TEST REPORT

Report Number: 16040637HKG-005

Application
for
Original Grant of 47 CFR Part 15 Certification

DECT6.0 Cordless Headset – Base Unit

FCC ID: EW780-0356-00

Prepared and Checked by:

Signed on File
Leung Chiu Kuen, Stanley
Engineer

Approved by:

Digitally signed
by Koo Wai Ip
Location: Intertek
Testing Services
Hong Kong Ltd.

Koo Wai Ip
Assistant Supervisor
September 14, 2016

GENERAL INFORMATION

Applicant Name:	VTech Telecommunications Ltd.
Applicant Address:	23/F., Tai Ping Industrial Centre, Block 1, 57 Ting Kok Road, Tai Po, Hong Kong.
FCC Specification Standard:	FCC Part 15, October 1, 2014 Edition
FCC ID:	EW780-0356-00
FCC Model(s):	V200, V200.BS
Type of EUT:	Class B Personal Computers and Peripherals
Description of EUT:	DECT6.0 Cordless Headset – Base Unit
Serial Number:	N/A
Sample Receipt Date:	April 12, 2016
Date of Test:	May 05, 2016 to August 05, 2016
Report Date:	September 14, 2016
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

Table of Contents

EXHIBIT 1
TEST RESULTS SUMMARY & STATEMENT OF COMPLIANCE

1.0 Test Results Summary & Statement of Compliance

1.1 Summary of Test Results

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

1.2 Statement of Compliance

The equipment under test is found to be complying with the following standard:

FCC Part 15, October 1, 2014 Edition

EXHIBIT 2
GENERAL DESCRIPTION

2.0 General Description

2.1 Product Description

The V200 is a DECT6.0 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 Model(s): V200.BS is the same as the Model: V200 in electronics/electrical designs including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these models are color and model number to be sold for marketing purpose.

The Base Unit is powered by an adaptor 100-120VAC 50/60Hz 200mA.

The antenna(s) used in the EUT is integral, and the test sample is a prototype.

The circuit description is saved with filename: descri.pdf.

2.2 Test Methodology

Both AC power line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2014). Preliminary radiated scans and all radiated measurements were performed in radiated emission test site. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

2.3 Test Facility

The radiated emission test site and AC power line conducted measurement facility used to collect the radiated data and AC Power Line conducted data are at Intertek Testing Services Hong Kong Ltd., which is located at Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, Sha Tin, N.T., Hong Kong. This test facility and site measurement data have been fully placed on file with FCC.

EXHIBIT 3
SYSTEM TEST CONFIGURATION

3.0 System Test Configuration

3.1 Justification

For radiated emissions testing, the equipment under test (EUT) was setup 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 EUT was powered by DC adaptor (100-120VAC 50/60Hz 200mA to Output1: 6VDC 450mAh & Output2: 6VDC 300mAh, Model: SSC-6W2 US 6045/6030)

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.

Detector function for radiated emissions is in peak mode.

3.1 Justification - Cont'd

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 was connected to power mains through a line impedance stabilization network (LISN), which provided 50ohm coupling impedance for measuring instrument. 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.

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 was included in this report.

3.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted 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 Accessories

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.

An AC adaptor (100-120VAC 50/60Hz 200mA to Output1: 6VDC 450mAh & Output2: 6VDC 300mAh, Model: SSC-6W2 US 6045/6030) (Supplied by Client)

Description of Accessories:

(1) Telecommunication cable with RJ11C connectors (1m, unshielded), terminated (Supplied by Intertek)
(2) Corded phone (Panasonic, Model: KX TS500MX), (Supplied by Intertek)
(3) VXI corporation Handset lifter (Supplied by client)
(4) Corded telephone cable with RJ10 connectors (1m, unshielded), (Supplied by Intertek)
(5) Notebook (HP Probook 430) (Provided by Intertek)
(6) USB cable (1m, with ferried), (Supplied by client)
(7) 1 X LAN cable of 1m in length (Supplied by Intertek)

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test at a level of confidence of 95% has been considered. The values of the Measurement uncertainty for radiated emission test and RF conducted measurement test are ± 5.3dB and ±0.99dB respectively. The value of the Measurement uncertainty for conducted emission test is ±4.2dB.

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.

EXHIBIT 4
TEST RESULTS

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 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 reflects 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 dB
PD = 0 dB
AV = -10 dB
FS = 62 + 7.4 +1.6 -29 +0 + (-10) = 32 dBμV/m
Level in μV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

4.2 Radiated Emissions

4.2.1 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at

760.288 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 tables 1-2 list the significant emission frequencies, the limit and the margin of compliance.

Judgement -

Passed by 3.5 dB margin

Mode: PC & Headset Sound On with Ferrite Core

Table 1

Radiated Emissions Data
Pursuant To FCC Part 15 Section 15.109
Emissions Requirements

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
H	252.008	36.6	16	20.0	40.6	46.0	-5.4
H	257.950	34.1	16	21.0	39.1	46.0	-6.9
H	713.001	26.5	16	30.0	40.5	46.0	-5.5
H	725.005	27.5	16	30.0	41.5	46.0	-4.5
H	748.285	28.2	16	30.0	42.2	46.0	-3.8
H	760.288	28.5	16	30.0	42.5	46.0	-3.5
V	773.990	24.7	16	31.0	39.7	46.0	-6.3
V	785.993	25.0	16	31.0	40.0	46.0	-6.0
V	930.038	22.0	16	33.0	39.0	46.0	-7.0
V	960.836	24.8	16	33.0	41.8	54.0	-12.2

NOTES:

1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters.

