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TEST REPORT

Report No.: 14040046HKG-002

ALCO Electronics Ltd.

Application
For
Certification
(Original Grant)
(FCC ID: A2HRCT6273W26)
(IC: 9903A-RCT6273W26)

Transceiver

Prepared and Checked by:

Approved by:

Handwritten signature of Wong Cheuk Ho, Herbert.

Wong Cheuk Ho, Herbert
Lead Engineer

Handwritten signature of Chan Chi Hung, Terry.

Chan Chi Hung, Terry
Supervisor
Date: May 16, 2014

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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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GENERAL INFORMATION

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Manufacturer:	Alco Electronics (Dongguan) Limited
Manufacturer Address:	Gong Ye Xi Road, Houjie Technology Industrial Park, Houjie, Dongguan, Guangdong P.R.C. 523960 China
Brand Name:	VENTURER / RCA
Model:	CT9273W26 / RCT6273W26
Type of EUT:	Transceiver
Description of EUT:	7" Tablet
Serial Number:	N/A
FCC ID / IC:	A2HRCT6273W26 / 9903A-RCT6273W26
Date of Sample Submitted:	April 01, 2014
Date of Test:	April 01, 2014 to May 12, 2014
Report No.:	14040046HKG-002
Report Date:	May 16, 2014
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

Report No.: 14040046HKG-002

FCC ID: A2HRCT6273W26

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SUMMARY OF TEST RESULT

TEST SPECIFICATION	REFERENCE	RESULTS
Transmitter Power Line Conducted Emissions	15.207 / RSS-Gen 7.2.4	Pass
Radiated Emission Radiated Emission on the Bandedge	15.249 / RSS-210 A2.9	Pass
Digital Device Radiated Emissions	15.109 / RSS-210 2.5	Pass
Radiated Emission in Restricted Bands	15.205 / RSS-210 2.2	Pass

The equipment under test is found to be complying with the following standards:
FCC Part 15, October 1, 2012 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 excepted 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 a Tablet, equipped with HDMI, WiFi, Bluetooth 3.0/4.0 (BLE), SD and USB Interface. The EUT operates in frequency range from 2412MHz to 2462MHz at 802.11b,g,n HT20 (11 channels with 5MHz spacing) and also operates in the frequency range 2402MHz to 2480MHz at Bluetooth 3.0 (79 channels with 1MHz spacing) while 2402MHz to 2480MHz at Bluetooth 4.0 BLE (40 channels with 2MHz spacing). The EUT is powered by an external AC/DC adaptor (5VDC output) or/and 3.7VDC (1x 3.7V 3000mAh rechargeable battery). The adaptor accepts 100-120VAC only. WiFi and Bluetooth portions are in the same module sharing a single antenna.

The Model: RCT6273W26 is the same as the Model: CT9273W26 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.

1.2 Related Submittal(s) Grants

This is a single application for certification of a transceiver.

The Declaration of the Conformity procedure of PC Connectivity for this transceiver (with FCC ID: A2HRCT6273W26) is being processed as the same time of this application.

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. Average measurements were performed according to ANSI C63.10 (2009).



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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.

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 AC line conducted emission test, the EUT along with its peripherals were placed on a 1.0m(W)X1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT power cord connected to one LISN (Line impedance stabilization network), which provided 50ohm coupling impedance for measuring instrument. Meanwhile, the peripheral or supporting equipment power cords connected to a separate LISN. The ac power for all LISNs were obtained from the same power source. The LISN housing, measuring instrument case, reference ground plane, and vertical ground plane were bounded together. The excess power cable between the EUT and the LISN was bundled. Power cords of non-equipments draped over the rear of the table, and routed them down onto the floor of the ac power line conducted emission test site to the second LISN.



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2.1 Justification (cont.)

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.

Different setting of data rates of WLAN (WiFi) has been tested. Worst case is reported only.

For simultaneous transmission, both WLAN (WiFi) and Bluetooth portions are also switched on when taking radiated emission for determining worst-case spurious emission.

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2.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

2.3 Special Accessories

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

2.4 Measurement Uncertainty

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

Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

2.5 Support Equipment List and Description

1. HDMI cable of 2m long
2. USB cable of 2m long
3. Headphone of 1.2m long cable
4. HDMI monitor (for radiated emission measurement)
5. HDMI monitor (for conducted emission measurement)
6. 4GB Micro SD Card
(Provided by Intertek)
7. Notebook computer (MIS1486)
8. Software: Ampak RFTTestTool VER:4.7
9. AC/DC Adaptor
(Model: STC-A515B-Z, Date Code: 1333, Input: 100-120VAC 50-60Hz 0.3A, Output: 5VDC 1.5A)
(Provided by Applicant)

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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 μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB
- 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 μ V/m
- RR = RA - AG - AV in dB μ V
- LF = CF + AF in dB

Assume a receiver reading of 52.0 dB μ 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 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V/m	
AF = 7.4 dB	RR = 18.0 dB μ V
CF = 1.6 dB	LF = 9.0 dB
AG = 29.0 dB	
AV = 5.0 dB	
FS = RR + LF	
FS = 18 + 9 = 27 dB μ V/m	

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



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3.2 Radiated Emission Configuration Photograph

The worst case in radiated emission was found at 2412.000 MHz

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 5.2 dB

3.4 Conducted Emission Configuration Photograph

The worst case in line-conducted emission was found at 0.164 MHz

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

3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission is saved with filename: conducted.pdf.

Judgment: Pass by 5.6 dB

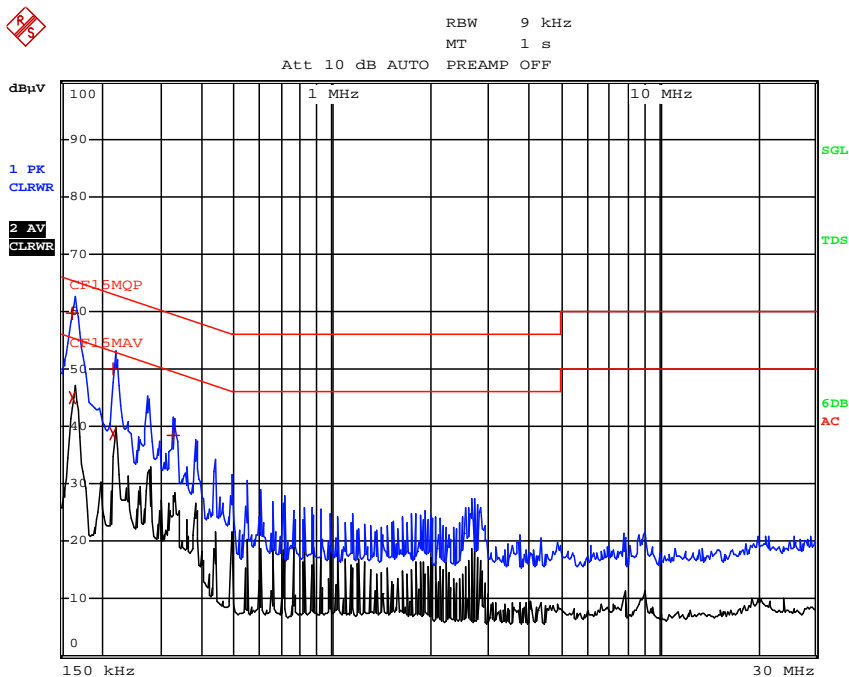
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Worst-Case Operating Mode: WiFi and Bluetooth Transmitting

