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APPLICANT: TTI TECH CO., LTD.

FCC ID: PDHGMRS200W

TEST REPORT:

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EXHIBITS CONTAINING:

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| EXHIBIT | 2..... | LABEL LOCATION |
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APPLICANT: TTI TECH CO., LTD.

FCC ID: PDHGMRS200W

REPORT #: T/TTI_PDH\473KT3\473KT3TestReport.doc

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GENERAL INFORMATION REQUIRED
FOR CERTIFICATION

2.1033(c)(1)(2) TTI TECH CO., LTD. will manufacture the
FCCID: PDHGMRS200W
GMRS/FRS COMBINATION TRANSCEIVER in quantity,
for use under FCC RULES PART 95.

TTI TECH CO., LTD.
EUNDO BLDG. # 402, 737-19, BANPO-1DONG
SEOCHO-KU, 137-041, KOREA

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 = 1.75K

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

GMRS Authorized Bandwidth 20.0 kHz

| | | |
|------------------------------------|--------------|--------------|
| 2.1033(c)(5) GMRS Frequency Range: | 1. 462.5500 | 13. 462.7000 |
| 95.621 | 2. 462.5625 | 14. 462.7125 |
| | 3. 462.5750 | 15. 462.7250 |
| | 4. 462.5875 | 16. 467.5500 |
| | 5. 462.6000 | 17. 467.5750 |
| | 6. 462.6125 | 18. 467.6000 |
| | 7. 462.6250 | 19. 467.6250 |
| | 8. 462.6375 | 20. 467.6500 |
| | 9. 462.6500 | 21. 467.6750 |
| | 10. 462.6625 | 22. 467.7000 |
| | 11. 462.6750 | 23. 467.7250 |
| | 12. 462.6875 | |

FRS Authorized Bandwidth 12.5KHz

| | | |
|-----------------------------------|-------------|------------------|
| 2.1033(c)(5) FRS 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 |

2.10311c)(6)(7) RF power is measured by the substitution method as
2.1046(a) outlined in TIA/EIA - 603. With a nominal battery
voltage of 3.6 V, and the transmitter properly
adjusted the RF output measures:

GMRS - .142 Watts

FRS - .141 Watts

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.

2.1033(c)(8) DC Voltages and Current into Final Amplifier:
FINAL AMPLIFIER ONLY

FOR LOW POWER SETTING INPUT POWER: $(3.6V)(.211A) = .76 \text{ Watts}$
FOR HIGH POWER SETTING INPUT POWER: $(3.6V)(.211A) = .76 \text{ Watts}$

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
diagrams are included as EXHIBIT 5 of this
report.

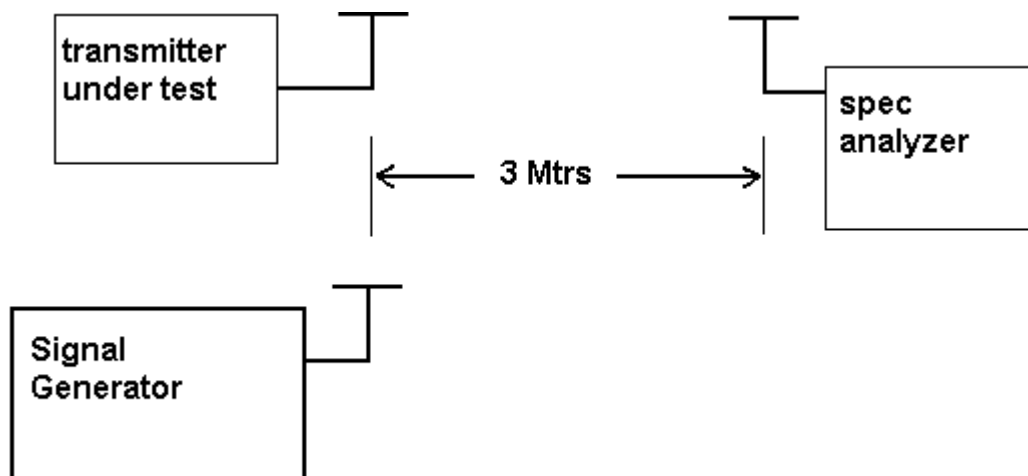
2.1033(c)(11) A photograph or a drawing of the equipment
identification label is included as EXHIBIT # 1.

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 #'S 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. The test procedure used was
TIA/EIA-603.



