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TEST REPORT

Report Number: 15061180HKG-003

Application
for
Original Grant of 47 CFR Part 15 Certification
1.9GHz VoIP Cordless Telephone - Base Unit

FCC ID: EW780-9800-00

Prepared and Checked by:

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Signed on File

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September 15, 2015

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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:	EW780-9800-00
FCC Model(s):	VVX D60
Type of EUT:	Class B Personal Computers and Peripherals
Description of EUT:	1.9GHz VoIP Cordless Telephone – Base Unit
Serial Number:	N/A
Sample Receipt Date:	June 22, 2015
Date of Test:	June 26, 2015 to August 17, 2015
Report Date:	September 15, 2015
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

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**EXHIBIT 1
TEST RESULTS SUMMARY & STATEMENT OF COMPLIANCE**

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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

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**EXHIBIT 2
GENERAL DESCRIPTION**

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2.0 General Description

2.1 Product Description

The VVX D60 is a 1.9GHz VoIP Cordless Phone. 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 100-240VAC to 5VDC 1200mA and/or powered by a PoE Injector.

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.

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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 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 100-240VAC to 5VDC 1200mA adaptor and/or powered by a PoE Injector.

As the Base unit can be powered by 2 different configurations (AC adaptor and PoE injector), all configurations have been checked. The data in this report represented the worst-case.

The EUT can support transmission of full slot and long slot. Both types of transmission were checked. The data in this report represented the worst-case.

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 quasi-peak mode.

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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.

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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 descriptions are listed below.

- (1) Base Unit: An AC adaptor with Ferrite Core (100-240VAC to 5VDC 1200mA, Brand: Ten Pao, Model: S008ACM0500120) (Supplied by Client)

Description of Accessories:

- (1) Polycom VVX Host Simulator, Model: VVX-310 FCC ID:2201-46161-001 (Supplied by client)
- (2) HP Notebook, Model 2540p, S/N: CND05104SY, DoC Product (Supplied by Intertek)
- (3) I-O DATA Harddisk, Model: HDPNC-HSUBK, DoC Product (Supplied by Intertek)
- (4) TP-LINK PoE Injector Model: TL-POE150S, S/N: 12391001515, AC adaptor: MU24-1480050, DoC Product (Supplied by Intertek)
- (5) 2 x CAT5 LAN cable with 1.5m long (Supplied by Intertek)
- (6) 1 x CAT5 LAN cable with 0.17m long (Supplied by Intertek)
- (7) 1 x USB to mini-USB cable with 0.28m long (Supplied by Intertek)
- (8) Polycom Cordless Handset, Model: VVX D60, FCC ID: EW780-9800-00 (Supplied by Client)
- (9) Telephone Headset, Brand: PLANTRONICS Model: M110 (Supplied by Intertek)

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.

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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 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 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 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29 \text{ dB}$$

$$PD = 0 \text{ dB}$$

$$AV = -10 \text{ dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m}$$

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

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4.2 Radiated Emissions

4.2.1 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at

Base Unit: 30.840 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 -

Base Unit: Passed by 1.8 dB margin

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Mode: Data Transfer (PC Port) with PC - power by PoE Injector

Table 1

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

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	30.840	44.2	16	10.0	38.2	40.0	-1.8
V	38.572	43.9	16	10.0	37.9	40.0	-2.1
V	98.674	38.8	16	12.0	34.8	43.5	-8.7
V	150.458	35.5	16	14.0	33.5	43.5	-10.0
H	173.620	29.1	16	19.0	32.1	43.5	-11.4
H	284.850	32.2	16	22.0	38.2	46.0	-7.8
H	351.142	32.5	16	24.0	40.5	46.0	-5.5
H	373.627	30.6	16	24.0	38.6	46.0	-7.4
H	476.426	26.4	16	26.0	36.4	46.0	-9.6
V	549.585	23.7	16	28.0	35.7	46.0	-10.3
H	807.028	12.2	16	31.0	27.2	46.0	-18.8

