

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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## TEST REPORT

Report No.: 13080835HKG-001

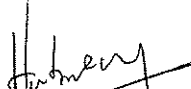
ALCO Electronics Ltd.


Application  
For  
Certification  
(Original Grant)  
(FCC ID: A2HRCS13101T)  
(IC: 9903A-RCS13101T)

Transceiver

Prepared and Checked by:

Approved by:

  
\_\_\_\_\_  
Wong Cheuk Ho, Herbert  
Lead Engineer

  
\_\_\_\_\_  
Chan Chi Hung, Terry  
Supervisor  
Date: September 14, 2013

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## GENERAL INFORMATION

**ALCO Electronics Ltd.**  
**BRAND NAME: VENTURER, MODEL: ACS3101E**  
**BRAND NAME: RCA, MODEL: RCS13101E**  
**FCC ID: A2HRCS13101T**  
**IC: 9903A-RCS13101T**

Grantee:	ALCO Electronics Ltd.
Grantee Address:	11/F., Zung Fu Industrial Building, 1067 King's Road, Quarry Bay, Hong Kong.
Contact Person:	Peggy Suen
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Manufacturer:	Dongguan Houjie Alco Electronics General Factory
Manufacturer Address:	Gong Ye Xi Road, Houjie Industrial Compound, Houjie, Dongguan, Guangdong, P.R.C.
Brand Name:	VENTURER / RCA
Model:	ACS3101E / RCS13101E
Type of EUT:	Transceiver
Description of EUT:	Internet Music System
Serial Number:	N/A
FCC ID / IC:	A2HRCS13101T / 9903A-RCS13101T
Date of Sample Submitted:	August 21, 2013
Date of Test:	August 21, 2013 to September 04, 2013
Report No.:	13080835HKG-001
Report Date:	September 14, 2013
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

Report No.: 13080835HKG-001  
FCC ID: A2HRCS13101T  
IC: 9903A-RCS13101T

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**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

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## SUMMARY OF TEST RESULT

**ALCO Electronics Ltd.**  
**BRAND NAME: VENTURER, MODEL: ACS3101E**  
**BRAND NAME: RCA, MODEL: RCS13101E**  
**FCC ID: A2HRCS13101T**  
**IC: 9903A-RCS13101T**

TEST SPECIFICATION	REFERENCE	RESULTS
Transmitter Power Line Conducted Emissions	15.207 / RSS-Gen 7.2.4	Pass
Transmitter Field Strength and Bandwidth Requirement	15.249 / RSS-210 A2.9	Pass
Digital Device Radiated Emissions	15.109 / RSS-210 2.5	Pass
Digital Device Conducted Emissions	15.107 / ICES-003	Pass

The equipment under test is found to be complying with the following standards:  
FCC Part 15, October 1, 2011 Edition  
RSS-210 Issue 8, December 2010  
RSS-Gen Issue 3, December 2010

- Note: 1. The EUT uses a permanently attached antenna which, in accordance to section 15.203, is considered sufficient to comply with the provisions of this section.
2. Pursuant to FCC part 15 Section 15.215(c), the 20 dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over exceeded variations in temperature and supply voltage were considered.

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## 1.0 **General Description**

### 1.1 Product Description

The Equipment Under Test (EUT) is the Internet Music System. The EUT contains two portions: The Tablet portion that using Android Operating System and the Main Unit portion. These two portions are as a whole product unit for sale that cannot be separated by end-user as declared by applicant.

The Tablet portion equipped with a 7-inch LCD display (with touch screen), USB, SD, HDMI interface and audio line output. The Tablet contains a WiFi module and a Bluetooth module. The WiFi module is complying with IEEE 802.11b/g/n(HT20)/n(HT40) standards that operating in 2.4GHz ISM frequency band (2400MHz – 2483.5MHz), while the Bluetooth module is operating in the frequency range from 2402MHz to 2480MHz (79 channels with 1MHz channel spacing). The Tablet is powered by a 5VDC output from the Main Unit. The Main Unit can accept 100-120VAC only. The Bluetooth module of the Tablet is using non-adaptive frequency hopping as declared by the applicant. The USB interface of the Tablet contains PC Connectivity function.

The Main Unit portion of the Internet Music System acts as the undetachable docking base of the Tablet with audio amplification. The Main Unit can accept audio input sources such as 3.5mm phone-jack line-in, FM radio, CD, audio line output from Tablet (Internet) and wireless Bluetooth devices. The Bluetooth module in the Main Unit is operating in the frequency range from 2402MHz to 2480MHz (79 channels with 1MHz channel spacing). The audio signal is amplified and fed to headphone and the separate passive stereo loudspeakers. The Main Unit can accept 100-120VAC only. The Bluetooth module of the Main Unit is using non-adaptive frequency hopping as declared by the applicant.

The Model: RCS13101E is the same as the Model: ACS3101E in hardware aspect. The difference in model number and brand name serves as marketing strategy.

Antenna Type : Internal, Integral

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

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## 1.2 Related Submittal(s) Grants

This is a single application for certification of transceivers (Bluetooth portion) and PC Connectivity portion.

## 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). All radiated measurements were performed in an Open Area Test Site. Preliminary scans were performed in the Open Area Test Site 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.

## 1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been placed on file with the FCC and IC.

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## 2.0 System Test Configuration

### 2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2009).

The device was powered by 120VAC.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a plastic stand if necessary and placed on the wooden turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

All configuration (with and without USB PC connectivity during transceiver test) and setting of data rate for each operating mode, which are Bluetooth of Main Unit, Bluetooth of Tablet and WiFi of Tablet 802.11b/g/n(HT20)/n(HT40), had been considered and worst case test data are shown on this test report.

### 2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it transmits the RF signal continuously.

### 2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

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## 2.4 Equipment Modification

Any modifications installed previous to testing by ALCO Electronics Ltd. will be incorporated in each production model sold/leased in the United States and Canada.

## 2.5 Measurement Uncertainty

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

## 2.6 Support Equipment List and Description

1. 1 x 2GB Kingston SD Card
2. 1 x headphone with 1.2m cable
3. 1 x audio cable of 2m long (with 47kohm resistive termination)
4. 1 x USB cable of 2m long
5. 1 x HDMI cable of 2m long
6. 1 x HDMI monitor  
(Provided by Intertek)
7. 1 x passive stereo loudspeaker with 1.5m cable
8. Tablet WiFi Test mode software (RTL8188ETV Linux Driver MP)
9. Tablet Bluetooth Test mode software (RDA Bluetooth Certification)
10. Main Unit Bluetooth Test mode software (RF Control Kit v1.0)
10. Notebook IBM Thinkpad X31 (Type 2672)
11. Micro USB converter
12. Micro HDMI converter  
(Provided by Applicant)



### 3.0 Emission 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.

#### 3.1 Field Strength Calculation

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

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

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  
                    AV = Average Factor in dB

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

$$FS = RR + LF$$

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

Assume a receiver reading of 52.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB and average factor of 5 dB are subtracted, giving a field strength of 27 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$\begin{aligned} RA &= 52.0 \text{ dB}\mu\text{V/m} \\ AF &= 7.4 \text{ dB} & RR &= 18.0 \text{ dB}\mu\text{V} \\ CF &= 1.6 \text{ dB} & LF &= 9.0 \text{ dB} \\ AG &= 29.0 \text{ dB} \\ AV &= 5.0 \text{ dB} \\ FS &= RR + LF \\ FS &= 18 + 9 = 27 \text{ dB}\mu\text{V/m} \end{aligned}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(27 \text{ dB}\mu\text{V/m})/20] = 22.4 \mu\text{V/m}$$

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### 3.2 Radiated Emission Configuration Photograph

The worst case in radiated emission was found at 4824.000 MHz (transceiver) and 60MHz (PC mode).

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

### 3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgment: Passed by 3.4 dB (transceiver) and 3.8dB (PC mode).

### 3.4 Conducted Emission Configuration Photograph

The worst case in line-conducted emission was found at 0.308MHz (transceiver) and 0.474 MHz (PC mode).

For electronic filing, the worst case line-conducted configuration photographs are saved with filename: conducted photo.pdf.

### 3.5 Conducted Emission Data

The graph and data table of conducted emission is shown as below.

Judgment: Pass by 7.0dB (transceiver) and 6.9 dB (PC mode).

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Worst-Case Operating Mode: Main Unit – Bluetooth Transmitting

EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
TRACE	FREQUENCY	LEVEL	dB $\mu$ V		DELTA LIMIT dB
1 Quasi Peak	159 kHz	37.59	L1		-27.91
1 Quasi Peak	235.5 kHz	32.45	L1		-29.79
2 CISPR Average	235.5 kHz	11.41	L1		-40.84
1 Quasi Peak	307.5 kHz	43.40	L1		-16.63
2 CISPR Average	307.5 kHz	43.08	L1		-6.95
1 Quasi Peak	501 kHz	21.25	N		-34.74
2 CISPR Average	501 kHz	12.32	N		-33.67
1 Quasi Peak	613.5 kHz	39.86	L1		-16.13
2 CISPR Average	613.5 kHz	32.60	L1		-13.39
1 Quasi Peak	919.5 kHz	33.00	L1		-22.99
2 CISPR Average	1.0005 MHz	11.90	L1		-34.09
1 Quasi Peak	1.23 MHz	39.79	L1		-16.20
2 CISPR Average	1.23 MHz	35.72	L1		-10.27
1 Quasi Peak	1.9995 MHz	21.55	N		-34.44
2 CISPR Average	1.9995 MHz	15.45	N		-30.54
2 CISPR Average	2.8905 MHz	10.25	N		-35.74
1 Quasi Peak	3.309 MHz	18.24	N		-37.75
2 CISPR Average	3.669 MHz	11.90	N		-34.09
2 CISPR Average	4.1595 MHz	14.46	N		-31.54
1 Quasi Peak	4.353 MHz	32.20	N		-23.79

