FCC RF Test Report

APPLICANT: Horton L.L.C.

EQUIPMENT : Tablet

MODEL NAME : SR87MC

FCC ID : 2AE26-1229

STANDARD : FCC Part 15 Subpart C §15.247

CLASSIFICATION : (DTS) Digital Transmission System

The testing was completed on Feb. 20, 2016. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

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TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 1 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

1190

Report No.: FR561042-04C

TABLE OF CONTENTS

RE	visio	N HISTORY	3
SU	MMAI	RY OF TEST RESULT	
1	GEN	ERAL DESCRIPTION	5
	1.1	Applicant	5
	1.2	Product Feature of Equipment Under Test	5
	1.3	Product Specification of Equipment Under Test	5
	1.4	Modification of EUT	5
	1.5	Testing Location	6
	1.6	Applicable Standards	6
2	TES	CONFIGURATION OF EQUIPMENT UNDER TEST	7
	2.1	Carrier Frequency Channel	7
	2.2	Pre-Scanned RF Power	8
	2.3	Test Mode	8
	2.4	Connection Diagram of Test System	9
	2.5	Support Unit used in test configuration and system	10
	2.6	EUT Operation Test Setup	10
	2.7	Measurement Results Explanation Example	10
3	TES	T RESULT	11
	3.1		
	3.2	Output Power Measurement	13
	3.3	Power Spectral Density Measurement	14
	3.4	•	
	3.5	-	
	3.6		
	3.7	Antenna Requirements	36
4	LIST	OF MEASURING EQUIPMENT	37
5	UNC	ERTAINTY OF EVALUATION	38
ΑP	PEND	DIX A. CONDUCTED TEST RESULTS	
ΑP	PEND	DIX B. RADIATED TEST RESULTS	
ΑP	PEND	DIX C. RADIATED SPURIOUS EMISSION PLOTS	

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 2 of 38
Report Issued Date : Mar. 01, 2016

Report No. : FR561042-04C

Report Version : Rev. 01
Report Template No.: BU5-FR15CWL Version 1.2

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR561042-04C	Rev. 01	Initial issue of report	Mar. 01, 2016

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 3 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No. : FR561042-04C

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
	45.045(1)	Conducted Band Edges		Pass	-
3.4	15.247(d)	Conducted Spurious Emission	≤ 20dBc	Pass	-
3.5	15.247(d)	Radiated Band Edges and	15.209(a) &	Pass	Under limit 0.51 dB at
3.5	15.247 (u)	Radiated Spurious Emission	15.247(d)	rass	2390.000 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 11.80 dB at 0.462 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 4 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report Template No.: BU5-FR15CWL Version 1.2

Report No. : FR561042-04C

General Description

1.1 Applicant

Horton L.L.C. 1 North Water Street, 10th Floor Mobile, Alabama, 36602

1.2 Product Feature of Equipment Under Test

Product Feature				
Equipment	Tablet			
Model Name	SR87MC			
FCC ID	2AE26-1229			
	WLAN 11b/g/n HT20			
EUT supports Radios application	WLAN 11a/n HT20/HT40			
EOT Supports Radios application	WLAN 11ac VHT20/VHT40/VHT80			
	Bluetooth v4.1 EDR/LE			

Report No.: FR561042-04C

: 5 of 38

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.3 Product Specification of Equipment Under Test

Standards-related Product Specification					
Tx/Rx Channel Frequency Range 802.11b/g/n: 2412 MHz ~ 2462 MHz					
Maximum (Peak) Output Power to Antenna	802.11b : 22.04 dBm (0.1600 W) 802.11g : 24.61 dBm (0.2891 W) 802.11n HT20 : 24.61 dBm (0.2891 W)				
Antenna Type	802.11b/g/n: Fixed Internal Antenna type with gain 2.40 dBi				
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)				

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

SPORTON INTERNATIONAL INC. Page Number TEL: 886-3-327-3456 Report Issued Date: Mar. 01, 2016 FAX: 886-3-328-4978 Report Version : Rev. 01

FCC ID: 2AE26-1229 Report Template No.: BU5-FR15CWL Version 1.2

1.5 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.					
	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park,					
Test Site Location	Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.					
rest site Location	TEL: +886-3-327-3456					
	FAX: +886-3-328-4978					
Toot Site No		Sporton Site No.				
Test Site No.	TH02-HY	CO05-HY	03CH07-HY			

Note: The test site complies with ANSI C63.4 2014 requirement.

1.6 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r04
- ANSI C63.10-2013

Remark:

- All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 6 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	1	2412	7	2442
	2	2417	8	2447
2400 2492 E MU-	3	2422	9	2452
2400-2483.5 MHz	4	2427	10	2457
	5	2432	11	2462
	6	2437	-	-

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 7 of 38

Report Issued Date : Mar. 01, 2016

Report Version : Rev. 01

Report No.: FR561042-04C

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

Report No.: FR561042-04C

2.4GHz 802.11b mode							
Data Rate (MHz)	Data Rate (MHz) 1M bps 2M bps 5.5M bps 11M bps						
Peak Power (dBm)	<mark>22.04</mark>	21.92	21.92	21.94			

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	<mark>24.61</mark>	24.58	24.57	24.51	24.53	24.60	24.60	24.60

2.4GHz 802.11n HT20 mode								
Data Rate (MHz) MCS0 MCS1 MCS2 MCS3 MCS4 MCS5 MCS6 MCS7								
Peak Power (dBm)	<mark>24.61</mark>	24.58	24.59	24.59	24.55	24.60	24.60	24.60

2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

<2.4GHz>

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0

	Test Cases							
AC	Mode 1: Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Earphone + MicroSD Card + USB							
Conducted	Cable (Charging from Adapter)							
Emission	Cable (Charging Horri Adapter)							

 SPORTON INTERNATIONAL INC.
 Page Number
 : 8 of 38

 TEL: 886-3-327-3456
 Report Issued Date
 : Mar. 01, 2016

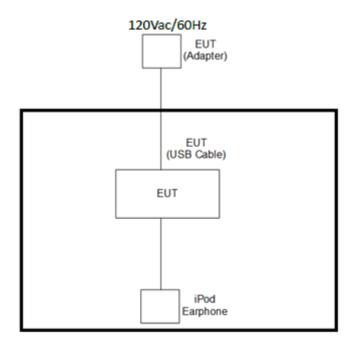
 FAX: 886-3-328-4978
 Report Version
 : Rev. 01

FCC ID : 2AE26-1229 Report Template No.: BU5-FR15CWL Version 1.2

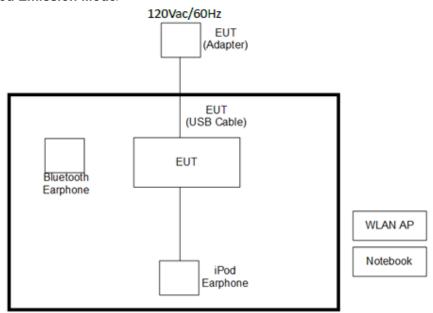


2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229

Page Number : 9 of 38 Report Issued Date: Mar. 01, 2016 Report Version : Rev. 01

Report Template No.: BU5-FR15CWL Version 1.2

Report No.: FR561042-04C

2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DIR-865L	KA2IR865LA1	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054		AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
4.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.6 EUT Operation Test Setup

For WLAN function, programmed RF utility, installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
=
$$4.2 + 10 = 14.2$$
 (dB)

Report No.: FR561042-04C

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

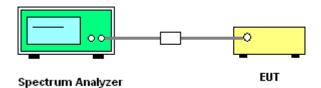
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

- The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r04.
- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
- 5. Measure and record the results in the test report.

3.1.4 Test Setup



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 11 of 38

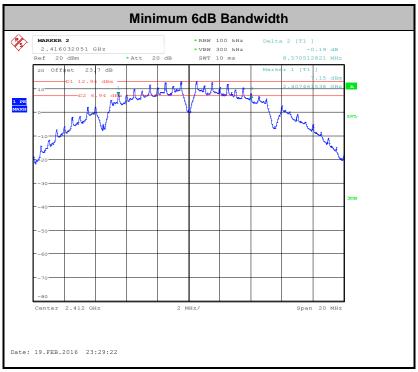
Report Issued Date : Mar. 01, 2016

Report Version : Rev. 01

Report No.: FR561042-04C

3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A of this test report.



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 12 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting Antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the Antenna exceeds 6dBi.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

- The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas.
 Guidance v03r04 section 9.1.2 PKPM1 Peak power meter method.
- 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Please refer to Appendix A of this test report.

3.2.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A of this test report.

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 13 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

- The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r04
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
- 5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
- 6. Measure and record the results in the test report.

3.3.4 Test Setup



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 14 of 38

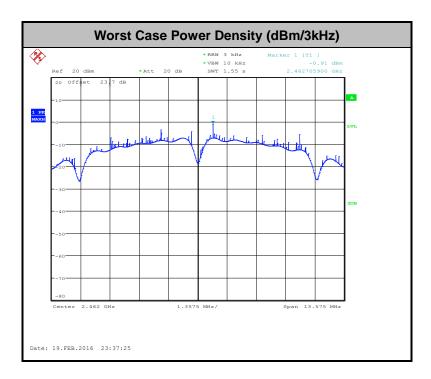
Report Issued Date : Mar. 01, 2016

Report Version : Rev. 01

Report No.: FR561042-04C

3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A of this test report.



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 15 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

- 1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r04.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
- 5. Measure and record the results in the test report.
- 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 16 of 38

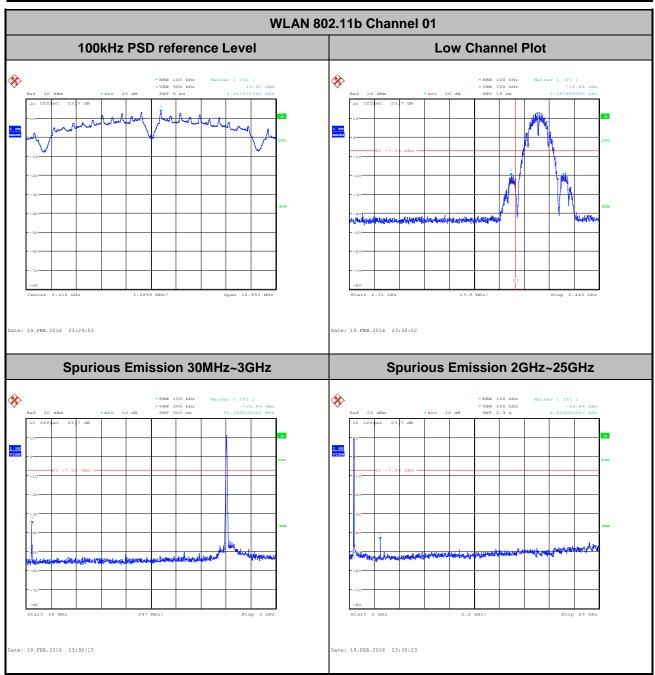
Report Issued Date : Mar. 01, 2016

Report Version : Rev. 01

Report No.: FR561042-04C

3.4.5 Test Result of Conducted Band Edges and Spurious Emission

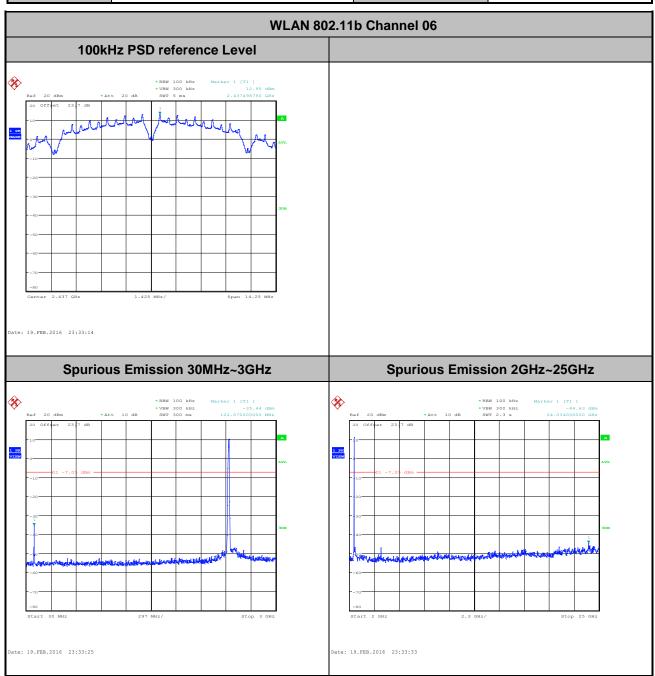
Test Mode :	802.11b	Temperature :	21~25℃
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	Derek Hsu



