VTech Telecommunications Ltd.

Application
For
Permissive Change Class II

Unlicensed Personal Communication Service Devices

FCC ID: EW780-6270-00

Test Report Number: HK08060905-1

Issue Date: July 18, 2008

TL/ ac

- The test report only allows to be revised within three years from its original issued date unless further standard or the requirement was noticed.
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LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

VTech Telecommunications Ltd. - Model: DS6111, DS6111-x, DS6121, DS6121-x, DS6122, DS6122-x

FCC ID: EW780-6270-00

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

Equipment Type : PUB - Part 15 Unlicensed PCS Base Station
PUE - Part 15 Unlicensed PCS portable Tx held to ear

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No X

If yes, defer until :

_____
Date

Company Name agrees to notify the Commission by: _____
Date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No X

If no, assumed Part 15, Subpart D for Unlicensed Personal Communication Service Device - the new 47 CFR [09-20-07 Edition] Provision.

Report prepared by: Leung Wai Leung, Tommy

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Operational Description	Technical Description	descri.pdf
Cover Letter	Purpose of Change	product change.pdf
Test Report	Emission Bandwidth and Test Frequency Plots	26bw.pdf
Test Report	Peak Transmit Power Plots	peaktp.pdf
Test Report	Power Spectral Density Plots	psd.pdf
Test Report	Unwanted Emission Inside Sub-Band Plots	inband.pdf
Test Report	Duty-Cycle Calculation & Measurement	dcc.pdf
Test Report	AC Lines Conducted Emission Data	conduct.pdf
Test Setup Photo	Radiated Emission Test Configuration	config photos. pdf
Test Setup Photo	AC Lines Conducted Emission Test Configuration	
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EXHIBIT 1
SUMMARY OF TEST RESULTS

1.0 **Summary of Test Results**

VTech Telecommunications Ltd. - Model: DS6111, DS6111-x, DS6121, DS6121-x, DS6122, DS6122-x

FCC ID: EW780-6270-00

Technical Requirements				
Test Items	**FCC Part 15 Section**	**Test Procedure ANSI C63.17 / ANSI C63.4 ***	**Results**	**Details see section**
Emission Bandwidth	15.323(a)	6.1.3	Pass	4.1
Peak Transmit Power	15.319(c)	6.1.2	Pass	4.2
Power Spectral Density	15.319(d)	6.1.5	Pass	4.3
Unwanted Emission Inside the Sub-Band	15.323(d)	6.1.6.1	Pass	4.4
Emissions Outside the Sub-Band	15.323(d)	6.1.6.2	Pass	4.5
AC Power Lines Conducted Emissions from Transmitter Portion of EUT	15.315	7 *	Pass	4.6
Radio Frequency Radiation Exposure	15.319(i)	---	Pass	4.7
Frame Period and Jitter	15.323(e)	6.2.3	Pass	4.8
Upper Monitoring Threshold	15.323(c)(5)	7.3.2	Pass	4.9.1

Test Engineer:

Ken Sit
Supervisor

Date: July 18, 2008

Approved By:

Leung Wai Leung, Tommy
Senior Manager

Date: July 18, 2008

EXHIBIT 2
GENERAL DESCRIPTION

2.0 **General Description**

2.1 Product Description

The DS6111 is 1.9GHz Digital Modulation Cordless Phone with Caller ID and Speakerphone, while DS6121 is 1.9GHz Digital Modulation Cordless Phone with Caller ID, Speakerphone and Digital Answering machine. They 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 DS6111 is powered by an AC adaptor 117VAC to 6VDC 300mA, and DS6121 is powered by an AC adaptor 117VAC to 6VDC 400mA. The Handset is powered by a "Ni-MH" type rechargeable battery pack (2.4V 500mAh, 550mAh, 600mAh).

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

The Model: DS6111-x and DS6121-x are the one of the Model: DS6111 and DS6121 respectively. The Model: DS6122 and DS6122-x are the same as the Model: DS6121 in hardware aspect. Suffix "x" represents number of handsets and chargers packed in the package. The difference in model number serves as the marketing strategy.