NOTES:

1. Quasi-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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Mode: Data Transfer (PC Port) with PC - powered by AC adaptor

Table 2

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

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
H	101.442	34.2	16	13.0	31.2	43.5	-12.3
H	171.097	28.9	16	18.0	30.9	43.5	-12.6
V	286.241	37.8	16	22.0	43.8	46.0	-2.2
V	312.109	25.9	16	23.0	32.9	46.0	-13.1
V	396.858	21.6	16	25.0	30.6	46.0	-15.4
V	550.401	21.1	16	28.0	33.1	46.0	-12.9
V	556.420	27.6	16	28.0	39.6	46.0	-6.4
V	635.160	20.1	16	29.0	33.1	46.0	-12.9
V	715.278	18.1	16	30.0	32.1	46.0	-13.9
V	859.899	12.4	16	31.0	27.4	46.0	-18.6

NOTES:

1. Quasi-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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4.3 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

1.2165 MHz

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

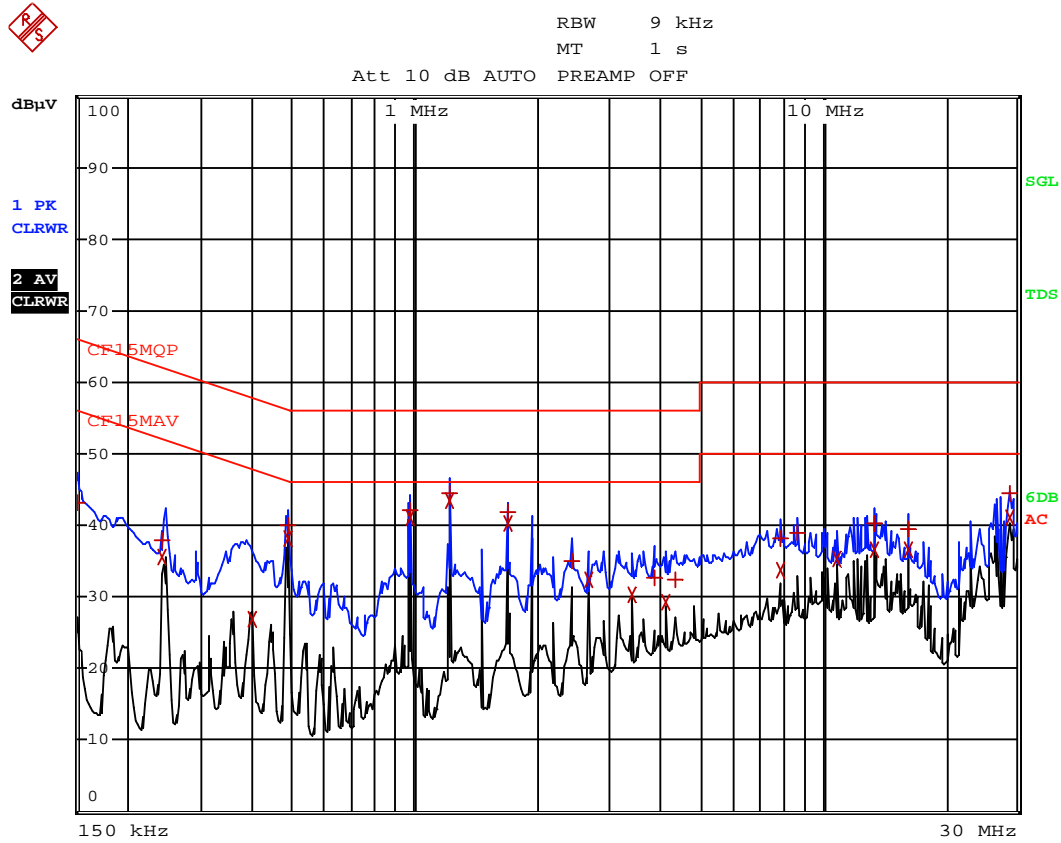
4.3.2 AC Power Line Conducted Emission Data

