

VTech Telecommunications Ltd.

Application

For

47 CFR Part 15 Class II Permissive Change
RSS-213 Issue 2 Equipment Certification

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

(Base Unit)

FCC ID: EW780-7718-00

Model: CS6124, CS6124-2, CS6124-11, CS6124-21, CS612Z-XY

IC: 1135B-80771800

Model: CS6124, CS6124-2, CS6124-11, CS6124-21

Test Report Number: HK10070990-1

Issue Date: August 06, 2010

MN/ sl

- The test report only allows to be revised within the retention period unless further standard or the requirement was noticed.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

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

INTERTEK TESTING SERVICES

Table of Contents

1.0 Summary of Test Results	4
2.0 General Description	7
2.1 Product Description	7
2.2 Technical Description	7
2.3 Purpose of Change	8
2.4 Test Methodology	8
2.5 Test Facility	8
3.0 System Test Configuration	10
3.1 Justification	10
3.2 Conducted Emission Test Configuration	11
3.3 Conducted Monitoring and Operational Test Configuration	11
3.4 EUT Exercising Software	11
3.5 Details of EUT and Description of Accessories	12
3.6 Measurement Uncertainty	12
3.7 Equipment Modification	12
4.0 Measurement Results	14
4.1 Antenna Requirement	14
4.2 Emission Bandwidth	15
4.3 Directional Gain of the Antenna	16
4.4 Peak Transmit Power	17
4.5 Power Spectral Density	18
4.6 Unwanted Emission Inside the Sub-Band	19
4.7 Emissions Outside the Sub-Band	20
4.7.1 Radiated Emissions Configuration Photographs	21
4.7.2 Radiated Emissions Data	21
4.7.3 Field Strength Calculation	28
4.7.4 Average Factor Calculation and Transmitter ON Time Measurements	29
4.8 Radiated Emissions from Receiver	30
4.8.1 Radiated Emission Configuration Photographs	31
4.8.2 Radiated Emissions Data	31
4.9 AC Power Line Conducted Emissions	34
4.9.1 AC Power Line Conducted Emissions Configuration Photographs	35
4.9.2 AC Power Line Conducted Emissions Data	35
4.10 Radio Frequency Radiation Exposure	36
4.11 Radio Frequency Exposure Compliance	36
4.12 Monitoring Threshold	37
4.12.1 Upper Monitoring Threshold	38
4.13 Monitoring Antenna	39
5.0 Equipment List	40
Appendix – Exhibits of Application for Certification	

INTERTEK TESTING SERVICES

**EXHIBIT 1
SUMMARY OF TEST RESULTS**

INTERTEK TESTING SERVICES

1.0 Summary of Test Results

VTech Telecommunications Ltd.

FCC ID: EW780-7718-00

MODEL: CS6124, CS6124-2, CS6124-11, CS6124-21, CS612Z-XY

IC: 1135B-80771800

MODEL: CS6124, CS6124-2, CS6124-11, CS6124-21

General Technical Requirements					
Test Items	RSS-213 / RSS-Gen# Clause	FCC Part 15 Section	Test Procedure ANSI C63.17 / ANSI C63.4 *	Results	Details see section
Antenna Requirement	7.1.4 [#]	15.317	---	Pass	4.1
Occupied/Emission Bandwidth	6.4	15.323(a)	6.1.3	Pass	4.2
Directional Gain of the Antenna	4.1(e)	15.319(e)	4.3.1	Pass	4.3
Peak Transmit Power	6.5	15.319(c)	6.1.2	Pass	4.4
Power Spectral Density	6.6	15.319(d)	6.1.5	Pass	4.5
Radiated Emissions from Receiver Portion of EUT	6.8	---	8 *	Pass	4.8
AC Power Line Conducted Emissions from EUT	6.3	15.315	7 *	Pass	4.9
Radio Frequency Radiation Exposure	RSS-102	15.319(i)	---	Pass	4.10 4.11

Test Engineer:



Simple Shum
Engineer

Date: August 06, 2010

Approved By:



Nip Ming Fung, Melvin
Supervisor

Date: August 06, 2010

INTERTEK TESTING SERVICES

1.0 Summary of Test Results (continued)

Specific Requirements for UPCS Device					
Test Items	RSS-213 Clause	FCC Part 15 Section	Test Procedure ANSI C63.17	Results	Details see section
Unwanted Emission Inside the Sub-Band	6.7.2	15.323(d)	6.1.6.1	Pass	4.6
Emissions Outside the Sub-Band	6.7.1	15.323(d)	6.1.6.2	Pass	4.7
Upper Monitoring Threshold	4.3.4(c5&c9)	15.323(c5.1&c9)	7.3.2	Pass	4.12.1
Monitoring Antenna	4.3.4(b8)	15.323(c)(8)	4	Pass	4.13

Test Engineer:



Simple Shum
Engineer

Date: August 06, 2010

Approved By:



Nip Ming Fung, Melvin
Supervisor

Date: August 06, 2010

INTERTEK TESTING SERVICES

**EXHIBIT 2
GENERAL DESCRIPTION**

INTERTEK TESTING SERVICES

2.0 General Description

2.1 Product Description

The CS6124 is a 1.9GHz Digital Modulation Cordless Phone with Caller ID, Digital Answering Machine and with Dual antenna - Base Unit. 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 is powered by an AC adaptor 100-120VAC to 6VDC 400mA (Brand: Salcomp and Ten Pao).

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

For FCC, The Model(s): CS6124-2, CS6124-11, CS6124-21 and CS612Z-XY are the same as the Model: CS6124 in electrical designs, including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these models are model number and color for marketing purpose. Suffix "Z" indicates different packaging material, "X" indicates different number of handset, and "Y" indicates different color of enclosure.

For IC, The Model(s): CS6124-2, CS6124-11 and CS6124-21 are the same as the Model: CS6124 in electrical designs, including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these model is model number for marketing purpose.

2.2 Technical Description

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

INTERTEK TESTING SERVICES

2.3 Purpose of Change

The purpose of change is saved as 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 (2003). 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 2 (2007).

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.

INTERTEK TESTING SERVICES

**EXHIBIT 3
SYSTEM TEST CONFIGURATION**

INTERTEK TESTING SERVICES

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 handset (if any) was powered by a fully charged battery.

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.

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

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. Receiver was performed from 30 MHz to the fifth harmonic of the highest frequency or 40 GHz, whichever is lower.

For FCC, RF module for base unit of CS6124 is the same with original granted model CS6114-2. Therefore conducted emission measurement for jitter, frame repetition stability, carrier stability and listen before transmit requirements for CS6124 is skipped.

For IC, RF module for base unit of CS6124 is the same with original granted model CS6114-2. Therefore conducted emission measurement for jitter, frame repetition stability, carrier stability and listen before transmit requirements for CS6124 is skipped.

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.

INTERTEK TESTING SERVICES

3.2 Conducted Emission Test Configuration

The setup and equipment setting were made in accordance with ANSI C63.17. The antenna of EUT transmitter was replaced by a coaxial cable. The impedance matching of connection, cable loss and external RF attenuator are taken into account. The EUT was arranged to communicate via a fixed carrier frequency between its transmitter and a companion device. The transmission was configured in burst mode with pseudo-random data as typical as normal operation.