EDIT PEAK LIST (Final Measurement Results)					
TRACE	FREQUENCY	LEVEL	dB μ V	DELTA	LIMIT
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
TRACE	FREQUENCY	LEVEL	dB μ V	DELTA	LIMIT
1 Quasi Peak	163.5 kHz	59.69	L1	-5.59	
2 CISPR Average	163.5 kHz	45.08	N	-10.19	
1 Quasi Peak	217.5 kHz	49.90	N	-13.01	
2 CISPR Average	217.5 kHz	38.80	N	-14.11	
1 Quasi Peak	325.5 kHz	38.37	N	-21.18	



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Applicant: ALCO Electronics Ltd.
Model: CT9273W26
Worst-Case Operating Mode: Transmitting (802.11b DSSS 11Mbps)

Date of Test: May 12, 2014

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 - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2412.000	92.4	33	29.4	88.8	94.0	-5.2
V	4824.000	37.6	33	34.9	39.5	54.0	-14.5
V	7236.000	36.9	33	37.9	41.8	54.0	-12.2
V	9648.000	35.2	33	40.4	42.6	54.0	-11.4
V	12060.000	37.2	33	40.5	44.7	54.0	-9.3
V	14472.000	40.8	33	40.0	47.8	54.0	-6.2

Channel 06

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2437.000	92.3	33	29.4	88.7	94.0	-5.3
V	4874.000	38.0	33	34.9	39.9	54.0	-14.1
V	7311.000	37.0	33	37.9	41.9	54.0	-12.1
V	9748.000	35.0	33	40.4	42.4	54.0	-11.6
V	12185.000	37.4	33	40.5	44.9	54.0	-9.1
V	14622.000	41.7	33	38.4	47.1	54.0	-6.9

Channel 11

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2462.000	92.2	33	29.4	88.6	94.0	-5.4
V	4924.000	37.9	33	34.9	39.8	54.0	-14.2
V	7386.000	35.9	33	37.9	40.8	54.0	-13.2
V	9848.000	35.3	33	40.4	42.7	54.0	-11.3
V	12310.000	37.4	33	40.5	44.9	54.0	-9.1
V	14772.000	42.1	33	38.4	47.5	54.0	-6.5

- NOTES:
1. Average measurement method 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.
 7. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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Applicant: ALCO Electronics Ltd.
Model: CT9273W26
Worst-Case Operating Mode: Transmitting (802.11b DSSS 11Mbps)

Date of Test: May 12, 2014

Table 2
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	105.2	33	29.4	101.6	114.0	-12.4
V	4824.000	44.6	33	34.9	46.5	74.0	-27.5
V	7236.000	42.4	33	37.9	47.3	74.0	-26.7
V	9648.000	41.4	33	40.4	48.8	74.0	-25.2
V	12060.000	43.2	33	40.5	50.7	74.0	-23.3
V	14472.000	48.6	33	40.0	55.6	74.0	-18.4

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	105.1	33	29.4	101.5	114.0	-12.5
V	4874.000	44.9	33	34.9	46.8	74.0	-27.2
V	7311.000	42.9	33	37.9	47.8	74.0	-26.2
V	9748.000	41.5	33	40.4	48.9	74.0	-25.1
V	12185.000	42.9	33	40.5	50.4	74.0	-23.6
V	14622.000	48.3	33	38.4	53.7	74.0	-20.3

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	105.0	33	29.4	101.4	114.0	-12.6
V	4924.000	44.5	33	34.9	46.4	74.0	-27.6
V	7386.000	42.7	33	37.9	47.6	74.0	-26.4
V	9848.000	41.2	33	40.4	48.6	74.0	-25.4
V	12310.000	43.0	33	40.5	50.5	74.0	-23.5
V	14772.000	48.2	33	38.4	53.6	74.0	-20.4

- 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.
 7. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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Applicant: ALCO Electronics Ltd.
Model: CT9273W26
Worst-Case Operating Mode: Transmitting (802.11g OFDM 54Mbps)

Date of Test: May 12, 2014

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 - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2412.000	89.7	33	29.4	86.1	94.0	-7.9
V	4824.000	38.8	33	34.9	40.7	54.0	-13.3
V	7236.000	37.3	33	37.9	42.2	54.0	-11.8
V	9648.000	36.5	33	40.4	43.9	54.0	-10.1
V	12060.000	38.0	33	40.5	45.5	54.0	-8.5
V	14472.000	40.7	33	40.0	47.7	54.0	-6.3

Channel 06

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2437.000	89.8	33	29.4	86.2	94.0	-7.8
V	4874.000	38.4	33	34.9	40.3	54.0	-13.7
V	7311.000	37.7	33	37.9	42.6	54.0	-11.4
V	9748.000	36.3	33	40.4	43.7	54.0	-10.3
V	12185.000	38.2	33	40.5	45.7	54.0	-8.3
V	14622.000	41.5	33	38.4	46.9	54.0	-7.1

Channel 11

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2462.000	90.0	33	29.4	86.4	94.0	-7.6
V	4924.000	38.6	33	34.9	40.5	54.0	-13.5
V	7386.000	37.9	33	37.9	42.8	54.0	-11.2
V	9848.000	36.1	33	40.4	43.5	54.0	-10.5
V	12310.000	38.3	33	40.5	45.8	54.0	-8.2
V	14772.000	40.9	33	38.4	46.3	54.0	-7.7

- NOTES:
1. Average measurement method 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.
 7. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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.
Model: CT9273W26
Worst-Case Operating Mode: Transmitting (802.11g OFDM 54Mbps)