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 17 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

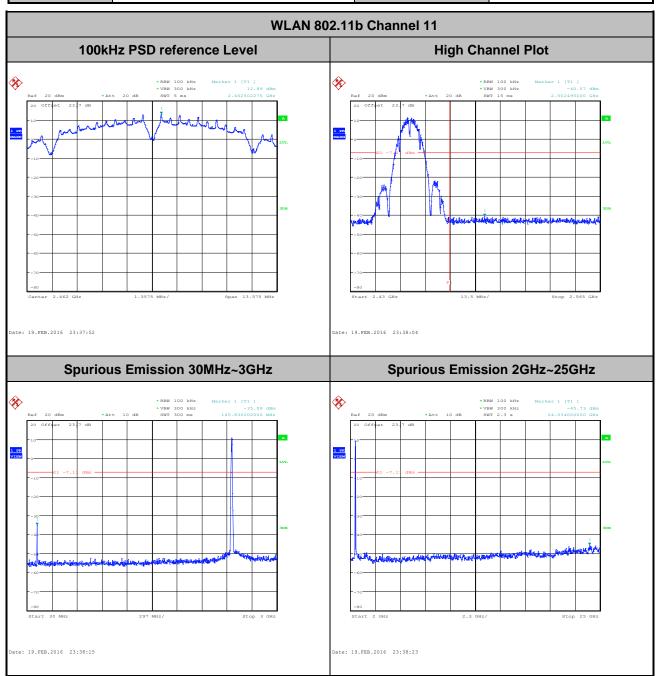
Test Mode :	802.11b	Temperature :	21~25℃
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel:	06	Test Engineer :	Derek Hsu



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 18 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

Test Mode :	802.11b	Temperature :	21~25℃
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel:	11	Test Engineer :	Derek Hsu



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 19 of 38

Report Issued Date : Mar. 01, 2016

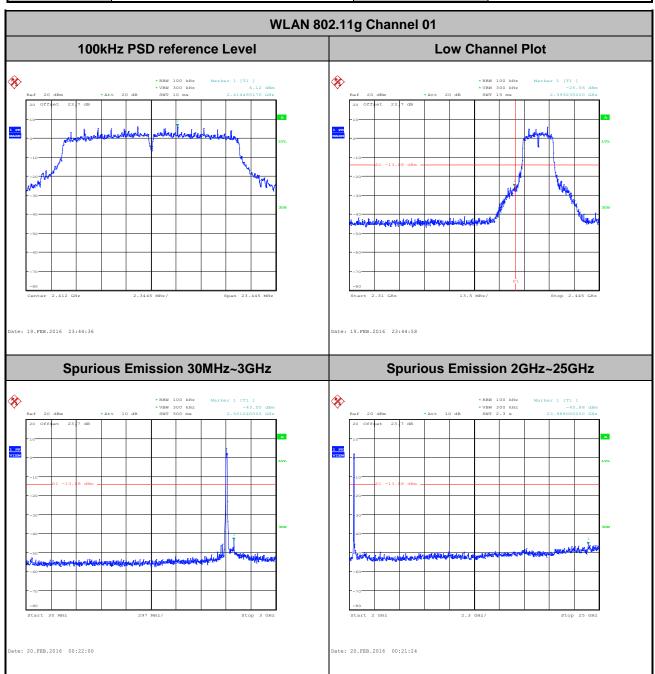
Report Version : Rev. 01

Report No.: FR561042-04C

 Test Mode :
 802.11g
 Temperature :
 21~25°C

 Test Band :
 2.4GHz Low
 Relative Humidity :
 51~54%

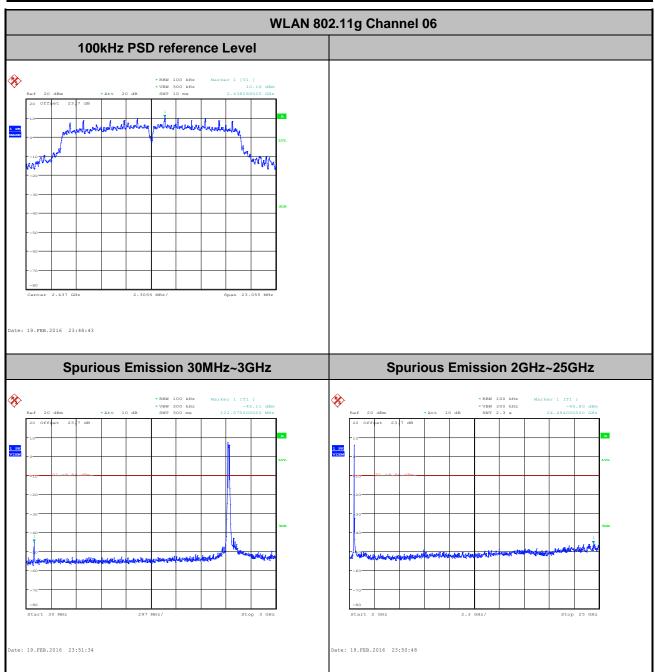
 Test Channel :
 01
 Test Engineer :
 Derek Hsu



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 20 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

Test Mode :	802.11g	Temperature :	21~25℃
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Derek Hsu



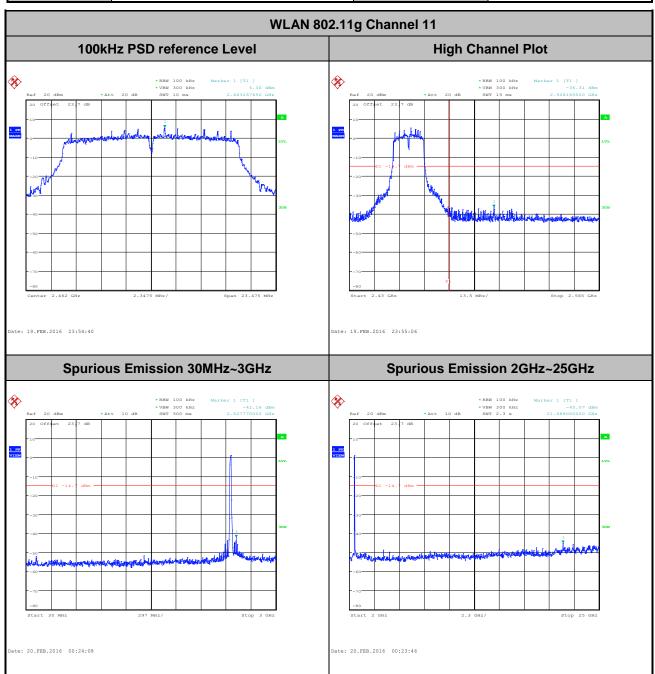
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 21 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

 Test Mode :
 802.11g
 Temperature :
 21~25℃

 Test Band :
 2.4GHz High
 Relative Humidity :
 51~54%

 Test Channel :
 11
 Test Engineer :
 Derek Hsu



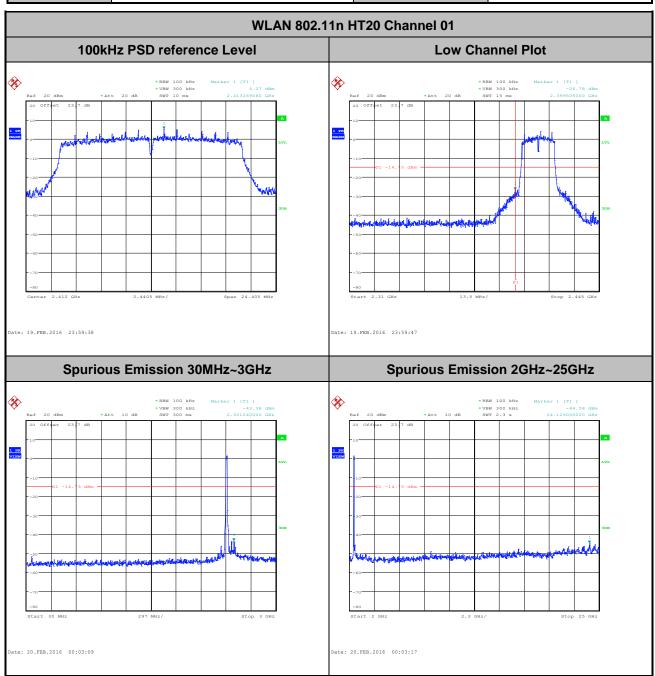
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 22 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

 Test Mode :
 802.11n HT20
 Temperature :
 21~25℃

 Test Band :
 2.4GHz Low
 Relative Humidity :
 51~54%

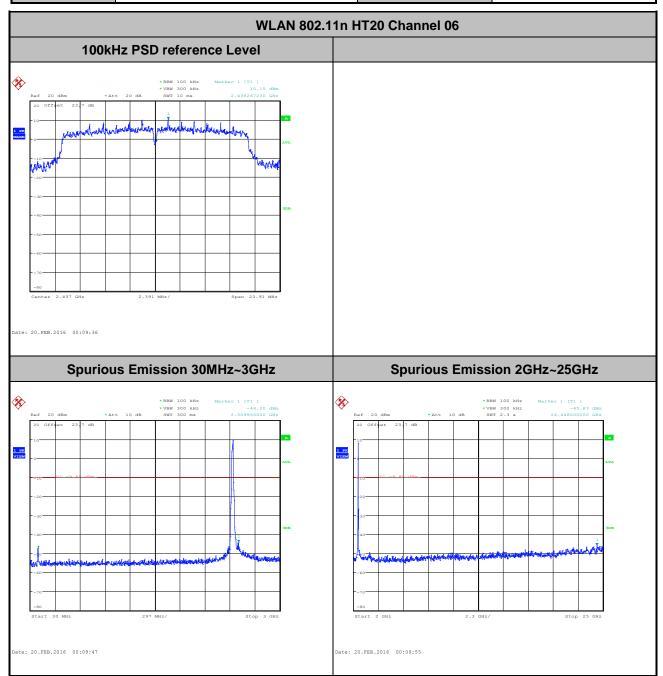
 Test Channel :
 01
 Test Engineer :
 Derek Hsu



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 23 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

Test Mode :	802.11n HT20	Temperature :	21~25℃
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	Derek Hsu



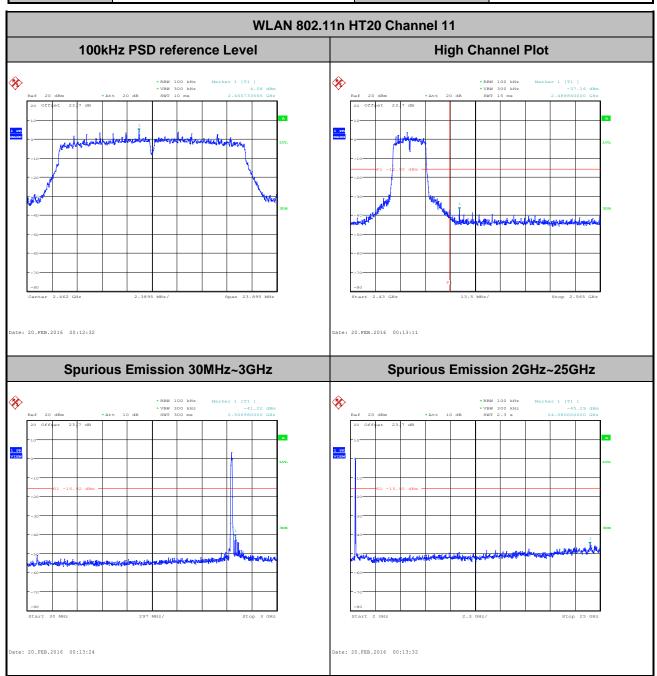
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 24 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

 Test Mode :
 802.11n HT20
 Temperature :
 21~25℃

 Test Band :
 2.4GHz High
 Relative Humidity :
 51~54%

 Test Channel :
 11
 Test Engineer :
 Derek Hsu



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 25 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 26 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

3.5.3 Test Procedures

- 1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r04.
- 2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.

