

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.



## TEST REPORT

**Report Number: 13030677HKG-003**

Application  
For

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

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

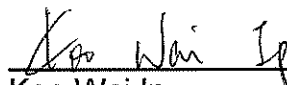
(Handset)

**FCC ID: EW780-8589-00**

**IC: 1135B-80858900**

Prepared and Checked by:

Approved by:

  
\_\_\_\_\_  
Koo Wai Ip  
Senior Lead Engineer

  
\_\_\_\_\_  
Nip Ming Fung, Melvin  
Assistant Manager  
May 29, 2013

- The test report only allows to be revised within the retention period unless further standard or the requirement was noticed.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

**Intertek Testing Services Hong Kong Ltd.**

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.  
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: [www.hk.intertek-etlsemko.com](http://www.hk.intertek-etlsemko.com)

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.



## 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, October 1, 2011 Edition and 77 FR 43013, July 23, 2012
<b>FCC ID:</b>	EW780-8589-00
<b>FCC Model(s):</b>	SB8740
<b>IC Specification Standard:</b>	RSS-213 Issue 2, December 2005 RSS-Gen Issue 3, December 2010
<b>IC:</b>	1135B-80858900
<b>IC Model(s):</b>	SB8740
<b>Type of EUT:</b>	Unlicensed Personal Communications Service Devices
<b>Description of EUT:</b>	1.9GHz Digital Modulation Cordless Handset with Caller ID
<b>Serial Number:</b>	N/A
<b>Sample Receipt Date:</b>	March 15, 2013
<b>Date of Test:</b>	April 9-18, 2013
<b>Report Date:</b>	May 29, 2013
<b>Environmental Conditions:</b>	Temperature: +10 to 40°C Humidity: 10 to 90%

## Table of Contents

<b>1.0 Test Results Summary &amp; Statement of Compliance</b> .....	4
1.1 Summary of Test Results .....	4
1.2 Statement of Compliance .....	5
<b>2.0 General Description</b> .....	7
2.1 Product Description .....	7
2.2 Purpose of Application.....	7
2.3 Test Methodology.....	7
2.4 Test Facility .....	7
<b>3.0 System Test Configuration</b> .....	9
3.1 Justification .....	9
3.2 Conducted Emission Test Configuration .....	10
3.3 Conducted Monitoring and Operational Test Configuration .....	10
3.4 EUT Exercising Software.....	10
3.5 Details of EUT and Description of Accessories .....	11
3.6 Measurement Uncertainty .....	11
<b>4.0 Measurement Results</b> .....	13
4.1 Emission Bandwidth .....	13
4.2 Directional Gain of the Antenna .....	16
4.3 Power Spectral Density .....	17
4.4 Unwanted Emission Inside the Sub-Band .....	20
4.5 Emissions Outside the Sub-Band .....	24
4.5.1 Radiated Emissions Configuration Photographs .....	25
4.5.2 Radiated Emissions Data .....	25
4.5.3 Field Strength Calculation.....	29
4.5.4 Average Factor Calculation and Transmitter ON Time Measurements .....	30
4.6 AC Power Line Conducted Emissions .....	30
4.7 Monitoring Threshold.....	31
4.7.1 Lower Monitoring Threshold .....	32
4.7.2 Least Interfered Channel .....	33
4.7.2.1 Upper Monitoring Threshold .....	33
<b>5.0 Equipment List</b> .....	35

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

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.



## 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<sup>#</sup> Clause</b>	<b>FCC Part 15 Section</b>	<b>Test Procedure ANSI C63.17 / ANSI C63.4<sup>*</sup></b>	<b>Results</b>	<b>Details see section</b>
Occupied/Emission Bandwidth	6.4	15.323(a)	6.1.3	Pass	4.1
Directional Gain of the Antenna	4.1(e)	15.319(e)	4.3.1	Pass	4.2
Power Spectral Density	6.6	15.319(d)	6.1.5	Pass	4.3
AC Power Line Conducted Emissions from EUT	6.3	15.315	7 <sup>*</sup>	NA	4.6

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.



1.1 Summary of Test Results (continued)

<b>Specific Requirements for UPCS Device</b>					
<b>Test Items</b>	<b>RSS-213 Clause</b>	<b>FCC Part 15 Section</b>	<b>Test Procedure ANSI C63.17</b>	<b>Results</b>	<b>Details see section</b>
Unwanted Emission Inside the Sub-Band	6.7.2	15.323(d)	6.1.6.1	Pass	4.4
Emissions Outside the Sub-Band	6.7.1	15.323(d)	6.1.6.2	Pass	4.5
Lower Monitoring Threshold	4.3.4(b2&b9)	15.323(c2&c9)	7.3.1	NA	4.7.1
Upper Monitoring Threshold	4.3.4(c5&c9)	15.323(c5.1&c9)	7.3.2	Pass	4.7.2.1

1.2 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

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 2**  
**GENERAL DESCRIPTION**

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.