Date of Test: May 12, 2014

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	104.8	33	29.4	101.2	114.0	-12.8
V	4824.000	44.9	33	34.9	46.8	74.0	-27.2
V	7236.000	42.7	33	37.9	47.6	74.0	-26.4
V	9648.000	41.5	33	40.4	48.9	74.0	-25.1
V	12060.000	43.1	33	40.5	50.6	74.0	-23.4
V	14472.000	46.8	33	40.0	53.8	74.0	-20.2

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	105.0	33	29.4	101.4	114.0	-12.6
V	4874.000	44.3	33	34.9	46.2	74.0	-27.8
V	7311.000	42.4	33	37.9	47.3	74.0	-26.7
V	9748.000	40.9	33	40.4	48.3	74.0	-25.7
V	12185.000	43.3	33	40.5	50.8	74.0	-23.2
V	14622.000	48.0	33	38.4	53.4	74.0	-20.6

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	104.6	33	29.4	101.0	114.0	-13.0
V	4924.000	44.8	33	34.9	46.7	74.0	-27.3
V	7386.000	42.9	33	37.9	47.8	74.0	-26.2
V	9848.000	41.3	33	40.4	48.7	74.0	-25.3
V	12310.000	43.4	33	40.5	50.9	74.0	-23.1
V	14772.000	47.7	33	38.4	53.1	74.0	-20.9

- 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. 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.
 7. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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.
Model: CT9273W26

Date of Test: May 12, 2014

Worst-Case Operating Mode: 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 (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2412.000	89.4	33	29.4	85.8	94.0	-8.2
V	4824.000	38.2	33	34.9	40.1	54.0	-13.9
V	7236.000	37.6	33	37.9	42.5	54.0	-11.5
V	9648.000	36.2	33	40.4	43.6	54.0	-10.4
V	12060.000	38.3	33	40.5	45.8	54.0	-8.2
V	14472.000	39.8	33	40.0	46.8	54.0	-7.2

Channel 06

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2437.000	89.2	33	29.4	85.6	94.0	-8.4
V	4874.000	38.6	33	34.9	40.5	54.0	-13.5
V	7311.000	37.9	33	37.9	42.8	54.0	-11.2
V	9748.000	36.0	33	40.4	43.4	54.0	-10.6
V	12185.000	38.2	33	40.5	45.7	54.0	-8.3
V	14622.000	41.4	33	38.4	46.8	54.0	-7.2

Channel 11

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2462.000	89.2	33	29.4	85.6	94.0	-8.4
V	4924.000	38.9	33	34.9	40.8	54.0	-13.2
V	7386.000	37.3	33	37.9	42.2	54.0	-11.8
V	9848.000	36.5	33	40.4	43.9	54.0	-10.1
V	12310.000	38.3	33	40.5	45.8	54.0	-8.2
V	14772.000	41.5	33	38.4	46.9	54.0	-7.1

- NOTES:
1. Average measurement method 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.
 7. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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.
Model: CT9273W26

Date of Test: May 12, 2014

Worst-Case Operating Mode: 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 (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	104.4	33	29.4	100.8	114.0	-13.2
V	4824.000	44.6	33	34.9	46.5	74.0	-27.5
V	7236.000	42.5	33	37.9	47.4	74.0	-26.6
V	9648.000	41.4	33	40.4	48.8	74.0	-25.2
V	12060.000	43.2	33	40.5	50.7	74.0	-23.3
V	14472.000	46.7	33	40.0	53.7	74.0	-20.3

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	104.3	33	29.4	100.7	114.0	-13.3
V	4874.000	44.7	33	34.9	46.6	74.0	-27.4
V	7311.000	42.4	33	37.9	47.3	74.0	-26.7
V	9748.000	41.0	33	40.4	48.4	74.0	-25.6
V	12185.000	43.3	33	40.5	50.8	74.0	-23.2
V	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	103.8	33	29.4	100.2	114.0	-13.8
V	4924.000	44.4	33	34.9	46.3	74.0	-27.7
V	7386.000	42.6	33	37.9	47.5	74.0	-26.5
V	9848.000	41.5	33	40.4	48.9	74.0	-25.1
V	12310.000	42.9	33	40.5	50.4	74.0	-23.6
V	14772.000	48.1	33	38.4	53.5	74.0	-20.5

- 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.
 7. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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: May 12, 2014

Model: CT9273W26

Worst-Case Operating Mode: Transmitting (Bluetooth 4.0 BLE)

Table 7
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 - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2402.000	87.6	33	29.4	84.0	94.0	-10.0
V	4804.000	39.2	33	34.9	41.1	54.0	-12.9
V	7206.000	37.8	33	37.9	42.7	54.0	-11.3
V	9608.000	38.3	33	40.4	45.7	54.0	-8.3
V	12010.000	39.3	33	40.5	46.8	54.0	-7.2
V	14412.000	41.7	33	40.0	48.7	54.0	-5.3

Channel 20

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2440.000	87.8	33	29.4	84.2	94.0	-9.8
V	4880.000	40.8	33	34.9	42.7	54.0	-11.3
V	7320.000	40.4	33	37.9	45.3	54.0	-8.7
V	9760.000	38.7	33	40.4	46.1	54.0	-7.9
V	12200.000	41.0	33	40.5	48.5	54.0	-5.5
V	14640.000	42.4	33	38.4	47.8	54.0	-6.2

Channel 40

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2480.000	87.4	33	29.4	83.8	94.0	-10.2
V	4960.000	40.8	33	34.9	42.7	54.0	-11.3
V	7440.000	41.0	33	37.9	45.9	54.0	-8.1
V	9920.000	38.8	33	40.4	46.2	54.0	-7.8
V	12400.000	40.9	33	40.5	48.4	54.0	-5.6
V	14880.000	42.5	33	38.4	47.9	54.0	-6.1

- NOTES:
1. Average measurement method 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. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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: May 12, 2014

Model: CT9273W26

Worst-Case Operating Mode: Transmitting (Bluetooth 4.0 BLE)

Table 8
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	2402.000	104.8	33	29.4	101.2	114.0	-12.8
V	4804.000	45.8	33	34.9	47.7	74.0	-26.3
V	7206.000	43.3	33	37.9	48.2	74.0	-25.8
V	9608.000	42.2	33	40.4	49.6	74.0	-24.4
V	12010.000	44.0	33	40.5	51.5	74.0	-22.5
V	14412.000	46.8	33	40.0	53.8	74.0	-20.2