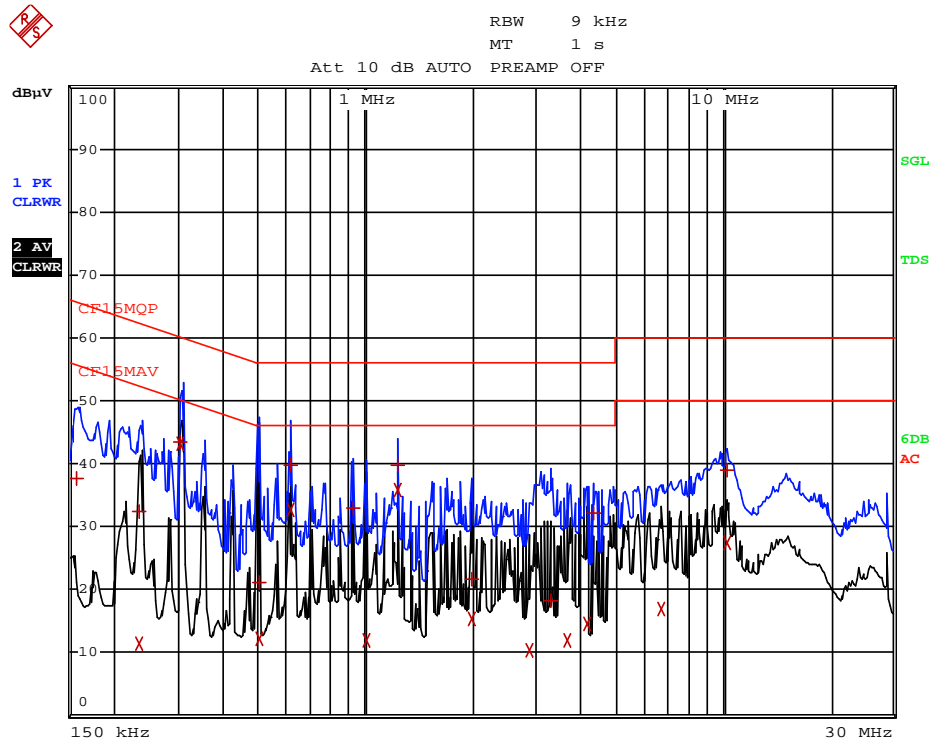
EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
TRACE	FREQUENCY	LEVEL	dB $\mu$ V		DELTA LIMIT dB
2 CISPR Average	6.6975 MHz	16.93	L1		-33.07
1 Quasi Peak	10.284 MHz	38.97	L1		-21.02
2 CISPR Average	10.284 MHz	27.39	L1		-22.60

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Worst-Case Operating Mode: Main Unit – Bluetooth Transmitting



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Worst-Case Operating Mode: Tablet – Bluetooth Transmitting

EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
TRACE	FREQUENCY	LEVEL	dB $\mu$ V	DELTA	LIMIT dB
1 Quasi Peak	204 kHz	40.18	L1	-23.26	
2 CISPR Average	204 kHz	35.35	L1	-18.09	
1 Quasi Peak	231 kHz	34.85	L1	-27.55	
2 CISPR Average	271.5 kHz	33.24	L1	-17.82	
2 CISPR Average	307.5 kHz	39.22	L1	-10.81	
1 Quasi Peak	402 kHz	40.64	N	-17.16	
1 Quasi Peak	474 kHz	42.37	L1	-14.06	
2 CISPR Average	474 kHz	39.09	L1	-7.34	
1 Quasi Peak	609 kHz	41.84	L1	-14.15	
2 CISPR Average	676.5 kHz	37.05	L1	-8.94	
2 CISPR Average	1.086 MHz	30.39	N	-15.60	
1 Quasi Peak	1.419 MHz	34.66	N	-21.33	
2 CISPR Average	1.419 MHz	26.95	N	-19.04	
2 CISPR Average	1.896 MHz	29.83	N	-16.17	
2 CISPR Average	2.634 MHz	23.89	N	-22.10	
2 CISPR Average	3.939 MHz	30.09	N	-15.90	
1 Quasi Peak	4.1055 MHz	32.23	N	-23.76	
2 CISPR Average	4.605 MHz	34.67	N	-11.32	
1 Quasi Peak	4.848 MHz	33.93	N	-22.06	
2 CISPR Average	6.378 MHz	31.30	L1	-18.69	

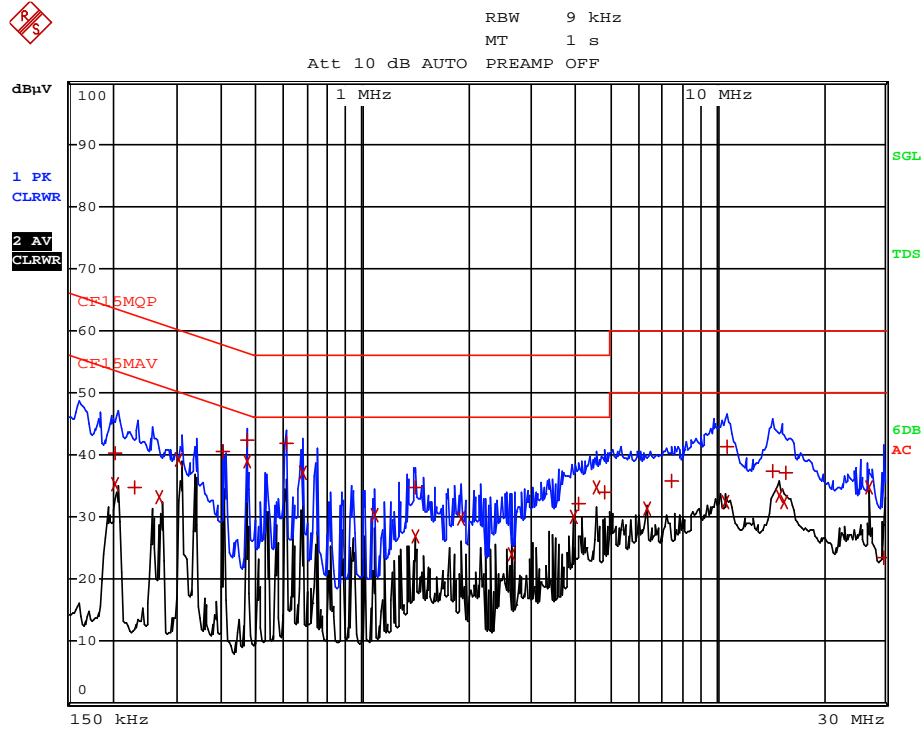
EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
TRACE	FREQUENCY	LEVEL	dB $\mu$ V	DELTA	LIMIT dB
1 Quasi Peak	7.4895 MHz	35.95	L1	-24.04	
2 CISPR Average	10.5765 MHz	32.39	L1	-17.60	
1 Quasi Peak	10.734 MHz	41.28	L1	-18.71	
1 Quasi Peak	14.4735 MHz	37.33	L1	-22.66	
2 CISPR Average	15.1035 MHz	33.34	L1	-16.65	
2 CISPR Average	15.486 MHz	32.34	L1	-17.65	
1 Quasi Peak	15.7425 MHz	37.18	L1	-22.81	
2 CISPR Average	27.0015 MHz	34.67	N	-15.32	
1 Quasi Peak	29.6475 MHz	23.59	L1	-36.40	

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Worst-Case Operating Mode: Tablet – Bluetooth Transmitting



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Worst-Case Operating Mode: Tablet – WiFi Transmitting

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CF15MQP			
Trace2:	CF15MAV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1 Quasi Peak	204 kHz	39.25 L1		-24.19
2 CISPR Average	204 kHz	34.06 L1		-19.38
1 Quasi Peak	267 kHz	34.34 N		-26.87
2 CISPR Average	271.5 kHz	32.04 L1		-19.03
1 Quasi Peak	307.5 kHz	38.18 L1		-21.85
2 CISPR Average	307.5 kHz	38.46 L1		-11.57
1 Quasi Peak	469.5 kHz	40.94 L1		-15.57
2 CISPR Average	474 kHz	37.00 L1		-9.43
2 CISPR Average	604.5 kHz	35.35 L1		-10.64
1 Quasi Peak	609 kHz	40.75 L1		-15.24
2 CISPR Average	1.077 MHz	25.36 L1		-20.63
1 Quasi Peak	1.4235 MHz	33.44 N		-22.55
1 Quasi Peak	1.5945 MHz	29.13 N		-26.86
2 CISPR Average	3.5925 MHz	27.96 N		-18.03
1 Quasi Peak	4.101 MHz	40.27 N		-15.72
2 CISPR Average	4.6725 MHz	30.42 N		-15.57
1 Quasi Peak	4.677 MHz	41.11 N		-14.88
1 Quasi Peak	6.3015 MHz	36.50 L1		-23.49
2 CISPR Average	7.6695 MHz	25.25 L1		-24.74
1 Quasi Peak	10.7025 MHz	39.68 L1		-20.31

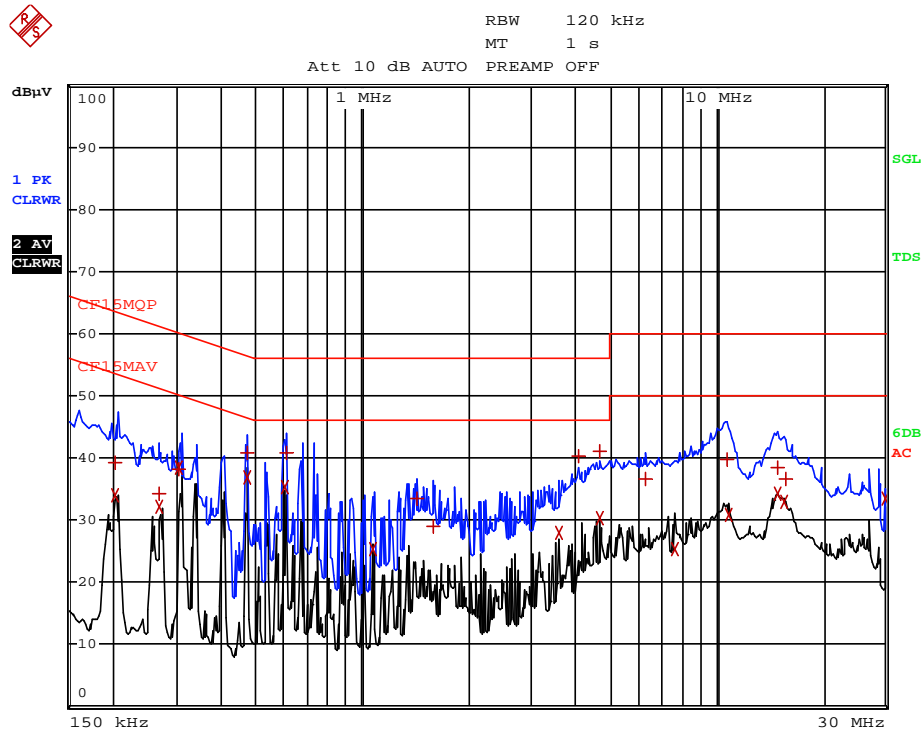
EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CF15MQP			
Trace2:	CF15MAV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
2 CISPR Average	10.806 MHz	30.85 L1		-19.14
2 CISPR Average	14.8425 MHz	34.26 L1		-15.73
1 Quasi Peak	14.901 MHz	38.48 L1		-21.51
2 CISPR Average	15.4815 MHz	32.94 L1		-17.05
1 Quasi Peak	15.729 MHz	36.59 L1		-23.40
2 CISPR Average	30 MHz	33.34 L1		-16.65

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Worst-Case Operating Mode: Tablet – WiFi Transmitting





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Worst-Case Operating Mode: Tablet – USB PC Connectivity – data transfer

EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
TRACE	FREQUENCY	LEVEL	dB $\mu$ V	DELTA	LIMIT dB
1 Quasi Peak	204 kHz	39.77	L1	-23.66	
2 CISPR Average	204 kHz	34.75	L1	-18.69	
1 Quasi Peak	262.5 kHz	33.84	N	-27.51	
2 CISPR Average	271.5 kHz	32.88	L1	-18.18	
1 Quasi Peak	339 kHz	40.68	L1	-18.54	
2 CISPR Average	339 kHz	38.06	L1	-11.16	
1 Quasi Peak	474 kHz	42.31	L1	-14.12	
2 CISPR Average	474 kHz	39.57	L1	-6.86	
1 Quasi Peak	604.5 kHz	41.53	L1	-14.46	
2 CISPR Average	676.5 kHz	37.67	L1	-8.32	
2 CISPR Average	1.0815 MHz	30.51	N	-15.48	
1 Quasi Peak	1.4235 MHz	35.63	N	-20.36	
2 CISPR Average	1.4235 MHz	31.03	N	-14.96	
2 CISPR Average	1.9005 MHz	23.17	N	-22.82	
2 CISPR Average	3.597 MHz	24.90	N	-21.09	
1 Quasi Peak	4.0785 MHz	37.73	N	-18.26	
1 Quasi Peak	4.749 MHz	41.23	N	-14.76	
2 CISPR Average	4.749 MHz	29.56	N	-16.43	
1 Quasi Peak	5.973 MHz	36.78	L1	-23.22	
2 CISPR Average	7.5885 MHz	27.10	L1	-22.89	

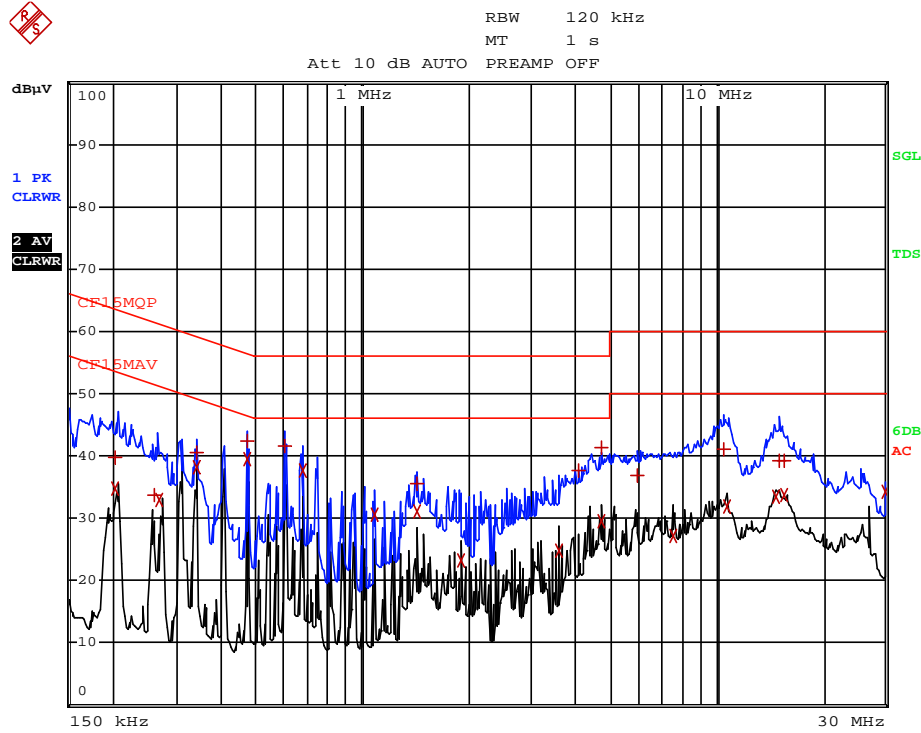
EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
TRACE	FREQUENCY	LEVEL	dB $\mu$ V	DELTA	LIMIT dB
1 Quasi Peak	10.5495 MHz	40.95	L1	-19.04	
2 CISPR Average	10.725 MHz	31.82	L1	-18.17	
2 CISPR Average	14.784 MHz	33.52	L1	-16.47	
1 Quasi Peak	15.0315 MHz	39.28	L1	-20.71	
2 CISPR Average	15.4815 MHz	33.65	L1	-16.34	
1 Quasi Peak	15.5445 MHz	39.20	L1	-20.79	
2 CISPR Average	30 MHz	34.13	L1	-15.86	

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.



Worst-Case Operating Mode: Tablet – USB PC Connectivity – data transfer



Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet – WiFi Transmitting (802.11b DSSS 11Mbps)

**Table 1**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Channel 01

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2412.000	71.8	33	29.4	68.2	94.0	-25.8
H	4824.000	44.4	33	34.9	46.3	54.0	-7.7
H	7236.000	36.6	33	37.9	41.5	54.0	-12.5
H	9648.000	37.9	33	40.4	45.3	54.0	-8.7
H	12060.000	40.2	33	40.5	47.7	54.0	-6.3
H	14472.000	43.5	33	40.0	50.5	54.0	-3.5

Channel 06

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2437.000	71.2	33	29.4	67.6	94.0	-26.4
H	4874.000	44.1	33	34.9	46.0	54.0	-8.0
H	7311.000	36.4	33	37.9	41.3	54.0	-12.7
H	9748.000	37.7	33	40.4	45.1	54.0	-8.9
H	12185.000	39.8	33	40.5	47.3	54.0	-6.7
H	14622.000	45.0	33	38.4	50.4	54.0	-3.6

Channel 11

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2462.000	70.8	33	29.4	67.2	94.0	-26.8
H	4924.000	43.9	33	34.9	45.8	54.0	-8.2
H	7386.000	36.3	33	37.9	41.2	54.0	-12.8
H	9848.000	37.8	33	40.4	45.2	54.0	-8.8
H	12310.000	39.6	33	40.5	47.1	54.0	-6.9
H	14772.000	44.8	33	38.4	50.2	54.0	-3.8

- NOTES:
1. Average Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
  6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet – WiFi Transmitting (802.11b DSSS 11Mbps)

**Table 2**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Channel 01

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	2412.000	89.2	33	29.4	85.6	114.0	-28.4
H	4824.000	68.7	33	34.9	70.6	74.0	-3.4
H	7236.000	45.5	33	37.9	50.4	74.0	-23.6
H	9648.000	44.1	33	40.4	51.5	74.0	-22.5
H	12060.000	45.1	33	40.5	52.6	74.0	-21.4
H	14472.000	46.9	33	40.0	53.9	74.0	-20.1

Channel 06

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	2437.000	88.0	33	29.4	84.4	114.0	-29.6
H	4874.000	67.7	33	34.9	69.6	74.0	-4.4
H	7311.000	45.7	33	37.9	50.6	74.0	-23.4
H	9748.000	44.3	33	40.4	51.7	74.0	-22.3
H	12185.000	44.9	33	40.5	52.4	74.0	-21.6
H	14622.000	48.4	33	38.4	53.8	74.0	-20.2

Channel 11

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	2462.000	87.8	33	29.4	84.2	114.0	-29.8
H	4924.000	67.3	33	34.9	69.2	74.0	-4.8
H	7386.000	45.4	33	37.9	50.3	74.0	-23.7
H	9848.000	44.2	33	40.4	51.6	74.0	-22.4
H	12310.000	44.8	33	40.5	52.3	74.0	-21.7
H	14772.000	48.3	33	38.4	53.7	74.0	-20.3

- NOTES:
1. Peak Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
  6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet – WiFi Transmitting (802.11g OFDM 54Mbps)

**Table 3  
Radiated Emissions  
Pursuant to FCC Part 15 Section 15.249 Requirement**

Channel 01

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2412.000	63.4	33	29.4	59.8	94.0	-34.2
H	4824.000	38.5	33	34.9	40.4	54.0	-13.6
H	7236.000	36.2	33	37.9	41.1	54.0	-12.9
H	9648.000	37.8	33	40.4	45.2	54.0	-8.8
H	12060.000	40.5	33	40.5	48.0	54.0	-6.0
H	14472.000	43.2	33	40.0	50.2	54.0	-3.8

Channel 06

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2437.000	63.2	33	29.4	59.6	94.0	-34.4
H	4874.000	39.1	33	34.9	41.0	54.0	-13.0
H	7311.000	35.9	33	37.9	40.8	54.0	-13.2
H	9748.000	37.7	33	40.4	45.1	54.0	-8.9
H	12185.000	40.1	33	40.5	47.6	54.0	-6.4
H	14622.000	42.8	33	38.4	48.2	54.0	-5.8

Channel 11

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2462.000	63.0	33	29.4	59.4	94.0	-34.6
H	4924.000	38.9	33	34.9	40.8	54.0	-13.2
H	7386.000	36.0	33	37.9	40.9	54.0	-13.1
H	9848.000	37.9	33	40.4	45.3	54.0	-8.7
H	12310.000	40.3	33	40.5	47.8	54.0	-6.2
H	14772.000	42.6	33	38.4	48.0	54.0	-6.0

- NOTES:
1. Average Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
  6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet – WiFi Transmitting (802.11g OFDM 54Mbps)

**Table 4**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Channel 01

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
H	2412.000	83.2	33	29.4	79.6	114.0	-34.4
H	4824.000	57.9	33	34.9	59.8	74.0	-14.2
H	7236.000	45.4	33	37.9	50.3	74.0	-23.7
H	9648.000	44.0	33	40.4	51.4	74.0	-22.6
H	12060.000	45.1	33	40.5	52.6	74.0	-21.4
H	14472.000	46.9	33	40.0	53.9	74.0	-20.1

Channel 06

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
H	2437.000	83.0	33	29.4	79.4	114.0	-34.6
H	4874.000	57.3	33	34.9	59.2	74.0	-14.8
H	7311.000	45.8	33	37.9	50.7	74.0	-23.3
H	9748.000	44.3	33	40.4	51.7	74.0	-22.3
H	12185.000	45.3	33	40.5	52.8	74.0	-21.2
H	14622.000	48.4	33	38.4	53.8	74.0	-20.2

Channel 11

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
H	2462.000	82.8	33	29.4	79.2	114.0	-34.8
H	4924.000	56.5	33	34.9	58.4	74.0	-15.6
H	7386.000	45.7	33	37.9	50.6	74.0	-23.4
H	9848.000	44.2	33	40.4	51.6	74.0	-22.4
H	12310.000	45.2	33	40.5	52.7	74.0	-21.3
H	14772.000	48.3	33	38.4	53.7	74.0	-20.3

- NOTES:
1. Peak Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
  6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet - WiFi Transmitting (802.11n HT20 mcs7 65Mbps)

**Table 5**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Channel 01

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	2412.000	62.8	33	29.4	59.2	94.0	-34.8
H	4824.000	34.9	33	34.9	36.8	54.0	-17.2
H	7236.000	34.7	33	37.9	39.6	54.0	-14.4
H	9648.000	36.6	33	40.4	44.0	54.0	-10.0
H	12060.000	40.5	33	40.5	48.0	54.0	-6.0
H	14472.000	43.0	33	40.0	50.0	54.0	-4.0

Channel 06

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	2437.000	62.2	33	29.4	58.6	94.0	-35.4
H	4874.000	35.0	33	34.9	36.9	54.0	-17.1
H	7311.000	34.9	33	37.9	39.8	54.0	-14.2
H	9748.000	36.9	33	40.4	44.3	54.0	-9.7
H	12185.000	40.0	33	40.5	47.5	54.0	-6.5
H	14622.000	42.6	33	38.4	48.0	54.0	-6.0

