

## TEST REPORT

**Report Number: 13061306HKG-001**

Application  
for

Original Grant of 47 CFR Part 15 Certification  
New Family of RSS-210 Issue 8 Equipment Certification

2.4GHz Frequency Hopping Spread Spectrum Video Baby Monitor - Baby Unit

**FCC ID: EW780-9138-00**

**IC: 1135B-80913800**

Prepared and Checked by:

Approved by:

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September 12, 2013

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### GENERAL INFORMATION

<b>VTech Telecommunications Ltd.:</b>	VTech Telecommunications Ltd.
<b>Applicant Address:</b>	23/F, Tai Ping Industrial Centre, Block 1, 57 Ting Kok Road, Tai Po, Hong Kong.
<b>FCC Specification Standard:</b>	FCC Part 15, October 1, 2011 Edition
<b>FCC ID:</b>	EW780-9138-00
<b>FCC Model(s):</b>	VM333 BU, VM333-2 BU, VM333-3 BU, VM333-4 BU, VM3x3-ab BU, VM303, VM303-ab
<b>IC Specification Standard:</b>	RSS-210 Issue 8, December 2010 RSS-Gen Issue 3, December 2010
<b>IC:</b>	1135B-80913800
<b>IC Model(s):</b>	VM333 BU, VM333-2 BU, VM333-3 BU, VM333-4 BU, VM303
<b>Type of EUT:</b>	Transceiver
<b>Description of EUT:</b>	2.4GHz Frequency Hopping Spread Spectrum Video Baby Monitor - Baby Unit
<b>Serial Number:</b>	N/A
<b>Sample Receipt Date:</b>	June 14, 2013
<b>Date of Test:</b>	August 12, 2013 to August 13, 2013
<b>Report Date:</b>	September 12, 2013
<b>Environmental Conditions:</b>	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 <sup>#</sup> / RSS-310 <sup>^</sup> Section	Results	Details see section
Antenna Requirement	15.203	7.1.2 <sup>#</sup>	Pass	2.1
Radiated Emission	15.249(a), 209, & 109	A2.9(a)	Pass	4.2
Radiated Emission on the Bandedge	15.249(d)	A2.9(b)	Pass	4.3
Radiated Emission in Restricted Bands	15.205	2.2	Pass	4.2
AC Power Line Conducted Emission	15.207 & 15.107	7.2.4 <sup>#</sup>	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, 2011 Edition  
RSS-210 Issue 8, December 2010  
RSS-Gen 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 VM333 BU is a 2.4GHz Frequency Hopping Spread Spectrum Video Baby Monitor - Baby Unit. It operates at frequency range of 2409.750MHz-2473.875MHz. The EUT is powered by an adaptor 100-240VAC to 6VDC 1000mA.

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

For FCC, The Model(s): VM333-2 BU, VM333-3 BU, VM333-4 BU, VM3x3-ab BU, VM303 and VM303-ab are the same as the Model: VM333 BU in electronics/electrical designs including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these models are color, model number, packaging and number of baby unit to be sold for marketing purpose. Suffix (a, b, x) indicates number of baby unit, color option and different packaging respectively.

For IC, The Model(s): VM333-2 BU, VM333-3 BU, VM333-4 BU and VM303 are the same as the Model: VM333 BU in electronics/electrical designs including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these models are model number, packaging and number of baby unit to be sold for marketing purpose.

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

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### 2.2 Test Methodology

Both AC power line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). 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 2<sup>nd</sup> 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 / normal mode 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 100-240VAC to 6VDC 1000mA 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. The resolution bandwidth was 1 MHz for frequencies above 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.

Emission that are directly caused by digital circuits in the transmit path and transmitter portion were measured, and the limit are according to FCC Part 15 Section 15.209. Digital circuitry used to control additional functions other than the operation of the transmitter are subject to FCC Part 15 Section 15.109 Limits.

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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 section 4.2.1.

Determination of pulse desensitization was made according to *Hewlett Packard Application Note 150-2, Spectrum Analysis... Pulsed RF*. The effective period (Teff) was referred to Exhibit 4.2.1. With the resolution bandwidth 100kHz and spectrum analyzer IF bandwidth 3dB, the pulse desensitization factor was 0dB.

