VTech Telecommunications Ltd.

Application
For
Permissive Change Class II

5.8GHz/2.4GHz Frequency Hopping Spread Spectrum Cordless Phone
with Caller ID and Digital Answering Machine - Handset

(FCC ID: EW780-5656-01)

07243282
KS/ ac
November 12, 2007

LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

VTech Telecommunications Ltd. - MODEL: TL72208
TL72108, TL72308,
TL72408, TL70008,
TL71108, TL71208,
TL71308, TL71408

FCC ID: EW780-5656-01

This report concerns (check one)   Original Grant_____   Class II Change__X____

Equipment Type: DSS-Part 15 Spread Spectrum Transmitter

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 C for intentional radiator - the new 47 CFR [04-05-05 Edition] provision.

Report prepared by: Sit Kim Wai, Ken
                                                    Intertek Testing Services Hong Kong Ltd.
                                                    2/F., Garment Centre,
                                                    576 Castle Peak Road,
                                                    Kowloon, Hong Kong.
                                                    Phone: 852-2173-8534
                                                    Fax: 852-2741-1693

INTERTEK TESTING SERVICES

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Cover Letter	Purpose of Application	product change.pdf
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Test Report	Duty Cycle Calculation and Measurement	dcc.pdf
Test Setup Photo	Radiated Emission for Handset	config photos.doc
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.doc
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
ID Label/Location Info	Label Location Justification	justification.pdf
User Manual	User Manual	manual.pdf
Operation Description	Security Code Information	security code information.pdf
RF Exposure Info	RF Safety	RF exposure info.pdf
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EXHIBIT 1
SUMMARY OF TEST RESULTS

1.0 Summary of Test

VTech Telecommunications Ltd. - MODEL: TL72208
TL72108, TL72308,
TL72408, TL70008,
TL71108, TL71208,
TL71308, TL71408

FCC ID: EW780-5656-01

TEST	REFERENCE	RESULTS
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
Radiated Emission from Digital Part	15.109	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses a permanently attached antenna which, in accordance to Section 15.203, is considered sufficient to comply with the provisions of this section.

EXHIBIT 2
GENERAL DESCRIPTION

2.0 **General Description**

2.1 Product Description

The TL72208 is a 5.8GHz/2.4GHz Frequency Hopping Spread Spectrum Cordless Phone with Caller ID and Digital Answering Machine. Base Unit and Handset operate at frequency of 5744.736MHz to 5825.952MHz and 2401.056MHz to 2482.272MHz respectively. The Base Unit consists of 95 physical hopping frequencies and 85 logical hopping frequencies, and the Handset consists of 95 physical hopping frequencies and 17 logical hopping frequencies. The unit is capable of either tone or pulse dialing. The internal power supply's isolation is accomplished through a power transformer having an adequate dielectric rating. The circuit wiring is consistent under the requirement of part 68.

The handset unit consists of a keypad with twelve standard keys (0,...9,*,#), eleven function keys (CID, DIR, Menu/Select, Up, Down, Left, Right, Speaker, Mute/Remove, Redial/Pause, INT). A Phone key and an OFF key are provided to control pick/release telephone line in a toggle base.

The base unit has a page key, which is used to communicate with handset unit, together with answer machine control keys.

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

The Handset of the Models: TL72108, TL72308, TL72408, TL71108, TL71208, TL71308, and TL71408 are the same as the Model: TL72208 in hardware aspect except different number of handsets in a package. The Model: TL70008 is an additional identical handset with a charger for selling a handset standalone. The difference in model number serves as marketing strategy.

The circuit description and frequency hopping algorithm is saved with filename: descri.pdf. The receiver input bandwidth provided by the manufacturer is 864kHz.

2.2   Purpose of Application

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

The RF module and FHSS mechanism of the handset are the same as the previous granted Model: I6765. Enclosure and PCB layout are changed.

