

TEST REPORT

Report Number: HK11020093-1

Application
for
Original Grant of 47 CFR Part 15 Certification

Category II Equipment of RSS-310 Issue 3

49MHz Transmitter (Baby Unit of Baby Monitor)

FCC ID: BMWTFY3040C

Prepared and Checked by:



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February 17, 2011

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February 17, 2011

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GENERAL INFORMATION

Applicant Name:	Learning Curve Brands, Inc.
Applicant Address:	1111 W. 22 nd Street, Suite 320 Oak Brook, Illinois 60523 United States.
FCC Specification Standard:	FCC Part 15, October 1, 2009 Edition
FCC ID:	BMWTFY3040C
FCC Model(s):	Y3040C
IC Specification Standard:	RSS-Gen Issue 3, December 2010 RSS-310 Issue 3, December 2010
IC Model(s):	Y3040C
Type of EUT:	Transmitter
Description of EUT:	49MHz Transmitter - Baby Unit of Baby Monitor
Serial Number:	N/A
Sample Receipt Date:	January 17, 2011
Date of Test:	January 18-20, 2011
Report Date:	February 17, 2011
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

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EXHIBIT 1 TEST RESULTS SUMMARY & STATEMENT OF COMPLIANCE

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1.0 Test Results Summary & Statement of Compliance

1.1 Summary of Test Results

Test Items	FCC Part 15 Section	RSS-210/ RSS-Gen [#] / RSS-310 [^] Section	Results	Details see section
Antenna Requirement	15.203	7.1.2 [#]	Pass	2.1
Radiated Emission	15.235(a)	3.9 [^]	Pass	4.2
Radiated Emission on the Bandedge	15.235(b)		Pass	4.3
Radiated Emission in Restricted Bands	15.205	7.2.2 [#]	Pass	4.2
AC Power Line Conducted Emission	15.207 & 15.107	7.2.4 [#]	Pass	4.4

Note: 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.

1.2 Statement of Compliance

The equipment under test is found to be complying with the following standards:

FCC Part 15, October 1, 2009 Edition
RSS-Gen Issue 3, December 2010
RSS-310 Issue 3, December 2010

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EXHIBIT 2 GENERAL DESCRIPTION

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2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a 49MHz Transmitter - Baby Unit of Baby Monitor. It operates at 49.83MHz and 49.89MHz. The EUT is powered by a 120VAC to 6VDC 200mA AC adaptor.

The antenna used in baby unit is integral, and the test sample is a prototype.

The circuit description is attached in the Appendix and saved with filename: descri.pdf.

2.2 Test Methodology

Both AC power line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Preliminary radiated scans and 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.

2.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data and conducted data are at Roof Top and 2nd Floor respectively of Intertek Testing Services Hong Kong Ltd., which 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 and the Industry Canada.

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EXHIBIT 3 SYSTEM TEST CONFIGURATION

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3.0 **System Test Configuration**

3.1 Justification

For radiated 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 to 6VDC 200mA adaptor.

For the measurements, the EUT was attached to a plastic stand if necessary and placed on the wooden turntable. If the EUT attached to peripherals, they were connected and operational to simulate typical use.

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

For any intentional radiator powered by AC power line, 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.

For transmitter radiated measurement, the spectrum analyzer resolution bandwidth was 100 kHz for frequencies below 1000 MHz.

Radiated emission measurement for transmitter was performed 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 to 40 GHz, whichever is lower.

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3.1 Justification - Cont'd

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 4.2.3.

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

For AC line conducted emission test, the EUT along with its peripherals were placed on a 1.0m(W)x1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50ohm coupling impedance for measuring instrument. The LISN housing, measuring instrument case, reference ground plane, and vertical ground plane were bounded together. The excess power cable between the EUT and the LISN was bundled.

All connecting cables of EUT and peripherals were manipulated to find the maximum emission.

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

3.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it transmits the RF signal continuously.

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3.3 Details of EUT and Description of Accessories

Details of EUT:

An AC adaptor (provided with the unit) was used to power the device. Their description are listed below.

