

Report No.: FR852420-01D



FCC RADIO TEST REPORT

FCC ID : 2AJOTTA-1112 Equipment : Smart Phone

Brand Name : NOKIA
Model Name : TA-1112

Applicant : HMD Global Oy

Karaportti 2, 02610 Espoo, Finland

Manufacturer : HMD Global Oy

Karaportti 2, 02610 Espoo, Finland

Standard : FCC Part 15 Subpart E §15.407

The product was received on May 14, 2018 and testing was started from May 14, 2018 and completed on Jun. 21, 2018. 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Jones Tsai

(Jones Tsai)

SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

TEL: 886-3-327-3456 Page Number : 1 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1

Report Version : 01

Table of Contents

Report No. : FR852420-01D

His	torv o	f this test report	3
	-	of Test Result	
1	•	ral Description	
•	1.1	Product Feature of Equipment Under Test	
	1.2	Modification of EUT	
	1.3	Testing Location	
	1.4	Applicable Standards	
2		Configuration of Equipment Under Test	
	2.1	Carrier Frequency and Channel	
	2.2	Test Mode	
	2.3	Connection Diagram of Test System	9
	2.4	Support Unit used in test configuration and system	
	2.5	EUT Operation Test Setup1	0
	2.6	Measurement Results Explanation Example1	0
3	Test	Result1	1
	3.1	26dB & 99% Occupied Bandwidth Measurement1	
	3.2	Maximum Conducted Output Power Measurement1	
	3.3	Power Spectral Density Measurement1	5
	3.4	Unwanted Emissions Measurement1	8
	3.5	AC Conducted Emission Measurement2	3
	3.6	Automatically Discontinue Transmission	5
	3.7	Antenna Requirements2	6
4	List o	of Measuring Equipment2	7
5	Unce	rtainty of Evaluation2	9
Apı	pendix	A. Conducted Test Results	
Apı	pendix	B. AC Conducted Emission Test Result	
Apı	endix	C. Radiated Spurious Emission	

Appendix D. Radiated Spurious Emission Plots

Appendix E. Duty Cycle Plots

Appendix F. Setup Photographs

TEL: 886-3-327-3456 Page Number : 2 of 29 FAX: 886-3-328-4978 Report Issued Date: Jul. 05, 2018 Report Version : 01

Report Template No.: BU5-FR15EWLAC MA Version 2.1

History of this test report

Report No.	Version	Description	Issued Date
FR852420-01D	01	Initial issue of report	Jul. 05, 2018

TEL: 886-3-327-3456 Page Number : 3 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWLAC MA Version 2.1

Report Version : 01

Report No. : FR852420-01D

Summary of Test Result

Report No.: FR852420-01D

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403(i)	26dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407(a)	Maximum Conducted Output Power	Pass	-
3.3	15.407(a)	Power Spectral Density	Pass	-
3.4	15.407(b)	Unwanted Emissions	Pass	Under limit 3.31 dB at 5452.240 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 13.79 dB at 0.152 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Pass	-
3.7	15.203 15.407(a)	Antenna Requirement	Pass	-

Remark: This is a variant report which can be referred Product Equality Declaration. Since the test result is not affected by the changes, the FR852420-01D test report reuses test data from the FR852420D test report.

Reviewed by: Joseph Lin

Report Producer: Maggie Chiang

TEL: 886-3-327-3456 Page Number : 4 of 29 FAX: 886-3-328-4978 Report Issued Date: Jul. 05, 2018 : 01

Report Version Report Template No.: BU5-FR15EWL AC MA Version 2.1

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, FM Receiver, and GNSS

Report No.: FR852420-01D

Product Specification subjective to this standard		
	WWAN: Monopole Antenna	
	WLAN: Monopole Antenna	
Antenna Type	Bluetooth: Monopole Antenna	
	GPS / Glonass / BDS / Galileo: PIFA Antenna	
	FM: using earphone as antenna	

1.2 Modification of EUT

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

1.3 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.			
Test Site Location	No.52, Huaya 1st Rd., Gu Taoyuan City, Taiwan (R.0 TEL: +886-3-327-3456 FAX: +886-3-328-4978			
Test Site No.		Sporton Site No.		
	TH05-HY	CO05-HY	03CH07-HY	

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

1.4 Applicable Standards

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

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- + ANSI C63.10-2013

Remark:

- 1. 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 Page Number : 5 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1 Report Version : 01

2 Test Configuration of Equipment Under Test

- a. 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: conduction emission (150 kHz to 30 MHz), radiation 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 (X plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	36	5180	44	5220
5150-5250 MHz Band 1	38*	5190	46*	5230
(U-NII-1)	40	5200	48	5240
(3 (411 1)	42#	5210		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	52	5260	60	5300
5250-5350 MHz Band 2	54*	5270	62*	5310
(U-NII-2A)	56	5280	64	5320
(3 :::: 27)	58#	5290		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	100	5500	112	5560
	102*	5510	116	5580
5470-5725 MHz	104	5520	132	5660
Band 3 (U-NII-2C)	106#	5530	134*	5670
(8 1111 28)	108	5540	136	5680
	110*	5550	140	5700

TEL: 886-3-327-3456 Page Number : 6 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1

Report Version : 01

Report No.: FR852420-01D

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
Straddle Channel	138#	5690	144	5720
Straddle Channel	142*	5710		

Report No.: FR852420-01D

: 01

Note:

- 1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.
- 2. The above Frequency and Channel in "#" were 802.11ac VHT80.

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20 (Covered by a)	MCS0
802.11n HT40	MCS0
802.11ac VHT20 (Covered by HT20)	MCS0
802.11ac VHT40 (Covered by HT40)	MCS0
802.11ac VHT80	MCS0

	Test Cases					
AC Conducted Emission	Mode 1: LTE Band 17 Idle + Bluetooth Link + WLAN (5GHz) Link + FM Rx + Earphone + USB Cable (Charging from Adapter 1)					
Remark: For	Remark: For Radiated Test Cases, the tests were performed with Adapter 1.					

TEL: 886-3-327-3456 Page Number : 7 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1 Report Version

Ch. #		Band I: 5150-5250 MHz	Band II:5250-5350 MHz	Band III:5470-5725MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
Н	High	48	64	140
	Straddle	-	-	144

Report No. : FR852420-01D

: 01

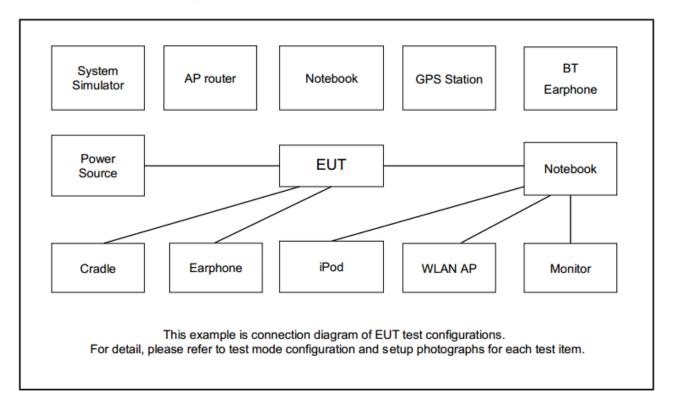
Ch. #		Band I: 5150-5250 MHz Band II: 5250-5350 MHz		Band III: 5470-5725MHz
		802.11n HT40	802.11n HT40	802.11n HT40
L	Low	38	54	102
М	Middle	-	-	110
Н	High	46	62	134
	Straddle	-	-	142

	Ch. #	Band I: 5150-5250 MHz	Band II: 5250-5350 MHz	Band III: 5470-5725MHz	
Cn. #		802.11ac VHT80 802.11ac VHT80		802.11ac VHT80	
L	Low	-	-	106	
M	Middle	42	58	-	
Н	High	-	-	-	
	Straddle	-	-	138	

TEL: 886-3-327-3456 Page Number : 8 of 29 FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018 Report Version

Report Template No.: BU5-FR15EWL AC MA Version 2.1

2.3 Connection Diagram of Test System



Report No.: FR852420-01D

2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8m
2.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8m
3.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
4.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,1.8m
5.	Notebook	DELL	Latitude E3340	FCC DoC/ Contains FCC ID: PD97260NGU	N/A	AC I/P: Unshielded, 1.2m DC O/P: Shielded, 1.8m
6.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

TEL: 886-3-327-3456 Page Number : 9 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Version

: 01

Report Template No.: BU5-FR15EWL AC MA Version 2.1

2.5 EUT Operation Test Setup

The RF test items, make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

Report No.: FR852420-01D

: 01

2.6 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)

TEL: 886-3-327-3456 Page Number : 10 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1 Report Version

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Description of 26dB & 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

For Straddle Channel, according to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, if the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

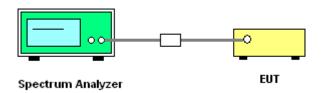
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
 Section C) Emission bandwidth
- 2. Set RBW = approximately 1% of the emission bandwidth.
- 3. Set the VBW > RBW.
- 4. Detector = Peak.
- 5. Trace mode = max hold
- Measure the maximum width of the emission that is 26 dB down from the peak of the emission.
 Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
- 7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
- 8. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

Please refer to Appendix A.

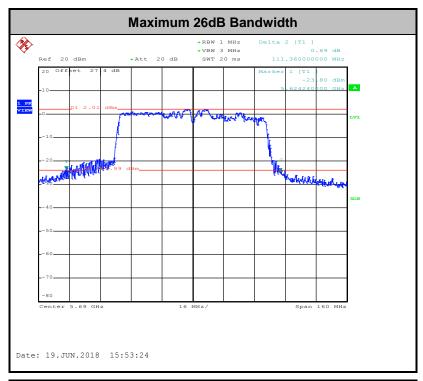
TEL: 886-3-327-3456 Page Number : 11 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

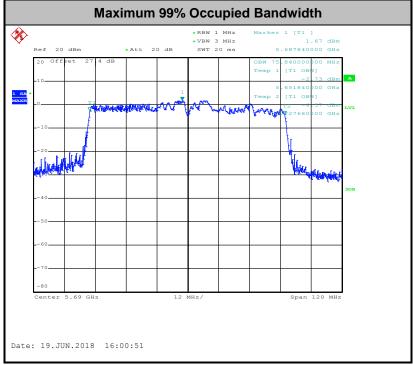
Report Template No.: BU5-FR15EWL AC MA Version 2.1

Report Version : 01

Report No.: FR852420-01D







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

TEL: 886-3-327-3456 Page Number : 12 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1

Report Version : 01

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For the 5.15-5.25 GHz bands:

■ For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW. For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

Report No.: FR852420-01D

For the 5.25-5.725 GHz bands:

■ The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For Straddle Channel, according to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, if the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

TEL: 886-3-327-3456 Page Number : 13 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWLAC MA Version 2.1 Report Version : 01

3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Report No.: FR852420-01D

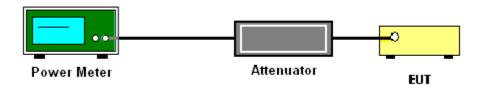
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Method PM (Measurement using an RF average power meter):

- 1. Measurement is performed using a wideband RF power meter.
- 2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
- 3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

For Straddle Channel, according to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, if the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

TEL: 886-3-327-3456 Page Number : 14 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1 Report Version

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For the 5.15-5.25 GHz bands:

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1.0 MHz band. For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1.0 MHz band.

Report No.: FR852420-01D

For the 5.25-5.725 GHz bands:

The maximum power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

For Straddle Channel, according to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, if the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

TEL: 886-3-327-3456 Page Number : 15 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1 Report Version : 01

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section F) Maximum power spectral density.

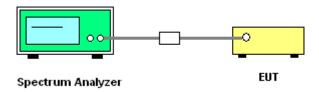
Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

Report No.: FR852420-01D

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.
- 1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
- 2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

3.3.4 Test Setup



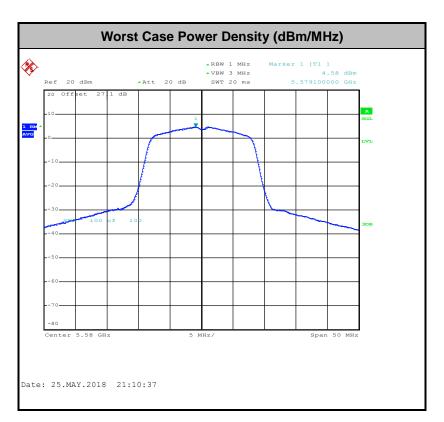
3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

TEL: 886-3-327-3456 Page Number : 16 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1 Report Version : 01





Note: Average Power Density (dB) = Measured value+ Duty Factor

TEL: 886-3-327-3456 Page Number : 17 of 29 FAX: 886-3-328-4978 Report Issued Date: Jul. 05, 2018 Report Version : 01

Report Template No.: BU5-FR15EWLAC MA Version 2.1

3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

Report No.: FR852420-01D

3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of –27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

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

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3}$$
 µV/m, where P is the eirp (Watts)

TEL: 886-3-327-3456 Page Number: 18 of 29
FAX: 886-3-328-4978 Report Issued Date: Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1 Report Version : 01

EIRP (dBm)	Field Strength at 3m (dBμV/m)	
- 27	68.3	

Report No.: FR852420-01D

(3) KDB789033 D02 v02r01 G)2)c)

- (i) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.³
- (ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.⁴
- **Note 3:** An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.
- **Note 4:** Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedures

- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
 Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW ≥ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold

TEL: 886-3-327-3456 Page Number: 19 of 29
FAX: 886-3-328-4978 Report Issued Date: Jul. 05, 2018

Report Version

: 01

Report Template No.: BU5-FR15EWL AC MA Version 2.1

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- 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.

Report No.: FR852420-01D

- 2. 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.
- 3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- 4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- 5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- 6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
- 7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

TEL: 886-3-327-3456 Page Number : 20 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Version

: 01

Report Template No.: BU5-FR15EWL AC MA Version 2.1

3.4.4 Test Setup

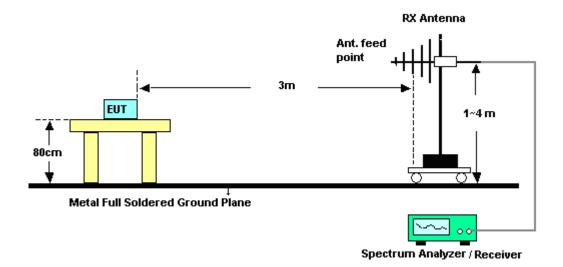
For radiated emissions below 30MHz



Report No.: FR852420-01D

: 01

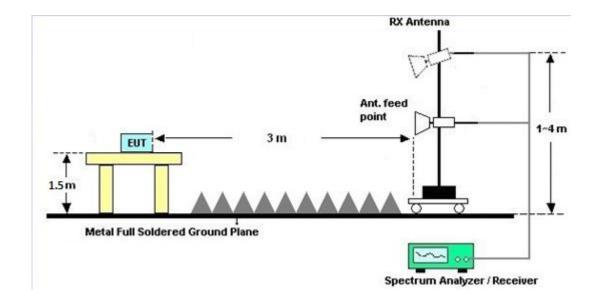
For radiated emissions from 30MHz to 1GHz



TEL: 886-3-327-3456 Page Number : 21 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1 Report Version

For radiated emissions above 1GHz



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

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

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

3.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.

TEL: 886-3-327-3456 Page Number : 22 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1

Report Version : 01

Report No.: FR852420-01D

3.5 AC Conducted Emission Measurement

3.5.1 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.

Report No.: FR852420-01D

Eroquency of emission (MUz)	Conducted limit (dBμV)			
Frequency of emission (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.

3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

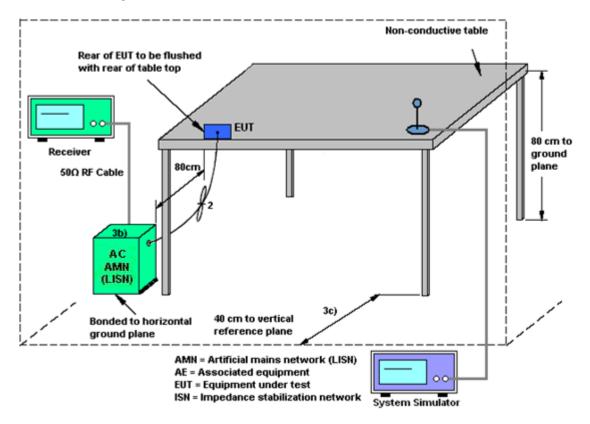
3.5.3 Test Procedures

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room 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 with Maximum Hold Mode.

TEL: 886-3-327-3456 Page Number : 23 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1 Report Version : 01

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

TEL: 886-3-327-3456 Page Number : 24 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1

Report Version : 01

Report No.: FR852420-01D

3.6 Automatically Discontinue Transmission

3.6.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

Report No.: FR852420-01D

3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

TEL: 886-3-327-3456 Page Number : 25 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Version

: 01

Report Template No.: BU5-FR15EWL AC MA Version 2.1

3.7 Antenna Requirements

3.7.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Report No.: FR852420-01D

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 Page Number : 26 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Version

: 01

Report Template No.: BU5-FR15EWLAC MA Version 2.1

List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 26, 2017	May 14, 2018~	Son 25 2018	Conducted
rowel Metel	Allitsu	WILZ493A	0932001	14/71	Зер. 20, 2017	Jun. 19, 2018	Sep. 25, 2018	(TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 26, 2017	May 14, 2018~	Sep. 25, 2018	Conducted
Fower Sensor	Allitsu	WAZ411D	0040202	300MHZ~40GHZ	Зер. 20, 2017	Jun. 19, 2018	Зер. 23, 2016	(TH05-HY)
Spectrum	Rohde &	FSP30	101067	9kHz ~ 30GHz	Nov. 13, 2017	May 14, 2018~	Nov. 12, 2018	Conducted
Analyzer	Schwarz	F3F30	101067	9KHZ ~ 3UGHZ	1100. 13, 2017	Jun. 19, 2018	1400. 12, 2016	(TH05-HY)
Programmable	GW Instek	PSS-2005	EL890001	1V~20V	Oct. 06, 2017	May 14, 2018~	Oct. 05, 2018	Conducted
Power Supply	GW ITISTEK	P33-2005	EL690001	0.5A~4A	Oct. 06, 2017	Jun. 19, 2018	Oct. 05, 2018	(TH05-HY)
Switch Box & RF	Burgoon	Burgeon ETF-058	EC1300484	N/A	Mar. 01, 2018	May 14, 2018~	Feb. 28, 2019	Conducted
Cable	Burgeon					Jun. 19, 2018		(TH05-HY)
AC Power	ChainTak	ainTek APC-1000W	N/A	N/A	N/A	Jun. 18, 2018	N/A	Conduction
Source	Chairrek							(CO05-HY)
EMI Test	Rohde &	ESR3	102388	3.6GHz	Dec. 08, 2017	Jun. 18, 2018	Dec. 07, 2018	Conduction
Receiver	Schwarz	LONG	102300	3.00112	Dec. 00, 2017	Juli. 10, 2016	Dec. 07, 2010	(CO05-HY)
LISN	Rohde &	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	Jun. 18, 2018	Nov. 29, 2018	Conduction
LISIN	Schwarz	LINVZIO	100000 9KHZ~30WHZ 1NOV. 30, 20	1407. 30, 2017	50, 2017 Juli. 10, 2016	INUV. 29, 2010	(CO05-HY)	
Coffuero	Rohde &	EMC32	N/A	NI/A	NI/A	lum 40 2040	NI/A	Conduction
Software	Schwarz	V10.30	IN/A	N/A	N/A Jun. 1	Jun. 18, 2018	N/A	(CO05-HY)
LF Cable	HUBER +	DC 214/LI	I E01	NI/A	lon 02 2019	lun 19 2019	lon 02 2010	Conduction
LF Cable	SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	Jun. 18, 2018	Jan. 02, 2019	(CO05-HY)
Dulan Limitar	Rohde &	ECU2 72	100851	N/A	Jan. 03, 2018	Jun. 18, 2018	Jan. 02, 2019	Conduction
Pulse Limiter	Schwarz	ESH3-Z2						(CO05-HY)

Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number FAX: 886-3-328-4978 Report Issued Date: Jul. 05, 2018 Report Version : 01

