

## TEST REPORT

**Report Number: HK10060831-4**

Application  
for  
Original Grant  
of 47 CFR Part 15 Certification

1.9GHz Digital Modulation Cordless Phone with Cordless Headset - Base Unit  
(Computer Peripheral Portion)

**FCC ID: EW780-7812-00**

Prepared and Checked by:



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Koo Wai Ip  
Lead Engineer

Approved by:



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Nip Ming Fung, Melvin  
Supervisor  
August 19, 2010

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### GENERAL INFORMATION

<b>Applicant Name:</b>	VTech Telecommunications Ltd.
<b>Applicant Address:</b>	23/F., Tai Ping Industrial Centre, Block 1, 57 Ting Kok Road, Tai Po, Hong Kong.
<b>FCC Specification Standard:</b>	FCC Part 15: 2009
<b>FCC ID:</b>	EW780-7812-00
<b>FCC Model(s):</b>	TL7710, TL7711
<b>Type of EUT:</b>	Class B Personal Computers and Peripherals
<b>Description of EUT:</b>	1.9GHz Digital Modulation Cordless Phone with Cordless Headset - Base Unit (USB Portion)
<b>Serial Number:</b>	N/A
<b>Sample Receipt Date:</b>	June 15, 2010
<b>Date of Test:</b>	June 21, 2010
<b>Report Date:</b>	August 19, 2010
<b>Environmental Conditions:</b>	Temperature: +10 to 40°C Humidity: 10 to 90%

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### 1.0 Summary of Test Results

<b>Test Items</b>	<b>FCC Part 15 Section</b>	<b>Results</b>	<b>Details see section</b>
Radiated Emission from Class B Personal Computers and Peripherals	15.109	Pass	4.2
AC Power Line Conducted Emission	15.107	Pass	4.3

Note: The device complies with ICES-003 (Issue 4) requirements. The test results in FCC test report are deemed satisfactory evidence of compliance with Industry Canada Interference – Causing Equipment Standard ICES-003.

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**EXHIBIT 2  
GENERAL DESCRIPTION**

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### 2.0 General Description

#### 2.1 Product Description

The TL7710 is a 1.9GHz Digital Modulation Cordless Phone with Cordless Headset - Base Unit. It operates at frequency range of 1921.536MHz to 1928.448MHz with 5 channels (1921.536MHz, 1923.264MHz, 1924.992MHz, 1926.720MHz and 1928.448MHz). The Base Unit is powered by an adaptor 117VAC to 6VDC 300mA and 7VDC 300mA.

The base unit is connected to the computer via the USB port for VOIP calls, audio playing or recording under PC mode.

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

The Model(s): TL7711 is the same as the Model: TL7710 in electrical designs, including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these models are model number and cosmetic details for marketing purpose.

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

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### 2.2 Purpose of Application

This is an application for Certification of a JBP (Computer Peripheral Portion) - Part 15 Class B Computer Peripheral. The FCC ID of the associated headset is EW780-7812-01 and has been filed at the same time as this application.

A Verification report has been prepared for the digital devices portion.

### 2.3 Test Methodology

Both AC power line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Preliminary radiated scans and all radiated measurements were performed in Open Area Test Sites. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

### 2.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data and conducted data are located at Roof Top and 2<sup>nd</sup> Floor respectively of 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.

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**EXHIBIT 3  
SYSTEM TEST CONFIGURATION**

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### 3.0 System Test Configuration

#### 3.1 Justification

For radiated emissions testing, the equipment under test (EUT) was setup to normal mode to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) were manipulated to produce worst case emissions.

The Base Unit was powered by a 117VAC to 6VDC 300mA and 7VDC 300mA adaptor.

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 to simulate typical use.

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. 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.

For radiated measurement, the spectrum analyzer resolution bandwidth was 100 kHz for frequencies below 1000 MHz.

Radiated emission measurement was performed from the frequency 30MHz to 1GHz.

Emission that are directly caused by digital circuits in the transmit path and transmitter portion were measured, and the limit are according to FCC Part 15 Section 15.109.

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### 3.1 Justification - Cont'd

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in Exhibit 4.2.3.

For AC line conducted emission test, the EUT along with its peripherals were placed on a 1.0m(W)x1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT power cord connected to one LISN (Line impedance stabilization network), which provided 50ohm coupling impedance for measuring instrument. Meanwhile, the peripheral or support equipment power cords connected to a separate LISN. The ac power for all LISNs were obtained from the same power source. The LISN housing, measuring instrument case, reference ground plane, and vertical ground plane were bounded together. The excess power cable between the EUT and the LISN was bundled. Power cords of non-EUT equipment (peripherals) were not bundled. AC power cords of peripheral equipments draped over the rear edge of the table, and routed them down onto the floor of the ac powerline conducted emission test site to the second LISN.

All connecting cables of EUT and peripherals were manipulated to find the maximum emission.

All relevant operation modes have been tested, and the worst case data is included in this report.

### 3.2 EUT Exercising Software

There was no special software to exercise the device.