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 was included in this report.

### 3.2 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.

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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 (100-240VAC to 6VDC 1000mA, Model: S006MU0600100, Brand: Ten Pao) (Supplied by Client)

#### Description of Accessories:

- (1) Parent Unit, Model: VM333 PU, FCC ID: EW780-9138-01 (Supplied by Client)

### 3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of 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.

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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 $\mu$ V/m
- RA = Receiver Amplitude (including preamplifier) in dB $\mu$ 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 $\mu$ 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 $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ 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

2409.750 MHz

The worst case radiated emission configuration photographs are saved in folder:  
test setup photos.

#### 4.2.2 Radiated Emission Data

The data in tables 1-4 list the significant emission frequencies, the limit and the margin of compliance.

Judgement -

Passed by 1.1 dB margin compare with peak limit

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Mode: TX-Channel 00

Table 1

### Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	2409.750	116.5	33	29.4	22.8	90.1	94.0	-3.9
<b>H</b>	<b>4819.500</b>	<b>49.7</b>	<b>33</b>	<b>34.9</b>	<b>22.8</b>	<b>28.8</b>	<b>54.0</b>	<b>-25.2</b>
H	7229.250	46.9	33	37.9	22.8	29.0	54.0	-25.0
H	9639.000	43.5	33	40.4	22.8	28.1	54.0	-25.9
<b>H</b>	<b>12048.750</b>	<b>43.5</b>	<b>33</b>	<b>40.5</b>	<b>22.8</b>	<b>28.2</b>	<b>54.0</b>	<b>-25.8</b>
H	14458.500	43.5	33	40.0	22.8	27.7	54.0	-26.3

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	2409.750	116.5	33	29.4	112.9	114.0	-1.1
<b>H</b>	<b>4819.500</b>	<b>49.7</b>	<b>33</b>	<b>34.9</b>	<b>51.6</b>	<b>74.0</b>	<b>-22.4</b>
H	7229.250	46.9	33	37.9	51.8	74.0	-22.2
H	9639.000	43.5	33	40.4	50.9	74.0	-23.1
<b>H</b>	<b>12048.750</b>	<b>43.5</b>	<b>33</b>	<b>40.5</b>	<b>51.0</b>	<b>74.0</b>	<b>-23.0</b>
H	14458.500	43.5	33	40.0	50.5	74.0	-23.5

- 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.
  5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

## INTERTEK TESTING SERVICES

Mode: TX-Channel 11

Table 2

### Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	2439.000	115.9	33	29.4	22.8	89.5	94.0	-4.5
<b>H</b>	<b>4878.000</b>	<b>49.4</b>	<b>33</b>	<b>34.9</b>	<b>22.8</b>	<b>28.5</b>	<b>54.0</b>	<b>-25.5</b>
<b>H</b>	<b>7317.000</b>	<b>47.0</b>	<b>33</b>	<b>37.9</b>	<b>22.8</b>	<b>29.1</b>	<b>54.0</b>	<b>-24.9</b>
H	9756.000	43.4	33	40.4	22.8	28.0	54.0	-26.0
<b>H</b>	<b>12195.000</b>	<b>43.5</b>	<b>33</b>	<b>40.5</b>	<b>22.8</b>	<b>28.2</b>	<b>54.0</b>	<b>-25.8</b>
H	14634.000	45.0	33	38.4	22.8	27.6	54.0	-26.4

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	2439.000	115.9	33	29.4	112.3	114.0	-1.7
<b>H</b>	<b>4878.000</b>	<b>49.4</b>	<b>33</b>	<b>34.9</b>	<b>51.3</b>	<b>74.0</b>	<b>-22.7</b>
<b>H</b>	<b>7317.000</b>	<b>47.0</b>	<b>33</b>	<b>37.9</b>	<b>51.9</b>	<b>74.0</b>	<b>-22.1</b>
H	9756.000	43.4	33	40.4	50.8	74.0	-23.2
<b>H</b>	<b>12195.000</b>	<b>43.5</b>	<b>33</b>	<b>40.5</b>	<b>51.0</b>	<b>74.0</b>	<b>-23.0</b>
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.
  5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