Channel 11

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	2462.000	62.0	33	29.4	58.4	94.0	-35.6
H	4924.000	35.2	33	34.9	37.1	54.0	-16.9
H	7386.000	35.0	33	37.9	39.9	54.0	-14.1
H	9848.000	37.2	33	40.4	44.6	54.0	-9.4
H	12310.000	40.1	33	40.5	47.6	54.0	-6.4
H	14772.000	42.4	33	38.4	47.8	54.0	-6.2

- NOTES:
1. Average Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
  6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet - WiFi Transmitting (802.11n HT20 mcs7 65Mbps)

**Table 6**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Channel 01

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	2412.000	83.0	33	29.4	79.4	114.0	-34.6
H	4824.000	41.9	33	34.9	43.8	74.0	-30.2
H	7236.000	41.9	33	37.9	46.8	74.0	-27.2
H	9648.000	41.1	33	40.4	48.5	74.0	-25.5
H	12060.000	41.3	33	40.5	48.8	74.0	-25.2
H	14472.000	47.6	33	40.0	54.6	74.0	-19.4

Channel 06

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	2437.000	82.8	33	29.4	79.2	114.0	-34.8
H	4874.000	43.6	33	34.9	45.5	74.0	-28.5
H	7311.000	44.0	33	37.9	48.9	74.0	-25.1
H	9748.000	41.5	33	40.4	48.9	74.0	-25.1
H	12185.000	41.3	33	40.5	48.8	74.0	-25.2
H	14622.000	49.0	33	38.4	54.4	74.0	-19.6

Channel 11

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	2462.000	82.4	33	29.4	78.8	114.0	-35.2
H	4924.000	43.2	33	34.9	45.1	74.0	-28.9
H	7386.000	43.7	33	37.9	48.6	74.0	-25.4
H	9848.000	41.4	33	40.4	48.8	74.0	-25.2
H	12310.000	41.3	33	40.5	48.8	74.0	-25.2
H	14772.000	48.8	33	38.4	54.2	74.0	-19.8

- NOTES:
1. Peak Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
  6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.



Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet-WiFi Transmitting (802.11n HT40 mcs7 150Mbps)

**Table 7**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Channel 03

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	2422.000	62.4	33	29.4	58.8	94.0	-35.2
H	4844.000	34.6	33	34.9	36.5	54.0	-17.5
H	7266.000	36.6	33	37.9	41.5	54.0	-12.5
H	9688.000	37.0	33	40.4	44.4	54.0	-9.6
H	12110.000	41.3	33	40.5	48.8	54.0	-5.2
H	14532.000	44.6	33	38.4	50.0	54.0	-4.0

Channel 06

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	2437.000	62.0	33	29.4	58.4	94.0	-35.6
H	4874.000	34.5	33	34.9	36.4	54.0	-17.6
H	7311.000	36.2	33	37.9	41.1	54.0	-12.9
H	9748.000	36.9	33	40.4	44.3	54.0	-9.7
H	12185.000	39.7	33	40.5	47.2	54.0	-6.8
H	14622.000	42.4	33	38.4	47.8	54.0	-6.2

Channel 09

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	2452.000	61.8	33	29.4	58.2	94.0	-35.8
H	4904.000	34.9	33	34.9	36.8	54.0	-17.2
H	7356.000	36.7	33	37.9	41.6	54.0	-12.4
H	9808.000	36.9	33	40.4	44.3	54.0	-9.7
H	12260.000	39.9	33	40.5	47.4	54.0	-6.6
H	14712.000	42.2	33	38.4	47.6	54.0	-6.4

- NOTES:
1. Average Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
  6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet-WiFi Transmitting (802.11n HT40 mcs7 150Mbps)

**Table 8**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Channel 03

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	2422.000	82.2	33	29.4	78.6	114.0	-35.4
H	4844.000	41.6	33	34.9	43.5	74.0	-30.5
H	7266.000	40.2	33	37.9	45.1	74.0	-28.9
H	9688.000	41.3	33	40.4	48.7	74.0	-25.3
H	12110.000	43.6	33	40.5	51.1	74.0	-22.9
H	14532.000	47.8	33	38.4	53.2	74.0	-20.8

Channel 06

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	2437.000	82.0	33	29.4	78.4	114.0	-35.6
H	4874.000	41.8	33	34.9	43.7	74.0	-30.3
H	7311.000	40.4	33	37.9	45.3	74.0	-28.7
H	9748.000	41.0	33	40.4	48.4	74.0	-25.6
H	12185.000	43.9	33	40.5	51.4	74.0	-22.6
H	14622.000	47.4	33	38.4	52.8	74.0	-21.2

Channel 09

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	2452.000	81.8	33	29.4	78.2	114.0	-35.8
H	4904.000	41.9	33	34.9	43.8	74.0	-30.2
H	7356.000	40.7	33	37.9	45.6	74.0	-28.4
H	9808.000	40.7	33	40.4	48.1	74.0	-25.9
H	12260.000	44.1	33	40.5	51.6	74.0	-22.4
H	14712.000	47.0	33	38.4	52.4	74.0	-21.6

- NOTES:
1. Peak Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
  6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet – Bluetooth Transmitting

**Table 9  
Radiated Emissions  
Pursuant to FCC Part 15 Section 15.249 Requirement**

**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	2402.000	104.0	33	29.4	100.4	30.1	70.3	94.0	-23.7
V	4804.000	66.5	33	34.9	68.4	30.1	38.3	54.0	-15.7
V	7206.000	61.6	33	37.9	66.5	30.1	36.4	54.0	-17.6
H	9608.000	42.6	33	40.4	50.0	30.1	19.9	54.0	-34.1
H	12010.000	45.0	33	40.5	52.5	30.1	22.4	54.0	-31.6
H	14412.000	46.6	33	40.0	53.6	30.1	23.5	54.0	-30.5

**Middle 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	2441.000	104.2	33	29.4	100.6	30.1	70.5	94.0	-23.5
V	4882.000	67.9	33	34.9	69.8	30.1	39.7	54.0	-14.3
V	7323.000	59.4	33	37.9	64.3	30.1	34.2	54.0	-19.8
H	9764.000	43.2	33	40.4	50.6	30.1	20.5	54.0	-33.5
H	12205.000	44.7	33	40.5	52.2	30.1	22.1	54.0	-31.9
H	14646.000	48.5	33	38.4	53.9	30.1	23.8	54.0	-30.2

**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	2480.000	104.4	33	29.4	100.8	30.1	70.7	94.0	-23.3
V	4960.000	68.5	33	34.9	70.4	30.1	40.3	54.0	-13.7
V	7440.000	58.9	33	37.9	63.8	30.1	33.7	54.0	-20.3
H	9920.000	43.2	33	40.4	50.6	30.1	20.5	54.0	-33.5
H	12400.000	44.7	33	40.5	52.2	30.1	22.1	54.0	-31.9
H	14880.000	48.4	33	38.4	53.8	30.1	23.7	54.0	-30.3

- NOTES:
1. Peak Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. Data was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet – Bluetooth Transmitting

**Table 10**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Lowest Channel

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	2402.000	104.0	33	29.4	100.4	114.0	-13.6
V	4804.000	66.5	33	34.9	68.4	74.0	-5.6
V	7206.000	61.6	33	37.9	66.5	74.0	-7.5
H	9608.000	42.6	33	40.4	50.0	74.0	-24.0
H	12010.000	45.0	33	40.5	52.5	74.0	-21.5
H	14412.000	46.6	33	40.0	53.6	74.0	-20.4

Middle Channel

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	2441.000	104.2	33	29.4	100.6	114.0	-13.4
V	4882.000	67.9	33	34.9	69.8	74.0	-4.2
V	7323.000	59.4	33	37.9	64.3	74.0	-9.7
H	9764.000	43.2	33	40.4	50.6	74.0	-23.4
H	12205.000	44.7	33	40.5	52.2	74.0	-21.8
H	14646.000	48.5	33	38.4	53.9	74.0	-20.1

Highest Channel

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	2480.000	104.4	33	29.4	100.8	114.0	-13.2
V	4960.000	68.5	33	34.9	70.4	74.0	-3.6
V	7440.000	58.9	33	37.9	63.8	74.0	-10.2
H	9920.000	43.2	33	40.4	50.6	74.0	-23.4
H	12400.000	44.7	33	40.5	52.2	74.0	-21.8
H	14880.000	48.4	33	38.4	53.8	74.0	-20.2

- NOTES:
1. Peak Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. Data was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Main Unit – Bluetooth Transmitting

**Table 11**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Lowest Channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2402.000	101.8	33	29.4	98.2	30.1	68.1	94.0	-25.9
V	4804.000	51.6	33	34.9	53.5	30.1	23.4	54.0	-30.6
V	7206.000	44.7	33	37.9	49.6	30.1	19.5	54.0	-34.5
H	9608.000	40.4	33	40.4	47.8	30.1	17.7	54.0	-36.3
H	12010.000	44.7	33	40.5	52.2	30.1	22.1	54.0	-31.9
H	14412.000	46.6	33	40.0	53.6	30.1	23.5	54.0	-30.5

Middle Channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2441.000	102.0	33	29.4	98.4	30.1	68.3	94.0	-25.7
V	4882.000	51.7	33	34.9	53.6	30.1	23.5	54.0	-30.5
V	7323.000	44.2	33	37.9	49.1	30.1	19.0	54.0	-35.0
H	9764.000	40.2	33	40.4	47.6	30.1	17.5	54.0	-36.5
H	12205.000	45.1	33	40.5	52.6	30.1	22.5	54.0	-31.5
H	14646.000	48.4	33	38.4	53.8	30.1	23.7	54.0	-30.3

Highest Channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2480.000	102.4	33	29.4	98.8	30.1	68.7	94.0	-25.3
V	4960.000	51.4	33	34.9	53.3	30.1	23.2	54.0	-30.8
V	7440.000	44.6	33	37.9	49.5	30.1	19.4	54.0	-34.6
H	9920.000	40.4	33	40.4	47.8	30.1	17.7	54.0	-36.3
H	12400.000	45.3	33	40.5	52.8	30.1	22.7	54.0	-31.3
H	14880.000	48.8	33	38.4	54.2	30.1	24.1	54.0	-29.9

- NOTES:
1. Peak Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. Data was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Main Unit – Bluetooth Transmitting

**Table 12**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Lowest Channel

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	2402.000	101.8	33	29.4	98.2	114.0	-15.8
V	4804.000	51.6	33	34.9	53.5	74.0	-20.5
V	7206.000	44.7	33	37.9	49.6	74.0	-24.4
H	9608.000	40.4	33	40.4	47.8	74.0	-26.2
H	12010.000	44.7	33	40.5	52.2	74.0	-21.8
H	14412.000	46.6	33	40.0	53.6	74.0	-20.4

Middle Channel

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	2441.000	102.0	33	29.4	98.4	114.0	-15.6
V	4882.000	51.7	33	34.9	53.6	74.0	-20.4
V	7323.000	44.2	33	37.9	49.1	74.0	-24.9
H	9764.000	40.2	33	40.4	47.6	74.0	-26.4
H	12205.000	45.1	33	40.5	52.6	74.0	-21.4
H	14646.000	48.4	33	38.4	53.8	74.0	-20.2

Highest Channel

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	2480.000	102.4	33	29.4	98.8	114.0	-15.2
V	4960.000	51.4	33	34.9	53.3	74.0	-20.7
V	7440.000	44.6	33	37.9	49.5	74.0	-24.5
H	9920.000	40.4	33	40.4	47.8	74.0	-26.2
H	12400.000	45.3	33	40.5	52.8	74.0	-21.2
H	14880.000	48.8	33	38.4	54.2	74.0	-19.8

- NOTES:
1. Peak Detector is used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. Data was collected by spectrum analyzer with 1MHz resolution bandwidth.

Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Simultaneous Transmitting (Bluetooth of Main Unit and Tablet, WiFi of Tablet), all channel combinations had been considered

**Table 13**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.249 Requirement**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4814.000	42.9	33	34.9	44.8	54.0	-9.2
H	4824.000	42.7	33	34.9	44.6	54.0	-9.4
H	4839.000	42.5	33	34.9	44.4	54.0	-9.6
H	4854.000	43.3	33	34.9	45.2	54.0	-8.8
H	4864.000	43.7	33	34.9	45.6	54.0	-8.4
H	4878.000	43.5	33	34.9	45.4	54.0	-8.6
H	4892.000	43.9	33	34.9	45.8	54.0	-8.2
H	4902.000	44.3	33	34.9	46.2	54.0	-7.8
H	4932.000	44.5	33	34.9	46.4	54.0	-7.6
H	4942.000	44.1	33	34.9	46.0	54.0	-8.0

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	4814.000	62.3	33	34.9	64.2	74.0	-9.8
H	4824.000	62.7	33	34.9	64.6	74.0	-9.4
H	4839.000	62.5	33	34.9	64.4	74.0	-9.6
H	4854.000	62.9	33	34.9	64.8	74.0	-9.2
H	4864.000	63.5	33	34.9	65.4	74.0	-8.6
H	4878.000	63.9	33	34.9	65.8	74.0	-8.2
H	4892.000	63.3	33	34.9	65.2	74.0	-8.8
H	4902.000	63.7	33	34.9	65.6	74.0	-8.4
H	4932.000	64.7	33	34.9	66.6	74.0	-7.4
H	4942.000	64.9	33	34.9	66.8	74.0	-7.2

- NOTES:
1. Average and Peak Detector are used for emission measurement.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
  6. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

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.



Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Main Unit – Bluetooth (Other Digital)

Table 14

**Radiated Emissions  
Pursuant to FCC Part 15 Section 15.109 Requirement**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	132.000	35.3	16	14.0	33.3	43.5	-10.2
H	165.000	32.9	16	17.0	33.9	43.5	-9.6
H	231.000	40.2	16	18.0	42.2	46.0	-3.8
H	264.000	37.4	16	21.0	42.4	46.0	-3.6
H	330.000	28.5	16	24.0	36.5	46.0	-9.5
H	462.000	28.9	16	26.0	38.9	46.0	-7.1
H	495.000	28.5	16	26.0	38.5	46.0	-7.5
H	561.000	26.8	16	28.0	38.8	46.0	-7.2
H	594.000	27.2	16	29.0	40.2	46.0	-5.8
H	726.000	23.5	16	30.0	37.5	46.0	-8.5

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.



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.



Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet – Bluetooth (Other Digital)

Table 15

**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.109 Requirement**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	132.000	34.2	16	14.0	32.2	43.5	-11.3
H	165.000	31.6	16	17.0	32.6	43.5	-10.9
H	231.000	40.2	16	18.0	42.2	46.0	-3.8
H	264.000	37.4	16	21.0	42.4	46.0	-3.6
H	330.000	26.6	16	24.0	34.6	46.0	-11.4
H	462.000	26.8	16	26.0	36.8	46.0	-9.2
H	495.000	26.6	16	26.0	36.6	46.0	-9.4
H	561.000	24.8	16	28.0	36.8	46.0	-9.2
H	594.000	27.6	16	29.0	40.6	46.0	-5.4
H	726.000	22.6	16	30.0	36.6	46.0	-9.4

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative sign in the column shows value below limit.

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

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.



Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet – WiFi (Other Digital)

Table 16

**Radiated Emissions  
Pursuant to FCC Part 15 Section 15.109 Requirement**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	132.000	34.4	16	14.0	32.4	43.5	-11.1
H	165.000	31.8	16	17.0	32.8	43.5	-10.7
H	231.000	40.2	16	18.0	42.2	46.0	-3.8
H	264.000	37.4	16	21.0	42.4	46.0	-3.6
H	330.000	26.4	16	24.0	34.4	46.0	-11.6
H	462.000	26.8	16	26.0	36.8	46.0	-9.2
H	495.000	26.4	16	26.0	36.4	46.0	-9.6
H	561.000	24.8	16	28.0	36.8	46.0	-9.2
H	594.000	27.2	16	29.0	40.2	46.0	-5.8
H	726.000	22.2	16	30.0	36.2	46.0	-9.8

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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Applicant: ALCO Electronics Ltd.

Date of Test: September 04, 2013

Model: ACS3101E

Worst-Case Operating Mode: Tablet – USB PC Connectivity – data transfer

Table 17

**Radiated Emissions  
Pursuant to FCC Part 15 Section 15.109 Requirement**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	36.000	41.2	16	10.0	35.2	40.0	-4.8
V	60.000	42.2	16	10.0	36.2	40.0	-3.8
V	84.000	44.6	16	7.0	35.6	40.0	-4.4
H	132.000	34.6	16	14.0	32.6	43.5	-10.9
H	216.000	37.0	16	17.0	38.0	43.5	-5.5
H	228.000	36.4	16	18.0	38.4	46.0	-7.6
H	240.000	35.0	16	19.0	38.0	46.0	-8.0
H	264.000	37.0	16	21.0	42.0	46.0	-4.0
H	300.000	32.0	16	22.0	38.0	46.0	-8.0

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative sign in the column shows value below limit.

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

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#### 4.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.pdf and internal photos.pdf.

#### 5.0 **Product Labelling**

For electronics filing, the FCC ID and IC label artwork and the label location are saved with filename: label.pdf.

#### 6.0 **Technical Specifications**

For electronic filing, the block diagram and schematic of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

#### 7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States and Canada.

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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## 8.0 Miscellaneous Information

The miscellaneous information includes details of the test procedure and measured bandwidth / calculation of factor such as pulse desensitization and averaging factor.

### 8.1 Measured Bandwidth

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz to 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2009) for frequency being measured.

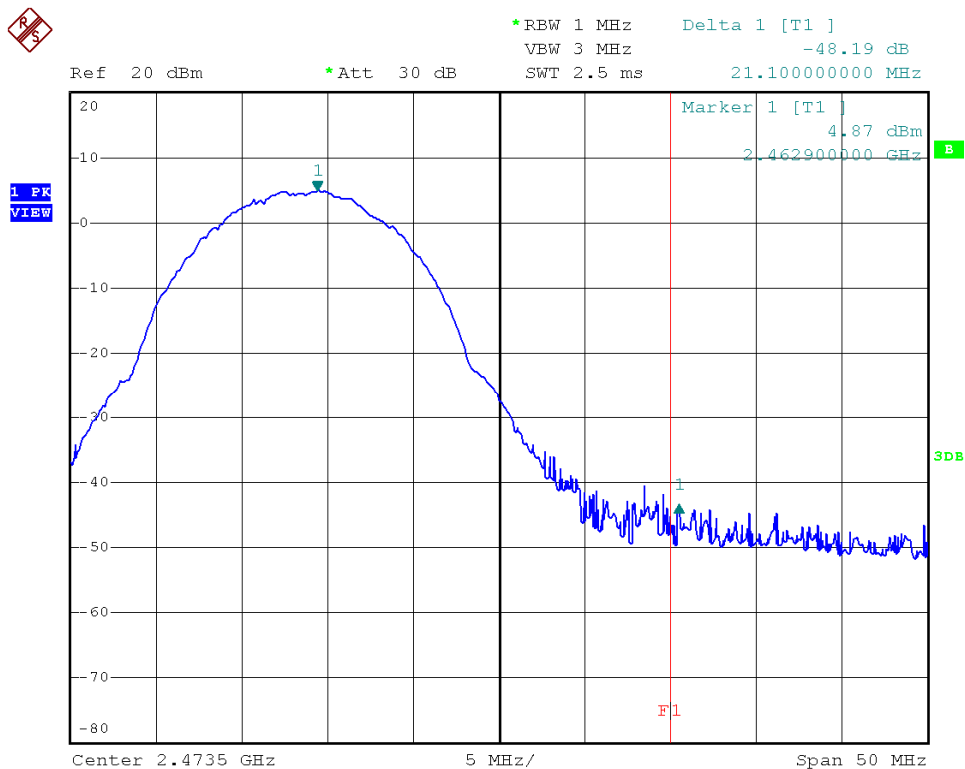
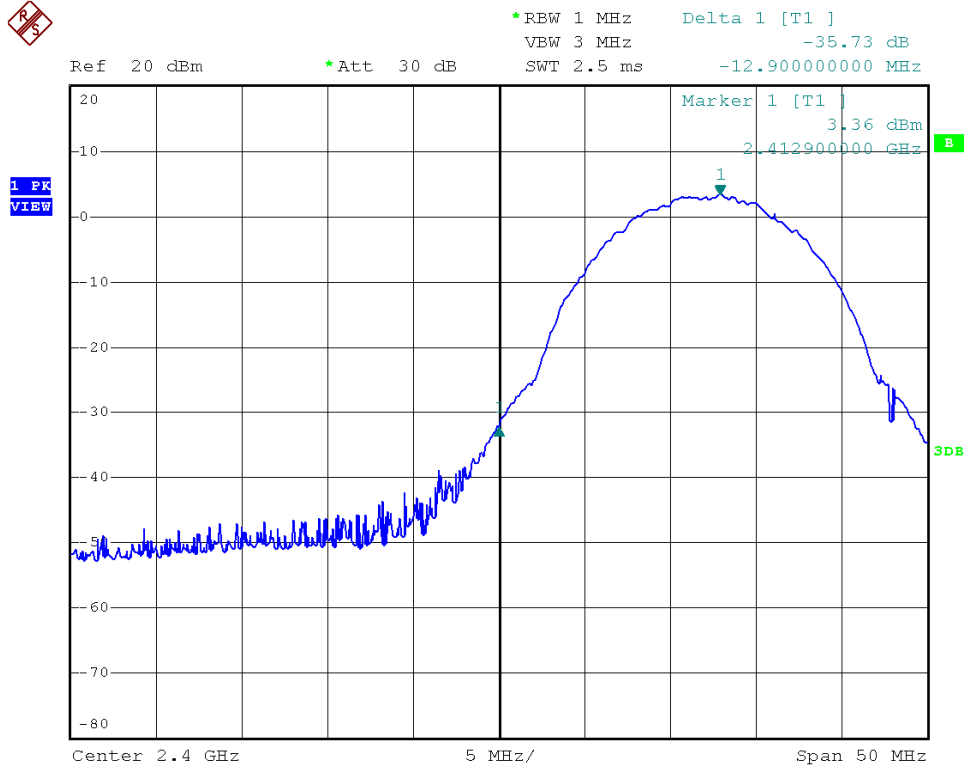
Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50dB below the level of the fundamental or to the general radiated emissions limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

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Peak Measurement (Tablet - WiFi 802.11b DSSS 11Mbps)



### Peak Measurement (Tablet - WiFi 802.11b DSSS 11Mbps)

Bandedge compliance is determined by applying marker-delta method, i.e. (Bandedge Plot).