## 2.0 General Description

### 2.1 Product Description

The SB8740 is a 1.9GHz Digital Modulation Cordless Handset with Caller ID. 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, 550mAh and 2.4V, 750mAh).

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

### 2.2 Purpose of Application

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

### 2.3 Test Methodology

The radiated emission measurements for unintentional radiator (if any) were performed according to the test procedures specified in ANSI C63.4 (2009). The radiated emission measurements for intentional radiator contained in UPCS device and conducted emission measurements were 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).

### 2.4 Test Facility

The open area test site and antenna port conducted measurement facility used to collect the radiated data and conductive data are at Rooftop and 5<sup>th</sup> Floor respectively 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.

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 3**  
**SYSTEM TEST CONFIGURATION**

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.



### 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.

Based on the purpose of change letter, the data of emission bandwidth, power spectral density and unwanted emission inside and outside the sub-band were included in the report.

### 3.2 Conducted Emission Test Configuration

The setup and equipment setting were made in accordance with ANSI C63.17. The antenna of EUT transmitter was replaced by a coaxial cable. The impedance matching of connection, cable loss and external RF attenuator are taken into account. The EUT was arranged to communicate via a fixed carrier frequency between its transmitter and a companion device. The transmission was configured in burst mode with pseudo-random data as typical as normal operation.

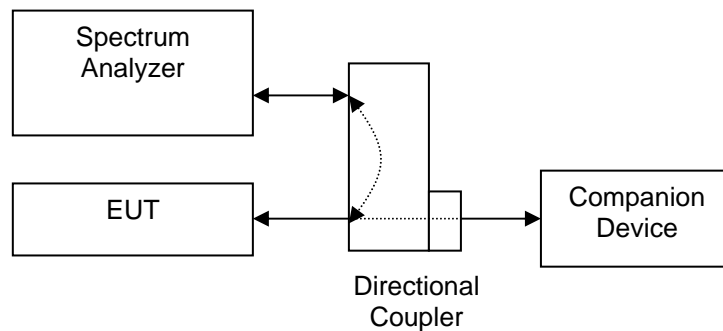


Figure 3.2.1

### 3.3 Conducted Monitoring and Operation Test Configuration

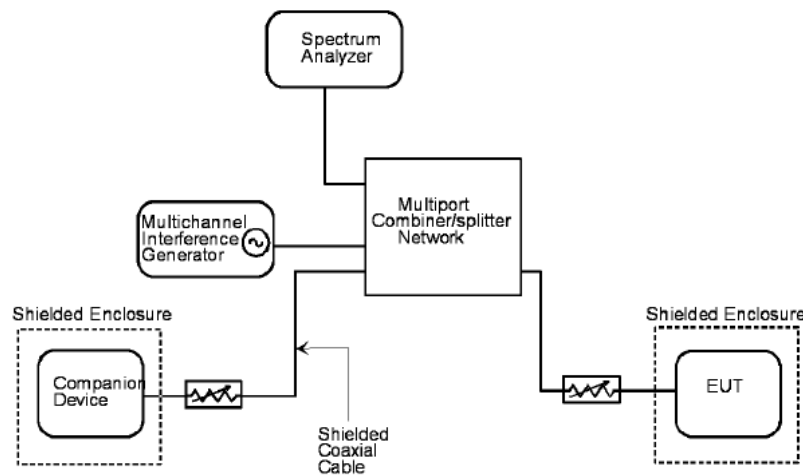


Figure 3.3.1

### 3.4 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.

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.



### 3.5 Details of EUT and Description of Accessories

#### Details of EUT:

A battery (provided with the unit) was used to power the device. Their descriptions are listed below.

- (1) A "Ni-MH" type rechargeable battery (2.4V, 550mAh) (Model: BT164392 / BT264392 Brand: GPI and Corun) (Supplied by Client)
- (2) A "Ni-MH" type rechargeable battery (2.4V, 550mAh) (Model: BT183342 / BT283342 Brand: BYD) (Supplied by Client)
- (3) A "Ni-MH" type rechargeable battery (2.4V, 750mAh) (Model: BT166342 / BT266342 Brand: BYD and GPI) (Supplied by Client)

#### Description of Accessories:

- (1) Telephone Headset with 1.2m long (Supplied by Applicant)
- (2) vtech Base Unit, Model: CS6124-2, FCC ID: EW780-7719-00 (Supplied by Applicant)

### 3.6 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.

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 4**  
**TEST RESULTS**

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.