The Handsets are identical among models as follows electrical designs, including software & firmware, PCB layout and construction design/ physical design/ enclosure.

Connection between the base unit and the telephone network is accomplished through the use of USOC RJ11C in the 2-wire loop calling central office line.

The technical description is saved as filename: descri.pdf

2.2 Purpose of Application

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

For the Model: DS6111 and DS6121, the RF module and algorithm are the same as the previous granted Model: DS6121. The RF and PCB layout are changed.

This is an application for Certification of a PUB - Part 15 Unlicensed PCS Base Station, PUE - Part 15 Unlicensed PCS portable Tx held to ear. The device is also subject to Part 68 Registration. A Verification report has been prepared for the digital device portion.

2.3 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, conducted emission measurements, Listen Before Transmit (LBT) test and Time Frame test, 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.

2.4 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.

EXHIBIT 3
SYSTEM TEST CONFIGURATION

3.0 **System Test Configuration**

3.1 Justification

For emissions testing, the equipment under test (EUT) was setup 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 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. Detector function was in peak mode. 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.

The spectrum analyzer resolution bandwidth was approximately 1% of the EUT emission bandwidth, unless otherwise specified.

Radiated emission measurements 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.

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.

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 impendence matching of connection, cable loss and external RF attenuator were 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.

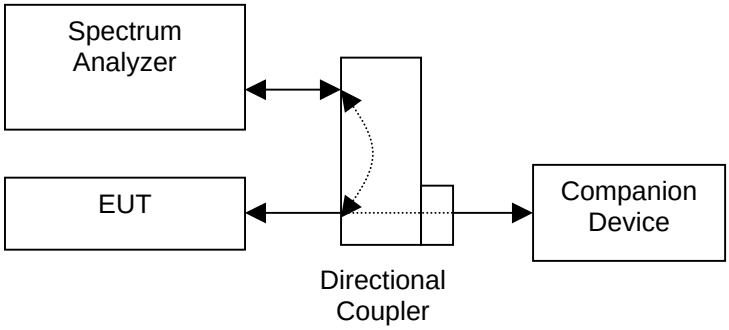

Figure 3.2.1

3.3 Conducted Monitoring and Operational Test Configuration

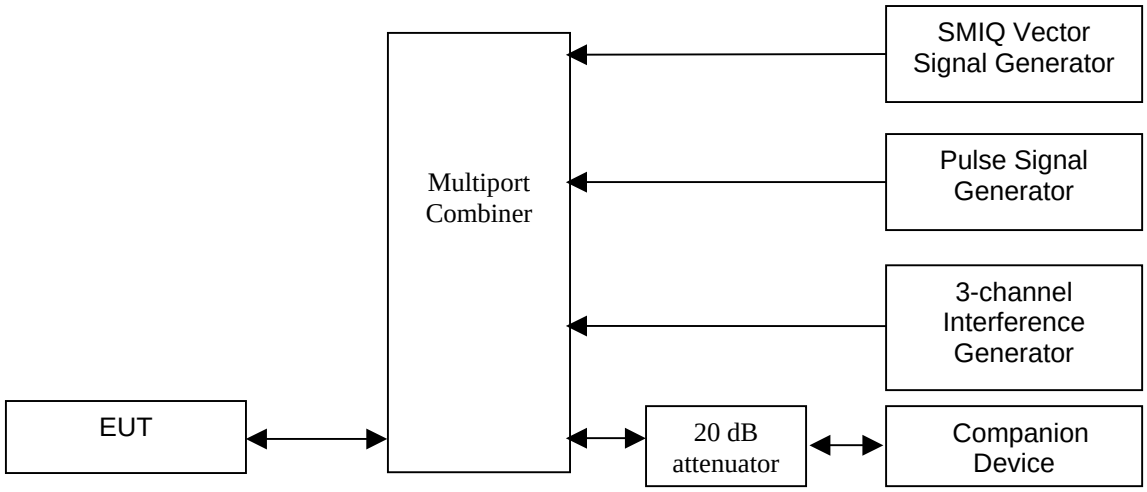

Figure 3.3.1

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.