## INTERTEK TESTING SERVICES

Mode: TX-Channel 23

Table 3

### Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	2473.875	115.7	33	29.4	22.8	89.3	94.0	-4.7
<b>H</b>	<b>4947.750</b>	<b>49.9</b>	<b>33</b>	<b>34.9</b>	<b>22.8</b>	<b>29.0</b>	<b>54.0</b>	<b>-25.0</b>
<b>H</b>	<b>7421.625</b>	<b>46.7</b>	<b>33</b>	<b>37.9</b>	<b>22.8</b>	<b>28.8</b>	<b>54.0</b>	<b>-25.2</b>
H	9895.500	43.2	33	40.4	22.8	27.8	54.0	-26.2
<b>H</b>	<b>12369.375</b>	<b>43.8</b>	<b>33</b>	<b>40.5</b>	<b>22.8</b>	<b>28.5</b>	<b>54.0</b>	<b>-25.5</b>
H	14843.250	44.9	33	38.4	22.8	27.5	54.0	-26.5

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	2473.875	115.7	33	29.4	112.1	114.0	-1.9
<b>H</b>	<b>4947.750</b>	<b>49.9</b>	<b>33</b>	<b>34.9</b>	<b>51.8</b>	<b>74.0</b>	<b>-22.2</b>
<b>H</b>	<b>7421.625</b>	<b>46.7</b>	<b>33</b>	<b>37.9</b>	<b>51.6</b>	<b>74.0</b>	<b>-22.4</b>
H	9895.500	43.2	33	40.4	50.6	74.0	-23.4
<b>H</b>	<b>12369.375</b>	<b>43.8</b>	<b>33</b>	<b>40.5</b>	<b>51.3</b>	<b>74.0</b>	<b>-22.7</b>
H	14843.250	44.9	33	38.4	50.3	74.0	-23.7

- 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.
  5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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Mode: Talk

Table 4

### Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	36.000	40.0	16	10.0	34.0	40.0	-6.0
V	72.002	44.8	16	7.0	35.8	40.0	-4.2
<b>H</b>	<b>108.600</b>	<b>38.2</b>	<b>16</b>	<b>14.0</b>	<b>36.2</b>	<b>43.5</b>	<b>-7.3</b>
<b>H</b>	<b>120.008</b>	<b>36.2</b>	<b>16</b>	<b>14.0</b>	<b>34.2</b>	<b>43.5</b>	<b>-9.3</b>
<b>H</b>	<b>132.009</b>	<b>36.6</b>	<b>16</b>	<b>14.0</b>	<b>34.6</b>	<b>43.5</b>	<b>-8.9</b>
<b>H</b>	<b>168.011</b>	<b>36.8</b>	<b>16</b>	<b>18.0</b>	<b>38.8</b>	<b>43.5</b>	<b>-4.7</b>
H	180.012	29.2	16	20.0	33.2	43.5	-10.3
H	192.015	34.9	16	16.0	34.9	43.5	-8.6
H	204.023	35.2	16	16.0	35.2	43.5	-8.3
H	216.025	37.8	16	17.0	38.8	46.0	-7.2
<b>H</b>	<b>240.013</b>	<b>32.1</b>	<b>16</b>	<b>19.0</b>	<b>35.1</b>	<b>46.0</b>	<b>-10.9</b>
<b>H</b>	<b>252.015</b>	<b>30.5</b>	<b>16</b>	<b>20.0</b>	<b>34.5</b>	<b>46.0</b>	<b>-11.5</b>
<b>H</b>	<b>276.025</b>	<b>28.8</b>	<b>16</b>	<b>22.0</b>	<b>34.8</b>	<b>46.0</b>	<b>-11.2</b>
H	288.019	28.2	16	22.0	34.2	46.0	-11.8
H	300.034	29.2	16	22.0	35.2	46.0	-10.8
H	336.059	28.0	16	24.0	36.0	46.0	-10.0
H	360.023	28.1	16	24.0	36.1	46.0	-9.9
H	384.045	27.4	16	24.0	35.4	46.0	-10.6
<b>H</b>	<b>408.025</b>	<b>29.0</b>	<b>16</b>	<b>24.0</b>	<b>37.0</b>	<b>46.0</b>	<b>-9.0</b>
H	432.068	26.9	16	25.0	35.9	46.0	-10.1

- 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-210 Section 2.2.