Channel 20

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	2440.000	104.6	33	29.4	101.0	114.0	-13.0
V	4880.000	45.9	33	34.9	47.8	74.0	-26.2
V	7320.000	43.7	33	37.9	48.6	74.0	-25.4
V	9760.000	42.0	33	40.4	49.4	74.0	-24.6
V	12200.000	44.3	33	40.5	51.8	74.0	-22.2
V	14640.000	47.8	33	38.4	53.2	74.0	-20.8

Channel 40

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	2480.000	104.6	33	29.4	101.0	114.0	-13.0
V	4960.000	45.9	33	34.9	47.8	74.0	-26.2
V	7440.000	44.0	33	37.9	48.9	74.0	-25.1
V	9920.000	42.4	33	40.4	49.8	74.0	-24.2
V	12400.000	43.9	33	40.5	51.4	74.0	-22.6
V	14880.000	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. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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: May 12, 2014

Model: CT9273W26

Worst-Case Operating Mode: Transmitting (Bluetooth 3.0)

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

Channel 00

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	93.0	33	29.4	89.4	24	65.4	94.0	-28.6
V	4804.000	45.7	33	34.9	47.6	24	23.6	54.0	-30.4
V	7206.000	43.9	33	37.9	48.8	24	24.8	54.0	-29.2
V	9608.000	42.0	33	40.4	49.4	24	25.4	54.0	-28.6
V	12010.000	43.7	33	40.5	51.2	24	27.2	54.0	-26.8
V	14412.000	46.4	33	40.0	53.4	24	29.4	54.0	-24.6

Channel 38

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	2440.000	93.4	33	29.4	89.8	24	65.8	94.0	-28.2
V	4880.000	45.4	33	34.9	47.3	24	23.3	54.0	-30.7
V	7320.000	43.2	33	37.9	48.1	24	24.1	54.0	-29.9
V	9760.000	42.2	33	40.4	49.6	24	25.6	54.0	-28.4
V	12200.000	44.0	33	40.5	51.5	24	27.5	54.0	-26.5
V	14640.000	48.1	33	38.4	53.5	24	29.5	54.0	-24.5

Channel 78

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	94.0	33	29.4	90.4	24	66.4	94.0	-27.6
V	4960.000	45.3	33	34.9	47.2	24	23.2	54.0	-30.8
V	7440.000	43.6	33	37.9	48.5	24	24.5	54.0	-29.5
V	9920.000	42.3	33	40.4	49.7	24	25.7	54.0	-28.3
V	12400.000	44.0	33	40.5	51.5	24	27.5	54.0	-26.5
V	14880.000	48.2	33	38.4	53.6	24	29.6	54.0	-24.4

- 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. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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: May 12, 2014

Model: CT9273W26

Worst-Case Operating Mode: Transmitting (Bluetooth 3.0)

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

Channel 00

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	2402.000	93.0	33	29.4	89.4	114.0	-24.6
V	4804.000	45.7	33	34.9	47.6	74.0	-26.4
V	7206.000	43.9	33	37.9	48.8	74.0	-25.2
V	9608.000	42.0	33	40.4	49.4	74.0	-24.6
V	12010.000	43.7	33	40.5	51.2	74.0	-22.8
V	14412.000	46.4	33	40.0	53.4	74.0	-20.6

Channel 38

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	2440.000	93.4	33	29.4	89.8	114.0	-24.2
V	4880.000	45.4	33	34.9	47.3	74.0	-26.7
V	7320.000	43.2	33	37.9	48.1	74.0	-25.9
V	9760.000	42.2	33	40.4	49.6	74.0	-24.4
V	12200.000	44.0	33	40.5	51.5	74.0	-22.5
V	14640.000	48.1	33	38.4	53.5	74.0	-20.5

Channel 78

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	2480.000	94.0	33	29.4	90.4	114.0	-23.6
V	4960.000	45.3	33	34.9	47.2	74.0	-26.8
V	7440.000	43.6	33	37.9	48.5	74.0	-25.5
V	9920.000	42.3	33	40.4	49.7	74.0	-24.3
V	12400.000	44.0	33	40.5	51.5	74.0	-22.5
V	14880.000	48.2	33	38.4	53.6	74.0	-20.4

- 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. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.



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Applicant: ALCO Electronics Ltd.

Date of Test: May 12, 2014

Model: CT9273W26

Worst-Case Operating Mode: WiFi and Bluetooth Transmitting

Table 11

**Radiated Emissions
Pursuant to FCC Part 15 Section 15.209 Requirement**

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	57.550	38.1	16	11.0	33.1	40.0	-6.9
H	91.850	38.8	16	11.0	33.8	43.5	-9.7
H	102.350	38.4	16	13.0	35.4	43.5	-8.1
V	107.250	37.6	16	14.0	35.6	43.5	-7.9
V	127.550	38.0	16	14.0	36.0	43.5	-7.5
H	145.050	39.0	16	14.0	37.0	43.5	-6.5
H	256.400	32.1	16	21.0	37.1	46.0	-8.9
H	317.600	30.8	16	23.0	37.8	46.0	-8.2
H	391.400	29.0	16	25.0	38.0	46.0	-8.0
V	461.000	29.2	16	26.0	39.2	46.0	-6.8

NOTES: 1. Quasi-Peak Detector Data unless otherwise stated.

- 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.
- Negative sign in the column shows value below limit.
- Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.



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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 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.



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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 Radiated Emission on the Bandedge

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.

