

Giant Electronics Ltd.

Application
For
Class II Permissive Change

Two Way Radio with GMRS and FRS

(FCC ID: K7GFV500)

0525290(S1)
TL/ Ann Choy
February 7, 2006

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INTERTEK TESTING SERVICES

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MEASUREMENT/TECHNICAL REPORT

Application : Giant Electronics Ltd.
Trade Name/Model No : Motorola FV600
Date : February 7, 2006

This report concerns (check one:) Original Grant _____ Class II Change X

Equipment Type: FRF – Part 95 Family Radio Face Held Transmitter

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No X

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

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List of attached file

Exhibit type	File Description	Filename
Cover Page	Purpose of Application	product change.pdf
Test Report	Spurious Emission	spurious.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	config photos.doc
Internal Photo	Internal Photo	internal photos.doc
External Photo	External Photo	external photos.doc
RF Exposure Info	SAR Test Report	SAR report.pdf

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EXHIBIT 1

GENERAL DESCRIPTION

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1.0 General Description

1.1 Product Description

The Equipment Under Test (EUT) is a Two Way Radio with GMRS and FRS operating between 462.5500MHz and 467.7125MHz. The EUT is powered by 3.6V (1 x 3.6V "Ni-MH" type rechargeable battery) or 4.5V (3 x "AA" size 1.5V alkaline batteries). According to the battery charging instruction, the EUT is turned off while in charging tray.

Transmitter Portion

- (i) Type of Emission : GMRS: 10K2F3E; FRS: 10K1F3E
- (ii) Frequency Range : GMRS 15 Channels from 462.5500MHz to 462.7250MHz
FRS 7 Channels from 467.5625MHz to 467.7125MHz
- (iii) Maximum Power Rating : GMRS: 0.33W ERP; FRS: 0.18W ERP
- (iv) Antenna Type : Integral

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1.2 Purpose of Application

The purpose of application is saved with filename: product change.pdf

As only the antenna length was increased and all other designs remained the same, only the transmission power and spurious emission results were included in this report.

1.3 Test Methodology

Radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003) and ANSI/TIA-603-B-2002. All measurement were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. For each scan, the procedure of maximizing emissions in Appendices D and E were followed. All Radiated tests were performed at an antenna the EUT distance of 3 meters, unless stated otherwise in the “**Justification Section**” of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the emission data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. The test facility and site measurement data have been fully placed on file with the FCC.

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EXHIBIT 2

SYSTEM TEST CONFIGURATION

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2.0 System Test Configuration

2.1 Justification

The device was configured for testing in a typical fashion (as a customer would normally use it). The device was placed on a turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes. When the radiated emissions are measured.

The device was powered by 3 new "AA" size 1.5V alkaline batteries.

The frequency range from 30 MHz to 4.69 GHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

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2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered on, a signal is transmitted.

2.3 Special Accessories

No special accessory is needed for compliance of this device.

2.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

2.5 Equipment Modification

Any modification installed previous to testing by Giant Electronics Ltd. will be incorporated in each production model sold/leased in the United States.

No modification were installed by Intertek Testing Services Hong Kong Ltd.

2.6 Support Equipment

A headset with 1.2m unshielded cable. (Supplied by Intertek)

Confirmed by:

*Tommy Leung
Assistant Manager
Intertek Testing Services
Agent for Giant Electronics Ltd.*



_____ Signature

_____ February 7, 2006 Date

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EXHIBIT 3

RF POWER OUTPUT

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3.0 RF Power Output (Section 2.1046(a))

A. Equipment Used

Equipment	Brand Name	Model No.
Log Periodic Antenna	EMCO	3148
Test receiver	Rohde & Schwarz	ESVS30
Tuned Dipole Antenna	CDI	A100
Signal Generator	RFI	2023B

B. Testing Procedure

1. On a test site, the EUT shall be placed at 1.5m height on a turn table, and in the position closest to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarisation located 3m from EUT to correspond to the frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the quasi-peak detector is used for the measurement.
4. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test.
5. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.