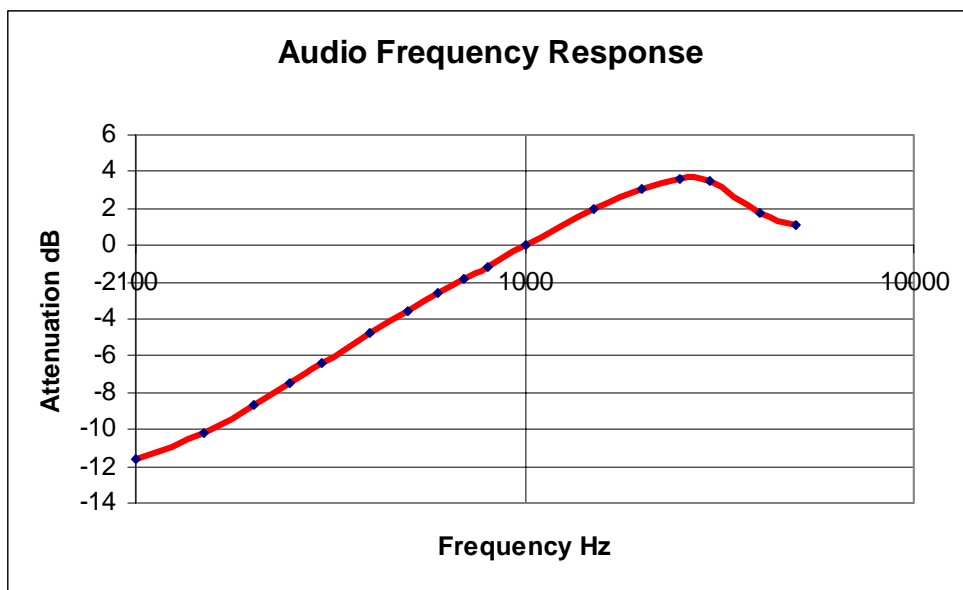
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2.1047(a)(b) Modulation characteristics:

AUDIO FREQUENCY RESPONSE

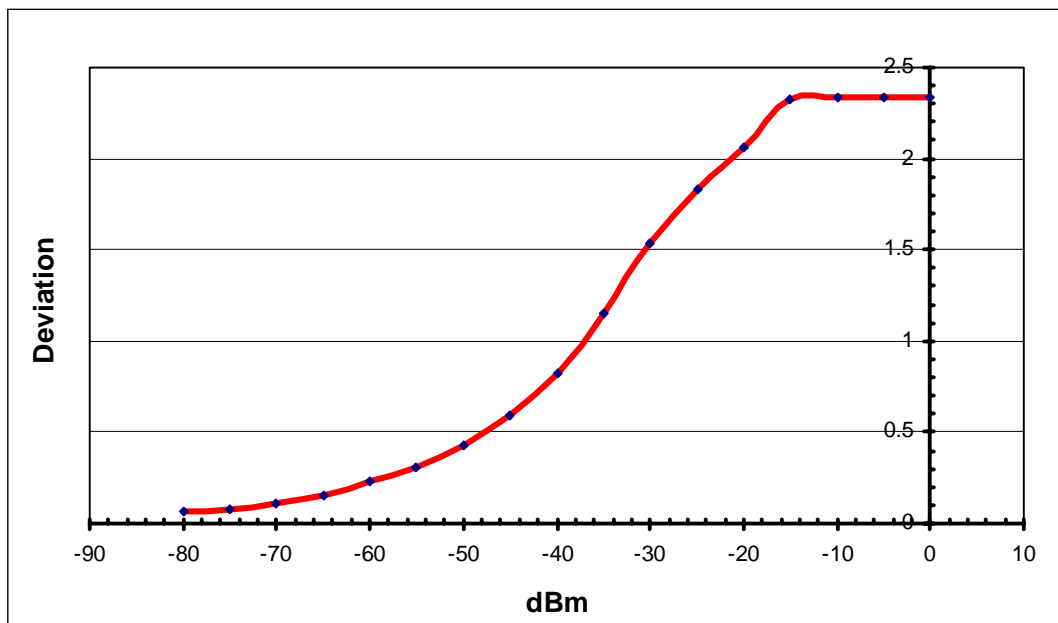
The audio frequency response was measured in accordance with TIA/EIA Specification 603. The audio frequency response curve is shown on the next page. The audio signal was fed into a dummy microphone circuit and into the microphone connector. The input required to produce 30 percent modulation level was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

