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FCC ID: AAO1901108

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TEST EQUIPMENT LIST

1. X Spectrum Analyzer: HP 8566B-Opt 462, S/N 3138A07786, w/  
preselector HP 85685A, S/N 3221A01400, Quasi-Peak Adapter  
HP 85650A, S/N 3303A01690 & Preamplifier HP 8449B-OPT H02,  
S/N 3008A00372 Cal. 1/19/01
2. X Biconnical Antenna: Eaton Model 94455-1, S/N 1057, Cal 3/15/00
3.    Biconnical Antenna: Electro-Metrics Model BIA-25, S/N 1171  
Cal. 3/16/01
4. X Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632  
Cal. 3/15/00
5.    Log-Periodic Antenna: Electro-Metrics Model LPA-30, S/N 409  
Cal. 3/15/00
6. X Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180,  
1-18 GHz, S/N 2319
7.    18-26.3GHz Systron Donner Standard Gain Horn #DBE-520-20
8.    Horn 40-60GHz: ATM Part #19-443-6R
9.    Line Impedance Stabilization Network: Electro-Metrics Model  
EM-7820, w/NEMA Adapter S/N 2682 Cal. 3/16/01
10.    Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7  
Cal. 1/21/01
11.    Frequency Counter: HP Model 5385A, S/N 3242A07460 Cal 11/20/00
12.    Peak Power Meter: HP Model 8900C, S/N 2131A00545, Cal. 1/26/01
13. X Open Area Test Site #1-3meters Cal. 12/22/99
14.    Signal Generator: HP 8640B, S/N 2308A21464 Cal. 11/21/00
15.    Signal Generator: HP 8614A, S/N 2015A07428
16.    Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N  
9706-1211 Cal. 6/10/00
17.    Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153  
Cal. 11/24/00
18.    AC Voltmeter: HP Model 400FL, S/N 2213A14499 Cal. 2/1/01
19.    Digital Multimeter: Fluke Model 8012A, S/N 4810047 Cal 9/21/99
20.    Digital Multimeter: Fluke Model 77, S/N 43850817 Cal 11/16/00
21.    Oscilloscope: Tektronix Model 2230, S/N 300572 Cal 2/1/01

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without  
the written approval of TIMCO ENGINEERING, INC.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD  
C63.4-1992 using a HEWLETT PACKARD spectrum analyzer with a prese-  
lector. The bandwidth of the spectrum analyzer was 100 kHz with an  
appropriate sweep speed. The analyzer was calibrated in dB above a  
microvolt at the output of the antenna. The resolution bandwidth was  
100KHz and the video bandwidth was 300KHz. The ambient temperature of  
the UUT was 80°C with a humidity of 76%.

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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 80 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

TEST RESULTS: A search was made of the spectrum from 30 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

TEST DATA:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB	Antenna Polarity
110.60	155.60	7.00	0.90	16.73	24.63	18.87	H
110.60	311.20	5.70	1.40	15.30	22.40	23.60	V
110.60	466.80	9.40	1.60	18.54	29.54	16.46	V
120.60	165.60	6.50	0.90	17.72	25.12	18.38	H
120.60	496.80	9.40	1.60	19.23	30.23	15.77	V
120.60	662.47	6.30	2.00	21.47	29.77	16.23	H
135.60	180.60	5.30	0.90	14.69	20.89	22.61	H
135.60	361.20	7.50	1.40	15.87	24.77	21.23	V
135.60	722.30	6.00	2.00	21.94	29.94	16.06	H
420.00	374.90	21.90	1.40	16.27	39.57	6.43	V
420.00	749.80	9.70	2.00	21.90	33.60	12.40	H
420.00	1499.60	12.90	1.00	26.00	39.90	14.10	V
466.00	420.90	13.80	1.60	17.48	32.88	13.12	V
466.00	1262.00	10.40	1.00	25.05	36.45	17.55	V
466.00	1683.60	12.20	1.00	26.73	39.93	14.07	V
512.00	466.90	9.20	1.60	18.54	29.34	16.66	V
512.00	933.80	10.30	2.90	24.17	37.37	8.63	V
512.00	1400.70	16.80	1.00	25.60	43.40	10.60	V
512.00	1868.00	6.80	1.01	27.47	35.28	18.72	H
162.50	207.43	5.60	1.20	12.14	18.94	24.56	H
162.50	414.90	5.50	1.60	17.34	24.44	21.56	V
162.50	622.30	6.20	1.60	20.59	28.39	17.61	H
137.00	364.00	7.50	1.40	15.96	24.86	21.14	V
137.00	546.00	4.40	1.60	19.67	25.67	20.33	V
155.00	200.00	7.20	1.20	12.60	21.00	22.50	H
155.00	400.00	5.60	1.35	33.11	40.06	13.94	H
174.00	657.00	9.70	2.00	21.35	33.05	12.95	H

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NAME OF TEST:                  RADIATION INTERFERENCE CONTINUED

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

TEST PROCEDURE:  ANSI STANDARD C63.4-1992 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Preselector, a Hewlett Packard Model 85650A Quasi-Peak adapter, an Electro-Metric Dipole Kit, and an Eaton Model 94455-1 Biconical Antenna. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The receiver was put into the coherent mode by placing an antenna driven by a signal generator off site. The UUT was tested in 3 orthogonal planes.

PERFORMED BY:  JOSEPH SCOGLIO

DATE:  MAY 9, 2001

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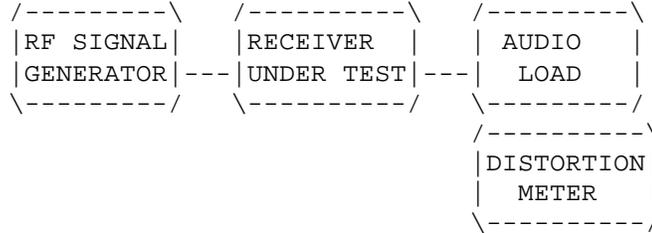
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NAME OF TEST: 38dB REJECTION RATIO

RULES PART NUMBER: 15.121(b)

REQUIREMENTS: 38dB REJECTION RATIO TO SENSITIVITY OF  
OF THE RECEIVER.

TEST SET-UP



TEST PROCEDURE: The reference sensitivity was measured in accordance with TIA/EIA-603;

- a. Equipment connected as illustrated
- b. A standard signal was applied to the receiver input terminals.
- c. Receiver output audio output was adjusted for rated output.
- d. The RF Signal generator was adjusted to the lowest level to produce a 12dB SINAD without the audio output dropping more than 3dB. Make note of sensitivity level.
- e. This was done across the different bands to establish a reference level. The reference taken was the worse case sensitivity.
- f. The output of the signal generator was then adjusted to a level of 60dB above the reference level at a frequency of 824.5MHz.
- g. With the level set 60dB above the level measured in step e,
- h. Set squelch on receiver to threshold, The signal level required to open the squelch must be lower than the level measured in step d.
- i. Cause the receiver to scan or step-it through its complete range of frequencies.
- j. If receiver stops or unsquelches on any frequency, record the frequency and then adjust the level until a 12dB SINAD is produced. This level must be greater than 38dB above the level in step e.
- k. Repeat steps f thorough j for frequencies 836.0, 848.5, 869.1, 881.0, & 893.5MHz.

TEST RESULTS: The UUT meet the 38dB REJECTION RATIO. NO CELL BAND SIGNALS DETECTED.

PERFORMED BY: JOSEPH SCOGLIO

DATE: May 9, 2001

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