Report No.: FR561042-04C

- 3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
- 7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \ge 1$ GHz for peak measurement. For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(μs)	1/T(kHz)	VBW Setting
802.11b	100	-	-	10Hz
802.11g	99.03	-	-	10Hz
2.4GHz 802.11n HT20	98.96	-	-	10Hz

 SPORTON INTERNATIONAL INC.
 Page Number
 : 27 of 38

 TEL: 886-3-327-3456
 Report Issued Date
 : Mar. 01, 2016

 FAX: 886-3-328-4978
 Report Version
 : Rev. 01

FCC ID: 2AE26-1229 Report Template No.: BU5-FR15CWL Version 1.2

3.5.4 Test Setup

For radiated emissions below 30MHz



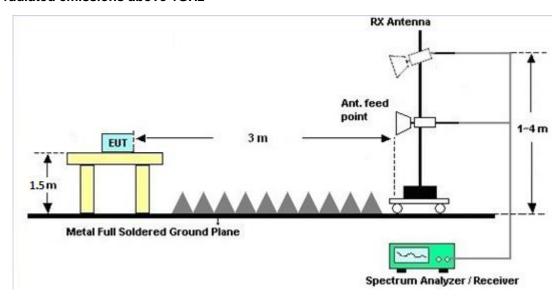
For radiated emissions from 30MHz to 1GHz



TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 28 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 29 of 38

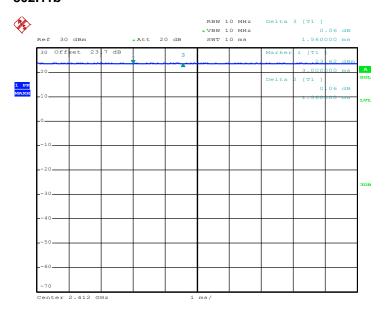
Report Issued Date : Mar. 01, 2016

Report Version : Rev. 01

Report No.: FR561042-04C

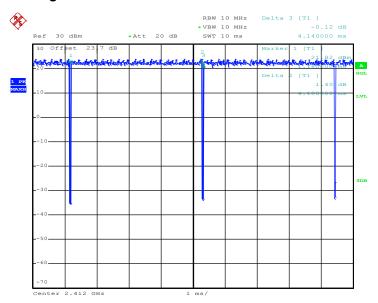
3.5.7 Duty Cycle

802.11b



Date: 16.FEB.2016 20:44:11

802.11g



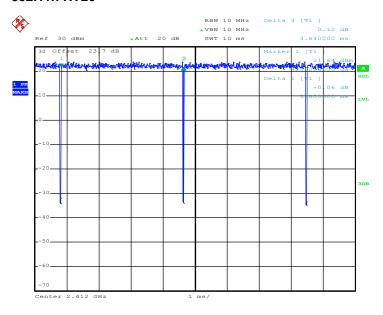
Date: 16.FEB.2016 20:51:28

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 30 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C





Date: 16.FEB.2016 20:57:41

3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 31 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission	Conducted Limit (dBµV)		
(MHz)	Quasi-Peak	Average	
0.15-0.5	66 to 56*	56 to 46*	
0.5-5	56	46	
5-30	60	50	

^{*}Decreases with the logarithm of the frequency.

3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

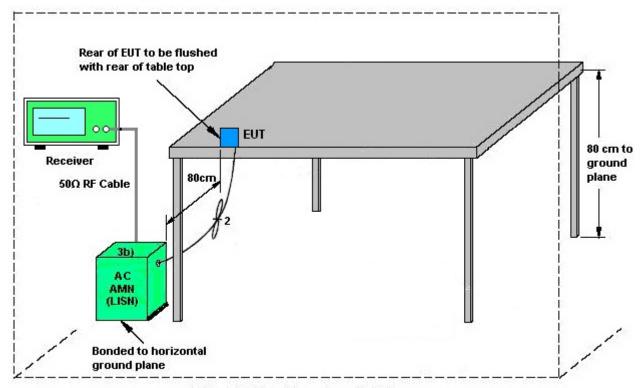
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 32 of 38

Report Issued Date : Mar. 01, 2016

Report Version : Rev. 01

Report No.: FR561042-04C

3.6.4 Test Setup



AMN = Artificial mains network (LISN)

AE = Associated equipment

EUT = Equipment under test

ISN = Impedance stabilization network

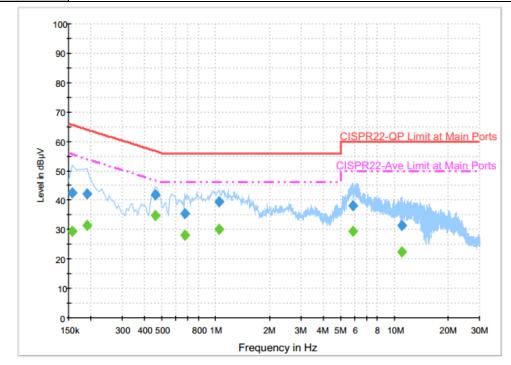
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 33 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~23 ℃		
Test Engineer :	Derreck Chen	Relative Humidity :	52~53%		
Test Voltage :	120Vac / 60Hz	Phase :	Line		
Function Time	Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Earphone + MicroSD Card +				
Function Type :	USB Cable (Charging from Adapter)				



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	42.4	Off	L1	19.6	23.2	65.6
0.190000	42.2	Off	L1	19.6	21.8	64.0
0.462000	41.7	Off	L1	19.6	15.0	56.7
0.670000	35.3	Off	L1	19.6	20.7	56.0
1.046000	39.4	Off	L1	19.6	16.6	56.0
5.886000	38.2	Off	L1	19.7	21.8	60.0
11.030000	31.4	Off	L1	19.8	28.6	60.0

Final Result : Average

mai itesait						
Frequency	Average	Filter	Line	Corr.	Margin	Limit
(MHz)	(dBµV)	riitei	Lille	(dB)	(dB)	(dBµV)
0.158000	29.5	Off	L1	19.6	26.1	55.6
0.190000	31.3	Off	L1	19.6	22.7	54.0
0.462000	34.7	Off	L1	19.6	12.0	46.7
0.670000	27.9	Off	L1	19.6	18.1	46.0
1.046000	30.0	Off	L1	19.6	16.0	46.0
5.886000	29.4	Off	L1	19.7	20.6	50.0
11.030000	22.3	Off	L1	19.8	27.7	50.0

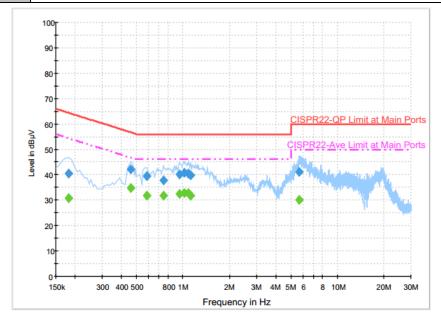
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 34 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C



Test Mode :	Mode 1	Temperature :	22~23 ℃		
Test Engineer :	Derreck Chen	Relative Humidity :	52~53%		
Test Voltage :	120Vac / 60Hz	Phase :	Neutral		
Function Type:	Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Earphone + MicroSD Card +				
	USB Cable (Charging from Adapter)				



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	40.3	Off	N	19.6	24.1	64.4
0.462000	42.2	Off	N	19.6	14.5	56.7
0.582000	39.3	Off	N	19.6	16.7	56.0
0.750000	37.7	Off	N	19.6	18.3	56.0
0.950000	40.0	Off	N	19.6	16.0	56.0
1.022000	40.6	Off	N	19.6	15.4	56.0
1.078000	40.6	Off	N	19.6	15.4	56.0
1.118000	39.7	Off	N	19.6	16.3	56.0
5.678000	41.1	Off	N	19.7	18.9	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr.	Margin (dB)	Limit (dBµV)
(1411 12)	(ubµv)			(ub)	(ub)	(αυμν)
0.182000	30.9	Off	N	19.6	23.5	54.4
0.462000	34.9	Off	N	19.6	11.8	46.7
0.582000	31.6	Off	N	19.6	14.4	46.0
0.750000	31.8	Off	N	19.6	14.2	46.0
0.950000	32.5	Off	N	19.6	13.5	46.0
1.022000	32.8	Off	N	19.6	13.2	46.0
1.078000	32.8	Off	N	19.6	13.2	46.0
1.118000	31.9	Off	N	19.6	14.1	46.0
5.678000	30.2	Off	N	19.7	19.8	50.0

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 35 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 36 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

4 List of Measuring Equipment

Instrument	Manufacturan	Madel No	Carial Na	Charactaristics	Calibration	Took Date	Due Dete	Domosti
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Jul. 29, 2015	Feb. 16, 2016 ~ Feb. 20, 2016	Jul. 28, 2016	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Jul. 29, 2015	Feb. 16, 2016 ~ Feb. 20, 2016	Jul. 28, 2016	Conducted (TH02-HY)
Signal Analyzer	Rohde & Schwarz	FSQ	200578/026	20Hz~26.5GHz	May 19, 2015	Feb. 16, 2016 ~ Feb. 20, 2016	May 18, 2016	Conducted (TH02-HY)
Bilog Antenna	TESEQ	CBL 6111D	35419	30MHz to 1GHz	Jan. 13, 2016	Feb. 17, 2016 ~ Feb. 20, 2016	Jan. 12, 2017	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 21, 2015	Feb. 17, 2016 ~ Feb. 20, 2016	Aug. 20, 2016	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Feb. 17, 2016 ~ Feb. 20, 2016	Sep. 01, 2016	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz ~ 18GHz	Apr. 20, 2015	Feb. 17, 2016 ~ Feb. 20, 2016	Apr. 19, 2016	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz-1000MHz	Mar. 12, 2015	Feb. 17, 2016 ~ Feb. 20, 2016	Mar. 11, 2016	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Oct. 19, 2015	Feb. 17, 2016 ~ Feb. 20, 2016	Oct. 18, 2016	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Mar. 03, 2015	Feb. 17, 2016 ~ Feb. 20, 2016	Mar. 02, 2016	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Feb. 17, 2016 ~ Feb. 20, 2016	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 degree	N/A	Feb. 17, 2016 ~ Feb. 20, 2016	N/A	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA91702 51	18GHz- 40GHz	Oct. 12, 2015	Feb. 17, 2016 ~ Feb. 20, 2016	Oct. 11, 2016	Radiation (03CH07-HY)
Preamplifier	MITEQ	JS44-180040 00-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	Feb. 17, 2016 ~ Feb. 20, 2016	Jun. 01, 2016	Radiation (03CH07-HY)
EMI Test Receiver	Agilent Technologies	N9038A (MXE)	MY53290045	20MHz~8.4GHz	Feb. 01, 2016	Feb. 17, 2016 ~ Feb. 20, 2016	Jan. 31, 2017	Radiation (03CH07-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Feb. 18, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 26, 2015	Feb. 18, 2016	Aug. 25, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Feb. 18, 2016	Dec. 01, 2016	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 08, 2016	Feb. 18, 2016	Jan. 07, 2017	Conduction (CO05-HY)

