

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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## TEST REPORT

**Report Number: 13031353HKG-001**

Application  
For

Class II permissive Change of 47 CFR Part 15 Certification  
RSS-213 Issue 2 Equipment Class I Permissive Change

Unlicensed Personal Communication Service Devices/  
2 GHz License-exempt Personal Communications Service Devices

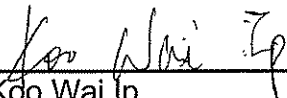
**(Handset unit)**

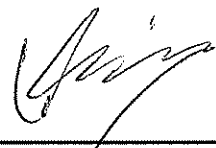
**FCC ID: EW780-8581-00**

**IC: 1135B-80858100**

Prepared and Checked by:

Approved by:

  
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April 12, 2013

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**Intertek Testing Services Hong Kong Ltd.**

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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, N.T., Hong Kong.
<b>FCC Specification Standard:</b>	FCC Part 15, October 1, 2011 Edition and 77 FR 43013, July 23, 2012
<b>FCC ID:</b>	EW780-8581-00
<b>FCC Model(s):</b>	SN6107, SN6147, SN6197, SN610x- abc, SN614x-abc, SN619x-abc
<b>IC Specification Standard:</b>	RSS-213 Issue 2, December 2005 RSS-Gen Issue 3, December 2010
<b>IC:</b>	1135B-80858100
<b>IC Model(s):</b>	SN6147, SN6197
<b>Type of EUT:</b>	Unlicensed Personal Communications Service Devices
<b>Description of EUT:</b>	1.9GHz Digital Modulation Cordless Phone with Caller ID, Digital Answering Machine and Speakerphone
<b>Serial Number:</b>	N/A
<b>Sample Receipt Date:</b>	December 31, 2012
<b>Date of Test:</b>	January 14 - 31, 2013
<b>Report Date:</b>	April 12, 2013
<b>Environmental Conditions:</b>	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

<b>General Technical Requirements</b>					
<b>Test Items</b>	<b>RSS-213 / RSS-Gen# Clause</b>	<b>FCC Part 15 Section</b>	<b>Test Procedure ANSI C63.17 / ANSI C63.4 *</b>	<b>Results</b>	<b>Details see section</b>
Radio Frequency Radiation Exposure	---	15.319(i)	---	Pass	4.11
Emissions Outside the Sub-Band	6.7.1	15.323(d)	6.1.6.2	Pass	4.9

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## 1.1 Statement of Compliance

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

FCC Part 15, October 1, 2011 Edition and 77 FR 43013, July 23, 2012  
RSS-213 Issue 2, December 2005  
RSS-Gen Issue 3, December 2010

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**EXHIBIT 2**  
**GENERAL DESCRIPTION**

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## 2.0 General Description

### 2.1 Product Description

The SN6197 is a 1.9GHz Digital Modulation Cordless Phone with Caller ID, Digital Answering Machine and Speakerphone. 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 Handset is powered by a Ni-MH type rechargeable battery pack (2.4V, 400mAh).

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

For FCC, The Model(s): SN6107, SN6147, SN610x-abc, SN614x-abc, SN619x-abc are the same as the Model: SN6197 in electronics/electrical designs including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these models are color, model number and packing configuration to be sold for marketing purpose. Suffix (x) indicates any alphanumeric character or blank presenting different packaging. Suffix (a) indicates any alphanumeric character or blank presenting number of handset. Suffix (b) indicates any alphanumeric character or blank presenting number of pendant unit. Suffix (c) indicates any alphanumeric character or blank presenting color code. Model: SN6107, SN610x-abc is an identical handset with a charger for selling a handset standalone.

For IC, The Model(s): SN6147 are the same as the Model: SN6197 in electronics/electrical designs including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these models are color, model number and packing configuration to be sold for marketing purpose.

### 2.2 Technical Description

The circuit description and digital modulation techniques description are saved with filename: descri.pdf.

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### 2.3 Purpose of Application / Change

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

### 2.4 Test Methodology

The radiated emission measurements for unintentional radiator (if any) was performed according to the test procedures specified in ANSI C63.4 (2009). The radiated emission measurements for intentional radiator contained in UPCS device was 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 / RSS-Gen Issue 3 (2010).

### 2.5 Test Facility

The open area test site used to collect the radiated data is at Rooftop of Intertek Testing Services Hong Kong Ltd., which 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 FCC and Industry Canada.

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**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 set up 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 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 EUT is attached to accessories, 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 are 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 UPCS transmitter radiated measurement, the spectrum analyzer resolution bandwidth was approximately 1% of EUT emission bandwidth, unless otherwise specified.

Radiated emission measurements for UPCS transmitter 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.

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

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### 3.2 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.

