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**APPLICANT:** GLOBAL LINK CORPORATION LIMITED

**FCC ID:** QL2KP5X

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GENERAL INFORMATION REQUIRED  
FOR TYPE ACCEPTANCE

2.1033(c)(1)(2) GLOBAL LINK CORPORATION LIMITED will manufacture the FCCID: QL2KP5X FAMILY RADIO SERVICES 14 CHANNEL TRANSCEIVER in quantity, for use under FCC RULES PART 95. The UUT is a PTT Radio with a maximum duty cycle of 50%.

GLOBAL LINK CORPORATION LIMITED  
ROOM 13B, CHINA MINMETALS TOWER  
79 CHATHAM ROAD SOUTH  
TSIM SHA TSUI, KOWLOON HONG KONG

2.1033 (c) TECHNICAL DESCRIPTION

2.1033(c)(3) Instruction book. A draft copy of the instruction manual is included as EXHIBIT 7.

2.1033(c) (4) Type of Emission: 10K5F3E  
95.631

Bn = 2M + 2DK

M = 3000

D = 2.25K

Bn = 2(3000)+2(2250) = 10.5K

Authorized Bandwidth 12.5 kHz

2.1033(c)(5) Frequency Range: 1. 462.5625 8. 467.5625  
95.627 2. 462.5875 9. 467.5875  
3. 462.6125 10. 467.6125  
4. 462.6375 11. 467.6375  
5. 462.6625 12. 467.6625  
6. 462.6875 13. 467.6875  
7. 462.7125 14. 467.7125 MHz

2.1033(c)(6)(7) Power Output shall not exceed 0.50 Watts effective  
95.639 radiated power. There can be no provisions for  
95.649 increasing the power or varying the power.

95.647 The antenna is an integral part to the unit, it cannot be removed without rendering the unit inoperative. In order to remove the antenna the case must be unscrewed, then the PCB assemblies must be removed then the antenna can be removed.

2.1033(c)(8) DC Voltages and Current into Final Amplifier:  
FINAL AMPLIFIER ONLY  
Vce = 4.5 Volts DC Ice = .550A.  
Pin = 2.48 Watts

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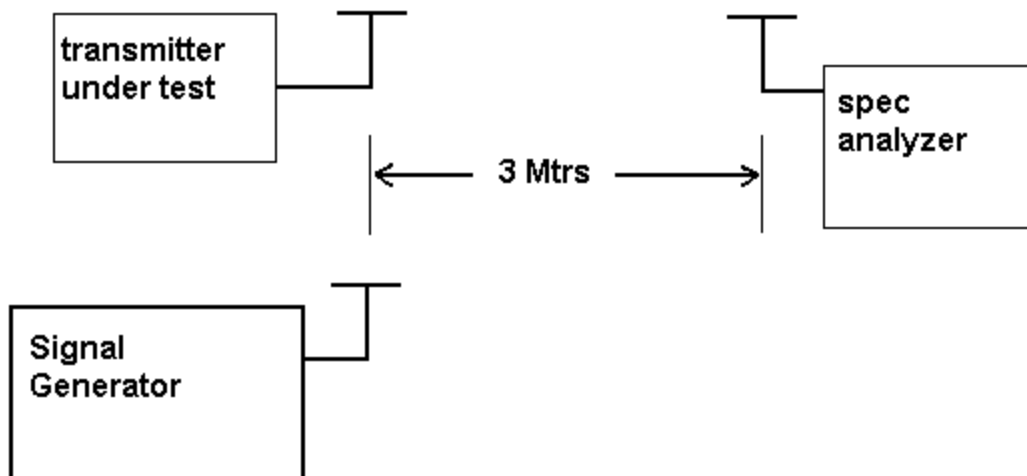
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- 2.1033(c)(9) Tune-up procedure. The tune-up procedure is included as EXHIBIT 9.
- 2.1033(c)(10) Complete Circuit Diagrams: The circuit diagram is included as EXHIBIT 6 of this report. The block diagram is included as EXHIBIT 5 of this report.
- 2.1033(c)(11) A photograph or a drawing of the equipment identification label is included as exhibit No. 1.
- 2.1033(c)(12) Photographs(8"X10") of the equipment of sufficient clarity to reveal equipment construction and layout, including meters, labels for controls, including any view under shields - See EXHIBIT 3-4.
- 2.1033(c)(13) Digital modulation is not allowed.
- 2.1033(c)(14) The data required by 2.1046 through 2.1057 is submitted below.

