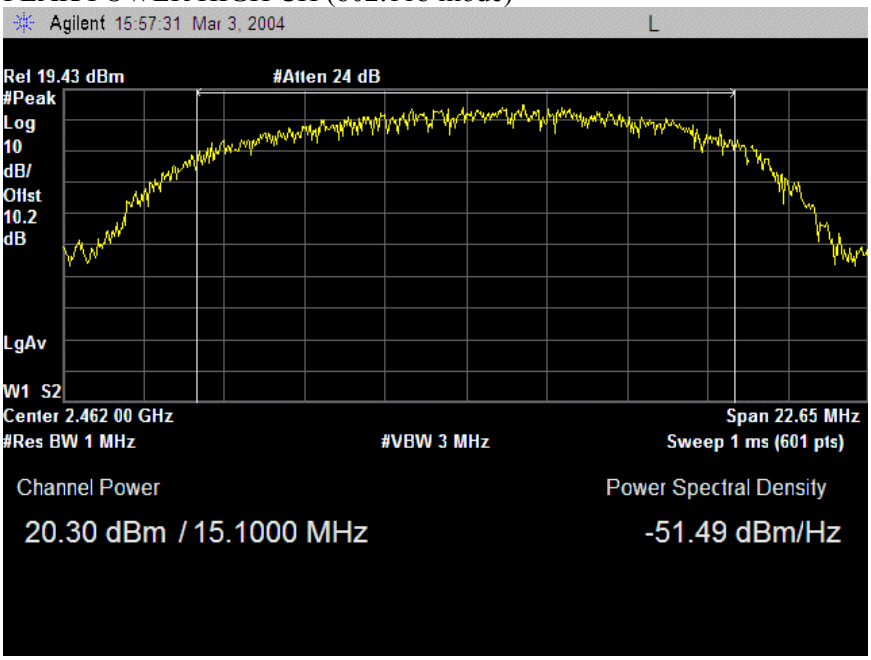
PEAK POWER LOW CH (802.11b mode)



PEAK POWER MID CH (802.11b mode)



PEAK POWER HIGH CH (802.11b mode)



## 7.3. MAXIMUM PERMISSIBLE EXPOSURE

**LIMITS**

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density ($mW/cm^2$) | Averaging time (minutes) |
|---|---|---|---|---|
| (A) Limits for Occupational/Controlled Exposures | | | | |
| 0.3–3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0–30 | 1842/f | 4.89/f | *($900/f^2$) | 6 |
| 30–300 | 61.4 | 0.163 | 1.0 | 6 |
| 300–1500 | | | f/300 | 6 |
| 1500–100,000 | | | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3–1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34–30 | 824/f | 2.19/f | *($180/f^2$) | 30 |

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density ($mW/cm^2$) | Averaging time (minutes) |
|---|---|---|---|---|
| 30–300 | 27.5 | 0.073 | 0.2 | 30 |
| 300–1500 | | | f/1500 | 30 |
| 1500–100,000 | | | 1.0 | 30 |

f = frequency in MHz
* = Plane-wave equivalent power density
NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

**CALCULATIONS**

Given

$E = \sqrt{(30 * P * G)} / d$

and

$S = E ^ 2 / 3770$

where

E = Field Strength in Volts/meter
P = Power in Watts
G = Numeric antenna gain
d = Distance in meters
S = Power Density in milliwatts/square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

$d = \sqrt{((30 * P * G) / (3770 * S))}$

Changing to units of Power to mW and Distance to cm, using:

P (mW) = P (W) / 1000 and
d (cm) =100 * d (m)

yields

$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$
$d = 0.282 * \sqrt{(P * G / S)}$

where

d = distance in cm
P = Power in mW
G = Numeric antenna gain
S = Power Density in mW/cm^2

Substituting the logarithmic form of power and gain using:

P (mW) = 10 ^ (P (dBm) / 10) and
G (numeric) = 10 ^ (G (dBi) / 10)

yields

$d = 0.282 * 10 ^ ((P + G) / 20) / \sqrt{S}$ Equation (1)

where

d = MPE distance in cm
P = Power in dBm
G = Antenna Gain in dBi
S = Power Density Limit in mW/cm^2

Equation (1) and the measured peak power is used to calculate the MPE distance.

## LIMITS

From §1.1310 Table 1 (B), S = 1.0 mW/cm^2

## RESULTS

No non-compliance noted:

| Antenna Type | Power Density Limit (mW/cm^2) | Output Power (dBm) | Antenna Gain (dBi) | MPE Distance (cm) |
|---|---|---|---|---|
| OMNI | 1.0 | 23.95 | 12.00 | 17.69 |
| PATCH | 1.0 | 18.97 | 17.00 | 17.73 |

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

## 7.4. AVERAGE POWER

**AVERAGE POWER LIMIT**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

No non-compliance noted:

The cable assembly insertion loss of 10.20 dB (including 10 dB pad and 0.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power. The cable assembly insertion loss does not include cable loss from EUT to antenna, which is documented below.

802.11b Mode (Omni Antenna)

| Channel | Frequency (MHz) | Final Average Power (dBm) |
|---|---|---|
| Low | 2412 | 21.80 |
| Middle | 2437 | 21.00 |
| High | 2462 | 21.74 |

802.11b Mode (Patch Antenna)

| Channel | Frequency (MHz) | Average Power (dBm) | Cable Loss (dB) | Final Average Power (dBm) |
|---|---|---|---|---|
| Low | 2412 | 18.14 | 1.33 | 16.81 |
| Middle | 2437 | 18 | 1.33 | 16.67 |
| High | 2462 | 18.39 | 1.33 | 17.06 |

# 7.5. RADIATED EMISSIONS

## 7.5.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

**LIMITS**

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| [1]0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2655 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | ([2]) |
| 13.36 - 13.41 | | | |

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 30 - 88 | 100 ** | 3 |
| 88 - 216 | 150 ** | 3 |
| 216 - 960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

## TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

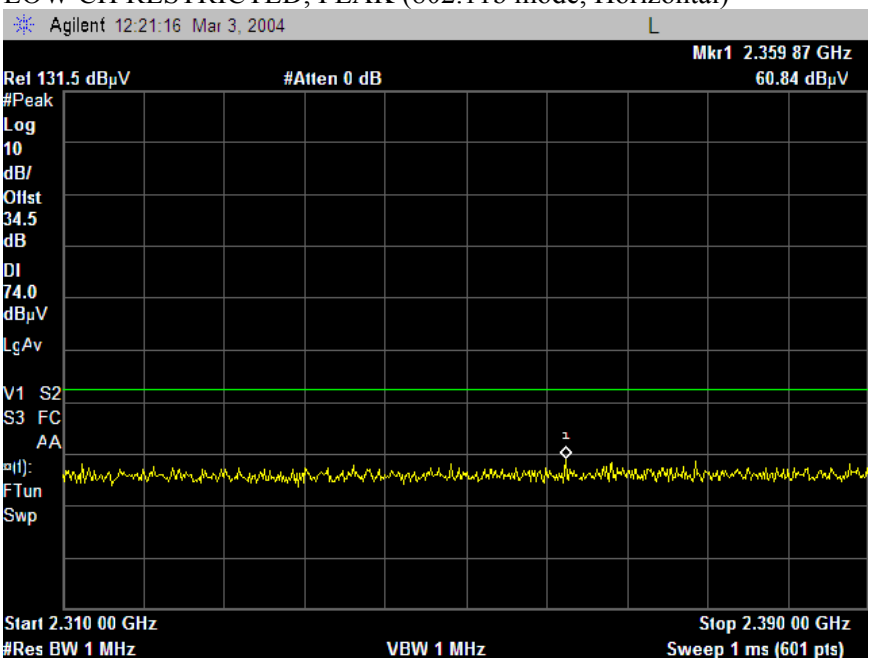
## RESULTS

No non-compliance noted:

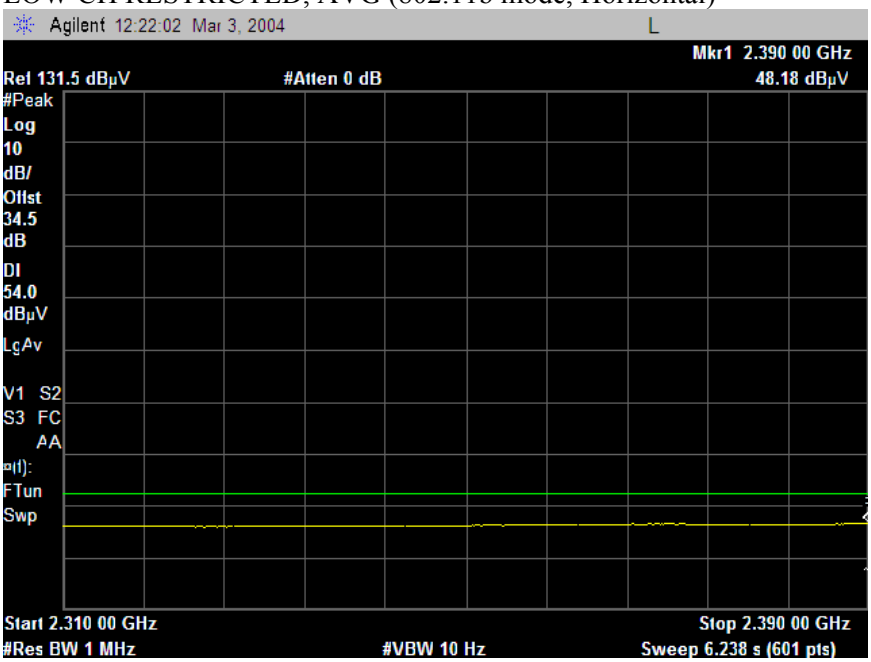
## 7.5.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ (OMNI ANTENNA)

**RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)**

LOW CH RESTRICTED, PEAK (802.11b mode, Horizontal)