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6. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8. The maximum signal level detected by the measuring receiver shall be noted.
9. The transmitter shall be replaced by a tuned dipole (substitution antenna).
10. The substitution antenna shall be orientated for vertical polarisation and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
11. The substitution antenna shall be connected to a calibrated signal generator.
12. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
15. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarisation.
17. The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

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Table 1

**Giant Electronics Ltd.
Motorola FV600**

Transmission Power

Channel	Frequency (MHz)	Effective Radiated Power		Limit (W)	Margin (W)
		(dBm)	(W)		
1	462.5625	25.1	0.33	2.0	-1.67
2	462.5875	25.1	0.33	2.0	-1.67
3	462.6125	25.1	0.33	2.0	-1.67
4	462.6375	25.1	0.33	2.0	-1.67
5	462.6625	25.1	0.33	2.0	-1.67
6	462.6875	25.1	0.33	2.0	-1.67
7	462.7125	25.1	0.33	2.0	-1.67
8	467.5625	22.5	0.18	0.5	-0.32
9	467.5875	22.5	0.18	0.5	-0.32
10	467.6125	22.5	0.18	0.5	-0.32
11	467.6375	22.5	0.18	0.5	-0.32
12	467.6625	22.5	0.18	0.5	-0.32
13	467.6875	22.5	0.18	0.5	-0.32
14	467.7125	22.5	0.18	0.5	-0.32
15	462.5500	25.1	0.33	2.0	-1.67
16	462.5750	25.1	0.33	2.0	-1.67
17	462.6000	25.1	0.33	2.0	-1.67
18	462.6250	25.1	0.33	2.0	-1.67
19	462.6500	25.1	0.33	2.0	-1.67
20	462.6750	25.1	0.33	2.0	-1.67
21	462.7000	25.1	0.33	2.0	-1.67
22	462.7250	25.1	0.33	2.0	-1.67

Notes: Negative sign in the margin column shows the value below limits.

Test Engineer: Kenneth C. C. Lam Date of Test: October 9, 2005-January 27, 2006

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EXHIBIT 4

SPURIOUS EMISSION

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4.0 **Spurious Emission (Section 95.635)**

In order to satisfy the 95.635 requirement, the spurious emission from the EUT are measured and shown in the Exhibit 6.1.

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4.1 Field Strength of Spurious Radiation (Section 95.635)

A. Test Equipment

Equipment	Brand Name	Model No.
Antenna	EMCO	A100, 3148, 3104C, 3115
Spectrum Analyzer	ADVANTEST	R3271
Test receiver	Rohde & Schwarz	ESVS30
RF Filter	Trilithic	3VF500/1000-5-50-CC

B. Testing Procedure

Radiated emission measurements were performed according to the procedures in ANSI C63.4(2003). All measurements were performed in Open Area Test Sites located at Roof Top of Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.

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C. Radiated Emission Configuration Photograph

Worst Case Radiated Emission

For electronic filing, the radiated emission configurations photograph is saved with filename: config photos.doc

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C. Test Result

**Giant Electronics Ltd.
Motorola FV600**

Table 2(a)

1) Unwanted emission from CARRIER $\pm 6.25\text{kHz}$ to CARRIER $\pm 31.25\text{kHz}$

(Refer to the plots which is saved with filename: spurious.pdf)

Region	Unwanted emission	
	Channel 4	Channel 11
CARRIER $\pm 6.25\text{kHz}$ to $\pm 12.5\text{kHz}$	<25dB	<25dB
CARRIER $\pm 12.5\text{kHz}$ to $\pm 31.25\text{kHz}$	<35dB	<35dB