This is a single application for Certification of a handset of a DSS-Part 15 Spread Spectrum Cordless Telephone System. The FCC ID of the associated Base Unit is EW780-5656-00 and has been filed at the same time as this application. A verification report has been prepared for the digital portion. The device is also subject to Part 68 Registration.

2.3   Test Methodology

A Radiated emission measurements was performed according to the procedures in ANSI C63.4 (2003). All 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 facility used to collect the radiated 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 to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. The handset was powered by a fully charged battery.

For the measurements, the EUT is attached to a plastic stand if necessary and placed on the wooden turntable. The base is remotely located as far from the antenna and the handset as possible to ensure full power transmission from the handset. Else, the handset is wired to transmit full power without modulation.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Detector function is in peak mode. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed 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.

3.2 EUT Exercising Software

The EUT exercise program used during radiated testing was designed to exercise the various system components in a manner similar to a typical use.

3.3   Details of EUT and Description of 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: An AC adaptor (120VAC to 9VDC 600mA, Model: U090060D30S)
(2)   Handset: A "Ni-MH" type rechargeable battery (3.6V 550mAh)

Description of Peripherals:

(1)   Telecommunication cable with RJ11C connectors (1m, unshielded), terminated
(2)   A headset for telephone use with 1.2m unshielded cable permanently affixed.
(3)   Base, Model: TL72208, FCC ID: EW780-5656-00 (Supplied by Client)

3.4   Measurement Uncertainty

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

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

3.5   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 ETL Division, Intertek Testing Services Hong Kong Ltd.

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

Confirmed by:

> *Sit Kim Wai, Ken*
> *Supervisor*
> *Intertek Testing Services Hong Kong Ltd.*
> *Agent for VTech Telecommunications Ltd.*

_____Signature

_____November 12, 1007_____Date

EXHIBIT 4
MEASUREMENT RESULTS

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208

4.0 **Measurement Results**

4.1   Out of Band Conducted Emissions, FCC Rule 15.247(d):

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

Refer to the following plots for out of band conducted emissions data:

Plot H6A.1 - H6A.2: Low Channel Emissions
Plot H6B.1 - H6B.2: Middle Channel Emissions
Plot H6C.1 - H6C.2: High Channel Emissions
Plot H6D.1 - H6D.2: Modulation Products Emissions*

The plots showed the 2nd harmonic and modulation products at the band edges of 2400MHz and 2483.5MHz. In addition, all spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

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

*These 2 plots are shown the worst-case which has been already considered between enable and disable the hopping function of the EUT.

For electronic filing, the above plots are saved with filenames: obantcon.pdf

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208

4.2   Out of Band Radiated Emissions (for emissions in 4.3 above that are less than 20
      dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation
requirement described in the specification, radiated measurements were performed at
a 3m separation distance to determine whether these emissions complied with the
general radiated emission requirement.

[×]   Not required, all emissions more than 20dB below fundamental
[ ]   See attached data sheet

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208

4.3   Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels).   A sample calculation, configuration photographs and data tables of the emissions are included.   All measurements were performed with peak detection unless otherwise specified.

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

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208

4.4   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 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB.   The net field strength for comparison to the appropriate emission limit is 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB
AV = -10 dB
FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBμV/m

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

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208

4.5   Radiated Emission Configuration Photograph - Handset

Worst Case Radiated Emission
at
12208.320 MHz

For electronic filing, the worst case radiated emission configuration photographs
are saved with filename: config photos.doc

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208

4.6   Radiated Emission Data - Handset

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

Judgement : Passed by 2.8 dB margin compare with the peak limit

****

TEST PERSONNEL:

Jess

_____
Tester Signature

Jess Tang, Lead Engineer____
Typed/Printed Name

November 12, 2007_____
Date

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208
Mode : TX-Channel 1

Table 1, Handset

Radiated Emissions

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)	Limit at 3m (dBμV/m)	Margin (dB)
H	*4802.112	58.3	33	34.9	60.2	35.4	24.8	54.0	-29.2
H	*12005.280	63.4	33	40.5	70.9	35.4	35.5	54.0	-18.5
H	*19208.448	45.5	33	37.7	50.2	35.4	14.8	54.0	-39.2

