

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

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VTech Telecommunications Ltd.

Application

For

47 CFR Part 15: 2010 Class I Permissive Change (for Base Unit)
47 CFR Part 15: 2010 Class II Permissive Change (for Handset only)
RSS-213 Issue 2, December 2005 Equipment Certification

Unlicensed Personal Communication Service Devices/
2 GHz License-exempt Personal Communications Service Devices

FCC ID: EW780-H033-00

Model: CTM-S2411, CTM-S2421

FCC ID: EW780-H014-00

**Model: CTM-S2411, CTM-S2421, CTM-S2311, CMT-S2321,
CTM-C4401, CTM-C4501**

IC: 1135B-80H03300

**Model: CTM-S2411, CTM-S2421, CTM-S2311, CTM-S2321,
CTM-C4401, CTM-C4501**

Test Report Number: HK12070333-1

Issue Date: August 07, 2012

MN/KY

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Intertek Testing Services Hong Kong Ltd.

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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, N.T., Hong Kong.
FCC Specification Standard:	FCC Part 15, October 1, 2010 Edition
FCC ID (Base):	EW780-H033-00
FCC Model(s) (Base):	CTM-S2411, CTM-S2421
FCC ID (Handset):	EW780-H014-00
FCC Model(s) (Handset):	CTM-S2411, CTM-S2421, CTM-S2311, CTM-S2321, CTM-C4401, CTM-C4501
IC Specification Standard:	RSS-213 Issue 2, December 2005 RSS-Gen Issue 3, December 2010
IC:	1135B-50H03300
IC Model(s):	CTM-S2411, CTM-S2421, CTM-S2311, CTM-S2321, CTM-C4401, CTM-C4501
Type of EUT:	Unlicensed Personal Communications Service Devices
Description of EUT:	1.9GHz DECT SIP Cordless Phone with Speakerphone
Serial Number:	N/A
Sample Receipt Date:	July 09, 2012
Date of Test:	July 13 – 17, 2012
Report Date:	August 07, 2012
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

VTech Telecommunications Ltd.

**FCC ID: EW780-H033-00
MODEL: CTM-S2411, CTM-S2421**

**FCC ID: EW780-H014-00
MODEL: CTM-S2411, CTM-S2421, CTM-S2311, CMT-S2321, CTM-C4401,
CTM-C4501**

**IC: 1135B-80H03300
MODEL: CTM-S2411, CTM-S2421, CTM-S2311, CMT-S2321, CTM-C4401,
CTM-C4501**

General Technical Requirements					
Test Items	RSS-213 / RSS-Gen# Clause	FCC Part 15 Section	Test Procedure ANSI C63.17 / ANSI C63.4 / RSS-Gen#	Results	Details see section
AC Power Line Conducted Emissions from EUT	6.3	15.315	7*	Pass	4.2
Radio Frequency Radiation Exposure	---	15.319(i)	---	Pass	4.3 4.3
Security Code Information	5	---	---	Pass	2.2

Specific Requirements for UPCS Device					
Test Items	RSS-213 Clause	FCC Part 15 Section	Test Procedure ANSI C63.17	Results	Details see section
Emissions Outside the Sub-Band	6.7.1	15.323(d)	6.1.6.2	Pass	4.1

Test Engineer:

Approved By:

Koo Wai Ip
Senior Lead Engineer
Date: August 07, 2012

Nip Ming Fung, Melvin
Assistant Manager
Date: August 07, 2012

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1.2 Statement of Compliance

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

FCC Part 15, October 1, 2010 Edition
RSS-213 Issue 2, December 2005
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 CTM-S2421 is 1.9GHz DECT SIP Cordless Phone with Speakerphone. It operates at frequency range of 1921.536MHz to 1928.448MHz with 5 channels (1921.536MHz, 1923.264MHz, 1924.992MHz, 1926.720MHz and 1928.448MHz). The Base Unit for CTM-S2421 is powered by Ethernet. The Handset is powered by a “Ni-MH” type rechargeable battery pack (2.4V 550mAh) and/or by connected to the base cradle which is powered by an AC adaptor 100-120VAC to 6VDC 400mA with Brand: Ten Pao and FEREX.

The antennas used in Base unit and Handset are integral, and the test sample is a prototype.