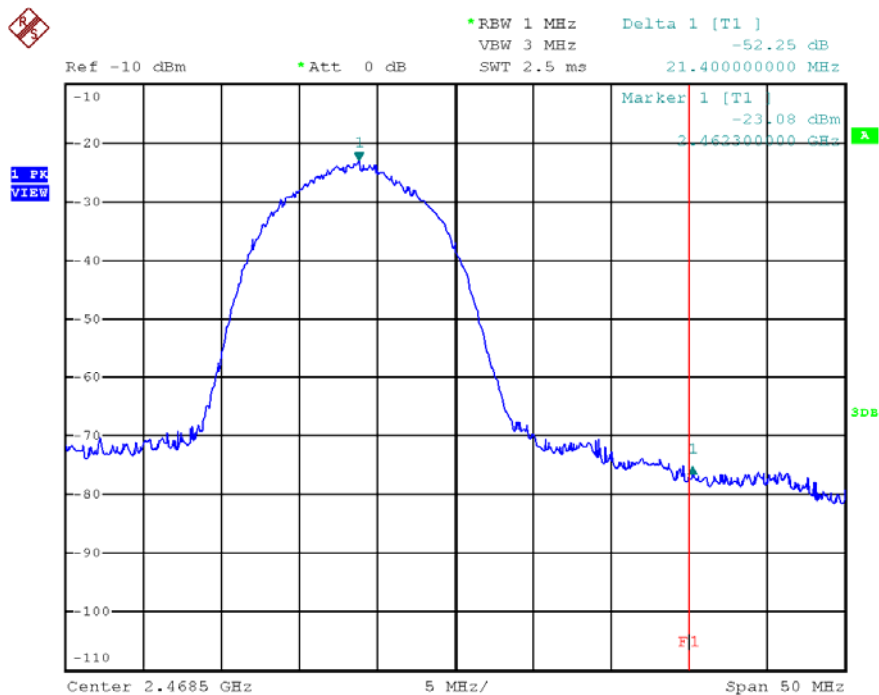
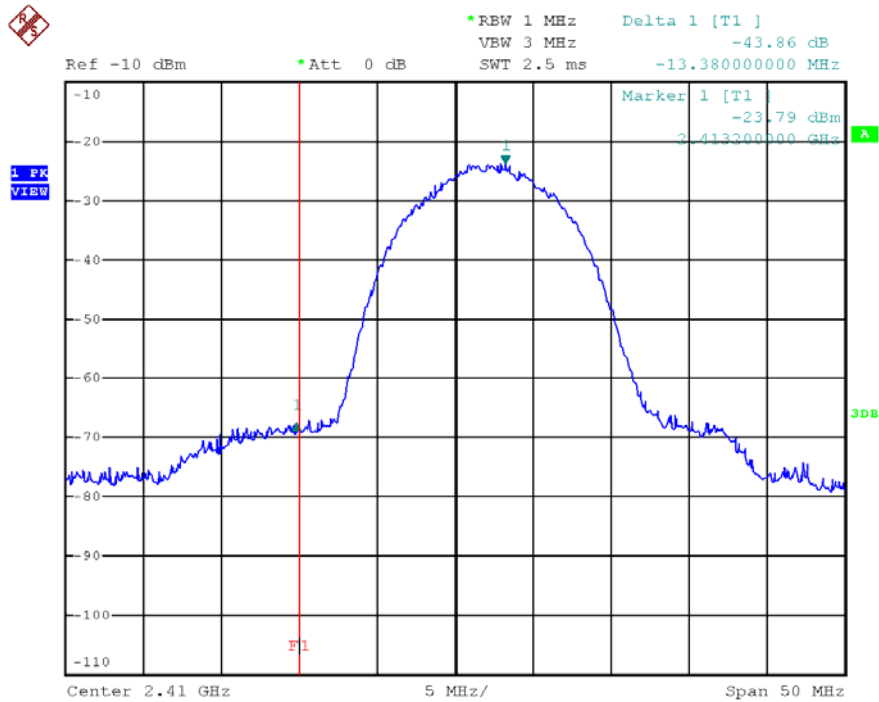
Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50dB below the level of the fundamental or to the general radiated emissions limits in Section 15.209 / RSS-210 2.5, whichever is the lesser attenuation, which meet the requirement of part 15.249(d) / RSS-210 A2.9.

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Peak Measurement (802.11b DSSS 11Mbps)





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Peak Measurement (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

=101.6 dB μ V/m - 43.9 dB
=57.7 dB μ V/m

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

=88.8 dB μ V/m - 43.9 dB
=44.9 dB μ V/m

Upper bandedge

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

=101.4 dB μ V/m - 52.3 dB
=49.1 dB μ V/m

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

=88.6 dB μ V/m - 52.3 dB
=36.3 dB μ V/m

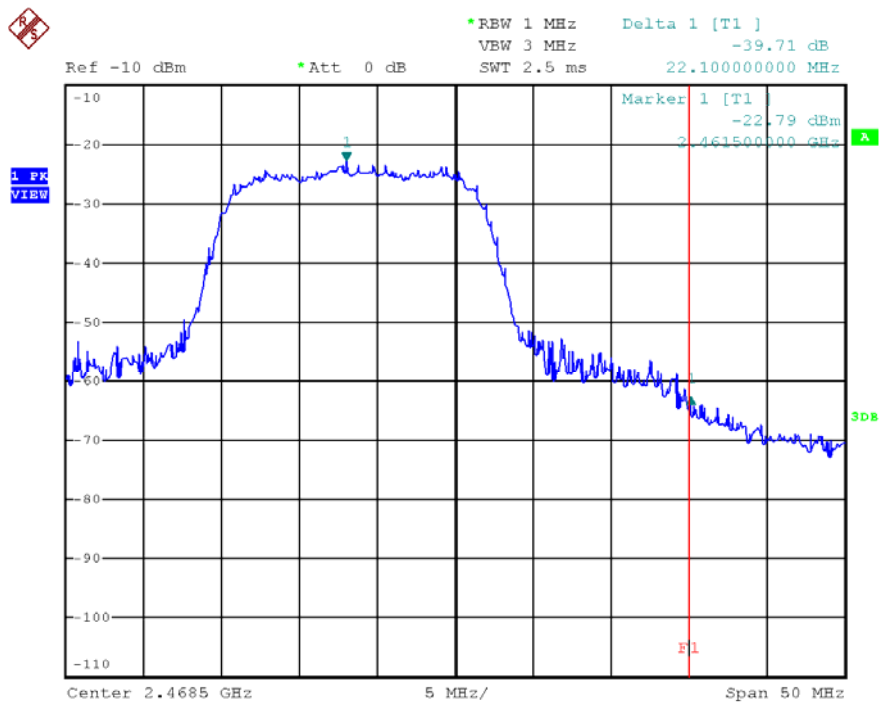
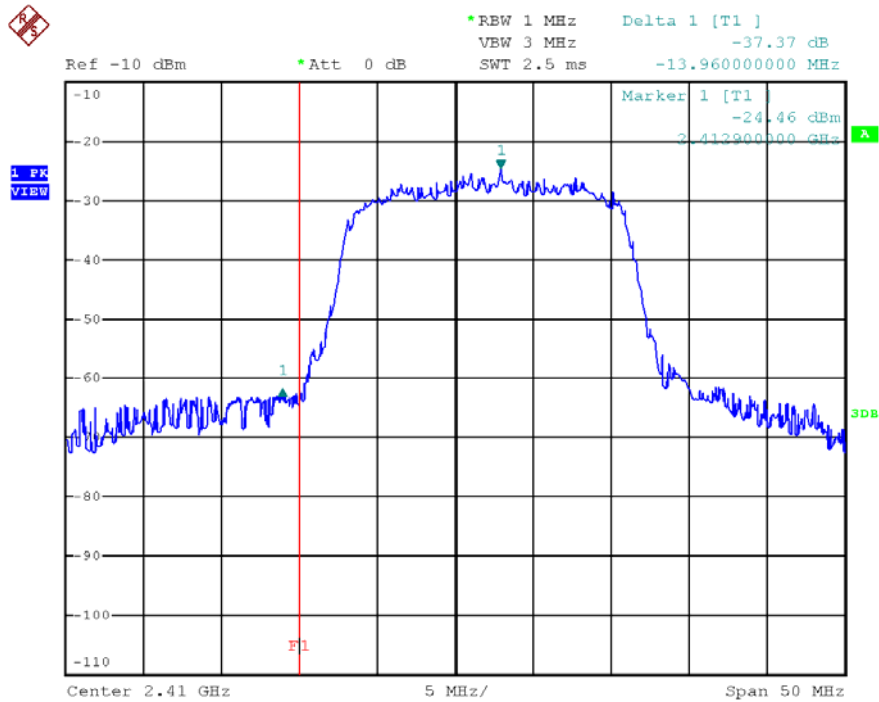
The resultant field strength meets the general radiated emission limit in Section 15.209, which does not exceed 74 dB μ V/m (Peak Limit) and 54 dB μ V/m (Average Limit).

