TEST REPORT

Report Number: HK11041669-1

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: EW780-8181-00

IC: 1135B-80818100

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GENERAL INFORMATION

Applicant Name:	VTech Telecommunications Ltd.
Applicant Address:	23/F., Tai Ping Industrial Centre, Block 1, 57 Ting Kok Road, Tai Po, Hong Kong.
FCC Specification Standard:	FCC Part 15, October 1, 2009 Edition
FCC ID:	EW780-8181-00
FCC Model(s):	VM321 BU, VM321-2 BU, VM321-3 BU, VM321-4 BU, VM321-X BU, VM301
IC Specification Standard:	RSS-210 Issue 8, December 2010 RSS-Gen Issue 3, December 2010 RSS-102 Issue 4, March 2010
IC:	1135B-80818100
IC Model(s):	VM321 BU, VM321-2 BU, VM321-3 BU, VM321-4 BU, VM301
Type of EUT:	Spread Spectrum Transmitter
Description of EUT:	2.4GHz Frequency Hopping Spread Spectrum Video Baby Monitor
Serial Number:	N/A
Sample Receipt Date:	April 29, 2011
Date of Test:	April 29-May 20, 2011
Report Date:	May 27, 2011
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

Table of Contents

EXHIBIT 1
TEST RESULTS SUMMARY & STATEMENT OF COMPLIANCE

1.0 Test Results Summary & Statement of Compliance

1.1 Summary of Test Results

Test Items	FCC Part 15 Section	RSS-210/ RSS-Gen# Section	Results	Details see section
Antenna Requirement	15.203	7.1.2#	Pass	2.1
Max. Conducted Output Power	15.247(b)(1) & (4)	A8.4(2)	Pass	4.1
Max. 20dB RF Bandwidth	15.247(a)(1)(iii)	A8.1(d)	Pass	4.2
Min. No. of Hopping Frequencies	15.247(a)(1)(iii)	A8.1(d)	Pass	4.3
Min. Hopping Channel Carrier Frequency Separation	15.247(a)(1)	A8.1(b)	Pass	4.4
Average Time of Occupancy	15.247(a)(1)(iii)	A8.1(d)	Pass	4.5
Out of Band Antenna Conducted Emission	15.247(d)	A8.5	Pass	4.6
Radiated Emission in Restricted Bands and Spurious Emissions	15.247(d) & 15.109	2.2	Pass	4.8
Radiated Emission from Receiver	N/A	2.3	Pass	4.9
AC Power Line Conducted Emission	15.207 & 15.107	7.2.4#	Pass	4.10
Radio Frequency Radiation Exposure	15.247(i)	RSS-102	Pass	4.11 4.12

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-210 Issue 8, December 2010
RSS-Gen Issue 3, December 2010
RSS-102 Issue 4, March 2010

EXHIBIT 2
GENERAL DESCRIPTION

2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a 2.4GHz Frequency Hopping Spread Spectrum Baby Unit of Video Monitor operating at frequency range of 2402.000MHz to 2478.500MHz. There are total of 52 channels, and 20 channels are used for each hopping sequence. The EUT is powered by a 100-120VAC to 6VDC 800mA switching AC adaptor and/or 4xAA size 1.5VDC battery.

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

For FCC, The Model(s): VM321-2 BU, VM321-3 BU, VM321-4 BU, VM321-X BU and VM301 are the same as the Model: VM321 BU in electronics/electrical designs, including software & firmware, construction design/physical design/enclosure and PCB layout. The only difference between these models is model number to be sold for marketing purpose. Suffix ”X” represent number of baby unit. Model: VM301 is an identical baby unit for selling a baby unit standalone.

For IC, The Model(s): VM321-2 BU, VM321-3 BU, VM321-4 BU and VM301 are the same as the Model: VM321 BU in electronics/electrical designs, including software & firmware, construction design/physical design/enclosure and PCB layout. The only difference between these models is model number to be sold for marketing purpose. Model: VM301 is an identical baby unit for selling a baby unit standalone.

The circuit description and frequency hopping algorithm are 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. Antenna port conducted measurements were performed according to FCC Public Notice DA 00-705. All other measurements were made in accordance with the procedures in 47 CFR Part 2.

2.3 Test Facility

The open area test site, AC Power Line conducted measurement facility, and antenna port conducted measurement facility used to collect the radiated data, AC Power Line conducted data, and conductive data are at Roof Top, 2nd Floor, and 5th 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.