The Base Unit, for FCC & IC approval, Model(s): CTM-S2411 is the same as the Model: CTM-S2421 in electronics/electrical designs, including software & firmware, PCB layout and construction design/Physical design/Enclosure. The only differences between these models are cosmetic details and model number to be sold for marketing purpose. Moreover, the software of CTM-S2421 supports 2-Line while the software of CTM-S2411 supports 1-Line. Also, Model CTM-S2411 has one key button for Line 1 while Model CTM-S2421 has key buttons for Line 1, Line 2 and CONF.

The Handset, for FCC approval of Class II Permissive Change, Model(s): CTM-S2411, CTM-S2311, CMT-S2321, CTM-C4401 and CTM-C4501 are the same as Handset Model: CTM-S2421 in electronics/electrical designs, including software & firmware, PCB layout and construction design/Physical design/Enclosure. The only differences between these models are cosmetic details and model number to be sold for marketing purpose. Moreover, the software of CTM-S2421, CTM-S2321, CTM-C4501 support 2-Line while the software of CTM-S2411, CTM-S2311, CTM-C4401 support 1-Line. Also, Model CTM-S2411, CTM-S2311, CTM-C4401 have one key button for Line 1 while Model CTM-S2421, CTM-S2321, CTM-C4501 have key buttons for Line 1, Line 2 and CONF.

The Handset, for IC approval, Model(s): CTM-S2411, CTM-S2311, CMT-S2321, CTM-C4401 and CTM-C4501 are the same as Handset Model: CTM-S2421 in electronics/electrical designs, including software & firmware, PCB layout and construction design/Physical design/Enclosure. The only differences between these models are cosmetic details and model number to be sold for marketing purpose. Moreover, the software of CTM-S2421, CTM-S2321, CTM-C4501 support 2-Line while the software of CTM-S2411, CTM-S2311, CTM-C4401 support 1-Line. Also, Model CTM-S2411, CTM-S2311, CTM-C4401 have one key button for Line 1 while Model CTM-S2421, CTM-S2321, CTM-C4501 have key buttons for Line 1, Line 2 and CONF.

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2.1 Product Description - Continued

Handset Models: CTM-S2311 and CTM-S2321 are Corded Handsets connected to the base cradle which is powered by an AC adaptor.

The RF modules of Base Units are identical to Model CTM-S2421 including RF algorithm.

The RF modules of Handsets are identical to Model CTM-S2421 including RF algorithm.

2.2 Technical Description

The circuit description and digital modulation techniques description are saved with filename: descri.pdf.

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2.3 Purpose of Change

The purpose of change is saved with filename: product change.pdf.

2.4 Test Methodology

The radiated emission measurements for unintentional radiator (if any) and AC power line-conducted emission measurements were performed according to the test procedures specified in ANSI C63.4 (2009). The radiated emission measurements for intentional radiator contained in UPCS device, were performed according to the test procedures specified in ANSI C63.17 (2006). All radiated measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "Justification Section" of this Application. All other measurements were made in accordance with the procedures in 47 CFR Part 2 / RSS-Gen Issue 3 (2010).

2.5 Test Facility

The open area test site and conducted measurement facility used to collect the emission data 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 emissions testing, the equipment under test (EUT) was set up to transmit continuously in burst mode with pseudo-random data 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 Base Unit was powered by Ethernet

The Handset was powered by a fully charged rechargeable battery and/or by connected to the base cradle which is powered by an AC adaptor 100-120VAC to 6VDC 400mA

For the measurements, the EUT was attached to a plastic stand if necessary and placed on the wooden turntable. If the base unit attached to accessories, 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. Detector function was in peak mode. Radiated emissions are 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 UPCS transmitter radiated measurement, the spectrum analyzer resolution bandwidth was approximately 1% of EUT emission bandwidth, unless otherwise specified.

Radiated emission measurements for UPCS 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.

For FCC, RF module and antenna for Base and Handset of CTM-S2421 are the same with original granted model S1420. Therefore conducted emission measurement for CTM-S2421 is skipped.

For IC, RF module and antenna for Base and Handset of CTM-S2421 is the same with previous granted model S2420. Therefore conducted emission measurement for CTM-S2421 is skipped.

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3.1 Justification - Continued

The Handset is powered by a “Ni-MH” type rechargeable battery pack (Model: CTM-S2421) and/or by connected to the base cradle which is powered by AC adaptors (Model(s): CTM-S2311, CTM-S2321). Handset powered in these two power sources have been checked. The data of Radiated emission in this report represented the worst case.