### 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) Handset: A Ni-MH type rechargeable battery pack (2.4V, 400mAh), Model: BT183342/BT283342, Brand: Corun (Supplied by Client)

Description of Accessories:

- (1) Telephone Line Simulator, Model: TLS-5D-01, S/N: 151101 (Supplied by Intertek)
- (2) Base Unit: An AC adaptor (100-120VAC to 6VDC 400mA, Model: S005IU0600040, Brand: Ten Pao) (Supplied by Client)
- (3) 3m Telephone Line (Supplied by Intertek)
- (4) 1m Telephone Line (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 Measurement Results**

**4.1 Emissions Outside the Sub-Band, FCC Rule 15.323(d) / RSS-213 Clause 6.7.1:**

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 / RSS-210 Clause 2.5.

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. Radiated emissions test method is used. Emissions that are directly caused by digital circuits in the transmit path and transmitter portion are measured.

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 / RSS-210 Clause 2.5	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 / RSS-210 Clause 2.5	Pass

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#### 4.1.1 Radiated Emissions Configuration Photographs:

Worst Case Radiated Emission  
at

Handset: 3856.896 MHz

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

#### 4.1.2 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:

Handset - Passed by 4.2 dB margin compared with peak limit

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Mode: Transmission

Table 1, Handset

**Radiated Emissions Data**  
**Pursuant To FCC Part 15 Section 15.323 (d) / RSS-213 Clause 6.7.1**  
**Emissions Requirements**

Lowest Channel

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	1917.101	-52.3	-39.5	-12.8
V	1917.869	-46.7	-29.5	-17.2
V	1919.800	-41.8	-9.5	-32.3

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.

Mode: Transmission

Table 2, Handset

**Radiated Emissions Data  
Pursuant To FCC Part 15 Section 15.209 / RSS-210 Clause 2.5  
Emissions Requirements**

Lowest Channel

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Average Factor (dB)	Calculated at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	3843.072	69.3	33	33.3	69.6	27.6	42.0	54.0	-12.0
H	5764.608	56.9	33	36.6	60.5	27.6	32.9	54.0	-21.1
H	7686.144	56.2	33	38.9	62.1	27.6	34.5	54.0	-19.5
H	9607.680	55.6	33	40.4	63.0	27.6	35.4	54.0	-18.6
H	11529.216	52.9	33	40.5	60.4	27.6	32.8	54.0	-21.2

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	3843.072	69.3	33	33.3	69.6	74.0	-4.4
H	5764.608	56.9	33	36.6	60.5	74.0	-13.5
H	7686.144	56.2	33	38.9	62.1	74.0	-11.9
H	9607.680	55.6	33	40.4	63.0	74.0	-11.0
H	11529.216	52.9	33	40.5	60.4	74.0	-13.6

NOTES:

1. Peak detector is used for the emission measurement.
2. The resolution bandwidth of the spectrum analyzer was set 100 kHz and 1 MHz for spurious emission measurements below 1 GHz and above 1 GHz respectively.
3. All measurements were made at 3 meters.
4. Negative value in the margin column shows emission below limit.

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Mode: Transmission

Table 3, Handset

**Radiated Emissions Data**  
**Pursuant To FCC Part 15 Section 15.323 (d) / RSS-213 Clause 6.7.1**  
**Emissions Requirements**

Highest Channel

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	1930.014	-42.1	-9.5	-32.6
V	1931.886	-46.8	-29.5	-17.3
V	1933.475	-51.8	-39.5	-12.3

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.

Mode: Transmission

Table 4, Handset

**Radiated Emissions Data  
Pursuant To FCC Part 15 Section 15.209 / RSS-210 Clause 2.5  
Emissions Requirements**

Highest Channel

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Average Factor (dB)	Calculated at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	3856.896	69.5	33	33.3	69.8	27.6	42.2	54.0	-11.8
H	5785.344	56.8	33	36.6	60.4	27.6	32.8	54.0	-21.2
H	7713.792	56.1	33	38.9	62.0	27.6	34.4	54.0	-19.6
H	9642.240	55.7	33	40.4	63.1	27.6	35.5	54.0	-18.5
H	11570.688	53.4	33	40.5	60.9	27.6	33.3	54.0	-20.7

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	3856.896	69.5	33	33.3	69.8	74.0	-4.2
H	5785.344	56.8	33	36.6	60.4	74.0	-13.6
H	7713.792	56.1	33	38.9	62.0	74.0	-12.0
H	9642.240	55.7	33	40.4	63.1	74.0	-10.9
H	11570.688	53.4	33	40.5	60.9	74.0	-13.1

NOTES:

1. Peak detector is used for the emission measurement.
2. The resolution bandwidth of the spectrum analyzer was set 100 kHz and 1 MHz for spurious emission measurements below 1 GHz and above 1 GHz respectively.
3. All measurements were made at 3 meters.
4. Negative value in the margin column shows emission below limit.