Report Template No.: BU5-FR15EWLAC MA Version 2.1



FCC RADIO TEST REPORT

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	CBL 6111D&00800N 1D01N-06	35419&03	30MHz to 1GHz	Dec. 18, 2017	May 18, 2018~ Jun. 21, 2018	Dec. 17, 2018	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 23, 2017	May 18, 2018~ Jun. 21, 2018	Aug. 22, 2018	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Nov. 10, 2017	May 18, 2018~ Jun. 21, 2018	Nov. 09, 2018	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101 800-30-10P	1590075	1GHz ~ 18GHz	Apr. 25, 2018	May 18, 2018~ Jun. 21, 2018	Apr. 24, 2019	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Oct. 30, 2017	May 18, 2018~ Jun. 21, 2018	Oct. 29, 2018	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Apr. 17, 2018	May 18, 2018~ Jun. 21, 2018	Apr. 16, 2019	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	May 18, 2018~ Jun. 21, 2018	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	May 18, 2018~ Jun. 21, 2018	N/A	Radiation (03CH07-HY)
Amplifier	MITEQ	TTA1840-35- HG	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 18, 2017	May 18, 2018~ Jun. 21, 2018	Jul. 17, 2018	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170251	18GHz- 40GHz	Nov. 10, 2017	May 18, 2018~ Jun. 21, 2018	Nov. 09, 2018	Radiation (03CH07-HY)
Amplifier	SONOMA	310N	187231	9kHz~1GHz	Jan. 08, 2018	May 18, 2018~ Jun. 21, 2018	Jan. 07, 2019	Radiation (03CH07-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz to 26.5GHz	Jan. 16, 2018	May 18, 2018~ Jun. 21, 2018	Jan. 15, 2019	Radiation (03CH07-HY)
Software	Audix	E3 6.2009-8-24	N/A	N/A	N/A	May 18, 2018~ Jun. 21, 2018	N/A	Radiation (03CH07-HY)

Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number : 28 of 29 FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018 Report Version : 01

Report Template No.: BU5-FR15EWL AC MA Version 2.1

5 Uncertainty of Evaluation

<u>Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)</u>

Measuring Uncertainty for a Level of Confidence	2.7
of 95% (U = 2Uc(y))	2.1

Report No.: FR852420-01D

: 01

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

Measuring Uncertainty for a Level of Confidence	F 7
of 95% (U = 2Uc(y))	5.7

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence	EE
of 95% (U = 2Uc(y))	5.5

<u>Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)</u>

Measuring Uncertainty for a Level of Confidence	E 0
of 95% (U = 2Uc(y))	5.2
01 33 % (0 = 200(y))	

TEL: 886-3-327-3456 Page Number : 29 of 29
FAX: 886-3-328-4978 Report Issued Date : Jul. 05, 2018

Report Template No.: BU5-FR15EWL AC MA Version 2.1 Report Version

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Shiang Wang/Lena Lo/Shiming Liu/Rebecca Li	Temperature:	21~25	°C
Test Date:	2018/5/14~2018/6/19	Relative Humidity:	51~54	%

TEST RESULTS DATA 26dB and 99% OBW

	Band I														
Mod.	Data Rate	Rate NTX CH. (MHz) (MHz)			Band	width	Band	dB lwidth Hz)	IC 9 Band Powe (dE	width	Band EIRP	99% width Limit Bm)	Note		
				Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2					
11a	6Mbps	1	36	5180	17.30	-	22.30	-		-	22.38	-			
11a	6Mbps	1	44	5220	17.20	-	22.10	-		-	22.36	-			
11a	6Mbps	1	48	5240	17.30	-	21.90	-		•	22.38	-			
HT40	MCS0	1	38	5190	36.30	-	63.41	-		-	23.01	-			
HT40	MCS0	1	46	5230	36.20	-	55.77	-		-	23.01	-			
VHT80	MCS0	1	42	5210	75.84	-	81.92	-			23.01	-			

TEST RESULTS DATA Average Power Table

	FCC Band I														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Fac	uty ctor B)		Average Conducte Power (dBm)		FCC Conducted Power Limit (dBm)			G Bi)	Pass/Fail	
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1 Ant 2			
11a	6Mbps		36	5180	0.12	-	13.95	-		24.00	-	-7.16	-	Pass	
11a	6Mbps	1	44	5220	0.12	-	13.82	-		24.00	-	-7.16	-	Pass	
11a	6Mbps	1	48	5240	0.12	-	13.99	-		24.00	-	-7.16	-	Pass	
HT20	MCS0	1	36	5180	0.13	-	13.90	-		24.00	-	-7.16	-	Pass	
HT20	MCS0	1	44	5220	0.13	-	13.74	-		24.00	-	-7.16	-	Pass	
HT20	MCS0	1	48	5240	0.13	-	13.76	-		24.00	-	-7.16	-	Pass	
HT40	MCS0	1	38	5190	0.28	-	13.95	-		24.00	-	-7.16	-	Pass	
HT40	MCS0	1	46	5230	0.28	-	13.80	-		24.00	-	-7.16	-	Pass	
VHT20	MCS0	1	36	5180	0.13	-	11.96	-		24.00	-	-7.16	-	Pass	
VHT20	MCS0	1	44	5220	0.13	-	11.73	-	İ	24.00	-	-7.16	-	Pass	
VHT20	MCS0	1	48	5240	0.13	-	11.90	-		24.00	-	-7.16	-	Pass	
VHT40	MCS0	1	38	5190	0.27	-	11.88	-		24.00	-	-7.16	-	Pass	
VHT40	MCS0	1	46	5230	0.27	-	11.80	-		24.00	-	-7.16	-	Pass	
VHT80	MCS0	1	42	5210	0.46	-	11.83	-	Ì	24.00	-	-7.16	-	Pass	

TEST RESULTS DATA Power Spectral Density

	FCC Band I													
Mod.	Data Rate	N⊤x	CH.	Freq. (MHz)	' L Density			r PSD DG cy Limit (dBi)			_	Pass /Fail		
				Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	36	5180	0.12	-	3.88	-		11.00	-	-7.16	-	Pass
11a	6Mbps	1	44	5220	0.12	-	3.93	-		11.00	-	-7.16	-	Pass
11a	6Mbps	1	48	5240	0.12	-	3.72	-	İ	11.00	-	-7.16	-	Pass
HT40	MCS0	1	38	5190	0.28	-	0.66	-	İ	11.00	-	-7.16	-	Pass
HT40	MCS0	1	46	5230	0.28	-	0.31	-	İ	11.00	-	-7.16	-	Pass
VHT80	MCS0	1	42	5210	0.46	-	-5.01	-	Ī	11.00	-	-7.16	-	Pass

TEST RESULTS DATA 26dB and 99% OBW

	Band II														
Mod.	Data Rate	N⊤x	CH.	Freq. (MHz)	Band	l% width Hz)	26 dB Bandwidth (MHz)		Band Powe	IC 99% Bandwidth Power Limit (dBm)		99% lwidth Limit Bm)	FCC 26dB Bandwidth Power Limit (dBm)		Note
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	52	5260	17.60	-	21.50	-	23.46	-	29.46	-	23.98	-	
11a	6Mbps	1	60	5300	17.40	-	21.50	-	23.41	-	29.41	-	23.98	-	
11a	6Mbps	1	64	5320	17.30	-	21.50	-	23.38	-	29.38	-	23.98	-	
HT40	MCS0	1	54	5270	36.30	-	41.76	-	23.98	-	30.00	-	23.98	-	
HT40	MCS0	1	62	5310	36.30	-	43.87	-	23.98	-	30.00	-	23.98	-	
VHT80	MCS0	1	58	5290	75.84	-	81.92	-	23.98	-	30.00	-	23.98	-	

TEST RESULTS DATA Average Power Table

								FCC Ba	nd II						
Mod.	ו אדעו ויא		Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			Cond Powe	FCC Conducted Power Limit (dBm)		G Bi)	EIRP Power Limit (dBm)	Pass/Fail	
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1 Ant 2		,	
11a	6Mbps	1	52	5260	0.12	1	13.65	-		23.98		-5.82		26.99	Pass
11a	6Mbps	1	60	5300	0.12	-	13.59	-		23.98		-5.82		26.99	Pass
11a	6Mbps	1	64	5320	0.12	1	13.57	-		23.98		-5.82		26.99	Pass
HT20	MCS0	1	52	5260	0.13	-	13.99	-		23.98	-	-5.82	-	26.99	Pass
HT20	MCS0	1	60	5300	0.13	-	13.89	-		23.98	-	-5.82	-	26.99	Pass
HT20	MCS0	1	64	5320	0.13	-	13.87	-		23.98		-5.82		26.99	Pass
HT40	MCS0	1	54	5270	0.28	1	13.65	-		23.98		-5.82		26.99	Pass
HT40	MCS0	1	62	5310	0.28	-	13.91	-		23.98	-	-5.82	-	26.99	Pass
VHT20	MCS0	1	52	5260	0.13	-	11.93	-		23.98	-	-5.82	-	26.99	Pass
VHT20	MCS0	1	60	5300	0.13	-	11.99	-		23.98	-	-5.82	-	26.99	Pass
VHT20	MCS0	1	64	5320	0.13	-	11.64	-		23.98	-	-5.82	-	26.99	Pass
VHT40	MCS0	1	54	5270	0.27	-	11.97	-		23.98	-	-5.82	-	26.99	Pass
VHT40	MCS0	1	62	5310	0.27	-	11.64	-		23.98	-	-5.82	-	26.99	Pass
VHT80	MCS0	1	58	5290	0.46	-	9.36	-		23.98	-	-5.82	-	26.99	Pass

TEST RESULTS DATA Power Spectral Density

	Band II														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Fac	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		G Bi)	Pass /Fail	
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	52	5260	0.12	-	3.60	-		11.00	-	-5.82	-	Pass	
11a	6Mbps	1	60	5300	0.12	-	3.54	-		11.00	-	-5.82	-	Pass	
11a	6Mbps	1	64	5320	0.12	-	3.33	-		11.00	-	-5.82	-	Pass	
HT40	MCS0	1	54	5270	0.28	-	-0.70	-		11.00	-	-5.82	-	Pass	
HT40	MCS0	1	62	5310	0.28	-	-0.19	-	İ	11.00	-	-5.82	-	Pass	
VHT80	MCS0	1	58	5290	0.46	-	-7.59	-		11.00	-	-5.82	-	Pass	

Report Number : FR852420-01D

TEST RESULTS DATA 26dB and 99% OBW

								Band	III							
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth In U-NII 2C (MHz)		PC In U-NII 2C (MHz)		Band Powe	99% width r Limit Bm)	IC 9 Band EIRP (dE	width	Band Powe	26dB width r Limit Bm)	Bandw Stra	dB idth for ddle nnel Hz)
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2
11a	6Mbps	1	100	5500	17.35	-	21.70	-	23.39	-	29.39	1	23.98	-		
11a	6Mbps	1	116	5580	17.30	-	21.60	-	23.38	-	29.38	-	23.98	-		
11a	6Mbps	1	140	5700	17.25	-	24.10	-	23.37	-	29.37	-	23.98	-		
11a	6Mbps	1	144	5720	13.95	-	17.85	-	22.45	-	28.45	-	23.52	-	2.55	
HT20	MCS0	1	100	5500	18.10	-	27.50	-	23.58	-	29.58	-	23.98	-		
HT20	MCS0	1	116	5580	18.10	-	28.40	-	23.58	-	29.58	-	23.98	-		
HT20	MCS0	1	140	5700	18.20	-	31.50	-	23.60	-	29.60	-	23.98	-		
HT20	MCS0	1	144	5720	14.20	-	19.90	-	22.52	-	28.52	-	23.98	-	2.55	
HT40	MCS0	1	102	5510	36.30	-	52.92	-	23.98	-	30.00	-	23.98	-		
HT40	MCS0	1	110	5550	36.20	-	52.09	-	23.98	-	30.00	-	23.98	-		
HT40	MCS0	1	134	5670	36.40	-	64.71	-	23.98	-	30.00	-	23.98	-		
HT40	MCS0	1	142	5710	16.40	-	47.22	-	23.15	-	29.15	-	23.98	-	2.64	
VHT80	MCS0	1	106	5530	75.84	-	82.88	-	23.98	-	30.00	-	23.98	-		
VHT80	MCS0	1	122	5610	75.84		82.56		23.98		30.00		23.98			
VHT80	MCS0	1	138	5690	73.16		100.76		23.98		30.00		23.98		2.6	

Report Number : FR852420-01D

TEST RESULTS DATA Average Power Table

							I	FCC Ba	nd III						
Mod.	Data Rate	N⊤x	CH.	Freq. (MHz)		uty etor B)	Average Conducte Power (dBm)			Cond Powe	CC ucted r Limit Bm)	D (dl	-	EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	, ,	
11a	6Mbps	1	100	5500	0.12	-	13.68	-		23.98	-	-4.65	-	26.99	Pass
11a	6Mbps	1	116	5580	0.12	-	13.93	-		23.98	-	-4.65	-	26.99	Pass
11a	6Mbps	1	140	5700	0.12	-	13.96	-		23.98	-	-4.65	-	26.99	Pass
11a	6Mbps	1	144	5720	0.12	-	13.77	-		23.52	-	-4.65	-	26.99	Pass
HT20	MCS0	1	100	5500	0.13	-	13.97	-		23.98	-	-4.65	-	26.99	Pass
HT20	MCS0	1	116	5580	0.13	-	13.76	-		23.98	-	-4.65	-	26.99	Pass
HT20	MCS0	1	140	5700	0.13	-	13.79	-		23.98	-	-4.65	-	26.99	Pass
HT20	MCS0	1	144	5720	0.13	-	13.68	-		23.98	-	-4.65	•	26.99	Pass
HT40	MCS0	1	102	5510	0.28	-	13.86	-		23.98	-	-4.65	-	26.99	Pass
HT40	MCS0	1	110	5550	0.28	-	13.69	-		23.98	-	-4.65	•	26.99	Pass
HT40	MCS0	1	134	5670	0.28	-	13.92	-		23.98		-4.65	ı	26.99	Pass
HT40	MCS0	1	142	5710	0.28	-	13.57	-		23.98	-	-4.65	-	26.99	Pass
VHT20	MCS0	1	100	5500	0.13	-	11.72	-		23.98		-4.65	ı	26.99	Pass
VHT20	MCS0	1	116	5580	0.13	-	11.97	-		23.98	-	-4.65	-	26.99	Pass
VHT20	MCS0	1	140	5700	0.13	-	11.94	-		23.98	-	-4.65		26.99	Pass
VHT20	MCS0	1	144	5720	0.13	-	11.59	-		23.98	-	-4.65	-	26.99	Pass
VHT40	MCS0	1	102	5510	0.27	-	11.61	-		23.98	-	-4.65	-	26.99	Pass
VHT40	MCS0	1	110	5550	0.27	-	11.60	-		23.98	-	-4.65	-	26.99	Pass
VHT40	MCS0	1	134	5670	0.27	-	11.95	-		23.98	-	-4.65	-	26.99	Pass
VHT40	MCS0	1	142	5710	0.27	-	11.99	-		23.98	-	-4.65	-	26.99	Pass
VHT80	MCS0	1	106	5530	0.46	-	8.02	-		23.98	-	-4.65	-	26.99	Pass

Report Number : FR852420-01D

TEST RESULTS DATA Power Spectral Density

								Band III						
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)			Average Power Density IBm/MH		PS Lir	rage SD mit /MHz)		G Bi)	Pass /Fail
					Ant 1	Ant 2 Ant 1 Ant 2 SU		SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	100	5500	0.12	-	4.18	-		11.00	-	-4.65	-	Pass
11a	6Mbps	1	116	5580	0.12	-	4.70	-		11.00	-	-4.65	-	Pass
11a	6Mbps	1	140	5700	0.12	-	4.22	-		11.00	-	-4.65	-	Pass
11a	6Mbps	1	144	5720	0.12	-	2.37	-		11.00	-	-4.65	-	Pass
HT40	MCS0	1	102	5510	0.28	-	0.33	-		11.00	-	-4.65	-	Pass
HT40	MCS0	1	110	5550	0.28	-	0.37	-		11.00	-	-4.65	-	Pass
HT40	MCS0	1	134	5670	0.28	-	0.20	-		11.00	-	-4.65	-	Pass
HT40	MCS0	1	142	5710	0.28	-	-0.63		İ	11.00	-	-4.65	-	Pass
VHT80	MCS0	1	106	5530	0.46	-	-7.38	-	İ	11.00	-	-4.65	-	Pass
VHT80	MCS0	1	122	5610	0.46	-	-4.11	-	İ	11.00	-	-4.65	-	Pass
VHT80	MCS0	1	138	5690	0.46	-	-5.31	-	•	11.00	-	-4.65	-	Pass

Appendix B. AC Conducted Emission Test Results

Toot Engineer	Arthur Haiah	Temperature :	21~25°C
Test Engineer :	Attriur risieri	Relative Humidity:	51~55%

Report No. : FR852420-01D

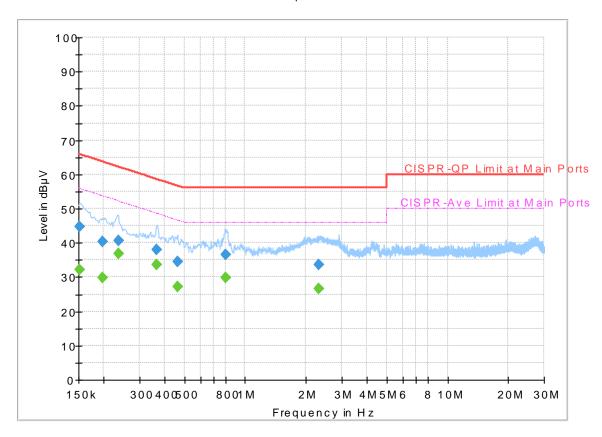
TEL: 886-3-327-3456 Page Number : B1 of B

EUT Information

Test Mode : Mode 1 Test Voltage : 120Vac/60Hz

Phase: Line

Full Spectrum



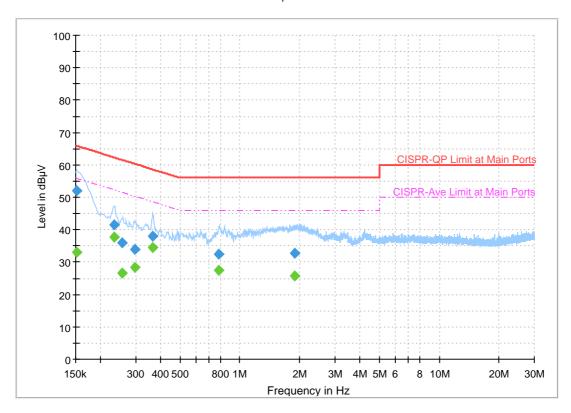
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	-	32.06	55.88	23.82	L1	OFF	19.5
0.152250	44.79		65.88	21.09	L1	OFF	19.5
0.197250		29.76	53.73	23.97	L1	OFF	19.5
0.197250	40.48		63.73	23.25	L1	OFF	19.5
0.235500	-	36.81	52.25	15.44	L1	OFF	19.5
0.235500	40.67		62.25	21.58	L1	OFF	19.5
0.366000		33.54	48.59	15.05	L1	OFF	19.5
0.366000	37.99		58.59	20.60	L1	OFF	19.5
0.462750		27.23	46.64	19.41	L1	OFF	19.5
0.462750	34.59		56.64	22.05	L1	OFF	19.5
0.802500	-	29.69	46.00	16.31	L1	OFF	19.6
0.802500	36.49		56.00	19.51	L1	OFF	19.6
2.310000		26.67	46.00	19.33	L1	OFF	19.5
2.310000	33.75		56.00	22.25	L1	OFF	19.5

EUT Information

Test Mode: Mode 1
Test Voltage: 120Vac/60Hz
Phase: Neutral

Full Spectrum



Final Result

<u>a </u>							
Frequency	QuasiPeak	CAverage	Limit	Margin	Line	Filter	Corr.
(MHz)	(dBµV)	(dBµV)	(dBµV)	(dB)			(dB)
0.152250	-	32.96	55.88	22.92	N	OFF	19.5
0.152250	52.09		65.88	13.79	N	OFF	19.5
0.233250		37.84	52.33	14.49	N	OFF	19.5
0.233250	41.58		62.33	20.75	N	OFF	19.5
0.255750		26.59	51.57	24.98	N	OFF	19.5
0.255750	36.05		61.57	25.52	N	OFF	19.5
0.296250	-	28.26	50.35	22.09	N	OFF	19.5
0.296250	33.87		60.35	26.48	N	OFF	19.5
0.366000	-	34.36	48.59	14.23	N	OFF	19.5
0.366000	37.91		58.59	20.68	N	OFF	19.5
0.782250		27.62	46.00	18.38	N	OFF	19.6
0.782250	32.34		56.00	23.66	N	OFF	19.6
1.887000		25.85	46.00	20.15	N	OFF	19.6
1.887000	32.73		56.00	23.27	N	OFF	19.6

Appendix C. Radiated Spurious Emission

Test Engineer :	Jesse Wang, Stan Hsieh, and Lance Chuang	Temperature :	22~24°C
rest Engineer.		Relative Humidity :	51~53%

