

VTech Telecommunications Ltd.

Application
For
Permissive Change Class II

Unlicensed Personal Communication Service Devices
(Base Unit)

FCC ID: EW780-6684-00

Test Report Number: HK08090801-1

Issue Date: October 17, 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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INTERTEK TESTING SERVICES

MEASUREMENT/TECHNICAL REPORT

VTech Telecommunications Ltd. - Model: TL92XY8, TL90078

FCC ID: EW780-6684-00

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

Equipment Type : PUB - Part 15 Unlicensed PCS Base Station

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

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

If no, assumed Part 15, Subpart D for Unlicensed Personal Communication Service Device - the new 47 CFR [10-01-07 Edition] Provision.

Report prepared by: Leung Wai Leung, Tommy

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List of Attached Files

Exhibit Type	File Description	Filename
Operational Description	Technical Description	descri.pdf
Test Report	Test Report	report.pdf
Cover Letters	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 Setup Photos	Radiated Emission Test Configuration	config photos.pdf
Test Setup Photos	AC Lines Conducted Emission Test Configuration	
Test Report	AC Lines Conducted Emission Data	conduct.pdf
RF Exposure Info	RF Safety	RF exposure info.pdf
External Photos	External Photo	external photos.pdf
Block Diagrams	Block Diagram	block.pdf
Cover Letter	Letter of Agency	letter of agency.pdf
Cover Letter	Confidentiality Request	request.pdf

**EXHIBIT 1
SUMMARY OF TEST RESULTS**

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1.0 Summary of Test Results

VTech Telecommunications Ltd. - Model: TL92XY8, TL90078

FCC ID: EW780-6684-00

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
Upper Monitoring Threshold	15.323(c)(5)	7.3.2	Pass	4.8.1

Test Engineer:

Approved By:



Ken Sit
Assistant Manager

Leung Wai Leung, Tommy
Senior Manager

Date: October 17, 2008

Date: October 17, 2008

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EXHIBIT 2 GENERAL DESCRIPTION

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2.0 General Description

2.1 Product Description

The TL92278 is 1.9GHz Digital Modulation Cordless Phone with Caller ID, Speakerphone, Digital Answering Machine and Bluetooth - Base Unit. DECT 6.0 Transmitter operates at frequency range of 1921.536MHz to 1928.448MHz with 5 channels (1921.536MHz, 1923.264MHz, 1924.992MHz, 1926.720MHz and 1928.448MHz) and Bluetooth Transmitter operates with 79 channels (2402MHz-2480MHz).

The Base Unit is powered by an AC adaptor 100-240VAC to 6VDC 400mA, and it also has a "Bluetooth" button that manages Bluetooth connections to a Bluetooth-equipped mobile device. With Bluetooth and 1.9GHz wireless communications enable, the base unit allows a user uses a cordless handset to dial out or receive cellular phone calls via the cellular network.

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

The Model: TL92278 is one of the Model: TL92XY8. The letters "X" represents the number of handsets, and the letter "Y" is in term of number either "2" or "7" with different packing. The Model: TL90078 is an additional identical handset with a charger for selling a handset standalone.

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 techniques 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 base unit of model: TL92278, the RF module, circuit, antennas and algorithm are the same as the previously granted Model: TL92278. The base adaptor power supply is changed from linear to switching. At the same time, Bluetooth transmitter, a composite device subject to an additional equipment authorization, has the same as this FCC ID: EW780-6684-00 and has been granted already.

This is an application for Certification of a PUB - Part 15 Unlicensed PCS Base Station. A verification report has been prepared for the digital portion.

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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, antenna conducted measurements, and Listen Before Transmit (LBT) tests 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**

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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.

Bluetooth module was mounted to the EUT and switched on when taking radiated emission for determining worst-case spurious emission.

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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 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.