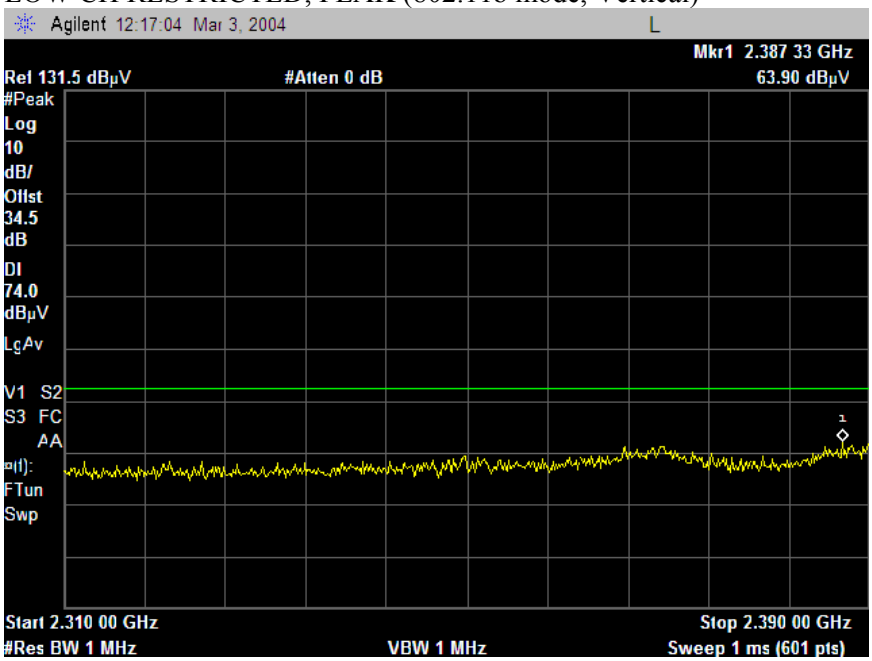


LOW CH RESTRICTED, AVG (802.11b mode, Horizontal)

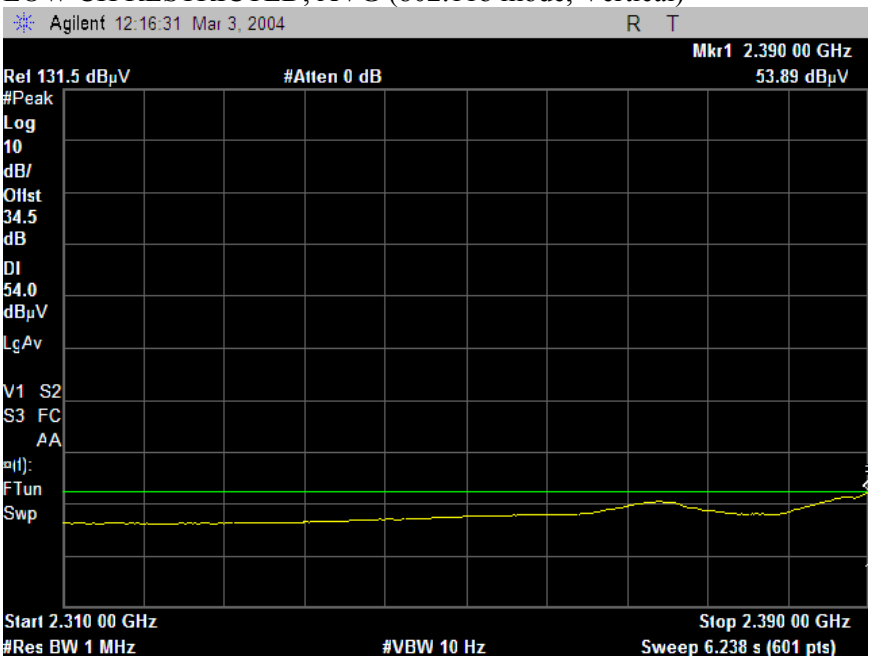


**RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)**

LOW CH RESTRICTED, PEAK (802.11b mode, Vertical)

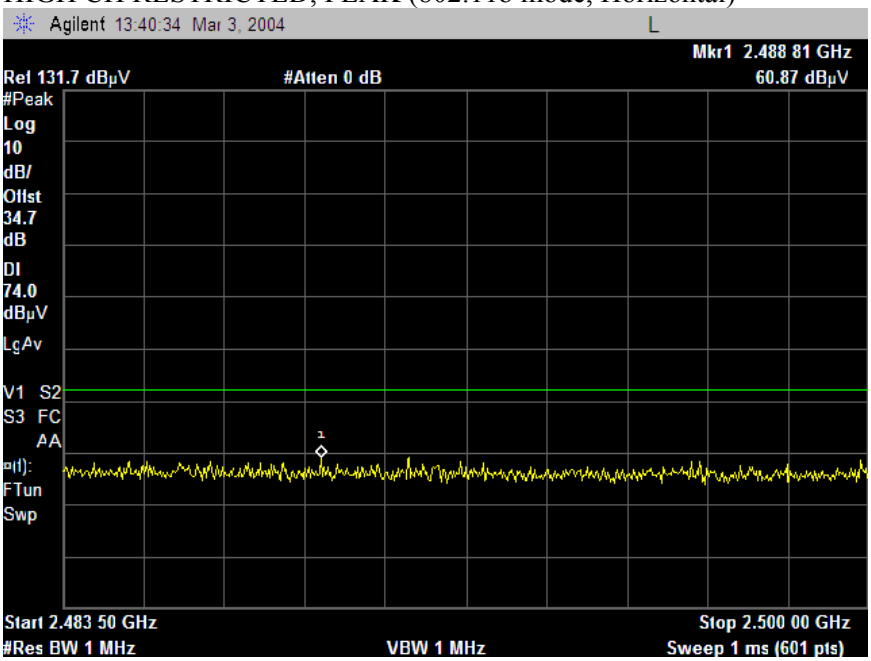


LOW CH RESTRICTED, AVG (802.11b mode, Vertical)

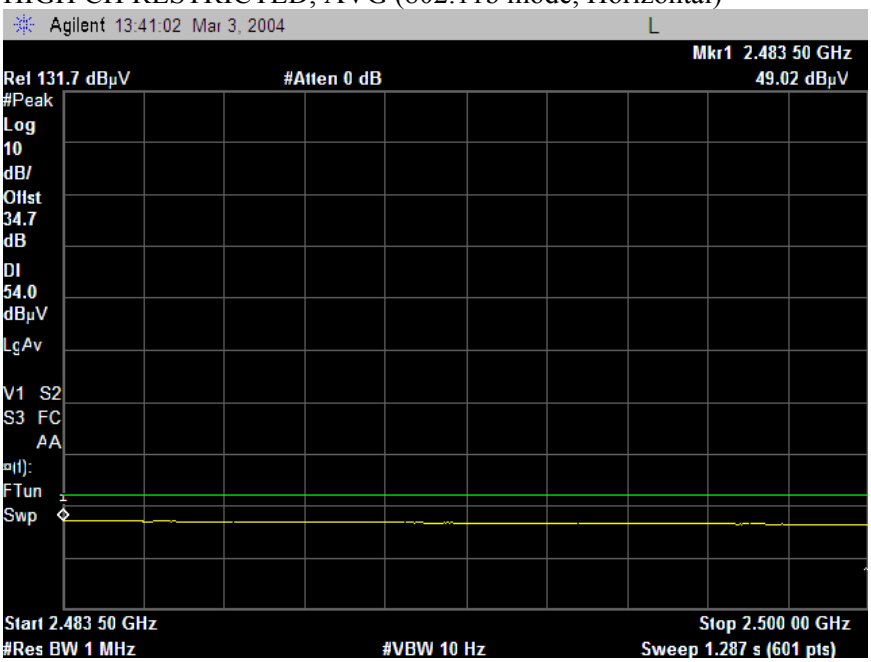


**RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)**

HIGH CH RESTRICTED, PEAK (802.11b mode, Horizontal)

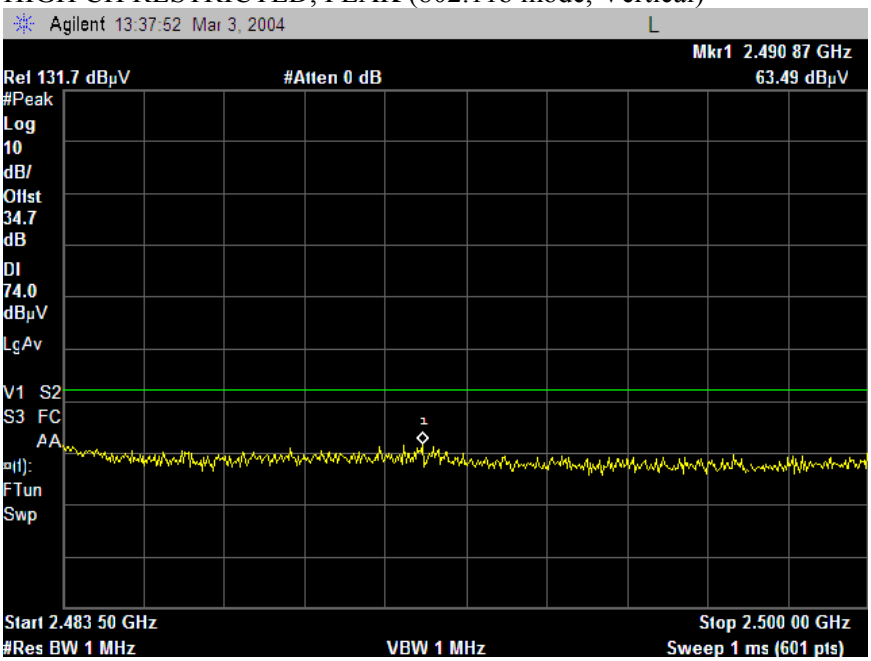


HIGH CH RESTRICTED, AVG (802.11b mode, Horizontal)