EXHIBIT 3
SYSTEM TEST CONFIGURATION

3.0 System Test Configuration

3.1 Justification

For radiated emissions testing, the equipment under test (EUT) was setup to transmit / receive 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 100-120VAC to 6VDC 800mA 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 (as typical as possible).

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.

For receiver radiated measurement, the spectrum analyzer resolution bandwidth was 1MHz for measurement above 1GHz while 100kHz for measurement from 30MHz to 1GHz.

Radiated emission measurement for transmitter were 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. Radiated emission measurement for receiver was performed from 30MHz to the fifth harmonic of the highest frequency or 40GHz, 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 15.109.

3.1 Justification - Cont'd

Detector function for radiated emissions was in peak mode. Average readings, when required, were 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 4.8.3.

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 Section 4.8.3. With the resolution bandwidth 1MHz 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 is 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.

3.3 Details of EUT and Description of Accessories

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 (100-120VAC to 6VDC 800mA, Model: SSA-5AP-09 US060080L) (Supplied by Client)
(2) Backup Battery: 4x"AA" size 1.5VDC battery (Supplied by Client)

Description of Accessories:

(1) Parent Unit, Model: VM321 PU, FCC ID: EW780-8181-01 (Provided 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.

EXHIBIT 4
TEST RESULTS

4.0 **Test Results**

4.1 Maximum Conducted Output Power at Antenna Terminals

☐ The antenna power of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

☒ The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set for RBW>20dB bandwidth and power was read directly in dBm. External attenuation and cable loss were compensated for using the OFFSET function of the analyser.

(Baby Unit) Antenna Gain = 2dBi			
Frequency (MHz)		Output in dBm	Output in mWatt
Low Channel:	2402.000	18.59	72.28
Middle Channel:	2439.500	18.40	69.18
High Channel:	2478.500	18.13	65.01

Cable loss : 0.5 dB External Attenuation : 0 dB

Cable loss, external attenuation: ☒ included in OFFSET function
☐ added to SA raw reading

dBm max. output level = 18.59 dBm

Limits:
☒ 0.125W (21dBm) for antennas with gains of 6dBi or less

☐ 0.25W (24dBm) for antennas with gains of 6dBi or less

☐ 1W (30dBm) for antennas with gains of 6dBi or less

☐ ___W (___dBm) for antennas with gains more than 6dBi

The plots of conducted output power are attached in the Appendix and saved with filename: maxop.pdf

4.2 Maximum 20 dB RF Bandwidth

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was chosen so that the display was a result of the hopping channel modulation. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 20 dB lower than PEAK level. The 20 dB bandwidth was determined from where the channel output spectrum intersected the display line.

Baby Unit		
Frequency (MHz)		20 dB Bandwidth (MHz)
Low Channel:	2402.000	2.10
Middle Channel:	2439.500	2.10
High Channel:	2478.500	2.11

Limits

☐ ≤500kHz for 902-928MHz

☒ N/A for 2400-2483.5MHz

☐ ≤1MHz for 5725-5850MHz

The plots of 20dB RF bandwidth are attached in the Appendix and saved with filename: 20dB.pdf

4.3 Minimum Number of Hopping Frequencies

With the analyzer set to MAX HOLD readings were taken for 2-3 minutes in each band. The channel peaks so recorded were added together, and the total number compared to the minimum number of channels required in the regulation.

Baby Unit	
No. of hopping channels (traffic)	20

Minimum Requirements:

☐ at least 50 hopping channels for 902MHz-928MHz (20 dB bandwidth of hopping channel < 250kHz)

☐ at least 25 hopping channels for 902MHz-928MHz (20 dB bandwidth of hopping channel ≥ 250kHz)

☒ at least 15 hopping channels for 2400MHz-2483.5MHz.

☐ at least 75 hopping channels for 5725MHz-5850MHz.

The plots of number of hopping frequencies are attached in the Appendix and saved with filename: chno.pdf

4.4 Minimum Hopping Channel Carrier Frequency Separation

Using the DELTA MARKER function of the analyzer, the frequency separation between two adjacent channels was measured and met the requirement.

Baby Unit	
Channel Separation (Channel 25 and Channel 26)	1.5MHz

Limits:
The channel separation must be larger than:

☐ 25 kHz

☐ 20 dB bandwidth of hopping channel: ___Hz

☒ 2/3 of 20dB bandwidth of hopping channel: 1.41 MHz

The plot(s) of hopping channel carrier frequency separation is attached in the Appendix and saved with filename: fsepa.pdf

4.5 Average Channel Occupancy Time

The spectrum analyzer center frequency was set to one of the known hopping channels. The SWEEP was set to 10ms, the SPAN was set to ZERO SPAN, and the TRIGGER was set to VIDEO. The time duration of the transmission so captured was measured with the MARKER DELTA function.