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Peak Measurement (802.11g OFDM 54Mbps)





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Peak Measurement (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

=101.2 dB μ V/m - 37.4 dB
=63.8 dB μ V/m

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

=86.1 dB μ V/m - 37.4 dB
=48.7 dB μ V/m

Upper bandedge

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

=101.0 dB μ V/m - 39.7 dB
=61.3 dB μ V/m

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

=86.4 dB μ V/m - 39.7 dB
=46.7 dB μ V/m

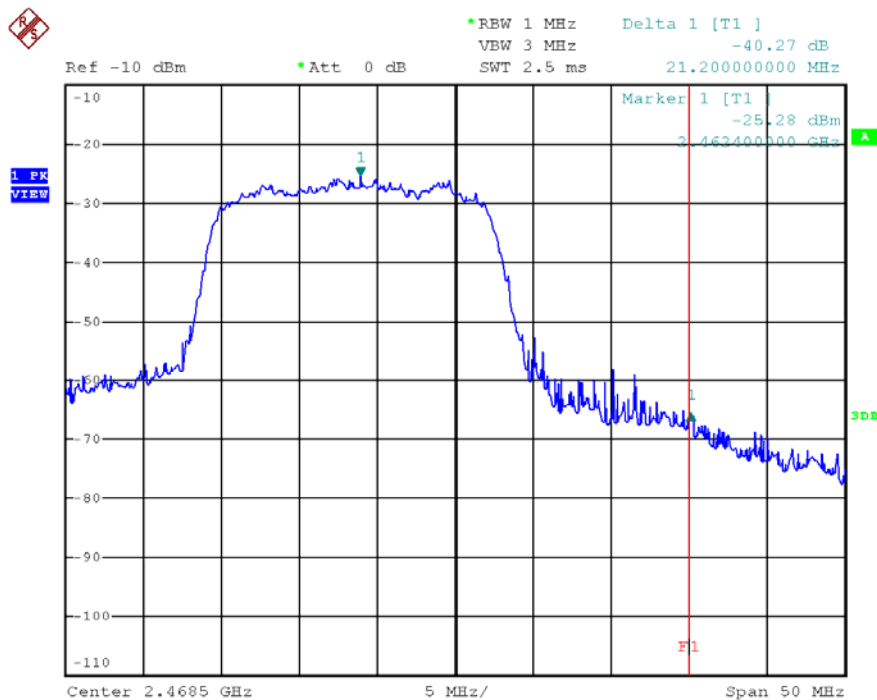
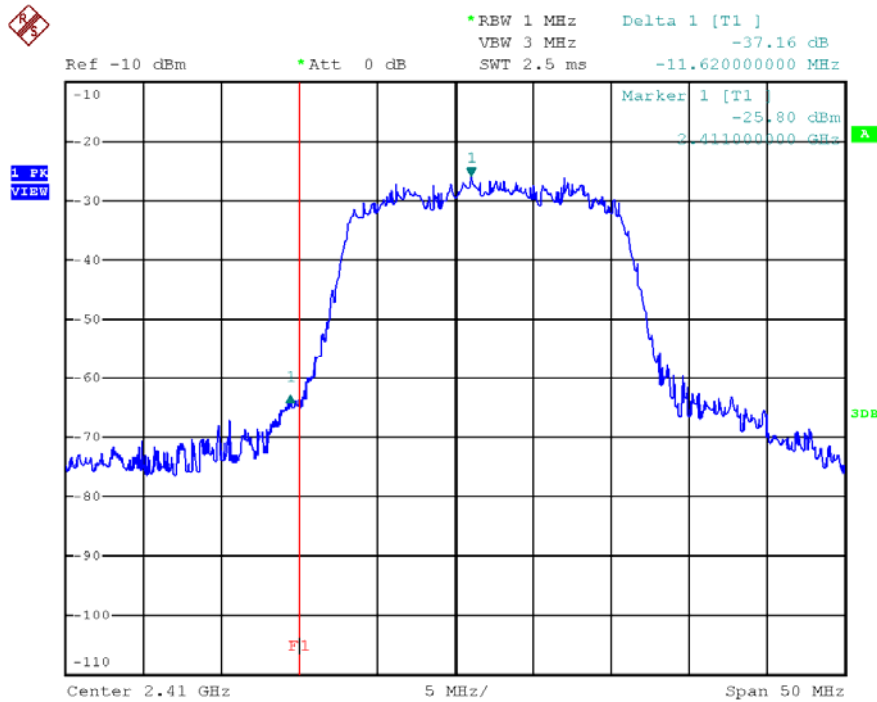
The resultant field strength meets the general radiated emission limit in Section 15.209, which does not exceed 74 dB μ V/m (Peak Limit) and 54 dB μ V/m (Average Limit).

