

June 20, 2005

***In-Tech Electronics Ltd.
East No. 1, Vehicle Test Building,
1021 Fuqiang Road, Futian District,
Shenzhen Guangdong, P.R. China 518045.***

Dear James Lai,

Enclosed you will find your file copy of a Part 15 report (FCC ID: NV6-CS4033).

For your reference, TCB will normally take another 15-20 days for reviewing the report. Approval will then be granted when no query is sorted.

Please contact me if you have any questions regarding the enclosed material.

Sincerely,



***Billy Chow
Senior Supervisor
Signed for and on behalf of
Intertek Hong Kong
ETL SEMKO***

Enclosure

FCC ID: NV6-CS4033

In-Tech Electronics Ltd.

Application
For
Certification
(FCC ID: NV6-CS4033)

Transmitter

05095762
LC/el
June 20, 2005

FCC ID: NV6-CS4033

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report shall not be reproduced except in full without prior authorization from Intertek Testing Services Hong Kong Limited
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-etlsemko.com

INTERTEK TESTING SERVICES

LIST OF EXHIBITS

INTRODUCTION

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MEASUREMENT/TECHNICAL REPORT

In-Tech Electronics Ltd. - MODEL: Abe FT10
FCC ID: NV6-CS4033

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 [12-08-03 Edition] provision.

Report prepared by:

Billy Chow
Intertek Testing Services
2/F., Garment Centre,
576, Castle Peak Road,
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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	Conduct Emission	conducted photos.pdf
Test Report	Conducted Emission Test Result	conduct.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Test Report	Bandwidth Plot	bw.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf

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EXHIBIT 1

GENERAL DESCRIPTION

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1.0 **General Description**

1.1 Product Description

This Equipment Under Test (EUT) is a low power stereo FM transmitter which can be operated at 106.7MHz, 107.1MHz, 107.5MHz and 107.9MHz selectively. The main function of the EUT is used to transmit the modulated signal which collected from audio input port (3mm jack equipped in right hand side). Then, the transmitted signal can be received by common FM broadcast radio. It is powered by two 1.5V batteries (AAA size), or 6V DC from the AC/DC adaptor. The power indicator (red LED) on the EUT's body will be lighted while the On/Off button was push downward. Once, the EUT was switched on, it will transmit the RF signal automatically no matter the audio signal has been fed or not. The helical type antenna is equipped inside the plastic case for transmission, and its photo was shown on the following pages (see constructional details in following pages).

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.

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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 (2001). Radiated Emission measurement was performed in Open Area Test Sites and Conducted Emission was performed in shield room. 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 radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been placed on file with the FCC.

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 (2001).

The EUT was powered by two "AAA" batteries (1.5V) or DC 6V from AC/DC adaptor. The rear of unit shall be flush with the rear of the table.

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. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it transmitted the RF signal 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 In-Tech 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 the test conclusion, the measurement uncertainty of test has been considered.

2.6 Support Equipment List and Description

Walkman with 7.5cm input cable as audio source

All the items listed under section 2.0 of this report are confirmed by:

Billy Chow
Senior Supervisor
Intertek Testing Services Hong Kong Ltd.
Agent for In-Tech Electronics Ltd.



Signature

June 20, 2005 Date

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EXHIBIT 3

EMISSION RESULTS

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3.0 **Emission Results**

Data is included of the 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 62.0dB μ V is obtained. The antenna factor of 7.4dB and cable factor of 1.6dB is added. The amplifier gain of 29dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0dB, and the resultant average factor was -10dB. The net field strength for comparison to the appropriate emission limit is 32dB 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
106.708MHz

For electronic filing, the front view and back view of the test configuration photographs are 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 2.5dB margin

TEST PERSONNEL:



Signature

Lawrence H. C. Chow, Compliance Engineer

Typed/Printed Name

June 20, 2005

Date

INTERTEK TESTING SERVICES

Company: In-Tech Electronics Ltd.