As the base unit has 2 antennas, both have been checked. While conducting the test on one of antennas, another one was being disable its transmission. The data in this report represented the worst-case.

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.

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3.2 EUT Exercising Software

The EUT exercise program (if any) 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 descriptions are listed below.

- (1) Handset with base cradle (for Model CTM-2321): An AC adaptor (100-120VAC to 6VDC 400mA, Model: S005IU0600040, Brand: Ten Pao and model: FA05RB-060S040U2C, Brand: FEREX) (Supplied by Client)
- (2) Handset: A "Ni-MH" type rechargeable battery pack (2.4V, 550mAh) (Supplied by Client)

Description of Accessories:

- (1) HP Notebook, Model: CPQNC2400, S/N: CNF638276D, DoC Product (Supplied by Intertek)
- (2) VTech ADSL Router, Model: IAD303, S/N: VT0010100100602, Output 12VDC 2.0A (Supplied by Client)
- (3) Smartdrive External Hard Disk, Model: HD3-SU2FW, S/N: 0800261, DoC Product (Supplied by Intertek)
- (4) TP-LINK PoE Injector, Model: TL-POE150S, Output 48VDC 3.5A, DoC Product (Supplied by Intertek)
- (5) SAMSUNG MP3 Player, Model: YP-Z5F, DoC Product (Supplied by Intertek)
- (6) 2 x USB cable with 1 meter long (Supplied by Intertek)
- (7) 2 x CAT5 LAN unshielded cable with 3 meter long (Supplied by Client)
- (8) 1 x 1394 cable with 0.8 meter long (Supplied by Intertek)

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 MEASUREMENT RESULTS

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Company: VTech Telecommunications Ltd.
Model: CTM-S2421

Date of Test: July 13 - 17, 2012

4.1 Emissions Outside the Sub-Band, FCC Rule 15.323(d) / RSS-213 Clause 6.7.1:

Emissions outside the sub-band shall be attenuated below a reference power of 112 mW (20.5 dBm) as follows:

1. 30 dB between the band edge and 1.25 MHz above or below the band;
2. 50 dB between 1.25 and 2.5 MHz above or below the band; and
3. 60 dB at 2.5 MHz or greater above or below the band, or shall meet the requirement of FCC Rule 15.319(g) which shall not exceed the limits of FCC Rule 15.209 / RSS-210 Clause 2.5.

Example: Calculation of Limit for emissions between the band edge and 1.25 MHz (1920.000 – 1918.750 MHz)

The emissions shall not exceed the Limit: 20.5 dBm – 30 dB = -9.5 dBm

Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.6.2. Radiated emissions test method is used. Emissions that are directly caused by digital circuits in the transmit path and transmitter portion are measured.

Test Results:

Channel	Carrier Frequency (MHz)	Measured Band (MHz)	Limit (dBm)	Results
Lowest	1921.536	1920.000 - 1918.750	-9.5	Pass
		1918.750 - 1917.500	-29.5	Pass
		0.009 - 1917.500 & 1932.500 - 19300.000	-39.5	Pass
Highest	1928.448	1930.000 - 1931.250	-9.5	Pass
		1931.250 - 1932.500	-29.5	Pass
		0.009 – 1917.500 & 1932.500 - 19300.000	-39.5	Pass

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Company: VTech Telecommunications Ltd.
Model: CTM-S2421
Mode: Transmission

Date of Test: July 13 - 17, 2012

4.1.1 Radiated Emissions Configuration Photographs:

Worst Case Radiated Emission
at

Base Unit: 5764.608 MHz

Handset: 3856.896 MHz

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

4.1.2 Radiated Emissions Data:

Data are 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. All measurements were performed with peak detection unless otherwise specified.

The data in table 1-6 list the significant emission frequencies, the limit and the margin of compliance.