3.5 Details of EUT and Description of Peripherals

Details of EUT:

An AC adaptor and/or a battery (provided with the unit) were used to power the device. Their description are listed below.

(1) Base Unit - Model: DS6111: An AC adaptor (117VAC to 6VDC 300mA, Model: U060030D12) (Supplied by Client)
(2) Base Unit - Model: DS6121: An AC adaptor (117VAC to 6VDC 400mA, Model: U060040D) (Supplied by Client)
(3) Handset: A “Ni-MH” Type Rechargeable Battery Pack (2.4V 500mAh, 550mAh, 600mAh) (Supplied by Client)

Description of Peripherals:

(1) Telecommunication cable with RJ11C connectors (1m, unshielded), terminated (Supplied by Intertek)

3.6 Measurement Uncertainty

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

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

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.

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

All the items listed under section 3.0 of this report are confirmed by:

Confirmed by:

Leung Wai Leung, Tommy
Senior Manager
Intertek Testing Services Hong Kong Ltd.
Agent for VTech Telecommunications Ltd.

Signature

July 18, 2008 Date

EXHIBIT 4
MEASUREMENT RESULTS

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.0 **Measurement Results**

4.1 Emission Bandwidth, FCC Rule 15.323(a):

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:

I. Traffic Carrier - Base Unit - Model: DS6111

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.536	26 dB down	1.51	Pass
Highest	1928.448	26 dB down	1.51	Pass

II. Dummy Carrier - Base Unit - Model: DS6111

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.536	26 dB down	1.46	Pass
Highest	1928.448	26 dB down	1.44	Pass

III. Traffic Carrier - Base Unit - Model: DS6121

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.536	26 dB down	1.54	Pass
Highest	1928.448	26 dB down	1.49	Pass

IV. Dummy Carrier - Base Unit - Model: DS6121

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.536	26 dB down	1.45	Pass
Highest	1928.448	26 dB down	1.41	Pass

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

V. Traffic Carrier - Handset

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.536	26 dB down	1.49	Pass
Highest	1928.448	26 dB down	1.47	Pass

Please refer to the attached plots for more details:

Base Unit - Model: DS6111
Plot B1A1: Lowest Channel 26dB Emission Bandwidth (Traffic Carrier)
Plot B1D1: Highest Channel 26dB Emission Bandwidth (Traffic Carrier)
Plot B1G1: Lowest Channel 26dB Emission Bandwidth (Dummy Carrier)
Plot B1J1: Highest Channel 26dB Emission Bandwidth (Dummy Carrier)

Base Unit - Model: DS6121
Plot B1A2: Lowest Channel 26dB Emission Bandwidth (Traffic Carrier)
Plot B1D2: Highest Channel 26dB Emission Bandwidth (Traffic Carrier)
Plot B1G2: Lowest Channel 26dB Emission Bandwidth (Dummy Carrier)
Plot B1J2: Highest Channel 26dB Emission Bandwidth (Dummy Carrier)

Handset
Plot H1A: Lowest Channel 26dB Emission Bandwidth (Traffic Carrier)
Plot H1D: Highest Channel 26dB Emission Bandwidth (Traffic Carrier)

The plots of emission bandwidth and test frequency are saved as filename: 26bw.pdf

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.2 Peak Transmit Power, FCC Rule 15.319(c):

The peak transmit power (P_{EUT}) shall not exceed 100μW multiplied by the square root of the emission 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}):

[×] $P_{max} = 5 \log_{10} B - 10$ dBm when $G_A \leq 3$dBi

[ ] $P_{max} = 5 \log_{10} B - 10$ dBm – (G_A – 3dBi) when $G_A > 3$dBi

Where G_A = EUT Antenna Gain: 0 dBi for Base Unit for Model: DS6111
0 dBi for Base Unit for Model: DS6121
0 dBi for Handset