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

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

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Jess Tang

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208
Mode : TX-Channel 47

Table 2, Handset

Radiated Emissions

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)	Limit at 3m (dBμV/m)	Margin (dB)
V	*4883.328	58.2	33	34.9	60.1	35.4	24.7	54.0	-29.3
H	*7324.992	53.5	33	37.9	58.4	35.4	23.0	54.0	-31.0
H	*12208.320	63.7	33	40.5	71.2	35.4	35.8	54.0	-18.2
H	*19533.312	46.1	33	37.8	50.9	35.4	15.5	54.0	-38.5

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

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

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function, and this is the worst-case of 2.8dB margin at 12208.320MHz.

Test Engineer: Jess Tang

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208
Mode : TX-Channel 94

Table 3, Handset

Radiated Emissions

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)	Limit at 3m (dBμV/m)	Margin (dB)
V	**2482.272	118.5	33	29.4	114.9	35.4	79.5	---	---
V	*4964.544	58.1	33	34.9	60.0	35.4	24.6	54.0	-29.4
H	*7446.816	54.5	33	37.9	59.4	35.4	24.0	54.0	-30.0
H	*12411.360	63.3	33	40.5	70.8	35.4	35.4	54.0	-18.6
H	*19858.176	45.5	33	37.8	50.3	35.4	14.9	54.0	-39.1

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

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

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

** Fundamental emission was measured for determining band-edge compliance of using delta measurement technique.

Test Engineer: Jess Tang

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208

4.7   Radiated Emissions from Digital Section of Transceiver (Transmitter), FCC Ref: 15.109

[ ]   Not required - No digital part

[×]   Test results are attached

[ ]   Included in the separated DOC report.

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208
Mode: Talk

Table 4, Handset

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	41.475	39.4	16	10.0	33.4	40.0	-6.6
V	82.950	41.6	16	7.0	32.6	40.0	-7.4
H	124.415	35.9	16	14.0	33.9	43.5	-9.6
H	138.225	34.8	16	14.0	32.8	43.5	-10.7
H	165.900	33.1	16	17.0	34.1	43.5	-9.4
H	207.375	33.0	16	17.0	34.0	43.5	-9.5
H	290.325	26.8	16	22.0	32.8	46.0	-13.2

NOTES: 1. Quasi-peak detector is used for the emission below or equal to 1000 MHz.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

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

Test Engineer: Jess Tang

FCC ID: EW780-5656-01

Company: VTech Telecommunications Ltd.   Date of Test: October 18-31, 2007
Model: TL72208

4.8   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:

Duty cycle (DC) = Maximum ON time in 100ms/100ms
               = (0.840ms x 2)/100ms for double-slots operation

Duty cycle correction, dB = 20* log (DC)
                     = 20* log (0.0168)
                     = -35.4 dB

X	See attached spectrum analyzer chart (s) for transmitter timing Base Unit: Plot H7
	See transmitter timing diagram provided by manufacturer
	Not applicable, duty cycle was not used.

For electronic filing, the above plots are saved with filenames: dcc.pdf

EXHIBIT 5
EQUIPMENT PHOTOGRAPHS

5.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.doc
& internal photos.doc

EXHIBIT 6
PRODUCT LABELLING

6.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf

The label location justification letter is saved as filename: justification.pdf

EXHIBIT 7
TECHNICAL SPECIFICATIONS

7.0 **Technical Specifications**

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.

EXHIBIT 8
INSTRUCTION MANUAL

8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

Please note that the required FCC Information to the User is attached on P.62 of Instruction Manual.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 9
SECURITY CODE INFORMATION

9.0 **Security Code Information**

For electronic filing, the security code information is saved with filename: security code information.pdf

EXHIBIT 10
CONFIDENTIALITY REQUEST

10.0 **Confidentiality Request**

For electronic filing, a confidentiality request is saved with filename: request.pdf