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 37 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No. : FR561042-04C

Report Template No.: BU5-FR15CWL Version 1.2

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of	2.26
Confidence of 95% (U = 2Uc(y))	2.20

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of	4.50
Confidence of 95% (U = 2Uc(y))	4.50

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : 38 of 38
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report No.: FR561042-04C

Report Template No.: BU5-FR15CWL Version 1.2

Appendix A. Conducted Test Results

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: 2AE26-1229 Page Number : A1 of A1
Report Issued Date : Mar. 01, 2016
Report Version : Rev. 01

Report Template No.: BU5-FR15CWL Version 1.2

A1 - DTS Part

Test Engineer:	Derek Hsu	Temperature:	21~25	°C
Test Date:	2016/02/16~2016/02/20	Relative Humidity:	51~54	%

TEST RESULTS DATA 6dB and 99% Occupied Bandwidth

	2.4GHz Band													
Mod.	1Mbps 1		CH.	Freq. Occupied (MHz) BW (MHz)		6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail						
11b	1Mbps	1	1	2412	14.80	8.57	0.50	Pass						
11b	1Mbps	1	6	2437	14.50	9.50	0.50	Pass						
11b	1Mbps	1	11	2462	14.50	9.05	0.50	Pass						
11g	6Mbps	1	1	2412	17.75	15.63	0.50	Pass						
11g	6Mbps	Mbps 1 6 2437 19.8		19.80	15.37	0.50	Pass							
11g	6Mbps 1 11 2462 17.75		17.75	15.65	0.50	Pass								
HT20	MCS0	1	1 1 2412 18.35		18.35	16.27	0.50	Pass						
HT20	MCS0	1	6	2437	20.10	15.94	0.50	Pass						
HT20	MCS0	1	11	2462	18.30	15.93	0.50	Pass						

TEST RESULTS DATA Peak Power Table

	2.4GHz Band													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail				
11b	1Mbps	1	1	2412	22.00	30.00	2.40	24.40	36.00	Pass				
11b	1Mbps	1	6	2437	22.04	30.00	2.40	24.44	36.00	Pass				
11b	1Mbps	1	11	2462	21.80	30.00	2.40	24.20	36.00	Pass				
11g	6Mbps	1	1	2412	24.01	30.00	2.40	26.41	36.00	Pass				
11g	6Mbps	1	6	2437	24.61	30.00	2.40	27.01	36.00	Pass				
11g	6Mbps	1	11	2462	23.74	30.00	2.40	26.14	36.00	Pass				
HT20	MCS0	1	1	2412	23.43	30.00	2.40	25.83	36.00	Pass				
HT20	MCS0	1	6	2437	24.61	30.00	2.40	27.01	36.00	Pass				
HT20	MCS0	1	11	2462	23.32	30.00	2.40	25.72	36.00	Pass				

TEST RESULTS DATA Average Power Table (Reporting Only)

	2.4GHz Band													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)								
11b	1Mbps	1	1	2412	0.00	19.95								
11b	1Mbps	1	6	2437	0.00	19.96								
11b	1Mbps	1	11	2462	0.00	19.75								
11g	6Mbps	1	1	2412	0.04	17.07								
11g	6Mbps	1	6	2437	0.04	18.74								
11g	6Mbps	1	11	2462	0.04	16.09								
HT20	MCS0	1	1	2412	0.05	15.88								
HT20	MCS0	1	6	2437	0.05	18.70								
HT20	11b 1Mbps 1 11b 1Mbps 1 11g 6Mbps 1 11g 6Mbps 1 11g 6Mbps 1 11g 6Mbps 1 1T20 MCS0 1 HT20 MCS0 1			2462	0.05	15.10								

TEST RESULTS DATA Peak Power Density

	2.4GHz Band													
Mod.	Data Rate	1Mbps 1 1 1 1 1 1 6 1 1 1 1 1 1 1 1 1 1 1 1		Freq. (dBm /3kHz)		DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail						
11b	1Mbps	1	1	2412	-2.24	2.40	8.00	Pass						
11b	1Mbps	1	6	2437	-1.24	2.40	8.00	Pass						
11b	1Mbps	1	11	2462	-0.91	2.40	8.00	Pass						
11g	6Mbps	1	1	2412	-10.21	2.40	8.00	Pass						
11g	6Mbps	1	6	2437	-4.44	2.40	8.00	Pass						
11g	6Mbps	1	11	2462	-9.92	2.40	8.00	Pass						
HT20	MCS0	1	1	2412	-10.11	2.40	8.00	Pass						
HT20	MCS0	1	6	2437	-5.76	2.40	8.00	Pass						
HT20	MCS0	1	11	2462	-12.10	2.40	8.00	Pass						

Appendix B. Radiated Spurious Emission

Test Engineer :	James Chiu and Jesse Wang and Ken Wu	Temperature :	21~24°C
Tool Lingilloor .	•	Relative Humidity :	50~54%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)		(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)		(H/V)
		2388.48	57.91	-16.09	74	52.78	32.18	7.31	34.36	243	237	Р	Н
		2387.22	49.36	-4.64	54	44.23	32.18	7.31	34.36	243	237	Α	Н
	*	2413.19	112.07	-	-	106.88	32.2	7.31	34.32	243	237	Р	Н
	*	2413.19	109.64	-	-	104.45	32.2	7.31	34.32	243	237	Α	Н
802.11b													Н
CH 01													Н
2412MHz		2384.7	55.86	-18.14	74	50.75	32.16	7.31	34.36	311	194	Р	V
		2387.13	45.24	-8.76	54	40.11	32.18	7.31	34.36	311	194	Α	V
	*	2413.19	107.22	-	-	102.03	32.2	7.31	34.32	311	194	Р	V
	*	2413.19	104.77	-	-	99.58	32.2	7.31	34.32	311	194	Α	V
													V
													V
		2374.44	56.92	-17.08	74	51.88	32.16	7.24	34.36	247	240	Р	Н
		2389.47	46.89	-7.11	54	41.76	32.18	7.31	34.36	247	240	Α	Н
	*	2435.82	112.26	-	-	106.95	32.22	7.36	34.27	247	240	Р	Н
	*	2435.91	109.76	-	-	104.45	32.22	7.36	34.27	247	240	Α	Н
000 441		2488.96	59.3	-14.7	74	53.79	32.3	7.4	34.19	247	240	Р	Н
802.11b CH 06		2500	48.34	-5.66	54	42.79	32.3	7.4	34.15	247	240	Α	Н
2437MHz		2371.29	57.11	-16.89	74	52.07	32.16	7.24	34.36	310	214	Р	V
2437 WIF12		2389.38	44.88	-9.12	54	39.75	32.18	7.31	34.36	310	214	Α	٧
	*	2435.74	107.18	-	-	101.87	32.22	7.36	34.27	310	214	Р	V
	*	2435.91	104.77	-	-	99.46	32.22	7.36	34.27	310	214	Α	V
		2486.36	56.39	-17.61	74	50.9	32.28	7.4	34.19	310	214	Р	V
		2497.24	46.01	-7.99	54	40.46	32.3	7.4	34.15	310	214	Α	V

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	*	2463.21	112.31	-	-	106.88	32.26	7.4	34.23	268	241	Р
	*	2463.38	109.92	-	-	104.49	32.26	7.4	34.23	268	241	Α
		2487.48	59.09	-14.91	74	53.6	32.28	7.4	34.19	268	241	Р
		2483.52	50.45	-3.55	54	44.96	32.28	7.4	34.19	268	241	Α
2.11b												
1 11 2MHz	*	2463.21	108.24	-	-	102.81	32.26	7.4	34.23	336	213	Р
	*	2463.13	105.81	-	-	100.38	32.26	7.4	34.23	336	213	Α
		2488.52	57.2	-16.8	74	51.69	32.3	7.4	34.19	336	213	Р
		2483.52	48.17	-5.83	54	42.68	32.28	7.4	34.19	336	213	Α

Remark

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^{2.} All results are PASS against Peak and Average limit line.

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		4824	48.43	-25.57	74	62.13	34.26	11.68	59.64	100	0	Р	Н
													Н
000 441													Н
802.11b													Н
CH 01		4824	48.68	-25.32	74	62.38	34.26	11.68	59.64	100	0	Р	V
2412MHz													V
													V
													V
		4872	46.83	-27.17	74	60.57	34.3	11.53	59.57	100	0	Р	Н
		7308	44.02	-29.98	74	53.08	35.6	13.81	58.47	100	0	Р	Н
													Н
802.11b													Н
CH 06		4872	45.66	-28.34	74	59.4	34.3	11.53	59.57	100	0	Р	V
2437MHz		7308	41.83	-32.17	74	50.89	35.6	13.81	58.47	100	0	Р	٧
													٧
													٧
		4926	46.32	-27.68	74	60.11	34.34	11.37	59.5	100	0	Р	Н
		7386	44.59	-29.41	74	53.62	35.6	13.95	58.58	100	0	Р	Н
													Н
802.11b													Н
CH 11		4926	48.57	-25.43	74	62.36	34.34	11.37	59.5	100	0	Р	٧
2462MHz		7386	42.14	-31.86	74	51.17	35.6	13.95	58.58	100	0	Р	٧
													V
													V
			I	1							1	1	

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2.4GHz 2400~2483.5MHz WIFI 802.11g (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant. 1		(MHz)	(dBµV/m)	Limit (dB)	Line (dBµV/m)	Level (dBµV)	Factor (dB/m)	Loss (dB)	Factor (dB)	Pos (cm)	Pos (deg)	Avg. (P/A)	
•		2389.74	66	-8	74	60.87	32.18	7.31	34.36	267	241	P	H
		2390	53.49	-0.51	54	48.32	32.18	7.31	34.32	267	241	Α	Н
	*	2412	110.68	-	-	105.49	32.2	7.31	34.32	267	241	Р	Н
	*	2412	103.43	•	-	98.24	32.2	7.31	34.32	267	241	Α	Н
802.11g													Н
CH 01													Н
2412MHz		2389.65	62.42	-11.58	74	57.29	32.18	7.31	34.36	353	219	Р	V
		2390	50.25	-3.75	54	45.08	32.18	7.31	34.32	353	219	Α	V
	*	2412	106.49	1	-	101.3	32.2	7.31	34.32	353	219	Р	V
	*	2412	99.22	-	-	94.03	32.2	7.31	34.32	353	219	Α	V
													V
													V
		2388.84	58.03	-15.97	74	52.9	32.18	7.31	34.36	262	243	Р	Н
		2389.65	47.46	-6.54	54	42.33	32.18	7.31	34.36	262	243	Α	Н
	*	2437	114.1	-	-	108.77	32.24	7.36	34.27	262	243	Р	Н
	*	2437	106.77	-	-	101.44	32.24	7.36	34.27	262	243	Α	Н
		2485.8	62.13	-11.87	74	56.64	32.28	7.4	34.19	262	243	Р	Н
802.11g		2484.4	49.64	-4.36	54	44.15	32.28	7.4	34.19	262	243	Α	Н
CH 06		2374.35	55.89	-18.11	74	50.85	32.16	7.24	34.36	311	221	Р	V
2437MHz		2390.01	45.23	-8.77	54	40.06	32.18	7.31	34.32	311	221	Α	V
	*	2435.99	110.6	1	-	105.29	32.22	7.36	34.27	311	221	Р	V
	*	2435.91	102.72	-	-	97.41	32.22	7.36	34.27	311	221	Α	V
		2483.68	56.9	-17.1	74	51.41	32.28	7.4	34.19	311	221	Р	V
		2483.52	46.55	-7.45	54	41.06	32.28	7.4	34.19	311	221	Α	V

