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FCC ID : AMWOVP-RD00905

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EMC Equipment List

| | DEVICE | MFGR | MODEL | SERNO | CAL/CHAR DATE | DUE DATE or STATUS |
|---|---|------------------|---------------|--------------------------|--------------------|-----------------------|
| X | 3-Meter OATS | TEI | N/A | N/A | Listed 12/22/99 | 12/22/02 |
| | 3/10-Meter OATS | TEI | N/A | N/A | Listed 3/26/01 | 3/26/04 |
| | Receiver, Beige Tower Spectrum Analyzer (Tan) | HP | 8566B Opt 462 | 3138A07786 3144A20661 | CAL 8/31/01 | 8/31/03 |
| | RF Preselector (Tan) | HP | 85685A | 3221A01400 | CAL 8/31/01 | 8/31/03 |
| | Quasi-Peak Adapter (Tan) | HP | 85650A | 3303A01690 | CAL 8/31/01 | 8/31/03 |
| X | Receiver, Blue Tower Spectrum Analyzer (Blue) | HP | 8568B | 2928A04729 | CHAR 10/22/01 | 10/22/03 |
| X | RF Preselector (Blue) | HP | 85685A | 2848A18049 2926A00983 | CHAR 10/22/01 | 10/22/03 |
| X | Quasi-Peak Adapter (Blue) | HP | 85650A | 2811A01279 | CHAR 10/22/01 | 10/22/03 |
| X | Biconnical Antenna | Electro-Metrics | BIA-25 | 1171 | CAL 4/26/01 | 4/26/03 |
| | Biconnical Antenna | Eaton | 94455-1 | 1096 | CAL 10/1/01 | 10/1/03 |
| | Biconnical Antenna | Eaton | 94455-1 | 1057 | CHAR 3/15/00 | 3/15/02 |
| | BiconiLog Antenna | EMCO | 3143 | 9409-1043 | | |
| X | Log-Periodic Antenna | Electro-Metrics | LPA-25 | 1122 | CAL 10/2/01 | 10/2/03 |
| | Log-Periodic Antenna | Electro-Metrics | EM-6950 | 632 | CHAR 10/15/01 | 10/15/03 |
| | Log-Periodic Antenna | Electro-Metrics | LPA-30 | 409 | CHAR 10/16/01 | 10/16/03 |
| | Dipole Antenna Kit | Electro-Metrics | TDA-30/1-4 | 152 | CAL 3/21/01 | 3/21/04 |
| | Dipole Antenna Kit | Electro-Metrics | TDA-30/1-4 | 153 | CHAR 11/24/00 | 11/24/03 |
| | Double-Ridged Horn Antenna | Electro-Metrics | RGA-180 | 2319 | CAL 12/19/01 | 12/19/03 |
| | Horn Antenna | Electro-Metrics | EM-6961 | 6246 | CAL 3/21/01 | 3/21/03 |
| | Horn Antenna | ATM | 19-443-6R | None | No Cal Required | |
| | Passive Loop Antenna | EMC Test Systems | EMCO 6512 | 9706-1211 | CHAR 7/10/01 | 7/10/03 |
| | Line Impedance Stabilization . . . | Electro-Metrics | ANS-25/2 | 2604 | CAL 10/9/01 | 10/9/03 |