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

4. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

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

366 kHz

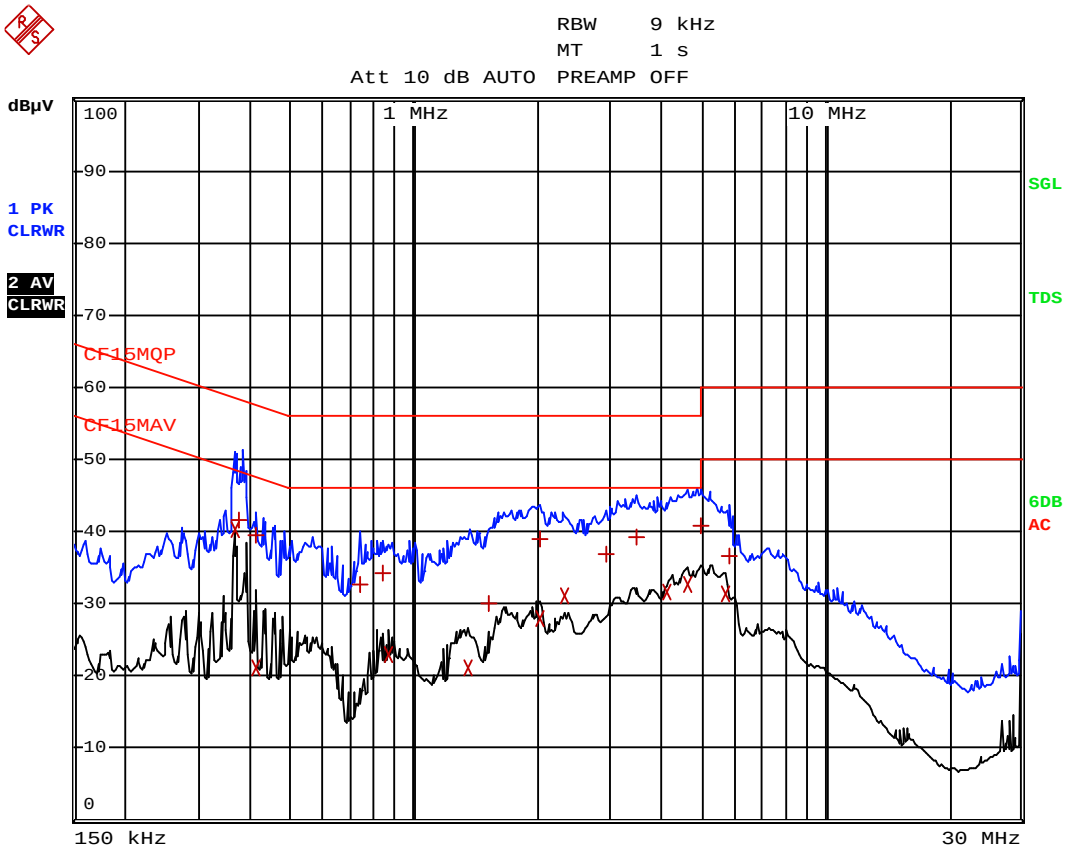
The worst case line conducted configuration photographs are saved with filename: config photos.pdf

4.3.2 AC Power Line Conducted Emission Data

The plot(s) and data in the following pages list the significant emission frequencies, the limit and the margin of compliance

Passed by 8.30 dB margin compare with CISPR average limit

Worst Case: PC & Headset Sound On with Ferrite Core



Worst Case: PC & Headset Sound On with Ferrite Core

EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

	TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
2	CISPR Average	366 kHz	40.28	N	-8.30
1	Quasi Peak	379.5 kHz	41.71	N	-16.58
1	Quasi Peak	411 kHz	39.42	N	-18.20
2	CISPR Average	411 kHz	21.16	L1	-26.46
1	Quasi Peak	739.5 kHz	32.55	L1	-23.44
1	Quasi Peak	838.5 kHz	34.19	L1	-21.81
2	CISPR Average	865.5 kHz	22.86	L1	-23.13
2	CISPR Average	1.3515 MHz	21.25	L1	-24.74
1	Quasi Peak	1.5225 MHz	30.05	L1	-25.94
2	CISPR Average	2.022 MHz	28.06	L1	-17.93
1	Quasi Peak	2.031 MHz	38.90	L1	-17.09
2	CISPR Average	2.3235 MHz	31.00	L1	-14.99
1	Quasi Peak	2.9265 MHz	36.98	L1	-19.01
1	Quasi Peak	3.489 MHz	39.28	N	-16.71
2	CISPR Average	4.11 MHz	31.57	L1	-14.42
2	CISPR Average	4.65 MHz	32.65	L1	-13.34
1	Quasi Peak	4.9785 MHz	40.74	L1	-15.25
2	CISPR Average	5.7435 MHz	31.28	L1	-18.71
1	Quasi Peak	5.8335 MHz	36.64	L1	-23.35

EXHIBIT 5
EQUIPMENT LIST

5.0 **Equipment List**

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Spectrum Analyzer
Registration No.	EW-3156	EW-2466
Manufacturer	R&S	R&S
Model No.	ESR26	FSP30
Calibration Date	Nov. 03, 2015	Sep. 16, 2015
Calibration Due Date	Nov. 03, 2016	Aug. 20, 2016

Equipment	Biconical Antenna	Double Ridged Guide Antenna
Registration No.	EW-0571	EW-1133
Manufacturer	EMCO	EMCO
Model No.	3104C	3115
Calibration Date	Jun. 23, 2015	Nov. 05, 2015
Calibration Due Date	Dec. 23, 2016	May 05, 2017

2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN
Registration No.	EW-2500	EW-2501
Manufacturer	R&S	R&S
Model No.	ESCI	ENV-216
Calibration Date	Jan. 28, 2016	Jan. 28, 2016
Calibration Due Date	Jan. 28, 2017	Jan. 28, 2017

END OF TEST REPORT