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FCC ID: ELVAR8A

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TEST EQUIPMENT LIST

1. Spectrum Analyzer: Hewlett Packard 8566B - Opt 462, w/ preselector 85685A, & Quasi-Peak Adapter HP 85650A, & HP 8449B - OPT H02 Cal. 6/26/98
2. Signal Generator, Hewlett Packard 8640B, cal. 6/26/98
3. Eaton Biconnical Antenna Model 94455-1
20-200 MHz Serial No. 0997 Cal. 5/15/98
4. Electro-Metric Dipole Kit, 20-1000 MHz, Model TDA 25 cal. 5/15/97
5. Electro-Metric Horn 1-18 GHz, Model RGA-180, Cal. 8/15/98
6. Electro-Metric Antennas Model TDS-25-1, TDS-25-2, 5/15/97
7. Electro-Metric Line Impedance Stabilization Network Model No. EM-7821, Serial No. 101; 100KHz-30MHz 50uH. 12/3/97
8. Electro-Metric Line Impedance Stabilization Network Model No. EM-7820, Serial No. 2682; 10KHz-30MHz 50uH. 12/3/97

TEST PROCEDURE

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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 BW was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and RBW was 1.0MHz with a VBW of 3.0MHz above 1.0GHz. The ambient temperature of the UUT was 89.7oF with a humidity of 83%.

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

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TEST PROCEDURES CONTINUED

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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.

The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSIC63.4-1992 with the EUT 40 cm from the vertical ground wall.

RULES:2.1033(b) (4) CIRCUIT DESCRIPTION

This unit is a super regenerative receiver for a low power security device system. The signal comes in on the antenna to the RF amplifier ATR1. From the RF amplifier the signal is fed to the super regenerative detector ATR2. From ATR2 the detected signal is fed to the amplifier AIC1. From AIC1 the signal is fed to the second section of AIC1, where the signal is further amplified.

ANTENNA & GROUND:

This unit uses a 18 inch long piece of 24AWG wire as an antenna. There is no provision for an external antenna.

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APPLICANT: NUTЕК CORPORATION
 FCC ID: ELVAR8A
 NAME OF TEST: RADIATION INTERFERENCE
 RULES PART NO.: 15.109
 REQUIREMENTS: 30-88 MHz 40.0 dBuV/m measured at 3 meters
 88-216 MHz 43.5 dbuV/m
 216-960 MHz 46.0 dbuV/m
 ABOVE 960 MHz 54.0 dbuV/m

TEST DATA:

TUNED FREQ. MHz	EMISSION FREQUENCY MHz	METER READING @ 3m dBuV	COAX LOSS dB	A.C.F. dB	FIELD STRENGTH dBuV/m@3m	MARGIN dB	ANT.
433.00	428.19	13.50	1.60	17.65	32.75	13.25	V
433.00	428.81	13.60	1.60	17.66	32.86	13.14	V
433.00	429.91	14.30	1.60	17.69	33.59	12.41	V
433.00	430.94	16.10	1.60	17.71	35.41	10.59	V
433.00	431.65	16.10	1.60	17.73	35.43	10.57	V
433.00	432.39	18.40	1.60	17.74	37.74	8.26	V
433.00	432.87	18.20	1.60	17.76	37.56	8.44	V
433.00	433.49	16.30	1.60	17.77	35.67	10.33	V
433.00	434.36	14.30	1.60	17.79	33.69	12.31	V
433.00	435.10	13.40	1.60	17.81	32.81	13.19	V
433.00	436.37	9.70	1.60	17.84	29.14	16.86	V
433.00	437.25	9.50	1.60	17.86	28.96	17.04	V

METHOD OF MEASUREMENT: The procedure used was ANSI STANDARD C63.4-1992. The spectrum was scanned from 30 MHz to at 2 GHz. The spectrum analyzer was as specified in ANSI STANDARD C63.4-1992. The receiver was put into a coherent mode.

- 1) Resolution bandwidth 100 kHz to 1 GHz and 1 MHz above 1 GHz
- 2) Frequency scan per division 1 MHz/division
- 3) Scan time was set to 20 mS/division
- 4) A preselector was a part of the spectrum analyzer system for the frequency range.
- 5) A weak, on frequency signal was used to place the receiver in the coherent mode.
- 6) The line spectrum of pulse analysis was used.

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

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: _____ DATE TESTED: SEPTEMBER 23, 1998

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