Report No. : FR852420-01D

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)
		5070.72	49.11	-24.89	74	39.05	34.29	10.9	35.13	285	62	Р	Н
		5138.58	40.04	-13.96	54	29.83	34.39	10.96	35.14	285	62	Α	Н
	*	5180	91	-	-	80.65	34.46	11.03	35.14	285	62	Р	Н
802.11a	*	5180	83.72	-	-	73.37	34.46	11.03	35.14	285	62	Α	Н
													Н
CH 36 5180MHz		5138.06	49.19	-24.81	74	38.98	34.39	10.96	35.14	102	308	Р	٧
3100WIF12		5132.08	39.89	-14.11	54	29.68	34.39	10.96	35.14	102	308	Α	٧
	*	5180	94.7	-	-	84.35	34.46	11.03	35.14	102	308	Р	V
	*	5180	87.39	-	-	77.04	34.46	11.03	35.14	102	308	Α	V
													V
		5119.08	49.08	-24.92	74	38.9	34.36	10.96	35.14	263	65	Р	Н
		5103.74	39.73	-14.27	54	29.57	34.34	10.96	35.14	263	65	Α	Н
	*	5220	91.5	-	-	81.04	34.5	11.1	35.14	263	65	Р	Н
	*	5220	82.96	-	-	72.5	34.5	11.1	35.14	263	65	Α	Н
000 44		5449.08	48.61	-25.39	74	37.74	34.83	11.2	35.16	263	65	Р	Н
802.11a CH 44		5452.16	39.92	-14.08	54	29.05	34.83	11.2	35.16	263	65	Α	Н
5220MHz		5043.68	49.3	-24.7	74	39.33	34.27	10.83	35.13	102	308	Р	٧
JZZUWITIZ		5137.28	39.85	-14.15	54	29.64	34.39	10.96	35.14	102	308	Α	٧
	*	5220	94.47	-	-	84.01	34.5	11.1	35.14	102	308	Р	V
	*	5220	86	-	-	75.54	34.5	11.1	35.14	102	308	Α	V
		5362.56	49.16	-24.84	74	38.46	34.71	11.14	35.15	102	308	Р	٧
		5445.72	40	-14	54	29.13	34.83	11.2	35.16	102	308	Α	V

TEL: 886-3-327-3456 Page Number: C1 of C25



		5091.26	48.94	-25.06	74	38.83	34.34	10.9	35.13	261	60	Р	Н
		5150	39.69	-14.31	54	29.39	34.41	11.03	35.14	261	60	Α	Н
	*	5240	90.49	-	-	79.99	34.53	11.11	35.14	261	60	Р	Н
	*	5240	83.46	-	-	72.96	34.53	11.11	35.14	261	60	Α	Н
		5389.16	50.55	-23.45	74	39.81	34.74	11.15	35.15	261	60	Р	Н
.11a		5453.28	39.92	-14.08	54	29.05	34.83	11.2	35.16	261	60	Α	Н
48 MHz		5138.84	50.21	-23.79	74	40	34.39	10.96	35.14	109	304	Р	٧
IVITIZ		5139.36	39.72	-14.28	54	29.51	34.39	10.96	35.14	109	304	Α	٧
	*	5240	93.67	-	-	83.17	34.53	11.11	35.14	109	304	Р	٧
	*	5240	86.81	-	-	76.31	34.53	11.11	35.14	109	304	Α	V
		5455.8	49.1	-24.9	74	38.23	34.83	11.2	35.16	109	304	Р	٧
		5457.48	40	-14	54	29.13	34.83	11.2	35.16	109	304	Α	V

Report No. : FR852420-01D

Remark

TEL: 886-3-327-3456 Page Number: C2 of C25

^{1.} No other spurious found.

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

Band 1 5150~5250MHz

Report No. : FR852420-01D

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBµV/m)		(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V
		10360	44.24	-23.96	68.2	49.54	37.19	16.84	59.33	100	0	Р	Н
		15540	46.33	-27.67	74	42.44	40.43	20.05	56.59	100	0	Р	Н
000.44													Н
802.11a													Н
CH 36 5180MHz		10360	44.28	-23.92	68.2	49.58	37.19	16.84	59.33	100	0	Р	V
3160MH2		15540	46.55	-27.45	74	42.66	40.43	20.05	56.59	100	0	Р	V
													V
													V
		10440	45.2	-23	68.2	50.24	37.25	16.98	59.27	100	0	Р	Н
		15660	48.32	-25.68	74	44.28	40.52	20.09	56.57	100	0	Р	Н
													Н
802.11a CH 44													Н
5220MHz		10440	45.11	-23.09	68.2	50.15	37.25	16.98	59.27	100	0	Р	V
JZZUWINZ		15660	47.97	-26.03	74	43.93	40.52	20.09	56.57	100	0	Р	V
													V
													V
		10480	45.36	-22.84	68.2	50.26	37.29	17.03	59.22	100	0	Р	Н
		15720	47.19	-26.81	74	43.07	40.58	20.1	56.56	100	0	Р	Н
802.11a													Н
602.11a CH 48													Н
5240MHz		10480	45.2	-23	68.2	50.1	37.29	17.03	59.22	100	0	Р	V
VATVIII IL		15720	46.52	-27.48	74	42.4	40.58	20.1	56.56	100	0	Р	V
													V
													V

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

TEL: 886-3-327-3456 Page Number: C3 of C25

Band 1 5150~5250MHz WIFI 802.11n HT40 (Band Edge @ 3m)

Report No. : FR852420-01D

Ant. 1			1										
1				Limit	Line	Level	Factor	Loss	Factor	Pos		Avg.	
		(MHz)	(dBµV/m)		(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)		(P/A)	
<u> </u>		5083.2	49.1	-24.9	74	39.01	34.32	10.9	35.13	248	59	Р	Н
_		5147.94	40.63	-13.37	54	30.33	34.41	11.03	35.14	248	59	Α	Н
_	*	5190	86.93	-	-	76.51	34.46	11.1	35.14	248	59	Р	Н
	*	5190	79.07	-	-	68.65	34.46	11.1	35.14	248	59	Α	Н
802.11n		5457.76	49.41	-24.59	74	38.54	34.83	11.2	35.16	248	59	Р	Н
HT40		5457.2	40.67	-13.33	54	29.8	34.83	11.2	35.16	248	59	Α	Н
CH 38		5148.98	48.9	-25.1	74	38.6	34.41	11.03	35.14	100	311	Р	V
5190MHz		5150	41.35	-12.65	54	31.05	34.41	11.03	35.14	100	311	Α	V
	*	5190	90.01	-	-	79.59	34.46	11.1	35.14	100	311	Р	V
	*	5190	82.47	-	-	72.05	34.46	11.1	35.14	100	311	Α	V
		5419.4	49.03	-24.97	74	38.26	34.78	11.15	35.16	100	311	Р	V
		5454.12	40.76	-13.24	54	29.89	34.83	11.2	35.16	100	311	Α	V
		5050.44	50.03	-23.97	74	40.06	34.27	10.83	35.13	272	62	Р	Н
		5130.52	40.4	-13.6	54	30.19	34.39	10.96	35.14	272	62	Α	Н
	*	5230	88.54	-	-	78.04	34.53	11.11	35.14	272	62	Р	Н
	*	5230	80.03	-	-	69.53	34.53	11.11	35.14	272	62	Α	Н
802.11n		5365.08	49.06	-24.94	74	38.36	34.71	11.14	35.15	272	62	Р	Н
HT40		5437.88	40.78	-13.22	54	29.93	34.81	11.2	35.16	272	62	Α	Н
CH 46		5122.98	49.24	-24.76	74	39.03	34.39	10.96	35.14	100	304	Р	V
5230MHz		5138.06	40.93	-13.07	54	30.72	34.39	10.96	35.14	100	304	Α	V
	*	5230	91.4	-	-	80.9	34.53	11.11	35.14	100	304	Р	V
	*	5230	83.53	-	-	73.03	34.53	11.11	35.14	100	304	Α	V
		5445.16	49.16	-24.84	74	38.31	34.81	11.2	35.16	100	304	Р	V
		5450.48	40.75	-13.25	54	29.88	34.83	11.2	35.16	100	304	Α	V

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

TEL: 886-3-327-3456 Page Number: C4 of C25

Band 1 5150~5250MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No. : FR852420-01D

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)	(H/V)
		5134.42	55.27	-18.73	74	45.06	34.39	10.96	35.14	109	68	Р	Н
		5147.68	44.56	-9.44	54	34.26	34.41	11.03	35.14	109	68	Α	Н
	*	5210	82.86	-	-	72.4	34.5	11.1	35.14	109	68	Р	Н
	*	5210	76.76	-	-	66.3	34.5	11.1	35.14	109	68	Α	Н
802.11ac		5376.84	49.63	-24.37	74	38.93	34.71	11.14	35.15	109	68	Р	Н
VHT80		5427.24	42.74	-11.26	54	31.92	34.78	11.2	35.16	109	68	Α	Н
CH 42		5142.48	55.94	-18.06	74	45.64	34.41	11.03	35.14	101	299	Р	V
5210MHz		5149.5	46.86	-7.14	54	36.56	34.41	11.03	35.14	101	299	Α	V
	*	5210	88.43	-	-	77.97	34.5	11.1	35.14	101	299	Р	V
	*	5210	82.47	-	-	72.01	34.5	11.1	35.14	101	299	Α	V
		5446.56	49.33	-24.67	74	38.46	34.83	11.2	35.16	101	299	Р	V
		5363.4	45.59	-8.41	54	34.89	34.71	11.14	35.15	101	299	Α	V

Remark

TEL: 886-3-327-3456 Page Number: C5 of C25

^{1.} No other spurious found.

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

Band 2 - 5250~5350MHz

Report No. : FR852420-01D

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)		(P/A)	
		5143.15	49.43	-24.57	74	39.13	34.41	11.03	35.14	284	26	Р	Н
		5135.45	39.67	-14.33	54	29.46	34.39	10.96	35.14	284	26	Α	Н
	*	5260	88.84	-	-	78.31	34.57	11.11	35.15	284	26	Р	Н
	*	5260	81.89	-	-	71.36	34.57	11.11	35.15	284	26	Α	Н
802.11a		5441.28	49.25	-24.75	74	38.4	34.81	11.2	35.16	284	26	Р	Н
		5444.88	39.93	-14.07	54	29.08	34.81	11.2	35.16	284	26	Α	Н
CH 52 5260MHz		5134.4	48.96	-25.04	74	38.75	34.39	10.96	35.14	100	317	Р	٧
3200WITI2		5134.4	39.75	-14.25	54	29.54	34.39	10.96	35.14	100	317	Α	٧
	*	5260	95.07	-	-	84.54	34.57	11.11	35.15	100	317	Р	٧
	*	5260	86.7	-	-	76.17	34.57	11.11	35.15	100	317	Α	٧
		5392.32	49.91	-24.09	74	39.17	34.74	11.15	35.15	100	317	Р	٧
		5393.04	40.21	-13.79	54	29.47	34.74	11.15	35.15	100	317	Α	٧
		5091	48.96	-25.04	74	38.85	34.34	10.9	35.13	248	60	Р	Н
		5126	39.54	-14.46	54	29.33	34.39	10.96	35.14	248	60	Α	Н
	*	5300	92.48	-	-	81.89	34.62	11.12	35.15	248	60	Р	Н
	*	5300	84.42	-	-	73.83	34.62	11.12	35.15	248	60	Α	Н
		5426.64	48.98	-25.02	74	38.16	34.78	11.2	35.16	248	60	Р	Н
802.11a		5439.84	40.04	-13.96	54	29.19	34.81	11.2	35.16	248	60	Α	Н
CH 60 5300MHz		5067.2	48.85	-25.15	74	38.79	34.29	10.9	35.13	100	306	Р	٧
3300WITZ		5093.8	39.67	-14.33	54	29.57	34.34	10.9	35.14	100	306	Α	٧
	*	5300	97.12	-	-	86.53	34.62	11.12	35.15	100	306	Р	V
	*	5300	88.7	-	-	78.11	34.62	11.12	35.15	100	306	Α	V
		5442.24	49.78	-24.22	74	38.93	34.81	11.2	35.16	100	306	Р	V
		5405.04	40.28	-13.72	54	29.53	34.76	11.15	35.16	100	306	Α	V

TEL: 886-3-327-3456 Page Number : C6 of C25



* 5320 93.16 82.54 34.64 11.13 35.15 284 60 Ρ Н * 5320 84.99 -74.37 34.64 11.13 35.15 284 60 Α Н -Ρ 5419.36 48.43 -25.57 74 37.66 34.78 11.15 35.16 284 60 Н 284 Н 5438.4 40.12 -13.88 29.27 34.81 11.2 35.16 60 Α 54 Н 802.11a Н CH 64 Ρ ٧ 5320 95.57 84.95 34.64 11.13 35.15 100 245 5320MHz 5320 87.56 76.94 34.64 11.13 35.15 100 245 ٧ 5353.28 -24.79 100 245 ٧ 49.21 74 38.53 34.69 11.14 35.15 5405.12 40.49 -13.51 34.76 35.16 100 245 Α ٧ 54 29.74 11.15 ٧ ٧ 1. No other spurious found. Remark All results are PASS against Peak and Average limit line.

Report No.: FR852420-01D

TEL: 886-3-327-3456 Page Number: C7 of C25

Band 2 5250~5350MHz

Report No. : FR852420-01D

WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)	(P/A)	
		10520	45.1	-23.1	68.2	49.87	37.32	17.09	59.18	100	0	Р	Н
		15780	48.87	-25.13	74	44.71	40.62	20.08	56.54	100	0	Р	Н
802.11a													Н
CH 52													Н
5260MHz		10520	45.25	-22.95	68.2	50.02	37.32	17.09	59.18	100	0	Р	V
3200WII 12		15780	48.15	-25.85	74	43.99	40.62	20.08	56.54	100	0	Р	V
													V
													V
		10600	45.31	-28.69	74	49.74	37.42	17.21	59.06	100	0	Р	Н
		15900	47.53	-26.47	74	43.15	40.72	20.18	56.52	100	0	Р	Н
													Н
802.11a													Н
CH 60		10600	47.05	-26.95	74	51.48	37.42	17.21	59.06	100	0	Р	V
5300MHz		15900	47.4	-26.6	74	43.02	40.72	20.18	56.52	100	0	Р	V
													V
													V
		10640	46.86	-27.14	74	51.15	37.47	17.25	59.01	100	0	Р	Н
		15960	47.53	-26.47	74	43.03	40.77	20.24	56.51	100	0	Р	Н
000.44													Н
802.11a													Н
CH 64 5320MHz		10640	45.14	-28.86	74	49.43	37.47	17.25	59.01	100	0	Р	٧
JJZUIVITZ		15960	48.26	-25.74	74	43.76	40.77	20.24	56.51	100	0	Р	V
													V
													V

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

TEL: 886-3-327-3456 Page Number : C8 of C25

Band 2 5250~5350MHz WIFI 802.11n HT40 (Band Edge @ 3m)

Report No. : FR852420-01D

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant		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)	(H/V
-		5039.55	48.96	-25.04	74	38.99	34.27	10.83	35.13	273	60	P	Н
		5138.6	40.65	-13.35	54	30.44	34.39	10.96	35.14	273	60	Α	Н
	*	5270	89.22	-	-	78.68	34.57	11.12	35.15	273	60	Р	Н
	*	5270	80.92	-	-	70.38	34.57	11.12	35.15	273	60	Α	Н
802.11n		5398.8	48.81	-25.19	74	38.06	34.76	11.15	35.16	273	60	Р	Н
HT40		5451.84	40.76	-13.24	54	29.89	34.83	11.2	35.16	273	60	Α	Н
CH 54		5057.05	48.72	-25.28	74	38.73	34.29	10.83	35.13	100	93	Р	V
5270MHz		5121.45	40.64	-13.36	54	30.46	34.36	10.96	35.14	100	93	Α	V
	*	5270	92.34	-	-	81.8	34.57	11.12	35.15	100	93	Р	V
	*	5270	84.19	-	-	73.65	34.57	11.12	35.15	100	93	Α	V
		5395.92	48.8	-25.2	74	38.04	34.76	11.15	35.15	100	93	Р	V
		5447.04	41.11	-12.89	54	30.24	34.83	11.2	35.16	100	93	Α	V
		5037.8	48.91	-25.09	74	38.94	34.27	10.83	35.13	282	58	Р	Н
		5123.2	40.45	-13.55	54	30.24	34.39	10.96	35.14	282	58	Α	Н
	*	5310	88.56	-	-	77.94	34.64	11.13	35.15	282	58	Р	Н
	*	5310	80.03	1		69.41	34.64	11.13	35.15	282	58	Α	Η
802.11n		5352.96	49.21	-24.79	74	38.53	34.69	11.14	35.15	282	58	Р	Η
HT40		5351.76	41.21	-12.79	54	30.53	34.69	11.14	35.15	282	58	Α	Н
CH 62		5022.05	48.27	-25.73	74	38.32	34.25	10.83	35.13	100	115	Р	V
5310MHz		5138.25	40.52	-13.48	54	30.31	34.39	10.96	35.14	100	115	Α	V
	*	5310	93.23	-	-	82.61	34.64	11.13	35.15	100	115	Р	V
	*	5310	86.07	-	-	75.45	34.64	11.13	35.15	100	115	Α	V
		5360.88	52.9	-21.1	74	42.2	34.71	11.14	35.15	100	115	Р	V
		5352	43.58	-10.42	54	32.9	34.69	11.14	35.15	100	115	Α	V

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

TEL: 886-3-327-3456 Page Number : C9 of C25

Band 2 5250~5350MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No. : FR852420-01D

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)	(H/V)
		5098	48.95	-25.05	74	38.85	34.34	10.9	35.14	300	72	Р	Н
		5138.95	42.18	-11.82	54	31.97	34.39	10.96	35.14	300	72	Α	Н
	*	5290	83.07	-	-	72.5	34.6	11.12	35.15	300	72	Р	Н
	*	5290	77.43	-	-	66.86	34.6	11.12	35.15	300	72	Α	Н
802.11ac		5452.56	49.33	-24.67	74	38.46	34.83	11.2	35.16	300	72	Р	Н
VHT80		5356.8	44.28	-9.72	54	33.6	34.69	11.14	35.15	300	72	Α	Н
CH 58		5138.6	49.09	-24.91	74	38.88	34.39	10.96	35.14	100	100	Р	V
5290MHz		5141.05	41.91	-12.09	54	31.61	34.41	11.03	35.14	100	100	Α	V
	*	5290	88.3	-	-	77.73	34.6	11.12	35.15	100	100	Р	V
	*	5290	81.87	-	-	71.3	34.6	11.12	35.15	100	100	Α	V
		5383.68	60.94	-13.06	74	50.2	34.74	11.15	35.15	100	100	Р	V
		5395.44	50.65	-3.35	54	39.89	34.76	11.15	35.15	100	100	Α	V

Remark

TEL: 886-3-327-3456 Page Number: C10 of C25

^{1.} No other spurious found.

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

Band 3 - 5470~5725MHz

Report No. : FR852420-01D

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)		(P/A)	
		5448.08	49.03	-24.97	74	38.16	34.83	11.2	35.16	400	26	Р	Н
		5465.52	48.12	-20.08	68.2	37.18	34.85	11.25	35.16	400	26	Р	Н
		5451.92	40.03	-13.97	54	29.16	34.83	11.2	35.16	400	26	Α	Н
	*	5500	93.14	-	-	82.15	34.9	11.25	35.16	400	26	Р	Н
802.11a	*	5500	85.67	-	-	74.68	34.9	11.25	35.16	400	26	Α	Н
CH 100													Н
5500MHz		5451.92	49.99	-24.01	74	39.12	34.83	11.2	35.16	109	301	Р	V
3300WII 12		5469.2	49.75	-18.45	68.2	38.81	34.85	11.25	35.16	109	301	Р	V
		5458	41.21	-12.79	54	30.34	34.83	11.2	35.16	109	301	Α	V
	*	5500	99.67	-	-	88.68	34.9	11.25	35.16	109	301	Р	٧
	*	5500	91.25	-	-	80.26	34.9	11.25	35.16	109	301	Α	٧
													٧
		5438.8	49.39	-24.61	74	38.54	34.81	11.2	35.16	391	59	Р	Н
		5461.6	48.34	-19.86	68.2	37.42	34.83	11.25	35.16	391	59	Р	Η
		5457.04	40.22	-13.78	54	29.35	34.83	11.2	35.16	391	59	Α	Н
	*	5580	91.77	-	-	80.6	35	11.35	35.18	391	59	Р	Н
	*	5580	83.88	-	-	72.71	35	11.35	35.18	391	59	Α	Н
802.11a		5753.345	50.32	-17.88	68.2	38.74	35.26	11.53	35.21	391	59	Р	Н
CH 116 5580MHz		5438.56	50.57	-23.43	74	39.72	34.81	11.2	35.16	100	301	Р	٧
3360WITI2		5465.92	49.37	-18.83	68.2	38.43	34.85	11.25	35.16	100	301	Р	٧
		5457.76	40.74	-13.26	54	29.87	34.83	11.2	35.16	100	301	Α	٧
	*	5580	99.14	-	-	87.97	35	11.35	35.18	100	301	Р	V
	*	5580	90.77	-	-	79.6	35	11.35	35.18	100	301	Α	V
		5742.95	50.87	-17.33	68.2	39.31	35.24	11.53	35.21	100	301	Р	V

TEL: 886-3-327-3456 Page Number: C11 of C25



	*	5700	89.72	-	-	78.29	35.17	11.46	35.2	384	14	Р	Н
	*	5700	81.03	-	-	69.6	35.17	11.46	35.2	384	14	Α	Н
		5744.6	51.16	-17.04	68.2	39.6	35.24	11.53	35.21	384	14	Р	Н
													Н
000 44 -													Н
802.11a CH 140													Н
5700MHz	*	5700	96.77	-	-	85.34	35.17	11.46	35.2	100	298	Р	V
37 00MH12	*	5700	88.41	-	-	76.98	35.17	11.46	35.2	100	298	Α	V
		5726.2	52.97	-15.23	68.2	41.46	35.21	11.5	35.2	100	298	Р	V
													V
													V
													V
Remark		o other spurio		. 5									
	2. Al	I results are F	'ASS again	st Peak	and Averaç	ge limit lin	e.						

Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number : C12 of C25

Band 3 - 5470~5725MHz

Report No. : FR852420-01D

WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	($dB\mu V/m$)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/\
		11000	45.24	-28.76	74	48.38	37.9	17.46	58.5	100	0	Р	Н
		16500	48.24	-19.96	68.2	42.13	41.8	20.51	56.2	100	0	Р	Н
802.11a													Н
													Н
CH 100 5500MHz		11000	45.62	-28.38	74	48.76	37.9	17.46	58.5	100	0	Р	V
JJUUWINZ		16500	48.84	-19.36	68.2	42.73	41.8	20.51	56.2	100	0	Р	V
													V
													V
		11160	46.71	-27.29	74	48.94	38.07	17.8	58.1	100	0	Р	Н
		16740	48.88	-19.32	68.2	42.26	41.94	20.69	56.01	100	0	Р	Н
000 44 -													Н
802.11a CH 116													Н
5580MHz		11160	47.18	-26.82	74	49.41	38.07	17.8	58.1	100	0	Р	V
000011112		16740	49.62	-18.58	68.2	43	41.94	20.69	56.01	100	0	Р	V
													V
													V
		11400	45	-29	74	46.22	38.3	18.02	57.54	100	0	Р	Н
		17100	49.88	-18.32	68.2	42.65	41.96	21.05	55.78	100	0	Р	Н
802.11a													Н
													Н
CH 140		11400	44.99	-29.01	74	46.21	38.3	18.02	57.54	100	0	Р	V
5700MHz		17100	49.52	-18.68	68.2	42.29	41.96	21.05	55.78	100	0	Р	V
													٧
													V

Remark

- No other spurious found.
- All results are PASS against Peak and Average limit line.

TEL: 886-3-327-3456 : C13 of C25 Page Number

Band 3 - 5470~5725MHz WIFI 802.11n HT40 (Band Edge @ 3m)

Report No. : FR852420-01D

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.		, .		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	4150
1		(MHz)	(dBµV/m)	` ,	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)		(P/A)	
		5451.76	49.58	-24.42	74	38.71	34.83	11.2	35.16	381	48	Р	Н
		5469.04	49.11	-19.09	68.2	38.17	34.85	11.25	35.16	381	48	Р	Н
		5452.48	40.9	-13.1	54	30.03	34.83	11.2	35.16	381	48	Α	Н
	*	5510	90.86	-	-	79.83	34.9	11.3	35.17	381	48	Р	Н
802.11n	*	5510	83.7	-	-	72.67	34.9	11.3	35.17	381	48	Α	Н
HT40		5730.35	50.1	-18.1	68.2	38.6	35.21	11.5	35.21	381	48	Р	Н
CH 102		5458.48	51.43	-22.57	74	40.56	34.83	11.2	35.16	108	103	Р	V
5510MHz		5467.84	55.39	-12.81	68.2	44.45	34.85	11.25	35.16	108	103	Р	V
		5456.08	42.75	-11.25	54	31.88	34.83	11.2	35.16	108	103	Α	V
	*	5510	97.25	-	-	86.22	34.9	11.3	35.17	108	103	Р	٧
	*	5510	89.64	-	-	78.61	34.9	11.3	35.17	108	103	Α	٧
		5759.96	50.17	-18.03	68.2	38.6	35.26	11.53	35.22	108	103	Р	٧
		5351.2	49.78	-24.22	74	39.1	34.69	11.14	35.15	394	48	Р	Н
		5462.08	48.17	-20.03	68.2	37.25	34.83	11.25	35.16	394	48	Р	I
		5440.24	40.92	-13.08	54	30.07	34.81	11.2	35.16	394	48	Α	Н
	*	5550	90.71	-	-	79.56	34.97	11.35	35.17	394	48	Р	Н
802.11n	*	5550	83.68	-	-	72.53	34.97	11.35	35.17	394	48	Α	Н
HT40		5745.155	50.57	-17.63	68.2	39.01	35.24	11.53	35.21	394	48	Р	Н
CH 110		5449.84	49.71	-24.29	74	38.84	34.83	11.2	35.16	100	104	Р	V
5550MHz		5465.2	51.46	-16.74	68.2	40.52	34.85	11.25	35.16	100	104	Р	٧
		5459.2	41.79	-12.21	54	30.92	34.83	11.2	35.16	100	104	Α	V
	*	5550	97.01	-	-	85.86	34.97	11.35	35.17	100	104	Р	V
	*	5550	89.71	-	-	78.56	34.97	11.35	35.17	100	104	Α	V
		5761.535	49.9	-18.3	68.2	38.33	35.26	11.53	35.22	100	104	Р	V

TEL: 886-3-327-3456 Page Number: C14 of C25



5360.15 49.55 -24.45 74 38.87 34.69 11.14 35.15 400 Ρ 59 Н 5464.1 48.63 -19.57 68.2 37.69 34.85 11.25 35.16 400 59 Ρ Н 5446.95 40.73 -13.27 29.86 34.83 11.2 35.16 400 59 Н 54 Α Ρ 35.14 400 Η 5670 89.49 78.08 11.46 35.19 59 5670 82.57 71.16 35.14 11.46 35.19 400 59 Α --Η 802.11n -17.8 35.24 35.21 400 Ρ HT40 5739.8 50.4 68.2 38.87 11.5 59 Н ٧ CH 134 5407.4 49.78 -24.22 74 39.03 34.76 11.15 35.16 100 103 5670MHz 5462 47.6 -20.6 36.68 34.83 11.25 35.16 100 103 Ρ ٧ 68.2 5417.9 41 -13 54 30.23 34.78 11.15 35.16 100 103 ٧ 100 103 Ρ ٧ 5670 95.51 84.1 35.14 11.46 35.19 _ * 100 ٧ 5670 88.11 76.7 35.14 11.46 35.19 103 Α Ρ ٧ 5727.375 51.22 -16.98 68.2 39.71 35.21 11.5 35.2 100 103

Report No.: FR852420-01D

Remark

TEL: 886-3-327-3456 Page Number : C15 of C25

^{1.} No other spurious found.

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

Band 3 - 5470~5725MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No. : FR852420-01D

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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	Pos (deg)	Avg.	(H/V)
		5429.68	49.85	-24.15	74	39	34.81	11.2	35.16	400	55	P	Η
		5470	49.4	-18.8	68.2	38.46	34.85	11.25	35.16	400	55	Р	Н
		5427.28	43.55	-10.45	54	32.73	34.78	11.2	35.16	400	55	Α	Н
	*	5530	84.19	-	-	73.14	34.92	11.3	35.17	400	55	Р	Н
802.11ac	*	5530	78.71	-	-	67.66	34.92	11.3	35.17	400	55	Α	Н
VHT80		5738.54	50.68	-17.52	68.2	39.15	35.24	11.5	35.21	400	55	Р	Н
CH 106		5418.4	53.42	-20.58	74	42.65	34.78	11.15	35.16	100	300	Р	V
5530MHz		5468.8	54.32	-13.88	68.2	43.38	34.85	11.25	35.16	100	300	Р	V
		5452.24	50.69	-3.31	54	39.82	34.83	11.2	35.16	100	300	Α	٧
	*	5530	90.32	1	-	79.27	34.92	11.3	35.17	100	300	Р	٧
	*	5530	83.69	-	-	72.64	34.92	11.3	35.17	100	300	Α	٧
		5743.58	49.78	-18.42	68.2	38.22	35.24	11.53	35.21	100	300	Р	٧

Remark

TEL: 886-3-327-3456 Page Number : C16 of C25

^{1.} No other spurious found.

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

Emission below 1GHz

Report No. : FR852420-01D

WIFI 802.11ac VHT80 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)
		37.83	23.7	-16.3	40	33.88	20.42	1.22	31.82	-	-	Р	Н
		192	29.21	-14.29	43.5	43.83	14.78	2.29	31.69	-	-	Р	Н
		271.38	28.54	-17.46	46	38.37	19.08	2.73	31.64	-	-	Р	Н
		873.3	31.79	-14.21	46	29.48	28.95	4.83	31.47	-	-	Р	Н
		937.7	32.33	-13.67	46	28.65	29.75	4.95	31.02	-	-	Р	Н
		956.6	33.1	-12.9	46	28.23	30.69	5.03	30.85	100	0	Р	Н
													Н
													Н
													Н
													Н
802.11ac													Н
VHT80													Н
LF		37.83	31.79	-8.21	40	41.97	20.42	1.22	31.82	100	0	Р	V
		92.91	27.99	-15.51	43.5	43.1	14.99	1.66	31.76	-	-	Р	V
		274.35	23	-23	46	32.94	18.97	2.73	31.64	-	-	Р	V
		833.4	30.12	-15.88	46	28.83	28.27	4.66	31.64	-	-	Р	V
		878.2	31.16	-14.84	46	28.86	28.91	4.84	31.45	-	-	Р	V
		955.2	32.79	-13.21	46	27.99	30.64	5.03	30.87	-	-	Р	V
													V
													V
													V
													V
													V
													V
	1. No	o other spurio	us found.										
Remark		' I results are F		st limit li	ne.								
			<u> </u>										

TEL: 886-3-327-3456 Page Number : C17 of C25

Band 3 - Straddle Channel

Report No. : FR852420-01D

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)
		5427.22	49.15	-24.85	74	38.33	34.78	11.2	35.16	386	35	Р	Η
		5467.78	49.13	-19.07	68.2	38.19	34.85	11.25	35.16	386	35	Р	Ι
		5451.01	39.78	-14.22	54	28.91	34.83	11.2	35.16	386	35	Α	Ι
	*	5720	93.51	1	-	82	35.21	11.5	35.2	386	35	Р	Ι
000.44	*	5720	84.16	-	-	72.65	35.21	11.5	35.2	386	35	Α	Η
802.11a CH 144		5947.25	49.86	-18.34	68.2	37.84	35.53	11.74	35.25	386	35	Р	Η
5720MHz		5405.38	49.08	-24.92	74	38.33	34.76	11.15	35.16	108	297	Р	٧
37 ZUWINZ		5467.78	47.73	-20.47	68.2	36.79	34.85	11.25	35.16	108	297	Р	٧
		5420.2	39.88	-14.12	54	29.06	34.78	11.2	35.16	108	297	Α	٧
	*	5720	99.91	-	-	88.4	35.21	11.5	35.2	108	297	Р	٧
	*	5720	90.76	-	-	79.25	35.21	11.5	35.2	108	297	Α	V
		5905.25	50.17	-18.03	68.2	38.24	35.48	11.69	35.24	108	297	Р	٧

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

TEL: 886-3-327-3456 Page Number : C18 of C25

Band 3 - Straddle Channel

Report No. : FR852420-01D

WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	($dB\mu V/m$)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		11440	47.09	-26.91	74	48.17	38.33	17.6	57.46	100	0	Р	Н
		17160	49.52	-18.68	68.2	42.25	41.87	20.77	55.77	100	0	Р	Н
000.44													Н
802.11a													Н
CH 144 5720MHz		11440	45.58	-28.42	74	46.66	38.33	17.6	57.46	100	0	Р	V
37 20WII 12		17160	49.32	-18.88	68.2	42.05	41.87	20.77	55.77	100	0	Р	V
													V
													V
Remark	1. No	o other spurio	us found.										

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

TEL: 886-3-327-3456 Page Number : C19 of C25

Band 3 - Straddle Channel WIFI 802.11n HT40 (Band Edge @ 3m)

Report No. : FR852420-01D

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)	(H/V)
		5427.61	49.01	-24.99	74	38.19	34.78	11.2	35.16	332	14	Р	I
		5468.56	48.33	-19.87	68.2	37.39	34.85	11.25	35.16	332	14	Р	Н
		5435.8	40.35	-13.65	54	29.5	34.81	11.2	35.16	332	14	Α	I
	*	5710	92.55	-	-	81.06	35.19	11.5	35.2	332	14	Р	Н
802.11n	*	5710	83.63	-	-	72.14	35.19	11.5	35.2	332	14	Α	Н
HT40		5949.75	51.1	-17.1	68.2	39.08	35.53	11.74	35.25	332	14	Р	Н
CH 142		5449.45	49.99	-24.01	74	39.12	34.83	11.2	35.16	102	297	Р	٧
5710MHz		5465.83	47.88	-20.32	68.2	36.94	34.85	11.25	35.16	102	297	Р	V
		5423.32	40.34	-13.66	54	29.52	34.78	11.2	35.16	102	297	Α	V
	*	5710	98.02	-	-	86.53	35.19	11.5	35.2	102	297	Р	V
	*	5710	89	-	-	77.51	35.19	11.5	35.2	102	297	Α	V
		5850	50.18	-18.02	68.2	38.43	35.38	11.6	35.23	102	297	Р	V

Remark

TEL: 886-3-327-3456 Page Number: C20 of C25

^{1.} No other spurious found.

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

Band 3 - Straddle Channel

Report No. : FR852420-01D

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)		Avg. (P/A)	(H/V)
		11420	46.19	-27.81	74	47.36	38.32	17.55	57.5	100	0	Р	Н
		17130	49.13	-19.07	68.2	41.89	41.91	20.73	55.77	100	0	Р	Н
802.11n													Н
HT40													Н
CH 142		11420	45.94	-28.06	74	47.11	38.32	17.55	57.5	100	0	Р	V
5710MHz		17130	49.13	-19.07	68.2	41.89	41.91	20.73	55.77	100	0	Р	V
													V
													V
Remark		o other spurio											
	2. Al	2. All results are PASS against Peak and Average limit line.											

TEL: 886-3-327-3456 : C21 of C25 Page Number

Band 3 - Straddle Channel WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No. : FR852420-01D

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)	(H/V)
		5381.59	48.89	-25.11	74	38.15	34.74	11.15	35.15	400	50	Р	Н
		5459.98	48	-26	74	37.13	34.83	11.2	35.16	400	50	Р	Н
		5431.51	42.02	-11.98	54	31.17	34.81	11.2	35.16	400	50	Α	Н
	*	5690	88.43	-	-	77	35.17	11.46	35.2	400	50	Р	Н
802.11ac	*	5690	79.8	-	-	68.37	35.17	11.46	35.2	400	50	Α	Н
VHT80		5927.2	50.44	-17.76	68.2	38.49	35.5	11.69	35.24	400	50	Р	Н
CH 138		5423.71	48.87	-25.13	74	38.05	34.78	11.2	35.16	100	118	Р	V
5690MHz		5465.83	48.42	-19.78	68.2	37.48	34.85	11.25	35.16	100	118	Р	V
		5399.53	42.27	-11.73	54	31.52	34.76	11.15	35.16	100	118	Α	V
	*	5690	92.15	-	-	80.72	35.17	11.46	35.2	100	118	Р	V
	*	5690	84.17	-	-	72.74	35.17	11.46	35.2	100	118	Α	V
		5870.5	49.79	-18.41	68.2	37.97	35.41	11.65	35.24	100	118	Р	V

Remark

TEL: 886-3-327-3456 Page Number: C22 of C25

^{1.} No other spurious found.

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

Band 3 - Straddle Channel WIFI 802.11ac VHT80 (Harmonic @ 3m)

Report No. : FR852420-01D

WIFI Ant. 1	Note	Frequency	Level	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Avg.	
· · ·		11380	47.03	-26.97	74	48.35	38.28	17.5	57.58	100	0	Р	Н
		17070	50	-18.2	68.2	42.75	42.01	20.7	55.79	100	0	Р	Н
802.11ac													Н
VHT80													Н
CH 138		11380	45.96	-28.04	74	47.28	38.28	17.5	57.58	100	0	Р	٧
5690MHz		17070	49.52	-18.68	68.2	42.27	42.01	20.7	55.79	100	0	Р	V
													٧
													٧
Remark		o other spurio		- 1 D 1		. P Y P.				1	1	1	

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

TEL: 886-3-327-3456 : C23 of C25 Page Number

Note symbol

Report No. : FR852420-01D

*	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

TEL: 886-3-327-3456 Page Number : C24 of C25

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

Report No.: FR852420-01D

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
- 2. Level(dBµV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- 3. 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) + Path 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) + Path Loss(dB) + Read Level(dB μ V) 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 μ V/m) Limit Line(dB μ 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".

TEL: 886-3-327-3456 Page Number : C25 of C25

Appendix D. Radiated Spurious Emission

Toot Engineer	Jesse Wang, Stan Hsieh, and Lance Chuang	Temperature :	22~24°C
Test Engineer :	Jesse Wang, Stan Hislen, and Lance Chidang	Relative Humidity :	51~53%

Report No. : FR852420-01D

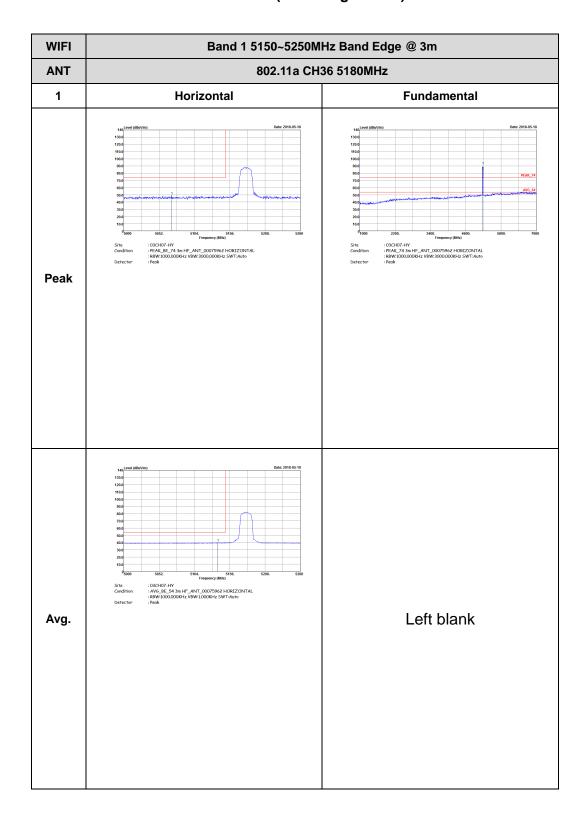
Note symbol

-L	Low channel location
-R	High channel location

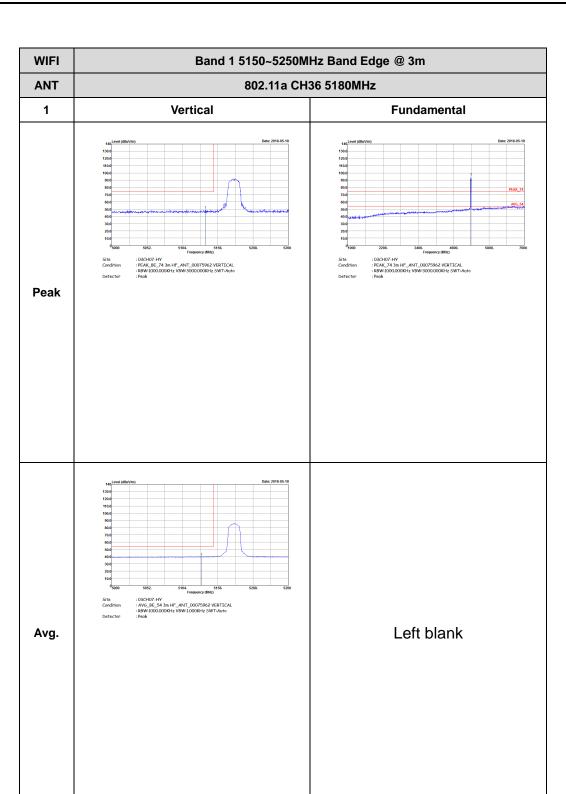
TEL: 886-3-327-3456 Page Number: D1 of D94

Band 1 - 5150~5250MHz WIFI 802.11a (Band Edge @ 3m)

Report No.: FR852420-01D



TEL: 886-3-327-3456 Page Number: D2 of D94



Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number: D3 of D94

WIFI Band 1 5150~5250MHz Band Edge @ 3m ANT 802.11a CH44 5220MHz - L 1 Horizontal **Fundamental** : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000,000KHz VBW:3000,000KHz SWT:Auto : Peak Peak : 03CH07-H7 : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : Peak Left blank Avg.

Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number : D4 of D94

WIFI Band 1 5150~5250MHz Band Edge @ 3m $\,$ ANT 802.11a CH44 5220MHz - R 1 Horizontal **Fundamental** : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000,000KHz VBW:3000,000KHz SWT:Auto : Peak Peak Left blank : 03CH07-H7 : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : Peak Left blank Avg.

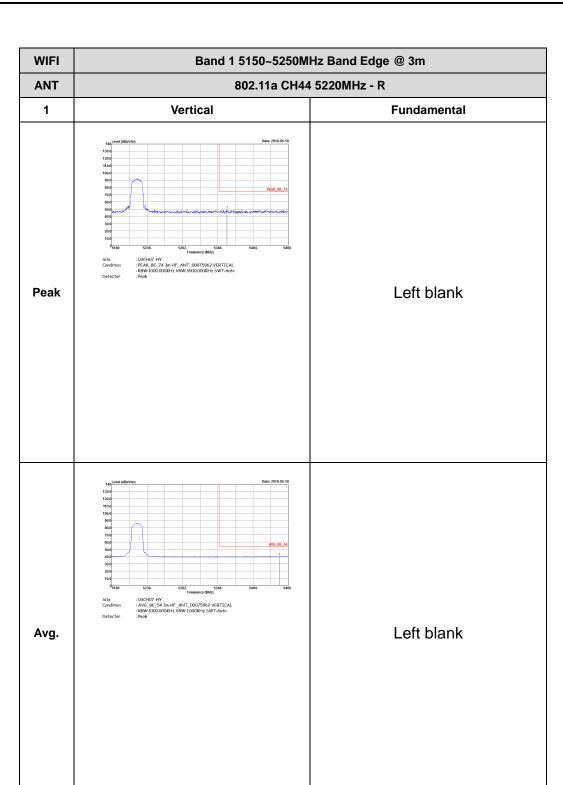
Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number: D5 of D94

WIFI Band 1 5150~5250MHz Band Edge @ 3m ANT 802.11a CH44 5220MHz - L 1 Vertical **Fundamental** : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto : Peak : 03CH07-HY : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto : Peak Peak : 03CH07-HY : AV6_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : Peak Left blank Avg.

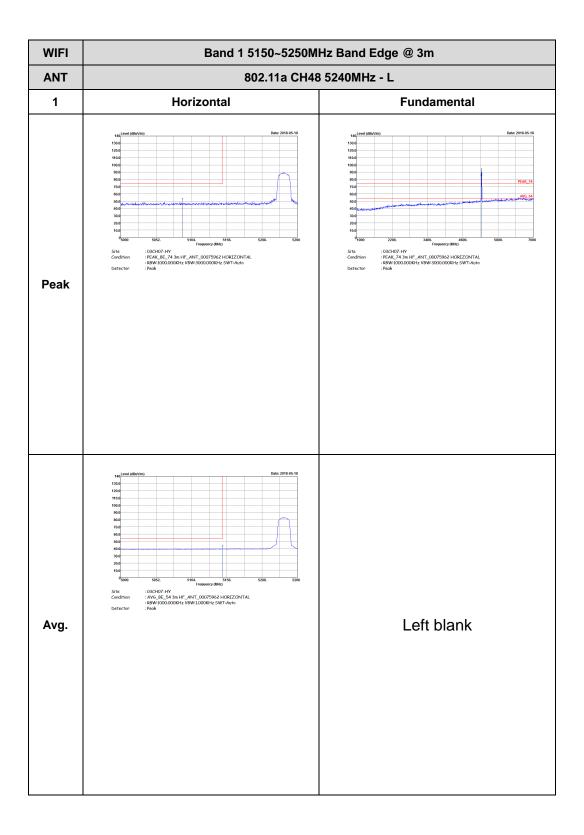
Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number: D6 of D94



TEL: 886-3-327-3456 Page Number : D7 of D94





TEL: 886-3-327-3456 Page Number: D8 of D94

WIFI Band 1 5150~5250MHz Band Edge @ 3m $\,$ ANT 802.11a CH48 5240MHz - R 1 Horizontal **Fundamental** : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000,000KHz VBW:3000,000KHz SWT:Auto : Peak Peak Left blank : 03CH07-H7 : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : Peak Left blank Avg.

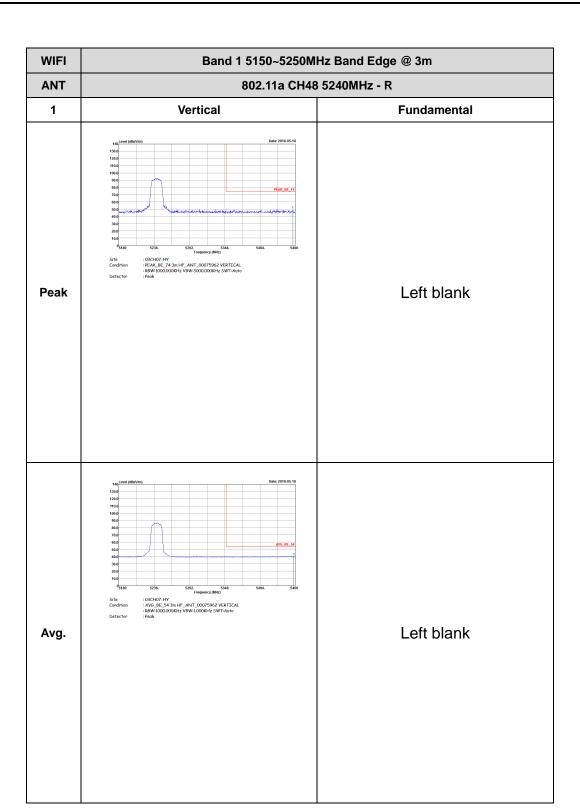
Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number : D9 of D94

WIFI Band 1 5150~5250MHz Band Edge @ 3m ANT 802.11a CH48 5240MHz - L 1 Vertical **Fundamental** : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto : Peak : 03CH07-HY : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto : Peak Peak : 03CH07-HY : AV6_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : Peak Left blank Avg.

Report No. : FR852420-01D

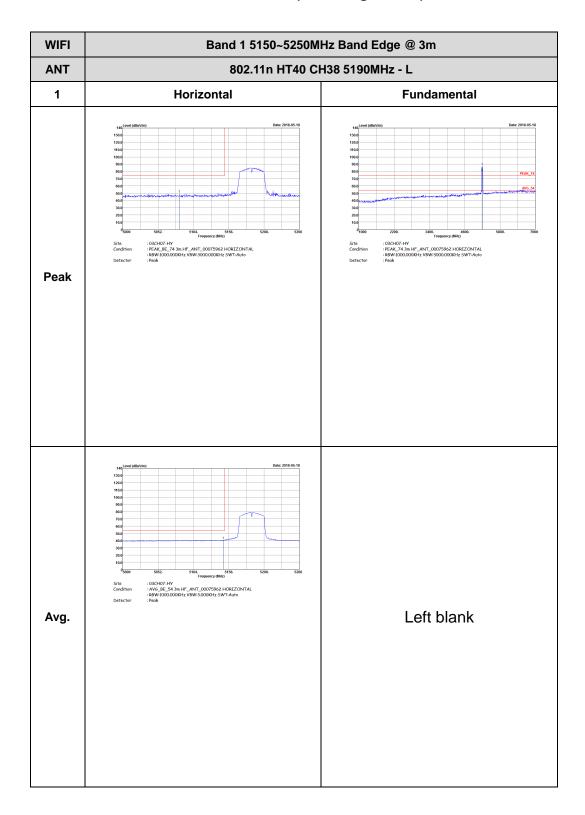
TEL: 886-3-327-3456 Page Number : D10 of D94



TEL: 886-3-327-3456 Page Number : D11 of D94

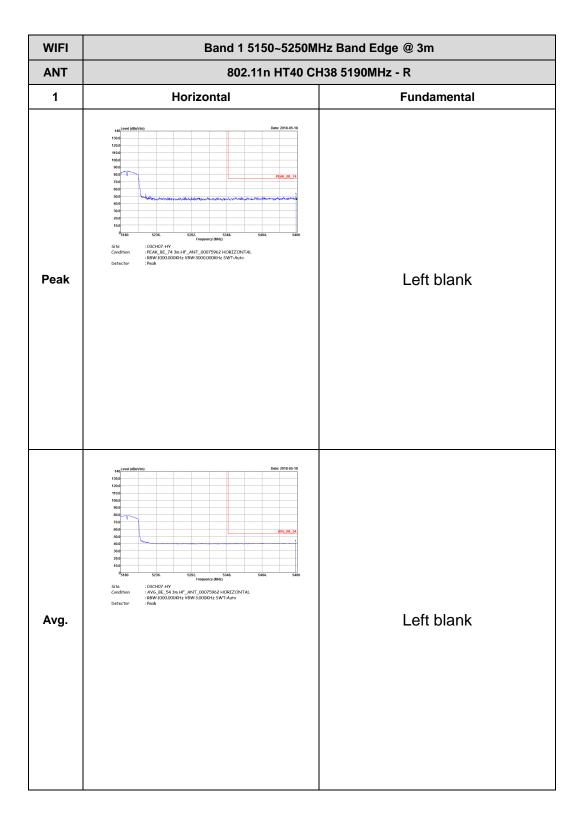
Band 1 5150~5250MHz WIFI 802.11n HT40 (Band Edge @ 3m)

Report No.: FR852420-01D

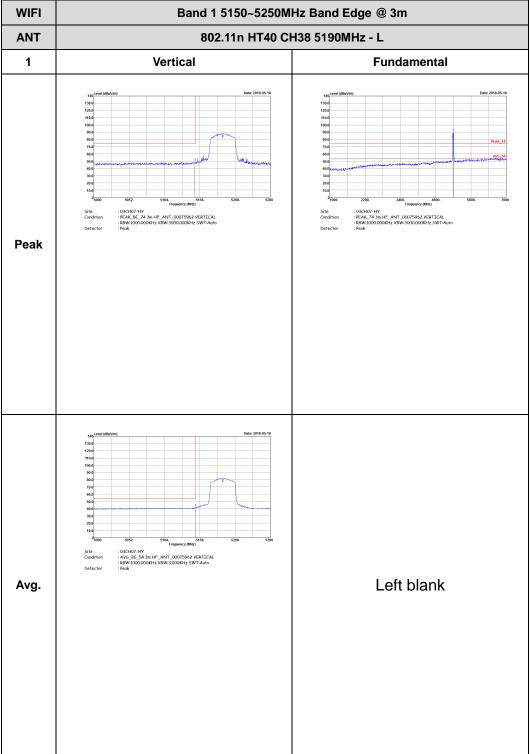


TEL: 886-3-327-3456 Page Number : D12 of D94





TEL: 886-3-327-3456 Page Number: D13 of D94



TEL: 886-3-327-3456 Page Number : D14 of D94

WIFI Band 1 5150~5250MHz Band Edge @ 3m ANT 802.11n HT40 CH38 5190MHz - R 1 Vertical **Fundamental** : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto : Peak Peak Left blank : 03CH07-HV : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto : Peak Left blank Avg.

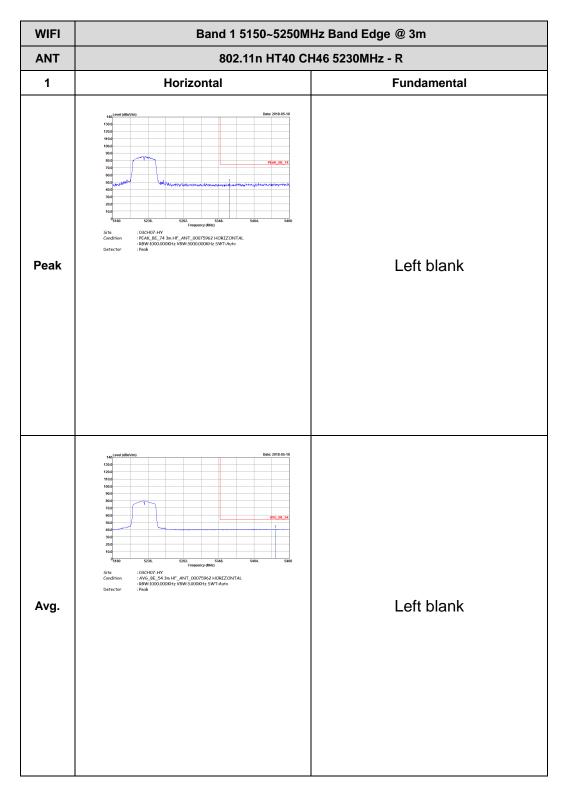
Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number : D15 of D94

WIFI Band 1 5150~5250MHz Band Edge @ 3m ANT 802.11n HT40 CH46 5230MHz - L 1 Horizontal **Fundamental** : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000,000KHz VBW:3000,000KHz SWT:Auto : Peak Peak : 03CH07-HY : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto : Peak Left blank Avg.

Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number: D16 of D94



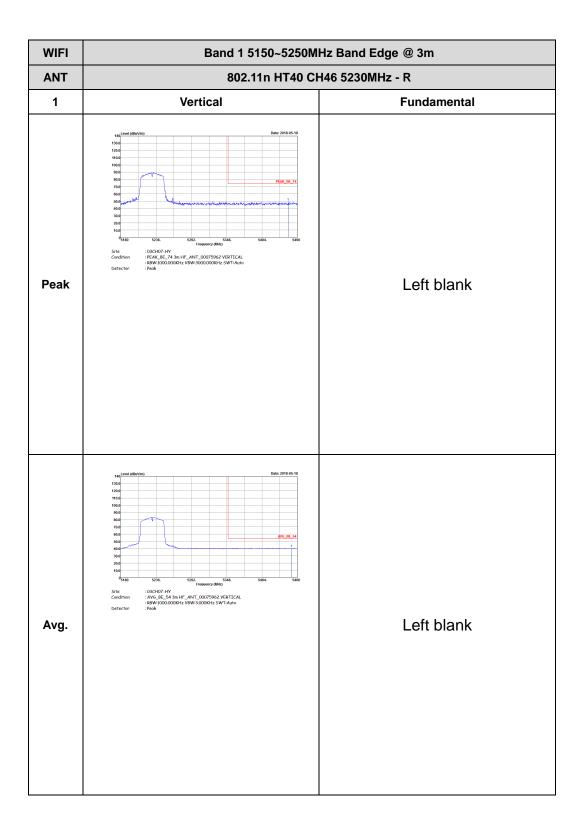
TEL: 886-3-327-3456 Page Number : D17 of D94

WIFI Band 1 5150~5250MHz Band Edge @ 3m ANT 802.11n HT40 CH46 5230MHz - L 1 Vertical **Fundamental** : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto : Peak : 03CH07-HY : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto : Peak Peak : 03CH07-HY : AV6_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto : Peak Left blank Avg.

Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number : D18 of D94

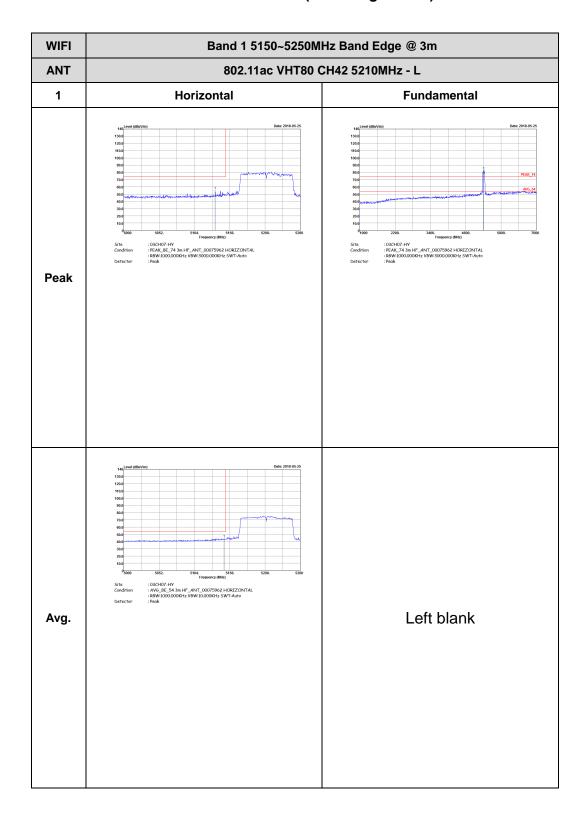




TEL: 886-3-327-3456 Page Number : D19 of D94

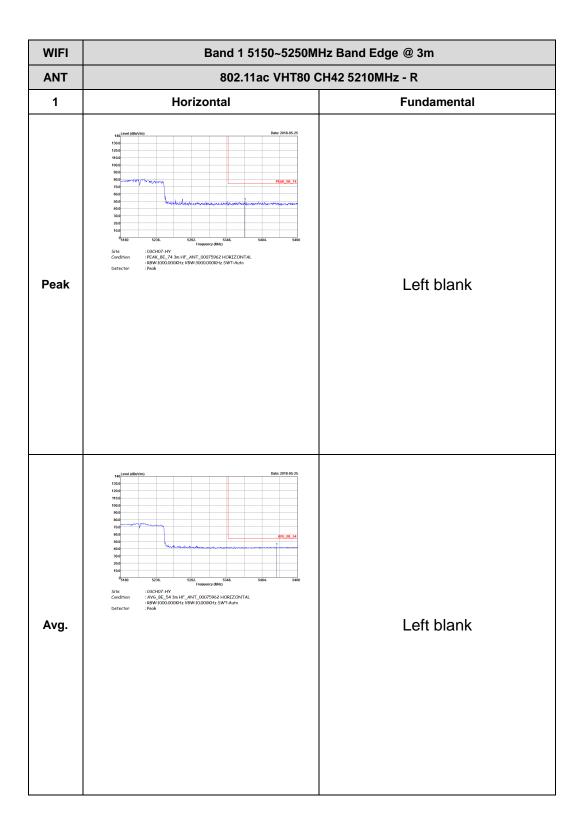
Band 1 5150~5250MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No.: FR852420-01D



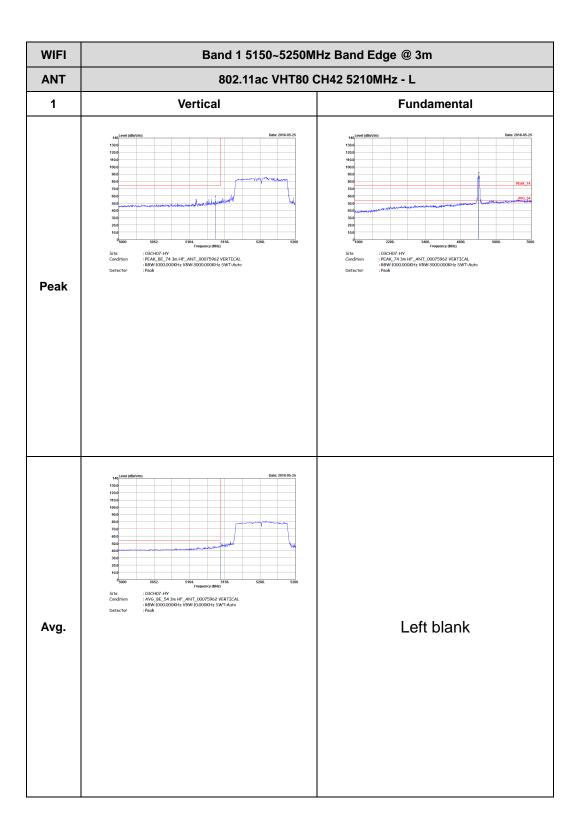
TEL: 886-3-327-3456 Page Number : D20 of D94





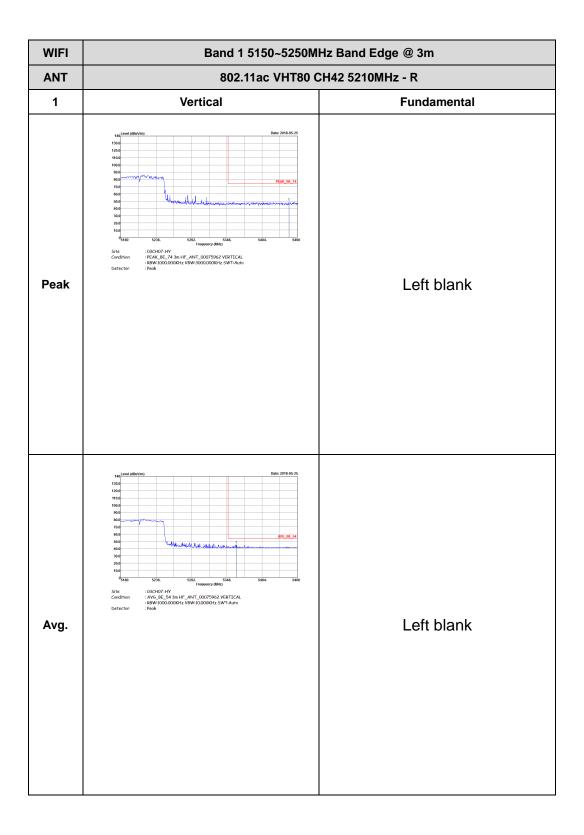
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TEL: 886-3-327-3456 Page Number : D22 of D94