2.1046(a) RF power output.

95.639 RF power is measured by measuring the radiated power at 3 meters and then replacing the transmitter with a signal generator to determine the effective radiated power. The ERP shall not exceed 0.500 Watts.

**POWER OUTPUT - .155 WATTS**



Equipment placed 80 cm above ground  
on a rotatable platform.

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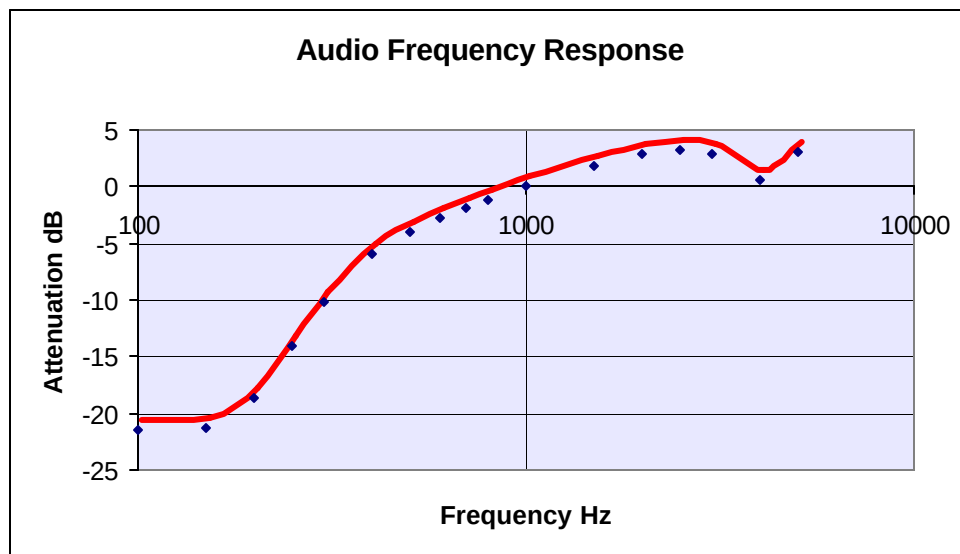
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2.1047(a)(b) Modulation characteristics:

AUDIO FREQUENCY RESPONSE

The audio frequency response was measured in accordance with TIA/EIA Specification 603. The audio frequency response curve is shown on page 5. The audio signal was fed into a dummy microphone circuit and into the microphone connector. The input required to produce 30 percent modulation level was measured.

**AUDIO FREQUENCY RESPONSE PLOT GOES HERE**

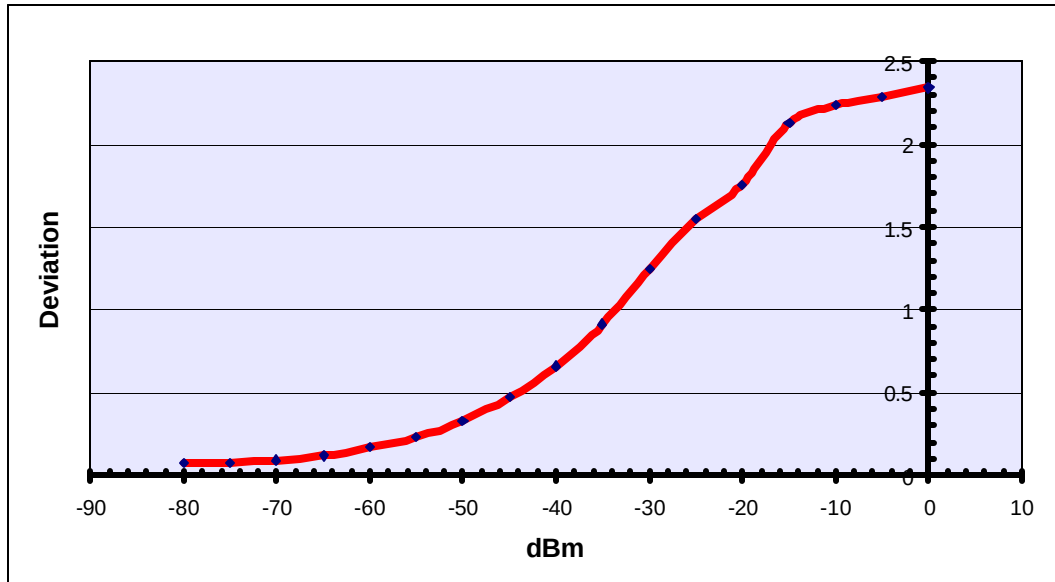


2.1047(b)

Audio input versus modulation

The audio input level needed for a particular percentage of modulation was measured in accordance with TIA/EIA Specification 603. The audio input curves versus modulation are shown in the following pages. Curves are provided for audio input frequencies of 300, 1000, and 2500 Hz.

