

THRU Lab & Engineering.

477-6, Hager-Ri, Yaju-Up, Yaju-Gun

Kyunggi-Do,469-803, Korea

T820318835092F820318835169 email thrukang@kornet.net

THRU

Test Report

Product Name: GMRS/FRS Combination

MODEL NO:GXT720

FCC ID:MMAGXT775

Applicant:

Midland Radio Corporation.
5900 Parretta Drive,Kansas City,
MO64120

Date Receipt:03/25/2008

Date Tested: 03/28/2008

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GENERAL INFORMATION REQUIRED FOR CERTIFICATION

2.1033 (c) (1) (2) MidLand Radio Corporation. will manufacture
the FCCID: MMAGXT775 GMRS/FRS COMBINATION TRANSCEIVER
in quantity, for use under FCC RULES PART 95A&B.
MidLand Radio Corporation.
5900 Parretta Drive, Kansas City, MO64120

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 : 10K2F3E
95.631

Bn = 2M + 2DK
M = 3000
D = 2.147k
Bn = 2(3000) + 2(2147) = 10.2k

GMRS Frequency Range : 20.0kHz

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 6 V, and the transmitter properly
adjusted the RF output measures:
power supply : Alkaline batteries (1.5VDC) x 4

GMRS (HIGH) - 1.225 Watts
GMRS (LOW) - 0.122 Watts
FRS - 0.165 Watts

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2.1033(c)(6)(7) FRS 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 GMRS HIGH POWER SETTING INPUT POWER: (6V)(1.25A)=7.50 Watts

FOR GMRS LOW POWER SETTING INPUT POWER: (6V)(0.54A)=3.24 Watts

FOR FRS POWER SETTING INPUT POWER: (6V)(0.51A)=3.06 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.

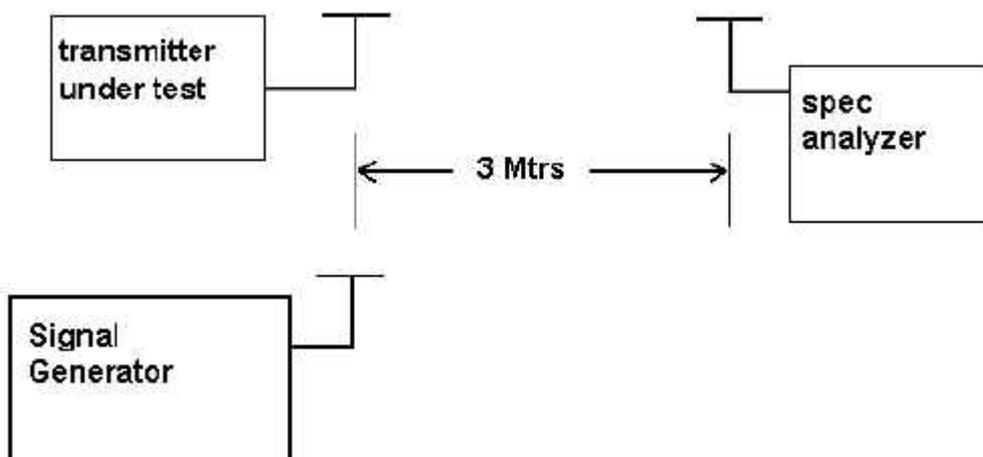
2.1033(c)(11) A photograph or a drawing of the equipment identification label is included as exhibit No. 1.

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 exhibits 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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2.1053
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.

REQUIREMENTS: GMRS (HIGH): $43 + 10\log(1.2246) = 43.88\text{dB}$

(LOW) : $43 + 10\log(0.1225) = 33.88\text{dB}$

GMRS-High				GMRS-Low			
frequency	dBc	Margin	dBm	frequency	dBc	Margin	dBm
462.7250				462.7250			
925.4500	54.96	11.08	-24.08	925.4500	60.56	26.68	-39.68
1388.1750	61.03	17.15	-30.15	1388.1750	58.53	24.65	-37.65
1850.9000	63.21	19.33	-32.33	1850.9000	57.31	23.43	-36.43
2313.6250	66.49	22.61	-35.61	2313.6250	57.19	23.31	-36.31
2776.3500	61.93	18.05	-31.05	2776.3500	53.23	19.35	-32.35
3239.0750	59.21	15.33	-28.33	3239.0750	48.21	14.33	-27.33
3701.8000	62.03	18.15	-31.15	3701.8000	53.53	19.65	-32.65
4164.5250	60.93	17.05	-30.05	4164.5250	51.93	18.05	-31.05
4627.2500	60.94	17.06	-30.06	4627.2500	50.74	16.86	-29.86

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 ThruLab & ENGINEERING. located at 477-6, Hager-Ri, Yoju-Up, Yoju-Gun, Kyunggi-Do,469-803, Korea

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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.