#### 4.0 Measurement Results

##### 4.1 Emission Bandwidth, FCC Rule 15.323(a) / Occupied Bandwidth, RSS-213 Clause 6.4:

Operation shall be contained within the 1920 – 1930 MHz band. The emission bandwidth ( $B$ ) shall be less than 2.5 MHz and greater than 50 kHz.

Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.3 and RSS-Gen clause 4.6.1. Test setup is shown in section 3.2 Figure 3.2.1.

Test Results:

Traffic Carrier

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.536	26 dB down	1.48	Pass
Middle	1924.992	99% Bandwidth	1.31	Pass
Highest	1928.448	26 dB down	1.49	Pass

The plots of emission bandwidth and occupied bandwidth are saved as below.



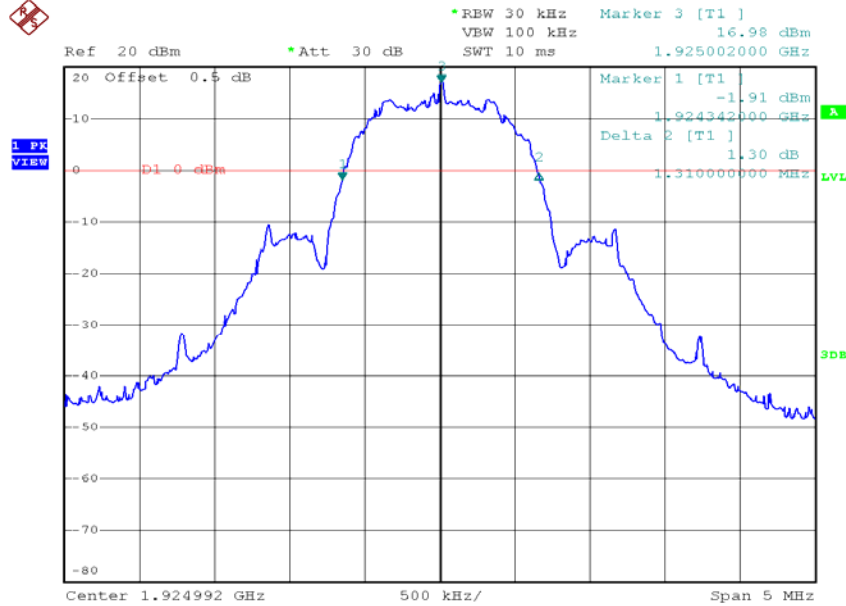
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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.



## Plots of occupied bandwidth

### Middle channel, Traffic carrier



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.



4.2 Directional Gain of the Antenna, FCC Rule FCC 15.319(e) /  
RSS-213 Clause 4.1(e):

The peak transmit power shall be reduced by the amount in dB that the maximum directional gain of the antenna exceeds 3 dBi.

The requirements are made in accordance with ANSI C63.17 sub-clause 4.3.1 / RSS-213 Clause 4.1(e).

- Manufacturer declares that the directional gain of the antenna is less than or equal to 3dBi. No peak transmit power reduction is required.
- Manufacturer declares that the directional gain of the antenna is greater than 3dBi. The peak transmit power shall be reduced by \_\_\_\_ dB.

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 Power Spectral Density, FCC Rule 15.319(d) / RSS-213 Clause 6.6:

Power spectral density shall not exceed 3 mW (4.8dBm) in any 3 kHz bandwidth as measured with a spectrum analyzer having a resolution bandwidth of 3 kHz.

Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.5. Test setup is shown in section 3.2 Figure 3.2.1.

Test Results:

Traffic Carrier

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.536	-5.9	4.8	Pass
Middle	1924.992	-4.0	4.8	Pass
Highest	1928.448	-4.1	4.8	Pass

The plots of the power spectral density are as below.

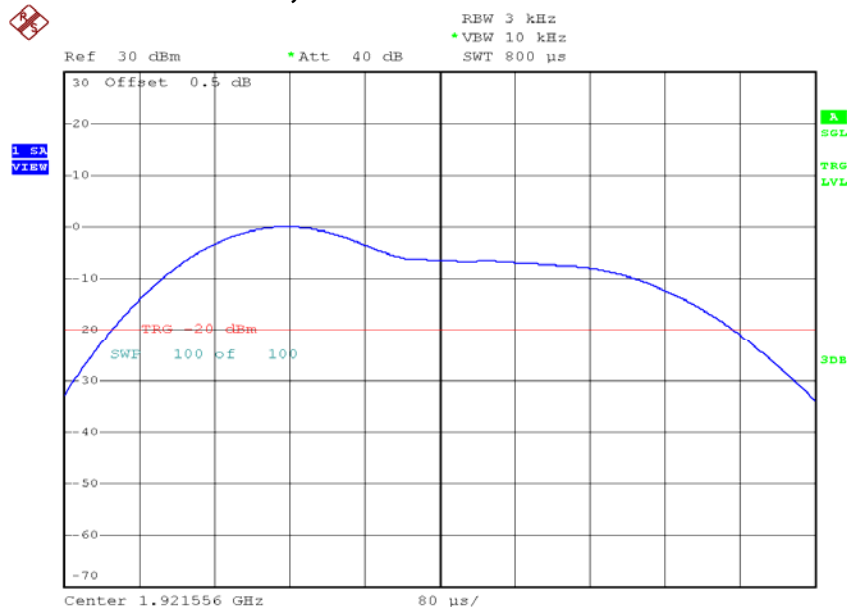
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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.