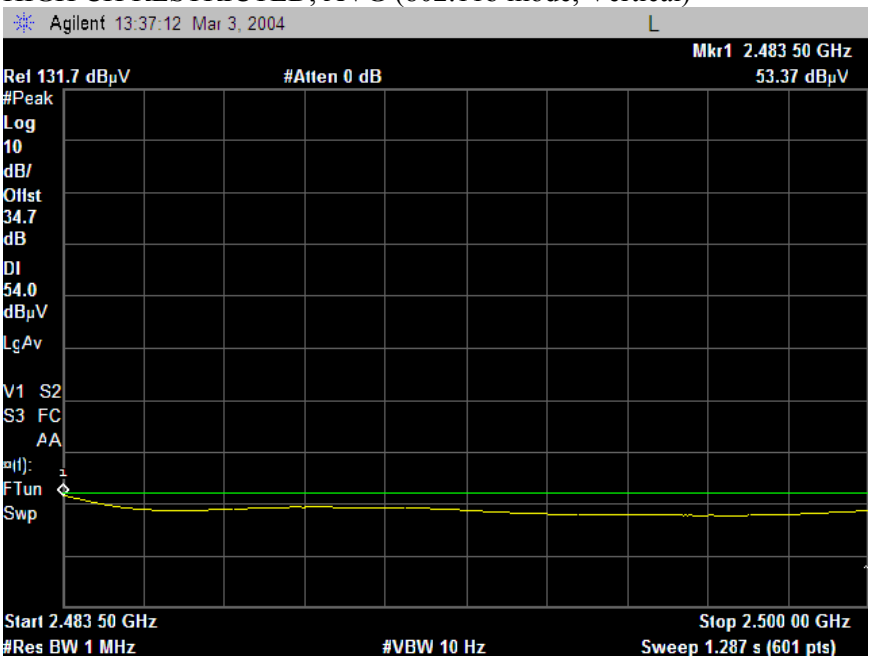


**RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)**

HIGH CH RESTRICTED, PEAK (802.11b mode, Vertical)



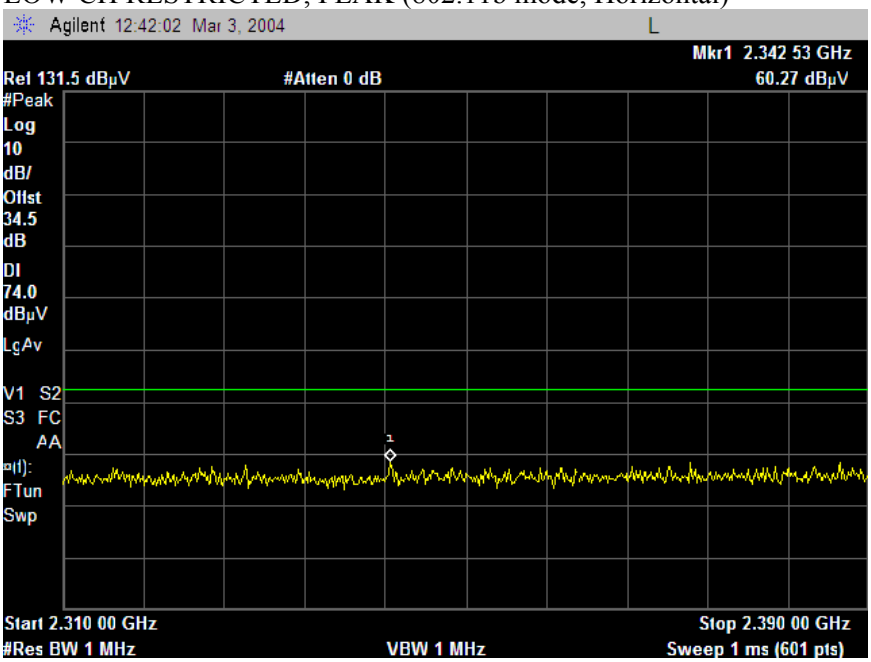
HIGH CH RESTRICTED, AVG (802.11b mode, Vertical)



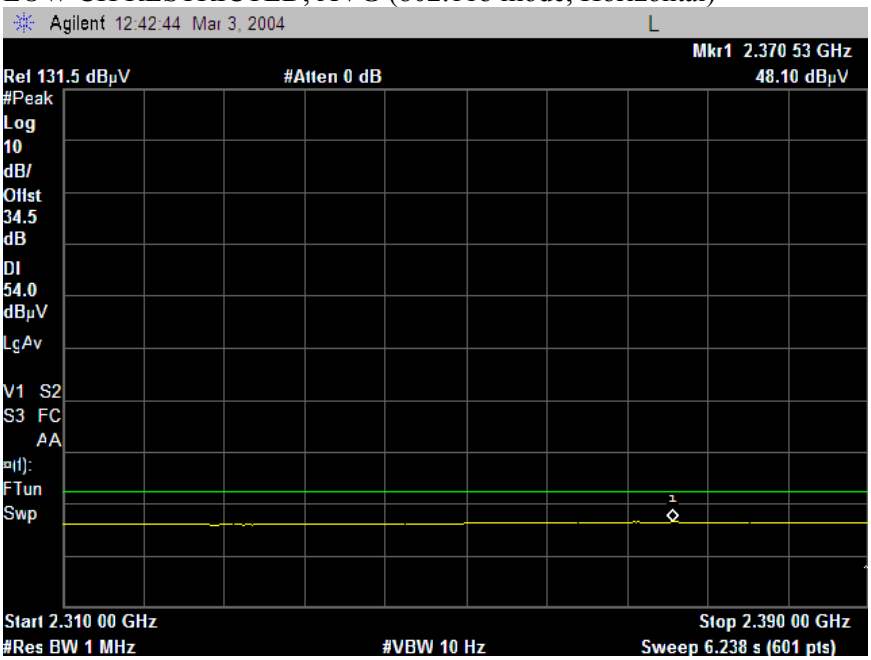
## 7.5.3. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ (PATCH ANTENNA)

**RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)**

LOW CH RESTRICTED, PEAK (802.11b mode, Horizontal)

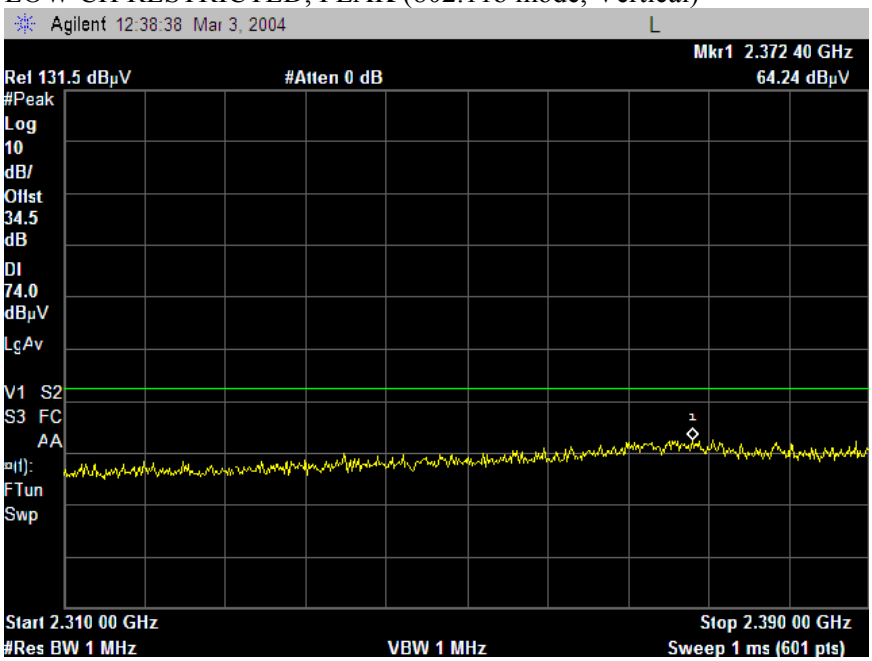


LOW CH RESTRICTED, AVG (802.11b mode, Horizontal)

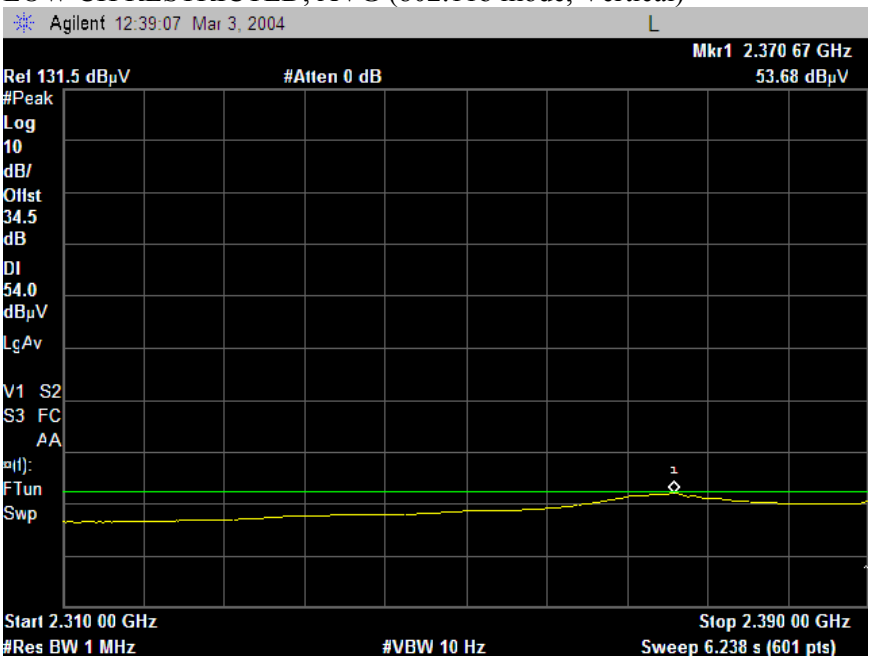


**RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)**

LOW CH RESTRICTED, PEAK (802.11b mode, Vertical)

