

# TIMCO ENGINEERING INC.

849 NW State Road 45

Newberry, Florida 32669

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**FCC ID:** AMWUB328

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APPLICANT: UNIDEN AMERICA CORPORATION

FCC ID: AMWUB328

REPORT #: U/Uniden AMW/470AUT5/470AUT5TestReport.doc

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## EMC Equipment List

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/27/04	3/26/07
3-Meter OATS	TEI	N/A	N/A	Listed 1/13/03	1/12/06
Biconnical Antenna	Eaton	94455-1	1057	CAL 3/18/03	3/18/05
Biconnical Antenna	Eaton	94455-1	1096	CAL 8/17/04	8/17/06
Biconnical Antenna	Electro-Metrics	BIA-25	1171	CAL 4/26/01	4/26/03
Blue Tower Quasi-Peak Adapter	HP	85650A	2811A01279	CAL 4/15/03	4/15/05
Blue Tower RF Preselector	HP	85685A	2620A00294	CAL 4/27/04	4/27/06
Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/15/03	4/15/05
LISN	Electro-Metrics	ANS-25/2	2604	CAL 8/27/04	8/27/06
LISN	Electro-Metrics	EM-7820	2682	CAL 3/12/03	3/12/05
Log-Periodic Antenna	Eaton	96005	1243	CAL 5/8/03	5/8/05

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## 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 C63.4-2003 using a HEWLETT PACKARD spectrum analyzer with a preselector. 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 80oC with a humidity of 76%.

**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 C63.4-2003 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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**APPLICANT:** UNIDEN AMERICA CORPORATION

**FCC ID:** AMWUB328

**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	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
25.0	405.73	10.1	H	1.21	16.27	27.58	12.42
25.0	405.73	11.3	V	1.21	16.11	28.62	11.38
40.8	421.53	9.2	V	1.22	16.28	26.70	13.3
40.8	421.53	9.9	H	1.22	16.70	27.82	12.18
54.0	434.63	9.7	H	1.23	16.70	27.63	12.37
54.0	434.63	10.0	V	1.23	16.29	27.52	12.48
54.1	434.72	9.0	H	1.23	16.70	26.93	13.07
54.1	434.72	10.1	V	1.23	16.29	27.62	12.38
72.0	452.71	8.8	V	1.25	16.83	26.88	13.12
72.0	452.71	10.2	H	1.25	17.18	28.63	11.37
107.9	488.59	9.8	H	1.29	18.34	29.43	14.07
107.9	488.59	10.1	V	1.29	17.62	29.01	14.49
118.8	499.50	9.6	H	1.30	18.78	29.68	13.82
118.8	499.50	10.5	V	1.30	17.89	29.69	13.81
127.2	507.81	9.9	V	1.32	17.98	29.20	14.3
127.2	507.81	10.4	H	1.32	19.03	30.75	12.75
135.5	516.24	9.5	H	1.35	19.16	30.01	13.49
135.5	516.24	10.5	V	1.35	18.25	30.10	13.4
138.2	518.84	9.8	H	1.36	19.19	30.35	13.15
138.2	518.84	9.8	V	1.36	18.35	29.51	13.99
162.0	542.61	9.8	V	1.43	18.23	29.46	14.04
162.0	542.61	10.0	H	1.43	18.73	30.16	13.34

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**NAME OF TEST:** RADIATION INTERFERENCE

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**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 DATA CONTD.

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
173.2	553.90	9.9	H	1.46	18.92	30.28	13.22
173.2	553.90	10.2	V	1.46	18.38	30.04	13.46
197.8	578.39	9.5	H	1.54	19.38	30.42	13.08
197.8	578.39	9.7	V	1.54	18.95	30.19	13.31
216.1	596.69	10.5	H	1.59	19.27	31.36	14.64
216.1	596.69	10.6	V	1.59	18.73	30.92	15.08
225.1	605.75	9.8	H	1.61	19.36	30.77	15.23
225.1	605.75	10.8	V	1.61	18.60	31.01	14.99
273.1	653.70	9.6	H	1.65	20.09	31.34	14.66
273.1	653.70	9.7	V	1.65	19.91	31.26	14.74
318.1	698.67	9.8	H	1.70	21.40	32.90	13.1
318.1	698.67	10.6	V	1.70	20.96	33.26	12.74
320.1	585.59	9.5	V	1.56	19.00	30.06	15.94
320.1	585.59	10.6	H	1.56	19.29	31.45	14.55
406.9	672.40	10.9	H	1.67	21.00	33.57	12.43
406.9	672.40	11.8	V	1.67	20.70	34.17	11.83
511.9	777.51	9.9	V	1.86	21.05	32.81	13.19
511.9	777.51	10.2	H	1.86	21.88	33.94	12.06
764.0	498.50	10.4	H	1.30	18.74	30.44	15.56
764.0	498.50	10.6	V	1.30	17.87	29.77	16.23
806.0	425.33	9.9	H	1.23	16.70	27.83	18.17
806.0	425.33	10.6	V	1.23	16.25	28.08	17.92
857.2	476.53	9.8	H	1.28	17.90	28.98	17.02
857.2	476.53	10.5	V	1.28	17.03	28.81	17.19
954.9	574.20	9.4	H	1.52	19.34	30.26	15.74
954.9	574.20	9.7	V	1.52	18.83	30.05	15.95
1,299.9	919.21	12.3	H	1.98	23.48	37.76	8.24
1,299.9	919.21	14.0	V	1.98	22.68	38.66	7.34

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**NAME OF TEST:** RADIATION INTERFERENCE

**SAMPLE CALCULATION:**  $F_{SdBuV/m} = MR (dBuV) + ACF_{dB}$ .

**TEST PROCEDURE:** ANSI STANDARD C63.4-2003 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:** Nam Nguyen

**DATE:** March 10, 2005

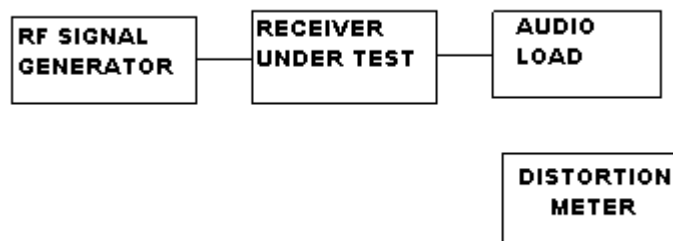
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**APPLICANT:** UNIDEN AMERICA CORPORATION  
**FCC ID:** AMWUB328  
**NAME OF TEST:** 38dB REJECTION RATIO  
**RULES PART NUMBER:** 15.121(b)  
**REQUIREMENTS:** 38dB REJECTION RATIO TO SENSITIVITY OF THE RECEIVER.

## TEST SET-UP



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

- Equipment connected as illustrated
- A standard signal was applied to the receiver input terminals.
- Receiver output audio output was adjusted for rated output.
- 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.
- This was done across the different bands to establish a reference level. The reference taken was the worse case sensitivity.
- The output of the signal generator was then adjusted to a level of 60dB above the reference level at a frequency of 824.5MHz.
- With the level set 60dB above the level measured in step e.
- Set squelch on receiver to threshold, the signal level required to open the squelch must be lower than the level measured in step d.
- Cause the receiver to scan or step-it through its complete range of frequencies.
- 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.
- Repeat steps f through j for frequencies 836.0, 848.5, 869.1, 881.0, & 893.5MHz.

**TEST RESULTS:** The UUT meets the 38dB REJECTION RATIO.

**PERFORMED BY:** Nam Nguyen

**DATE:** March 10, 2005

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