**MODULATION LIMITING PLOT - 300 Hz**



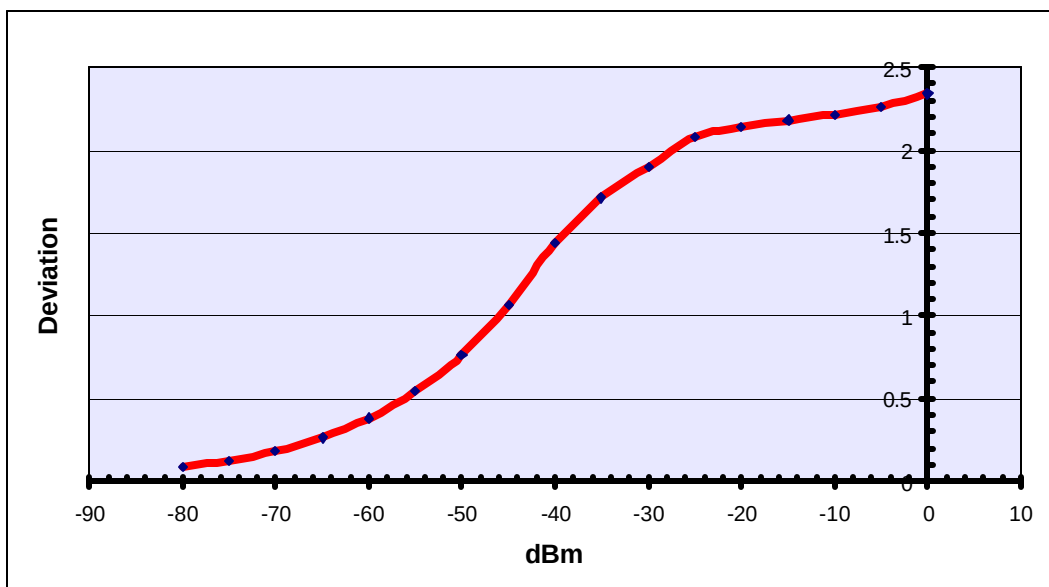
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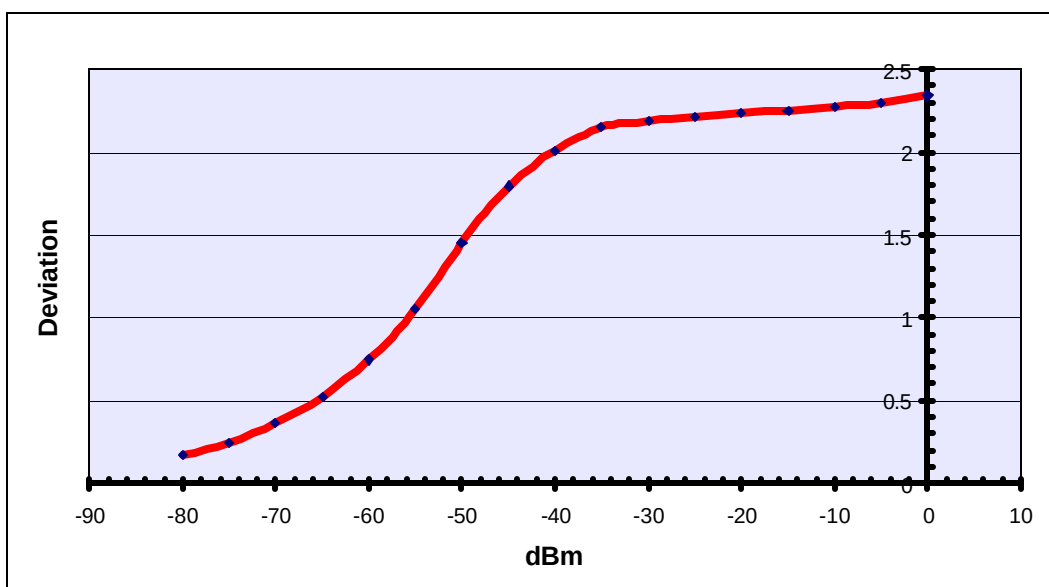
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### MODULATION LIMITING PLOT - 1000 Hz