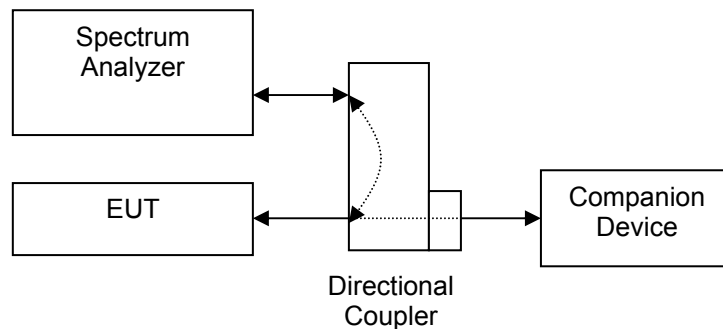


Figure 3.2.1

3.3 Conducted Monitoring and Operational Test Configuration

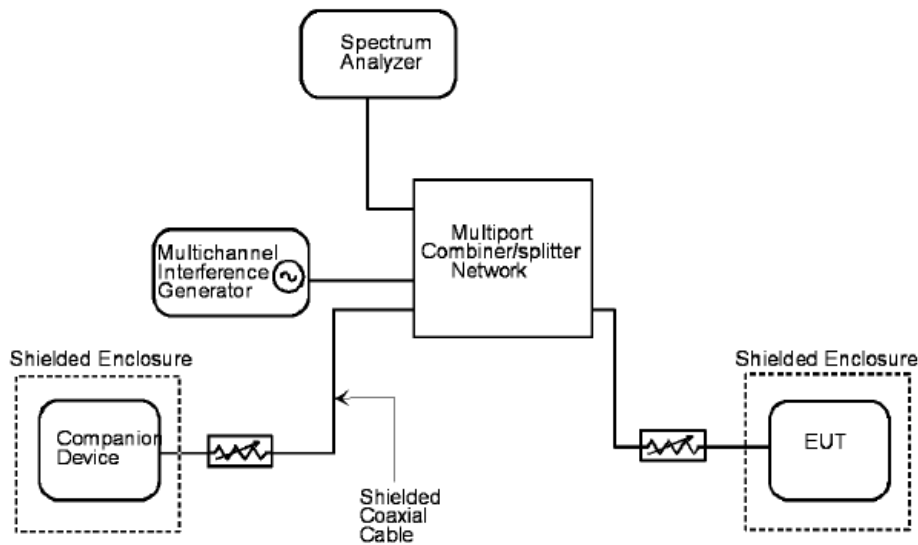


Figure 3.3.1

3.4 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.

INTERTEK TESTING SERVICES

3.5 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) Base Unit: An AC adaptor (100-120VAC to 6VDC 400mA, Model: VT0102) (Brand: Salcomp) (Supplied by Client)
- (2) Base Unit: An AC adaptor (100-120VAC to 6VDC 400mA, Model: S005IU0600040) (Brand: Ten Pao) (Supplied by Client)

Description of Accessories:

- (1) Telephone Line Simulator, Model: TLS-5D-01, S/N: 151101 (Supplied by Intertek)
- (2) 3m Telephone Line (Supplied by Intertek)
- (3) Telecommunication cable with RJ11C connectors (1m, unshielded), terminated (Supplied by Intertek)
- (4) Cordless Handset, Model: CS6114-2, FCC ID: EW780-7718-00 (Provided by Client)

3.6 Measurement Uncertainty

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

3.7 Equipment Modification

Any modifications installed previous to testing by VTech Telecommunications Ltd. will be incorporated in each production model sold/leased in the United States/Canada.

No modifications were installed by Commercial & Electrical Division, Intertek Testing Services Hong Kong Ltd.

INTERTEK TESTING SERVICES

**EXHIBIT 4
MEASUREMENT RESULTS**

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.0 **Measurement Results**

4.1 Antenna Requirement, FCC Rule 15.317 / RSS-Gen Clause 7.1.4:

EUT must meet the antenna requirement of FCC Rule 15.203 / RSS-Gen Clause 7.1.4.

- [x] EUT uses permanently attached antenna(s) which is considered sufficient to comply with the provisions of this rule. Please refer to internal photos.pdf for more details.

- [] EUT uses unique antenna jack(s) or electrical connector(s) which is considered sufficient to comply with the provisions of this rule. Please refer to internal photos.pdf for more details.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.2 Emission Bandwidth, FCC Rule 15.323(a) / Occupied Bandwidth, RSS-213 Clause 6.4:

Operation shall be contained within the 1920 – 1930 MHz band. The emission bandwidth (*B*) shall be less than 2.5 MHz and greater than 50 kHz.

Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.3. Test setup is shown in section 3.2 Figure 3.2.1.

Test Results:

la. Base unit - Traffic Carrier

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.536	26 dB down	1.49	Pass
Middle	1924.992	20 dB down	1.26	Pass
Highest	1928.448	26 dB down	1.44	Pass

Ib. Base unit - Dummy Carrier

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.536	26 dB down	1.48	Pass
Middle	1924.992	20 dB down	1.24	Pass
Highest	1928.448	26 dB down	1.44	Pass

The plots of emission bandwidth and occupied bandwidth and test frequency are saved as filename: bw.pdf

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.3 Directional Gain of the Antenna, FCC Rule FCC 15.319(e) / RSS-213 Clause 4.1(e):

The peak transmit power shall be reduced by the amount in dB that the maximum directional gain of the antenna exceeds 3 dBi.

The requirements are made in accordance with ANSI C63.17 sub-clause 4.3.1 / RSS-213 Clause 4.1(e).