The SWEEP was then set to the time required by the regulation (20 seconds for 902-928 MHz devices, if the 20dB bandwidth is less than 250kHz, 10 seconds for 902-928 MHz if the 20dB bandwidth is or greater than 250kHz, "0.4 seconds x Number of hopping channels employed" seconds for 2400-2483.5 MHz, 30 seconds for 5725-5850 MHz). The analyzer was set to SINGLE SWEEP, the total ON time was added and compared against the limit (0.4 seconds).

Baby Unit (worst-case:)	
Average Occupancy Time = 0.870msx4x8s/96ms	290ms

Limits:
Average 0.4 seconds maximum occupancy in:

☒ 8 seconds (0.4 sec. x 20) for 2400MHz-2483.5MHz

☐ 20 seconds for 902MHz-928MHz ≥ 50 hopping channels

☐ 10 seconds for 902MHz-928MHz ≥ 25 hopping channels

☐ 30 seconds for 5725-5850MHz

The plots of average channel occupancy time are attached in the Appendix and saved with filename: avetime.pdf

4.6 Out of Band Conducted Emissions

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission.

The plot(s) of bandedge compliance is shown the worst-case which has been already considered between enable and disable the hopping function of the EUT.

Furthermore, delta measurement technique for measuring bandedge emissions was incorporated in the test of the edge at 2483.5MHz.

Limits:
All spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

The plots of out of band conducted emissions are attached in the Appendix and saved with filenames: obantcon.pdf

4.7 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 reflects 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 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 dB
PD = 0 dB
AV = -10 dB
FS = 62 + 7.4 +1.6 -29 +0 + (-10) = 32 dBμV/m

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

4.8 Transmitter Radiated Emissions in Restricted Bands and Spurious Emissions

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.

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

4.8.1 Radiated Emission Configuration Photograph

Worst Case Restricted Band Radiated Emission
at

576.054 MHz

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

4.8.2 Radiated Emission Data

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

Judgement -

Passed by 0.6 dB margin

4.8.3 Transmitter Duty Cycle Calculation

For the worst case,
Duty Cycle (DC) = Maximum On time in 96ms/96ms = (0.870msx4)/96ms = 0.03625
Average Factor (AF) = 20 log(DC)
= 20* log (0.03625)
= -28.8dB

The plot(s) shows the bit timing is attached in the Appendix and saved with filename: dcc.pdf

Mode: TX-Channel 00

Table 1, Baby Unit

Radiated Emission Data

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)
H	***4804.000***	***55.3***	***33***	***34.9***	***28.8***	***28.4***	***54.0***	***-25.6***
H	***12010.000***	***48.9***	***33***	***40.5***	***28.8***	***27.6***	***54.0***	***-26.4***

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)
H	***4804.000***	***55.3***	***33***	***34.9***	***57.2***	***74.0***	***-16.8***
H	***12010.000***	***48.9***	***33***	***40.5***	***56.4***	***74.0***	***-17.6***

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.

Mode: TX-Channel 25

Table 2, Baby Unit

Radiated Emission Data

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)
H	***4879.000***	***55.4***	***33***	***34.9***	***28.8***	***28.5***	***54.0***	***-25.5***
H	***7318.500***	***54.4***	***33***	***37.9***	***28.8***	***30.5***	***54.0***	***-23.5***
H	***12197.500***	***48.8***	***33***	***40.5***	***28.8***	***27.5***	***54.0***	***-26.5***

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)
H	***4879.000***	***55.4***	***33***	***34.9***	***57.3***	***74.0***	***-16.7***
H	***7318.500***	***54.4***	***33***	***37.9***	***59.3***	***74.0***	***-14.7***
H	***12197.500***	***48.8***	***33***	***40.5***	***56.3***	***74.0***	***-17.7***

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.