- (1) An AC adaptor (120VAC to 6VDC 200mA, Model: UD060020B) (Supplied by Client)

Description of Accessories:

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

3.4 Measurement Uncertainty

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

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EXHIBIT 4 TEST RESULTS

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4.0 Test 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.

4.1 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:

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

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.

$$\begin{aligned} RA &= 62.0 \text{ dB}\mu\text{V} \\ AF &= 7.4 \text{ dB} \\ CF &= 1.6 \text{ dB} \\ AG &= 29 \text{ dB} \\ PD &= 0 \text{ dB} \\ AV &= -10 \text{ dB} \\ FS &= 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m} \end{aligned}$$

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

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4.2 Radiated Emissions

4.2.1 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at

49.830 MHz

The worst case radiated emission configuration photographs are attached in the Appendix and saved with filename: config photos.pdf

4.2.2 Radiated Emission Data

The data in tables 1 list the significant emission frequencies, the limit and the margin of compliance.

Judgement -

Passed by 5.4 dB margin

4.2.3 Transmitter Duty Cycle Calculation

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

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Mode: TX

Table 1

Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	49.830	79.6	16	11.0	74.6	80.0	-5.4
V	99.660	38.1	16	12.0	34.1	43.5	-9.4
V	149.490	36.5	16	14.0	34.5	43.5	-9.0
V	199.320	34.2	16	16.0	34.2	43.5	-9.3
V	249.150	31.1	16	20.0	35.1	46.0	-10.9
V	298.980	29.0	16	22.0	35.0	46.0	-11.0
V	348.810	26.6	16	24.0	34.6	46.0	-11.4
V	398.640	24.9	16	25.0	33.9	46.0	-12.1
V	448.470	22.5	16	26.0	32.5	46.0	-13.5
V	498.300	22.2	16	26.0	32.2	46.0	-13.8

- 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. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 7.2.2.

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4.3 Radiated Emission on the Bandedge

For electronic filing, the plot shows the fundamental emission when modulated with 1kHz and 100 dB SPL, 10cm from the Microphone of EUT and unmodulated are saved with filename: be.pdf. From the plot, the field strength of any emissions appearing between the band edges and up to 10kHz above and below band edges are attenuated at least 26dB below the level of the unmodulated carrier. It fulfils the requirement of FCC Part 15 Section 15.235(b) / RSS-310 Section 3.9.

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4.4 AC Power Line Conducted Emission

- ☐ Not applicable – EUT is only powered by battery for operation.
- ☒ EUT connects to AC power line. Emission Data is listed in following pages.
- ☐ Base Unit connects to AC power line and has transmission. Handset connects to AC power line but has no transmission. Emission Data of Base Unit is listed in following pages.

4.4.1 AC Power Line Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration
at

16.61 MHz

The worst case line conducted configuration photographs are attached in the Appendix and saved with filename: config photos.pdf