AUDIO FREQUENCY RESPONSE PLOT GOES HERE

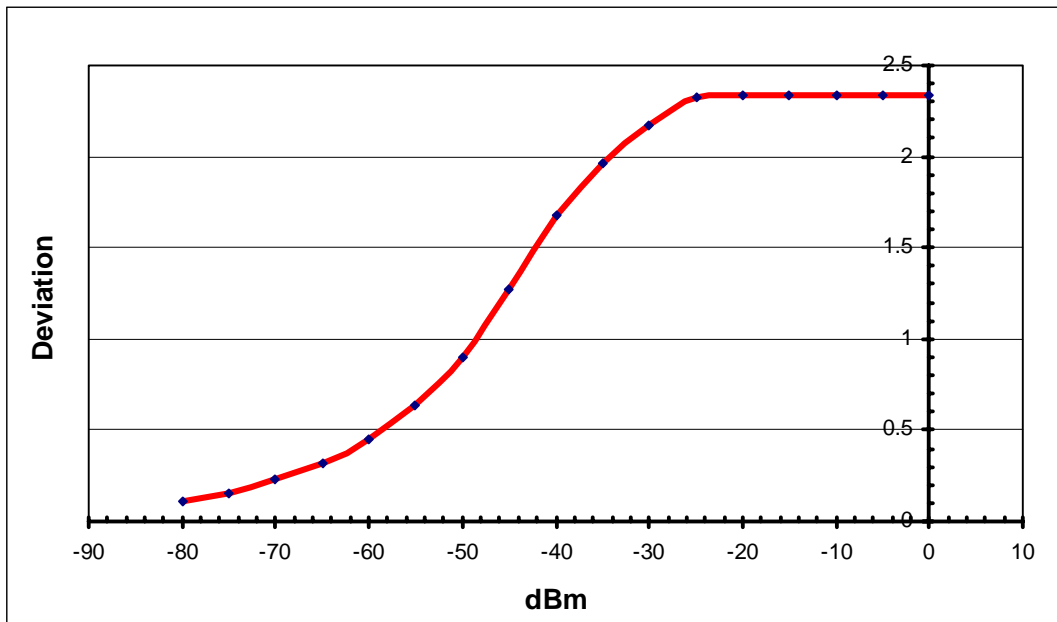


2.1047(b) Audio input versus modulation
The audio input level needed for a particular percentage of modulation was measured in accordance with TIA/EIA Specification 603. The audio input curves versus modulation are on the following pages. Curves are provided for audio input frequencies of 300, 1000, and 2500 Hz. See following plots.