Test Results:

I. Traffic Carrier - Base Unit - Model: DS6111

Channel	Channel Frequency (MHz)	Measured Peak Transmit Power (dBm)	Limit (dBm)	Results
Lowest	1921.536	20.14	20.89	Pass
Highest	1928.448	20.14	20.89	Pass

II. Dummy Carrier - Base Unit - Model: DS6111

Channel	Channel Frequency (MHz)	Measured Peak Transmit Power (dBm)	Limit (dBm)	Results
Lowest	1921.536	20.14	20.82	Pass
Highest	1928.448	20.20	20.79	Pass

4.2 Peak Transmit Power, FCC Rule 15.319(c): - Continued

III. Traffic Carrier - Base Unit - Model: DS6121

Channel	Channel Frequency (MHz)	Measured Peak Transmit Power (dBm)	Limit (dBm)	Results
Lowest	1921.536	19.99	20.94	Pass
Highest	1928.448	19.93	20.87	Pass

IV. Dummy Carrier - Base Unit - Model: DS6121

Channel	Channel Frequency (MHz)	Measured Peak Transmit Power (dBm)	Limit (dBm)	Results
Lowest	1921.536	20.02	20.81	Pass
Highest	1928.448	19.96	20.75	Pass

V. Traffic Carrier - Handset

Channel	Channel Frequency (MHz)	Measured Peak Transmit Power (dBm)	Limit (dBm)	Results
Lowest	1921.536	20.57	20.87	Pass
Highest	1928.448	20.48	20.84	Pass

Please refer to the attached plots for more details:

Base Unit - Model: DS6111
Plot B2A1: Lowest Channel Peak Transmit Power (Traffic Carrier)
Plot B2B1: Highest Channel Peak Transmit Power (Traffic Carrier)
Plot B2C1: Lowest Channel Peak Transmit Power (Dummy Carrier)
Plot B2D1: Highest Channel Peak Transmit Power (Dummy Carrier)

Base Unit - Model: DS6121
Plot B2A2: Lowest Channel Peak Transmit Power (Traffic Carrier)
Plot B2B2: Highest Channel Peak Transmit Power (Traffic Carrier)
Plot B2C2: Lowest Channel Peak Transmit Power (Dummy Carrier)
Plot B2D2: Highest Channel Peak Transmit Power (Dummy Carrier)

Handset
Plot H2A: Lowest Channel Peak Transmit Power (Traffic Carrier)
Plot H2B: Highest Channel Peak Transmit Power (Traffic Carrier)

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

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.3 Power Spectral Density, FCC Rule 15.319(d):

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:

I. Traffic Carrier - Base Unit - Model: DS6111

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.536	-9.4	4.8	Pass
Highest	1928.448	-12.9	4.8	Pass

II. Dummy Carrier - Base Unit - Model: DS6111

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.536	-10.6	4.8	Pass
Highest	1928.448	-16.0	4.8	Pass

III. Traffic Carrier - Base Unit - Model: DS6121

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.536	-9.5	4.8	Pass
Highest	1928.448	-11.8	4.8	Pass

IV. Dummy Carrier - Base Unit - Model: DS6121

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.536	-18.4	4.8	Pass
Highest	1928.448	-10.0	4.8	Pass

4.3 Power Spectral Density, FCC Rule 15.319(d): - Continued

V. Traffic Carrier - Handset

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.536	-6.8	4.8	Pass
Highest	1928.448	-12.2	4.8	Pass

Please refer to the attached plots for more details:

Base Unit - Model: DS6111
Plot B3A1: Lowest Channel Power Spectral Density (Traffic Carrier)
Plot B3B1: Highest Channel Power Spectral Density (Traffic Carrier)
Plot B3C1: Lowest Channel Power Spectral Density (Dummy Carrier)
Plot B3D1: Highest Channel Power Spectral Density (Dummy Carrier)