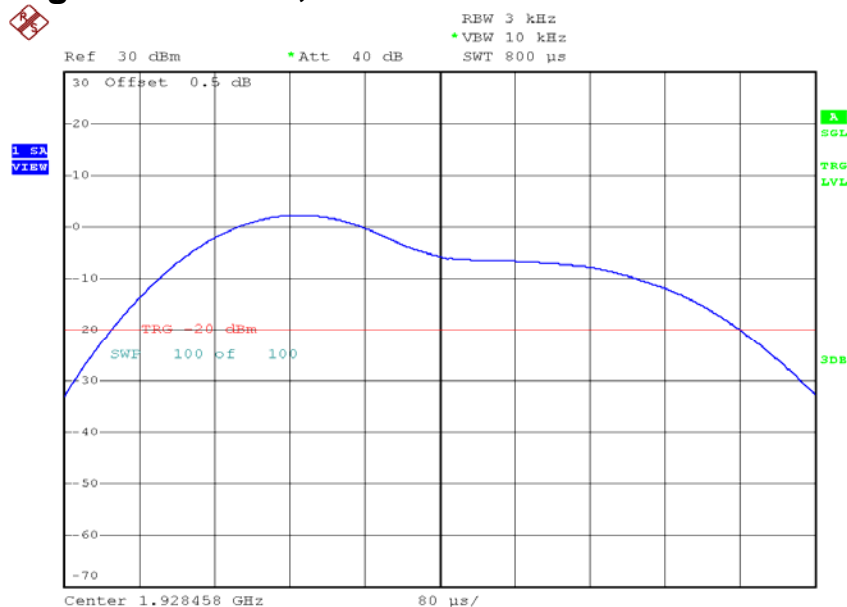


## Plots of the power spectral density - FCC

### Lowest channel, Traffic carrier



### Highest channel, Traffic carrier



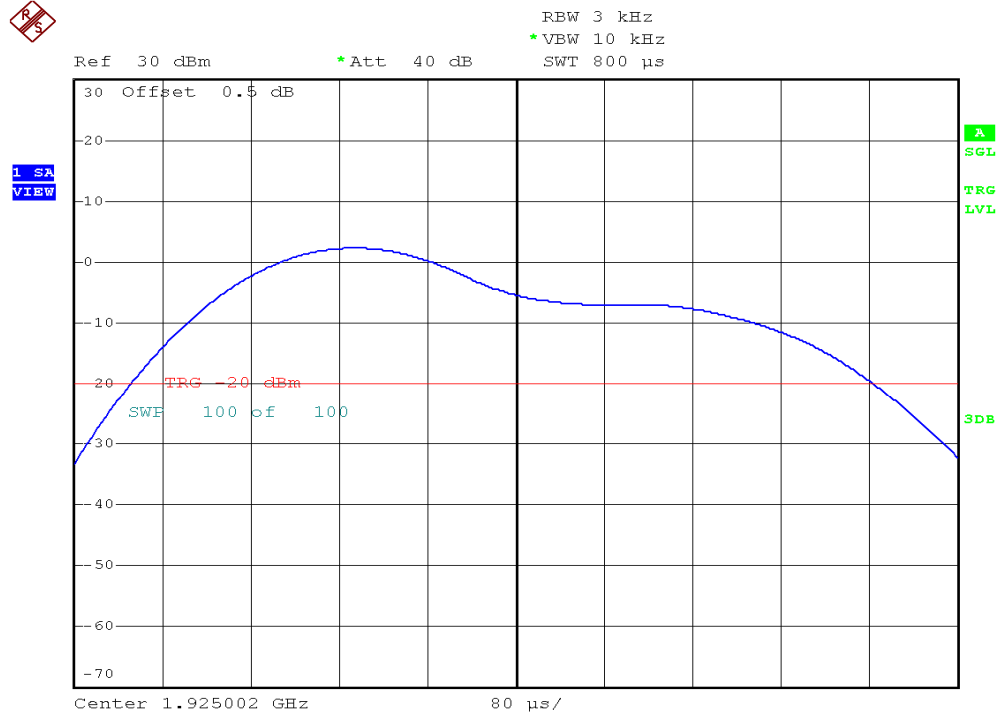
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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.



