**Evenflo Company, Inc.**

Application
For
Certification
**(FCC ID: EHK615R)**

Receiver

WO# 9810531
CKL/at
December 16, 1998



FCC ID : EHK615R

# LIST OF EXHIBITS

# MEASUREMENT/TECHNICAL REPORT

## Evenflo Company, Inc. - MODEL: 615
## FCC ID: EHK615R

## December 16, 1998

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

Equipment Type: Superheterodyne Receiver (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 [10-1-96 Edition] provision.

Report prepared by: C.K.Lam
Intertek Testing Services
2/F., Garment Center,
576, Castle Peak Road,
HONG KONG
Phone: 852-2746-8211
Fax: 852-2785-5487

## Table of Contents

List of attached file

| Exhibit type | File Description | filename |
|---|---|---|
| Cover Letter | Letter of Agency | letter.pdf |
| Test Report | Test Report | report.doc |
| Test Setup Photo | Radiated Emission | radiated.jpg |
| Test Setup Photo | Conducted Emission | conduct1.jpg, conduct2.jpg |
| Test Report | Conducted Emission Test Result | conduct.pdf |
| External Photo | External Photo | ophoto1.jpg, ophoto2 .jpg |
| Internal Photo | Internal Photo | iphoto1.jpg to iphoto2 .jpg |
| 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 superheterodyne receiver of a baby monitor. It is operated with 49MHz and powered by 9V battery or 9V AC/DC adaptor. The baby monitor has two communication channels 49.86MHz and 49.89MHz. It receives the FM modulated audio signal transmitted from the child unit(Transmitter portion). It has a volume control switch, channel switch and headphone jack.

The brief circuit description is listed in the following:

- Q1 and associated circuit act as a RF amplifier.
- U1 and associated circuit act as a demodulator
- Q2, Q3, Q3,Q4 and associated circuit act as LED display.
- U2 and associated circuit act as power amplifier.

### 1.2 Related Submittal(s) Grants

This is a single application for certification of a receiver. The FCC ID of the transmitter associated with this receiver is EHK615T

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.

# 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 C63.4 (1992.)

The EUT was powered from 9V AC/DC 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 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 mounted to a cardboard box, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.
The worst case bit sequence was applied during test.

### 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 Barney Technology Limited 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

A headphone with 1m cable is used for the testing.

All the items listed under section 2.0 of this report are

*Confirmed by:*

*C.K. Lam*
*Assistant Manager*
*Intertek Testing Services*
*Agent for Evenflo Company, Inc.*

Signature

December 16, 1998 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

3.1 Field Strength Calculation (cont)

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

49.404 MHz

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

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 4.0 dB

***TEST PERSONNEL:***

*Signature*

Billy C. M. Chow, Compliance Engineer
*Typed/Printed Name*

December 16, 1998
*Date*

Company: Evenflo Company, Inc. Date of Test: December 3, 1998
Model: 615 (Channel A)

Table 1

**Radiated Emissions**

| 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 | 49.434 | 39.5 | 11 | 16 | 34.5 | 40.0 | -5.5 |
| H | 98.871 | 32.6 | 11 | 16 | 27.6 | 43.5 | -15.9 |
| H | 148.303 | 33.8 | 13 | 16 | 30.8 | 43.5 | -12.7 |

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 and average detector 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 average detector data for frequencies over 1000 MHz.

Test Engineer: Billy C. M. Chow

Company: Evenflo Company, Inc. Date of Test: December 3, 1998
Model: 615 (Channel B)

Table 2

**Radiated Emissions**

| 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 | 49.404 | 41.0 | 11 | 16 | 36.0 | 40.0 | -4.0 |
| H | 98.769 | 33.6 | 11 | 16 | 28.6 | 43.5 | -14.9 |
| H | 148.21 | 30.6 | 13 | 16 | 27.6 | 43.5 | -15.9 |

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 and average detector 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 average detector data for frequencies over 1000 MHz.

Test Engineer: Billy C. M. Chow

3.4 Line Conducted Configuration Photograph

Worst Case Line-Conducted Configuration

For electronic filing, the worst case line-conducted configuration photograph are saved with filename: conduct1.jpg & conduct2.jpg

Company: Evenflo Company, Inc. Date of Test: December 3, 1998
Model: 615

**Conducted Emissions**
**Section 15.107 Requirements**

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

3.5 Line Conducted Emission Configuration 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 more than 20 dB margin

* All readings are peak unless stated otherwise.

***TEST PERSONNEL:***

*Signature*

Billy C. M. Chow, Compliance Engineer
*Typed/Printed Name*

December 16, 1998
*Date*

# EXHIBIT 4

# EQUIPMENT PHOTOGRAPHS

## 4.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: ophoto1.jpg to ophoto2 .jpg and iphoto1.jpg to iphoto2.jpg

# 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 respectively.

# EXHIBIT 7

# INSTRUCTION MANUAL

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.