Manufacturer declares that the directional gain of the antenna is less than or equal to 3dBi. No peak transmit power reduction is required.

Manufacturer declares that the directional gain of the antenna is greater than 3dBi. The peak transmit power shall be reduced by _____ dB.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.4 Peak Transmit Power, FCC Rule 15.319(c) / RSS-213 Clause 6.5:

The peak transmit power (P_{EUT}) shall not exceed $100\mu W$ multiplied by the square root of the emission bandwidth / occupied bandwidth (B) in Hz or $5 \log_{10} B - 10$ dBm. The peak transmit power shall be reduced by the amount in dB that the maximum directional gain of the antenna exceeds 3 dBi.

Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.2. Test setup is shown in section 3.2 Figure 3.2.1. The cable loss and/or external attenuation are included in OFFSET function of spectrum analyzer.

Calculation of Peak Transmit Power Limit (P_{max}):

$$\begin{aligned} [\times] \quad P_{max} &= 5 \log_{10} B - 10 \text{ dBm} && \text{when } G_A \leq 3\text{dBi} \\ [] \quad P_{max} &= 5 \log_{10} B - 10 \text{ dBm} - (G_A - 3\text{dBi}) && \text{when } G_A > 3\text{dBi} \end{aligned}$$

Where G_A = EUT Antenna Gain: 0 dBi for Base Unit
 = EUT Antenna Gain: 0 dBi for Handset

B = Measured Emission Bandwidth / Occupied Bandwidth

Test Results:

1a. Base unit - Traffic Carrier

Channel	Channel Frequency (MHz)	Measured Peak Transmit Power (dBm)	Limit (dBm)	Results
Lowest	1921.536	18.68	20.87	Pass
Middle	1924.992	18.62	20.50	Pass
Highest	1928.448	18.59	20.79	Pass

1b. Base unit - Dummy Carrier

Channel	Channel Frequency (MHz)	Measured Peak Transmit Power (dBm)	Limit (dBm)	Results
Lowest	1921.536	18.74	20.85	Pass
Middle	1924.992	18.68	20.47	Pass
Highest	1928.448	18.65	20.79	Pass

The plots of peak transmit power are saved as filename: peaktp.pdf

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.5 Power Spectral Density, FCC Rule 15.319(d) / RSS-213 Clause 6.6:

Power spectral density shall not exceed 3 mW (4.8dBm) in any 3 kHz bandwidth as measured with a spectrum analyzer having a resolution bandwidth of 3 kHz.

Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.5. Test setup is shown in section 3.2 Figure 3.2.1.

Test Results:

1a. Base unit - Traffic Carrier

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.536	-11.4	4.8	Pass
Middle	1924.992	-6.6	4.8	Pass
Highest	1928.448	-11.3	4.8	Pass

1b. Base unit - Dummy Carrier

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.536	-4.0	4.8	Pass
Middle	1924.992	-3.6	4.8	Pass
Highest	1928.448	-20.9	4.8	Pass

The plots of the power spectral density are saved as filename: psd.pdf

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.6 Unwanted Emission Inside the Sub-Band, FCC Rule 15.323(d) / RSS-213 Clause 6.7.2:

Emissions inside the sub-band must comply with the following emission mask:

1. In the bands between $1B$ and $2B$ measured from the center of the emission bandwidth, emission shall be at least 30 dB below the permitted peak transmit power.
2. In the bands between $2B$ and $3B$ measured from the center of the emission bandwidth, emission shall be at least 50 dB below the permitted peak transmit power.
3. In the bands between $3B$ and the band edge, emission shall be at least 60 dB below the permitted peak transmit power.

Where B = emission bandwidth or occupied bandwidth in Hz

Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.6.1. Test setup is shown in section 3.2 Figure 3.2.1.

Test Results:

la. Base unit - Traffic Carrier

Channel	Channel Frequency (MHz)	Results
Lowest	1921.536	Pass
Middle	1924.992	Pass
Highest	1928.448	Pass

lb. Base unit - Dummy Carrier

Channel	Channel Frequency (MHz)	Results
Lowest	1921.536	Pass
Middle	1924.992	Pass
Highest	1928.448	Pass

The plots of the unwanted emission inside the sub-band are saved as filename: inband.pdf

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
 Model: CS6124

Date of Test: July 22-29, 2010

4.7 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 2.6.