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## INTERTEK TESTING SERVICES

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Mode: Talk

Table 4 (continuous)

### Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	552.068	24.4	16	28.0	36.4	46.0	-9.6
H	576.089	24.8	16	28.0	36.8	46.0	-9.2
H	672.079	23.9	16	29.0	36.9	46.0	-9.1
H	719.992	21.4	16	30.0	35.4	46.0	-10.6
H	768.040	26.5	16	31.0	41.5	46.0	-4.5
H	840.065	20.5	16	31.0	35.5	46.0	-10.5
<b><i>H</i></b>	<b><i>960.078</i></b>	<b><i>24.2</i></b>	<b><i>16</i></b>	<b><i>33.0</i></b>	<b><i>41.2</i></b>	<b><i>54.0</i></b>	<b><i>-12.8</i></b>

- 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-210 Section 2.2.

## INTERTEK TESTING SERVICES

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### 4.2.3 Transmitter Duty Cycle Calculation

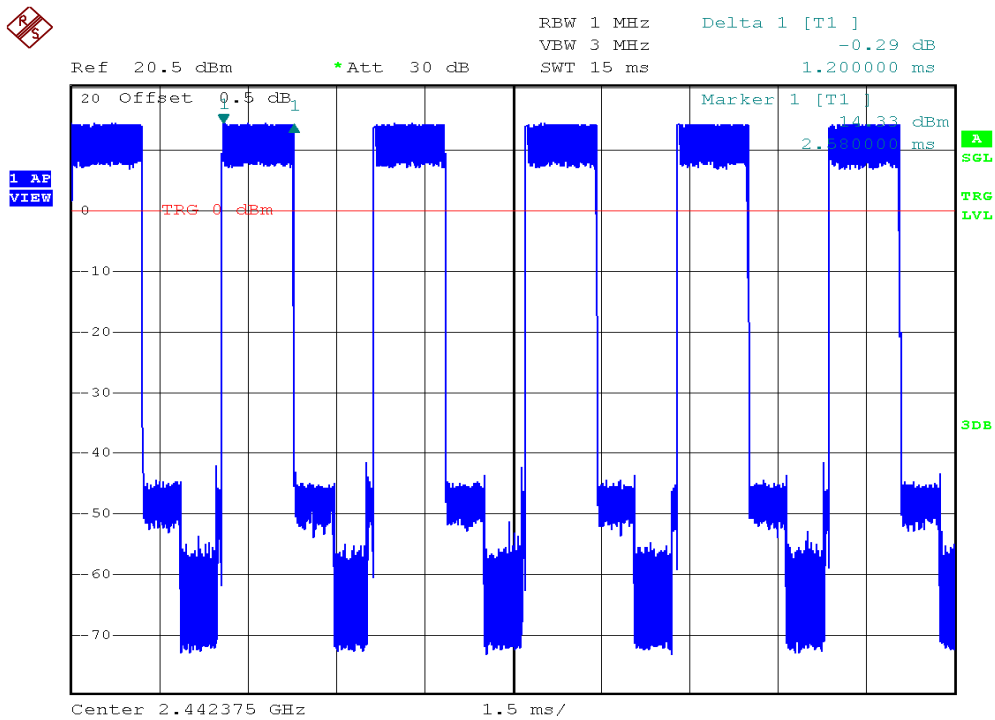
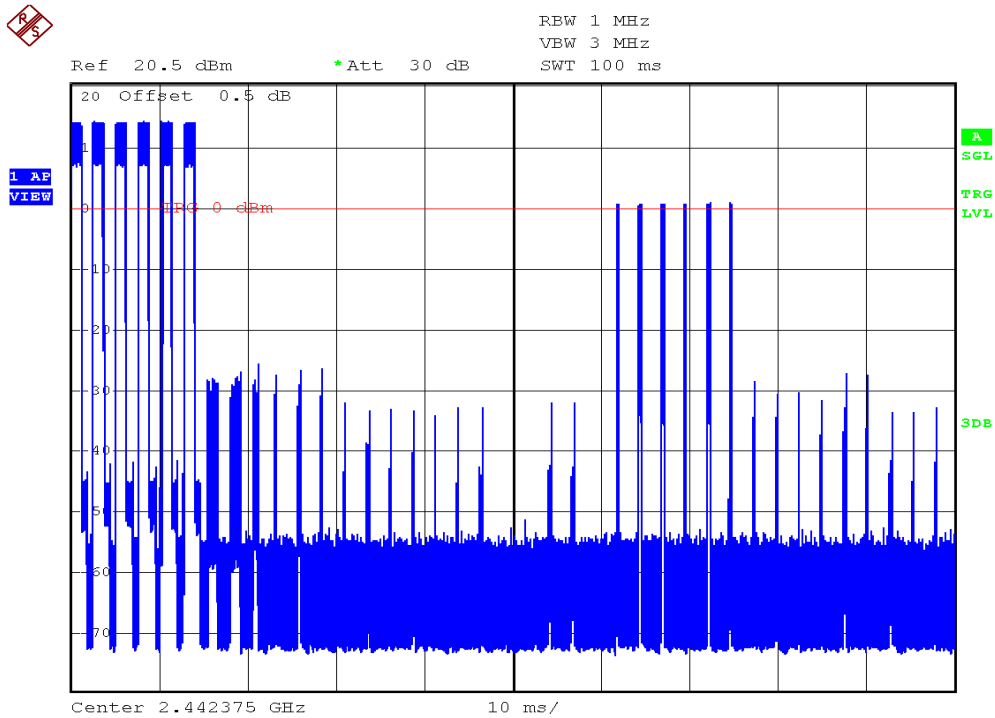
$$\begin{aligned}\text{Duty Cycle (DC)} &= \text{Maximum On time in 100ms/100ms} \\ &= 1.2 \times 6 \text{ ms} / 100\text{ms} \\ &= 0.072\end{aligned}$$