Base Unit - Model: DS6121
Plot B3A2: Lowest Channel Power Spectral Density (Traffic Carrier)
Plot B3B2: Highest Channel Power Spectral Density (Traffic Carrier)
Plot B3C2: Lowest Channel Power Spectral Density (Dummy Carrier)
Plot B3D2: Highest Channel Power Spectral Density (Dummy Carrier)

Handset
Plot H3A: Lowest Channel Power Spectral Density (Traffic Carrier)
Plot H3B: Highest Channel Power Spectral Density (Traffic Carrier)

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

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.4 Unwanted Emission Inside the Sub-Band, FCC Rule 15.323(d):

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

1. In the bands between 1*B* and 2*B* measured from the center of the emission bandwidth, emission shall be at least 30 dB below the permitted peak transmit power; i.e.-9.5 dBm

2. In the bands between 2*B* and 3*B* measured from the center of the emission bandwidth, emission shall be at least 50 dB below the permitted peak transmit power; i.e. -29.5 dBm

3. In the bands between 3*B* and the band edge, emission shall be at least 60 dB below the permitted peak transmit power. i.e. -39.5 dBm

Where *B* = emission 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:

I. Traffic Carrier - Base Unit

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

II. Dummy Carrier - Base Unit

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

III. Traffic Carrier - Handset

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

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.4 Unwanted Emission Inside the Sub-Band, FCC Rule 15.323(d): - Continued

Please refer to the attached plots for more details:

Base Unit - Model: DS6111
Plot B4A1: Lowest Channel Unwanted Emission Inside the Sub-Band (Traffic Carrier)
Plot B4B1: Highest Channel Unwanted Emission Inside the Sub-Band (Traffic Carrier)
Plot B4C1: Lowest Channel Unwanted Emission Inside the Sub-Band (Dummy Carrier)
Plot B4D1: Highest Channel Unwanted Emission Inside the Sub-Band (Dummy Carrier)

Base Unit - Model: DS6121
Plot B4A2: Lowest Channel Unwanted Emission Inside the Sub-Band (Traffic Carrier)
Plot B4B2: Highest Channel Unwanted Emission Inside the Sub-Band (Traffic Carrier)
Plot B4C2: Lowest Channel Unwanted Emission Inside the Sub-Band (Dummy Carrier)
Plot B4D2: Highest Channel Unwanted Emission Inside the Sub-Band (Dummy Carrier)

Handset
Plot H4A: Lowest Channel Unwanted Emission Inside the Sub-Band (Traffic Carrier)
Plot H4B: Highest Channel Unwanted Emission Inside the Sub-Band (Traffic Carrier)

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

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.5 Emissions Outside the Sub-Band, FCC Rule 15.323(d):

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 not exceed the limits of FCC Rule 15.209.

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 setup and procedures are described in section 3.2 Figure 3.2.1.

Test Results:

Base Unit & Handset:

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	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	Pass

Please refer to the section 4.5.1 to 4.5.4 for more details.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121
Mode: Transmission

4.5.1 Radiated Emissions Configuration Photographs:

Worst Case Radiated Emission
at

Base Unit - Model: DS6111: 3843.072 MHz

Base Unit - Model: DS6121: 3856.896 MHz

Handset: 3856.896 MHz

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

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121
Mode: Transmission

4.5.2 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 tables 1-11 list the significant emission frequencies, the limit and the margin of compliance.

Judgement -

Base Unit - Model: DS6111: Passed by 4.9 dB margin

Base Unit - Model: DS6121: Passed by 2.9 dB margin

Handset: Passed by 7.6 dB margin compare with the peak limit

TEST ENGINEER:

Signature

Ken Sit, Supervisor
Typed/Printed Name

July 18, 2008
Date

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111
Mode: Transmission

Table 1, Base Unit

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) Emissions Requirements

Lowest Channel:

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
H	1919.852	-46.7	-9.5	-37.2
H	1917.895	-51.1	-29.5	-21.6
H	1917.101	-54.4	-39.5	-14.9
V	3843.072	-44.4	-39.5	-4.9
V	5764.608	-47.0	-39.5	-7.5
V	7686.144	-47.1	-39.5	-7.6
V	9607.680	-48.0	-39.5	-8.5