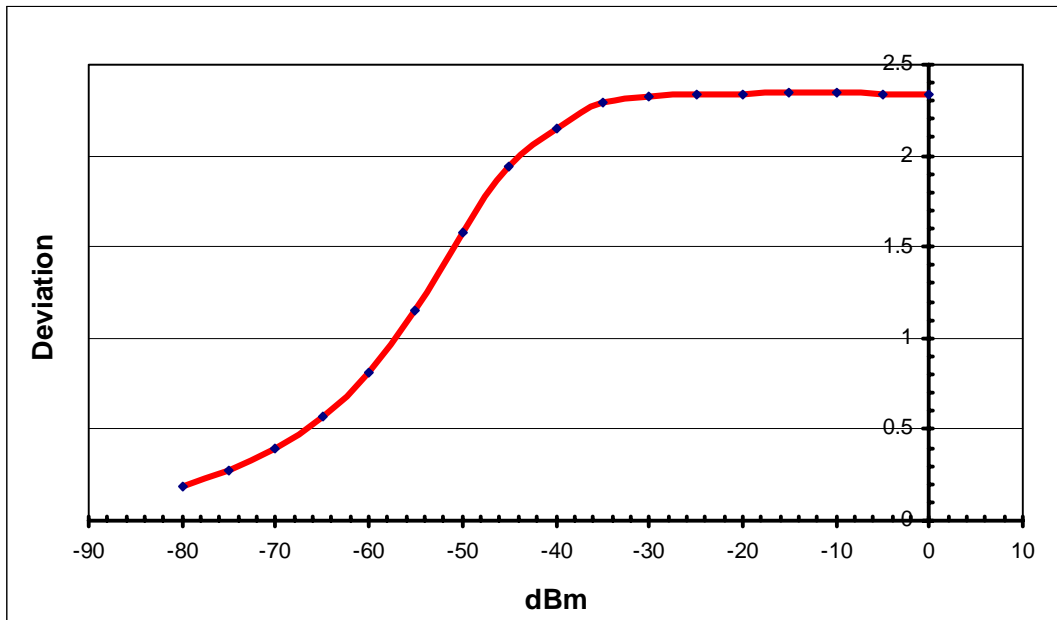
MODULATION LIMITING PLOT - 300 Hz



MODULATION LIMITING PLOT - 1000 Hz

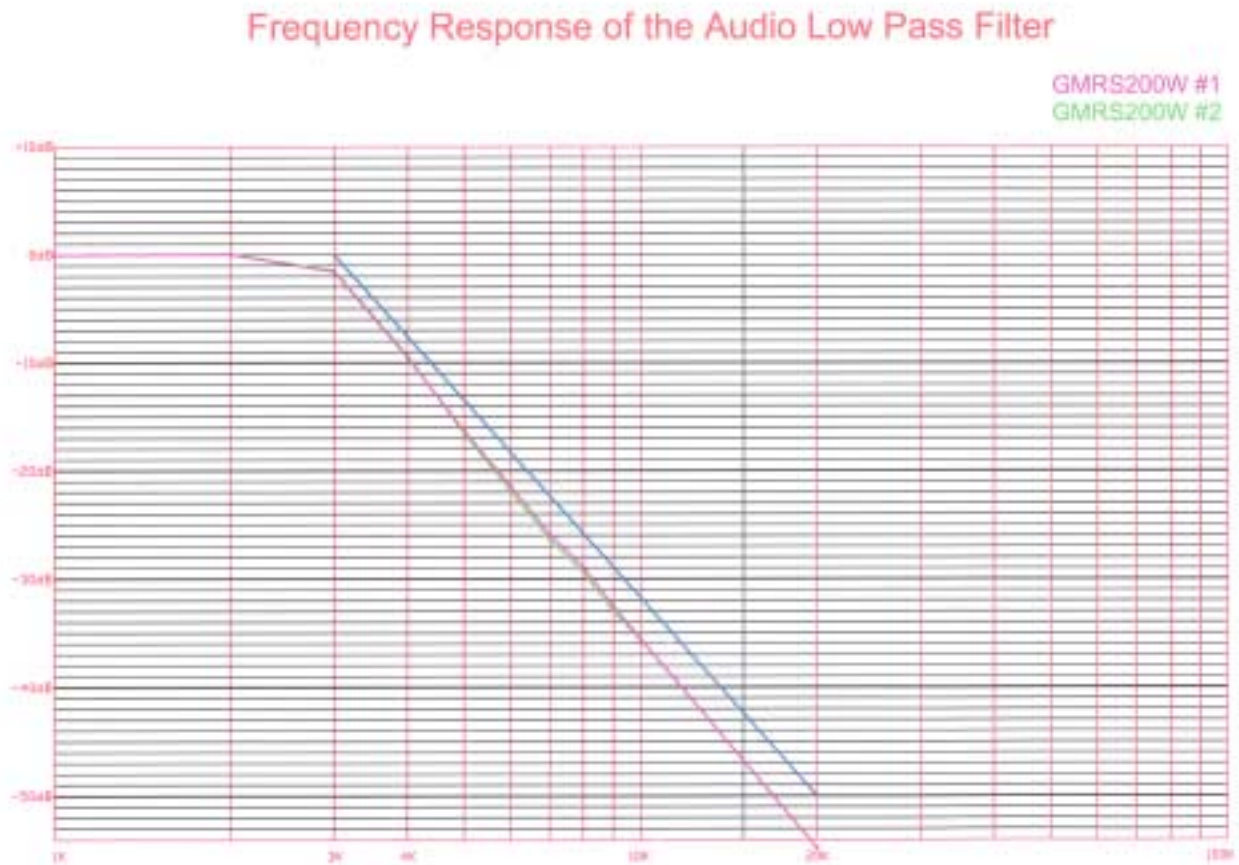


MODULATION LIMITING PLOT - 2500 Hz



95.637 Post Limiter Filter Each GMRS transmitter, except a mobile station transmitter with a power of 2.5Watts or less, must be equipped with an audio low pass filter. 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 below.