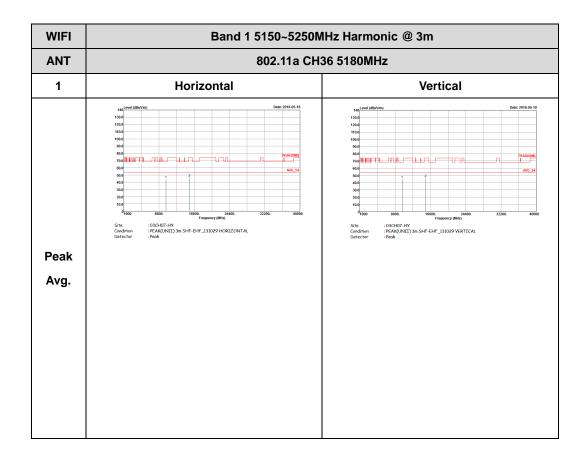




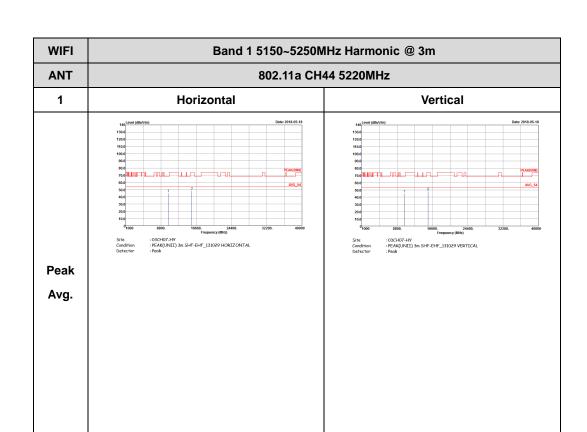
TEL: 886-3-327-3456 Page Number : D23 of D94

Band 1 - 5150~5250MHz WIFI 802.11a (Harmonic @ 3m)

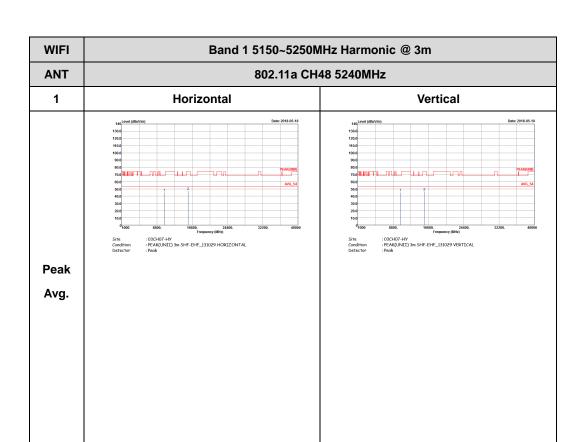
Report No.: FR852420-01D



TEL: 886-3-327-3456 Page Number : D24 of D94



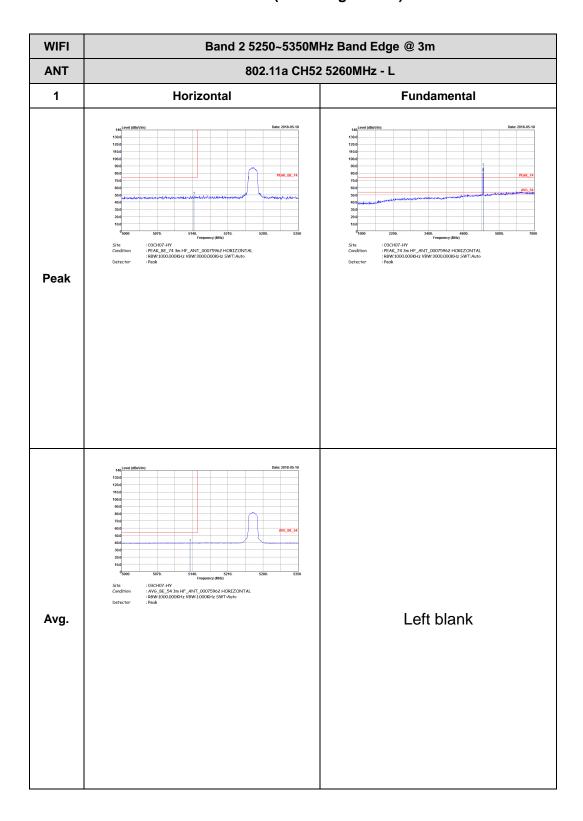
TEL: 886-3-327-3456 Page Number : D25 of D94



TEL: 886-3-327-3456 Page Number : D26 of D94

Band 2 - 5250~5350MHz WIFI 802.11a (Band Edge @ 3m)

Report No.: FR852420-01D

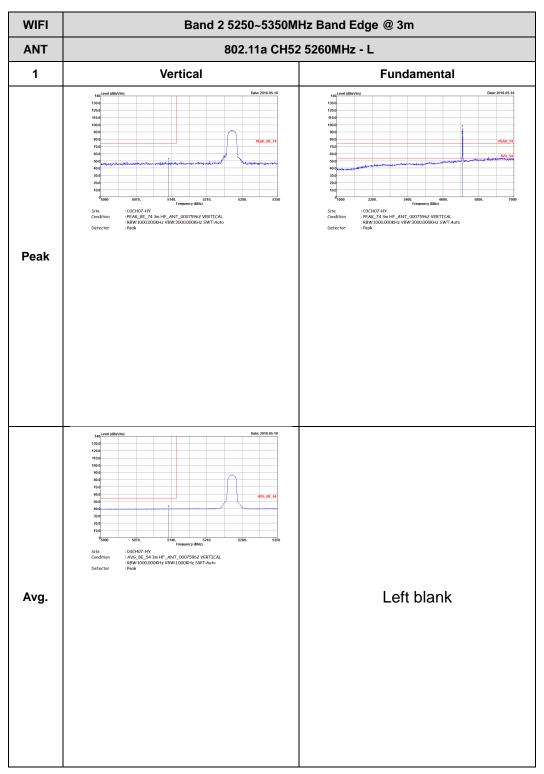


TEL: 886-3-327-3456 Page Number : D27 of D94

WIFI Band 2 5250~5350MHz Band Edge @3mANT 802.11a CH52 5260MHz - R 1 Horizontal **Fundamental** : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000,000KHz VBW:3000,000KHz SWT:Auto : Peak Peak Left blank : 03CH07-H7 : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : Peak Left blank Avg.

Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number: D28 of D94



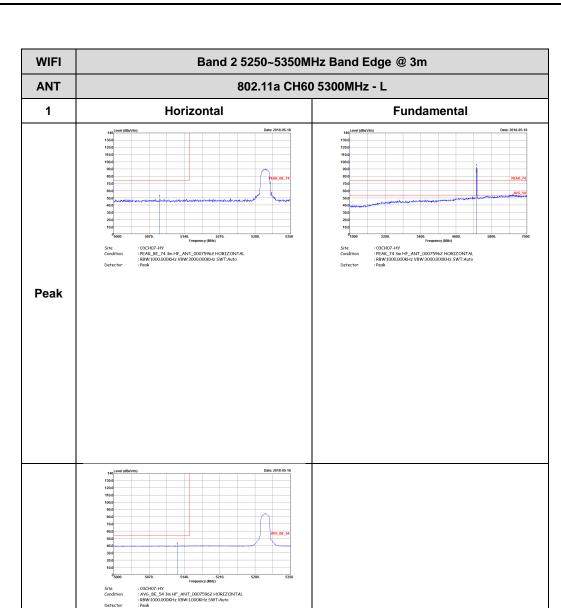
TEL: 886-3-327-3456 Page Number : D29 of D94

WIFI Band 2 5250~5350MHz Band Edge @3mANT 802.11a CH52 5260MHz - R 1 Vertical **Fundamental** Left blank Peak : 03CH07-HY : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : Peak Left blank Avg.

Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number : D30 of D94

Avg.



Left blank

Report No. : FR852420-01D

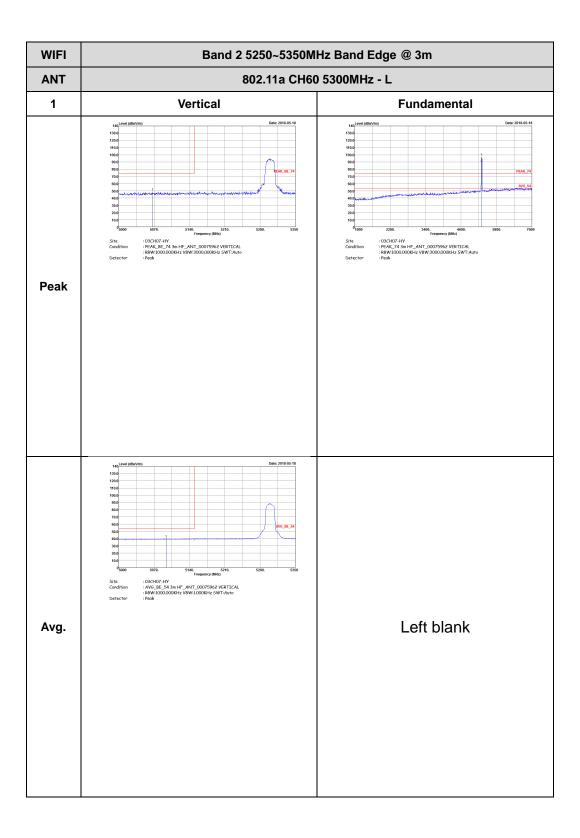
TEL: 886-3-327-3456 Page Number : D31 of D94 FAX: 886-3-328-4978

WIFI Band 2 5250~5350MHz Band Edge @3mANT 802.11a CH60 5300MHz - R 1 Horizontal **Fundamental** Peak Left blank : 03CH07-HY : AV6_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : Peak Left blank Avg.

Report No. : FR852420-01D

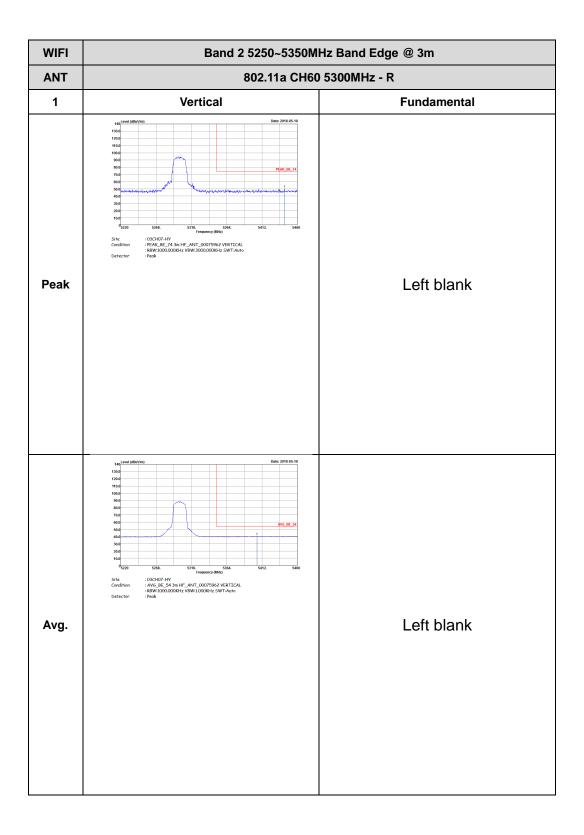
TEL: 886-3-327-3456 Page Number: D32 of D94





TEL: 886-3-327-3456 Page Number: D33 of D94





TEL: 886-3-327-3456 Page Number : D34 of D94

WIFI Band 2 5250~5350MHz Band Edge @ 3m ANT 802.11a CH64 5320MHz 1 Horizontal **Fundamental** Peak : 03CH07-HY : AV6_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : Peak Left blank Avg.

Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number: D35 of D94

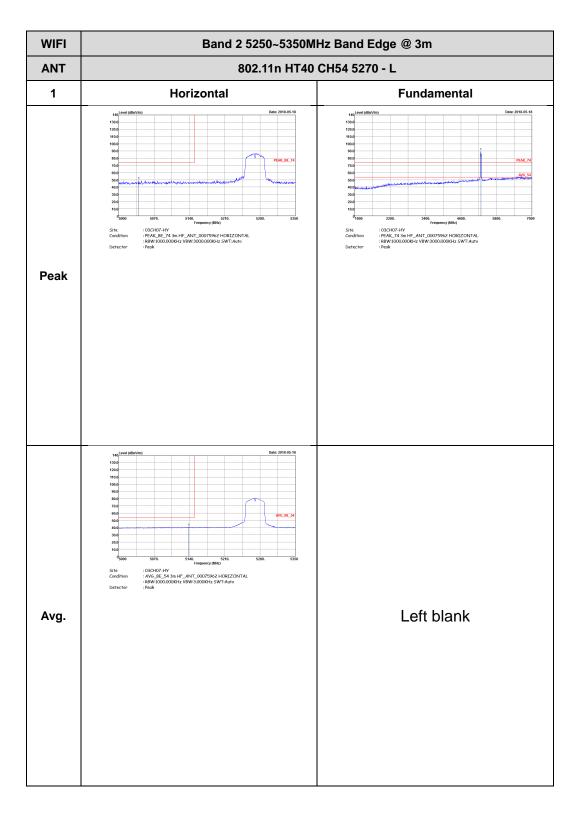
WIFI Band 2 5250~5350MHz Band Edge @ 3m ANT 802.11a CH64 5320MHz 1 Vertical **Fundamental** Peak : 03CH07-HY : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto : Peak Left blank Avg.

Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number: D36 of D94

Band 2 5250~5350MHz WIFI 802.11n HT40 (Band Edge @ 3m)

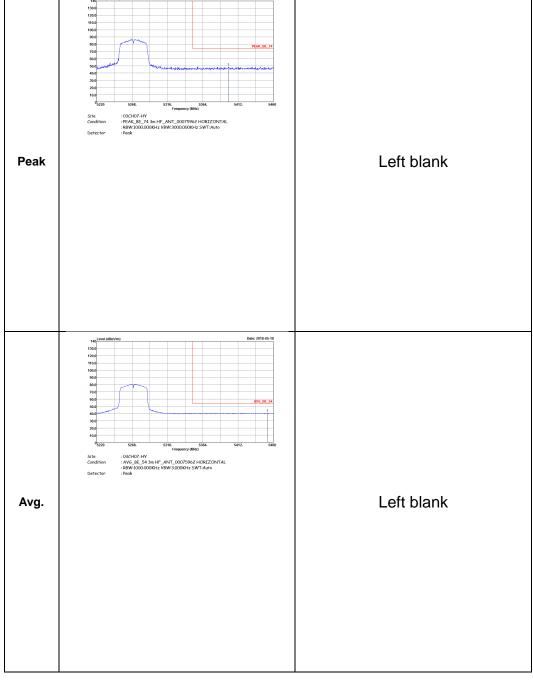
Report No.: FR852420-01D



TEL: 886-3-327-3456 Page Number: D37 of D94

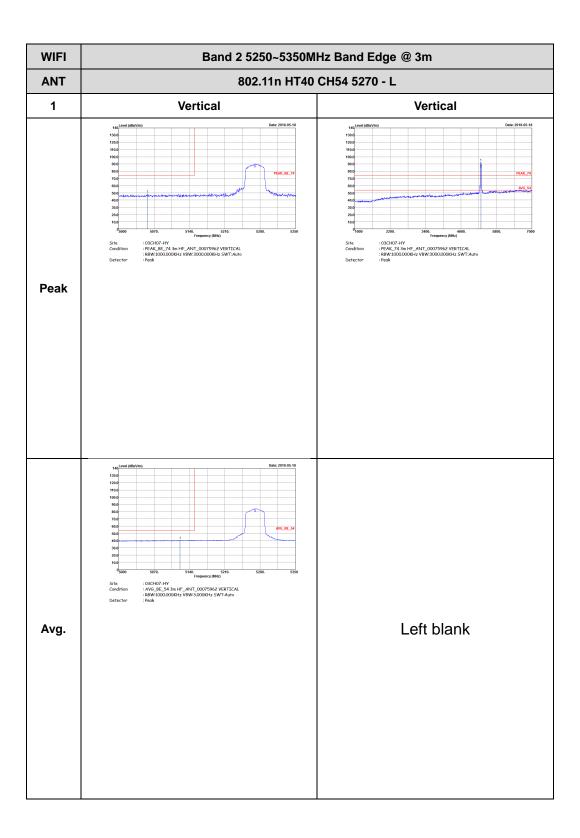
Band 2 5250~5350MHz Band Edge @ 3m WIFI ANT 802.11n HT40 CH54 5270 - R 1 Horizontal **Fundamental** Left blank Peak

Report No. : FR852420-01D



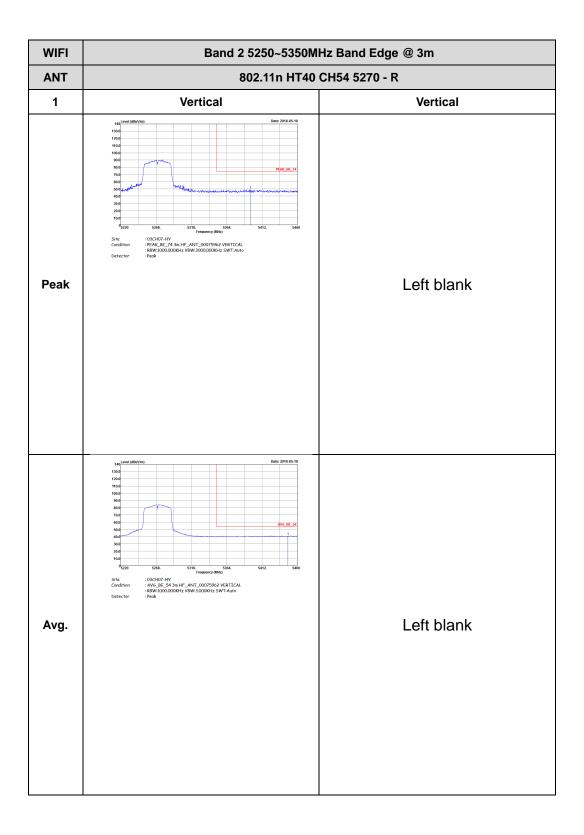
TEL: 886-3-327-3456 Page Number : D38 of D94



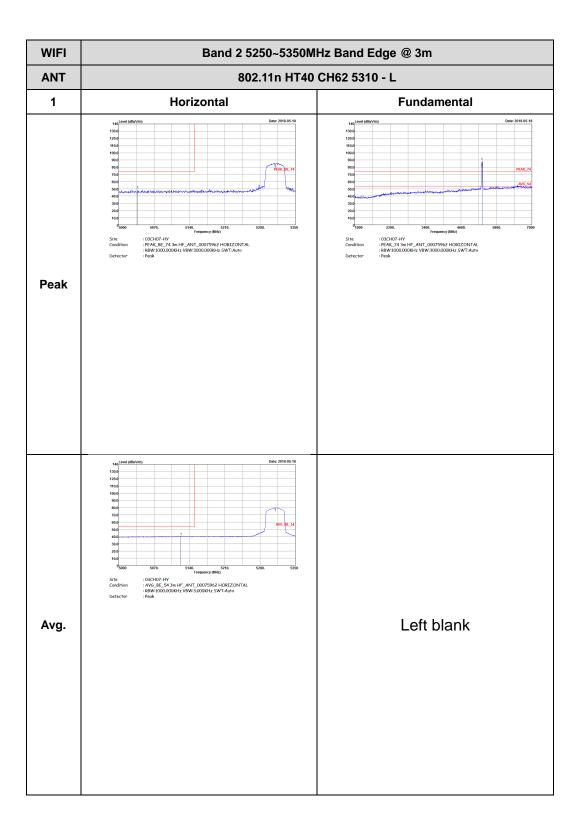


TEL: 886-3-327-3456 Page Number: D39 of D94

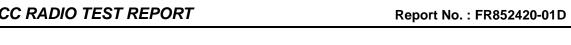
CC RADIO TEST REPORT Report No. : FR852420-01D