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| | DEVICE | MFGR | MODEL | SERNO | CAL/CHAR DATE | DUE DATE or STATUS |
|---|---------------------------------------|--------------------------------|-------------|------------|------------------|-----------------------|
| | Line Impedance Stabilization . . . | Electro-Metrics | EM-7820 | 2682 | CAL 3/16/01 | 3/16/03 |
| | Termaline Wattmeter | Bird Electronic Corporation | 611 | 16405 | CAL 5/25/99 | 5/25/01 |
| | Termaline Wattmeter | Bird Electronic Corporation | 6104 | 1926 | CAL 12/12/01 | 12/12/03 |
| | Oscilloscope | Tektronix | 2230 | 300572 | CHAR 2/1/01 | 2/1/03 |
| | Temperature Chamber | Tenney Engineering | TTRC | 11717-7 | CHAR 1/22/02 | 1/22/04 |
| | AC Voltmeter | HP | 400FL | 2213A14499 | CAL 10/9/01 | 10/9/03 |
| | AC Voltmeter | HP | 400FL | 2213A14261 | CHAR 10/15/01 | 10/15/03 |
| | AC Voltmeter | HP | 400FL | 2213A14728 | CHAR 10/15/01 | 10/15/03 |
| X | Digital Multimeter | Fluke | 77 | 35053830 | CHAR 1/8/02 | 1/8/04 |
| | Digital Multimeter | Fluke | 77 | 43850817 | CHAR 1/8/02 | 1/8/04 |
| | Digital Multimeter | HP | E2377A | 2927J05849 | CHAR 1/8/02 | 1/8/04 |
| | Multimeter | Fluke | FLUKE-77-3 | 79510405 | CAL 9/26/01 | 9/26/03 |
| | Peak Power Meter | HP | 8900C | 2131A00545 | CHAR 1/26/01 | 1/26/03 |
| | Digital Thermometer | Fluke | 2166A | 42032 | CAL 1/16/02 | 1/16/04 |
| | Thermometer | Traulsen | SK-128 | | CHAR 1/22/02 | 1/22/04 |
| X | Temp/Humidity gauge | EXTech | 44577F | E000901 | CHAR 1/22/02 | 1/22/04 |
| | Frequency Counter | HP | 5352B | 2632A00165 | CAL 11/28/01 | 11/28/03 |
| | Power Sensor | Agilent Technologies | 84811A | 2551A02705 | CAL 1/26/01 | 1/26/03 |
| | Service Monitor | IFR | FM/AM 500A | 5182 | CAL 11/22/00 | 11/22/02 |
| | Comm. Serv. Monitor | IFR | FM/AM 1200S | 6593 | CAL 5/12/02 | 5/12/04 |
| | Signal Generator | HP | 8640B | 2308A21464 | CAL 11/15/01 | 11/15/03 |
| | Modulation Analyzer | HP | 8901A | 3435A06868 | CAL 9/5/01 | 9/5/03 |
| | Near Field Probe | HP | HP11940A | 2650A02748 | CHAR 2/1/01 | 2/1/03 |

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| | DEVICE | MFGR | MODEL | SERNO | CAL/CHAR DATE | DUE DATE or STATUS |
|--|----------------------|---------------------|----------------------|--------------|--------------------------|-------------------------------|
| | BandReject Filter | Lorch Microwave | 5BR4-2400/ 60-N | Z1 | CHAR 3/2/01 | 3/2/03 |
| | BandReject Filter | Lorch Microwave | 6BR6-2442/ 300-N | Z1 | CHAR 3/2/01 | 3/2/03 |
| | BandReject Filter | Lorch Microwave | 5BR4-10525/ 900-S | Z1 | CHAR 3/2/01 | 3/2/03 |
| | High Pas Filter | Microlab | HA-10N | | CHAR 10/4/01 | 10/4/03 |
| | Audio Oscillator | HP | 653A | 832-00260 | CHAR 3/1/01 | 3/1/03 |
| | Frequency Counter | HP | 5382A | 1620A03535 | CHAR 3/2/01 | 3/2/03 |
| | Frequency Counter | HP | 5385A | 3242A07460 | CHAR 12/11/01 | 12/11/03 |
| | Preamplifier | HP | 8449B-H02 | 3008A00372 | CHAR 3/4/01 | 3/4/03 |
| | Amplifier | HP | 11975A | 2738A01969 | CHAR 3/1/01 | 3/1/03 |
| | Egg Timer | Unk | | | CHAR 8/31/01 | 8/31/03 |
| | Measuring Tape, 20M | Kraftixx | 0631-20 | | CHAR 2/1/02 | 2/1/04 |
| | Measuring Tape, 7.5M | Kraftixx | 7.5M PROFI | | 2/1/02 | 2/1/04 |
| | Coaxial Cable #51 | Insulated Wire Inc. | NPS 2251-2880 | Timco #51 | CHAR 1/23/02 | 1/23/04 |
| | Coaxial Cable #64 | Semflex Inc. | 60637 | Timco #64 | CHAR 1/24/02 | 1/24/04 |
| | Coaxial Cable #65 | General Cable Co. | E9917 RG233/U | Timco #65 | CHAR 1/23/02 | 1/23/04 |
| | Coaxial Cable #106 | Unknown | Unknown | Timco #106 | CHAR 1/23/02 | 1/23/04 |