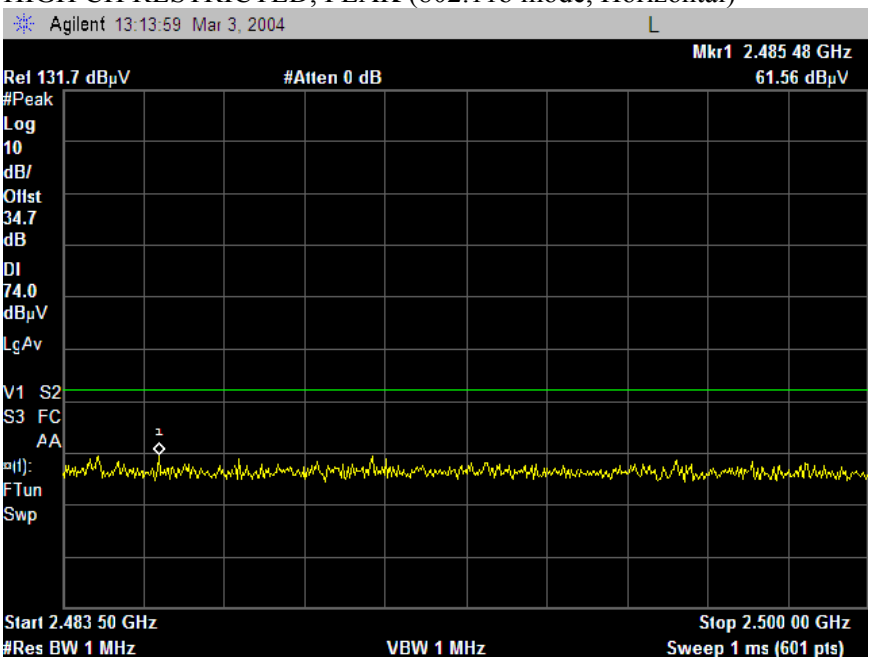


LOW CH RESTRICTED, AVG (802.11b mode, Vertical)

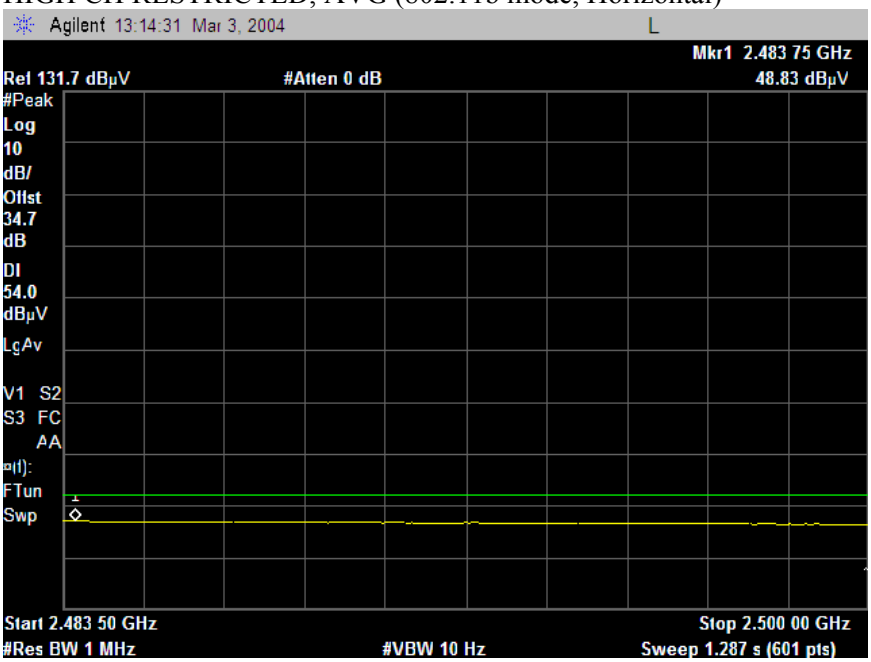


**RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)**

HIGH CH RESTRICTED, PEAK (802.11b mode, Horizontal)

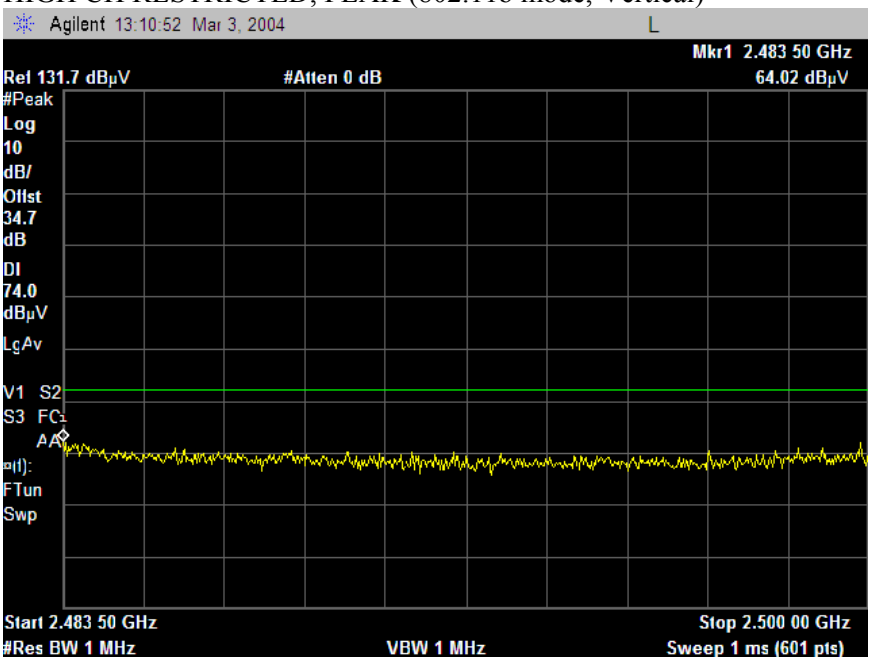


HIGH CH RESTRICTED, AVG (802.11b mode, Horizontal)

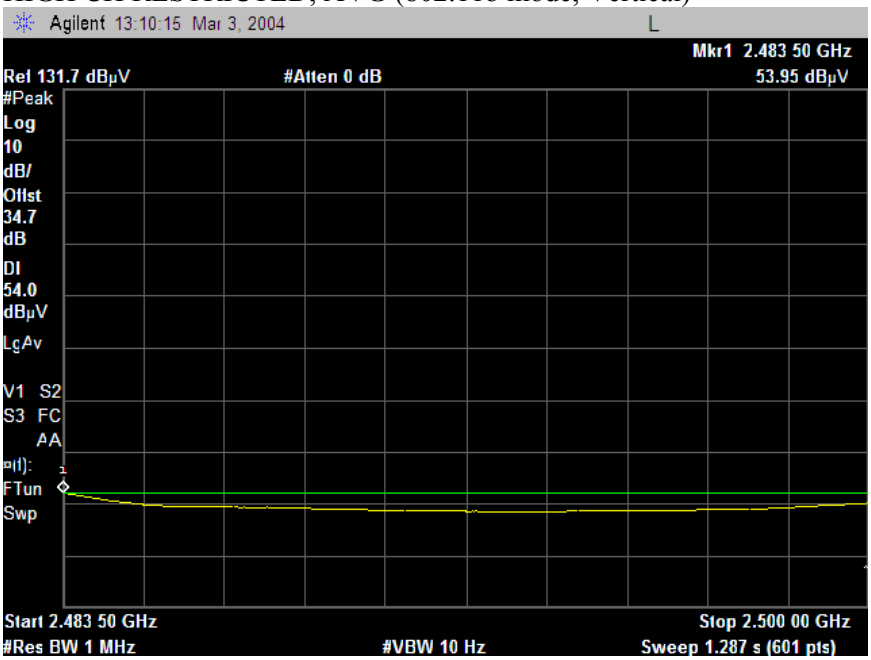


**RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)**

HIGH CH RESTRICTED, PEAK (802.11b mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11b mode, Vertical)



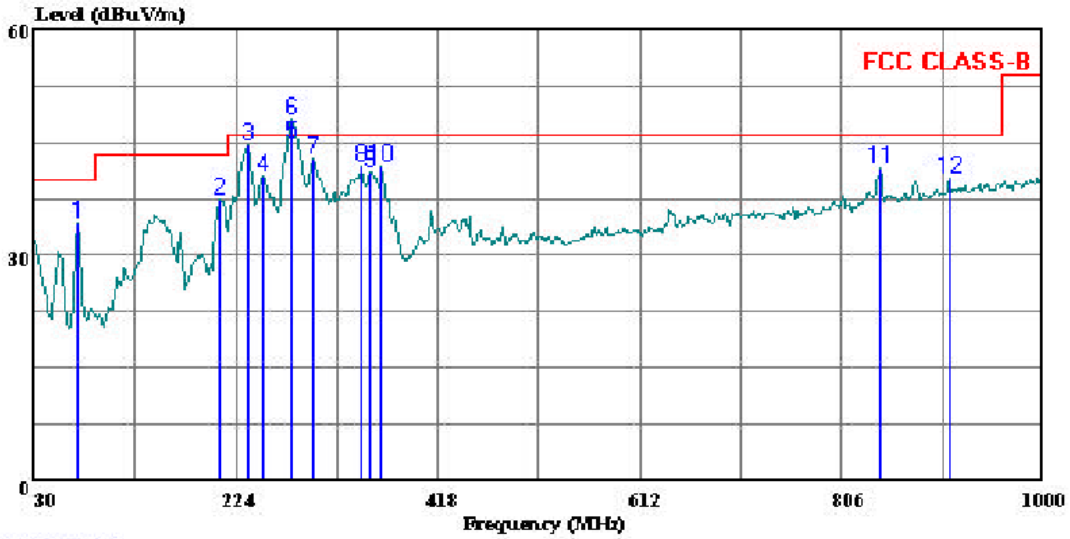
## 7.5.4. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz (AC PWR)