Date of Test: June 09, 2005

Model: Abe FT10

Worst Case Operating Mode: Transmitting (Lower Channel)

Table 1
Radiated Emissions

Lower Channel

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp (dB)	Antenna factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
H	106.708	48.5	16	13	45.5	48.0	-2.5
H	213.315	28.6	16	17	29.6	43.5	-13.9
H	320.100	25.0	16	23	32.0	46.0	-14.0
H	426.830	31.0	16	25	40.0	46.0	-6.0
H	533.540	23.2	16	27	34.2	46.0	-11.8

- NOTES:
1. Peak Detector Data unless otherwise stated.
 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the margin column shows emission below limit.
 4. Horn antenna is used for the emission over 1000MHz.
 5. '*' Emission within restricted band fulfill the requirement of section 15.205.

Test Engineer: Lawrence H. C. Chow

INTERTEK TESTING SERVICES

Company: In-Tech Electronics Ltd.

Date of Test: June 09, 2005

Model: Abe FT10

Worst Case Operating Mode: Transmitting (Upper Channel)

Table 2
Radiated Emissions

Upper Channel

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp (dB)	Antenna factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
H	107.907	47.0	16	14	45.0	48.0	-3.0
H	215.815	26.3	16	17	27.3	43.5	-16.2
H	*323.714	26.1	16	24	34.1	46.0	-11.9
H	431.621	30.7	16	25	39.7	46.0	-6.3
H	539.518	23.0	16	28	35.0	46.0	-11.0

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. '*' Emission within restricted band fulfill the requirement of section 15.205.

Test Engineer: Lawrence H. C. Chow

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3.4 Conducted Emission Configuration Photograph

Worst Case Conducted Emission
at
0.150MHz

For electronic filing, the front view, rear view and side view of the test configuration photographs are saved with filename: conducted photos.pdf.

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Company: In-Tech Electronics Ltd.
Model: Abe FT10

Date of Test: June 09, 2005

Conducted Emissions Section 15.107 Requirements

For Electronic filing, the conducted emission test result is saved with filename:
conduct.pdf

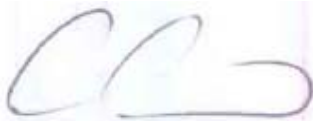
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3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission are saved with filename: conduct.pdf. The data table lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by at least 20dB margin

TEST PERSONNEL:



Signature

Lawrence H. C. Chow, Compliance Engineer
Typed/Printed Name

June 20, 2005
Date

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EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

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4.0 **Equipment Photographs**

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

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EXHIBIT 5

PRODUCT LABELLING

5.0 **Product Labelling**

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

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EXHIBIT 6

TECHNICAL SPECIFICATIONS

6.0 **Technical Specifications**

For electronic filing, the block diagram and schematic 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. Moreover, it was said that the declaration which mention in following pages will also be committed at the time.

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EXHIBIT 8

MISCELLANEOUS INFORMATION

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8.0 **Miscellaneous Information**

The miscellaneous information includes details of the measured bandwidth, the test procedure and calculation of factor such as pulse desensitization and averaging factor (calculation and timing diagram).

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8.1 Measured Bandwidth

For electronic filing, the plot on saved in bw.pdf shows the fundamental emission which are with applying modulation (15kHz audio signal with 100mV level). From the plot, it shows the fundamental emissions are within the 200kHz bandwidth and wholly inside 88MHz and 108MHz (as the plotting shown that the start and stop frequencies of if are 106.63MHz and 107.97MHz respectively). the unit meets the FCC bandwidth requirements.

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8.2 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device. Since the transmitter transmits the RF signal continuously.

8.3 Calculation of Average Factor

The average factor is not applicable for this device as the transmitted signal is a continuously signal.

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8.4 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Ltd. in the measurements of Low Power Transmitter operating under the Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2001.

The equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9kHz to the tenth harmonic of the highest fundamental frequency. For line conducted emissions, the range scanned is 150kHz to 30MHz.

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8.4 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements were made as described in ANSI C63.4 - 2001.

The IF bandwidth used for measurement of radiated signal strength was 100kHz or greater when frequency is below 1000MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.2). Above 1000MHz, a resolution bandwidth of 1MHz is used.

Measurements are normally conducted at a measurement distance of three meters. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.