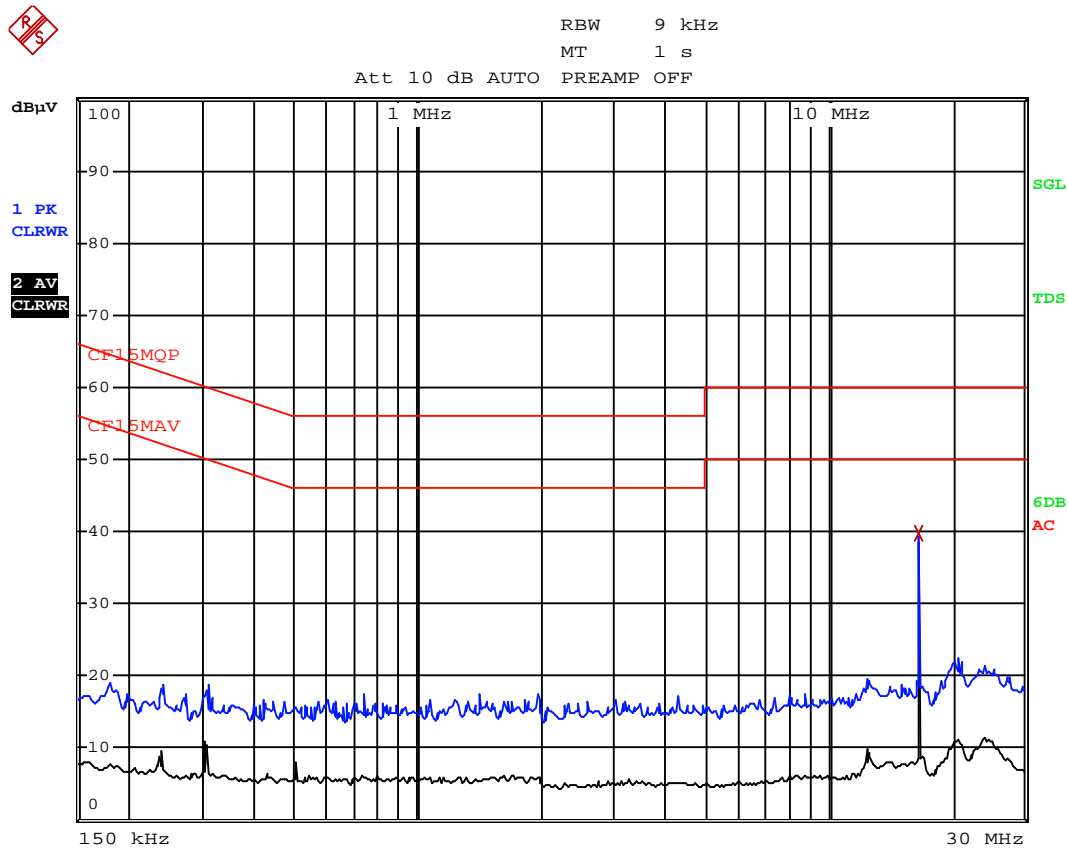
4.4.2 AC Power Line Conducted Emission Data

The plot(s) and data in the following pages list the significant emission frequencies, the limit and the margin of compliance.

Passed by 10.12 dB margin compare with average limit

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Worst Case: Transmitting (on Channel A:49.83MHz)



Date: 18.JAN.2011 19:55:24

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Worst Case: Transmitting (on Channel A:49.83MHz)

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CF15MQP			
Trace2:	CF15MAV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB	
2 CISPR Average	16.611 MHz	39.87 N	-10.12	

Date: 18.JAN.2011 19:55:16

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EXHIBIT 5 EQUIPMENT LIST

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5.0 Equipment List

1) Radiated Emissions Test

Equipment	Biconical Antenna	Spectrum Analyzer	Log Periodic Antenna
Registration No.	EW-0954	EW-2188	EW-0446
Manufacturer	EMCO	AGILENTTECH	EMCO
Model No.	3104C	E4407B	3146
Calibration Date	Apr. 14, 2010	Dec. 27, 2010	Apr. 26, 2010
Calibration Due Date	Oct. 14, 2011	Dec. 31, 2011	Oct. 26, 2011

Equipment	EMI Test Receiver	Spectrum Analyzer	Digital Multimeter
Registration No.	EW-2251	EW-2466	EW-1237
Manufacturer	R&S	ROHDESCHWARZ	FLUKE
Model No.	ESCI	FSP30	179
Calibration Date	Oct. 22, 2009	Nov. 11, 2009	Sep. 01, 2010
Calibration Due Date	Jan. 22, 2011	Feb. 11, 2011	Oct. 01, 2011

Equipment	Function Generator
Registration No.	EW-2100
Manufacturer	GRUNDIG
Model No.	FG100
Calibration Date	Jul. 27, 2010
Calibration Due Date	Jul. 27, 2011

2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN	Pulse Limiter
Registration No.	EW-2666	EW-0090	EW-0699
Manufacturer	ROHDESCHWARZ	R&S	R&S
Model No.	ESCI7	ESH3-Z5	ESH3-Z2
Calibration Date	Oct. 12, 2010	Feb. 05, 2010	Dec. 24, 2009
Calibration Due Date	Oct. 12, 2011	Feb. 05, 2011	Jun. 24, 2011

END OF TEST REPORT

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APPENDIX EXHIBITS OF APPLICATION FOR CERTIFICATION