TEL: 886-3-327-3456 FAX: 886-3-328-4978



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	*	2462	109.5	-	-	104.07	32.26	7.4	34.23	267	243	Р	Н
	*	2462	102.25	-	-	96.82	32.26	7.4	34.23	267	243	Α	Н
		2483.8	65.84	-8.16	74	60.35	32.28	7.4	34.19	267	243	Р	Н
		2483.52	53.26	-0.74	54	47.77	32.28	7.4	34.19	267	243	Α	Н
													Н
802.11g													Н
CH 11 2462MHz	*	2462	107.32	-	-	101.89	32.26	7.4	34.23	340	221	Р	V
Z40ZIVINZ	*	2462	100.1	-	-	94.67	32.26	7.4	34.23	340	221	Α	V
		2483.56	64.35	-9.65	74	58.86	32.28	7.4	34.19	340	221	Р	V
		2483.52	51.7	-2.3	54	46.21	32.28	7.4	34.19	340	221	Α	V
													V
													V
Remark		o other spurious						,		,	,		
	2. Al	l results are PA	SS against I	Peak and	Average lin	nit line.							

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978

: B5 of B12

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		4824	46.35	-27.65	74	60.05	34.26	11.68	59.64	100	0	Р	Н
													Н
902 44 ~													Н
802.11g													Н
CH 01		4824	46.72	-27.28	74	60.42	34.26	11.68	59.64	100	0	Р	V
2412MHz													V
													٧
													V
		4872	46.36	-27.64	74	60.1	34.3	11.53	59.57	100	0	Р	Н
		7314	44.7	-29.3	74	53.76	35.6	13.81	58.47	100	0	Р	Н
000.44													Н
802.11g													Н
CH 06 2437MHz		4872	46.48	-27.52	74	60.22	34.3	11.53	59.57	100	0	Р	٧
2437 WII 12		7314	40.9	-33.1	74	49.96	35.6	13.81	58.47	100	0	Р	V
													V
													V
		4926	44.04	-29.96	74	57.83	34.34	11.37	59.5	100	0	Р	Н
		7386	40.72	-33.28	74	49.75	35.6	13.95	58.58	100	0	Р	Н
000 44													Н
802.11g													Н
CH 11 2462MHz		4926	45.31	-28.69	74	59.1	34.34	11.37	59.5	100	0	Р	V
2402WITIZ		7386	40.79	-33.21	74	49.82	35.6	13.95	58.58	100	0	Р	V
													V
													٧

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TEL: 886-3-327-3456 FAX: 886-3-328-4978

Page Number : B6 of B12

2.4GHz 2400~2483.5MHz WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.		, ,		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		2390	68.99	-5.01	74	63.82	32.18	7.31	34.32	266	242	Р	Н
		2390	52.68	-1.32	54	47.51	32.18	7.31	34.32	266	242	Α	Н
	*	2413.44	109.27	-	-	104.08	32.2	7.31	34.32	266	242	Р	Н
	*	2413.19	101.76	ı	-	96.57	32.2	7.31	34.32	266	242	Α	Н
802.11n													Н
HT20													Н
CH 01		2389.83	60.83	-13.17	74	55.66	32.18	7.31	34.32	312	216	Р	V
2412MHz		2390	46.99	-7.01	54	41.82	32.18	7.31	34.32	312	216	Α	V
	*	2412	104.34	-	-	99.15	32.2	7.31	34.32	312	216	Р	V
	*	2412	96.88	-	-	91.69	32.2	7.31	34.32	312	216	Α	V
													٧
													V
		2389.92	61.39	-12.61	74	56.22	32.18	7.31	34.32	247	244	Р	Н
		2390	47.79	-6.21	54	42.62	32.18	7.31	34.32	247	244	Α	Н
	*	2437	113.77	-	-	108.44	32.24	7.36	34.27	247	244	Р	Н
	*	2437	106.21	-	-	100.88	32.24	7.36	34.27	247	244	Α	Н
802.11n		2492.96	60.99	-13.01	74	55.44	32.3	7.4	34.15	247	244	Р	Н
HT20		2486.8	49.33	-4.67	54	43.84	32.28	7.4	34.19	247	244	Α	Н
CH 06		2387.31	56.3	-17.7	74	51.17	32.18	7.31	34.36	378	190	Р	V
2437MHz		2390	45.58	-8.42	54	40.41	32.18	7.31	34.32	378	190	Α	V
	*	2437	108.14	-	-	102.81	32.24	7.36	34.27	378	190	Р	V
	*	2437	100.64	-	-	95.31	32.24	7.36	34.27	378	190	Α	V
		2485.24	59.5	-14.5	74	54.01	32.28	7.4	34.19	378	190	Р	V
		2483.52	46.99	-7.01	54	41.5	32.28	7.4	34.19	378	190	Α	V

TEL: 886-3-327-3456 FAX: 886-3-328-4978

Page Number : B7 of B12



FCC RF Test Report

				_				1	1			_	
	*	2462	108.12	-	-	102.69	32.26	7.4	34.23	268	244	Р	Н
	*	2462	100.76	-	-	95.33	32.26	7.4	34.23	268	244	Α	Н
		2483.84	67.02	-6.98	74	61.53	32.28	7.4	34.19	268	244	Р	Н
		2483.52	52.82	-1.18	54	47.33	32.28	7.4	34.19	268	244	Α	Н
802.11n													Н
HT20													Н
CH 11	*	2462	104.54	-	-	99.11	32.26	7.4	34.23	338	223	Р	V
2462MHz	*	2462	97.16	-	-	91.73	32.26	7.4	34.23	338	223	Α	V
		2483.88	63.61	-10.39	74	58.12	32.28	7.4	34.19	338	223	Р	V
		2483.52	50.51	-3.49	54	45.02	32.28	7.4	34.19	338	223	Α	V
													V
													V

Remark

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^{1.} No other spurious found.

^{2.} All results are PASS against Peak and Average limit line.

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V
		4824	44.72	-29.28	74	58.42	34.26	11.68	59.64	100	0	Р	Н
													Н
802.11n													Н
HT20													Н
CH 01		4824	45.72	-28.28	74	59.42	34.26	11.68	59.64	100	0	Р	V
2412MHz													V
													V
													V
		4872	44.75	-29.25	74	58.49	34.3	11.53	59.57	100	0	Р	Н
		7314	44.24	-29.76	74	53.3	35.6	13.81	58.47	100	0	Р	Н
802.11n													Н
HT20													Н
CH 06		4872	45.73	-28.27	74	59.47	34.3	11.53	59.57	100	0	Р	V
2437MHz		7314	40.32	-33.68	74	49.38	35.6	13.81	58.47	100	0	Р	V
													V
													V
		4926	43.96	-30.04	74	57.75	34.34	11.37	59.5	100	0	Р	Н
		7386	41.55	-32.45	74	50.58	35.6	13.95	58.58	100	0	Р	Н
802.11n													Н
HT20													Н
CH 11		4924	42.33	-31.67	74	56.12	34.34	11.37	59.5	100	0	Р	V
2462MHz		7386	41.64	-32.36	74	50.67	35.6	13.95	58.58	100	0	Р	V
													V
													V

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TEL: 886-3-327-3456 FAX: 886-3-328-4978

Page Number : B9 of B12

Emission below 1GHz 2.4GHz WIFI 802.11g (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		30.54	27.99	-12.01	40	32.92	25.46	1.07	31.46			Р	Н
		86.7	26.45	-13.55	40	41.65	14.62	1.28	31.1			Р	Н
		193.35	29.28	-14.22	43.5	42.86	15.65	1.87	31.1			Р	Н
		487.6	26.29	-19.71	46	30.05	23.93	3.04	30.73			Р	Н
		756.4	31.09	-14.91	46	30.39	27.27	3.82	30.39			Р	Н
		912.5	35.93	-10.07	46	32.82	29.31	4.12	30.32	100	0	Р	Н
													Н
													Н
													Н
													Н
													Н
2.4GHz													Н
802.11g LF		30	29.47	-10.53	40	33.9	26	1.07	31.5	100	0	Р	V
LF		87.24	23.11	-16.89	40	38.19	14.74	1.28	31.1			Р	V
		181.74	27.38	-16.12	43.5	41.04	15.41	1.87	30.94			Р	٧
		428.8	25.98	-20.02	46	31.05	22.8	2.89	30.76			Р	٧
		801.2	31.54	-14.46	46	30.22	27.72	3.9	30.3			Р	V
		953.1	34	-12	46	30.11	30.21	4.07	30.39			Р	V
													V
													٧
													٧
													V
													V
													V
Remark		o other spurious		mit line.									

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Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions
	shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical

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A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	Р	Н
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	Α	Н

1. Level($dB\mu V/m$) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBµV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dB μ V/m) – Limit Line(dB μ V/m)

For Peak Limit @ 2390MHz:

- 1. Level(dBµV/m)
- = Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 54.51(dB\mu V) 35.86 (dB)$
- $= 55.45 (dB\mu V/m)$
- 2. Over Limit(dB)
- = Level(dBµV/m) Limit Line(dBµV/m)
- $= 55.45(dB\mu V/m) 74(dB\mu V/m)$
- = -18.55(dB)

For Average Limit @ 2390MHz:

- Level(dBµV/m)
- = Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 42.6(dB\mu V) 35.86 (dB)$
- $= 43.54 (dB\mu V/m)$
- 2. Over Limit(dB)
- = Level($dB\mu V/m$) Limit Line($dB\mu V/m$)
- $= 43.54(dB\mu V/m) 54(dB\mu V/m)$
- = -10.46(dB)

Both peak and average measured complies with the limit line, so test result is "PASS".