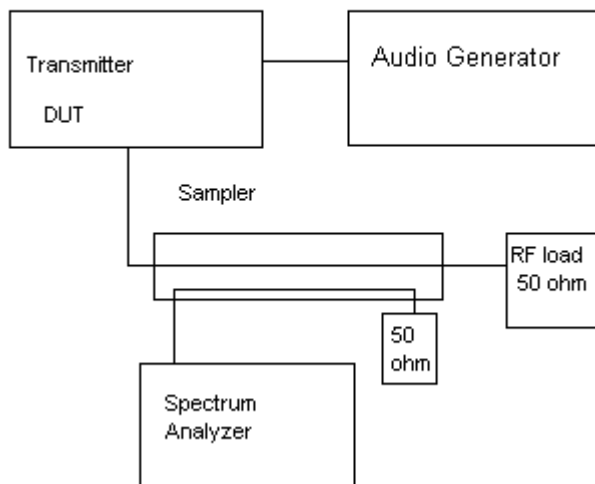
AUDIO LOW PASS FILTER GRAPH



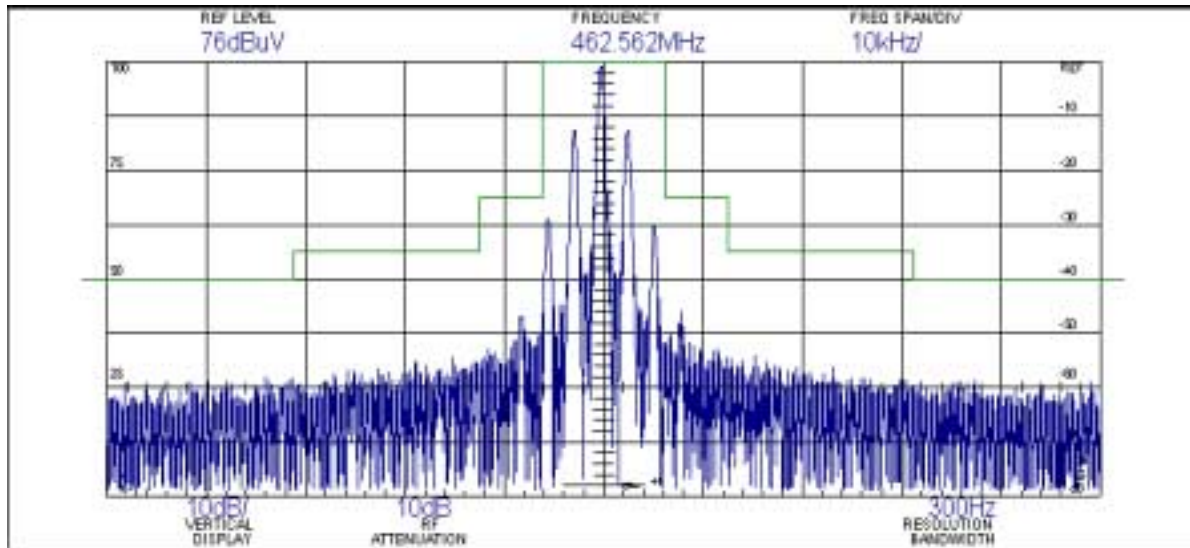
2.1049 Occupied bandwidth:
95.635(b)(1)(3)(7)

At least 25dB on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth. At least 35 dB on any frequency removed from the center of the authorized BW by more than 100% up to and including 250% of the authorized BW. At least $43 + \log_{10}(TP)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250%. See following plot.

Occupied BW Test Equipment Setup

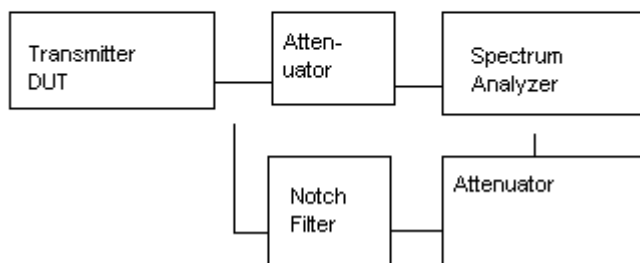


OCCUPIED BANDWIDTH PLOT



2.1051 Spurious emissions at antenna terminals(conducted):
The following data shows the level of conducted spurious responses at the antenna terminal. The test procedure used was TIA/EIA 603 S2.2.13 with the exception that the emissions were recorded in dBc. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental.