### MODULATION LIMITING PLOT - 2500 Hz



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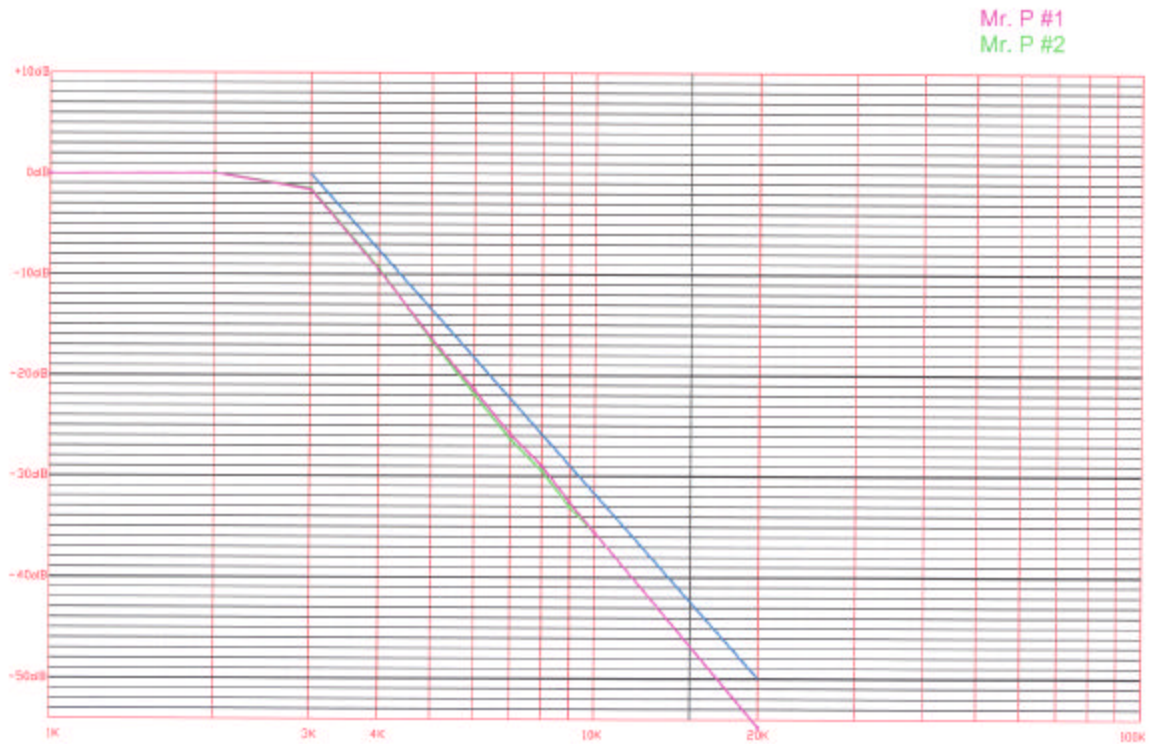
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95.637(b)

Post Limiter Filter The filter must be between the modulation limiter and the modulated stage. At any frequency between 3 & 20 kHz the filter must have an attenuation of  $60\log(f/3)$  greater than the attenuation at 1kHz. See the following plot

Frequency Response of the Audio Low Pass Filter



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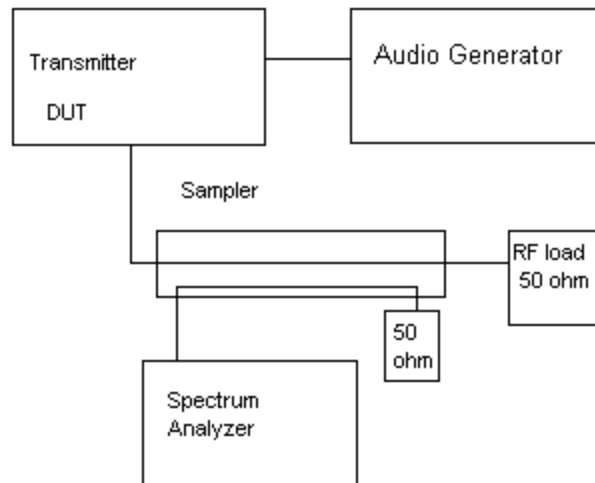
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2.1049(c)  
95.633(c)