$$\begin{aligned}\text{Average Factor (AF) of Bluetooth in dB} &= 20 \log_{10} (0.072) \\ &= -22.8\text{dB}\end{aligned}$$

The plots of the timing are saved as below.

# INTERTEK TESTING SERVICES

## Plots of the timing



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### 4.3 Radiated Emission on the Bandedge

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz and 2483.5MHz). In case of emissions up to two standard bandwidths away from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2009) for frequency being measured.

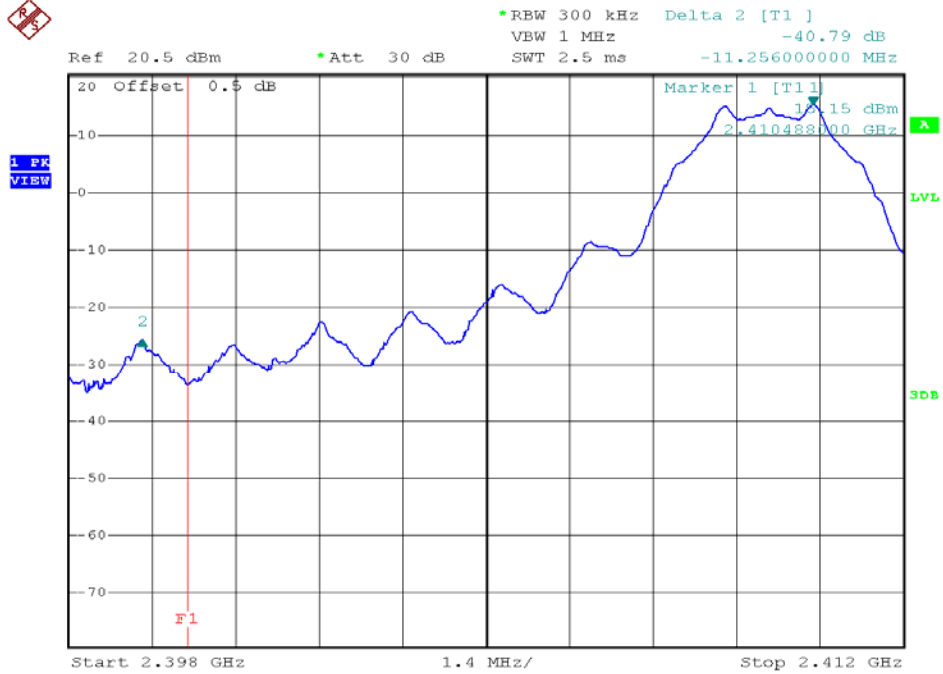
Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in FCC Part 15 Section 15.209 / Table 5 of RSS-Gen, whichever is the lesser attenuation, which meet the requirement of FCC Part 15 Section 15.249(d) / RSS-210 A2.9(b).