REQUIREMENTS: FRS: $43 + 10\log(0.1648) = 35.17\text{dB}$

FRS			
frequency	dBc	Margin	dBm
467.5625			
935.1250	61.22	26.05	-39.05
1402.6875	61.72	26.55	-39.55
1870.2500	59.47	24.30	-37.30
2337.8125	55.67	20.50	-33.50
2805.3750	54.92	19.75	-32.75
3272.9375	51.62	16.45	-29.45
3740.5000	54.67	19.50	-32.50
4208.0625	55.32	20.15	-33.15
4675.6250	52.63	17.46	-30.46

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 ThruLab & ENGINEERING. located at 477-6, Hager-Ri, Yoju-Up, Yoju-Gun, Kyunggi-Do,469-803, Korea

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TEST EQUIPMENT LIST

No	Description	Manufacturer	Model No.	Serial No.	Due Cal.	Used
1	Test Receiver	Rohde & Schwarz	ESHS 10	862970/018	2008.05.01	<input type="checkbox"/>
2	Test Receiver	Rohde & Schwarz	ESVS 10	826008/014	2008.06.12	<input type="checkbox"/>
3	Spectrum Analyzer	Hewlett Packard	8566B	2311A02394	2008.06.13	<input checked="" type="checkbox"/>
4	Spectrum Display	Hewlett Packard	85662A	2542A12429	2008.06.13	<input checked="" type="checkbox"/>
5	Quasi-peak Adapter	Hewlett Packard	85650A	2521A00887	2008.06.13	<input type="checkbox"/>
6	RF Preselector	Hewlett Packard	85685A	2648A00504	2008.06.13	<input type="checkbox"/>
7	Preamplifer	Hewlett Packard	8447F	2805A02570	2008.05.28	<input type="checkbox"/>
8	Preamplifer	A.H. Systems	PAM-0118	164	2008.05.08	<input type="checkbox"/>
9	Biconical Antenna	Eaton Corp.	94455-1	0977	2008.04.01	<input type="checkbox"/>
10	Biconical Antenna	EMCO	3104C	9111-2468	2008.06.07	<input type="checkbox"/>
11	Log Periodic	EMCO	3146	2051	2008.05.11	<input checked="" type="checkbox"/>
12	Horn Antenna	A.H. Systems	SAS-571	414	2008.03.17	<input checked="" type="checkbox"/>
13	Loop Antenna	Rohde & Schwarz	HFH2-	826532/006	2009.01.31	<input type="checkbox"/>
14	Dipole Antenna	Rohde & Schwarz	VHAP	574	2007.12.12	<input type="checkbox"/>
15	Dipole Antenna	Rohde & Schwarz	VHAP	575	2007.12.12	<input type="checkbox"/>
16	Dipole Antenna	Rohde & Schwarz	UHAP	546	2007.12.12	<input type="checkbox"/>
17	Dipole Antenna	Rohde & Schwarz	UHAP	547	2007.12.12	<input type="checkbox"/>
18	Signal Generator	Hewlett Packard	8673D	2708A00448	2008.06.12	<input type="checkbox"/>
19	Spectrum Analyzer	Advantest Corp.	R3261C	61720208	2008.06.12	<input type="checkbox"/>
20	LISN	EMCO	3825/2	9111-1912	2008.12.12	<input type="checkbox"/>
21	LISN	Kyoritsu	KNW-242	8-923-2	2009.05.23	<input type="checkbox"/>
22	Modulation Analyzer	Hewlett Packard	8901B	3438A05094	2008.05.25	<input type="checkbox"/>
23	Waveform	Hewlett Packard	33120A	US34001190	2008.05.21	<input type="checkbox"/>
24	Audio analyzer	Hewlett Packard	8903B	3011A12915	2008.05.21	<input type="checkbox"/>
25	Digital Oscilloscope	Tektronix	TDS 340A	B012287	2008.06.13	<input type="checkbox"/>

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