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Peak Measurement (802.11n HT20 mcs7 65Mbps)





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Peak Measurement (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

$$\begin{aligned} &= 100.8 \text{ dB}\mu\text{V/m} - 37.2 \text{ dB} \\ &= 63.6 \text{ dB}\mu\text{V/m} \end{aligned}$$

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

$$\begin{aligned} &= 85.8 \text{ dB}\mu\text{V/m} - 37.2 \text{ dB} \\ &= 48.6 \text{ dB}\mu\text{V/m} \end{aligned}$$

Upper bandedge

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

$$\begin{aligned} &= 100.2 \text{ dB}\mu\text{V/m} - 40.3 \text{ dB} \\ &= 59.9 \text{ dB}\mu\text{V/m} \end{aligned}$$

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

$$\begin{aligned} &= 85.6 \text{ dB}\mu\text{V/m} - 40.3 \text{ dB} \\ &= 45.3 \text{ dB}\mu\text{V/m} \end{aligned}$$

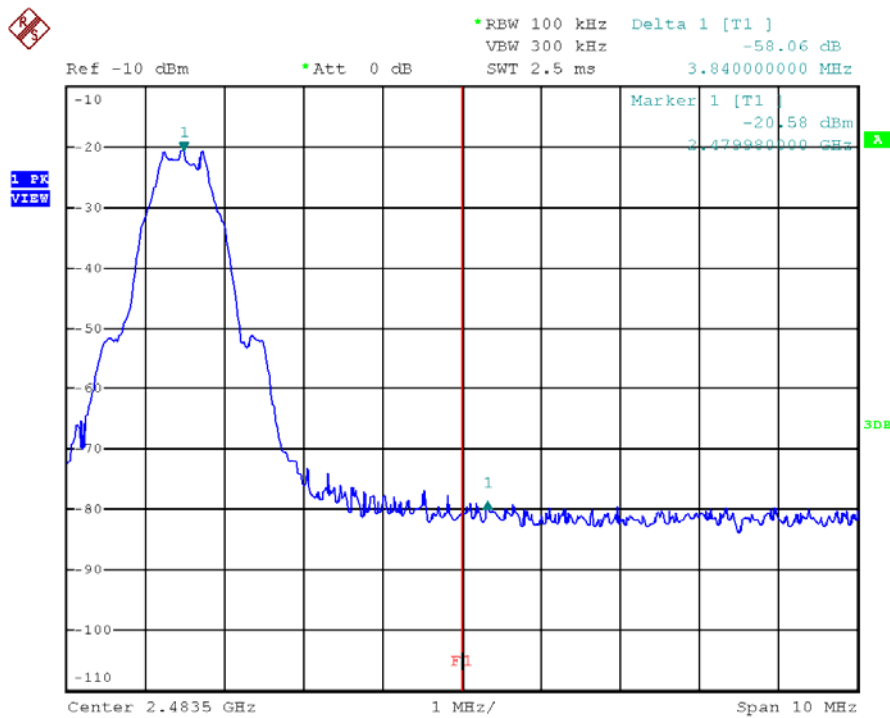
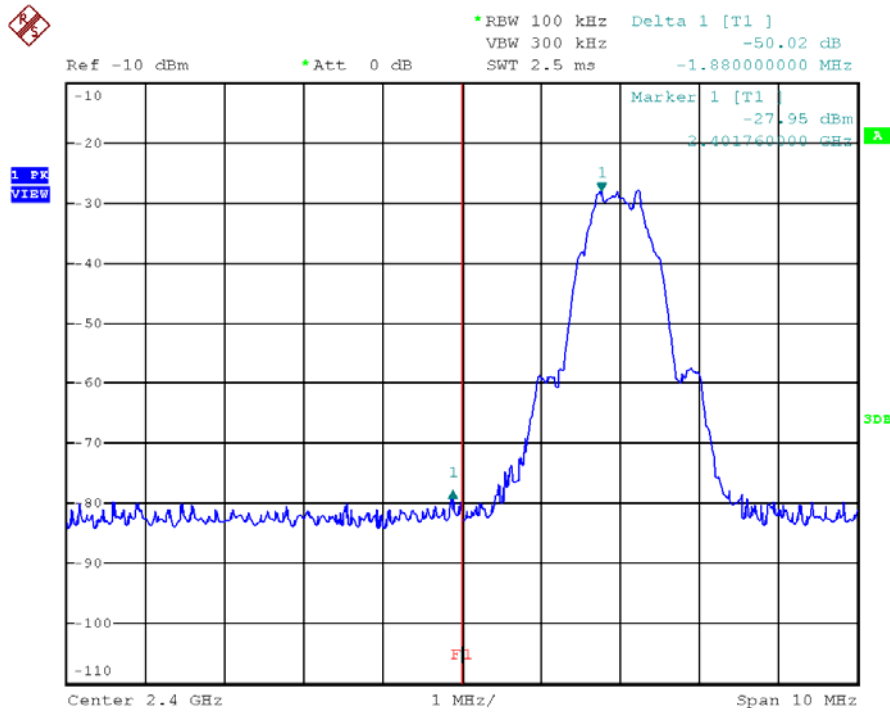
The resultant field strength meets the general radiated emission limit in Section 15.209, which does not exceed 74 dB μ V/m (Peak Limit) and 54 dB μ V/m (Average Limit).

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Peak Measurement (Bluetooth 4.0 BLE)





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Peak Measurement (Bluetooth 4.0 BLE)