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)**

HORIZONTAL PLOT

COMPLIANCE Engineering Services, Inc.
561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 12 File#: Run1.emi Date: 03-03-2004 Time: 09:52:33




(Audix ATC)

Trace: 9 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Eng: : NEELESH RAJ
Project #: : 03U2355
Company: : TROPOS NETWORKS
EUT: : WI-FI CELLUALR BASESTATION
Model No: : TROPOS 5110L (AC PWR)
Configuration: : EUT
Target of Test: : FCC
Mode of Operation: TX (WORST CASE)

HORIZONTAL DATA

Page: 1

| | | Freq | Remark | Read Level | Factor | Level | Limit Line | Over Limit |
|---|---|---|---|---|---|---|---|---|
| | | MHz | | dBuV | dB | dBuV/m | dBuV/m | dB |
| 1 | | 72.680 | Peak | 25.03 | 9.35 | 34.38 | 40.00 | -5.62 |
| 2 | | 208.480 | Peak | 24.49 | 13.01 | 37.50 | 43.50 | -6.00 |
| 3 | | 235.640 | Peak | 31.31 | 13.47 | 44.78 | 46.00 | -1.22 |
| 4 | | 250.190 | Peak | 26.43 | 14.05 | 40.48 | 46.00 | -5.52 |
| 5 | | 276.380 | QP | 29.53 | 15.37 | 44.90 | 46.00 | -1.11 |
| 6 | * | 276.380 | Peak | 32.74 | 15.37 | 48.11 | 46.00 | 2.11 |
| 7 | | 298.690 | Peak | 27.06 | 15.91 | 42.97 | 46.00 | -3.04 |
| 8 | | 344.280 | Peak | 25.16 | 16.76 | 41.92 | 46.00 | -4.08 |

Page: 2

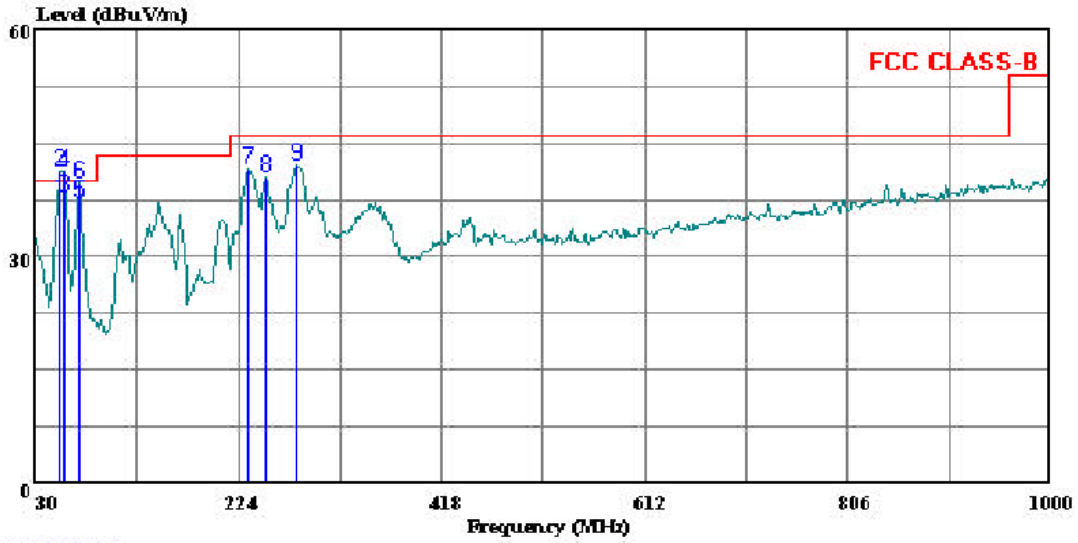
| | | Freq | Remark | Read Level | Factor | Level | Limit Line | Over Limit |
|---|---|---|---|---|---|---|---|---|
| | | MHz | | dBuV | dB | dBuV/m | dBuV/m | dB |
| 9 | | 352.040 | Peak | 24.15 | 16.91 | 41.06 | 46.00 | -4.94 |
| 10 | | 363.680 | Peak | 24.51 | 17.25 | 41.76 | 46.00 | -4.24 |
| 11 | | 843.830 | Peak | 16.21 | 25.45 | 41.66 | 46.00 | -4.34 |
| 12 | | 909.790 | Peak | 13.72 | 26.42 | 40.14 | 46.00 | -5.86 |

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)**

VERTICAL PLOT

561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 8 File#: Run1.emi Date: 03-03-2004 Time: 09:44:42




(Audix ATC)

Trace: 3 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Eng: : NEELESH RAJ
Project #: : 03U2355
Company: : TROPOS NETWORKS
EUT: : WI-FI CELLUALR BASESTATION
Model No: : TROPOS 5110L (AC PWR0
Configuration: : EUT
Target of Test: : FCC
Mode of Operation: TX (WORST CASE)

VERTICAL DATA

Page: 1

| | | Freq | Remark | Read Level | Factor | Level | Limit Line | Over Limit |
|---|---|---|---|---|---|---|---|---|
| | | MHz | | dBuV | dB | dBuV/m | dBuV/m | dB |
| 1 | | 53.280 | QP | 28.78 | 8.74 | 37.52 | 40.00 | -2.48 |
| 2 | * | 53.280 | Peak | 32.21 | 9.01 | 41.22 | 40.00 | 1.22 |
| 3 | | 56.190 | QP | 29.45 | 8.51 | 37.96 | 40.00 | -2.04 |
| 4 | * | 56.190 | Peak | 32.88 | 8.51 | 41.39 | 40.00 | 1.39 |
| 5 | | 72.680 | QP | 27.72 | 9.34 | 37.06 | 40.00 | -2.94 |
| 6 | | 72.680 | Peak | 30.26 | 9.35 | 39.61 | 40.00 | -0.39 |
| 7 | | 232.730 | Peak | 28.22 | 13.39 | 41.61 | 46.00 | -4.39 |
| 8 | | 250.190 | Peak | 26.43 | 14.05 | 40.48 | 46.00 | -5.52 |

Page: 2

| | | Freq | Remark | Read Level | Factor | Level | Limit Line | Over Limit |
|---|---|---|---|---|---|---|---|---|
| | | MHz | | dBuV | dB | dBuV/m | dBuV/m | dB |
| 9 | | 279.290 | Peak | 26.60 | 15.42 | 42.02 | 46.00 | -3.99 |

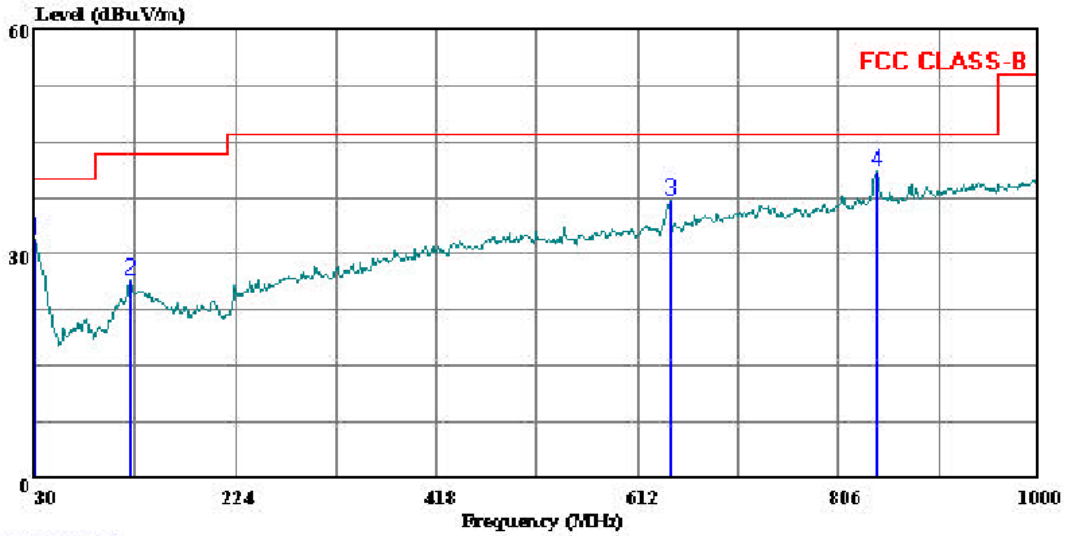
## 7.5.5. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz (BATTERY BACKUP)

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)**

HORIZONTAL PLOT

561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 21 File#: Run1.emi Date: 03-03-2004 Time: 11:18:11




Trace: 20 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Eng: : NEELESH RAJ
Project #: : 03U2355
Company: : TROPOS NETWORKS
EUT: : WI-FI CELLULAR BASESTATION
Model No: : TROPOS 5110L (BATTERY)
Configuration: : EUT
Target of Test: : FCC
Mode of Operation: TX (WORST CASE)