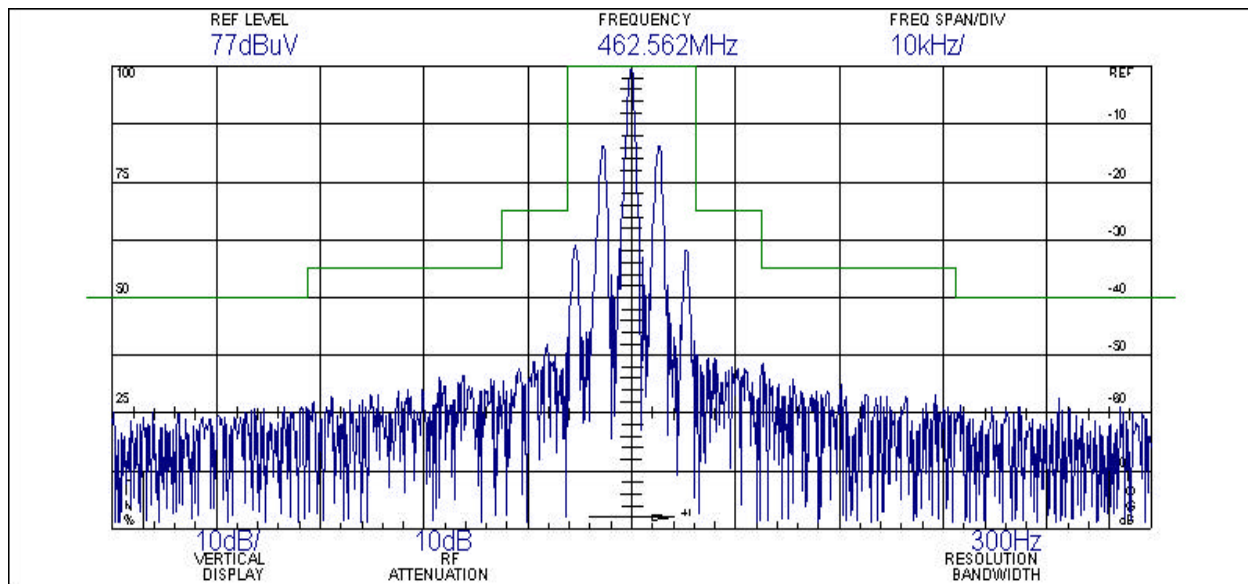
EMISSION BANDWIDTH:

Data in the plots shows that the sidebands from greater than 50% to 100% of the authorized bandwidth must be attenuated by at least 25 dB and from 100 to 250% the sidebands must be attenuated by at least 35 dB. Beyond 250% the sidebands must be attenuated by at least  $43 + \log_{10}(TP)$ . The transmitter was modulated with 2500 Hz, adjusted for 50% modulation plus 16 dB. The spectrum analyzer was set with the unmodulated carrier at the top of the screen. The test procedure diagram follows. See the occupied bandwidth plots

Occupied BW Test Equipment Setup



# OCCUPIED BANDWIDTH PLOT



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2.1053

UNWANTED RADIATION:

95.635(b)(7)

The tabulated Data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 MHz to at least the 10th harmonic of the fundamental. This test was conducted per ANSI C63.4-1992.

REQUIREMENTS: FRS:  $43 + 10\log(.155) = 35$  dB

TEST DATA (FRS):

| EMISSION<br>FREQUENCY | dBm  | ATTN<br>dBc | MARGIN<br>dB |
|-----------------------|------|-------------|--------------|
| 462.63                | 21.9 | 0.00        | 0.00         |
| 925.25                | -34  | 56          | 21           |
| 1387.88               | -37  | 59          | 24           |
| 1850.50               | -30  | 52          | 17           |
| 2313.13               | -33  | 55          | 20           |
| 2775.75               | -34  | 56          | 21           |
| 3238.38               | -40  | 62          | 27           |
| 3701.00               | -39  | 61          | 26           |
| 4163.63               | -37  | 59          | 24           |
| 4626.25               | -42  | 64          | 29           |

METHOD OF MEASUREMENT: The tabulated data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. This test was conducted per TIA/EIA STANDARD 603 using the substitution method. Measurements were made at the open field test site of TIMCO ENGINEERING, INC. located at 849 NW State Road 45, Newberry, FL 32669.