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Mode: Talk

Table 5, Handset

**Radiated Emissions Data**  
**Pursuant To FCC Part 15 Section 15.323 (d) / RSS-213 Clause 6.7.1**  
**Emissions Requirements**

Polarization	Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)	Margin (dB)
V	55.300	-63.5	-39.5	-24.0
V	110.600	-63.8	-39.5	-24.3
H	165.900	-63.0	-39.5	-23.5
H	221.200	-62.9	-39.5	-23.4
H	276.500	-63.3	-39.5	-23.8
H	331.800	-63.8	-39.5	-24.3

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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#### 4.1.3 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 $\mu$ 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
- 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 $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29.0 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 $\mu$ V/m. This value in dB $\mu$ V/m is converted to its corresponding level in  $\mu$ V/m.

RA = 62.0 dB $\mu$ V  
AF = 7.4 dB  
CF = 1.6 dB  
AG = 29.0 dB  
PD = 0.0 dB  
AV = -10 dB

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

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

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4.1.4 Average Factor Calculation and Transmitter ON Time Measurements, FCC Rule 15.35(b, c) / RSS-Gen cl 4.5

[ ] 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:

Please refer to the attached plots for more details:

The plots of Transmitter ON Time Measurements are as below.

[ ] Please refer to the attached transmitter timing diagram that are provided by manufacturer

[ x ] Not applicable - No average factor is required.

[ ] Please refer to Technical Description (descri.pdf) for more details

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#### 4.2 AC Power Line Conducted Emissions, FCC Rule 15.315 / RSS-213 Clause 6.3:

The AC power line conducted emission shall not exceed the limits of FCC Rule 15.207 / Table 4 in RSS-Gen Clause 7.2.4.

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 line. Emission Data is listed in following pages.
- Base Unit connects to AC power line and has transmission. Handset connects to AC power line (indirectly) but has no transmission. Emission Data of Base Unit is listed in following pages.
- Handset connects to AC power line (indirectly) only during charging. Emission Data is listed in following pages.

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.



#### 4.3 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.

- [X] Handset unit: 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. A SAR test report was submitted at same time and saved with filename SAR Report.pdf.
  
- [ ] Base unit: 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 with filename: RF exposure info.pdf.

Issuing Laboratory:  
**Intertek Testing Services Hong Kong Limited**

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.



**EXHIBIT 5**  
**EQUIPMENT LIST**

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.



## 5.0 Equipment List

### 1) Radiated Emissions Test

Equipment	Biconical Antenna 20MHz to 200MHz	Log Periodic Antenna	Double Ridged Guide Antenna
Registration No.	EW-2512	EW-0446	EW-1015
Manufacturer	EMCO	EMCO	EMCO
Model No.	3104C	3146	3115
Calibration Date	Nov. 15, 2011	Oct. 31, 2011	Aug. 24, 2011
Calibration Due Date	May. 15, 2013	Apr. 30, 2013	Feb. 24, 2013

Equipment	EMI Test Receiver	Spectrum Analyzer	Broad-Band Horn Antenna
Registration No.	EW-2500	EW-2188	EW-1679
Manufacturer	R&S	AGILENTECH	SCHWARZBECK
Model No.	ESCI	E4407B	BBHA9170
Calibration Date	Feb. 24, 2012	Nov. 05, 2012	Mar. 21, 2012
Calibration Due Date	Feb. 24, 2013	Nov. 05, 2013	Mar. 21, 2013

### 2) Conducted Emissions Test

Equipment	EMI Test Receiver (9kHz to 7GHz)	Artificial Mains	Pulse Limiter
Registration No.	EW-2666	EW-0192	EW-0698
Manufacturer	R&S	R&S	R&S
Model No.	ESCI7	ESH3-Z5	ESH3-Z2
Calibration Date	May. 21, 2012	Apr. 11, 2012	Apr. 06, 2012
Calibration Due Date	May. 21, 2013	Apr. 11, 2013	Apr. 06, 2013

### 3) Conductive Measurement Test

Equipment	Coaxial directional coupler	Spectrum Analyzer	Digital Radiocommunication Tester for DECT
Registration No.	EW-2337	EW-2466	EW-2250
Manufacturer	MAGNA	R&S	R&S
Model No.	4222-16	FSP30	CMD60
Calibration Date	Nil*	Jul. 06, 2012	Sep. 17, 2012
Calibration Due Date	Nil*	Jul. 06, 2013	Sep. 17, 2013

Equipment	Vector Signal Generator	Temperature & Humidity Chamber	Digital Multimeter
Registration No.	EW-2411	EW-2134	EW-1017
Manufacturer	R&S	GIANT FORCE	FLUKE
Model No.	SMU200A	GTH-750-40-CP- SD	87-IV
Calibration Date	Feb. 15, 2012	Aug. 13, 2012	Jun. 06, 2012
Calibration Due Date	Feb. 15, 2013	Aug. 29, 2013	Jul. 06, 2013

**END OF TEST REPORT**