HORIZONTAL DATA

Page: 1

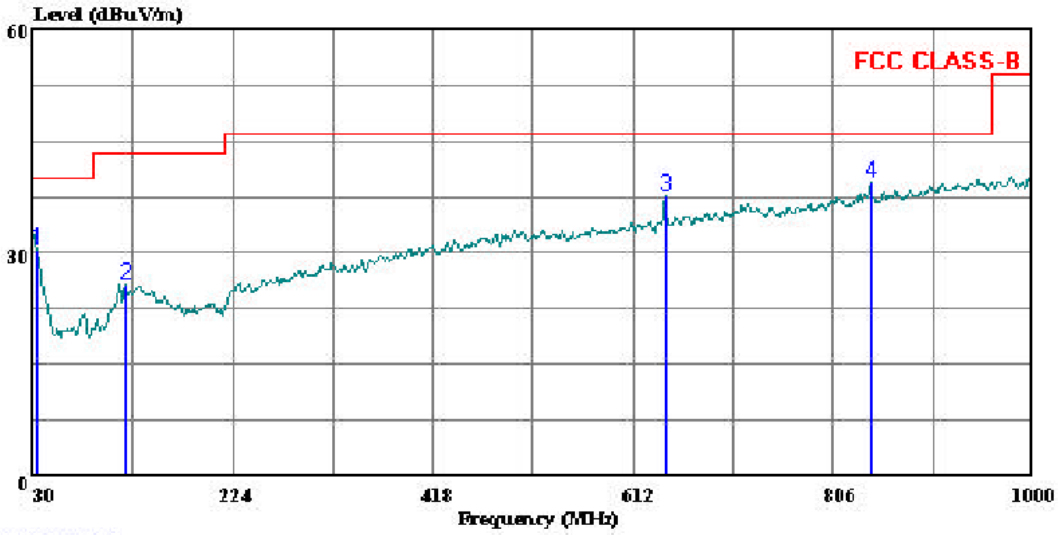
| | Freq | Remark | Read Level | Factor | Level | Limit Line | Over Limit |
|---|---|---|---|---|---|---|---|
| | MHz | | dBuV | dB | dBuV/m | dBuV/m | dB |
| 1 | 30.000 | Peak | 8.89 | 22.95 | 31.84 | 40.00 | -8.16 |
| 2 | 121.180 | Peak | 11.53 | 15.03 | 26.56 | 43.50 | -16.94 |
| 3 | 643.040 | Peak | 14.37 | 22.78 | 37.15 | 46.00 | -8.85 |
| 4 | 843.830 | Peak | 15.56 | 25.45 | 41.01 | 46.00 | -4.99 |

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)**

VERTICAL PLOT

561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 19 File#: Run1.emi Date: 03-03-2004 Time: 11:12:51




(Audix ATC)

Trace: 18 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Eng: : NEELESH RAJ
Project #: : 03U2355
Company: : TROPOS NETWORKS
EUT: : WI-FI CELLULAR BASESTATION
Model No: : TROPOS 5110L (BATTERY)
Configuration: : EUT
Target of Test: : FCC
Mode of Operation: TX (WORST CASE)

VERTICAL DATA

Page: 1

| | Freq | Remark | Read Level | Factor | Level | Limit Line | Over Limit |
|---|---|---|---|---|---|---|---|
| | MHz | | dBuV | dB | dBuV/m | dBuV/m | dB |
| 1 | 33.880 | Peak | 9.65 | 20.70 | 30.35 | 40.00 | -9.65 |
| 2 | 119.240 | Peak | 10.86 | 14.87 | 25.73 | 43.50 | -17.77 |
| 3 | 643.040 | Peak | 14.98 | 22.78 | 37.76 | 46.00 | -8.24 |
| 4 | 841.890 | Peak | 14.01 | 25.44 | 39.45 | 46.00 | -6.55 |

## 7.6. POWERLINE CONDUCTED EMISSIONS

**LIMIT**

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

| Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56 * | 56 to 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

**RESULTS**

No non-compliance noted:

## 7.6.1. POWERLINE CONDUCTED EMISSIONS FOR AC POWER OPERATION

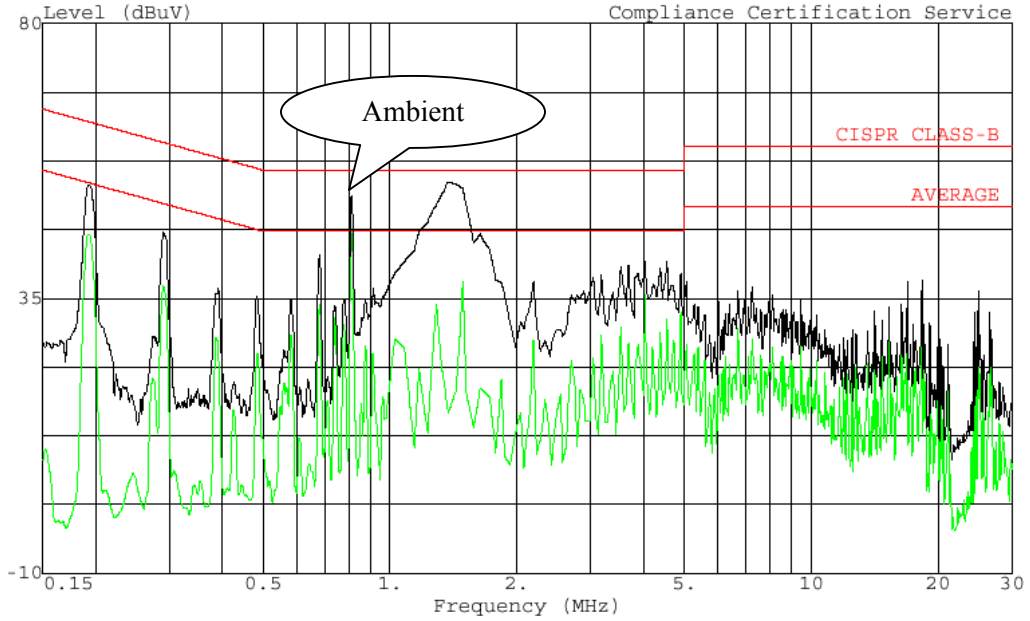
**6 WORST EMISSIONS (AC POWER)**

| CONDUCTED EMISSIONS DATA (115VAC 60Hz) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Freq. | Reading | | | Closs | Limit | EN_B | Margin | | Remark |
| (MHz) | PK (dBuV) | QP (dBuV) | AV (dBuV) | (dB) | QP | AV | QP (dB) | AV (dB) | L1 / L2 |
| 1.37 | 54.02 | -- | 34.10 | 0.00 | 56.00 | 46.00 | -1.98 | -11.90 | L1 |
| 0.19 | 53.52 | -- | 45.51 | 0.00 | 64.77 | 54.77 | -11.25 | -9.26 | L1 |
| 1.64 | 45.56 | -- | 20.30 | 0.00 | 56.00 | 46.00 | -10.44 | -25.70 | L1 |
| 1.46 | 53.58 | -- | 36.88 | 0.00 | 56.00 | 46.00 | -2.42 | -9.12 | L2 |
| 2.02 | 45.94 | -- | 12.39 | 0.00 | 56.00 | 46.00 | -10.06 | -33.61 | L2 |
| 0.42 | 47.18 | -- | 10.36 | 0.00 | 58.43 | 48.43 | -11.25 | -38.07 | L2 |
| 6 Worst Data | | | | | | | | | |

**LINE 1 RESULTS (AC POWER)**

COMPLIANCE Engineering Service, Inc.
561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

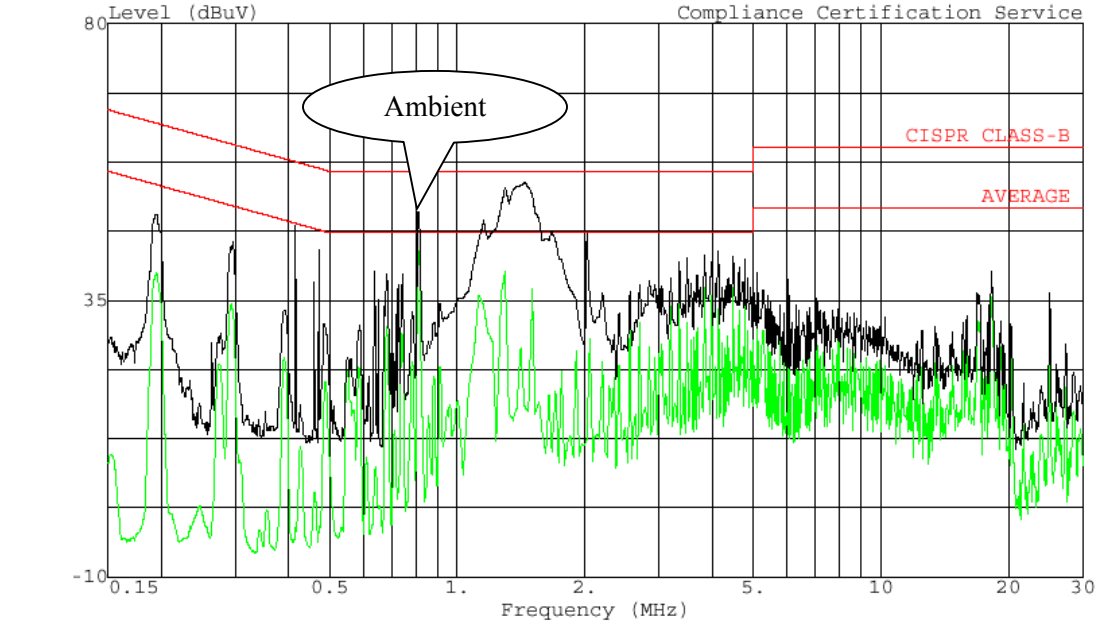
Data#: 21 File#: RUN1.EMI Date: 02-27-2004 Time: 10:49:05




Trace: 19 Ref Trace:
Project # : 03U2355
Test Operator : NEELESH RAJ
Company : TROPOS NETWORKS
EUT : WI-FI CELLULAR BASESTATION (AC PWR)
Model : TROPOS 5110L
Configuration : EUT/AC ADAPTER
Mode of Operation: TX(WORST CASE)
Target of Test : CLASS B
Voltage : 115VAC/60Hz
: L1 (PEAK;BLACK AVG;GREEN)

**LINE 2 RESULTS (AC POWER)**

COMPLIANCE Engineering Service, Inc.
561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888