Judgement:

Base Unit - Passed by 4.4 dB margin

Handset - Passed by 4.8 dB margin

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Company: VTech Telecommunications Ltd.
Model: CTM-S2421
Mode: Transmission

Date of Test: July 13 - 17, 2012

Table 1, Base Unit

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) / RSS-213 Clause 6.7.1
Emissions Requirements

Lowest Channel

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	1921.536	12.4	--	--
V	1919.477	-41.8	-9.5	-32.3
V	1918.703	-46.8	-29.5	-17.3
V	1917.210	-53.0	-39.5	-13.5
H	3843.072	-44.3	-39.5	-4.8
V	5764.608	-43.9	-39.5	-4.4
H	7686.144	-44.8	-39.5	-5.3
H	9607.680	-45.0	-39.5	-5.5
H	11529.216	-45.6	-39.5	-6.1

NOTES:

1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.

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Company: VTech Telecommunications Ltd.
Model: CTM-S2421
Mode: Transmission

Date of Test: July 13 - 17, 2012

Table 2, Base Unit

**Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) / RSS-213 Clause 6.7.1
Emissions Requirements**

Highest Channel

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	1928.448	12.0	--	--
V	1930.090	-41.6	-9.5	-32.1
V	1931.344	-46.7	-29.5	-17.2
V	1933.004	-53.1	-39.5	-13.6
H	3856.896	-44.4	-39.5	-4.9
V	5785.344	-44.0	-39.5	-4.5
H	7713.792	-44.6	-39.5	-5.1
H	9642.240	-45.0	-39.5	-5.5
H	11570.688	-45.8	-39.5	-6.3

NOTES:

1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.

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FCC ID: EW780-H014-00
IC: 1135B-80H03300

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Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.



Company: VTech Telecommunications Ltd.

Date of Test: July 13 - 17, 2012

Model: CTM-S2421

Mode: Talk by cordless Handset (3 way conference) + USB charging + PC online

Table 3, Base Unit

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) / RSS-213 Clause 6.7.1
Emissions Requirements

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	60.000	-62.8	-39.5	-23.3
V	134.900	-63.6	-39.5	-24.1
H	165.890	-59.8	-39.5	-20.3
H	200.000	-59.9	-39.5	-20.4
H	243.000	-57.2	-39.5	-17.7
H	250.000	-52.0	-39.5	-12.5
H	288.185	-60.6	-39.5	-21.1
H	300.000	-59.0	-39.5	-19.5
H	331.771	-60.2	-39.5	-20.7
H	375.500	-60.0	-39.5	-20.5
H	456.195	-59.2	-39.5	-19.7
H	500.000	-60.5	-39.5	-21.0
H	580.618	-61.2	-39.5	-21.7
H	750.000	-61.6	-39.5	-22.1

NOTES:

1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.

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Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-etlsemko.com

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

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Company: VTech Telecommunications Ltd.
Model: CTM-S2421
Mode: Transmission

Date of Test: July 13 - 17, 2012

Table 4, Handset

**Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) / RSS-213 Clause 6.7.1
Emissions Requirements**

Lowest Channel

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	1921.536	15.3	--	--
V	1919.903	-42.7	-9.5	-33.2
V	1918.008	-46.8	-29.5	-17.3
V	1917.400	-52.7	-39.5	-13.2
H	3843.072	-44.4	-39.5	-4.9
H	5764.608	-44.8	-39.5	-5.3
H	7686.144	-45.0	-39.5	-5.5
H	9607.680	-45.9	-39.5	-6.4
H	11529.216	-46.0	-39.5	-6.5

NOTES:

1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.

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Company: VTech Telecommunications Ltd.
Model: CTM-S2421
Mode: Transmission

Date of Test: July 13 - 17, 2012

Table 5, Handset

**Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) / RSS-213 Clause 6.7.1
Emissions Requirements**

Highest Channel

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	1928.448	15.4	--	--
V	1930.799	-42.1	-9.5	-32.6
V	1931.670	-47.0	-29.5	-17.5
V	1932.885	-52.9	-39.5	-13.4
H	3856.896	-44.3	-39.5	-4.8
H	5785.344	-44.8	-39.5	-5.3
H	7713.792	-45.0	-39.5	-5.5
H	9642.240	-45.8	-39.5	-6.3
H	11570.688	-45.9	-39.5	-6.4

NOTES:

1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.

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Company: VTech Telecommunications Ltd.
Model: CTM-S2421
Mode: Talk (3 way conference)

Date of Test: July 13 - 17, 2012

Table 6, Handset

**Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) / RSS-213 Clause 6.7.1
Emissions Requirements**

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	41.476	-63.8	-39.5	-24.3
V	55.300	-64.0	-39.5	-24.5
H	152.068	-64.2	-39.5	-24.7
H	207.362	-63.0	-39.5	-23.5
H	262.600	-63.2	-39.5	-23.7
H	331.780	-63.3	-39.5	-23.8
H	960.068	-63.8	-39.5	-24.3

NOTES:

1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.