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Appendix C. Radiated Spurious Emission Plots

Test Engineer :	James Chiu and Jesse Wang and Ken Wu	Temperature :	21~24°C
rest Engineer .		Relative Humidity :	50~54%

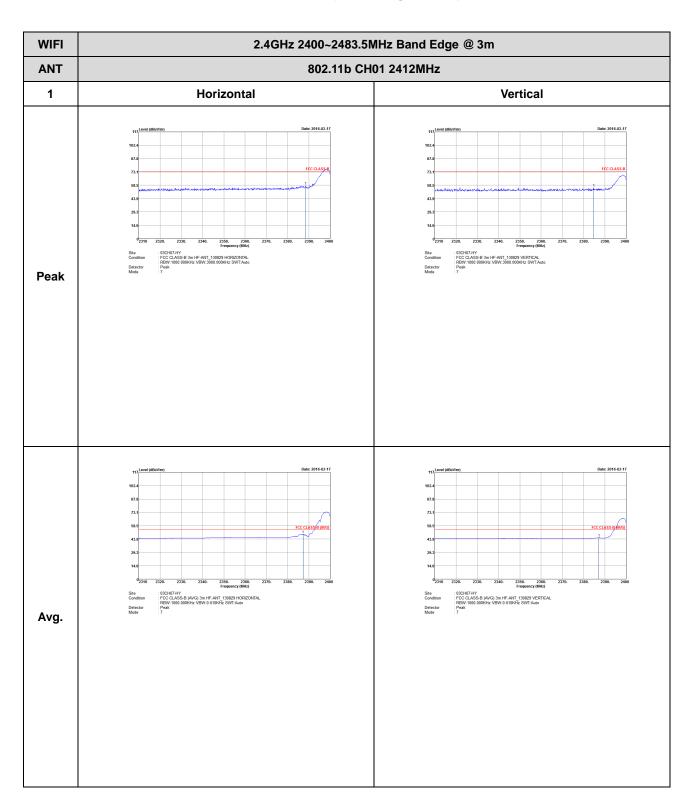
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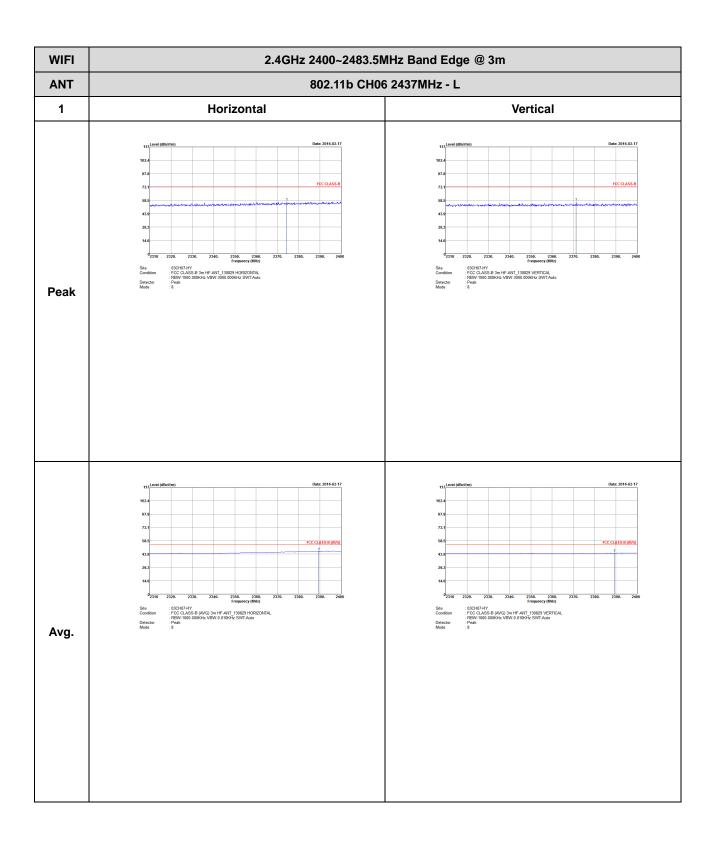
Page Number : C1 of C23

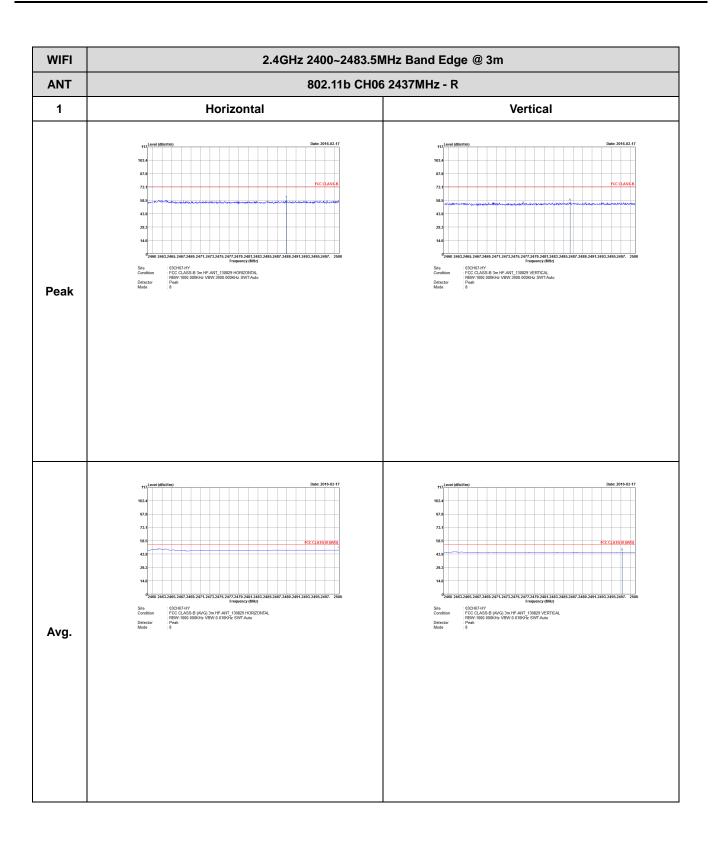
2.4GHz 2400~2483.5MHz WIFI 802.11b (Band Edge @ 3m)