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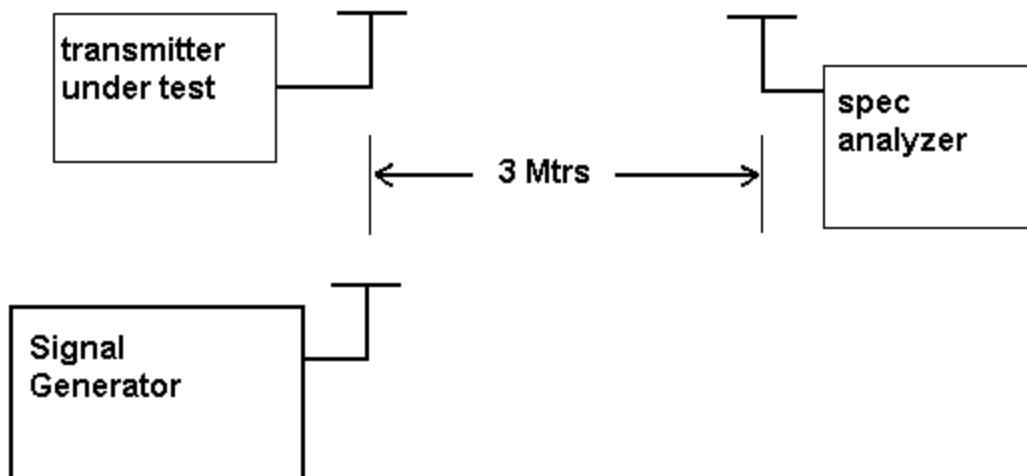
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2.1053  
95.635

UNWANTED RADIATION:

Method of Measuring Radiated Spurious Emissions



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## 2.1055 Frequency\_stability:

Temperature and voltage tests were performed to verify that the frequency remains within the 0.00025%, 2.5 ppm specification limit. The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 degrees C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15 second intervals. The worse case number was taken for temperature plotting. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -20 degrees C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15 second intervals. The worst case number was recorded for temperature plotting. This procedure was repeated in 10 degree increments up to + 50 degrees C.

Readings were also taken at plus and minus 15% of the battery voltage of 4.5 VDC.

### MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 462.6375

| TEMPERATURE C  | FREQUENCY MHZ | PPM   |
|----------------|---------------|-------|
| REFERENCE_____ | 462.6375      | 00.00 |
| -30C_____      | 462.63681     | -1.49 |
| -20C_____      | 462.63749     | -0.02 |
| -10C_____      | 462.63803     | 1.15  |
| 0C_____        | 462.63793     | 0.93  |
| 10C_____       | 462.63719     | -0.67 |
| 20C_____       | 462.6378      | 0.65  |
| 30C_____       | 462.63709     | -0.89 |
| 40C_____       | 462.63705     | -0.97 |
| 50C_____       | 462.63745     | -0.11 |

Batt End Point - 3.8 v/dc 462.63769 0.41

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was -1.49 to +1.15 ppm. The maximum frequency variation with voltage was 0.41 ppm.

Note: This EUT meets the frequency stability requirement for a FRS: +/- 2.5ppm over temp range of -20 degrees C to +50 degrees C. It also meets the GMRS frequency stability requirements: +/- 5ppm over the temp range -30 degrees C to +50 degrees C.