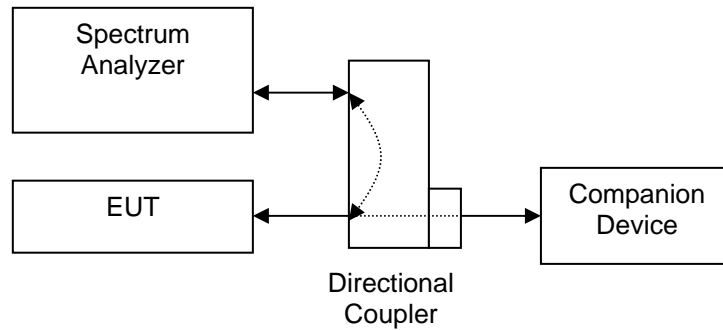


Figure 3.2.1

3.3 Conducted Monitoring and Operational Test Configuration

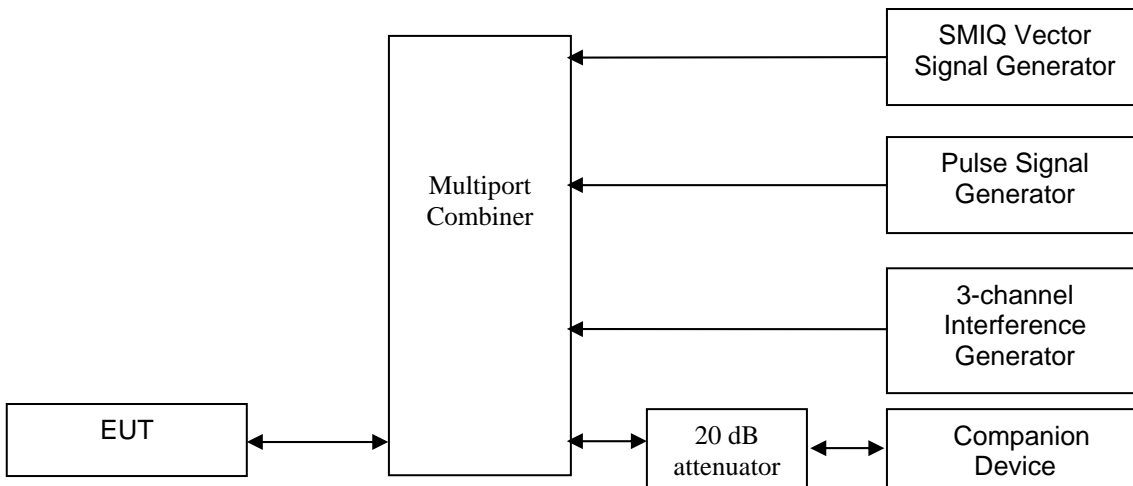


Figure 3.3.1

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.

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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 descriptions are listed below.

- (1) Base Unit: An AC adaptor (100-240VAC to 6VDC 400mA, Model: SSA-5AP-09 060040) (Supplied by Client)

Description of Peripherals:

- (1) Handset: A "Ni-MH" Type Rechargeable Battery Pack (2.4V 550mAh) (Supplied by Client)
- (2) Telecommunication cable with RJ11C connectors (1m, unshielded), terminated (Supplied by Intertek)

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3.6 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty 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.

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

October 17, 2008 _____
Date

**EXHIBIT 4
MEASUREMENT RESULTS**

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: TL92278

Date of Test: October 3-14, 2008

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

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.536	26 dB down	1.53	Pass
Highest	1928.448	26 dB down	1.52	Pass

II. Dummy Carrier

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.536	26 dB down	1.52	Pass
Highest	1928.448	26 dB down	1.43	Pass

Please refer to the attached plots for more details:

Plot 1A: Lowest Channel 26dB Emission Bandwidth (Traffic Carrier)
Plot 1D: Highest Channel 26dB Emission Bandwidth (Traffic Carrier)
Plot 1G: Lowest Channel 26dB Emission Bandwidth (Dummy Carrier)
Plot 1J: Highest Channel 26dB Emission Bandwidth (Dummy Carrier)

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

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: TL92278

Date of Test: October 3-14, 2008

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

The peak transmit power (P_{EUT}) shall not exceed $100\mu W$ 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}):

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

Where G_A = EUT Antenna Gain: \geq dBi

B = Measured Emission Bandwidth: (26dB down BW) in Hz

Test Results:

I. Traffic Carrier

Channel	Channel Frequency (MHz)	Measured Peak Transmit Power (dBm)	Limit (dBm)	Results
Lowest	1921.536	19.90	20.92	Pass
Highest	1928.448	19.59	20.91	Pass