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.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111
Mode: Transmission

Table 2, Base Unit

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) Emissions Requirements

Highest Channel:

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
H	1930.013	-46.6	-9.5	-37.1
H	1931.686	-51.0	-29.5	-21.5
H	1933.476	-54.3	-39.5	-14.8
V	3856.896	-44.6	-39.5	-5.1
V	5785.344	-46.6	-39.5	-7.1
V	7713.792	-47.0	-39.5	-7.5
V	9642.240	-47.6	-39.5	-8.1

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.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111
Mode: Talk

Table 3, Base Unit

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) Emissions Requirements

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	55.300	-65.6	-39.5	-26.1
V	82.950	-63.8	-39.5	-24.3
V	110.600	-62.6	-39.5	-23.1
H	138.250	-61.3	-39.5	-21.8
H	165.900	-62.3	-39.5	-22.8
H	193.550	-62.6	-39.5	-23.1
H	248.850	-63.2	-39.5	-23.7

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.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6121
Mode: Transmission

Table 4, Base Unit

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) Emissions Requirements

Lowest Channel:

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
H	1919.852	-46.7	-9.5	-37.2
H	1917.895	-51.8	-29.5	-22.3
H	1917.102	-54.3	-39.5	-14.8
V	3843.072	-43.4	-39.5	-3.9
V	5764.608	-45.8	-39.5	-6.3
V	7686.144	-44.6	-39.5	-5.1
V	9607.680	-48.0	-39.5	-8.5

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.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6121
Mode: Transmission

Table 5, Base Unit

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) Emissions Requirements

Highest Channel:

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
H	1930.014	-46.6	-9.5	-37.1
H	1931.686	-52.0	-29.5	-22.5
H	1933.475	-54.4	-39.5	-14.9
V	3856.896	-42.4	-39.5	-2.9
V	5785.344	-46.0	-39.5	-6.5
V	7713.792	-44.6	-39.5	-5.1
V	9642.240	-48.0	-39.5	-8.5

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.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6121
Mode: Talk

Table 6, Base Unit

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) Emissions Requirements

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	65.304	-61.8	-39.5	-22.3
V	82.920	-61.6	-39.5	-22.1
V	110.600	-61.0	-39.5	-21.5
H	138.260	-61.2	-39.5	-21.7
H	165.912	-61.4	-39.5	-21.9
H	193.564	-62.8	-39.5	-23.3
H	248.868	-63.2	-39.5	-23.7

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.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6121
Mode: Transmission

Table 7, Handset

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) Emissions Requirements

Lowest Channel:

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	1919.854	-48.3	-9.5	-38.8
V	1918.026	-50.9	-29.5	-21.4
V	1917.101	-54.4	-39.5	-14.9

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.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6121
Mode: Transmission

Table 8, Handset

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.209 Emissions Requirements

Lowest Channel:

Polari-zation	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	3843.072	66.0	33	33.3	66.3	28.2	38.1	54.0	-15.9
H	5764.608	60.9	33	36.6	64.5	28.2	36.3	54.0	-17.7
H	7686.144	47.7	33	38.9	53.6	28.2	25.4	54.0	-28.6
H	9607.680	42.6	33	40.4	50.0	28.2	21.8	54.0	-32.2

Polari-zation	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
H	3843.072	66.0	33	33.3	66.3	74.0	-7.7
H	5764.608	60.9	33	36.6	64.5	74.0	-9.5
H	7686.144	47.7	33	38.9	53.6	74.0	-20.4
H	9607.680	42.6	33	40.4	50.0	74.0	-24.0

NOTES:

1. Peak detector is used for the emission measurement over 1000 MHz.

2. All measurements were made at 3 meters.

3. Negative value in the margin column shows emission below limit.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6121
Mode: Transmission

Table 9, Handset

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) Emissions Requirements

Highest Channel:

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	1930.013	-48.4	-9.5	-38.9
V	1931.686	-51.0	-29.5	-21.5
V	1933.473	-54.6	-39.5	-15.1

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.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6121
Mode: Transmission

Table 10, Handset

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.209 Emissions Requirements

Highest Channel:

Polari-zation	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	3856.896	66.1	33	33.3	66.4	28.2	38.2	54.0	-15.8
H	5785.344	60.6	33	36.6	64.2	28.2	36.0	54.0	-18.0
H	7713.792	49.5	33	38.9	55.4	28.2	27.2	54.0	-26.8
H	9642.240	43.2	33	40.4	50.6	28.2	22.4	54.0	-31.6

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)
H	3856.896	66.1	33	33.3	66.4	74.0	-7.6
H	5785.344	60.6	33	36.6	64.2	74.0	-9.8
H	7713.792	49.5	33	38.9	55.4	74.0	-18.6
H	9642.240	43.2	33	40.4	50.6	74.0	-23.4

NOTES:

1. Peak detector is used for the emission measurement over 1000 MHz.

2. All measurements were made at 3 meters.

3. Negative value in the margin column shows emission below limit.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6121
Mode: Talk

Table 11, Handset

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.323 (d) Emissions Requirements

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	55.300	-61.6	-39.5	-22.1
V	82.950	-61.3	-39.5	-21.8
V	110.600	-61.1	-39.5	-21.6
V	138.250	-62.0	-39.5	-22.5
H	165.900	-62.3	-39.5	-22.8
H	193.550	-62.6	-39.5	-23.1
H	276.500	-64.3	-39.5	-24.8

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.

4.5.3 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 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 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 dBμV 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 dBμV/m. This value in dBμV/m is converted to its corresponding level in μV/m.

RA = 62.0 dBμV
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 dBμV/m

Level in mV/m = Common Antilogarithm [(32.0 dBμV/m)/20] = 39.8 μV/m

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6121

4.5.4 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

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 SWEP function on the analyzer was set to ZERO SPAN. The transmitter ON time was determined from the resultant time-amplitude display:

Handset: (Four single-slot operation)

Duty cycle (DC) = Maximum ON time in 10ms/10ms
= (1 x 0.387ms)/10ms

Average Factor (AF), dB = 20* log (DC)
= 20* log (0.0387)
= -28.2 dB

X	See attached spectrum analyzer chart (s) for transmitter timing Handset: Plot H5 (Handset Traffic)
	See transmitter timing diagram provided by manufacturer
	Not applicable, duty cycle was not used.

For electronic filing, the above plot is saved with filenames: dcc.pdf

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.6 AC Power Lines Conducted Emissions from Transmitter portion of EUT, FCC Rule 15.315:

The AC power lines conducted emission shall not exceed the limits of FCC Rule 15.207.

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 lines. Emission Data are listed in following pages. Please refer to the section 4.6.1 to 4.6.2 for more details.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121
Mode: Talk

4.6.1 AC Power Lines Conducted Emissions Configuration Photographs:

Worst Case AC Power Line Conducted Emission
at

Base Unit - Model: DS6111: 1.64000 MHz

Base Unit - Model: DS6121: 1.68000 MHz

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

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121
Mode: Talk

4.6.2 AC Power Line Conducted Emissions Data:

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

Base Unit - Model: DS6111: Judgment: Passed by 18.9 dB margin

Base Unit - Model: DS6121: Judgment: Passed by 17.0 dB margin

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

TEST ENGINEER:

Signature

Ken Sit, Supervisor
Typed/Printed Name

July 18, 2008
Date

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.7 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. The caution statement specified in the user manual. A SAR test report was submitted at the same time and saved as SAR report 1 of 2.pdf and SAR report 2 of 2.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.

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.8 Frame Period and Jitter, FCC Rule 15.323(e):

The frame period (a set of consecutive time slots in which the position of each time slot can be identified by reference to a synchronizing source) of EUT operating in these sub-bands shall be 20 ms or 10 ms/X where X is a positive whole number.