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FCC ID: KP5X

TEST EQUIPMENT LIST

|   | DEVICE                                              | MFGR            | MODEL            | SERNO                    | CAL/CHAR<br>DATE   | DUE DATE<br>or STATUS |
|---|-----------------------------------------------------|-----------------|------------------|--------------------------|--------------------|-----------------------|
| X | 3-Meter<br>OATS                                     | TEI             | N/A              | N/A                      | Listed<br>12/22/99 | 12/22/02              |
|   | 3/10-Meter<br>OATS                                  | TEI             | N/A              | N/A                      | Listed<br>3/26/01  | 3/26/04               |
|   | Receiver, Beige Tower<br>Spectrum Analyzer<br>(Tan) | HP              | 8566B Opt<br>462 | 3138A07786<br>3144A20661 | CAL<br>8/31/01     | 8/31/03               |
|   | RF Preselector<br>(Tan)                             | HP              | 85685A           | 3221A01400               | CAL<br>8/31/01     | 8/31/03               |
|   | Quasi-Peak Adapter<br>(Tan)                         | HP              | 85650A           | 3303A01690               | CAL<br>8/31/01     | 8/31/03               |
| X | Receiver, Blue Tower<br>Spectrum Analyzer<br>(Blue) | HP              | 8568B            | 2928A04729               | CHAR<br>10/22/01   | 10/22/03              |
| X | RF Preselector<br>(Blue)                            | HP              | 85685A           | 2848A18049<br>2926A00983 | CHAR<br>10/22/01   | 10/22/03              |
| X | Quasi-Peak Adapter<br>(Blue)                        | HP              | 85650A           | 2811A01279               | CHAR<br>10/22/01   | 10/22/03              |
| X | Biconnical Antenna                                  | Electro-Metrics | BIA-25           | 1171                     | CAL<br>4/26/01     | 4/26/03               |
|   | Biconnical Antenna                                  | Eaton           | 94455-1          | 1096                     | CAL<br>10/1/01     | 10/1/03               |
|   | Biconnical Antenna                                  | Eaton           | 94455-1          | 1057                     | CHAR<br>3/15/00    | 3/15/02               |
|   | BiconiLog Antenna                                   | EMCO            | 3143             | 9409-1043                |                    |                       |
| X | Log-Periodic<br>Antenna                             | Electro-Metrics | LPA-25           | 1122                     | CAL<br>10/2/01     | 10/2/03               |
|   | Log-Periodic<br>Antenna                             | Electro-Metrics | EM-6950          | 632                      | CHAR<br>10/15/01   | 10/15/03              |
|   | Log-Periodic<br>Antenna                             | Electro-Metrics | LPA-30           | 409                      | CHAR<br>10/16/01   | 10/16/03              |
|   | Dipole Antenna<br>Kit                               | Electro-Metrics | TDA-30/1-4       | 152                      | CAL<br>3/21/01     | 3/21/04               |

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|   | DEVICE                                | MFGR                           | MODEL      | SERNO      | CAL/CHAR<br>DATE   | DUE DATE<br>or STATUS |
|---|---------------------------------------|--------------------------------|------------|------------|--------------------|-----------------------|
|   | Dipole Antenna<br>Kit                 | Electro-Metrics                | TDA-30/1-4 | 153        | CHAR<br>11/24/00   | 11/24/03              |
|   | Double-Ridged Horn<br>Antenna         | Electro-Metrics                | RGA-180    | 2319       | CAL<br>12/19/01    | 12/19/03              |
|   | Horn Antenna                          | Electro-Metrics                | EM-6961    | 6246       | CAL<br>3/21/01     | 3/21/03               |
|   | Horn Antenna                          | ATM                            | 19-443-6R  | None       | No Cal<br>Required |                       |
|   | Passive Loop Antenna                  | EMC Test<br>Systems            | EMCO 6512  | 9706-1211  | CHAR<br>7/10/01    | 7/10/03               |
|   | Line Impedance<br>Stabilization . . . | Electro-Metrics                | ANS-25/2   | 2604       | CAL<br>10/9/01     | 10/9/03               |
|   | Line Impedance<br>Stabilization . . . | Electro-Metrics                | EM-7820    | 2682       | CAL<br>3/16/01     | 3/16/03               |
|   | Termaline Wattmeter                   | Bird Electronic<br>Corporation | 611        | 16405      | CAL<br>5/25/99     | 5/25/01               |
|   | Termaline Wattmeter                   | Bird Electronic<br>Corporation | 6104       | 1926       | CAL<br>12/12/01    | 12/12/03              |
|   | Oscilloscope                          | Tektronix                      | 2230       | 300572     | CHAR<br>2/1/01     | 2/1/03                |
|   | Temperature Chamber                   | Tenney<br>Engineering          | TTRC       | 11717-7    | CHAR<br>1/22/02    | 1/22/04               |
|   | AC Voltmeter                          | HP                             | 400FL      | 2213A14499 | CAL<br>10/9/01     | 10/9/03               |
|   | AC Voltmeter                          | HP                             | 400FL      | 2213A14261 | CHAR<br>10/15/01   | 10/15/03              |
|   | AC Voltmeter                          | HP                             | 400FL      | 2213A14728 | CHAR<br>10/15/01   | 10/15/03              |
| X | Digital Multimeter                    | Fluke                          | 77         | 35053830   | CHAR<br>1/8/02     | 1/8/04                |
|   | Digital Multimeter                    | Fluke                          | 77         | 43850817   | CHAR<br>1/8/02     | 1/8/04                |
|   | Digital Multimeter                    | HP                             | E2377A     | 2927J05849 | CHAR<br>1/8/02     | 1/8/04                |
|   | Multimeter                            | Fluke                          | FLUKE-77-3 | 79510405   | CAL<br>9/26/01     | 9/26/03               |
|   | Peak Power Meter                      | HP                             | 8900C      | 2131A00545 | CHAR<br>1/26/01    | 1/26/03               |

