Binatone Electronics International Limited

Application
For
Certification

2.4GHz Frequency Hopping Spread Spectrum Baby Unit

(FCC ID: VLJ-MBP35BU)

HK09070006-1
MN/cl
September 18, 2009

Intertek Testing Services Hong Kong Ltd.
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MEASUREMENT/TECHNICAL REPORT

Binatone Electronics International Limited - Model: MBP35BU
FCC ID: VLJ-MBP35BU

This report concerns (check one:) Original Grant __X__ Class II Change ___

Equipment Type : DXX - Pt 15 Low Pwr Com. Device Tx

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 [10-01-08 Edition] Provision.

Report reviewed by:

Nip Ming Fung, Melvin
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EXHIBIT 1
GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The MBP35BU is a 2.4GHz Frequency Hopping Spread Spectrum Baby Unit of Baby Monitor system operating at 2407.500 – 2475.000 MHz. There are total 16 channels are used for communication. The EUT is powered by a 100-240VAC to 6VDC 1000mA adaptor and/or a 3 x “AA” size 1.5VDC battery. It has a camera for capture the image and then send to parent unit. Besides, there is a temperature sensor and on/ off switch for measuring ambient temperature and turn on/ off the device. It also receives a baby’s voice from the corresponding baby unit.

The antenna used is integral, and the tested sample is a prototype.

The circuit description is saved with filename: descri.pdf

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.

EXHIBIT 2
SYSTEM TEST CONFIGURATION

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 fully charged battery and/or AC adaptor.

For the measurements, the EUT is attached to a plastic stand if necessary and placed on the wooden turntable.

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.

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.

Determination of pulse desensitization was made according to *Hewlett Packard Application Note 150-2, Spectrum Analysis... Pulsed RF.* The effective period (τ_{eff}) was 740μs per technical description. With the resolution bandwidth 1MHz and spectrum analyzer IF bandwidth 3 dB, the pulse desensitization factor was 0 dB.

2.2 EUT Exercising Software

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

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) An AC adaptor with ferrite core (100-240VAC to 6VDC, 1000mA, Model: KSS12-060-1000U) (Supplied by Client)

(2) Backup battery: 3 x “AA” size 1.5VDC (Supplied by Client)

Description of Peripherals:

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

2.4 Measurement Uncertainty

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

Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

2.5 Equipment Modification

Any modifications installed previous to testing by Binatone Electronics International Limited 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:

Nip Ming Fung, Melvin
Supervisor
Intertek Testing Services
Agent for Binatone Electronics International Limited

_____Signature

September 18, 2009 Date

EXHIBIT 3
EMISSION RESULTS

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.

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 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

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 dBμV/m
RR = RA - AG in dBμV
LF = CF + AF in dB

Assume a receiver reading of 52.0 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, giving a field strength of 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 52.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
FS = RR + LF
FS = 23 + 9 = 32 dBμV/m

RR = 23.0 dBμV
LF = 9.0 dB

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

3.2 Radiated Emission Configuration Photograph - Baby Unit

Worst Case Radiated Emission

at 2407.500 MHz

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

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 1.2 dB margin compared with peak limit

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TEST PERSONNEL:

Tester Signature

Koo Wai Ip, Engineer
Typed/Printed Name

September 18, 2009
Date

Company: Binatone Electronics International Limited Date of Test: June 22-July 08, 2009
Model: MBP35BU
Mode : TX-Channel 1

Table 1, Baby unit

Radiated Emissions
Pursuant to FCC Part 15 Section 15.249(a) Requirements

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2407.500	116.4	33	29.4	26.2	86.6	94.0	-7.4
H	*4815.000	53.7	33	34.9	26.2	29.4	54.0	-24.6
V	7222.500	54.3	33	37.9	26.2	33.0	54.0	-21.0
V	9630.000	44.2	33	40.4	26.2	25.4	54.0	-28.6
H	*12037.500	42.7	33	40.5	26.2	24.0	54.0	-30.0
H	14445.000	43.0	33	40.0	26.2	23.8	54.0	-30.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2407.500	116.4	33	29.4	112.8	114.0	-1.2
H	*4815.000	53.7	33	34.9	55.6	74.0	-18.4
V	7222.500	54.3	33	37.9	59.2	74.0	-14.8
V	9630.000	44.2	33	40.4	51.6	74.0	-22.4
H	*12037.500	42.7	33	40.5	50.2	74.0	-23.8
H	14445.000	43.0	33	40.0	50.0	74.0	-24.0

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

Company: Binatone Electronics International Limited Date of Test: June 22-July 08, 2009
Model: MBP35BU
Mode : TX-Channel 8

Table 2, Baby unit

Radiated Emissions
Pursuant to FCC Part 15 Section 15.249(a) Requirements

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2439.000	116.2	33	29.4	26.2	86.4	94.0	-7.6
H	*4878.000	53.9	33	34.9	26.2	29.6	54.0	-24.4
V	*7317.000	54.5	33	37.9	26.2	33.2	54.0	-20.8
V	9756.000	44.4	33	40.4	26.2	25.6	54.0	-28.4
H	*12195.000	43.1	33	40.5	26.2	24.4	54.0	-29.6
H	14634.000	45.0	33	38.4	26.2	24.2	54.0	-29.8

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2439.000	116.2	33	29.4	112.6	114.0	-1.4
H	*4878.000	53.9	33	34.9	55.8	74.0	-18.2
V	*7317.000	54.5	33	37.9	59.4	74.0	-14.6
V	9756.000	44.4	33	40.4	51.8	74.0	-22.2
H	*12195.000	43.1	33	40.5	50.6	74.0	-23.4
H	14634.000	45.0	33	38.4	50.4	74.0	-23.6