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### 3.3 Details of EUT and Description of Accessories

#### Details of EUT:

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

- (1) Base Unit: An AC adaptor (117VAC to 6VDC 300mA and 7VDC 300mA, Model: U070030E, Brand: Ten Pao) (Supplied by Client)

#### Description of Peripherals:

- (1) Telephone Line Simulator, Model: TLS-5D-01, S/N: 151101 (Supplied by Intertek)
- (2) 3m Telephone Line (Supplied by Intertek)
- (3) Telecommunication cable with RJ11C connectors (1m, unshielded), terminated (Supplied by Intertek)
- (4) HP Compaq Notebook, Model: NC6220, S/N: CNU620151CN, DoC Product (Supplied by Intertek)
- (5) LogiTech Mouse, Model: M-UV94, S/N: LZ639AB, DoC Product (Supplied by Intertek)
- (6) 1 x serial cable with 1 meter long (Supplied by Intertek)
- (7) 1 x USB cable with 1 meter long (Supplied by Intertek)
- (8) Hayes Modem, Model: 6800CN, S/N: A00900153317, FCC ID: BFJ9D907-00038 (Supplied by Intertek)
- (9) Simple Corded Phone, Model: CE29416, Brand: Thomson Telecom (Supplied by Intertek)
- (10) Cordless Headset, Model: TL7710, FCC ID: EW780-7812-01 (Provided by Client)
- (11) Handset Lifter with Ring Detector, Model: TL7100 (Provided by Client)
- (12) Corded Phone Interface Cable with 1 meter long (Provided by Client)

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### 3.4 Measurement Uncertainty

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

### 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 and Canada.

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

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**EXHIBIT 4  
TEST RESULTS**

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### 4.0 Test Results

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.

#### 4.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

where            FS = Field Strength in dB $\mu$ V/m  
                    RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V  
                    CF = Cable Attenuation Factor in dB  
                    AF = Antenna Factor in dB  
                    AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:-

$$FS = RR + LF$$

where            FS = Field Strength in dB $\mu$ V/m  
                    RR = RA - AG in dB $\mu$ V  
                    LF = CF + AF in dB

Assume a receiver reading of 52.0 dB $\mu$ V 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, giving a field strength of 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

RA = 52.0 dB $\mu$ V	
AF = 7.4 dB	RR = 23.0 dB $\mu$ V
CF = 1.6 dB	LF = 9.0 dB
AG = 29.0 dB	
FS = RR + LF	
FS = 23 + 9 = 32 dB $\mu$ V/m	

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm} [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

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### 4.2 Radiated Emissions

#### 4.2.1 Radiated Emission Configuration Photograph

Worst Case Radiated Emission  
at

Base Unit: 49.762 MHz

The worst case radiated emission configuration photographs are attached in the Appendix and saved with filename: config photos.pdf

#### 4.2.2 Radiated Emission Data

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

Judgement -

Base Unit: Passed by 5.9 dB margin

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### 4.2.3 Transmitter Duty Cycle Calculation

This device is a computer peripheral. It is not necessary to apply average factor to the measurement result.

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Mode: Base in PC mode (Audio Playing)

Table 1

### Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	49.762	39.1	16	11.0	34.1	40.0	-5.9
V	99.524	38.6	16	12.0	34.6	43.5	-8.9
H	149.286	35.9	16	14.0	33.9	43.5	-9.6
H	199.048	33.2	16	16.0	33.2	43.5	-10.3
H	248.810	28.6	16	20.0	32.6	46.0	-13.4
H	298.572	26.4	16	22.0	32.4	46.0	-13.6

- 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.
  4. Horn antenna is used for the emission over 1000MHz.

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### 4.3 AC Power Line Conducted Emission

- Not applicable – EUT is only powered by battery for operation.
- EUT connects to AC power line. Emission Data is listed in following pages.
- Base Unit connects to AC power line and has transmission. Handset connects to AC power line but has no transmission. Emission Data of Base Unit is listed in following pages.

#### 4.3.1 AC Power Line Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration  
at

24.00000 MHz

The worst case line conducted configuration photographs are attached in the Appendix and saved with filename: config photos.pdf

#### 4.3.2 AC Power Line Conducted Emission Data

The conducted emission test result is attached in the Appendix and saved with filename: conduct.pdf

Judgement -

Passed by 14.1 dB margin compare with quasi peak limit

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### 5.0 Equipment List

#### 1) Radiated Emissions Test

Equipment	EMI Test Receiver	Spectrum Analyzer	Biconical Antenna	Log Periodic Antenna
Registration No.	EW-0016	EW-2188	EW-0954	EW-0446
Manufacturer	R&S	AGILENTTECH	EMCO	EMCO
Model No.	ESVS30	E4407B	3104C	3146
Calibration Date	Apr. 21, 2010	Dec. 25, 2009	Apr. 14, 2010	Apr. 26, 2010
Calibration Due Date	Apr. 21, 2011	Dec. 31, 2010	Apr. 14, 2011	Oct. 26, 2011

#### 2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN	LISN	Pulse Limiter
Registration No.	EW-0015	EW-0090	EW-0192	EW-0700
Manufacturer	R&S	R&S	R&S	R&S
Model No.	ESHS30	ESH3-Z5	ESH3-Z5	ESH3-Z2
Calibration Date	Aug. 14, 2009	Feb. 05, 2010	Nov. 23, 2009	Jun. 08, 2009
Calibration Due Date	Aug. 14, 2010	Feb. 05, 2011	Nov. 23, 2010	Dec. 08, 2010

**END OF TEST REPORT**