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. As EUT has non-detachable antenna(s), radiated emissions test method is used for out-of-band emissions tests. 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 / FCC Rule 15.209 / RSS-210 Clause 2.6	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 / FCC Rule 15.209 / RSS-210 Clause 2.6	Pass

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124
Mode: Transmission

Date of Test: July 22-29, 2010

4.7.1 Radiated Emissions Configuration Photographs:

Worst Case Radiated Emission
at

Base Unit: 3843.072 and 5785.344MHz

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

4.7.2 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 4.9 dB margin

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.

Date of Test: July 22-29, 2010

Model: CS6124

Mode: Transmission with Adaptor "Salcomp"

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	1919.026	-40.7	-9.5	-31.2
V	1918.384	-47.1	-29.5	-17.6
V	1917.102	-51.8	-39.5	-12.3
V	3843.072	-45.0	-39.5	-5.5
H	5764.608	-44.9	-39.5	-5.4
H	7686.144	-45.6	-39.5	-6.1
H	9607.680	-45.8	-39.5	-6.3
H	11529.216	-46.9	-39.5	-7.4

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.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.

Date of Test: July 22-29, 2010

Model: CS6124

Mode: Transmission with Adaptor "Salcomp"

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	1930.014	-40.6	-9.5	-31.1
V	1931.264	-46.9	-29.5	-17.4
V	1933.086	-52.0	-39.5	-12.5
V	3856.896	-44.8	-39.5	-5.3
H	5785.344	-45.0	-39.5	-5.5
H	7713.792	-45.7	-39.5	-6.2
H	9642.240	-46.0	-39.5	-6.5
H	11570.688	-46.6	-39.5	-7.1

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.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.

Date of Test: July 22-29, 2010

Model: CS6124

Mode: Talk with Adaptor "Salcomp"

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	34.575	-63.5	-39.5	-24.0
V	69.150	-62.8	-39.5	-23.3
H	103.725	-63.2	-39.5	-23.7
H	138.300	-64.0	-39.5	-24.5
H	172.875	-64.2	-39.5	-24.7
H	207.450	-64.8	-39.5	-25.3

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.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.

Date of Test: July 22-29, 2010

Model: CS6124

Mode: Transmission with Adaptor "Ten Pao"

Table 4, 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	1919.026	-40.4	-9.5	-30.9
V	1918.384	-47.0	-29.5	-17.5
V	1917.102	-52.0	-39.5	-12.5
V	3843.072	-44.4	-39.5	-4.9
H	5764.608	-44.8	-39.5	-5.3
H	7686.144	-45.8	-39.5	-6.3
H	9607.680	-46.0	-39.5	-6.5
H	11529.216	-46.8	-39.5	-7.3

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.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.

Date of Test: July 22-29, 2010

Model: CS6124

Mode: Transmission with Adaptor "Ten Pao"

Table 5, 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	1930.014	-40.6	-9.5	-31.1
V	1931.264	-46.7	-29.5	-17.2
V	1933.086	-51.7	-39.5	-12.2
V	3856.896	-44.6	-39.5	-5.1
H	5785.344	-44.4	-39.5	-4.9
H	7713.792	-45.6	-39.5	-6.1
H	9642.240	-46.0	-39.5	-6.5
H	11570.688	-46.7	-39.5	-7.2

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.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.

Date of Test: July 22-29, 2010

Model: CS6124

Mode: Talk with Adaptor "Ten Pao"

Table 6, 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	34.575	-63.5	-39.5	-24.0
V	69.150	-63.3	-39.5	-23.8
H	103.725	-63.1	-39.5	-23.6
H	138.300	-63.8	-39.5	-24.3
H	172.875	-65.0	-39.5	-25.5
H	207.450	-65.2	-39.5	-25.7

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.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.7.3 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

$$FS = 62.0 + 7.4 + 1.6 - 29.0 + 0.0 + (-10.0) = 32.0 \text{ dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32.0 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.7.4 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 filename: txon.pdf

- Please refer to the attached transmitter timing diagram that are provided by manufacturer
- Not applicable - No average factor is required.
- Please refer to Technical Description (descri.pdf) for more details

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.8 Radiated Emissions from Receiver, RSS-213 Clause 6.8

The receiver portion is subject to the requirements of RSS-Gen Clause 7.2.3.2 and the radiated emission shall not exceed the limits of Table 1 in RSS-Gen Clause 6 (a).