II. Dummy Carrier

Channel	Channel Frequency (MHz)	Measured Peak Transmit Power (dBm)	Limit (dBm)	Results
Lowest	1921.536	19.90	20.91	Pass
Highest	1928.448	19.62	20.78	Pass

Please refer to the attached plots for more details:

Plot 2A: Lowest Channel Peak Transmit Power (Traffic Carrier)

Plot 2B: Highest Channel Peak Transmit Power (Traffic Carrier)

Plot 2C: Lowest Channel Peak Transmit Power (Dummy Carrier)

Plot 2D: Highest Channel Peak Transmit Power (Dummy Carrier)

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

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: TL92278

Date of Test: October 3-14, 2008

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

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.536	-10.3	4.8	Pass
Highest	1928.448	-11.0	4.8	Pass

II. Dummy Carrier - Base Unit

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.536	-13.9	4.8	Pass
Highest	1928.448	-17.1	4.8	Pass

Please refer to the attached plots for more details:

Plot 3A: Lowest Channel Power Spectral Density (Traffic Carrier)

Plot 3B: Highest Channel Power Spectral Density (Traffic Carrier)

Plot 3C: Lowest Channel Power Spectral Density (Dummy Carrier)

Plot 3D: Highest Channel Power Spectral Density (Dummy Carrier)

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

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: TL92278

Date of Test: October 3-14, 2008

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 $1B$ 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 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

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

II. Dummy Carrier

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

Please refer to the attached plots for more details:

Plot 4A: Lowest Channel Unwanted Emission Inside the Sub-Band (Traffic Carrier)
Plot 4B: Highest Channel Unwanted Emission Inside the Sub-Band (Traffic Carrier)
Plot 4C: Lowest Channel Unwanted Emission Inside the Sub-Band (Dummy Carrier)
Plot 4D: Highest Channel Unwanted Emission Inside the Sub-Band (Dummy Carrier)

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

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: TL92278

Date of Test: October 3-14, 2008

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 meet the requirement of FCC Rule 15.319(g) which 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:

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.

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Company: VTech Telecommunications Ltd.
Model: TL92278
Mode: Transmission

Date of Test: October 3-14, 2008

4.5.1 Radiated Emissions Configuration Photographs:

Worst Case Radiated Emission
at

3856.896 MHz

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

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Company: VTech Telecommunications Ltd.
Model: TL92278
Mode: Transmission

Date of Test: October 3-14, 2008

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 table 1-5 list the significant emission frequencies, the limit and the margin of compliance.

Judgement -

Passed by 11.0 dB margin compare with average limit

TEST ENGINEER:



Signature

Ken Sit, Assistant Manager
Typed/Printed Name

October 17, 2008
Date

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: TL92278
Mode: Transmission

Date of Test: October 3-14, 2008

Table 1

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	1919.802	-37.6	-9.5	-28.1
V	1918.663	-51.6	-29.5	-22.1
V	1917.403	-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.

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Company: VTech Telecommunications Ltd.
Model: TL92278
Mode: Transmission

Date of Test: October 3-14, 2008

Table 2

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

Lowest Channel:

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Average Factor (dB)	Calculated at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
H	3843.072	58.1	33	33.3	58.4	15.6	42.8	54.0	-11.2
H	5764.608	53.8	33	36.6	57.4	15.6	41.8	54.0	-12.2
H	7686.144	51.3	33	38.9	57.2	15.6	41.6	54.0	-12.4
H	9607.680	46.8	33	40.4	54.2	15.6	38.6	54.0	-15.4
H	11529.216	45.5	33	40.5	53.0	15.6	37.4	54.0	-16.6

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
H	3843.072	58.1	33	33.3	58.4	74.0	-15.6
H	5764.608	53.8	33	36.6	57.4	74.0	-16.6
H	7686.144	51.3	33	38.9	57.2	74.0	-16.8
H	9607.680	46.8	33	40.4	54.2	74.0	-19.8
H	11529.216	45.5	33	40.5	53.0	74.0	-21.0

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.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: TL92278
Mode: Transmission

Date of Test: October 3-14, 2008

Table 3

**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	1930.025	-35.0	-9.5	-25.5
V	1931.326	-51.7	-29.5	-22.2
V	1932.534	-55.0	-39.5	-15.5