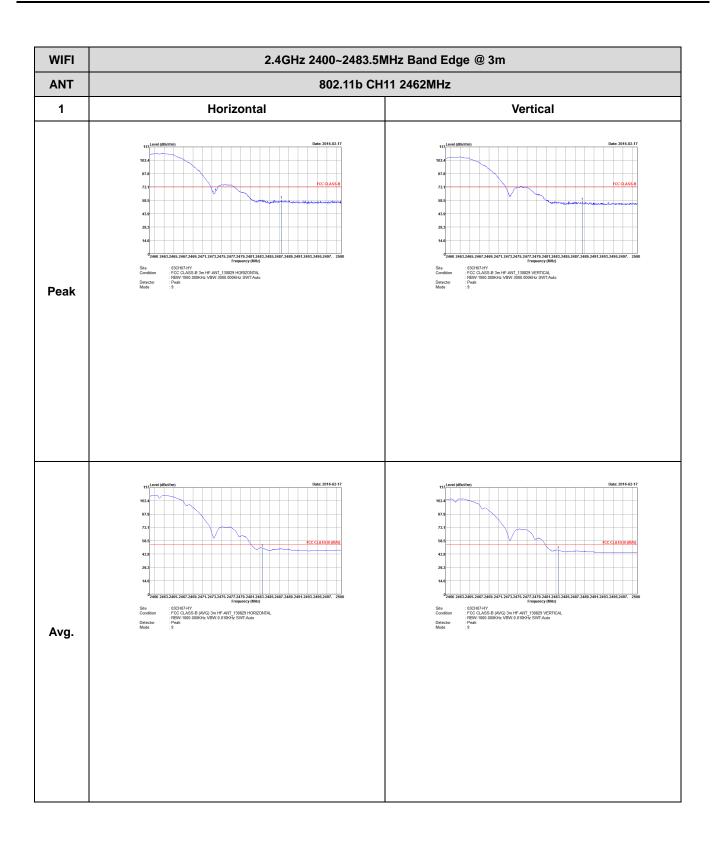
Report No. : FR561042-04C



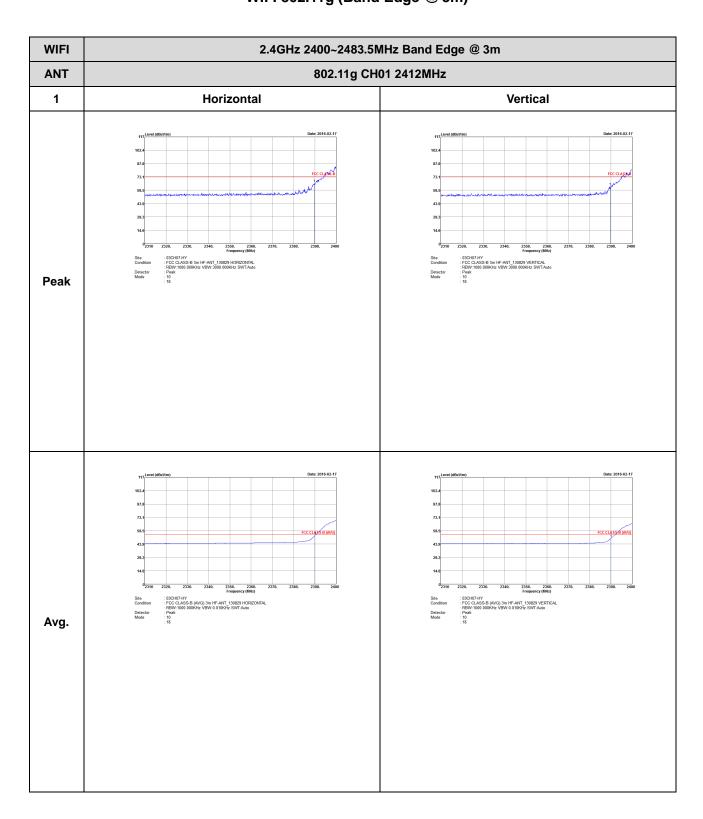
TEL: 886-3-327-3456 FAX: 886-3-328-4978



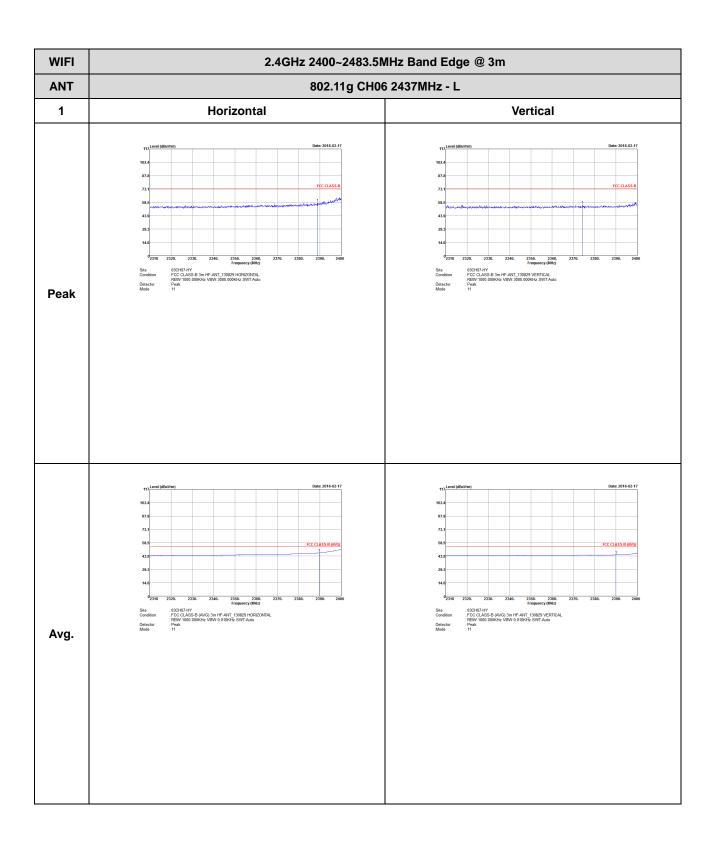


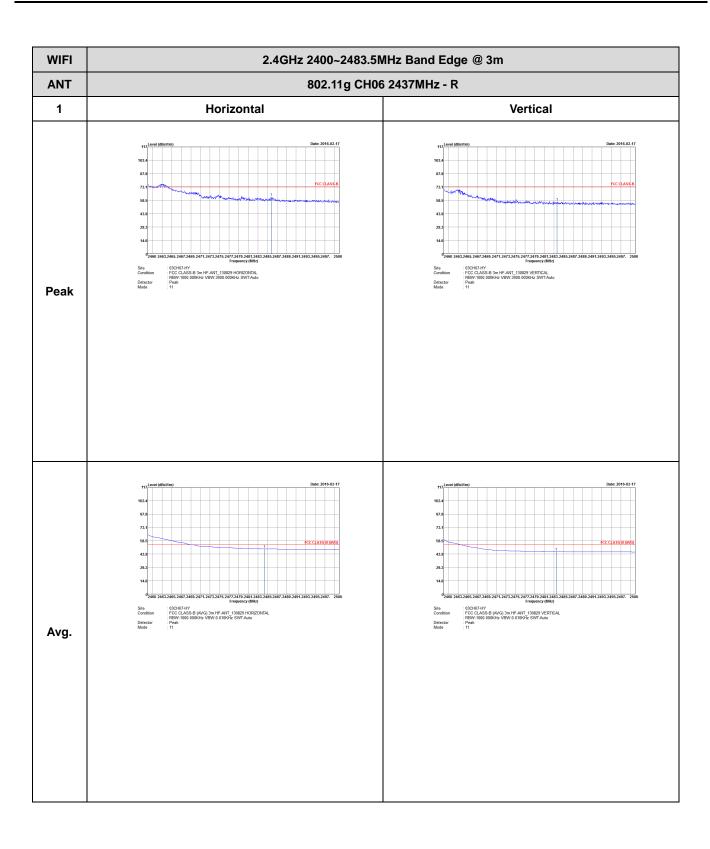


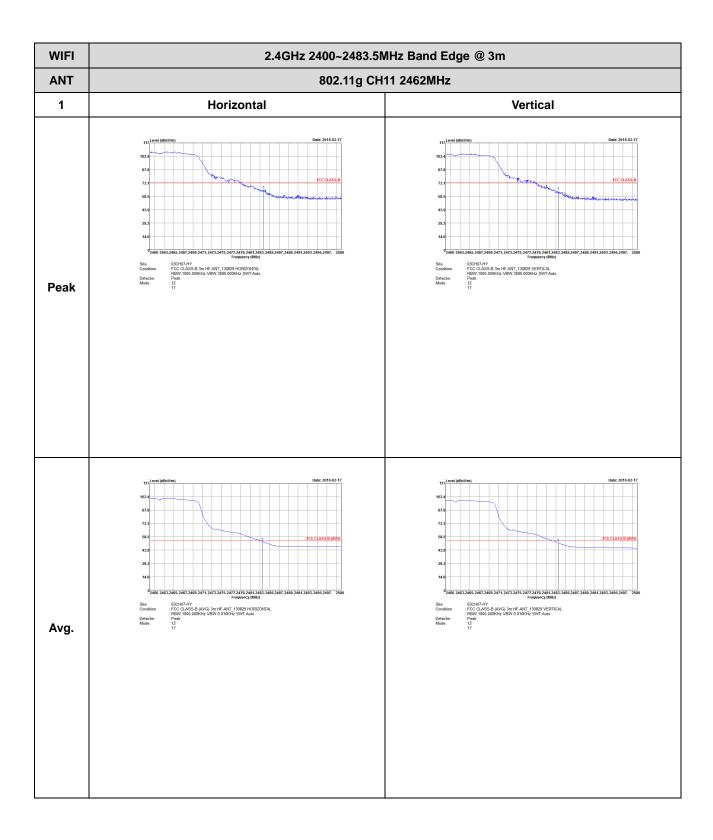
2.4GHz 2400~2483.5MHz WIFI 802.11g (Band Edge @ 3m)



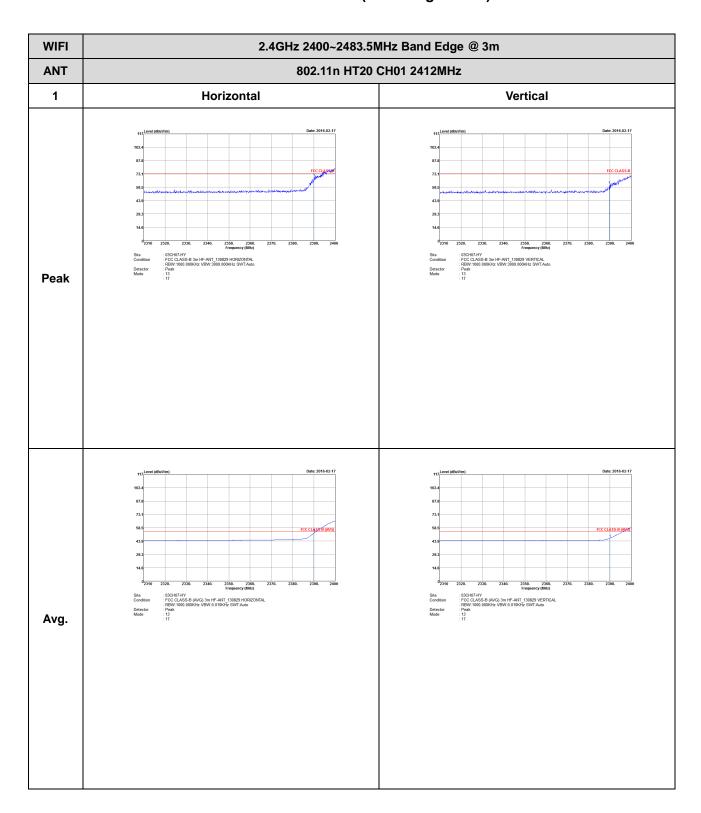
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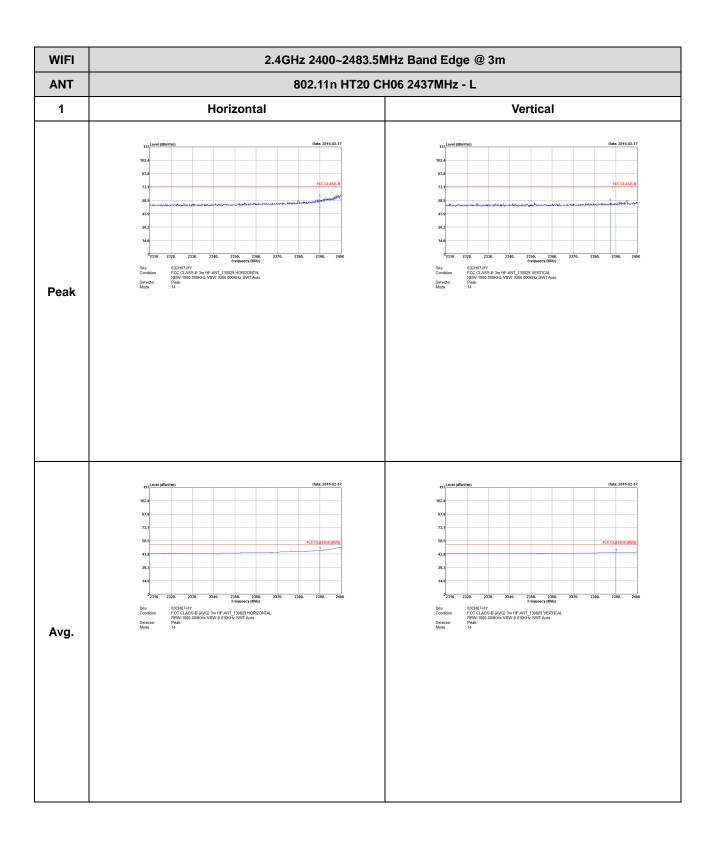


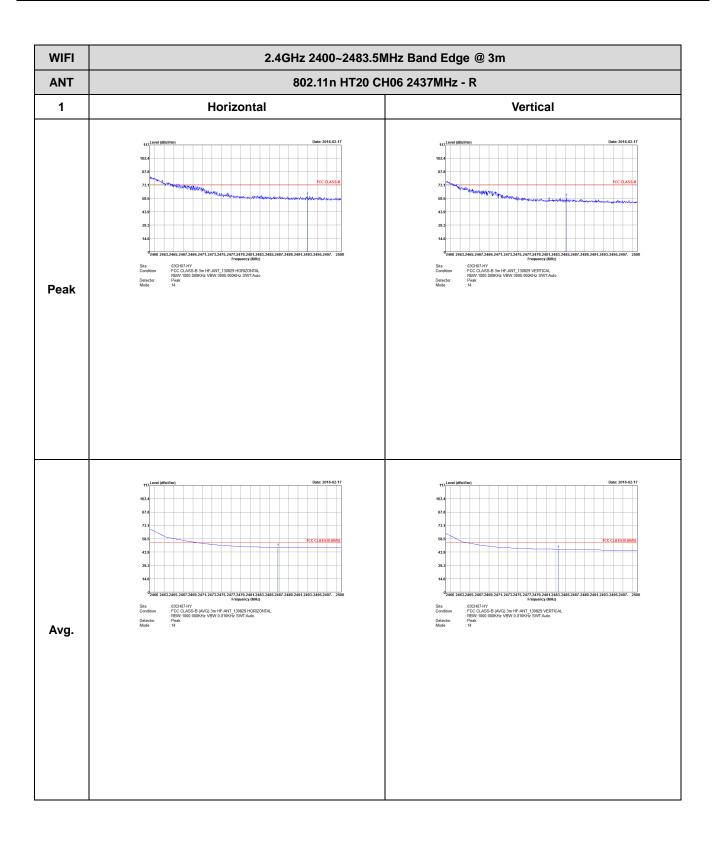


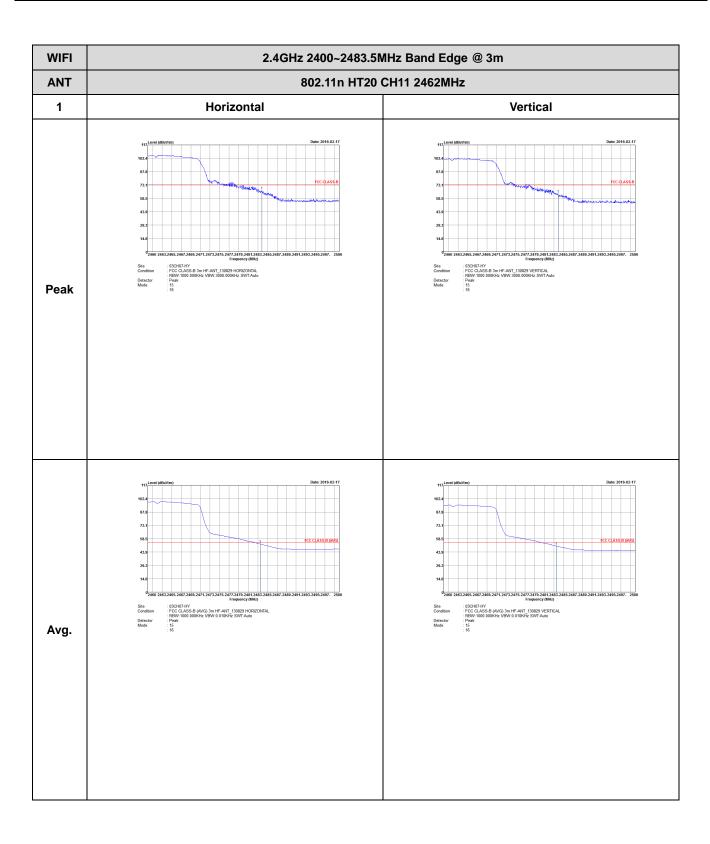
2.4GHz 2400~2483.5MHz WIFI 802.11n HT20 (Band Edge @ 3m)