The plots of radiated emission on the bandedge are saved as below.

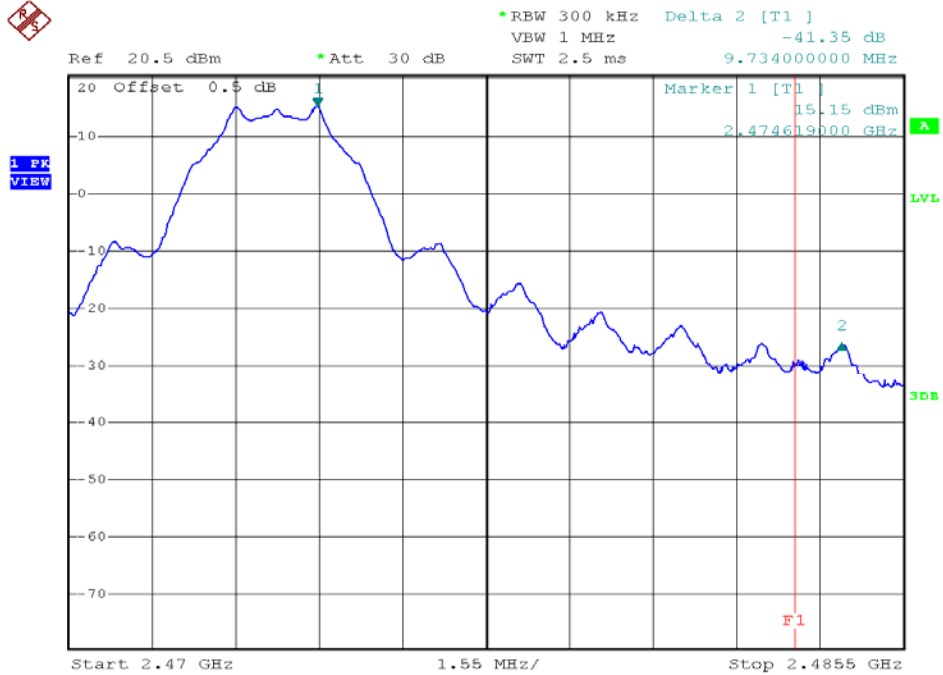
# INTERTEK TESTING SERVICES

## Plots of radiated emission on the bandedge

Baby unit, Lowest channel



Baby unit, Highest channel



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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 average values are calculated as follows:

Channel	Fundamental Emission (dB $\mu$ V/m)	Delta from the Plot (dB)	Resultant Field Strength (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Margin (dB)
Lowest	90.1	40.79	49.31	54	-4.69
Highest	89.3	41.35	47.95	54	-6.05

Channel	Fundamental Emission (dB $\mu$ V/m)	Delta from the Plot (dB)	Resultant Field Strength (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Margin (dB)
Lowest	112.9	40.79	72.11	74	-1.89
Highest	112.1	41.35	70.75	74	-3.25

The resultant field strength meets the general radiated emission limit in FCC Part 15 Section 15.209 / Table 5 of RSS-Gen, which does not exceed 74dB $\mu$ V/m for peak limit and also 54dB $\mu$ V/m for average limit.