## Plots of the power spectral density - IC

### Middle channel, Traffic carrier



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.



4.4 Unwanted Emission Inside the Sub-Band, FCC Rule 15.323(d) /  
RSS-213 Clause 6.7.2:

Emissions inside the sub-band must comply with the following emission mask:

1. In the bands between  $1B$  and  $2B$  measured from the center of the emission bandwidth, emission shall be at least 30 dB below the permitted peak transmit power.
2. In the bands between  $2B$  and  $3B$  measured from the center of the emission bandwidth, emission shall be at least 50 dB below the permitted peak transmit power.
3. In the bands between  $3B$  and the band edge, emission shall be at least 60 dB below the permitted peak transmit power.

Where  $B$  = emission bandwidth or occupied bandwidth in Hz

Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.6.1. Test setup is shown in section 3.2 Figure 3.2.1.

Test Results:

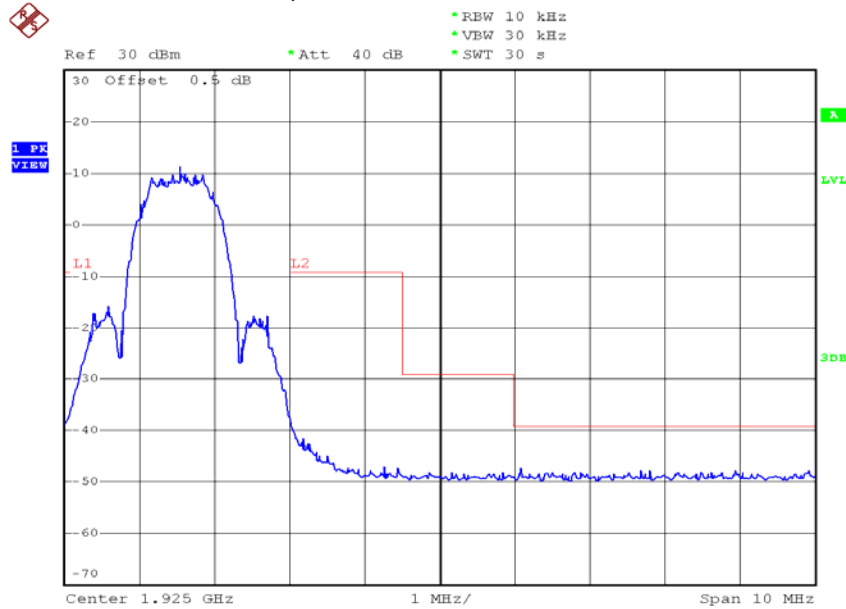
Traffic Carrier

Channel	Channel Frequency (MHz)	Results
Lowest	1921.536	Pass
Middle	1924.992	Pass
Highest	1928.448	Pass

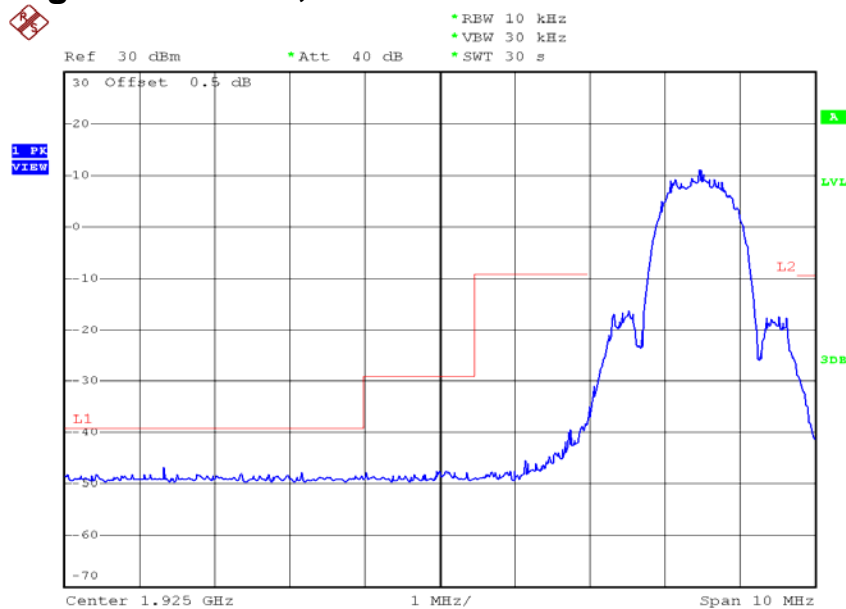
The plots of the unwanted emission inside the sub-band are as below.