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Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

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Company: VTech Telecommunications Ltd.
Model: CTM-S2421

Date of Test: July 13 - 17, 2012

4.1.3 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 29.0 dB is subtracted. The pulse desensitization factor of the spectrum analyzer is 0.0 dB, and the resultant average factor is -10.0 dB. The net field strength for comparison to the appropriate emission limit is 32.0 dB μ V/m. This value in dB μ V/m is converted to its corresponding level in μ V/m.

RA = 62.0 dB μ V
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0.0 dB
AV = -10 dB

$$FS = 62.0 + 7.4 + 1.6 - 29.0 + 0.0 + (-10.0) = 32.0 \text{ dB}\mu\text{V/m}$$
$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32.0 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

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Issuing Laboratory:
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Company: VTech Telecommunications Ltd.
Model: CTM-S2421

Date of Test: July 13 - 17, 2012

4.1.4 Average Factor Calculation and Transmitter ON Time Measurements, FCC Rule 15.35(b, c) / RSS-Gen cl 4.5

[] 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:

The plots of Transmitter ON Time Measurements are saved as below.

[] Please refer to the attached transmitter timing diagram that are provided by manufacturer

[x] Not applicable - No average factor is required.

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

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Intertek Testing Services Hong Kong Limited

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Company: VTech Telecommunications Ltd.
Model: CTM-S2321

Date of Test: July 13 - 17, 2012

4.2 AC Power Line Conducted Emissions, FCC Rule 15.315 / RSS-213 Clause 6.3:

The AC power line conducted emission shall not exceed the limits of FCC Rule 15.207 / Table 4 in RSS-Gen Clause 7.2.4.

Measurements are made in accordance with ANSI C63.4 sub-clause 7. Emissions that are directly caused by digital circuits in the transmit path and transmitter portion are measured.

- [x] Not applicable - Base Unit is only powered by Ethernet for operation.
- Handset is only powered by battery for operation.
The EUT does not have provision connected to the AC power line, the conducted emission is unnecessary.

- [x] Handset (powered by Base cradle) connects to AC power line. Emission Data is listed in following pages.

- [] Base Unit connects to AC power line and has transmission. Headset connects to AC power line but has no transmission. Emission Data of Base Unit is listed in following pages.

- [] Handset connects to AC power line (indirectly) only during charging. Emission Data is listed in following pages.

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Intertek Testing Services Hong Kong Limited

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Company: VTech Telecommunications Ltd.
Model: CTM-S2321
Mode: Talk (3 way conference) (Adaptor: FEREX)

Date of Test: July 13 - 17, 2012

4.2.1 AC Power Line Conducted Emissions Configuration Photographs:

Worst Case AC Power Line Conducted Emission

The worst case AC power Line conducted emission configuration photographs are saved with filename: config photos.pdf

4.2.2 AC Power Line Conducted Emissions Data:

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

Judgment:

Handset (Model CTM-S2321 only): more than 20dB margin

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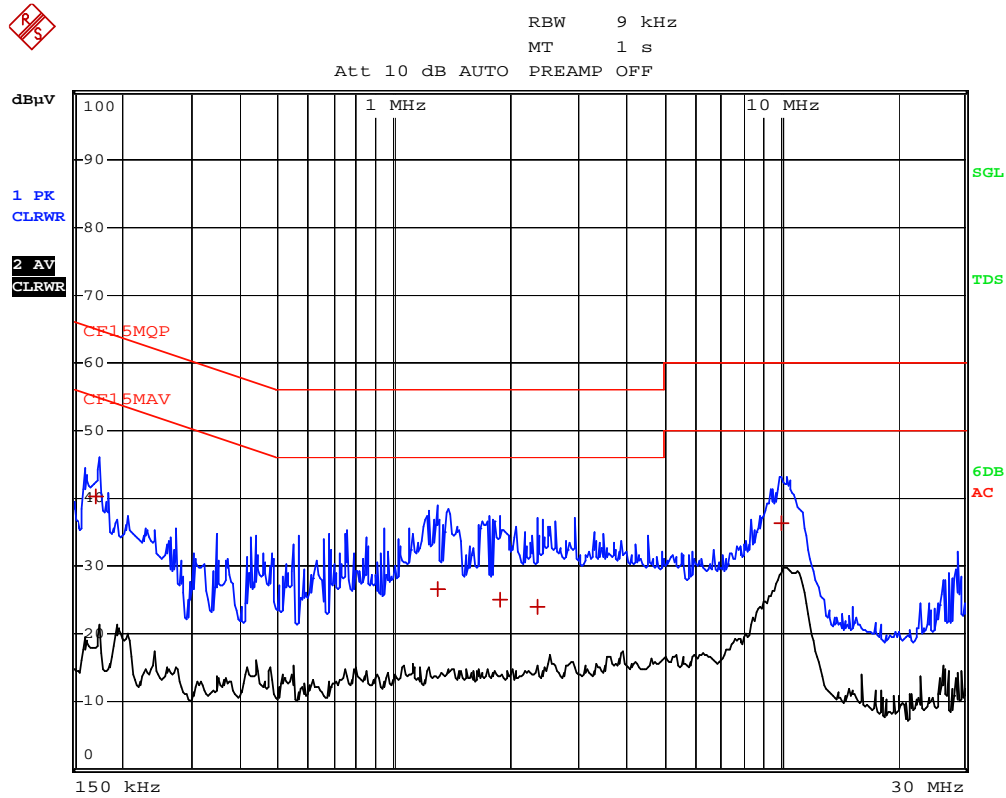
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Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

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Model No.: Model: CTM-S2321
Worst Case: Talk (3 way conference) (Adaptor: Ten Pao)



Date: 13.JUL.2012 16:14:11

Test Report Number: HK12070333-1
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Issuing Laboratory:
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Model No.: CTM-S2321
Worst Case: Talk (3 way conference) (Adaptor: Ten Pao)

EDIT PEAK LIST (Final Measurement Results)				
Trace1: CF15MQP				
Trace2: CF15MAV				
Trace3: ---				
	TRACE	FREQUENCY	LEVEL dB μ V	DELTA LIMIT dB
1	Quasi Peak	172.5 kHz	40.35 N gnd	-24.48
1	Quasi Peak	1.293 MHz	26.71 N gnd	-29.28
1	Quasi Peak	1.8735 MHz	24.95 N gnd	-31.04
1	Quasi Peak	2.346 MHz	24.04 N gnd	-31.95
1	Quasi Peak	10.113 MHz	36.44 L1 gnd	-23.56

Date: 13.JUL.2012 16:13:54

Test Report Number: HK12070333-1
FCC ID:EW780-H033-00
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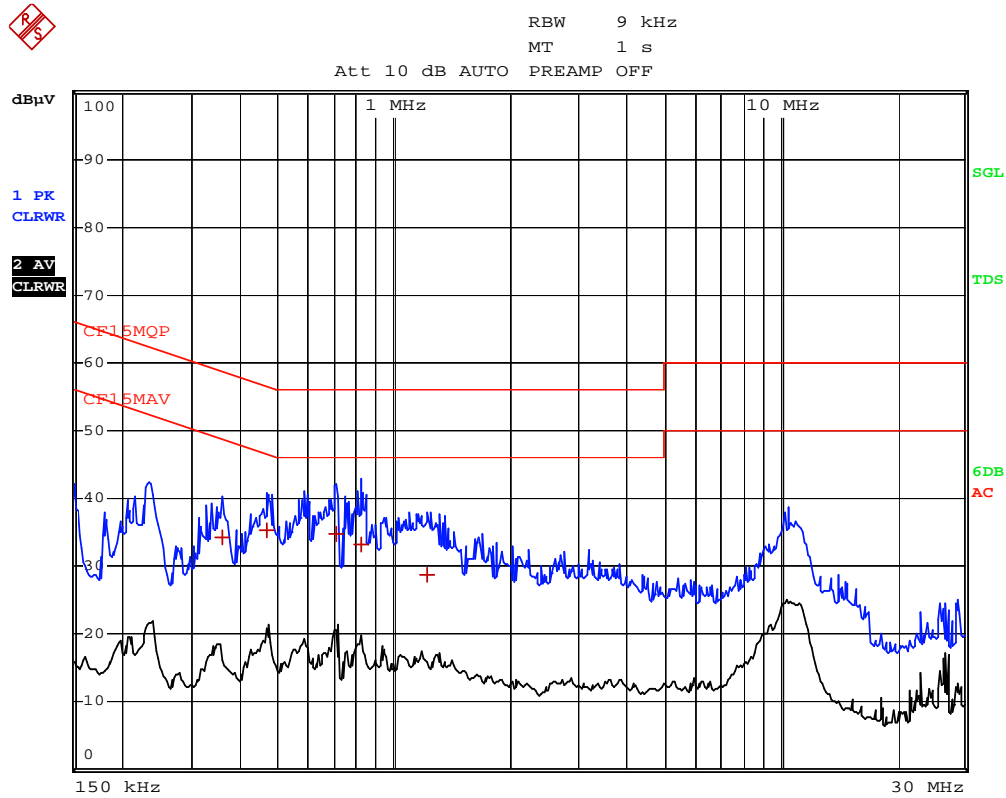
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Intertek Testing Services Hong Kong Limited