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.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: TL92278
Mode: Transmission

Date of Test: October 3-14, 2008

Table 4

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

Highest Channel:

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Average Factor (dB)	Calculated at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
H	3856.896	58.3	33	33.3	58.6	15.6	43.0	54.0	-11.0
H	5785.344	53.6	33	36.6	57.2	15.6	41.6	54.0	-12.4
H	7713.792	50.9	33	38.9	56.8	15.6	41.2	54.0	-12.8
H	9642.240	48.8	33	40.4	56.2	15.6	40.6	54.0	-13.4
H	11570.688	45.7	33	40.5	53.2	15.6	37.6	54.0	-16.4

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
H	3856.896	58.3	33	33.3	58.6	74.0	-15.4
H	5785.344	53.6	33	36.6	57.2	74.0	-16.8
H	7713.792	50.9	33	38.9	56.8	74.0	-17.2
H	9642.240	48.8	33	40.4	56.2	74.0	-17.8
H	11570.688	45.7	33	40.5	53.2	74.0	-20.8

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.

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd.
Model: TL92278
Mode: Base Talk

Date of Test: October 3-14, 2008

Table 5

**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	41.472	-67.4	-39.5	-27.9
V	69.120	-68.5	-39.5	-29.0
H	82.944	-68.0	-39.5	-28.5
H	165.953	-67.4	-39.5	-27.9
H	179.712	-66.0	-39.5	-26.5
H	181.763	-64.8	-39.5	-25.3
H	185.853	-64.0	-39.5	-24.5
H	202.248	-65.0	-39.5	-25.5
H	230.917	-68.4	-39.5	-28.9

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.

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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 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

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

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

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4.5.4 Average Factor Calculation and Transmitter ON Time Measurements, FCC Rule 15.35(b, c)

[x] 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:

Base Unit:

$$\begin{aligned} \text{Duty Cycle} &= (0.387 \times 4 + 0.103)/10\text{ms} \\ &= 0.1651 \end{aligned}$$

$$\begin{aligned} \text{Average Factor (AF)} &= 20\log(0.1651) \\ &= -15.6\text{dB} \end{aligned}$$

- [] Please refer to the attached transmitter timing diagram that are provided by manufacturer
- [] Not applicable - No average factor is required.
- [] Please refer to Exhibit 2.2 Technical Description for more details

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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.

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Company: VTech Telecommunications Ltd.
Model: TL92278
Mode: DECT Base Talking

Date of Test: October 3-14, 2008

4.6.1 AC Power Lines Conducted Emissions Configuration Photographs:

Worst Case AC Power Line Conducted Emission
at

1.310 MHz

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

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Company: VTech Telecommunications Ltd.
Model: TL92278
Mode: DECT Base Talking

Date of Test: October 3-14, 2008

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.

Judgment: Passed by 16.6 dB margin

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

TEST ENGINEER:



Signature

Ken Sit, Assistant Manager
Typed/Printed Name

October 17, 2008
Date

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Company: VTech Telecommunications Ltd.
Model: TL92278

Date of Test: October 3-14, 2008

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.

- 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
- 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.

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Model: TL92278

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4.8 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:

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

Where B = Measured Emission Bandwidth: 1.43 x10⁶ Hz
 M = 50 dB for Upper Monitoring Threshold (T_U)
 P_{\max} = 5 log₁₀ B - 10 dBm
 P_{EUT} = Measured Peak Transmit Power: 19.62 dBm

Calculated Monitoring Threshold Limits:

Upper Monitoring Threshold ($T_U + U_M$) in dBm	-55.3
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Company: VTech Telecommunications Ltd.
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4.8.1 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 $T_U + U_M + 10$ 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 ($T_U + U_M$).

Test Results:

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

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**EXHIBIT 5
EQUIPMENT PHOTOGRAPHS**

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5.0 Equipment Photographs

The photographs are saved as filename: external photos.pdf

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**EXHIBIT 6
TECHNICAL SPECIFICATIONS**

6.0 Technical Specifications

The block diagram is saved as filename: block.pdf.

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EXHIBIT 7 LETTER OF AGENCY

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7.0 Letter of Agency

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

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**EXHIBIT 8
CONFIDENTIALITY REQUEST**

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8.0 Confidentiality Request

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