Spurious Emissions at
Antenna Terminals



Method of Measuring Conducted Spurious Emissions

2.1051 Spurious emissions at the Antenna Terminals

NAME OF TEST: SPURIOUS EMISSIONS AT ANTENNA TERMINALS

2.1051 Not Applicable, no antenna terminal allowed.

2.1053
95.635(b)(7)

UNWANTED RADIATION:

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: GMRS: $43 + 10\log(0.142) = 35$ dB

TEST DATA (GMRS):

| EMISSION FREQUENCY | dBm | ATTN dBc | MARGIN dB |
|-----------------------|-------|-------------|--------------|
| 462.63 | +21.5 | 0.00 | 0.00 |
| 925.26 | -35 | 56 | 21 |
| 1387.89 | -42 | 63 | 28 |
| 1850.52 | -38 | 59 | 24 |
| 2313.15 | -47 | 68 | 33 |
| 2775.78 | -41 | 62 | 27 |
| 3238.41 | -44 | 65 | 30 |
| 3701.04 | -43 | 64 | 29 |
| 4163.67 | -39 | 60 | 25 |
| 4626.30 | -35 | 56 | 21 |

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.

2.1053
95.635(b)(7)

UNWANTED RADIATION:

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.

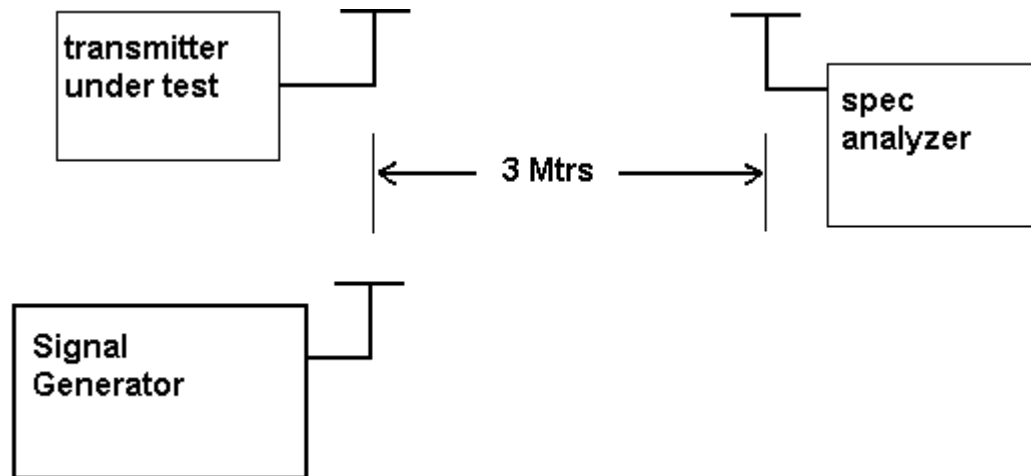
REQUIREMENTS: FRS: $43 + 10\log(.141) = 34$ dB

TEST DATA (FRS):

| EMISSION FREQUENCY | dBm | ATTN dBc | MARGIN dB |
|-----------------------|-------|-------------|--------------|
| 467.63 | +21.5 | 0.00 | 0.00 |
| 935.26 | -23 | 44 | 10 |
| 1402.89 | -43 | 64 | 30 |
| 1870.52 | -36 | 57 | 23 |
| 2338.15 | -44 | 65 | 31 |
| 2805.77 | -41 | 62 | 28 |
| 3273.40 | -46 | 67 | 33 |
| 3741.03 | -44 | 65 | 31 |
| 4208.66 | -37 | 58 | 24 |
| 4676.29 | -38 | 59 | 25 |

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.

Method of Measuring Radiated Spurious Emissions



Equipment placed 80 cm above ground
on a rotatable platform.

* Appropriate antenna raised from 1 to 4 M.

2.1055
95.621(b)

Frequency stability:

Temperature and voltage tests were performed to verify that the frequency remains within the 0.0005%, 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 -30 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 battery end point.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 462.63750

| TEMPERATURE C | FREQUENCY MHz | PPM |
|-------------------------|---------------|-------|
| REFERENCE_____ | 462.63750 | 00.00 |
| -30C_____ | 462.63673 | -1.66 |
| -20C_____ | 462.63758 | 0.17 |
| -10C_____ | 462.63855 | 2.27 |
| 0C_____ | 462.63847 | 2.10 |
| 10C_____ | 462.63805 | 1.19 |
| 20C_____ | 462.63754 | 0.09 |
| 30C_____ | 462.63698 | -1.12 |
| 40C_____ | 462.63728 | -0.48 |
| 50C_____ | 462.63739 | -0.24 |
| BATT. END POINT 3.1 VDC | 462.63723 | -0.58 |

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.