Lower bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 85.6 \text{ dB}\mu\text{V/m} - 35.7 \text{ dB} \\ &= 49.9 \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 68.2 \text{ dB}\mu\text{V/m} - 35.7 \text{ dB} \\ &= 32.5 \text{ dB}\mu\text{V/m} \end{aligned}$$

Upper bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 84.2 \text{ dB}\mu\text{V/m} - 48.2 \text{ dB} \\ &= 36.0 \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 67.2 \text{ dB}\mu\text{V/m} - 48.2 \text{ dB} \\ &= 19.0 \text{ dB}\mu\text{V/m} \end{aligned}$$

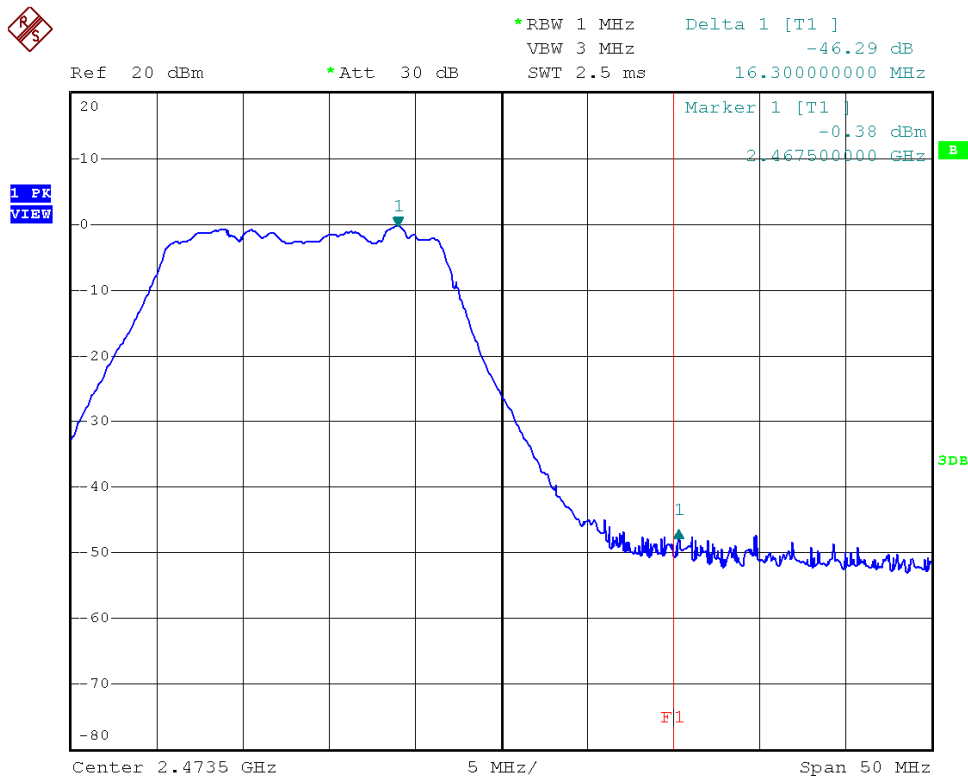
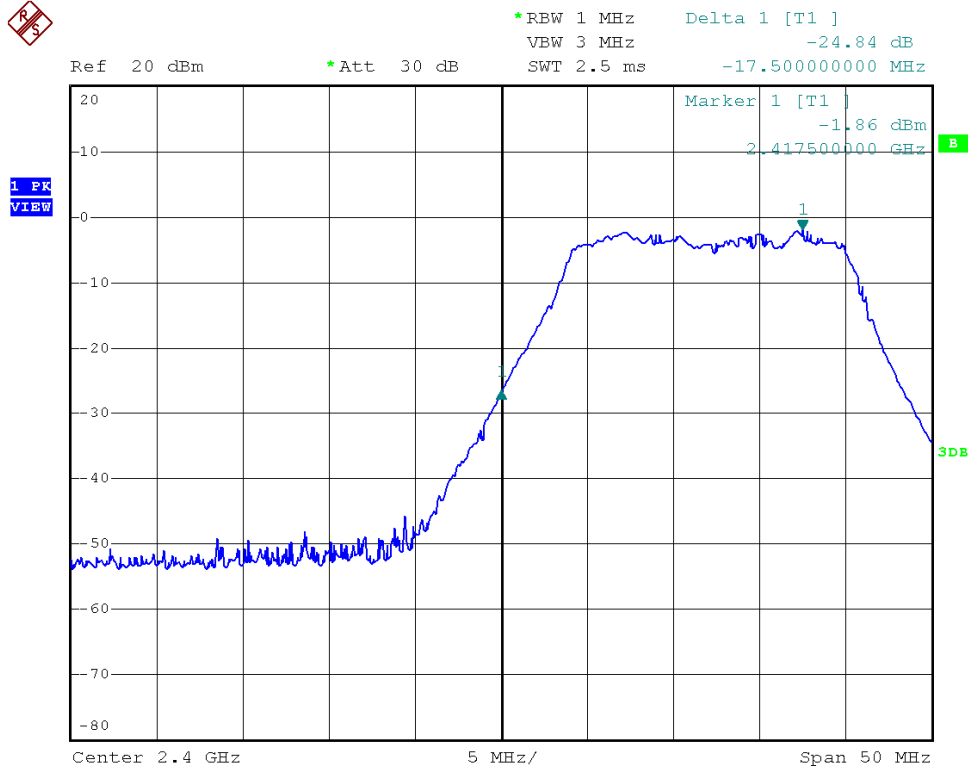
The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74 dB $\mu$ V/m (Peak Limit) and 54 dB $\mu$ V/m (Average Limit).

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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Peak Measurement (Tablet - WiFi 802.11g OFDM 54Mbps)





### Peak Measurement (Tablet - WiFi 802.11g OFDM 54Mbps)

Bandedge compliance is determined by applying marker-delta method, i.e. (Bandedge Plot).

Lower bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=79.6 dB $\mu$ V/m - 24.8 dB  
=54.8 dB $\mu$ V/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=59.8 dB $\mu$ V/m - 24.8 dB  
=35.0 dB $\mu$ V/m

Upper bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=79.2 dB $\mu$ V/m - 46.3 dB  
=32.9 dB $\mu$ V/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=59.4 dB $\mu$ V/m - 46.3 dB  
=13.1 dB $\mu$ V/m

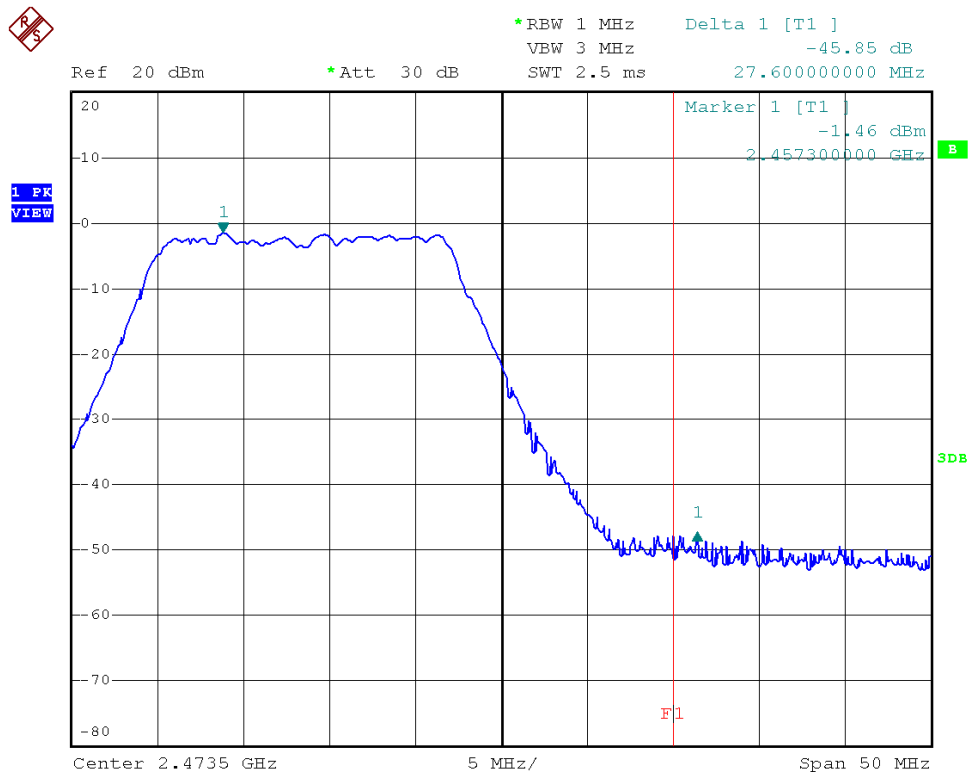
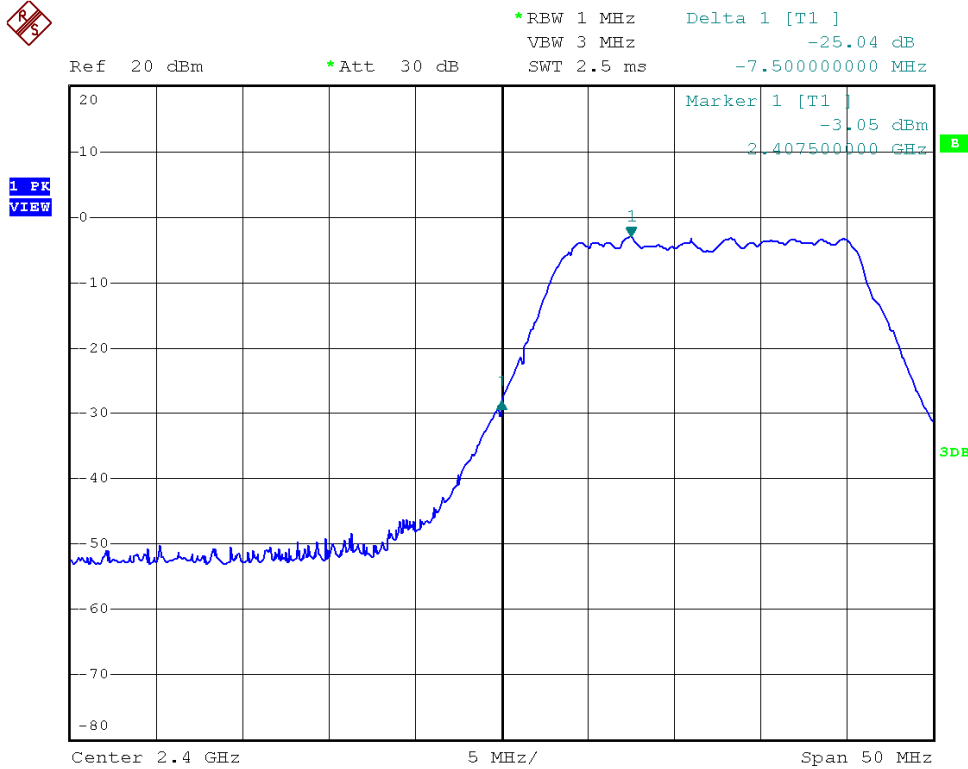
The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74 dB $\mu$ V/m (Peak Limit) and 54 dB $\mu$ V/m (Average Limit).