## INTERTEK TESTING SERVICES

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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

0.150 MHz

The worst case line conducted configuration photographs are 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 14.94 dB margin compare with quasi-peak limit

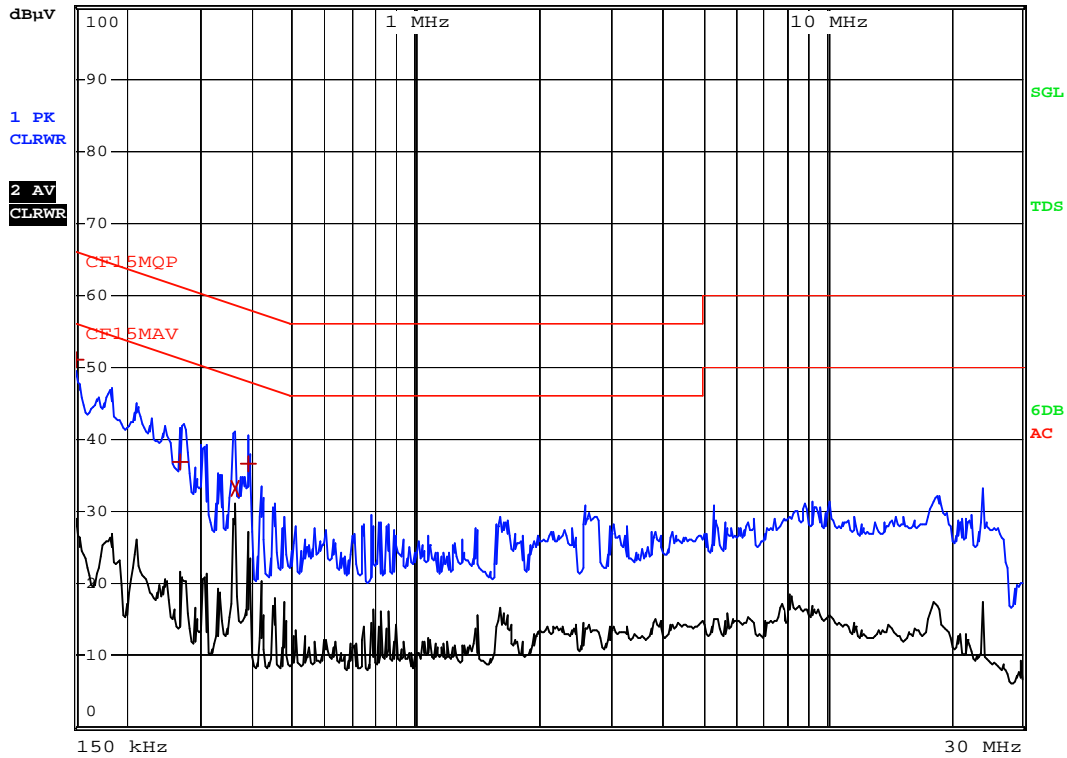
# INTERTEK TESTING SERVICES

Worst Case: Talk



RBW 9 kHz  
MT 1 s

Att 10 dB AUTO PREAMP OFF



Date: 12.AUG.2013 16:07:45

# INTERTEK TESTING SERVICES

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Worst Case: Talk

EDIT PEAK LIST (Final Measurement Results)					
Trace1: CF15MQP					
Trace2: CF15MAV					
Trace3: ---					
	TRACE	FREQUENCY	LEVEL	dB $\mu$ V	DELTA LIMIT dB
1	Quasi Peak	150 kHz	51.05	L1	-14.94
1	Quasi Peak	271.5 kHz	36.79	N	-24.27
2	CISPR Average	361.5 kHz	33.13	N	-15.55
1	Quasi Peak	388.5 kHz	36.50	L1	-21.59