EMC Equipment List

| | DEVICE | MFGR | MODEL | SERNO | CAL/CHAR DATE | DUE DATE or STATUS |
|---|---|------------------|---------------|--------------------------|--------------------|--------------------|
| X | 3-Meter OATS | TEI | N/A | N/A | Listed 12/22/99 | 12/22/02 |
| | 3/10-Meter OATS | TEI | N/A | N/A | Listed 3/26/01 | 3/26/04 |
| | Receiver, Beige Tower Spectrum Analyzer (Tan) | HP | 8566B Opt 462 | 3138A07786 3144A20661 | CAL 8/31/01 | 8/31/03 |
| | RF Preselector (Tan) | HP | 85685A | 3221A01400 | CAL 8/31/01 | 8/31/03 |
| | Quasi-Peak Adapter (Tan) | HP | 85650A | 3303A01690 | CAL 8/31/01 | 8/31/03 |
| X | Receiver, Blue Tower Spectrum Analyzer (Blue) | HP | 8568B | 2928A04729 2848A18049 | CHAR 10/22/01 | 10/22/03 |
| X | RF Preselector (Blue) | HP | 85685A | 2926A00983 | CHAR 10/22/01 | 10/22/03 |
| X | Quasi-Peak Adapter (Blue) | HP | 85650A | 2811A01279 | CHAR 10/22/01 | 10/22/03 |
| X | Biconnical Antenna | Electro-Metrics | BIA-25 | 1171 | CAL 4/26/01 | 4/26/03 |
| | Biconnical Antenna | Eaton | 94455-1 | 1096 | CAL 10/1/01 | 10/1/03 |
| | Biconnical Antenna | Eaton | 94455-1 | 1057 | CHAR 3/15/00 | 3/15/02 |
| | BiconiLog Antenna | EMCO | 3143 | 9409-1043 | | |
| X | Log-Periodic Antenna | Electro-Metrics | LPA-25 | 1122 | CAL 10/2/01 | 10/2/03 |
| | Log-Periodic Antenna | Electro-Metrics | EM-6950 | 632 | CHAR 10/15/01 | 10/15/03 |
| | Log-Periodic Antenna | Electro-Metrics | LPA-30 | 409 | CHAR 10/16/01 | 10/16/03 |
| | Dipole Antenna Kit | Electro-Metrics | TDA-30/1-4 | 152 | CAL 3/21/01 | 3/21/04 |
| | Dipole Antenna Kit | Electro-Metrics | TDA-30/1-4 | 153 | CHAR 11/24/00 | 11/24/03 |
| | Double-Ridged Horn Antenna | Electro-Metrics | RGA-180 | 2319 | CAL 12/19/01 | 12/19/03 |
| | Horn Antenna | Electro-Metrics | EM-6961 | 6246 | CAL 3/21/01 | 3/21/03 |
| | Horn Antenna | ATM | 19-443-6R | None | No Cal Required | |
| | Passive Loop Antenna | EMC Test Systems | EMCO 6512 | 9706-1211 | CHAR 7/10/01 | 7/10/03 |

