TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: sid@timcoengr.com

Test Report

Product Name: GEOMETRIX WIRELESS LOCATION SENSOR - RECEIVER

FCC ID: JTEWLS4NS

Applicant:

Andrew Network Solutions Group
140 Vista Centre Dr
Forest, Virginia 24551 USA

Date Receipt: 12/9/2003

Date Tested: 12/9/2003

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TABLE OF CONTENTS LIST

APPLICANT: ANDREW NETWORK SOLUTIONS GROUP

FCC ID: JTEWLS4NS

TEST REPORT CONTAINING:

EXHIBITS CONTAINING:

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TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/26/01	3/26/04
3-Meter OATS	TEI	N/A	N/A	Listed 1/13/03	1/13/06
Biconnical Antenna	Eaton	94455-1	1057	CAL 3/18/03	3/18/05
Biconnical Antenna	Eaton	94455-1	1096	CAL 10/1/01	10/1/03
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	2926A00983	CAL 4/15/03	4/15/05
Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/15/03	4/15/05
LISN	Electro-Metrics	ANS-25/2	2604	CAL 10/9/01	10/9/03
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 C63.4-1992 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 80°F with a humidity of 70%.

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. Measurements were made and data was taken to the tenth harmonic of the fundamental frequency. The antenna was placed in both the horizontal and vertical planes.

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APPLICANT: ANDREW NETWORK SOLUTIONS GROUP

FCC ID: JTEWLS4NS

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO.: 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

TEST DATA: Readings were taken at the following fundamental frequencies: 824 MHz, 834 MHz, and 846 MHz. Local Oscillator Radiation was indiscernible. Spurious Radiation data more than 20 dB below the limit are not reported.

Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
143.22	12.9	V	1.37	16.42	30.69	12.81
143.22	15.7	H	1.37	15.75	32.82	10.68
157.30	18.8	V	1.46	17.95	38.21	5.29
157.30	20.3	H	1.46	16.90	38.66	4.84
171.84	12.5	V	1.57	16.74	30.81	12.69
171.84	15.5	H	1.57	15.61	32.68	10.82
196.90	14.6	V	1.78	17.17	33.55	9.95
196.90	16.9	H	1.78	16.35	35.03	8.47
200.48	17.4	V	1.80	12.07	31.27	12.23
200.48	19.3	H	1.80	12.02	33.12	10.38
235.96	14.7	V	1.94	11.70	28.34	17.66
235.96	16.4	H	1.94	12.10	30.44	15.56
243.44	16.5	V	1.97	12.11	30.58	15.42
243.44	18.6	H	1.97	12.47	33.04	12.96
275.28	29.8	H	2.10	14.02	45.92	0.08
275.28	30.6	V	2.10	13.12	45.82	0.18
314.58	14.8	V	2.29	15.96	33.05	12.95
314.58	16.0	H	2.29	16.42	34.71	11.29
353.88	13.8	H	2.52	15.62	31.94	14.06
353.88	13.9	V	2.52	14.82	31.24	14.76
357.96	12.0	H	2.55	15.54	30.09	15.91
357.96	12.1	V	2.55	14.94	29.59	16.41
386.62	13.3	H	2.72	15.76	31.78	14.22
386.62	13.5	V	2.72	15.76	31.98	14.02
393.26	10.1	H	2.76	16.00	28.86	17.14
393.26	13.6	V	2.76	15.90	32.26	13.74
550.56	15.9	V	3.25	18.41	37.56	8.44
550.56	17.2	H	3.25	18.92	39.37	6.63
629.14	11.3	V	3.49	19.57	34.36	11.64
629.14	12.3	H	3.49	19.87	35.66	10.34
648.82	12.3	V	3.55	20.78	36.63	9.37
648.82	12.5	H	3.55	20.96	37.01	8.99
668.46	13.7	H	3.61	21.08	38.39	7.61
668.46	16.1	V	3.61	21.21	40.92	5.08

PERFORMED BY: JOSEPH SCOGLIO **DATE**:12/15/2003