The jitter (time-related, abrupt, spurious variations in the duration of the frame interval) introduced at the two ends of such a communication link shall not exceed 25 μs for any two consecutive transmissions. Transmissions shall be continuous in every time and spectrum window during the frame period defined for EUT.

Measurements are made in accordance with ANSI C63.17 sub-clause 6.2.3. Test setup is shown in section 3.2 Figure 3.2.1. A spectrum analyzer measures the time duration between the rising edges of two consecutive frames. The measurements are taken over 100,000 frames. These measurement values are used to compute mean value and the difference between any two consecutive frame periods. The mean value is the frame period.

Test Results:

I. Jitter - Base Unit - Model: DS6111

Measured Maximum Jitter (μs)	Limit (μs)	Results
-0.1856	±25	Pass

II. Jitter - Base Unit - Model: DS6121

Measured Maximum Jitter (μs)	Limit (μs)	Results
-0.2043	±25	Pass

III. Jitter - Handset

Measured Maximum Jitter (μs)	Limit (μs)	Results
-0.3406	±25	Pass

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.9 Monitoring Threshold:

Monitoring threshold can be relaxed according to FCC Rule 15.323(c)(9). EUT that has a power output lower than the maximum permitted under FCC Rule 15.319(c) 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:

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

Where B = Measured Occupied Bandwidth of Base Unit for Model: DS6111: 1.44 x10^6 Hz
B = Measured Occupied Bandwidth of Base Unit for Model: DS6121 1.41 x10^6 Hz
B = Measured Occupied Bandwidth of Handset: 1.49 x10^6 Hz
M = 50 dB for Upper Monitoring Threshold ($T_U + U_m$)
P_{max} = 5 $\log_{10} B$ – 10 dBm
P_{EUT} = Measured Peak Transmit Power of Base Unit for Model: DS6111: 20.20 dBm
P_{EUT} = Measured Peak Transmit Power of Base Unit for Model: DS6121: 19.96 dBm
P_{EUT} = Measured Peak Transmit Power of Handset: 20.57 dBm

Calculated Monitoring Threshold Limits:

I. Base Unit - Model: DS6111

Upper Monitoring Threshold ($T_U + U_m$) in dBm	-55.8

II. Base Unit - Model: DS6121

Upper Monitoring Threshold ($T_U + U_m$) in dBm	-55.7

III. Handset

Upper Monitoring Threshold ($T_U + U_m$) in dBm	-56.0

Company: VTech Telecommunications Ltd. Date of Test: June 19-26, 2008
Model: DS6111, DS6121

4.9.1 Upper Monitoring Threshold, FCC Rule 15.323(c)(5):

Measurements are made in accordance with ANSI C63.17 sub-clause 7.3.2(b). 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 + 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 (T_U + U_M + 10dB).

Test Results:

I. Base Unit - Model: DS6111

Measured Maximum Interference Level (dBm)	Upper Monitoring Threshold Limit (dBm)	Results
-64.4	-55.8	Pass

II. Base Unit - Model: DS6121

Measured Maximum Interference Level (dBm)	Upper Monitoring Threshold Limit (dBm)	Results
-59.4	-55.7	Pass

III. Handset:

Measured Maximum Interference Level (dBm)	Upper Monitoring Threshold Limit (dBm)	Results
-64.2	-56.0	Pass

EXHIBIT 5
EQUIPMENT PHOTOGRAPHS

5.0 **Equipment Photographs**

The photographs are saved as filename: external photos.pdf & internal photos.pdf

EXHIBIT 6
TECHNICAL SPECIFICATIONS

6.0 **Technical Specifications**

The block diagram and circuit diagram are saved as filename: block.pdf and circuit.pdf respectively.

EXHIBIT 7
LETTER OF AGENCY

7.0 **Letter of Agency**

A copy of the Letter of Agency is saved as filename: letter of agency.pdf

EXHIBIT 8
CONFIDENTIALITY REQUEST

8.0 **Confidentiality Request**

A copy of the Confidentiality Request is saved as filename: request.pdf