## Plots of the unwanted emission inside the sub-band - FCC

### Lowest channel, Traffic carrier

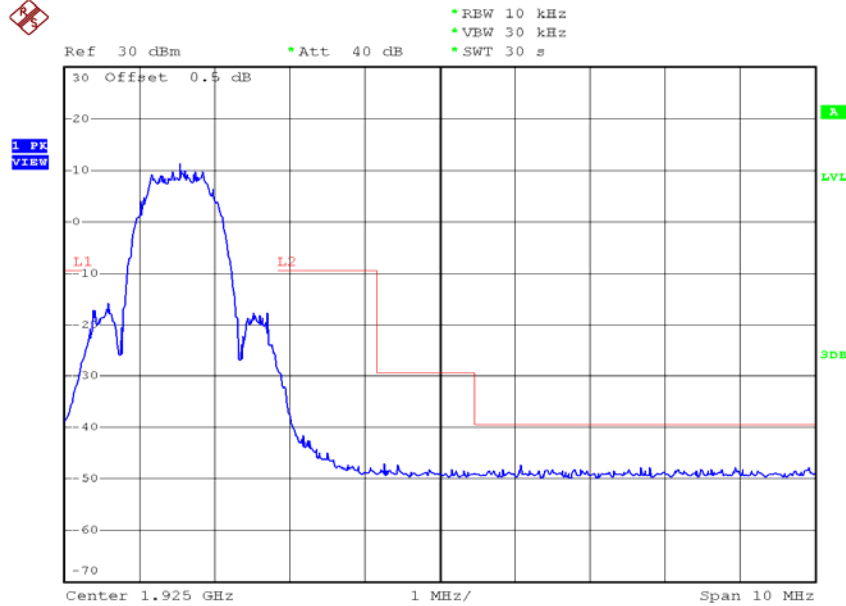


### Highest channel, Traffic carrier

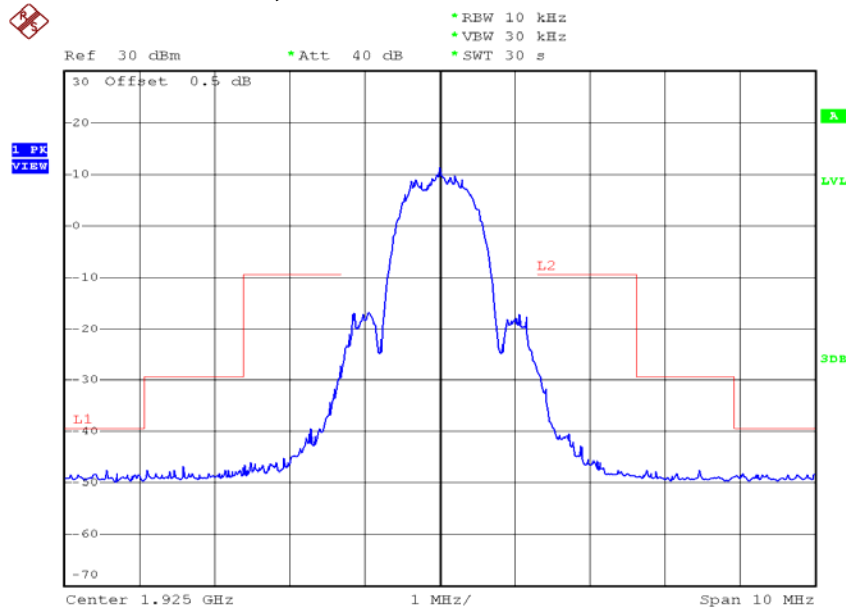


## Plots of the unwanted emission inside the sub-band - IC

### Lowest channel, Traffic carrier



### Middle channel, Traffic carrier



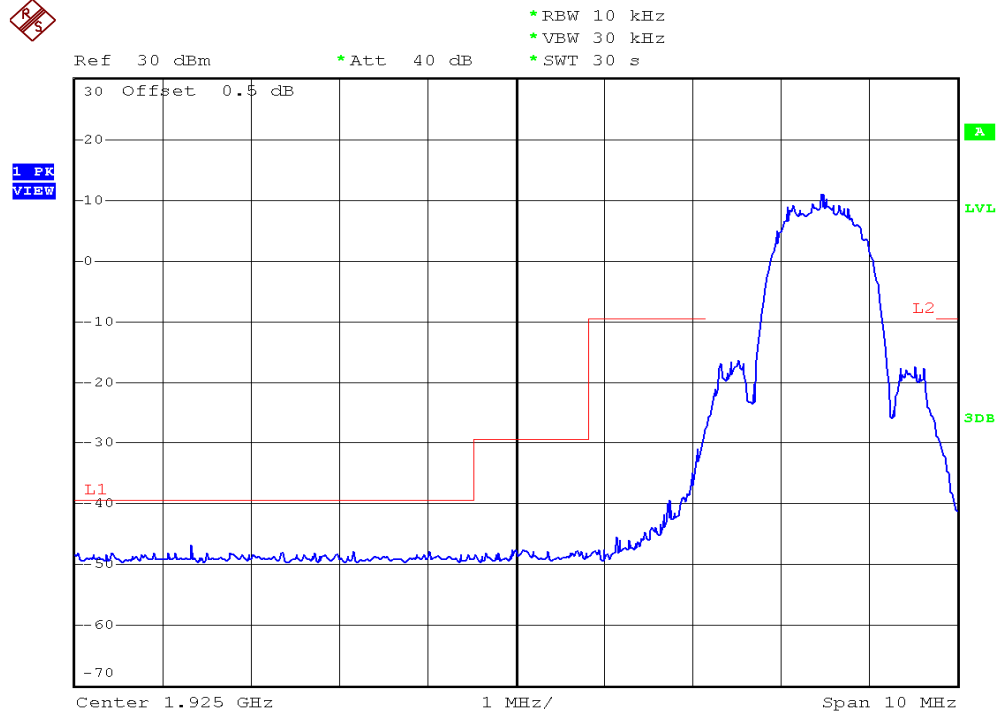
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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.



## Plots of the unwanted emission inside the sub-band - IC

### Highest channel, Traffic carrier



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.



4.5 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

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.



#### 4.5.1 Radiated Emissions Configuration Photographs:

Worst Case Radiated Emission  
at

3843.072 MHz

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

#### 4.5.2 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 1-3 list the significant emission frequencies, the limit and the margin of compliance.

Judgement:  
Passed by 2.4 dB margin

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.



Mode: Transmission

Table 1

**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	-51.6	-39.5	-12.1
V	1917.869	-46.7	-29.5	-17.2
V	1919.850	-41.9	-9.5	-32.4
H	3843.072	-41.9	-39.5	-2.4
H	5764.608	-42.6	-39.5	-3.1
H	7686.144	-44.0	-39.5	-4.5
H	9607.680	-44.6	-39.5	-5.1
H	11529.216	-45.3	-39.5	-5.8

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

**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	1930.013	-41.7	-9.5	-32.2
V	1931.686	-46.8	-29.5	-17.3
V	1933.471	-52.0	-39.5	-12.5
H	3856.896	-42.0	-39.5	-2.5
H	5785.344	-42.2	-39.5	-2.7
H	7713.792	-44.0	-39.5	-4.5
H	9642.240	-44.3	-39.5	-4.8
H	11570.688	-45.4	-39.5	-5.9

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.

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.



Mode: Talk

Table 3

**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	41.500	-63.8	-39.5	-24.3
V	62.300	-63.6	-39.5	-24.1