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Model No.: CTM-S2321
Worst Case: Talk (3 way conference) (Adaptor: FEREX)



Date: 13.JUL.2012 16:09:07

Test Report Number: HK12070333-1
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Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

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Model No.: CTM-S2321
Worst Case: Talk (3 way conference) (Adaptor: FEREX)

EDIT PEAK LIST (Final Measurement Results)					
Trace1:		CF15MQP			
Trace2:		CF15MAV			
Trace3:		---			
	TRACE	FREQUENCY	LEVEL dB μ V		DELTA LIMIT dB
1	Quasi Peak	357 kHz	34.18 L1 gnd		-24.61
1	Quasi Peak	465 kHz	35.25 L1 gnd		-21.34
1	Quasi Peak	708 kHz	34.90 L1 gnd		-21.10
1	Quasi Peak	825 kHz	33.29 L1 gnd		-22.70
1	Quasi Peak	1.2165 MHz	28.77 L1 gnd		-27.23

Date: 13.JUL.2012 16:08:54

Test Report Number: HK12070333-1
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Company: VTech Telecommunications Ltd.
Model: CTM-S2421

Date of Test: July 13 - 17, 2012

4.3 Radio Frequency Radiation Exposure, FCC Rule 15.319(i):

EUT is subject to the radio frequency exposure requirements specified in FCC Rule §§ 1.1307(b), 2.1091 and 2.1093. It shall be considered to operate in a “general population / uncontrolled” environment.

- [x] Handset unit: EUT was evaluated for Specific Absorption Rate (SAR) evaluation compliance according to OET Bulletin 65, Supplement C (Edition 01-01). It is in compliance with the SAR evaluation requirements. A SAR test report was submitted at same time and saved with filename: SAR Report.pdf.

- [x] Base unit: 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 saved with filename: RF exposure info.pdf.

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Issuing Laboratory:
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5.0 Equipment List

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Log Periodic Antenna	Biconical Antenna 20MHz to 200MHz
Registration No.	EW-2500	EW-0446	EW-2512
Manufacturer	R&S	EMCO	EMCO
Model No.	ESCI	3146	3104C
Calibration Date	Feb. 24, 2012	Oct. 31, 2011	Nov. 15, 2011
Calibration Due Date	Feb. 24, 2013	Apr. 30, 2013	May. 15, 2013

Equipment	Double Ridged Guide Antenna (1GHz - 18GHz)	Spectrum Analyzer	Broad-Band Horn Antenna
Registration No.	EW-1133	EW-2188	EW-1679
Manufacturer	EMCO	AGILENTTECH	SCHWARZBECK
Model No.	3115	E4407B	BBHA9170
Calibration Date	Mar. 02, 2011	Sep. 26, 2011	Mar. 21, 2012
Calibration Due Date	Sep. 02, 2012	Sep. 26, 2012	Mar. 21, 2013

2) Conducted Emissions Test

Equipment	EMI Test Receiver (9kHz to 7GHz)	Artificial Mains	Pulse Limiter
Registration No.	EW-2666	EW-0192	EW-0698
Manufacturer	R&S	R&S	R&S
Model No.	100792	ESH3-Z5	ESH3-Z2
Calibration Date	May. 21, 2012	Apr. 11, 2012	Apr. 06, 2012
Calibration Due Date	May. 21, 2013	Apr. 11, 2013	Apr. 06, 2013