Mode: TX-Channel 51

Table 3, Baby Unit

Radiated Emission Data

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	**2478.500	113.8	33	29.4	28.8	81.4	–	–
H	***4957.000***	***55.5***	***33***	***34.9***	***28.8***	***28.6***	***54.0***	***-25.4***
H	***7435.500***	***54.7***	***33***	***37.9***	***28.8***	***30.8***	***54.0***	***-23.2***
H	***12392.500***	***48.7***	***33***	***40.5***	***28.8***	***27.4***	***54.0***	***-26.6***

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	**2478.500	113.8	33	29.4	110.2	--	--
H	***4957.000***	***55.5***	***33***	***34.9***	***57.4***	***74.0***	***-16.6***
H	***7435.500***	***54.7***	***33***	***37.9***	***59.6***	***74.0***	***-14.4***
H	***12392.500***	***48.7***	***33***	***40.5***	***56.2***	***74.0***	***-17.8***

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. 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.

** Fundamental emission was measured for determining band-edge compliance of using delta measurement technique. Peak level and average level at the upper bandedge were 58.2 dBµV/m and 29.4 dBµV/m respectively.

Mode: Talk

Table 4, Baby Unit

Radiated Emission Data

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	64.006	40.9	16	9.0	33.9	40.0	-6.1
V	***128.012***	***36.1***	***16***	***14.0***	***34.1***	***43.5***	***-9.4***
H	192.018	34.5	16	16.0	34.5	43.5	-9.0
H	***256.024***	***29.5***	***16***	***21.0***	***34.5***	***46.0***	***-11.5***
H	320.030	27.6	16	23.0	34.6	46.0	-11.4
H	384.036	27.4	16	24.0	35.4	46.0	-10.6
H	448.042	25.8	16	26.0	35.8	46.0	-10.2
H	512.048	27.6	16	27.0	38.6	46.0	-7.4
H	576.054	33.4	16	28.0	45.4	46.0	-0.6
H	640.060	22.9	16	29.0	35.9	46.0	-10.1
H	704.066	20.8	16	30.0	34.8	46.0	-11.2

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.

4.9 Radiated Emissions from Receiver

4.9.1 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at

2437.500 MHz

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

4.9.2 Radiated Emission Data

The data in tables 5 list the significant emission frequencies, the limit and the margin of compliance.

Judgement –

Passed by 13.4 dB margin

Mode: Receiving – Middle Channel

Table 5, Base Unit

Radiated Emissions Data

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	2437.500	44.2	33	29.4	40.6	54.0	-13.4
V	4875.000	38.3	33	34.9	40.2	54.0	-13.8
V	7312.500	35.2	33	37.9	40.1	54.0	-13.9
V	9750.000	32.1	33	40.4	39.5	54.0	-14.5
V	12187.500	31.8	33	40.5	39.3	54.0	-14.7

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.

4.10 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.

4.10.1 AC Power Line Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration

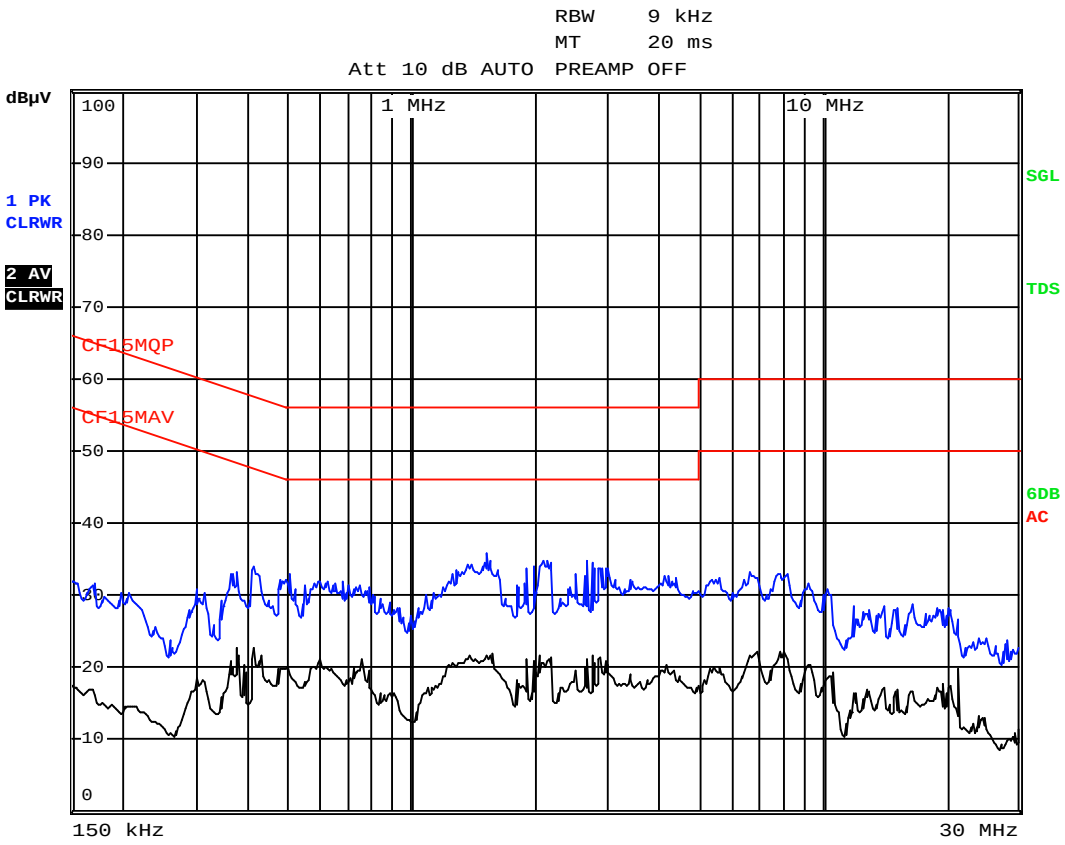
The worst case line conducted configuration photographs are attached in the Appendix and saved with filename: config photos.pdf