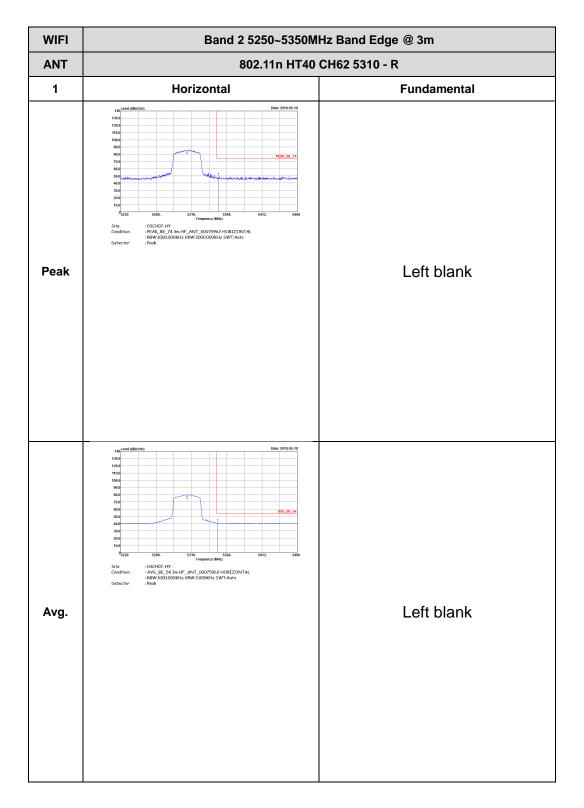


TEL: 886-3-327-3456 Page Number : D40 of D94



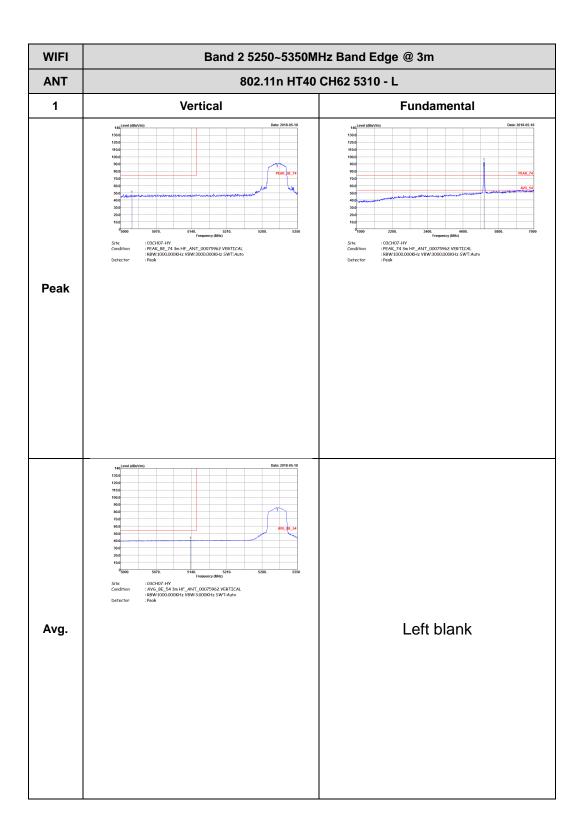
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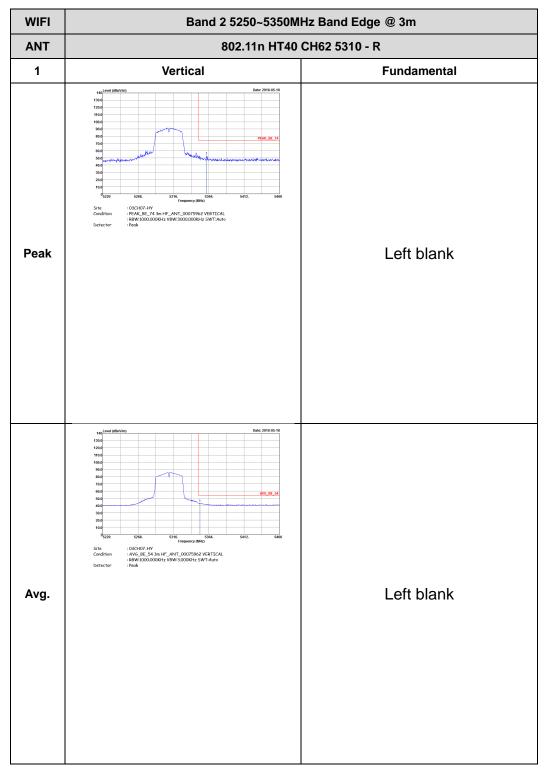


TEL: 886-3-327-3456 Page Number : D42 of D94





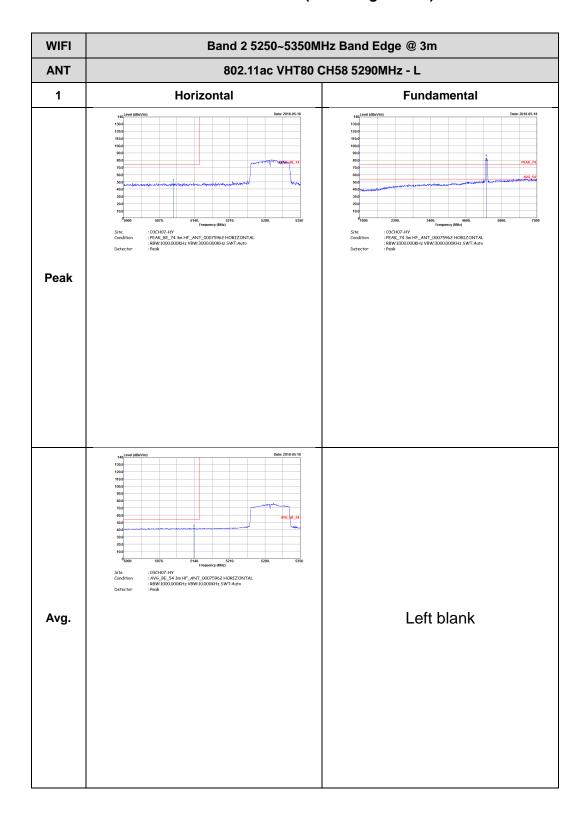
TEL: 886-3-327-3456 Page Number: D43 of D94



TEL: 886-3-327-3456 Page Number : D44 of D94

Band 2 5250~5350MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No.: FR852420-01D



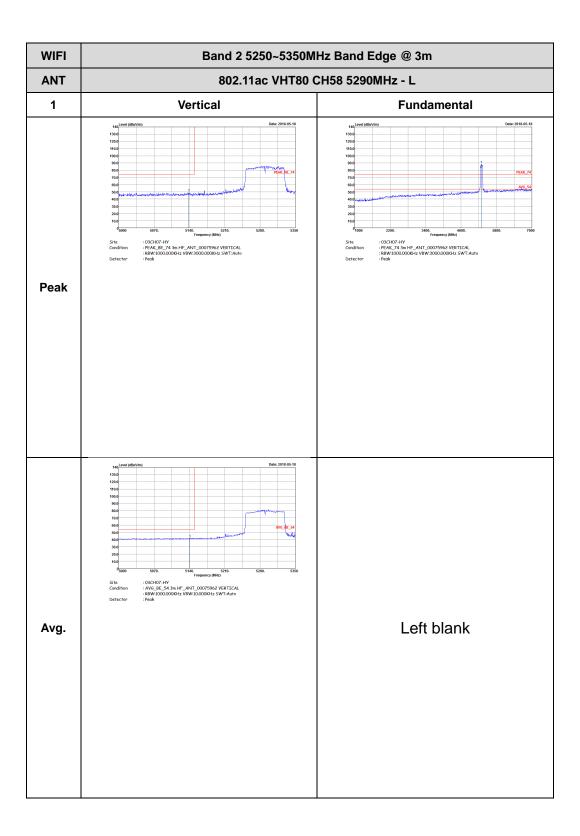
TEL: 886-3-327-3456 Page Number: D45 of D94

Band 2 5250~5350MHz Band Edge @ 3m WIFI ANT 802.11ac VHT80 CH58 5290MHz - R 1 Horizontal **Fundamental** Peak Left blank : 03CH07-HY : AV6_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto : Peak Left blank Avg.

Report No. : FR852420-01D

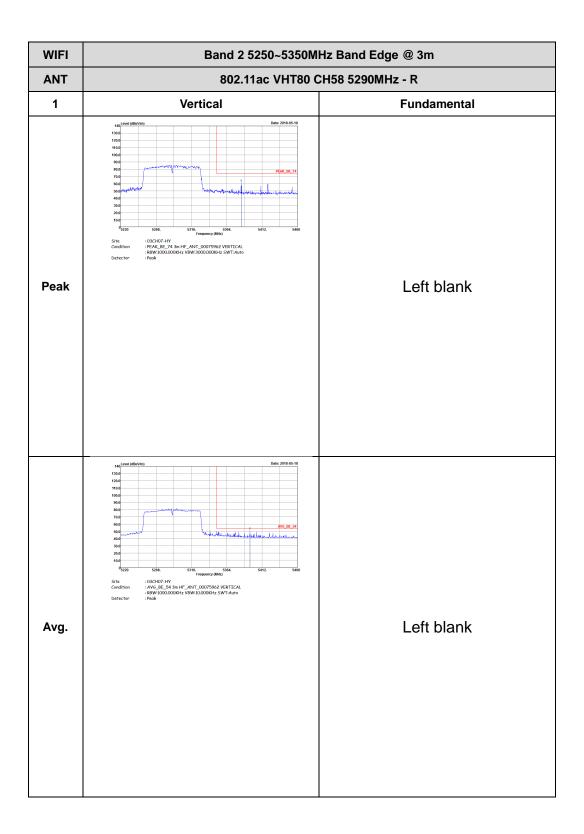
TEL: 886-3-327-3456 Page Number : D46 of D94





TEL: 886-3-327-3456 Page Number: D47 of D94

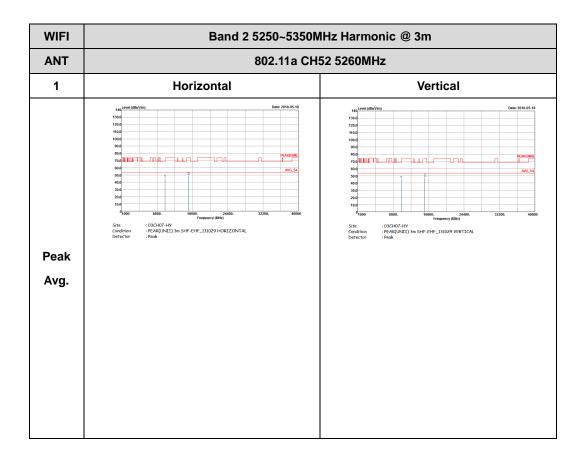




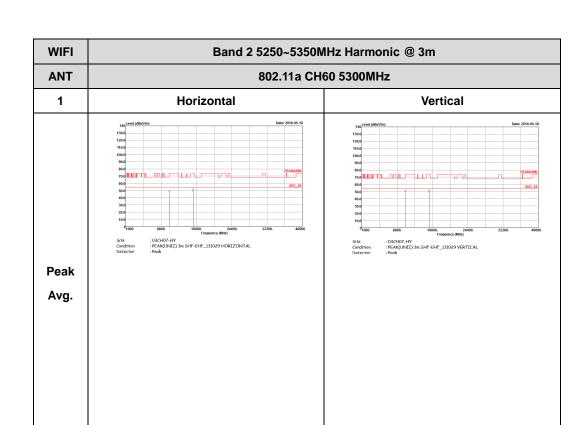
TEL: 886-3-327-3456 Page Number : D48 of D94

Band 2 - 5250~5350MHz WIFI 802.11a (Harmonic @ 3m)

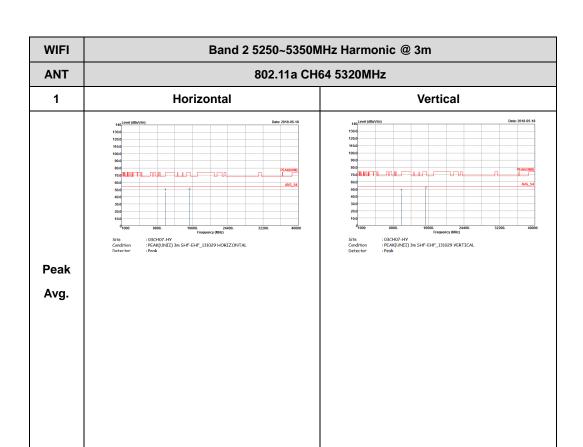
Report No.: FR852420-01D



TEL: 886-3-327-3456 Page Number : D49 of D94



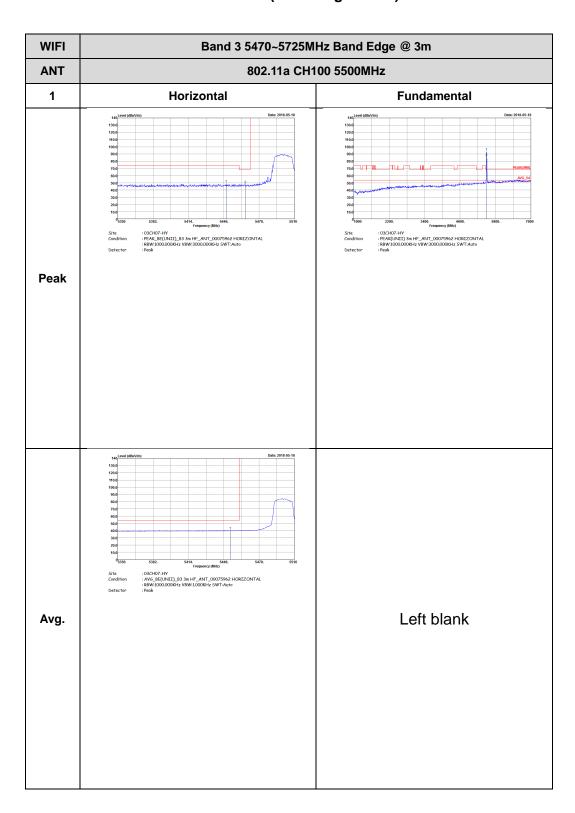
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TEL: 886-3-327-3456 Page Number : D51 of D94

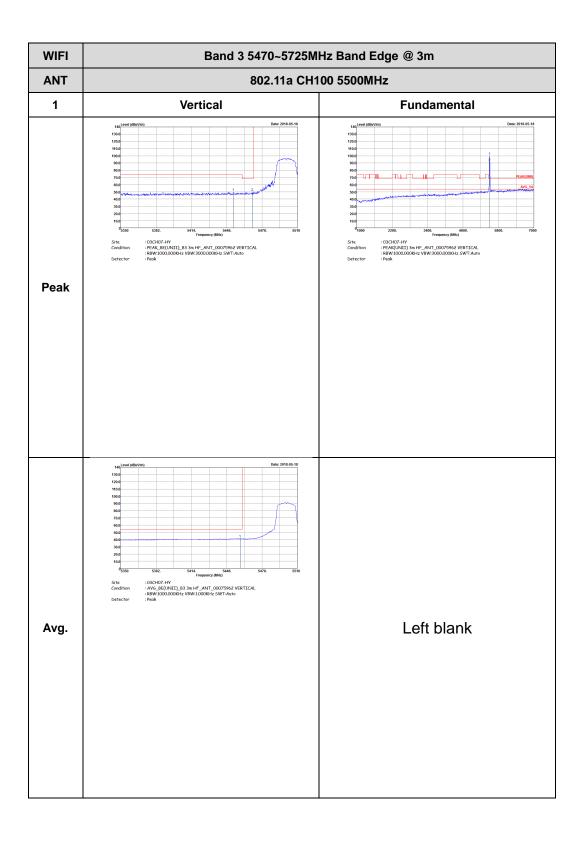
Band 3 - 5470~5725MHz WIFI 802.11a (Band Edge @ 3m)

Report No.: FR852420-01D



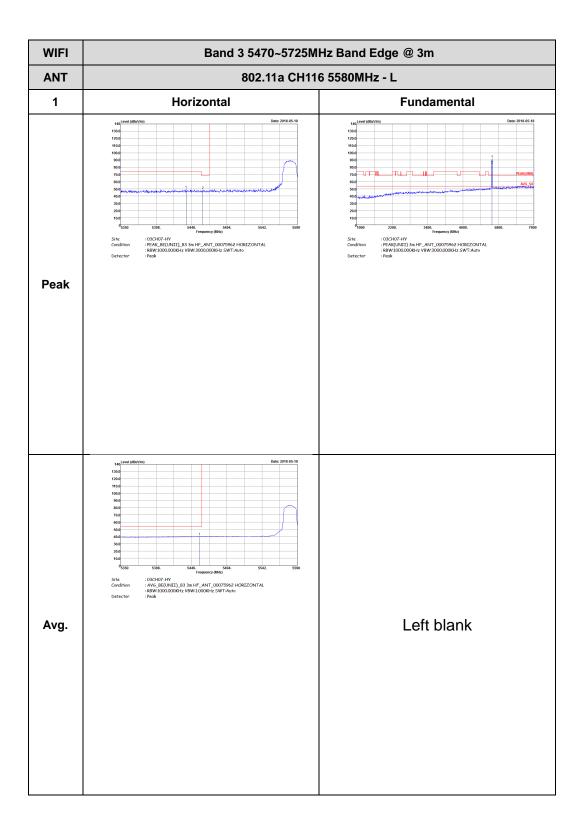
TEL: 886-3-327-3456 Page Number: D52 of D94



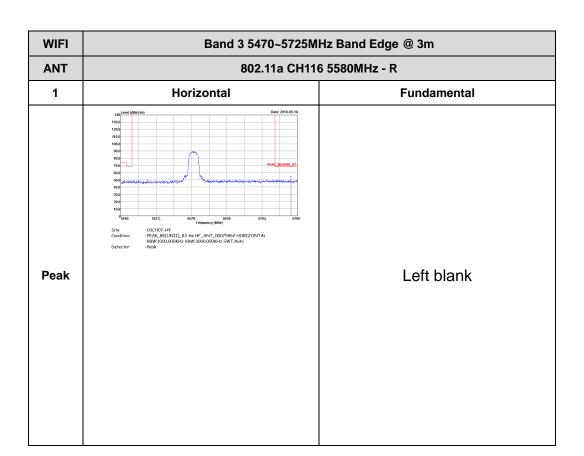


TEL: 886-3-327-3456 Page Number: D53 of D94



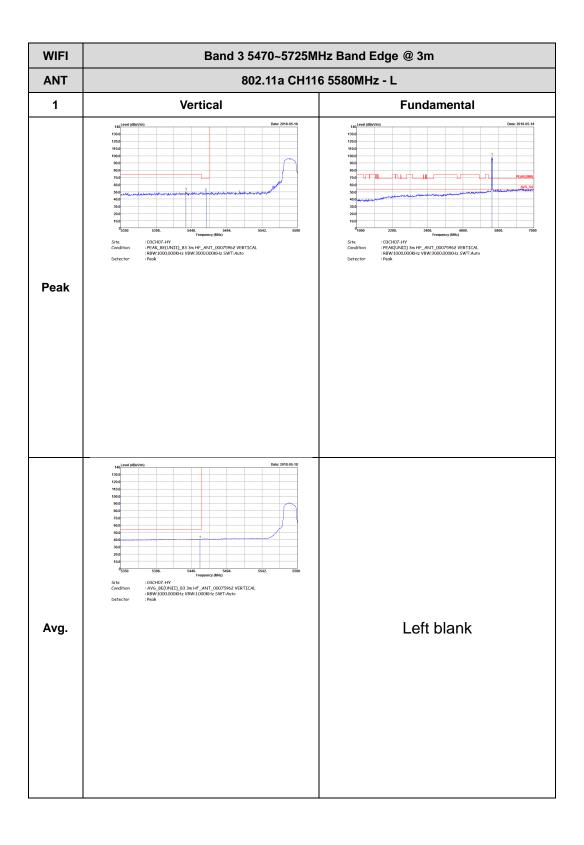


TEL: 886-3-327-3456 Page Number : D54 of D94

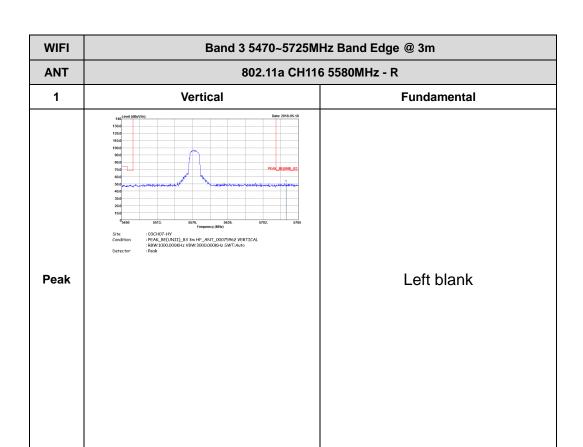


TEL: 886-3-327-3456 Page Number: D55 of D94

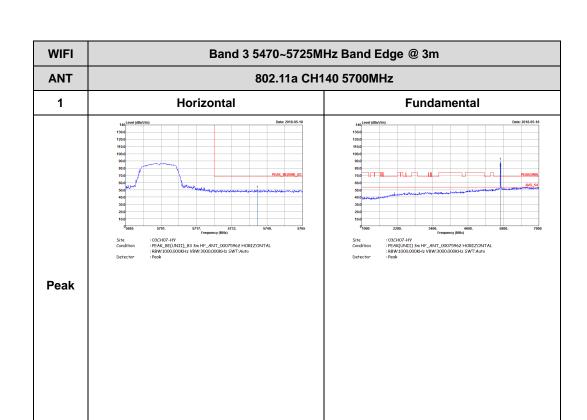




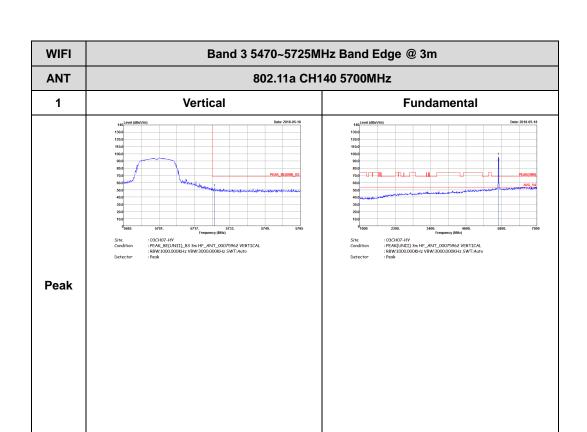
TEL: 886-3-327-3456 Page Number : D56 of D94