Date: 12.AUG.2013 16:07:10

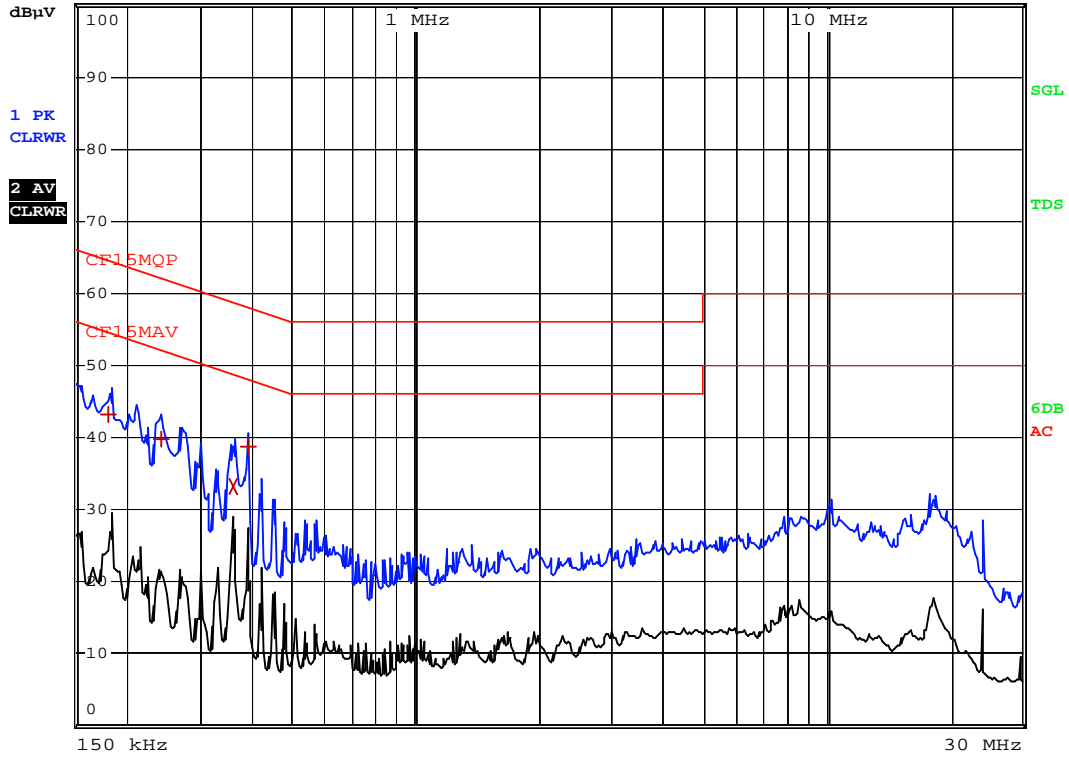
# INTERTEK TESTING SERVICES

## Worst Case: Sound Receiving



RBW 9 kHz  
MT 1 s

Att 10 dB AUTO PREAMP OFF



Date: 12.AUG.2013 16:13:42

# INTERTEK TESTING SERVICES

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## Worst Case: Sound Receiving

EDIT PEAK LIST (Final Measurement Results)				
TRACE	FREQUENCY	LEVEL dBμV		DELTA LIMIT dB
Trace1:	CF15MQP			
Trace2:	CF15MAV			
Trace3:	---			
1	Quasi Peak 181.5 kHz	43.15 N		-21.26
1	Quasi Peak 240 kHz	39.82 L1		-22.27
2	CISPR Average 357 kHz	33.24 N		-15.55
1	Quasi Peak 388.5 kHz	38.66 L1		-19.43

Date: 12.AUG.2013 16:13:21

**INTERTEK TESTING SERVICES**

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**EXHIBIT 5  
EQUIPMENT LIST**

## INTERTEK TESTING SERVICES

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### 5.0 Equipment List

#### 1) Radiated Emissions Test

Equipment	EMI Test Receiver	Spectrum Analyzer	Biconical Antenna
Registration No.	EW-2666	EW-2188	EW-0571
Manufacturer	R&S	AGILENTTECH	EMCO
Model No.	ESCI7	E4407B	3104C
Calibration Date	Jun. 20, 2013	Nov. 5, 2012	Apr. 5, 2012
Calibration Due Date	Jun. 20, 2014	Nov. 5, 2013	Oct. 5, 2013

Equipment	Log Periodic Antenna	Double Ridged Guide Antenna	Broad-Band Horn Antenna
Registration No.	EW-1042	EW-1015	EW-1679
Manufacturer	EMCO	EMCO	SCHWARZBECK
Model No.	3148	3115	BBHA9170
Calibration Date	Apr. 25, 2012	Mar. 5, 2013	Apr. 1, 2013
Calibration Due Date	Oct. 25, 2013	Sep. 5, 2014	Apr. 1, 2014

#### 2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN
Registration No.	EW-2500	EW-2874
Manufacturer	R&S	R&S
Model No.	ESCI	ENV216
Calibration Date	Mar. 22, 2013	Aug. 15, 2012
Calibration Due Date	Feb. 28, 2014	Aug. 15, 2013

**END OF TEST REPORT**