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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Peak Measurement (Tablet - WiFi 802.11n HT20 mcs7 65Mbps)



Peak Measurement (Tablet - WiFi 802.11n HT20 mcs7 65Mbps)

Bandedge compliance is determined by applying marker-delta method, i.e. (Bandedge Plot).

Lower bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=79.4 dB $\mu$ V/m - 25.0 dB  
=54.4 dB $\mu$ V/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=59.2 dB $\mu$ V/m - 25.0 dB  
=34.2 dB $\mu$ V/m

Upper bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=78.8 dB $\mu$ V/m - 45.9 dB  
=32.9 dB $\mu$ V/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=58.4 dB $\mu$ V/m - 45.9 dB  
=12.5 dB $\mu$ V/m

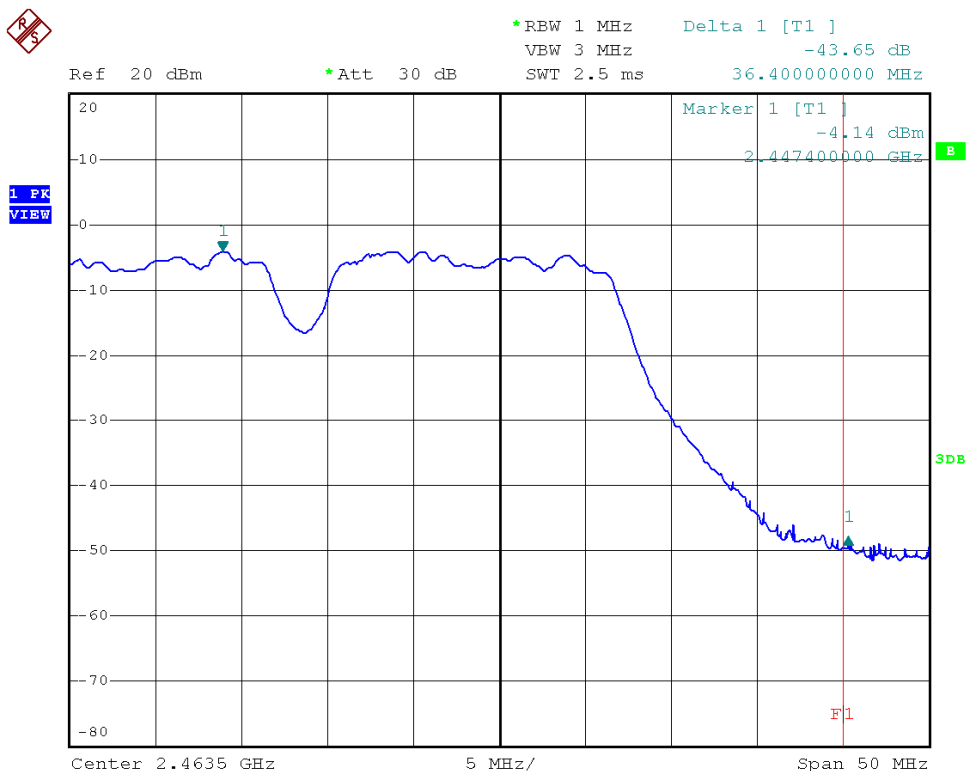
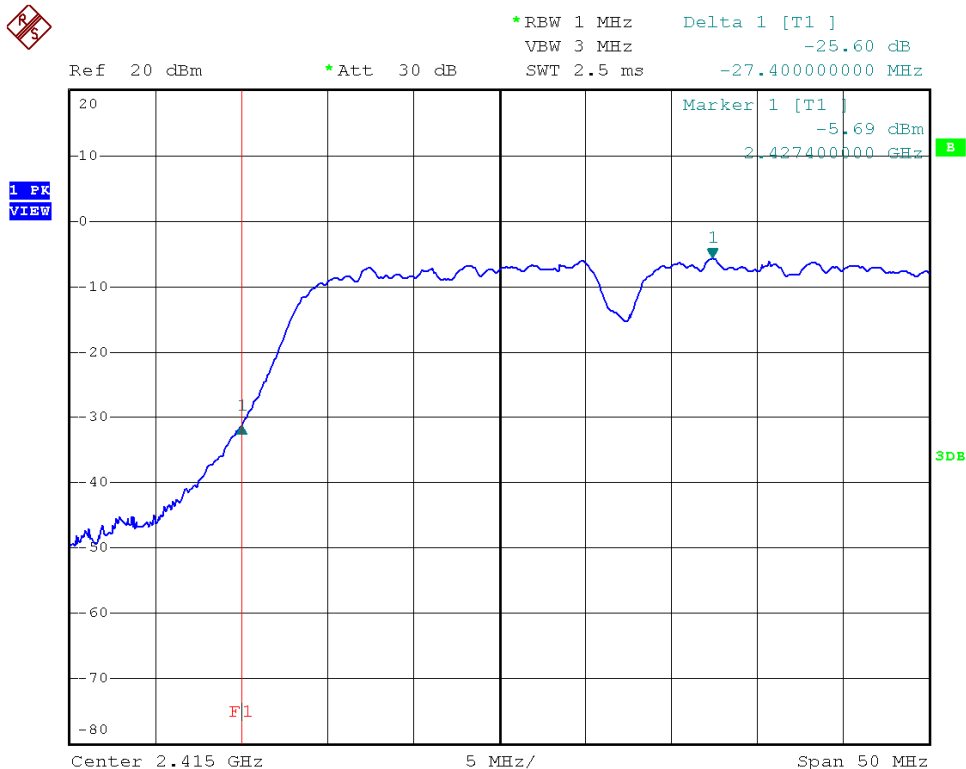
The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74 dB $\mu$ V/m (Peak Limit) and 54 dB $\mu$ V/m (Average Limit).

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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**Peak Measurement (Tablet - WiFi 802.11n HT40 mcs7 150Mbps)**



Peak Measurement (Tablet - WiFi 802.11n HT40 mcs7 150Mbps)

Bandedge compliance is determined by applying marker-delta method, i.e. (Bandedge Plot).

Lower bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 78.6 \text{ dB}\mu\text{V/m} - 25.6 \text{ dB} \\ &= 53.0 \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 58.8 \text{ dB}\mu\text{V/m} - 25.6 \text{ dB} \\ &= 33.2 \text{ dB}\mu\text{V/m} \end{aligned}$$

Upper bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 78.2 \text{ dB}\mu\text{V/m} - 43.7 \text{ dB} \\ &= 34.5 \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 58.2 \text{ dB}\mu\text{V/m} - 43.7 \text{ dB} \\ &= 14.5 \text{ dB}\mu\text{V/m} \end{aligned}$$

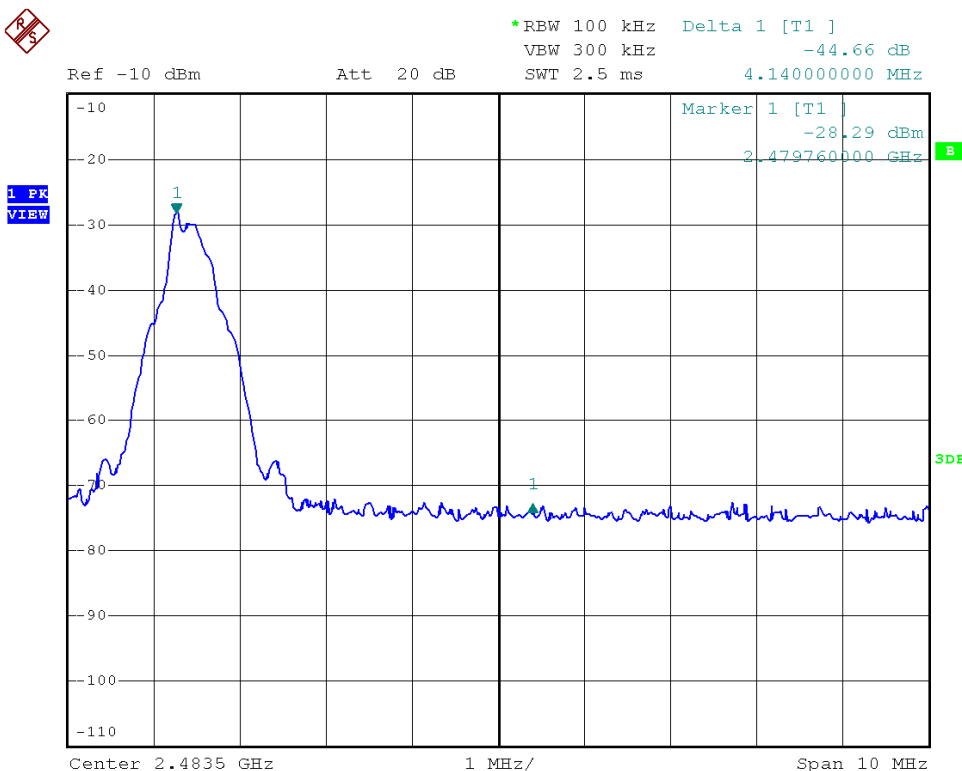
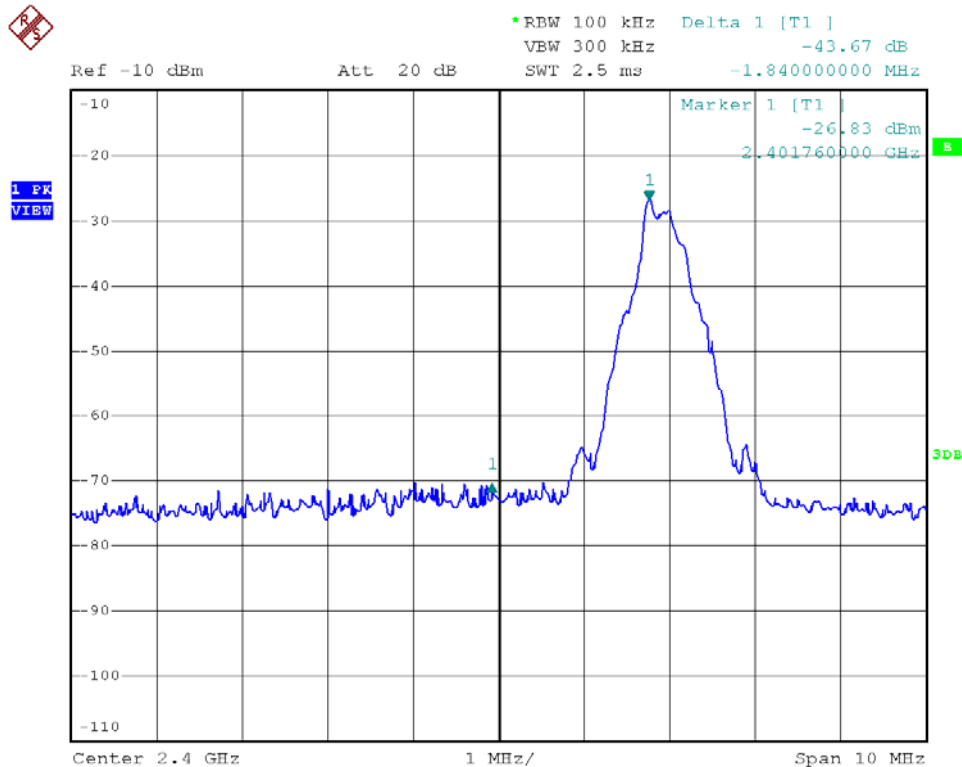
The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74 dB $\mu$ V/m (Peak Limit) and 54 dB $\mu$ V/m (Average Limit).