Measurements are made in accordance with ANSI C63.4 sub-clause 8. Radiated emissions shall be measured with EUT operating in typical operation modes.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124
Mode: Receiving

Date of Test: July 22-29, 2010

4.8.1 Radiated Emission Configuration Photographs:

Worst Case Radiated Emission
at

Base Unit: 2888.784 MHz

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

4.8.2 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 7-8 list the significant emission frequencies, the limit and the margin of compliance.

Judgement:

Base Unit: Passed by 13.1 dB margin

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124
Mode: Receiving with Adaptor "Salcomp"

Date of Test: July 22-29, 2010

Table 7, Base Unit

Radiated Emissions Data Pursuant To RSS-213 Clause 6.8 Emissions Requirements

Middle Channel

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	2888.784	43.5	33	30.4	40.9	54.0	-13.1
V	5777.748	37.0	33	36.6	40.6	54.0	-13.4
H	8666.622	33.8	33	39.5	40.3	54.0	-13.7
H	11555.496	32.1	33	40.5	39.6	54.0	-14.4
H	14444.370	30.7	33	41.7	39.4	54.0	-14.6

NOTES:

1. Peak detector is used for the emission measurement.
2. The resolution bandwidth of the spectrum analyzer shall be 100kHz for spurious emission measurements below 1.0GHz and 1.0MHz for measurements above 1.0GHz.
3. All measurements were made at 3 meters.
4. Negative value in the margin column shows emission below limit.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.

Date of Test: July 22-29, 2010

Model: CS6124

Mode: Receiving with Adaptor "Ten Pao"

Table 8, Base Unit

Radiated Emissions Data Pursuant To RSS-213 Clause 6.8 Emissions Requirements

Middle Channel

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	2888.784	43.4	33	30.4	40.8	54.0	-13.2
V	5777.568	37.0	33	36.6	40.6	54.0	-13.4
H	8666.352	33.7	33	39.5	40.2	54.0	-13.8
H	11555.136	32.0	33	40.5	39.5	54.0	-14.5
H	14443.920	30.2	33	41.7	38.9	54.0	-15.1

NOTES:

1. Peak detector is used for the emission measurement.
2. The resolution bandwidth of the spectrum analyzer shall be 100kHz for spurious emission measurements below 1.0GHz and 1.0MHz for measurements above 1.0GHz.
3. All measurements were made at 3 meters.
4. Negative value in the margin column shows emission below limit.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.9 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 2 in RSS-Gen Clause 7.2.2.

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.

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.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124
Mode: Talk

Date of Test: July 22-29, 2010

4.9.1 AC Power Line Conducted Emissions Configuration Photographs:

Worst Case AC Power Line Conducted Emission
at

Base Unit: 1.31100 MHz

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

4.9.2 AC Power Line Conducted Emissions Data:

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

Judgment:

Base unit: Passed by 12.8 dB margin compared with quasi-peak limit

The worst case AC power line conducted emission data are saved as filename: conduct.pdf

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.10 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.

- [] 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 as SAR Report.pdf.
- [×] 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 as filename: RF exposure info.pdf.

4.11 Radio Frequency Exposure Compliance, RSS-102:

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

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
 Model: CS6124

Date of Test: July 22-29, 2010

4.12 Monitoring Threshold:

Monitoring threshold can be relaxed according to FCC Rule 15.323(c)(9) / RSS-213 Clause 4.3.4(b)(9). EUT that has a power output lower than the maximum permitted under FCC Rule 15.319(c) / RSS-213 Clause 6.5 may increase their monitoring detection threshold by one decibel for each one decibel that the transmitter power is below the maximum permitted.