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TEST PROCEDURES

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RADIATION INTERFERENCE: Testing was done in accordance with ANSI C63.4-2001. Section 15.35(b) specifies the use of an average detector in this band. In addition, the peak level of an emissions shall not exceed the average limit by more than 20 dB using a minimum Resolution Bandwidth (RBW) of 1 MHz and minimum Video Bandwidth (VBW) OF 1 MHz. The following procedure is designed to determine if there are any spurious emissions from the local oscillator within the band of interest along with any additional spurious emissions caused by other circuitry within the device.

1) Determine the frequency of the peak emission:

Start Frequency 11.7 GHz

Stop Frequency 12.2 GHz

RBW equal to or greater than 1 MHz

VBW equal to or greater than 1 MHz

Detector Function Peak

Maximize the emissions with regards to device orientation, antenna polarization, and antenna height. Sweep the band using Max Hold for a minimum of 2 minutes. Record this frequency for measuring the peak emission. In addition record the frequency of other spurious emissions noted.

2) Determine the peak level of the emission:

Center Frequency Set to the frequency determined in Step 1

RBW Equal to or greater than 1 MHz

VBW Equal to or greater than 1 MHz

Detector Function Peak

Measure the value of the peak emission using Max Hold for a minimum of 2 minutes. This can be done at zero span or a frequency span where the analyzer does not show a "Measurement Uncalibrated" message. Record the peak value. If the peak measurement is compliant with the average limit an average measurement is not necessary. If the peak value exceeds the average limit by less than 20 dB proceed to Step 3.

3) Determine the average level of the emission:

Center Frequency Set to the frequency determined in Step 1

Span Zero

RBW Equal to or greater than 1 MHz

VBW Equal to or greater than 10 Hz

Detector Function Peak

This measurement uses video averaging and must be done in Linear mode. The analyzer Reference Level is adjusted so that a signal is clearly visible on the screen. Measure the value of the emission using Max Hold for a minimum of 2 minutes. Record this as the average value.

Step 2 and Step 3 should be repeated for other spurious emissions.

The ambient temperature of the UUT was 73°F with a humidity of 57%.

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TEST PROCEDURES CONTINUED

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

| | |
|------------|--|
| Freq (MHz) | METER READING + ACF = FS |
| 33 | 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m |

ANSI STANDARD C63.4-1992 10.1.7 MEASUREMENT PROCEDURES: The unit under test was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

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NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.109

REQUIREMENTS: 30 to 88 MHz: 40.0 dBuV/M @ 3 METERS
88 to 216 MHz: 43.5 dBuV/M
216 to 960 MHz: 46.0 dBuV/M
ABOVE 960 MHz: 54.0 dBuV/M
11.7 to 12.2GHz: 54.0dBuV/m

TEST RESULTS: A search was made of the spectrum from 30 to 1000MHz and from 11.7 to 12.2GHz the measurements indicate that the unit DOES meet the FCC requirements. Measurements in the 11.7 to 12.2GHz band were made with a Standard Gain Horn. The measurements in the 11.7 to 12.2GHz band represent the ambient noise levels. The attached plots were made with peak detector with the analyzer in a maximum hold for 2 minutes.