4.10.2 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 more than 20 dB margin

Worst Case: Receiving Sounds from Parent Unit



Date: 29.APR.2011 18:26:43

4.11 Radio Frequency Radiation Exposure

EUT is subject to the radio frequency exposure requirements specified in FCC Rule §§ 1.1307. It shall be considered to operate in a “general population / uncontrolled” environment.

☐ Output power is less than the applicable low threshold from SAR evaluation. The evaluation calculation results are saved as filename: RF exposure info.pdf

☒ EUT was evaluated for Maximum Permissible Exposure (MPE) evaluation compliance according to OET Bulletin 65, Supplement C (Edition 01-01). The evaluation calculation results are attached in the Appendix and saved as filename: RF exposure info.pdf

4.12 Radio Frequency Exposure Compliance

The Routine RF Exposure Evaluation, Routine SAR Evaluation and Declaration of RF Exposure Compliance are saved as filename: RF exposure.pdf

EXHIBIT 5
EQUIPMENT LIST

5.0 **Equipment List**

1) Radiated Emissions Test

Equipment	Biconical Antenna	Log Periodic Antenna	Double Ridged Guide Antenna
Registration No.	EW-0954	EW-0446	EW-1015
Manufacturer	EMCO	EMCO	EMCO
Model No.	3104C	3146	3115
Calibration Date	Apr. 14, 2010	Apr. 26, 2010	Feb. 09, 2010
Calibration Due Date	Oct. 14, 2011	Oct. 26, 2011	Aug. 09, 2011

Equipment	EMI Test Receiver	Spectrum Analyzer	Broad-Band Horn Antenna with frequency range 14G - 40GHz
Registration No.	EW-2500	EW-2188	EW-1679
Manufacturer	R&S	AGILENTTECH	SCHWARZBECK
Model No.	ESCI	E4407B	BBHA9170
Calibration Date	Jan. 25, 2011	Dec. 27, 2010	Mar. 03, 2011
Calibration Due Date	Jan. 25, 2012	Dec. 31, 2011	Sep. 03, 2012

Equipment	Biconical Antenna	Log Periodic Antenna
Registration No.	EW-2512	EW-0572
Manufacturer	EMCO	EMCO
Model No.	3104C	3146
Calibration Date	May 12, 2010	May 12, 2010
Calibration Due Date	Nov. 12, 2011	Nov. 12, 2011

2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN	LISN	Pulse Limiter
Registration No.	EW-2666	EW-0090	EW-0192	EW-0698
Manufacturer	R&S	R&S	R&S	R&S
Model No.	ESCI7	ESH3-Z5	ESH3-Z5	ESH3-Z2
Calibration Date	Oct. 12, 2010	Feb. 05, 2010	Nov. 30, 2010	Mar. 11, 2011
Calibration Due Date	Oct. 12, 2011	May 05, 2011	Nov. 30, 2011	Mar. 11, 2012

3) Conductive Measurement Test

Equipment	Spectrum Analyzer
Registration No.	EW-2253
Manufacturer	R&S
Model No.	FSP40
Calibration Date	Nov. 23, 2010
Calibration Due Date	Nov. 23, 2011

END OF TEST REPORT