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Peak Measurement (Tablet - Bluetooth)



Issuing Laboratory:  
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Peak Measurement (Tablet - Bluetooth)

Bandedge compliance is determined by applying marker-delta method, i.e. (Bandedge Plot).

Lower bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 100.4 \text{ dB}\mu\text{V/m} - 43.7 \text{ dB} \\ &= 56.7 \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 70.3 \text{ dB}\mu\text{V/m} - 43.7 \text{ dB} \\ &= 26.6 \text{ dB}\mu\text{V/m} \end{aligned}$$

Upper bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 100.8 \text{ dB}\mu\text{V/m} - 44.7 \text{ dB} \\ &= 56.1 \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 70.7 \text{ dB}\mu\text{V/m} - 44.7 \text{ dB} \\ &= 26.0 \text{ dB}\mu\text{V/m} \end{aligned}$$

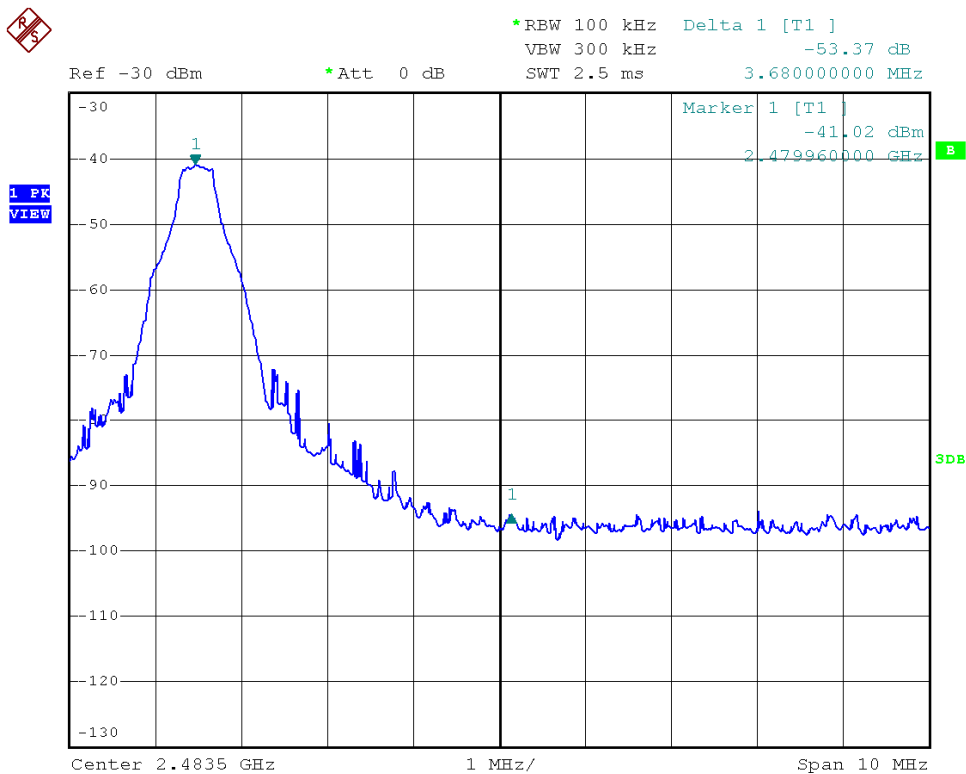
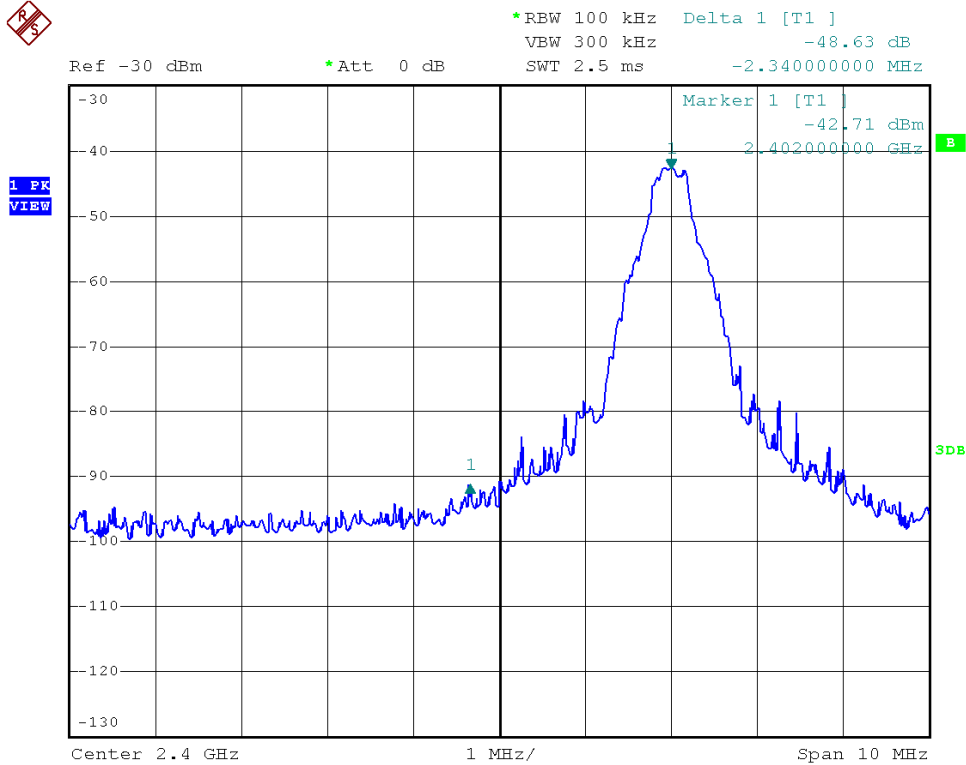
The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74 dB $\mu$ V/m (Peak Limit) and 54 dB $\mu$ V/m (Average Limit).

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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Peak Measurement (Main Unit – Bluetooth)





### Peak Measurement (Main Unit – Bluetooth)

Bandedge compliance is determined by applying marker-delta method, i.e. (Bandedge Plot).

Lower bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 98.2 \text{ dB}\mu\text{V/m} - 48.6 \text{ dB} \\ &= 49.6 \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 68.1 \text{ dB}\mu\text{V/m} - 48.6 \text{ dB} \\ &= 19.5 \text{ dB}\mu\text{V/m} \end{aligned}$$

Upper bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 98.8 \text{ dB}\mu\text{V/m} - 53.4 \text{ dB} \\ &= 45.4 \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 68.7 \text{ dB}\mu\text{V/m} - 53.4 \text{ dB} \\ &= 15.3 \text{ dB}\mu\text{V/m} \end{aligned}$$

The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74 dB $\mu$ V/m (Peak Limit) and 54 dB $\mu$ V/m (Average Limit).

## 8.2 Discussion of Pulse Desensitization

For WiFi module of Tablet, pulse desensitivity is not applicable for this device. Since the transmitter transmits the RF signal continuously.

For Bluetooth modules of both Tablet and Main Unit, the effective period ( $T_{eff}$ ) is approximately 3.125ms for a digital “1” bit which illustrated on technical specification, with a resolution bandwidth (3dB) of 1MHz, so the pulse desensitivity factor is 0dB.

## 8.3 Calculation of Average Factor

For WiFi module of Tablet, the average factor is not applicable for this device as the transmitted signal is a continuously signal.

For Bluetooth modules of both Tablet and Main Unit, based on the Bluetooth Specification Version 2.1/3.0 + EDR, the transmitter ON time for each timeslot of Bluetooth is 625 $\mu$ s. DH5 has the maximum duty cycle, which consists of 5 continuous Tx slots and 1 Rx slot. Therefore one hopset take  $(5+1) \times 625\mu\text{s} = 3.75\text{ms}$ . For one period for a pseudo-random hopping through all 79 RF channels, it takes:  $79 \times 3.75\text{ms} = 296.25\text{ms}$ .

The dwell time for DH5 is  $5 \times 625\mu\text{s} = 3.125\text{ms}$ .

Therefore,

$$\begin{aligned}\text{Duty Cycle (DC)} &= \text{Maximum On time in } 100\text{ms}/100\text{ms} \\ &= 3.125\text{ms}/100\text{ms} \\ &= 0.03125\end{aligned}$$

$$\begin{aligned}\text{Average Factor (AF) of Bluetooth in dB} &= 20 \log_{10} (0.03125) \\ &= -30.1 \text{ dB}\end{aligned}$$

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#### 8.4 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Ltd. in the measurements of transmitter operating under the Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 (2009). A typical or an unmodulated CW signal at the operating frequency of the EUT has been supplied to the EUT for all measurements. Such a signal is supplied by a signal generator and an antenna in close proximity to the EUT. The signal level is sufficient to stabilize the local oscillator of the EUT.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

The frequency range scanned is 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 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

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Intertek Testing Services Hong Kong Limited

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#### 8.4 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements were made as described in ANSI C63.4 (2009).

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.1). Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.

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## 9.0 Equipment List

### 1) Radiated Emissions Test

Equipment	EMI Test Receiver	Biconical Antenna	Log Periodic Antenna
Registration No.	EW-2500	EW-0954	EW-0446
Manufacturer	R&S	EMCO	EMCO
Model No.	ESCI	3104C	3146
Calibration Date	Mar. 22, 2013	Apr. 30, 2013	Apr. 30, 2013
Calibration Due Date	Feb. 28, 2014	Oct. 30, 2014	Oct. 30, 2014

Equipment	Spectrum Analyzer	Double Ridged Guide Antenna
Registration No.	EW-2188	EW-1133
Manufacturer	AGILENTTECH	EMCO
Model No.	E4407B	3115
Calibration Date	Nov. 05, 2012	Oct. 05, 2012
Calibration Due Date	Nov. 05, 2013	Apr. 05, 2014

### 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	Mar. 22, 2013	Nov. 30, 2012
Calibration Due Date	Feb. 28, 2014	Nov. 30, 2013

### 3) Bandedge Measurement

Equipment	Spectrum Analyzer
Registration No.	EW-2249
Manufacturer	R&S
Model No.	FSP30
Calibration Date	Oct. 04, 2012
Calibration Due Date	Oct. 04, 2013