TEST DATA:

| Tuned Frequency MHz | Emission Frequency MHz | Meter Reading dBuV | Ant. Polarity | Coax Loss dB | Correction Factor dB | Field Strength dBuV/m | Margin dB |
|---------------------------|------------------------------|--------------------------|------------------|--------------------|----------------------------|-----------------------------|--------------|
| 10,525.0 | 11,748.00 | 9.2 | H | 9.99 | 29.80 | 48.99 | 5.01 |
| 10,525.0 | 11,748.00 | 10.6 | V | 9.99 | 29.80 | 50.39 | 3.61 |
| 10,525.0 | 11,898.00 | 10.2 | H | 10.14 | 29.80 | 50.14 | 3.86 |
| 10,525.0 | 11,898.00 | 11.0 | V | 10.14 | 29.80 | 50.94 | 3.06 |
| 10,525.0 | 12,141.00 | 9.4 | H | 10.37 | 29.70 | 49.47 | 4.53 |
| 10,525.0 | 12,141.00 | 10.6 | V | 10.37 | 29.70 | 50.67 | 3.33 |

* The EUT is operating on the following bands; 10.525GHz(X-Band), 24.150GHz(K-Band), 33.4-36.0GHz(KA Band)

SAMPLE CALCULATION: FSdBuV/m = MR(dBuV) + ACFdB.

PERFORMED BY: SID SANDERS

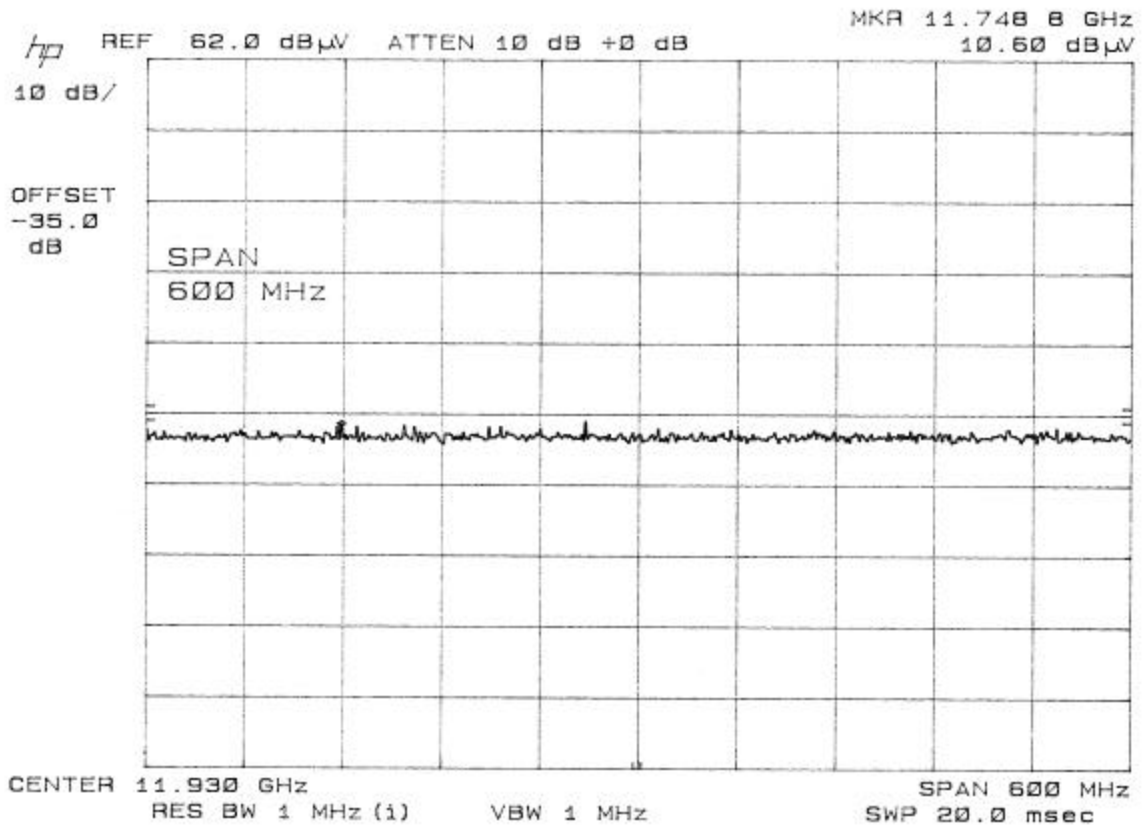
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VERTICAL LINE PLOT



HORIZONTAL LINE PLOT