| | DEVICE | MFGR | MODEL | SERNO | CAL/CHAR DATE | DUE DATE or STATUS |
|---|------------------------------------|-----------------------------|-------------|------------|------------------|--------------------|
| | Line Impedance Stabilization . . . | Electro-Metrics | ANS-25/2 | 2604 | CAL 10/9/01 | 10/9/03 |
| | Line Impedance Stabilization . . . | Electro-Metrics | EM-7820 | 2682 | CAL 3/16/01 | 3/16/03 |
| | Termaline Wattmeter | Bird Electronic Corporation | 611 | 16405 | CAL 5/25/99 | 5/25/01 |
| | Termaline Wattmeter | Bird Electronic Corporation | 6104 | 1926 | CAL 12/12/01 | 12/12/03 |
| | Oscilloscope | Tektronix | 2230 | 300572 | CHAR 2/1/01 | 2/1/03 |
| | Temperature Chamber | Tenney Engineering | TTRC | 11717-7 | CHAR 1/22/02 | 1/22/04 |
| | AC Voltmeter | HP | 400FL | 2213A14499 | CAL 10/9/01 | 10/9/03 |
| | AC Voltmeter | HP | 400FL | 2213A14261 | CHAR 10/15/01 | 10/15/03 |
| | AC Voltmeter | HP | 400FL | 2213A14728 | CHAR 10/15/01 | 10/15/03 |
| X | Digital Multimeter | Fluke | 77 | 35053830 | CHAR 1/8/02 | 1/8/04 |
| | Digital Multimeter | Fluke | 77 | 43850817 | CHAR 1/8/02 | 1/8/04 |
| | Digital Multimeter | HP | E2377A | 2927J05849 | CHAR 1/8/02 | 1/8/04 |
| | Multimeter | Fluke | FLUKE-77-3 | 79510405 | CAL 9/26/01 | 9/26/03 |
| | Peak Power Meter | HP | 8900C | 2131A00545 | CHAR 1/26/01 | 1/26/03 |
| | Digital Thermometer | Fluke | 2166A | 42032 | CAL 1/16/02 | 1/16/04 |
| | Thermometer | Traulsen | SK-128 | | CHAR 1/22/02 | 1/22/04 |
| X | Temp/Humidity gauge | EXTech | 44577F | E000901 | CHAR 1/22/02 | 1/22/04 |
| | Frequency Counter | HP | 5352B | 2632A00165 | CAL 11/28/01 | 11/28/03 |
| | Power Sensor | Agilent Technologies | 84811A | 2551A02705 | CAL 1/26/01 | 1/26/03 |
| | Service Monitor | IFR | FM/AM 500A | 5182 | CAL 11/22/00 | 11/22/02 |
| | Comm. Serv. Monitor | IFR | FM/AM 1200S | 6593 | CAL 5/12/02 | 5/12/04 |
| | Signal Generator | HP | 8640B | 2308A21464 | CAL 11/15/01 | 11/15/03 |
| | Modulation Analyzer | HP | 8901A | 3435A06868 | CAL 9/5/01 | 9/5/03 |
| | Near Field Probe | HP | HP11940A | 2650A02748 | CHAR 2/1/01 | 2/1/03 |

| | DEVICE | MFGR | MODEL | SERNO | CAL/CHAR DATE | DUE DATE or STATUS |
|--|----------------------|---------------------|----------------------|------------|------------------|-----------------------|
| | BandReject Filter | Lorch Microwave | 5BR4-2400/ 60-N | Z1 | CHAR 3/2/01 | 3/2/03 |
| | BandReject Filter | Lorch Microwave | 6BR6-2442/ 300-N | Z1 | CHAR 3/2/01 | 3/2/03 |
| | BandReject Filter | Lorch Microwave | 5BR4-10525/ 900-S | Z1 | CHAR 3/2/01 | 3/2/03 |
| | High Pas Filter | Microlab | HA-10N | | CHAR 10/4/01 | 10/4/03 |
| | Audio Oscillator | HP | 653A | 832-00260 | CHAR 3/1/01 | 3/1/03 |
| | Frequency Counter | HP | 5382A | 1620A03535 | CHAR 3/2/01 | 3/2/03 |
| | Frequency Counter | HP | 5385A | 3242A07460 | CHAR 12/11/01 | 12/11/03 |
| | Preamplifier | HP | 8449B-H02 | 3008A00372 | CHAR 3/4/01 | 3/4/03 |
| | Amplifier | HP | 11975A | 2738A01969 | CHAR 3/1/01 | 3/1/03 |
| | Egg Timer | Unk | | | CHAR 8/31/01 | 8/31/03 |
| | Measuring Tape, 20M | Kraftixx | 0631-20 | | CHAR 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 Inc. | NPS 2251-2880 | Timco #51 | CHAR 1/23/02 | 1/23/04 |
| | Coaxial Cable #64 | Semflex Inc. | 60637 | Timco #64 | CHAR 1/24/02 | 1/24/04 |
| | Coaxial Cable #65 | General Cable Co. | E9917 RG233/U | Timco #65 | CHAR 1/23/02 | 1/23/04 |
| | Coaxial Cable #106 | Unknown | Unknown | Timco #106 | CHAR 1/23/02 | 1/23/04 |