Trace: 26 Ref Trace:
Project # : 03U2355
Test Operator : NEELESH RAJ
Company : TROPOS NETWORKS
EUT : WI-FI CELLULAR BASESTATION (AC PWR)
Model : TROPOS 5110L
Configuration : EUT/AC ADAPTER
Mode of Operation: TX(WORST CASE)
Target of Test : CLASS B
Voltage : 115VAC/60Hz
: L2 (PEAK;BLACK AVG;GREEN)

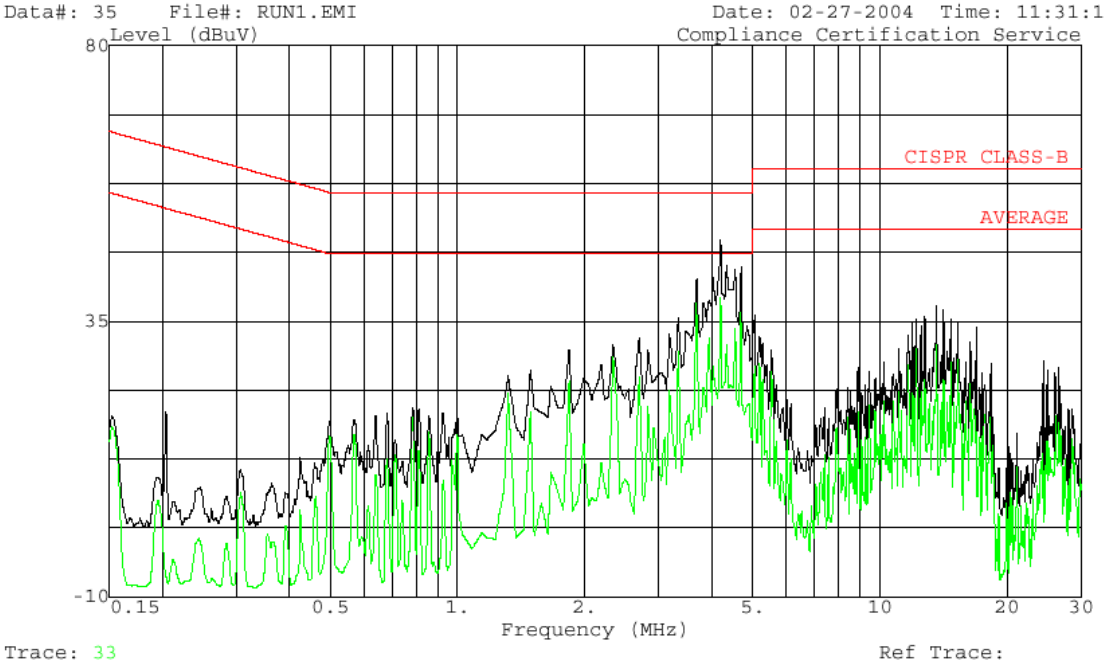
## 7.6.2. POWERLINE CONDUCTED EMISSIONS FOR BATTERY BACK-UP OPERATION

**6 WORST EMISSIONS (BATTERY BACK UP)**

| CONDUCTED EMISSIONS DATA (115VAC 60Hz) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Freq. | Reading | | | Closs | Limit | EN_B | Margin | | Remark |
| (MHz) | PK (dBuV) | QP (dBuV) | AV (dBuV) | (dB) | QP | AV | QP (dB) | AV (dB) | L1 / L2 |
| 4.20 | 48.20 | -- | 38.94 | 0.00 | 56.00 | 46.00 | -7.80 | -7.06 | L1 |
| 4.34 | 44.20 | -- | 31.19 | 0.00 | 56.00 | 46.00 | -11.80 | -14.81 | L1 |
| 4.70 | 43.92 | -- | 39.01 | 0.00 | 56.00 | 46.00 | -12.08 | -6.99 | L1 |
| 4.20 | 49.00 | -- | 39.72 | 0.00 | 56.00 | 46.00 | -7.00 | -6.28 | L2 |
| 3.68 | 46.06 | -- | 43.67 | 0.00 | 56.00 | 46.00 | -9.94 | -2.33 | L2 |
| 3.94 | 46.12 | -- | 37.44 | 0.00 | 56.00 | 46.00 | -9.88 | -8.56 | L2 |
| 6 Worst Data | | | | | | | | | |

**LINE 1 RESULTS (BATTERY BACKUP)**

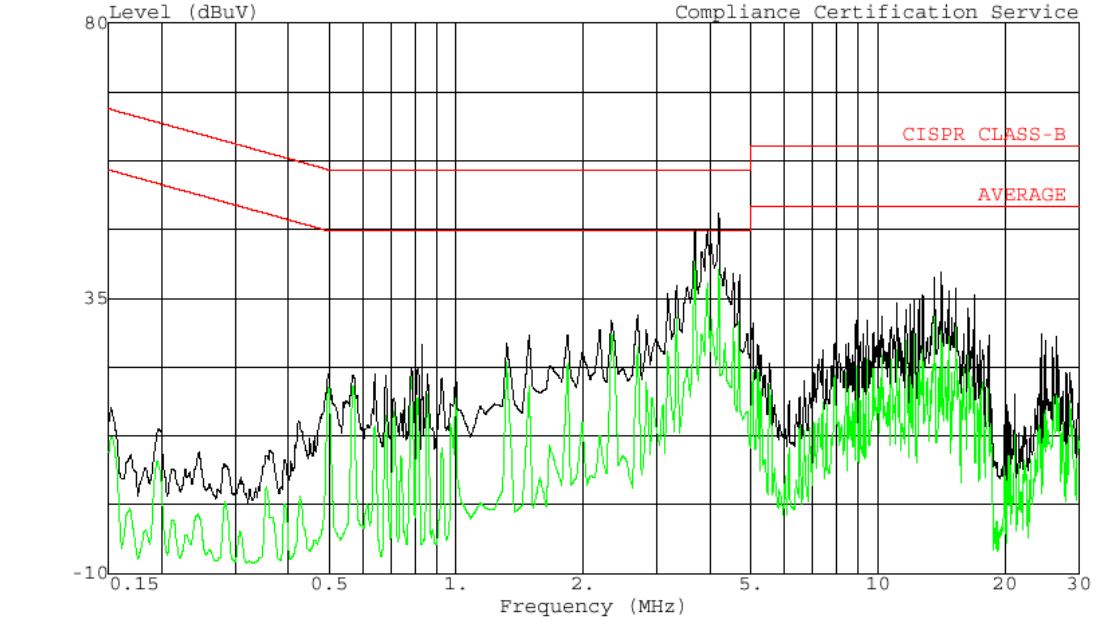
COMPLIANCE Engineering Service, Inc.
561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888




Trace: 33 Ref Trace:
Project # : 03U2355
Test Operator : NEELESH RAJ
Company : TROPOS NETWORKS
EUT : WI-FI CELLULAR BASESTATION (BATTERY)
Model : TROPOS 5110L
Configuration : EUT/AC ADAPTER
Mode of Operation: TX(WORST CASE)
Target of Test : CLASS B
Voltage : 115VAC/60Hz
: L1 (PEAK;BLACK AVG;GREEN)

**LINE 2 RESULTS (BATTERY BACKUP)**

COMPLIANCE Engineering Services, Inc.
561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888