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

Passed by 2.57 dB margin compare with average limit

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Worst Case: Data transfer (PC Port) with PC – powered by PoE Injector



Date: 17.AUG.2015 15:29:34

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Worst Case: Data transfer (PC Port) with PC – powered by PoE Injector

EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP

Trace2: CF15MAV

Trace3: ---

	TRACE	FREQUENCY	LEVEL dB μ V		DELTA LIMIT dB
1	Quasi Peak	150 kHz	43.24	L1	-22.76
1	Quasi Peak	244.5 kHz	38.05	L1	-23.88
2	CISPR Average	244.5 kHz	35.56	N	-16.37
2	CISPR Average	397.5 kHz	26.84	L1	-21.06
1	Quasi Peak	487.5 kHz	40.05	L1	-16.15
2	CISPR Average	487.5 kHz	38.22	L1	-7.98
1	Quasi Peak	973.5 kHz	42.21	N	-13.78
2	CISPR Average	973.5 kHz	41.14	N	-4.85
1	Quasi Peak	1.2165 MHz	44.44	N	-11.55
2	CISPR Average	1.2165 MHz	43.42	N	-2.57
1	Quasi Peak	1.698 MHz	41.94	N	-14.06
2	CISPR Average	1.698 MHz	40.18	N	-5.81
1	Quasi Peak	2.427 MHz	34.95	L1	-21.04
2	CISPR Average	2.67 MHz	32.54	N	-13.45
2	CISPR Average	3.399 MHz	30.36	N	-15.64
1	Quasi Peak	3.885 MHz	32.69	L1	-23.31
2	CISPR Average	4.128 MHz	29.14	N	-16.86
1	Quasi Peak	4.371 MHz	32.43	N	-23.56
2	CISPR Average	7.9215 MHz	33.62	N	-16.37
1	Quasi Peak	7.926 MHz	38.07	N	-21.92

Date: 17.AUG.2015 15:28:40

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Worst Case: Data transfer (PC Port) with PC – powered by PoE Injector

EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP

Trace2: CF15MAV

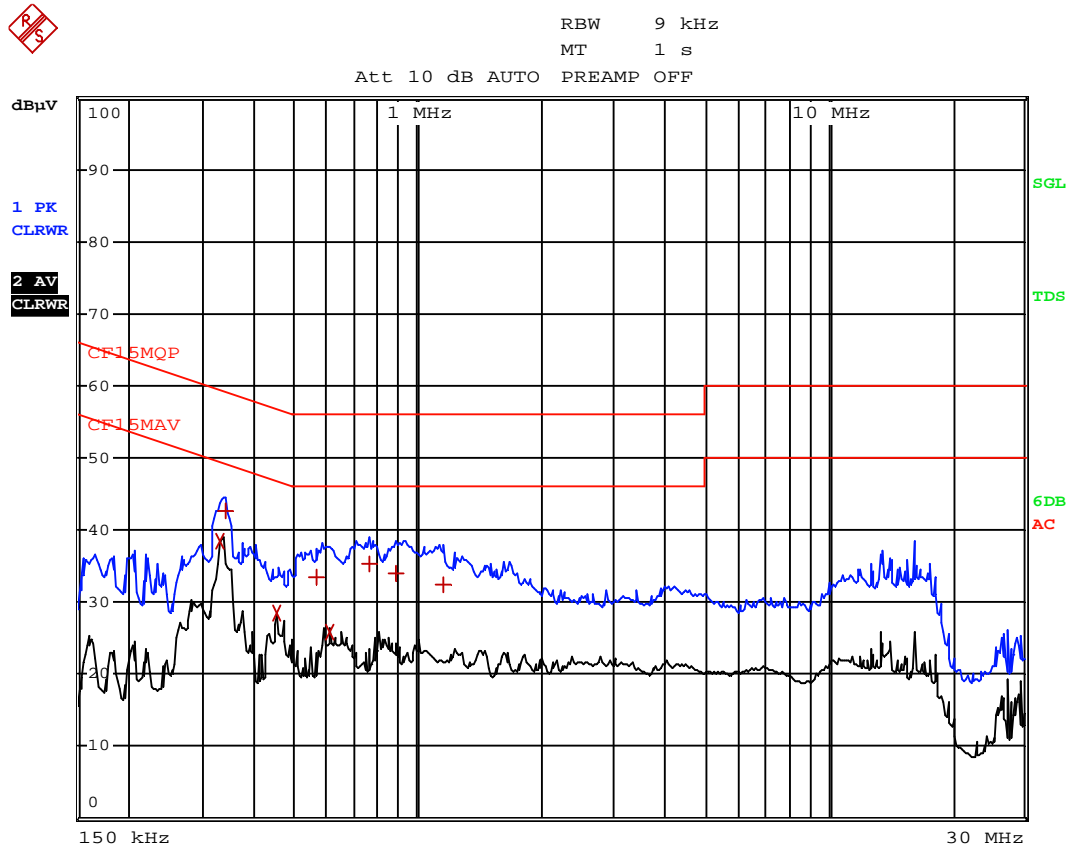
Trace3: ---

	TRACE	FREQUENCY	LEVEL dB μ V	DELTA LIMIT dB
1	Quasi Peak	8.718 MHz	39.00 N	-20.99
2	CISPR Average	10.7925 MHz	35.28 N	-14.72
1	Quasi Peak	13.4205 MHz	40.33 N	-19.66
2	CISPR Average	13.4205 MHz	36.55 N	-13.44
1	Quasi Peak	16.2285 MHz	39.41 N	-20.58
2	CISPR Average	16.2285 MHz	36.63 L1	-13.36
1	Quasi Peak	28.6845 MHz	44.35 N	-15.64
2	CISPR Average	28.6845 MHz	41.03 N	-8.96

Date: 17.AUG.2015 15:29:06

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Worst Case: Data transfer (PC Port) with PC – powered by AC adaptor



Date: 22.JUL.2015 08:18:14

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Worst Case: Data transfer (PC Port) with PC – powered by AC adaptor

EDIT PEAK LIST (Final Measurement Results)				
Trace1: CF15MQP				
Trace2: CF15MAV				
Trace3: ---				
	TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
2	CISPR Average	334.5 kHz	38.56 L1	-10.77
1	Quasi Peak	339 kHz	42.53 L1	-16.68
2	CISPR Average	451.5 kHz	28.58 L1	-18.26
1	Quasi Peak	564 kHz	33.42 L1	-22.57
2	CISPR Average	609 kHz	25.76 L1	-20.23
1	Quasi Peak	766.5 kHz	35.21 L1	-20.78
1	Quasi Peak	888 kHz	33.91 L1	-22.08
1	Quasi Peak	1.149 MHz	32.51 L1	-23.48

Date: 22.JUL.2015 08:17:33

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**EXHIBIT 5
EQUIPMENT LIST**

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5.0 Equipment List

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Spectrum Analyzer
Registration No.	EW-3095	EW-2253
Manufacturer	R&S	R&S
Model No.	ESCI	FSP40
Calibration Date	Oct. 16, 2014	May 27, 2015
Calibration Due Date	Oct. 16, 2015	May 27, 2016

Equipment	Log Periodic Antenna	Biconical Antenna
Registration No.	EW-0447	EW-2512
Manufacturer	EMCO	EMCO
Model No.	3146	3104C
Calibration Date	Mar. 16, 2015	Jan. 22, 2015
Calibration Due Date	Sep. 16, 2016	Jul. 22, 2016

2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN
Registration No.	EW-2251	EW-2501
Manufacturer	R&S	R&S
Model No.	ESCI	ENV-216
Calibration Date	Dec. 04, 2014	Jan. 15, 2015
Calibration Due Date	Dec. 04, 2015	Jan. 15, 2016

END OF TEST REPORT