Calculation of Monitoring Threshold Limit:

$$\begin{aligned} \text{Monitoring Threshold } (T) &\leq -174 + 10 \log_{10} B + M + P_{\max} - P_{\text{EUT}} \text{ dBm} \\ &\leq 15 \log_{10} B - 184 + M - P_{\text{EUT}} \text{ dBm} \end{aligned}$$

Where B = Measured Emission Bandwidth or Occupied Bandwidth of base unit - FCC: 1.44×10^6 Hz IC: 1.24×10^6 Hz
 M = 30 dB for Lower Monitoring Threshold (T_L), or
 = 50 dB for Upper Monitoring Threshold (T_U)
 P_{\max} = $5 \log_{10} B - 10$ dBm
 P_{EUT} = Measured Peak Transmit Power of base unit - FCC: 18.65dBm
 IC: 18.68dBm

Calculated Monitoring Threshold Limits:

I. Base unit

	FCC	IC
Lower Monitoring Threshold ($T_L + U_M$) in dBm	-74.3	-75.3
Upper Monitoring Threshold ($T_U + U_M$) in dBm	-54.3	-55.3

NA - Not applicable

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.12.1 Upper Monitoring Threshold, FCC Rule 15.323(c)(5) / RSS-213 Clause 4.3.4(b)(5):

Measurements are made in accordance with ANSI C63.17 sub-clause 7.3.2. Test setup is shown in section 3.3 Figure 3.3.1. The test is performed on the carrier closest to center of the band. RF signal generators apply uniform CW interference on all EUT carriers each at level $T_U + U_M + 10$ dB. Then, the interference level is reduced uniformly on all carriers until the EUT can transmit. The interference level shall be lower than or equal to the threshold limit.

Test Results:

I. Base unit

Measured Maximum Interference Level (dBm)	Upper Monitoring Threshold Limit (dBm) ($T_U + U_M$)		Results
	FCC	IC	
-57.7	-54.3	-55.3	Pass

NA - Not applicable

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: CS6124

Date of Test: July 22-29, 2010

4.13 Monitoring Antenna, FCC Rule 15.323(c)(8) / RSS-213 Clause 4.3.4(b)(8):

The monitoring system shall use the same antenna used for transmission, or an antenna that yields equivalent reception at that location.

- EUT uses the same antenna used for transmission and monitoring that is in compliance meet above provision.
- EUT uses difference antenna used for transmission and monitoring. It must be verified that the monitoring antenna provides coverage equivalent to that of the transmitting antenna. Measurements are made in accordance with ANSI C63.17 sub-clause 4.

INTERTEK TESTING SERVICES

5.0 Equipment List

1) Radiated Emissions Test

Equipment	Biconical Antenna	Log Periodic Antenna	Broad-Band Horn Antenna
Registration No.	EW-0954	EW-0446	EW-1679
Manufacturer	EMCO	EMCO	SCHWARZBECK
Model No.	3104C	3146	BBHA9170
Calibration Date	Apr. 14, 2010	Apr. 26, 2010	Feb. 17, 2010
Calibration Due Date	Apr. 14, 2011	Oct. 26, 2011	Feb. 17, 2011

Equipment	EMI Test Receiver	Double Ridged Guide Antenna	Spectrum Analyzer
Registration No.	EW-2251	EW-1015	EW-2188
Manufacturer	R&S	EMCO	AGILENTTECH
Model No.	ESCI	3115	E4407B
Calibration Date	Oct. 22, 2009	Feb. 09, 2010	Dec. 25, 2009
Calibration Due Date	Oct. 22, 2010	Aug. 09, 2011	Dec. 31, 2010

2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN	Pulse Limiter
Registration No.	EW-0015	EW-0090	EW-0700
Manufacturer	R&S	R&S	R&S
Model No.	ESHS30	ESH3-Z5	ESH3-Z2
Calibration Date	Aug. 14, 2009	Feb. 05, 2010	Jun. 08, 2009
Calibration Due Date	Aug. 14, 2010	Feb. 05, 2011	Dec. 08, 2010

3) Conductive Measurement Test

Equipment	Coaxial Directional Coupler	Spectrum Analyzer	Vector Signal Generator
Registration No.	EW-2337	EW-2466	EW-2320
Manufacturer	MAGNA	R&S	R&S
Model No.	4222-16	FSP30	SMU200A
Calibration Date	Nil*	Nov. 11, 2009	Oct. 21, 2009
Calibration Due Date	Nil*	Nov. 11, 2010	Oct. 21, 2010

Equipment	Digital Radiocommunication Tester for DECT	Digital Multimeter
Registration No.	EW-2250	EW-1017
Manufacturer	R&S	FLUKE
Model No.	CMD60	87-IV
Calibration Date	Jun. 28, 2010	Jun. 07, 2010
Calibration Due Date	Jun. 28, 2011	Jul. 06, 2011