H	83.100	-62.6	-39.5	-23.1
H	124.650	-62.8	-39.5	-23.3
H	166.200	-63.4	-39.5	-23.9
H	207.750	-63.6	-39.5	-24.1

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.

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.



#### 4.5.3 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

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

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

#### 4.5.4 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

#### 4.6 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.

[ x ] 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.

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.



4.7 Monitoring Threshold:

For FCC, upper monitoring threshold limit is declared by manufacturer, and lower monitoring threshold limit is calculated with 20dB difference of upper monitoring threshold limit.

For IC, monitoring threshold can be relaxed according to RSS-213 Clause 4.3.4(b)(9). EUT that has a power output lower than the maximum permitted under RSS-213 Clause 6.5 may increase their monitoring detection threshold by one decibel for each one decibel that the transmitter power is below the maximum permitted.

Calculation of Monitoring Threshold Limit:

$$\begin{aligned} \text{Monitoring Threshold } (T) &\leq -174 + 10 \log_{10} B + M + P_{\max} - P_{\text{EUT}} \text{ dBm} \\ &\leq 15 \log_{10} B - 184 + M - P_{\text{EUT}} \text{ dBm} \end{aligned}$$

- Where  $B$  = Measured Emission Bandwidth or Occupied Bandwidth –  
IC:  $1.31 \times 10^6$  Hz  
 $M$  = 30 dB for Lower Monitoring Threshold ( $T_L$ ), or  
= 50 dB for Upper Monitoring Threshold ( $T_U$ )  
 $P_{\max}$  =  $5 \log_{10} B - 10$  dBm  
 $P_{\text{EUT}}$  = Measured Peak Transmit Power - IC: 18.68dBm

Monitoring Threshold Limits:

	FCC	IC
Lower Monitoring Threshold ( $T_L + U_M$ ) in dBm	-74.6	-74.9
Upper Monitoring Threshold ( $T_U + U_M$ ) in dBm	-54.6	-54.9

NA - Not applicable

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.



