

Giant Electronics Ltd.

Application
For
Certification
(FCC ID: K7GHCLE4065)
Transmitter

WO# 0214101
TL/Sandy
October 31, 2002

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LIST OF EXHIBITS

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MEASUREMENT/TECHNICAL REPORT

Giant Electronics Ltd. - MODEL: SWIM MX240a
FCC ID: K7GHCLE4065

October 31, 2002

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

Equipment Type: Low Power Transmitter (example: computer, printer, modem, etc.)

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.

Transition Rules Request per 15.37? Yes No X

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [12-18-01 Edition] provision.

Report prepared by:

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List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
Test Report	Conducted Emission Test Result	conducted.pdf
Test Report	Bandedge Plot	bw.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Confidentiality Request	request.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 Transmitter Portion Short-Range Wireless Instant Message (Handheld Unit) operating at 902.475 - 927.475MHz. The EUT is powered by 3.6V d.c. (1 x 3.6V 550mAh NiMH battery or 120VAC 60Hz input, 9.0VDC 300mA output adaptor). It is a portable device that allows up to eight users to simultaneously send and receive Instant Message and participate in chat sessions over the internet from a maximum of 150 feet from a single PC. The EUT has 32 Channels which can be selected by the Up / Down scroll keys.

Antenna Type : Internal, Integral

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

1.2 Related Submittal(s) Grants

This is a single application for certification of a transmitter portion. The receiver portion associated with the EUT is subjected to verification procedure.

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1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements 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 for maximizing emissions in Appendices D and E were followed. All Radiated tests were performed at an antenna to 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. This 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 system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (1992).

The EUT was powered from 120VAC 60Hz input, 9.0VDC 300mA output adaptor.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The frequency range from 902MHz to 9.3GHz 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.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the button is depressed, the unit transmits the typical signal. For simplicity of testing, the unit was wired to transmit continuously.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

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2.4 Equipment Modification

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

No modifications were installed by Intertek Testing Services.

2.5 Measurement Uncertainty

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

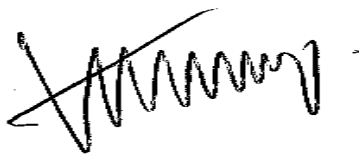
2.6 Support Equipment List and Description

Refer List:

1. GP NiMH 3.6V 500mAh battery
2. Adaptor
 - Input: 120VAC 60Hz
 - Output: 9.0VDC 300mA
 - Model: ELECTRADE MICRO POWER CO. DCBBD0930D

Confirmed by:

*Tommy Leung
Assistant Supervisor
Intertek Testing Services Hong Kong Ltd.
Agent for Giant Electronics Ltd.*



Signature

October 31, 2002

Date

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EXHIBIT 3

EMISSION RESULTS

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3.0 Emission Results

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

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3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD + AV$$

where FS = Field Strength in dB μ V/m

RA = Receiver Amplitude (including preamplifier) in dB μ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD + AV$$

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3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$PD = 0 \text{ dB}$$

$$AV = -10 \text{ dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm} [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at
927.457 MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.

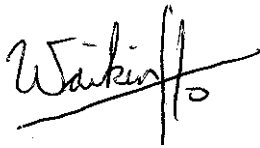
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3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 2.0 dB

TEST PERSONNEL:



Signature

Ben W. K. Ho, Compliance Engineer
Typed/Printed Name

October 31, 2002

Date

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Company: Giant Electronics Ltd.
Model: SWIM MX240a
Mode: TX (Handheld Unit)

Date of Test: October 7, 2002

Table 1

Radiated Emissions

Channel 1

Polarity	Frequency (MHz)	Reading (dB μ V)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
H	902.562	82.0	22.6	16	88.6	94	-5.4
H	1805.125	45.1	26.5	34	37.6	54	-16.4
H	2707.682	40.3	29.1	34	35.4	54	-18.6
H	3610.244	36.2	32.8	34	35.0	54	-19.0

Channel 16

Polarity	Frequency (MHz)	Reading (dB μ V)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
H	914.286	82.6	22.6	16	89.2	94	-4.8
H	1828.562	45.5	26.5	34	38.0	54	-16.0
H	2742.856	40.5	29.1	34	35.6	54	-18.4
H	3657.135	36.2	32.8	34	35.0	54	-19.0

Channel 32

Polarity	Frequency (MHz)	Reading (dB μ V)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
H	927.457	85.2	22.8	16	92.0	94	-2.0
H	1854.916	45.5	26.5	34	38.0	54	-16.0
H	2782.376	40.3	29.1	34	35.4	54	-18.6
H	3709.826	36.2	32.8	34	35.0	54	-19.0

Notes: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Ben W. K. Ho

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3.4 Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration
at
0.450 MHz

For electronic filing, the worst case line-conducted configuration photograph are saved with filename: conducted photos.pdf.

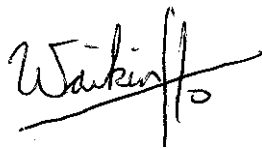
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3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission is saved with filename: conducted.pdf.

Judgement: Passed by 21.5 dB

TEST PERSONNEL:



Signature

Ben W. K. Ho, Compliance Engineer
Typed/Printed Name

October 31, 2002
Date

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EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

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4.0 Equipment Photographs

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

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EXHIBIT 5

PRODUCT LABELLING

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5.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

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EXHIBIT 6

TECHNICAL SPECIFICATIONS

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6.0 Technical Specifications

For electronic filing, the block diagram and schematics of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

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EXHIBIT 7

INSTRUCTION MANUAL

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7.0 **Instruction Manual**

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

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

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EXHIBIT 8

MISCELLANEOUS INFORMATION

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8.0 **Miscellaneous Information**

This miscellaneous information includes details of the bandedge plot.

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8.1 Bandedge Plot

For electronic filing, the plot shows the fundamental emission when modulated is saved with filename: bw.pdf. From the plot, the field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges are attenuated at least 50 dB below the level of the unmodulated carrier. It fulfil the requirement of 15.249(d).

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EXHIBIT 9

CONFIDENTIALITY REQUEST

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9.0 **Confidentiality Request**

The applicant would like to have confidential protection of the following documents:

- Schematic
- Block Diagram
- Operational Description

For electronic filing, the request letter is saved with filename: request.pdf.