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

Company: Binatone Electronics International Limited Date of Test: June 22-July 08, 2009
Model: MBP35BU
Mode : TX-Channel 16

Table 3, Baby unit

Radiated Emissions
Pursuant to FCC Part 15 Section 15.249(a) Requirements

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2475.000	116.1	33	29.4	26.2	86.3	94.0	-7.7
H	*4950.000	54.0	33	34.9	26.2	29.7	54.0	-24.3
V	*7425.000	54.7	33	37.9	26.2	33.4	54.0	-20.6
V	9900.000	43.8	33	40.4	26.2	25.0	54.0	-29.0
H	*12375.000	43.3	33	40.5	26.2	24.6	54.0	-29.4
H	14850.000	45.2	33	38.4	26.2	24.4	54.0	-29.6

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2475.000	116.1	33	29.4	112.5	114.0	-1.5
H	*4950.000	54.0	33	34.9	55.9	74.0	-18.1
V	*7425.000	54.7	33	37.9	59.6	74.0	-14.4
V	9900.000	43.8	33	40.4	51.2	74.0	-22.8
H	*12375.000	43.3	33	40.5	50.8	74.0	-23.2
H	14850.000	45.2	33	38.4	50.6	74.0	-23.4

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

Company: Binatone Electronics International Limited Date of Test: June 22-July 08, 2009
Model: MBP35BU
Mode : Talk

Table 4, Baby unit

Radiated Emissions
Pursuant to FCC Part 15 Section 15.209 Requirements

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	36.867	39.5	16	10.0	33.5	40.0	-6.5
V	61.444	34.6	16	10.0	28.6	40.0	-11.4
V	86.021	35.1	16	8.0	27.1	40.0	-12.9
H	*110.598	30.6	16	14.0	28.6	43.5	-14.9
H	159.752	28.0	16	16.0	28.0	43.5	-15.5
H	184.329	25.6	16	20.0	29.6	43.5	-13.9

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.

* Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Koo Wai Ip

3.4 Radiated Emission on the Bandedge - Baby Unit, FCC Rule 15.249(d)

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz to 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2003) for frequency being measured.

Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

Radiated emission on bandedge plots are saved with filename: emission.pdf

Bandedge compliance is determined by applying marker-delta method, i.e.

Resultant field strength = Fundamental emissions - delta from the plot

Resultant field strength for the lowest and/or highest channel(s), with corresponding peak and average values are calculated as follows:

Lowest channel (peak) = 112.8dBµV/m – 46.06dB = 66.74dBµV/m

Highest channel (peak) = 112.5dBµV/m – 46.02dB = 66.48dBµV/m

Lowest channel (average) = 86.6dBµV/m – 46.06dB = 40.54dBµV/m

Highest channel (average) = 86.3dBµV/m – 46.02dB = 40.28dBµV/m

Therefore, the resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74dBµV/m and 54dBµV/m for peak and average limits respectively.

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.

3.5 Line Conducted Configuration Photograph - Baby Unit

Worst Case Line-Conducted Configuration

at 0.474 MHz

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

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 16.74 dB margin compared with quasi-peak limit

TEST PERSONNEL:

Tester Signature

Koo Wai Ip, Engineer
Typed/Printed Name

September 18, 2009
Date

Company: Binatone Electronics International Limited Date of Test: June 22-July 08, 2009
Model: MBP35BU

Conducted Emissions
Pursuant to FCC Part 15 Section 15.207 Requirements

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

3.7 Transmitter Duty Cycle Calculation, FCC Rule 15.35(b, c)

Worst case is reported :

Duty Cycle (DC) = Maximum ON time in 15.232ms/15.232ms
= (0.660ms + 0.08ms)/15.232ms

Average Factor (AF) = 20 log (DC)
= 20* log [(0.660+0.08))/15.232
= -26.27 dB

[ ] The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SPAN function on the analyzer was set to ZERO. The transmitter ON time was determined from the resultant time-amplitude display:

[ ] Please refer to the attached plots for more details:

[x] The plots of Transmitter ON Time Measurements are saved as filename: txon.pdf

[x] Please refer to Technical Description (descri.pdf) for more details.

EXHIBIT 4
EQUIPMENT LIST

4.0 **Equipment List**

1) Radiated Emissions Test

Equipment	Biconical Antenna	Double Ridged Guide Antenna	Broad-Band Horn Antenna with frequency range 14G - 40GHz
Registration No.	EW-0954	EW-1015	EW-1679
Manufacturer	EMCO	EMCO	SCHWARZBECK
Model No.	3104C	3115	BBHA9170
Calibration Date	Sep. 30, 2008	Jul. 28, 2008	Feb. 10, 2009
Calibration Due Date	Mar. 30, 2010	Jan. 28, 2010	Feb. 10, 2010

Equipment	EMI Test Receiver	Digital Multimeter	Spectrum Analyzer	Log Periodic Antenna
Registration No.	EW-0014	EW-1237	EW-2188	EW-0446
Manufacturer	R&S	FLUKE	AGILENTTECH	EMCO
Model No.	ESVS30	179	E4407B	3146
Calibration Date	Jun 01, 2009	Sep. 01, 2008	Dec. 18, 2008	Oct. 02, 2008
Calibration Due Date	Jun 01, 2010	Oct. 01, 2009	Dec. 18, 2009	Apr. 02, 2010

2) Conducted Emissions Test

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