4.7.1 Lower Monitoring Threshold, FCC Rule 15.323(c)(2) /  
RSS-213 Clause 4.3.4(b)(2):

- [ x ] Not applicable – EUT which supports at least of 20 duplex system access channels for FCC and 40 duplex system access channels for IC and implements Least Interfered Channel (LIC) algorithm is permitted to use an upper monitoring threshold. Please refer to the section 4.15.2 for more details.
- [ ] The lower monitoring threshold must not be more than 30 dB above the thermal noise power for a bandwidth equivalent to the emission bandwidth used by EUT.

Measurements are made in accordance with ANSI C63.17 sub-clause 7.3.1. Test setup is shown in section 3.3 Figure 3.3.1. The test is performed on the carrier closest to center of the band. RF signal generators apply uniform CW interference on all EUT carriers each at level  $T_L + U_M + 10$  dB. Then, the interference level is reduced uniformly on all carriers until the EUT can transmit. The interference level shall be lower than or equal to the threshold limit.

Test Results:

Measured Maximum Interference Level (dBm)	Lower Monitoring Threshold Limit (dBm) ( $T_L + U_M$ )		Results
	FCC	IC	
NA	-74.6	-74.9	NA

NA - Not applicable

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.



4.7.2 Least Interfered Channel, LIC, FCC Rule 15.323(c)(5) /  
RSS-213 Clause 4.3.4(b)(5):

- Not implemented – EUT met lower monitoring threshold requirements. Please refer to the section 4.16.1 for more details
- If access to spectrum is not available as determined by section 4.15.1 and a minimum of 20 duplex system access channels (FCC) and 40 duplex system access channels (IC) are defined for the EUT, the time and spectrum windows with the lowest power level below a monitoring threshold of 50 dB above the thermal noise power determined for the emission bandwidth may be accessed

Number of duplex channels per frequency channel = 12  
 Number of frequency channel = 5  
 Total Duplex Channels = 60

Hence, the time and spectrum windows below upper monitoring threshold may be accessed.

4.7.2.1 Upper Monitoring Threshold, FCC Rule 15.323(c)(5) /  
RSS-213 Clause 4.3.4(b)(5):

Measurements are made in accordance with ANSI C63.17 sub-clause 7.3.2. Test setup is shown in section 3.3 Figure 3.3.1. The test is performed on the carrier closest to center of the band. RF signal generators apply uniform CW interference on all EUT carriers each at level  $T_U + U_M + 10$  dB. Then, the interference level is reduced uniformly on all carriers until the EUT can transmit. The interference level shall be lower than or equal to the threshold limit.

Test Results:

Measured Maximum Interference Level (dBm)	Upper Monitoring Threshold Limit (dBm) ( $T_U + U_M$ )		Results
	FCC	IC	
-64	-54.6	-54.9	Pass

NA - Not applicable

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	Spectrum Analyzer	EMI Test Receiver	Biconical Antenna
Registration No.	EW-2188	EW-2500	EW-2512
Manufacturer	AGILENTTECH	R&S	EMCO
Model No.	E4407B	ESCI	3104C
Calibration Date	Nov. 05, 2012	Mar. 22, 2013	Nov. 15, 2011
Calibration Due Date	Nov. 05, 2013	Feb. 28, 2014	May 15, 2013

Equipment	Log Periodic Antenna	Broad-Band Horn Antenna	Double Ridged Guide Antenna (1GHz - 18GHz)
Registration No.	EW-0446	EW-1679	EW-1133
Manufacturer	EMCO	SCHWARZBECK	EMCO
Model No.	3146	BBHA9170	3115
Calibration Date	Oct. 31, 2011	Apr. 01, 2013	Oct. 05, 2012
Calibration Due Date	Apr. 30, 2013	Apr. 01, 2014	Apr. 05, 2014

### 3) Conductive Measurement Test

Equipment	Spectrum Analyzer	Digital Multimeter	Coaxial directional coupler
Registration No.	EW-2466	EW-1017	EW-2168
Manufacturer	R&S	FLUKE	MAGNA
Model No.	FSP30	87-IV	4222-16
Calibration Date	Jul. 06, 2012	Jun. 06, 2012	Nil
Calibration Due Date	Jul. 06, 2013	Jul. 06, 2013	Nil

Equipment	Vector Signal Generator	Digital Radiocommunication Tester for DECT
Registration No.	EW-2320	EW-1739
Manufacturer	R&S	R&S
Model No.	SMU200A	CMD60
Calibration Date	Sep. 19, 2012	Jul. 06, 2012
Calibration Due Date	Aug. 18, 2013	Jul. 06, 2013

**END OF TEST REPORT**