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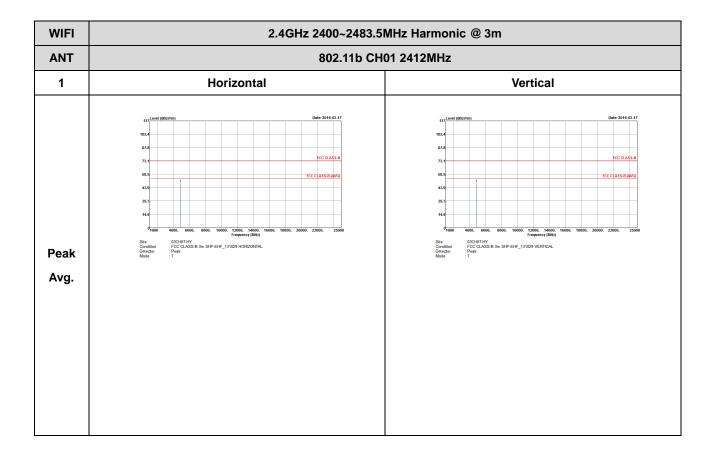




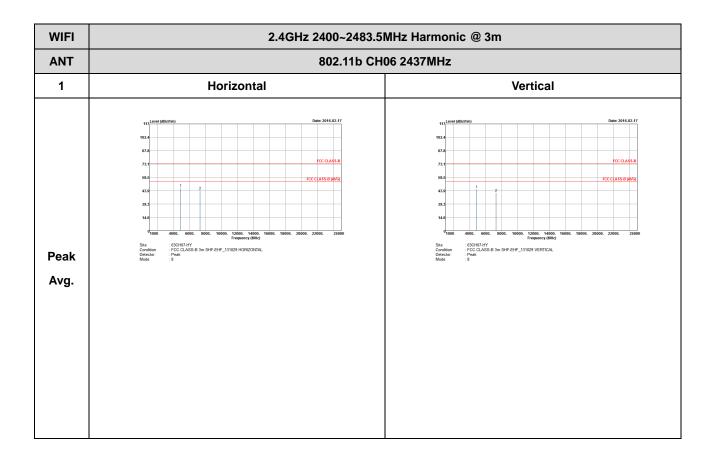
2.4GHz 2400~2483.5MHz

Report No. : FR561042-04C

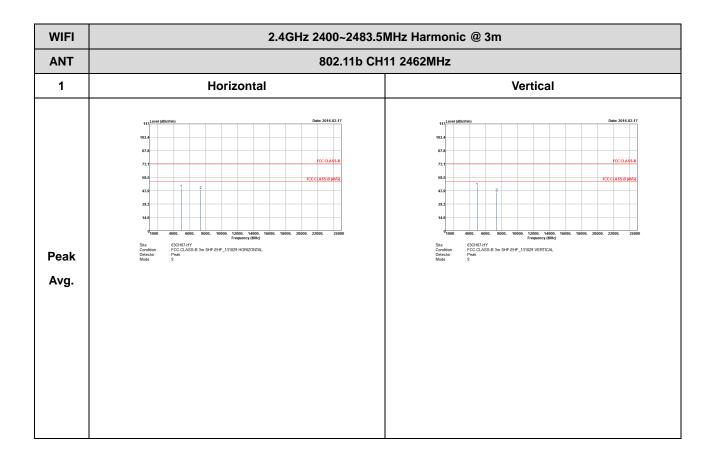
WIFI 802.11b (Harmonic @ 3m)



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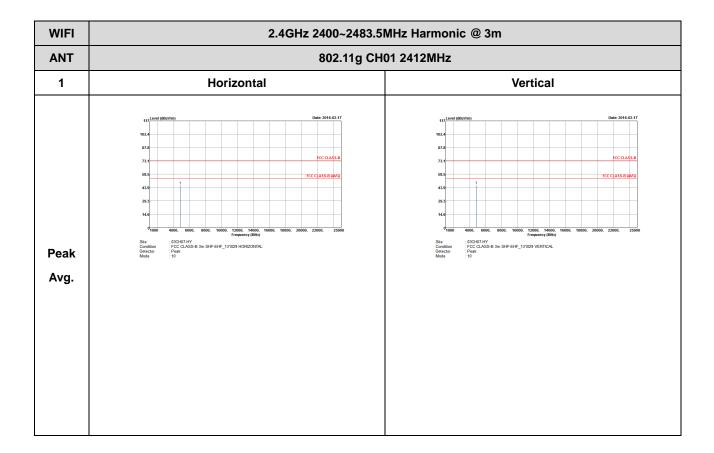






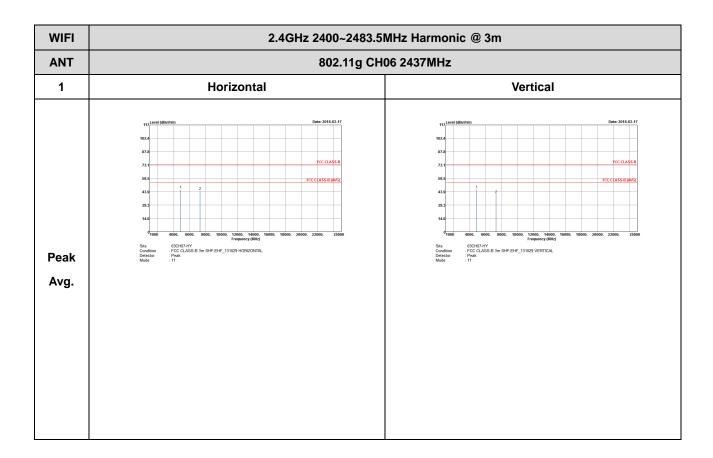
2.4GHz 2400~2483.5MHz

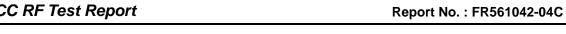
WIFI 802.11g (Harmonic @ 3m)

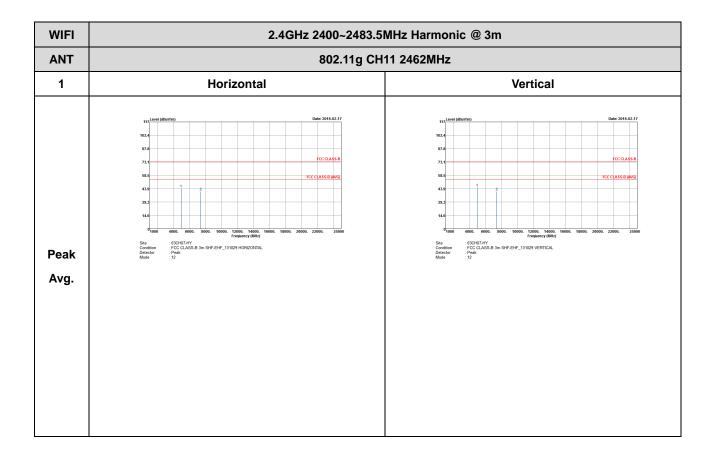


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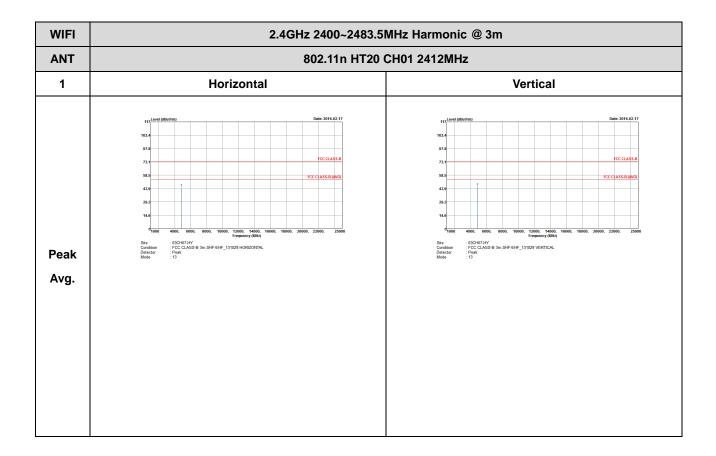






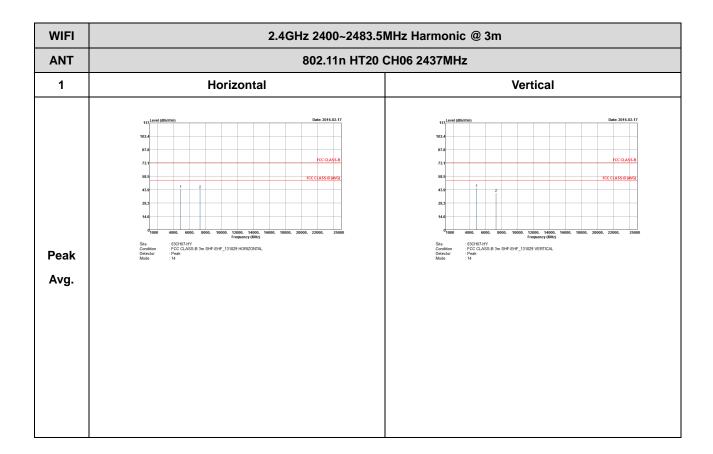


2.4GHz 2400~2483.5MHz WIFI 802.11n HT20 (Harmonic @ 3m)

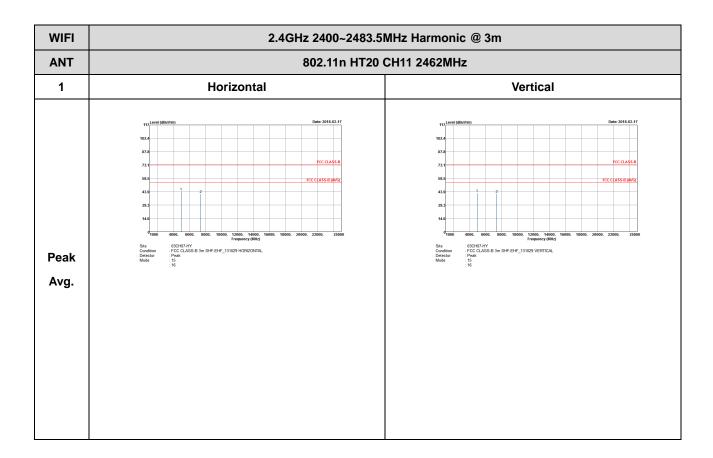


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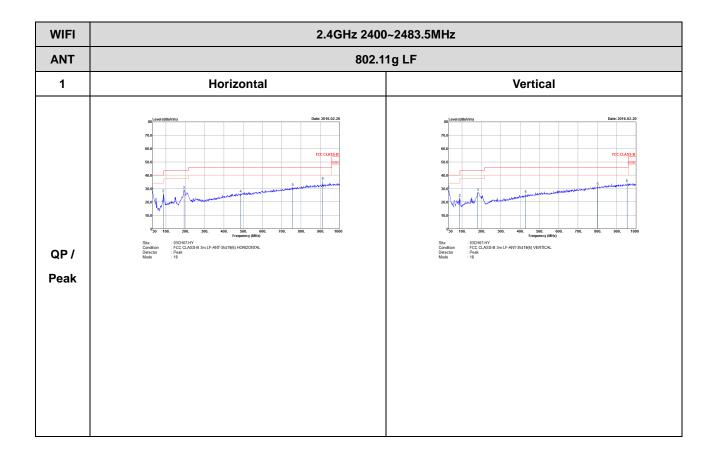






2.4GHz 2400~2483.5MHz

Emission below 1GHz 2.4GHz WIFI 802.11g (LF)



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