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

=101.2 dB μ V/m - 50.0 dB
=51.2 dB μ V/m

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

=84.0 dB μ V/m - 50.0 dB
=34.0 dB μ V/m

Upper bandedge

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

=101.0 dB μ V/m - 58.1 dB
=42.9 dB μ V/m

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

=83.8 dB μ V/m - 58.1 dB
=25.7 dB μ V/m

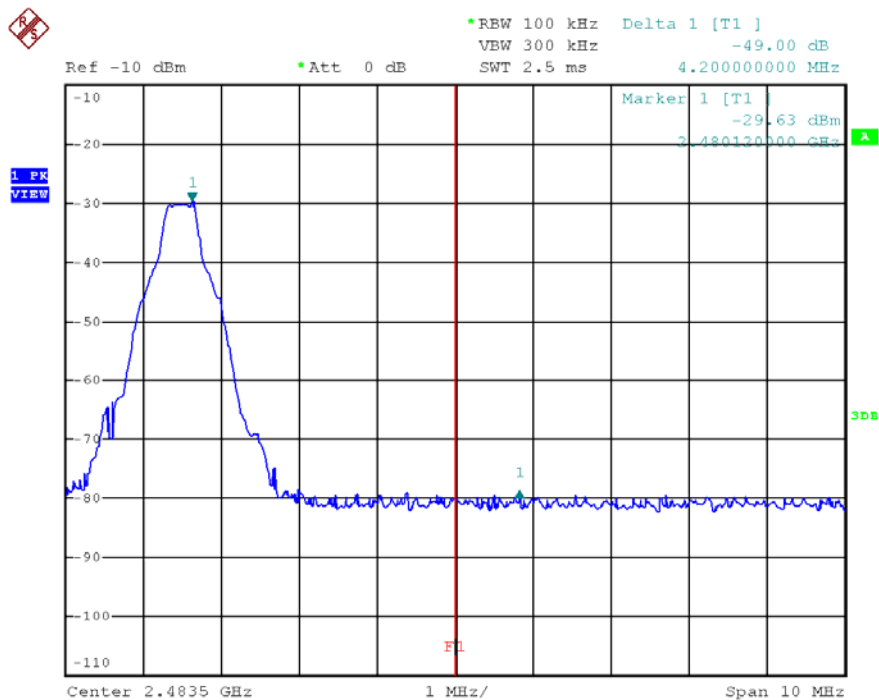
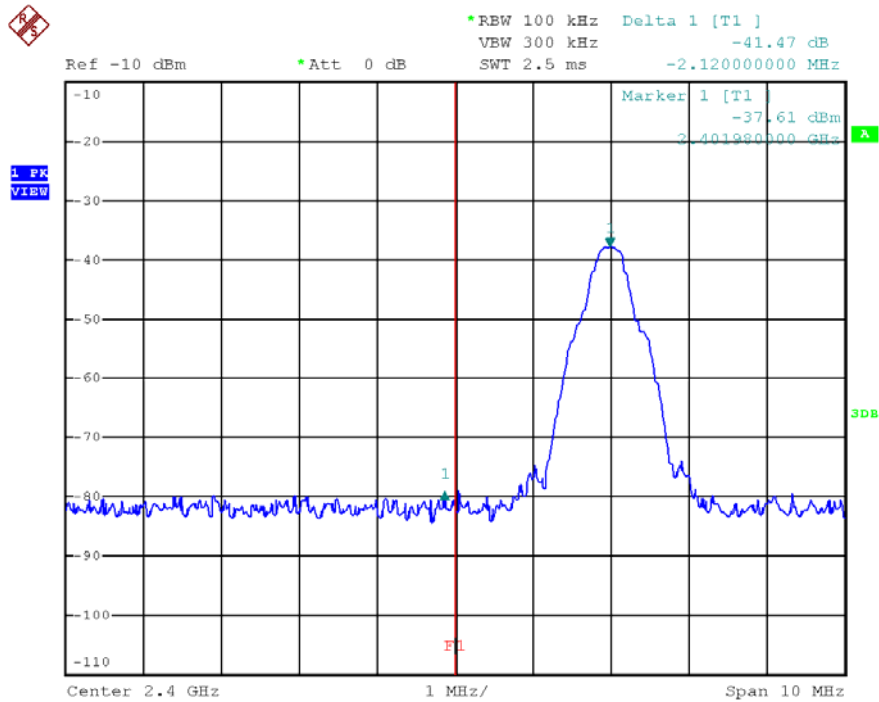
The resultant field strength meets the general radiated emission limit in Section 15.209, which does not exceed 74 dB μ V/m (Peak Limit) and 54 dB μ V/m (Average Limit).

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Peak Measurement (Bluetooth 3.0)





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Peak Measurement (Bluetooth 3.0)

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

=89.4 dB μ V/m - 41.5 dB
=47.9 dB μ V/m

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

=65.4 dB μ V/m - 41.5 dB
=23.9 dB μ V/m

Upper bandedge

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

=90.4 dB μ V/m - 49.0 dB
=41.4 dB μ V/m

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

=66.4 dB μ V/m - 49.0 dB
=17.4 dB μ V/m

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

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8.2 Discussion of Pulse Desensitization

For WiFi and Bluetooth 4.0 BLE: Pulse desensitivity is not applicable for this device. Since the transmitter transmits the RF signal continuously.

For Bluetooth 3.0: The effective period (T_{eff}) is approximately 6.25ms 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 and Bluetooth 4.0 BLE: The average factor is not applicable for this device as the transmitted signal is a continuously signal.

For Bluetooth 3.0: Based on the Bluetooth Specification Version 3.0 + EDR, the transmitter ON time for each timeslot of Bluetooth is 625 μ s. DH5 has the maximum duty cycle, which consists of 5 continuous Tx slots and 1 Rx slot. Therefore one hopset take $(5+1) \times 625\mu s = 3.75ms$. For one period for a pseudo-random hopping through at least 20 RF channels in adaptive mode (worse case), it take: $20 \times 3.75ms = 75ms$.

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

For the worst case calculation, there are two transmissions might occur in 100ms. Therefore,

$$\begin{aligned} \text{Duty Cycle (DC)} &= \text{Maximum On time in } 100ms/100ms \\ &= 3.125ms \times 2/100ms \\ &= 0.0625 \end{aligned}$$

$$\begin{aligned} \text{Average Factor (AF) of Bluetooth in dB} &= 20 \log_{10} (0.0625) \\ &= -24 \text{ dB} \end{aligned}$$



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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 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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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 3 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-2666	EW-0571	EW-0572
Manufacturer	R&S	EMCO	EMCO
Model No.	ESCI7	3104C	3146
Calibration Date	Jun. 20, 2013	Nov. 01, 2013	Jun. 26, 2013
Calibration Due Date	Jun. 20, 2014	May 01, 2015	Dec. 26, 2014

Equipment	Spectrum Analyzer	Pyramidal Horn Antenna	Double Ridged Guide Antenna
Registration No.	EW-2466	EW-0905	EW-1015
Manufacturer	R&S	EMCO	EMCO
Model No.	FSP30	3160-09	3115
Calibration Date	Aug. 04, 2013	Jan. 28, 2014	Mar. 05, 2013
Calibration Due Date	Aug. 04, 2014	Jul. 28, 2015	Sep. 05, 2014

2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN	LISN
Registration No.	EW-2666	EW-2501	EW-2874
Manufacturer	R&S	R&S	R&S
Model No.	ESCI7	ENV-216	ENV-216
Calibration Date	Jun. 20, 2013	Dec. 25, 2013	Oct. 17, 2013
Calibration Due Date	Jun. 20, 2014	Nov. 30, 2014	Aug. 17, 2014

3) Bandedge Measurement

Equipment	Spectrum Analyzer
Registration No.	EW-2249
Manufacturer	R&S
Model No.	FSP30
Calibration Date	Oct. 28, 2013
Calibration Due Date	Oct. 28, 2014

END OF TEST REPORT