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|   | DEVICE              | MFGR                    | MODEL                | SERNO      | CAL/CHAR<br>DATE | DUE DATE<br>or STATUS |
|---|---------------------|-------------------------|----------------------|------------|------------------|-----------------------|
|   | Digital Thermometer | Fluke                   | 2166A                | 42032      | CAL<br>1/16/02   | 1/16/04               |
|   | Thermometer         | Traulsen                | SK-128               |            | CHAR<br>1/22/02  | 1/22/04               |
| X | Temp/Humidity gauge | EXTech                  | 44577F               | E000901    | CHAR<br>1/22/02  | 1/22/04               |
|   | Frequency Counter   | HP                      | 5352B                | 2632A00165 | CAL<br>11/28/01  | 11/28/03              |
|   | Power Sensor        | Agilent<br>Technologies | 84811A               | 2551A02705 | CAL<br>1/26/01   | 1/26/03               |
|   | Service Monitor     | IFR                     | FM/AM<br>500A        | 5182       | CAL<br>11/22/00  | 11/22/02              |
|   | Comm. Serv. Monitor | IFR                     | FM/AM<br>1200S       | 6593       | CAL<br>5/12/02   | 5/12/04               |
|   | Signal Generator    | HP                      | 8640B                | 2308A21464 | CAL<br>11/15/01  | 11/15/03              |
|   | Modulation Analyzer | HP                      | 8901A                | 3435A06868 | CAL<br>9/5/01    | 9/5/03                |
|   | Near Field Probe    | HP                      | HP11940A             | 2650A02748 | CHAR<br>2/1/01   | 2/1/03                |
|   | BandReject Filter   | Lorch<br>Microwave      | 5BR4-2400/<br>60-N   | Z1         | CHAR<br>3/2/01   | 3/2/03                |
|   | BandReject Filter   | Lorch<br>Microwave      | 6BR6-2442/<br>300-N  | Z1         | CHAR<br>3/2/01   | 3/2/03                |
|   | BandReject Filter   | Lorch<br>Microwave      | 5BR4-10525/<br>900-S | Z1         | CHAR<br>3/2/01   | 3/2/03                |
|   | High Pas Filter     | Microlab                | HA-10N               |            | CHAR<br>10/4/01  | 10/4/03               |
|   | Audio Oscillator    | HP                      | 653A                 | 832-00260  | CHAR<br>3/1/01   | 3/1/03                |
|   | Frequency Counter   | HP                      | 5382A                | 1620A03535 | CHAR<br>3/2/01   | 3/2/03                |
|   | Frequency Counter   | HP                      | 5385A                | 3242A07460 | CHAR<br>12/11/01 | 12/11/03              |
|   | Preamplifier        | HP                      | 8449B-H02            | 3008A00372 | CHAR<br>3/4/01   | 3/4/03                |
|   | Amplifier           | HP                      | 11975A               | 2738A01969 | CHAR<br>3/1/01   | 3/1/03                |

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|  | <b>DEVICE</b>        | <b>MFGR</b>            | <b>MODEL</b>      | <b>SERNO</b> | <b>CAL/CHAR<br/>DATE</b> | <b>DUE DATE<br/>or STATUS</b> |
|--|----------------------|------------------------|-------------------|--------------|--------------------------|-------------------------------|
|  | Egg Timer            | Unk                    |                   |              | CHAR<br>8/31/01          | 8/31/03                       |
|  | Measuring Tape, 20M  | Kraftixx               | 0631-20           |              | CHAR<br>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<br>Inc. | NPS 2251-<br>2880 | Timco #51    | CHAR<br>1/23/02          | 1/23/04                       |
|  | Coaxial Cable #64    | Semflex Inc.           | 60637             | Timco #64    | CHAR<br>1/24/02          | 1/24/04                       |
|  | Coaxial Cable #65    | General Cable<br>Co.   | E9917<br>RG233/U  | Timco #65    | CHAR<br>1/23/02          | 1/23/04                       |
|  | Coaxial Cable #106   | Unknown                | Unknown           | Timco #106   | CHAR<br>1/23/02          | 1/23/04                       |

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