



Fisher-Price, Inc.

Application
For
Certification

49MHz Transmitter - Baby Unit

(FCC ID: CCTR4814-09)

HK09050337-1
KS/ sl
June 23, 2009

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MEASUREMENT/TECHNICAL REPORT

Fisher-Price, Inc. - Model: R4814
FCC ID: CCTR4814-09

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

Equipment Type : DXX - Lower Power Transmitter

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ☐ No ☒

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 ☒

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-08
Edition] Provision.

Report prepared by:

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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 operating at 49.830MHz and 49.875MHz. The EUT is powered by 120VAC to 6VDC 100mA adaptor. It is a baby unit of baby monitor system. After switching on the unit, it transmits a baby's voice to a corresponding parent unit with the same channel selection. And, there is a button for switch on the light.

The antenna used in baby unit is unique coupling, and the tested sample is a prototype.

The circuit description is saved with filename: descri.pdf

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1.2 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Preliminary radiated scans were performed in the Open Area Test Site only to determine worst case modes. All radiated measurements were performed in Open Area Test Sites. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data and conducted data are 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

For emissions testing, the equipment under test (EUT) was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) were manipulated to produce worst case emissions. The EUT was powered by a 120VAC 60Hz 4.5W to 6VDC 100mA adaptor.

For the measurements, the EUT is attached to a plastic stand if necessary and placed on the wooden turntable. If the baby unit attaches to peripherals, they are connected and operational (as typical as possible).

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

Measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

All relevant operation modes have been tested, and the worst-case data is included in this report.

Radiated emission measurement were performed 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 to 40 GHz, whichever is lower.

2.2 EUT Exercising Software

The EUT exercise program used during radiated testing was designed to exercise the various system components in a manner similar to a typical use.

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2.3 Details of EUT and Description of Peripherals

Details of EUT:

An AC adaptor and/or a battery (provided with the unit) were used to power the device. Their description are listed below.

- (1) Baby Unit: An AC adaptor (120VAC to 6VDC 100mA, Model: PA-0610-DVA) (Supplied by Client)

Description of Peripherals:

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

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2.4 Measurement Uncertainty

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

2.5 Equipment Modification

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

No modifications were installed by Commercial & Electrical Division, Intertek Testing Services Hong Kong Ltd.

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

Confirmed by:

*Sit Kim Wai, Ken
Assistant Manager
Intertek Testing Services
Agent for Fisher-Price, Inc.*



Signature

June 23, 2009

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 Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

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

where FS = Field Strength in $\text{dB}\mu\text{V/m}$
 RA = Receiver Amplitude (including preamplifier) in $\text{dB}\mu\text{V}$
 CF = Cable Attenuation Factor in dB
 AF = Antenna Factor in dB
 AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:-

$$FS = RR + LF$$

where FS = Field Strength in $\text{dB}\mu\text{V/m}$
 $RR = RA - AG$ in $\text{dB}\mu\text{V}$
 $LF = CF + AF$ in dB

Assume a receiver reading of $52.0 \text{ dB}\mu\text{V}$ 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, giving a field strength of $32 \text{ dB}\mu\text{V/m}$. This value in $\text{dB}\mu\text{V/m}$ was converted to its corresponding level in $\mu\text{V/m}$.

$RA = 52.0 \text{ dB}\mu\text{V}$	
$AF = 7.4 \text{ dB}$	$RR = 23.0 \text{ dB}\mu\text{V}$
$CF = 1.6 \text{ dB}$	$LF = 9.0 \text{ dB}$
$AG = 29.0 \text{ dB}$	
$FS = RR + LF$	
$FS = 23 + 9 = 32 \text{ dB}\mu\text{V/m}$	

Level in $\mu\text{V/m}$ = 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 - Baby Unit

Worst Case Radiated Emission

at 49.830 MHz

The worst case radiated emission configuration photographs are saved with filename: config photos.pdf

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3.3 Radiated Emission Data - Baby Unit

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 5.4 dB margin

TEST PERSONNEL:



Tester Signature

Koo Wai Ip, Engineer
Typed/Printed Name

June 23, 2009
Date

INTERTEK TESTING SERVICES

Company: Fisher-Price, Inc.
Model: R4814
Mode : Channel A - TX with Light On

Date of Test: May 22-Jun 09, 2009

Table 1, Baby unit

Radiated Emissions
Pursuant to FCC Part 15 Section 15.235 Requirements

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)
V	49.830	79.6	16	11.0	74.6	80.0	-5.4
V	99.660	37.8	16	12.0	33.8	43.5	-9.7
V	149.490	35.6	16	14.0	33.6	43.5	-9.9
V	199.320	34.2	16	16.0	34.2	43.5	-9.3
V	*249.150	30.6	16	20.0	34.6	46.0	-11.4
V	298.980	28.9	16	22.0	34.9	46.0	-11.1
V	348.810	25.4	16	24.0	33.4	46.0	-12.6
V	398.640	24.2	16	25.0	33.2	46.0	-12.8
V	448.470	22.6	16	26.0	32.6	46.0	-13.4
V	498.300	22.4	16	26.0	32.4	46.0	-13.6

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated 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 radiated 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.
- * Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Koo Wai Ip

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3.4 Radiated Emission on the Bandedge - Baby Unit

For electronic filing, the plot shows the fundamental emission when modulated with 1kHz and 100dBSPL, 10cm from the microphone of EUT are saved with filename: emission pdf.

From the plots, emission radiated outside the specified frequency bands (49.82MHz-49.90MHz), except harmonics, are attenuated at least 26 dB below level of the unmodulated carrier or to the general limit in section 15.209, whichever permits the higher emission levels. The field strength of any emission limits in section 15.209.

Please refer to the attached plot for details:

Plot B1A: Baby Unit - Low Channel Emissions

Plot B1B: Baby Unit - High Channel Emissions

Pursuant to FCC Part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over expected variations in temperature and supply voltage were considered.

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3.5 Line Conducted Configuration Photograph - Baby Unit

Worst Case Line-Conducted Configuration

The worst case line conducted configuration photographs are saved with filename:
config photos.pdf

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3.6 Line Conducted Emission Data - Baby Unit

The data on the following pages list the significant emission frequencies, the limit, and the margin of compliance.

Judgement : Passed by more than 20 dB margin

TEST PERSONNEL:



Tester Signature

Koo Wai Ip, Engineer
Typed/Printed Name

June 23, 2009
Date

INTERTEK TESTING SERVICES

Company: Fisher-Price, Inc.
Model: R4814

Date of Test: May 22-Jun 09, 2009

Conducted Emissions Pursuant to FCC Part 15 Section 15.207 Requirements

The conducted emission test result is saved with filename: conduct.pdf

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EXHIBIT 4 EQUIPMENT LIST

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4.0 Equipment List

1) Radiated Emissions Test

Equipment	EMI Test Receiver		Spectrum Analyzer
Registration No.	EW-0014	EW-0016	EW-2188
Manufacturer	R&S	R&S	AGILENTTECH
Model No.	ESVS30	ESVS30	E4407B
Calibration Date	Jun. 01, 2009	Apr. 14, 2009	Dec. 18, 2008
Calibration Due Date	Jun. 01, 2010	Apr. 14, 2010	Dec. 18, 2009

Equipment	Biconical Antenna	Log Periodic Antenna
Registration No.	EW-0954	EW-0446
Manufacturer	EMCO	EMCO
Model No.	3104C	3146
Calibration Date	Sep. 30, 2008	Oct. 02, 2008
Calibration Due Date	Mar. 30, 2010	Apr. 02, 2010

2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN	Pulse Limiter	
Registration No.	EW-2251	EW-0192	EW-0700	EW-0698
Manufacturer	R&S	R&S	R&S	R&S
Model No.	ESCI	ESH3-Z5	ESH3-Z2	ESH3-Z2
Calibration Date	Oct. 28, 2008	Nov. 12, 2008	Dec. 04, 2007	Feb. 03, 2009
Calibration Due Date	Oct. 28, 2009	Nov. 12, 2009	Jun. 04, 2009	Feb. 03, 2010