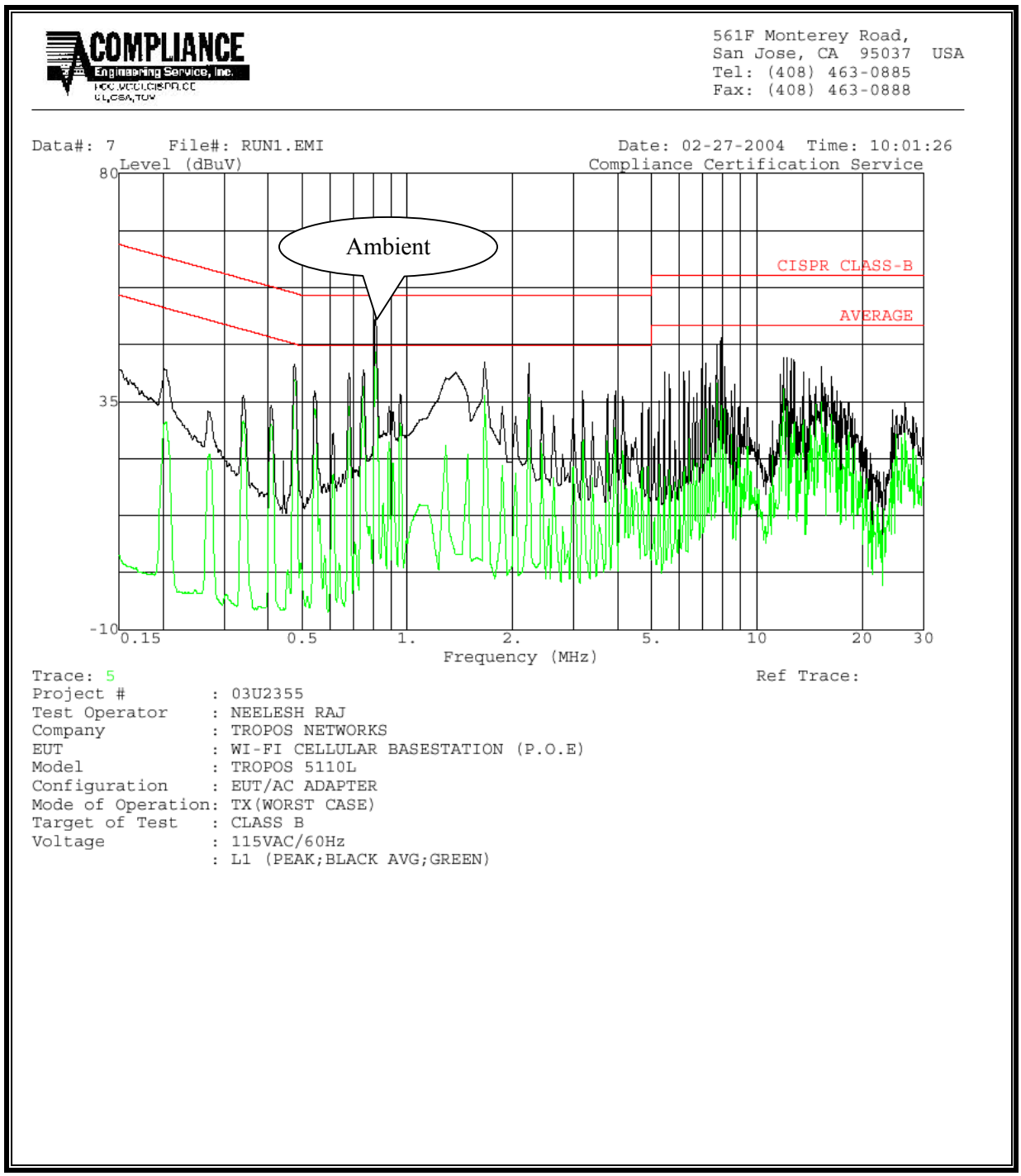

Trace: 40 Ref Trace:
Project # : 03U2355
Test Operator : NEELESH RAJ
Company : TROPOS NETWORKS
EUT : WI-FI CELLUALR BASESTATION (BATTERY)
Model : TROPOS 5110L
Configuration : EUT/AC ADAPTER
Mode of Operation: TX(WORST CASE)
Target of Test : CLASS B
Voltage : 115VAC/60Hz
: L2 (PEAK;BLACK AVG;GREEN)

## 7.6.3. POWERLINE CONDUCTED EMISSIONS FOR POWER-OVER-ETHERNET OPERATION

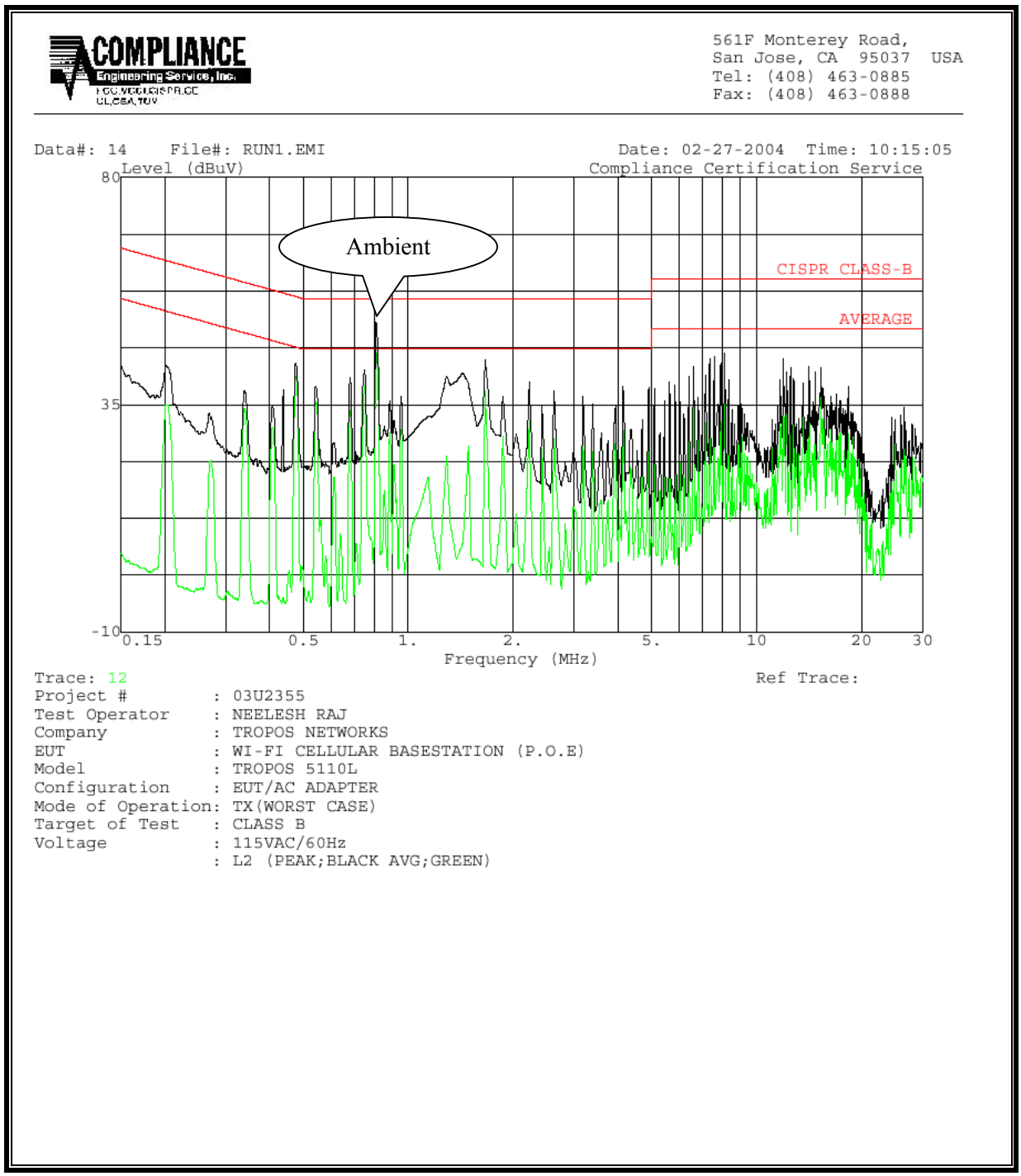
**6 WORST EMISSIONS (POWER OVER ETHERNET)**

| CONDUCTED EMISSIONS DATA (115VAC 60Hz) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Freq. | Reading | | | Closs | Limit | EN_B | Margin | | Remark |
| (MHz) | PK (dBuV) | QP (dBuV) | AV (dBuV) | (dB) | QP | AV | QP (dB) | AV (dB) | L1 / L2 |
| 1.66 | 42.82 | -- | 36.23 | 0.00 | 56.00 | 46.00 | -13.18 | -9.77 | L1 |
| 2.22 | 42.66 | -- | 35.75 | 0.00 | 56.00 | 46.00 | -13.34 | -10.25 | L1 |
| 7.89 | 47.66 | -- | 42.74 | 0.00 | 60.00 | 50.00 | -12.34 | -7.26 | L1 |
| 0.48 | 43.22 | -- | 40.56 | 0.00 | 56.69 | 46.69 | -13.47 | -6.13 | L2 |
| 1.66 | 43.84 | -- | 37.74 | 0.00 | 56.00 | 46.00 | -12.16 | -8.26 | L2 |
| 0.75 | 41.86 | -- | 37.01 | 0.00 | 56.00 | 46.00 | -14.14 | -8.99 | L2 |
| 6 Worst Data | | | | | | | | | |

**LINE 1 RESULTS (POWER OVER ETHERNET)**



**LINE 2 RESULTS (POWER OVER ETHERNET)**



# 8. SETUP PHOTOS

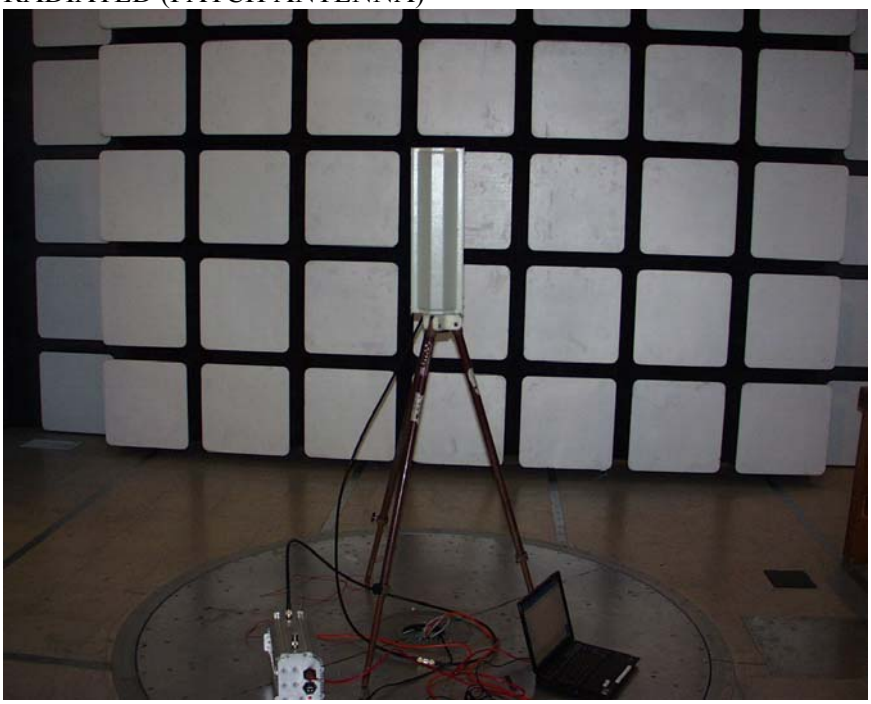
**ANTENNA PORT CONDUCTED**

ANTENNA PORT CONDUCTED

**RADIATED RF MEASUREMENT SETUP (ABOVE 1 GHz)**

RADIATED (OMNI ANTENNA)

RADIATED (PATCH ANTENNA)



## RADIATED RF MEASUREMENT SETUP (BELOW 1 GHz)

RADIATED (AC POWER AND BATTERY BACKUP)

## POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP (AC PWR & BATTERY BACKUP)

LINE CONDUCTED FRONT PHOTO

LINE CONDUCTED BACK PHOTO

## POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP (POWER OVER ETHERNET)

LINE CONDUCTED FRONT PHOTO

LINE CONDUCTED BACK PHOTO


# END OF REPORT