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Table 2(b): Channel 4

Frequency (MHz)	Effective Radiated Power (dBm)	Transmission Power (dBm)	Attenuation (dBc)	Limit (dB)	Margin (dB)
231.319	-49.9	25.1	75.0	38.1	-36.9
693.956	-37.8	25.1	62.9	38.1	-24.8
925.275	-17.8	25.1	42.9	38.1	-4.8
1156.594	-37.7	25.1	62.8	38.1	-24.7
1387.913	-26.6	25.1	51.7	38.1	-13.6
1619.231	-38.4	25.1	63.5	38.1	-25.4
1850.550	-46.7	25.1	71.8	38.1	-33.7
2081.869	-44.2	25.1	69.3	38.1	-31.2
2313.188	-37.7	25.1	62.8	38.1	-24.7
2544.506	-45.6	25.1	70.7	38.1	-32.6
2775.825	-40.4	25.1	65.5	38.1	-27.4
3007.144	-42.2	25.1	67.3	38.1	-29.2
3238.463	-36.6	25.1	61.7	38.1	-23.6
3469.781	-42.8	25.1	67.9	38.1	-29.8
3701.100	-44.0	25.1	69.1	38.1	-31.0
3932.419	-44.0	25.1	69.1	38.1	-31.0
4163.724	-33.1	25.1	58.2	38.1	-20.1

- Remark: 1. Transmission power is 25.1 dBm or -4.9 dB(W).
2. According to Section 95.635(b7), the unwanted emission should be attenuated below TP by at least $43 + 10 \log_{10} (TP)$ dB or 38.1 dB.
3. The test is performed according to ANSI/TIA-603-B-2002.

Test Engineer: Kenneth C. C. Lam Date of Test: October 19, 2005-January 27, 2006

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Table 2(b): Channel 11

Frequency (MHz)	Effective Radiated Power (dBm)	Transmission Power (dBm)	Attenuation (dBc)	Limit (dB)	Margin (dB)
233.819	-39.8	22.5	62.3	35.5	-26.8
701.456	-41.1	22.5	63.6	35.5	-28.1
935.275	-22.7	22.5	45.2	35.5	-9.7
1169.094	-37.9	22.5	60.4	35.5	-24.9
1402.913	-28.5	22.5	51.0	35.5	-15.5
1636.731	-35.3	22.5	57.8	35.5	-22.3
1870.550	-31.4	22.5	53.9	35.5	-18.4
2104.369	-48.2	22.5	70.7	35.5	-35.2
2338.188	-34.8	22.5	57.3	35.5	-21.8
2572.006	-34.5	22.5	57.0	35.5	-21.5
2805.825	-39.0	22.5	61.5	35.5	-26.0
3039.644	-42.0	22.5	64.5	35.5	-29.0
3273.463	-40.6	22.5	63.1	35.5	-27.6
3507.281	-45.3	22.5	67.8	35.5	-32.3
3741.100	-38.3	22.5	60.8	35.5	-25.3
3974.919	-50.5	22.5	73.0	35.5	-37.5
4208.738	-34.8	22.5	57.3	35.5	-21.8
4442.556	-44.5	22.5	67.0	35.5	-31.5
4676.375	-35.5	22.5	58.0	35.5	-22.5

- Remark: 1. Transmission power is 22.5 dBm or -7.5 dB(W).
2. According to Section 95.635(b7), the unwanted emission should be attenuated below TP by at least $43 + 10 \log_{10} (TP)$ dB or 35.5 dB.
3. The test is performed according to ANSI/TIA-603-B-2002.

Test Engineer: Kenneth C. C. Lam Date of Test: October 19, 2005-January 27, 2006

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EXHIBIT 5

PRODUCT LABELLING

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5.0 Product Labelling

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5.1 Label Artwork & Location

Figure 5.1 Label Artwork & Location

An engineering drawing of the label which will be permanently affixed to the unit.
For electronic filing, the label artwork & location are saved with filename: label.pdf

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EXHIBIT 6

PHOTOGRAPHS

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6.0 Equipment Photographs

For electronic filing, photographs of the tested EUT are saved with filename: external photos.doc and internal photos.doc

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EXHIBIT 7
INSTRUCTION MANUAL

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7.0 Instruction Manual

This manual will be provided to the end-user with each unit sold/leased in the United States.

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf

EXHIBIT 8
INPUT CURRENT

8.0 **Input Current**

The input current to final r.f. stage at 4.5VDC is 0.499A.

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EXHIBIT 9

RF EXPOSURE INFO

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9.0 RF Exposure Info

The RF Safety Information is shown on P.1 of User Manual.