**Kiddesigns Inc.**

Application
For
Certification
**(FCC ID: IAJMB134)**

Transmitter, Model : MB-134

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [24-5-2001]

WO# 0300961
WN/at
February 13, 2003



FCC ID : IAJMB134

# LIST OF EXHIBITS

# MEASUREMENT/TECHNICAL REPORT

## Kiddesigns Inc. - MODEL: MB-134
## FCC ID: IAJMB134

## February 13, 2003

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 [24-5-2001 Edition] provision.

Report prepared by: Wilbur Ng
Intertek Testing Services
2/F., Garment Center,
576, Castle Peak Road,
HONG KONG
Phone: 852-2173-8502
Fax: 852-2742-9149

## Table of Contents

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 |
| 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 |

# EXHIBIT 1

# GENERAL DESCRIPTION

## 1.0 General Description

### 1.1 Product Description

The equipment under test (EUT) is a transceiver for a Toy Metal Detector operating at 0.038 MHz which is controlled by a LC Circuit. The EUT is powered by a 9V battery. The EUT has two switches and four buttons. The switch on the left side controls the output sound level of the detector and the switch on the right side controls the sensitivity of detection. The button on the right side is used to activate the detector and the other two buttons are used to generate sound effect. The button on the back of the detector is used to reset the detector.

The brief circuit description is saved with filename : descri.pdf

### 1.2 Related Submittal(s) Grants

The receiver for this transmitter is exempted from the Part 15 technical rules per 15.101(b).

1.3 Test Methodology

All 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. 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.

# EXHIBIT 2

# SYSTEM TEST CONFIGURATION

## 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 by a new 9V battery during test.

For maximizing emissions below 30 MHz, the EUT was rotated through 360°, the loop antenna height was 1 meter above the ground place, and the antenna polarization was changed.

For maximizing emissions above 30 MHz, 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 Exhibition 3.0.

The unit was operated standalone and placed in the center of the turntable.

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 a turn table, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

For simplicity of testing, the unit was wired to transmit continuously.

### 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.

2.4 Equipment Modification

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

No modifications were installed by Intertek Testing Services.

2.5 Support Equipment List and Description

This product was tested in a standalone configuration.

All the items listed under section 2.0 of this report are

*Confirmed by:*

*Wilbur Ng*
*Manager*
*Intertek Testing Services*
*Agent for Kiddesigns Inc.*

_____Signature

February 13, 2003 Date

# EXHIBIT 3

# EMISSION RESULTS

## 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.

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 dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
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

For emission from 9kHz to 490kHz, a distance factor of -40dB are added to simulate the 300m measuring distance.
For emission from 490kHz to 30MHz, a distance factor of -20dB are added to simulate the 30m measuring distance.

3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0 dBμV 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 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB

AV = -10 dB

FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBμV/m

Level in mV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

0.038 MHz

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

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 27.8 dB

***TEST PERSONNEL:***

*Signature*

Ivan Y. M. Wong, Compliance Engineer
*Typed/Printed Name*

February 13, 2003
*Date*

Company: Kiddesigns Inc. Date of Test: January 27, 2003
Model: MB-134

Table 1

**Radiated Emissions (Transmitter Portion)**

| Polarity | Frequency (MHz) | Reading (dBµV) | Antenna Factor (dB) | Pre-Amp Gain (dB) | Distance Factor (dB) | Calculated at 300m (dBµV/m) | Limit at 300m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| I | 0.038 | 52.6 | 11.6 | 16.0 | 40.0 | 8.2 | 36.0 | -27.8 |
| I | 0.077 | 41.1 | 10.7 | 16.0 | 40.0 | -4.2 | 29.9 | -34.1 |
| I | 0.116 | 37.3 | 10.2 | 16.0 | 40.0 | -8.5 | 26.3 | -34.8 |
| I | 0.155 | 40.0 | 10.2 | 16.0 | 40.0 | -5.8 | 23.8 | -29.6 |
| I | 0.194 | 38.6 | 10.2 | 16.0 | 40.0 | -7.2 | 21.9 | -29.1 |
| I | 0.233 | 36.7 | 10.2 | 16.0 | 40.0 | -9.1 | 20.3 | -29.4 |
| I | 0.272 | 37.1 | 10.0 | 16.0 | 40.0 | -8.9 | 18.9 | -27.8 |

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 are used for the emission over 1000MHz.

5. Polarity "I" means the plane of loop antenna lies on the plane between the centre of antenna and turntable.

Test Engineer: Ivan Y. M. Wong

Company: Kiddesigns Inc. Date of Test: January 27, 2003
Model: MB-134

Table 2

**Radiated Emissions (Sound Portion)**

| Polarity | Frequency (MHz) | Reading (dBµV) | Antenna Factor (dB) | Pre-Amp Gain (dB) | Net at 3m (dBµV/m) | Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| V | 33.865 | 29.1 | 10.0 | 16.0 | 23.1 | 40 | -16.9 |
| V | 39.624 | 29.7 | 10.0 | 16.0 | 23.7 | 40 | -16.3 |
| V | 44.623 | 29.5 | 10.0 | 16.0 | 23.5 | 40 | -16.5 |
| V | 49.862 | 29.0 | 11.0 | 16.0 | 24.0 | 40 | -16.0 |
| V | 54.271 | 28.9 | 11.0 | 16.0 | 23.9 | 40 | -16.1 |
| V | 61.883 | 30.3 | 10.0 | 16.0 | 24.3 | 40 | -15.7 |

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 are used for the emission over 1000MHz.

*Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and peak detector data with average factor for frequencies over 1000 MHz.

Test Engineer: Ivan Y. M. Wong

# EXHIBIT 4

# EQUIPMENT PHOTOGRAPHS

## 4.0 Equipment Photographs

For electronic filing, the photographs are saved with filename:
external photos.pdf and internal photos.pdf

# EXHIBIT 5

# PRODUCT LABELLING

## 5.0 **Product Labelling**

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

# EXHIBIT 6

# TECHNICAL SPECIFICATIONS

## 6.0 Technical Specifications

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

# EXHIBIT 7

# INSTRUCTION MANUAL

## 7.0 Instruction Manual

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

# EXHIBIT 8

# MISCELLANEOUS INFORMATION

## 8.0 Miscellaneous Information

This miscellaneous information includes details of the test procedure and calculation of factors such as pulse desensitization and averaging factor.

8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 1992.

The transmitting 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 antenna height and polarization are varied during the testing to search for maximum signal levels.

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.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 450 kHz to 30 MHz.

8.1 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 are made as described in ANSI C63.4 - 1992.

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater below 1000 MHz. 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. Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.