TEL: 886-3-327-3456 Page Number : D57 of D94



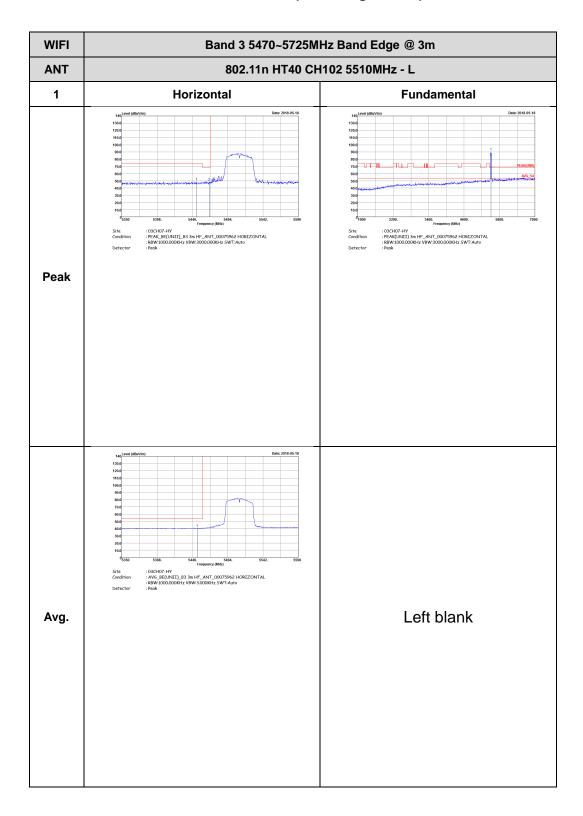
TEL: 886-3-327-3456 Page Number: D58 of D94



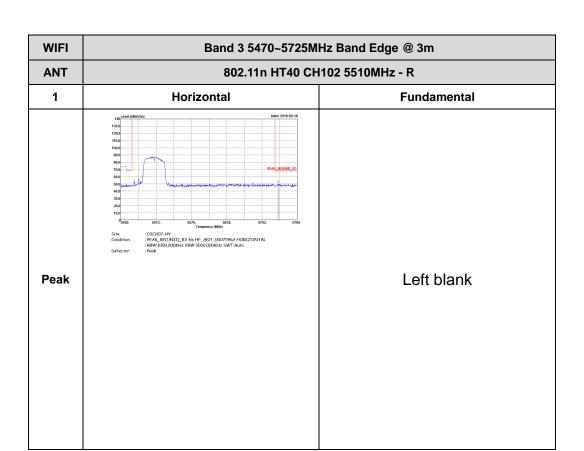
TEL: 886-3-327-3456 Page Number : D59 of D94

Band 3 5470~5725MHz WIFI 802.11n HT40 (Band Edge @ 3m)

Report No.: FR852420-01D



TEL: 886-3-327-3456 Page Number : D60 of D94

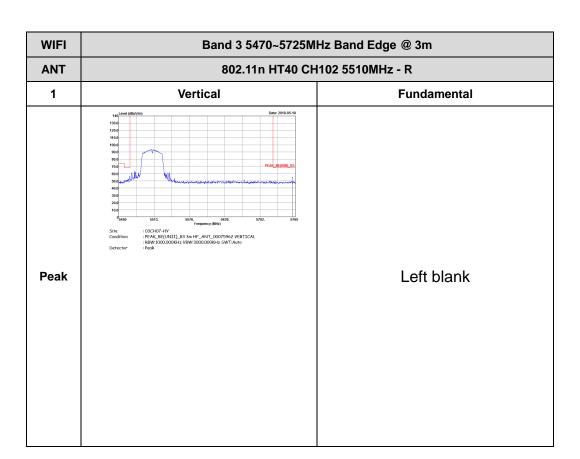


TEL: 886-3-327-3456 Page Number : D61 of D94

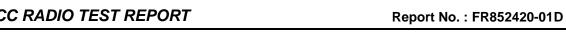
WIFI Band 3 5470~5725MHz Band Edge @ 3m ANT 802.11n HT40 CH102 5510MHz - L 1 Vertical **Fundamental** Peak : 03CH07-HY : AV6_BE(UNII)_B3 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto : Peak Left blank Avg.

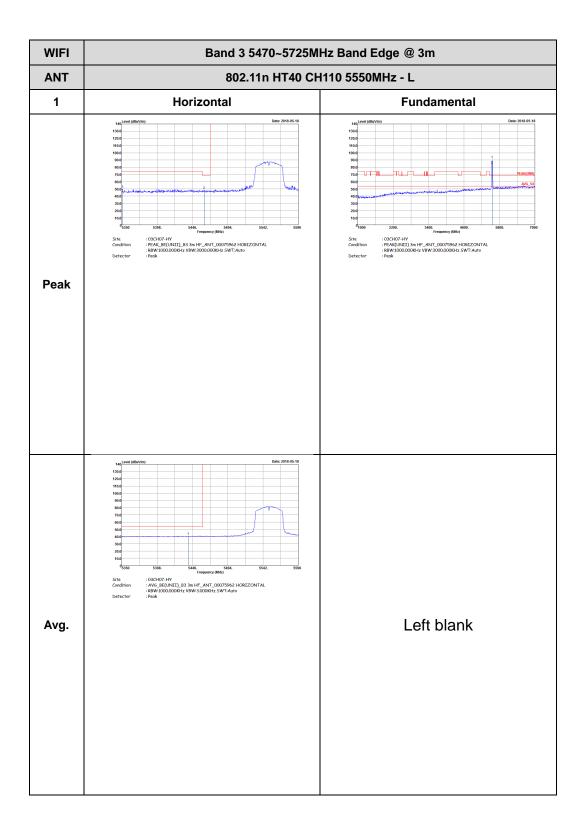
Report No. : FR852420-01D

TEL: 886-3-327-3456 Page Number : D62 of D94

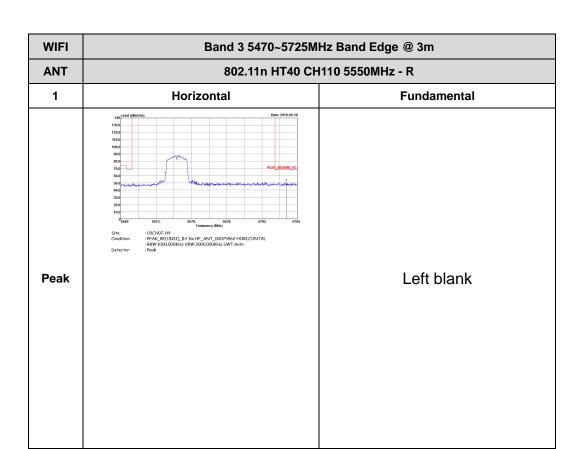


TEL: 886-3-327-3456 Page Number : D63 of D94



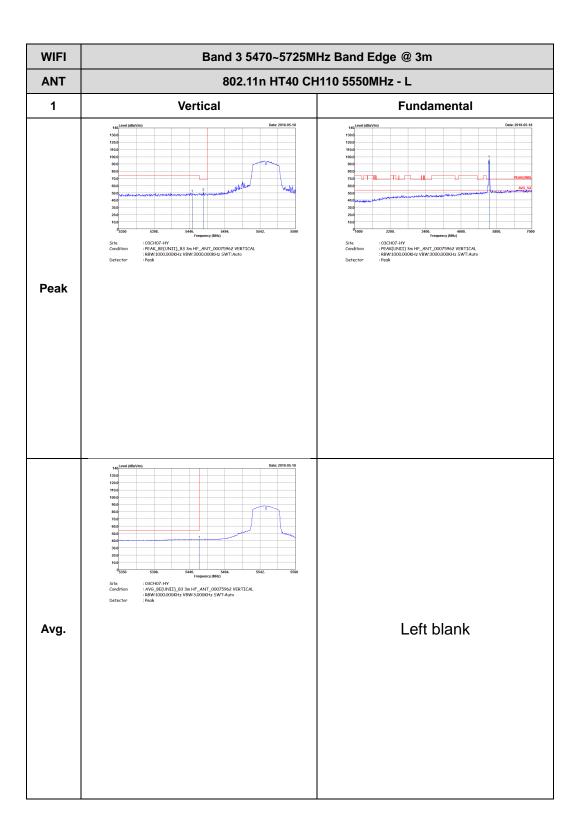


TEL: 886-3-327-3456 Page Number : D64 of D94

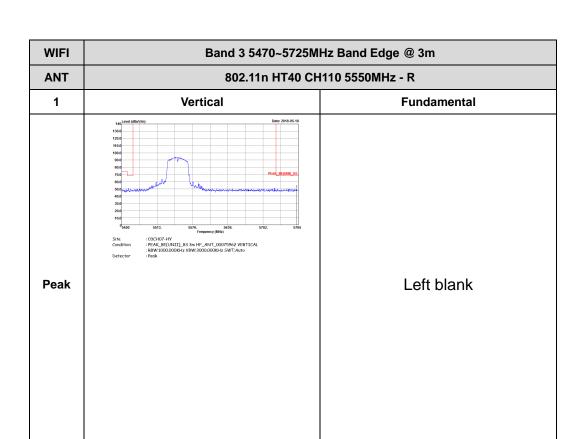


TEL: 886-3-327-3456 Page Number : D65 of D94

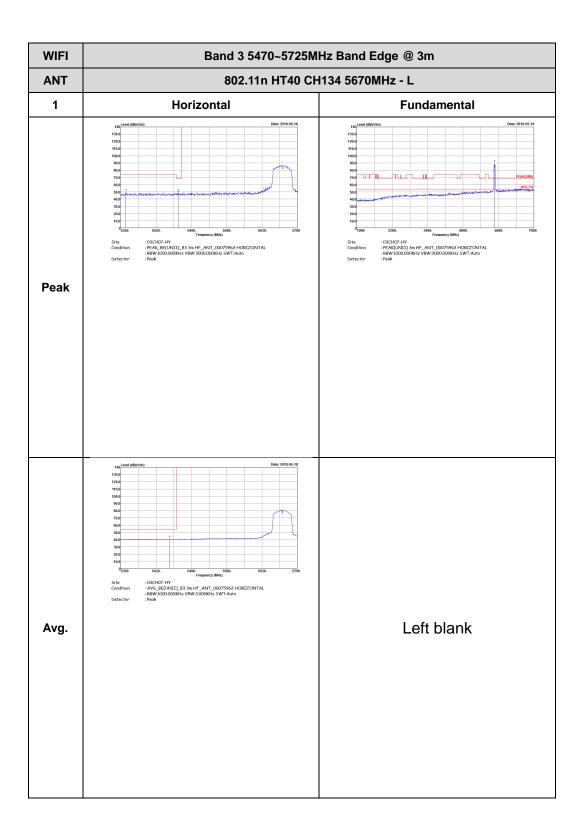




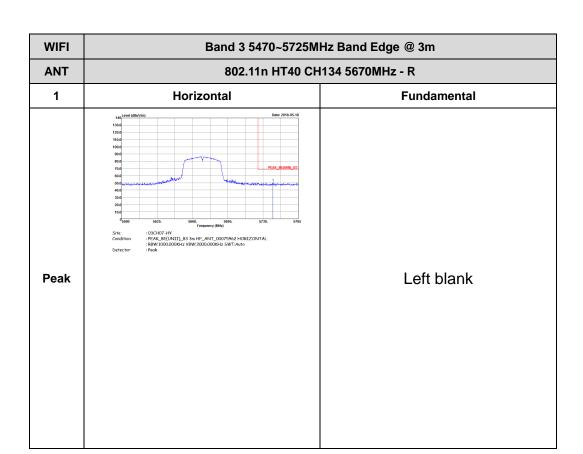
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TEL: 886-3-327-3456 Page Number : D67 of D94

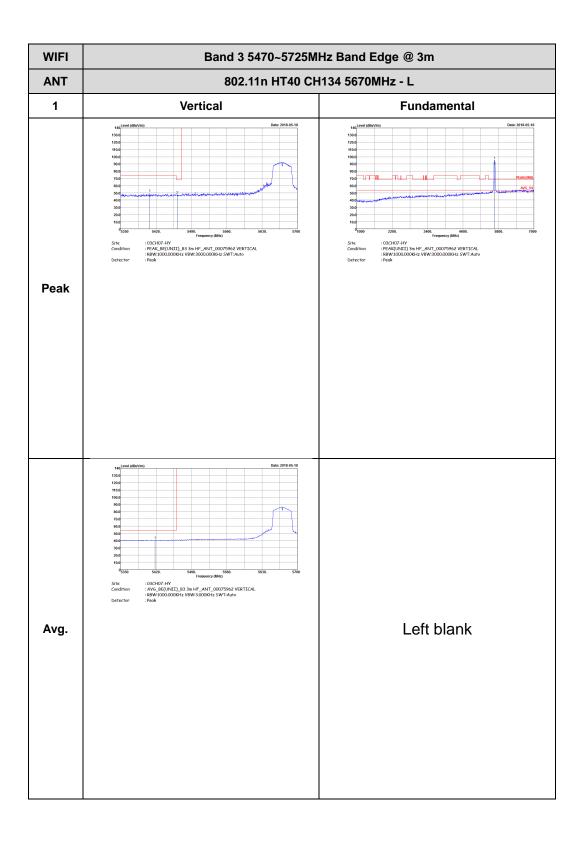


TEL: 886-3-327-3456 Page Number : D68 of D94

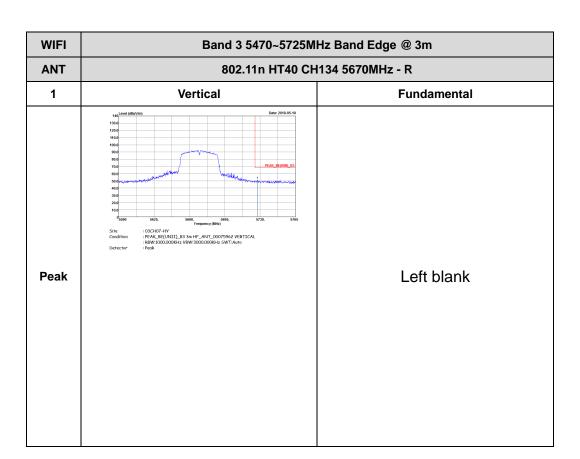


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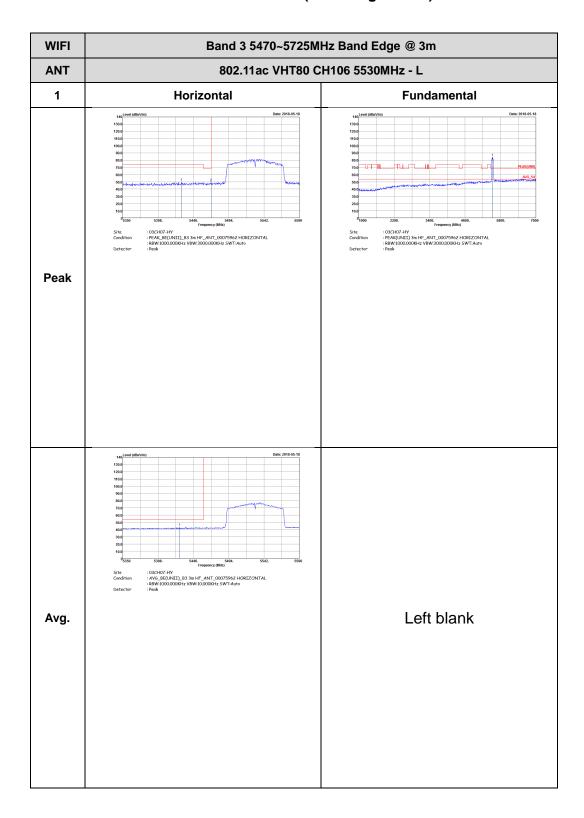
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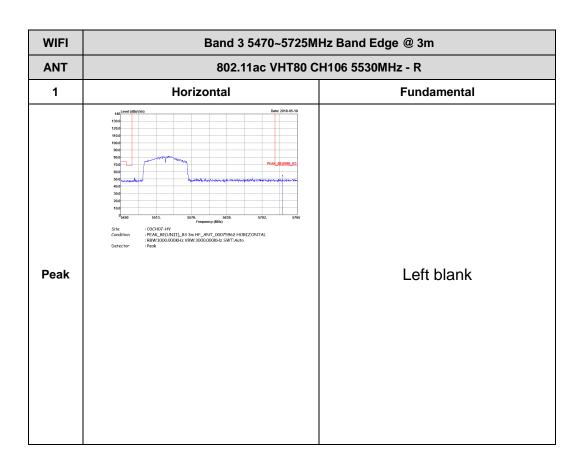
TEL: 886-3-327-3456 Page Number : D71 of D94

Band 3 5470~5725MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

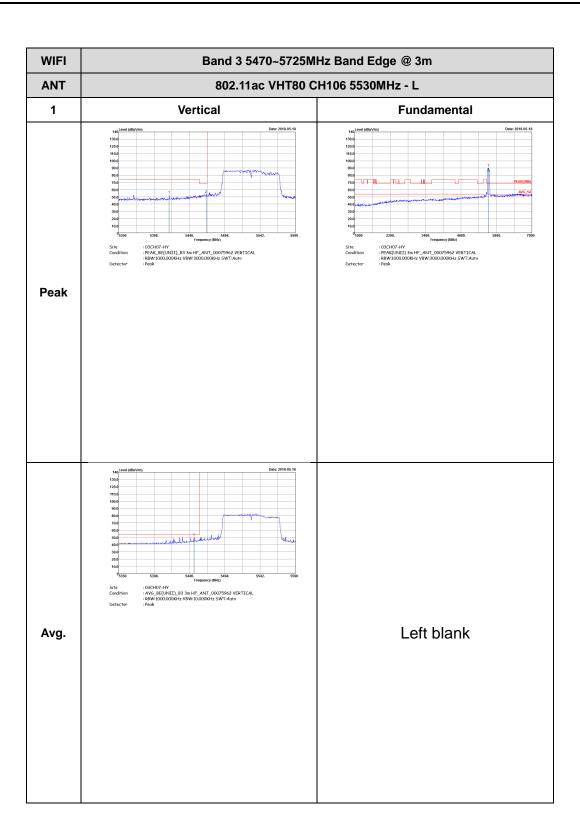
Report No.: FR852420-01D



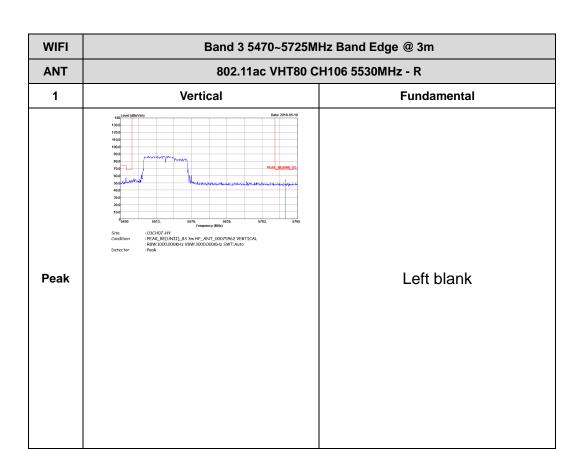
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TEL: 886-3-327-3456 Page Number: D73 of D94



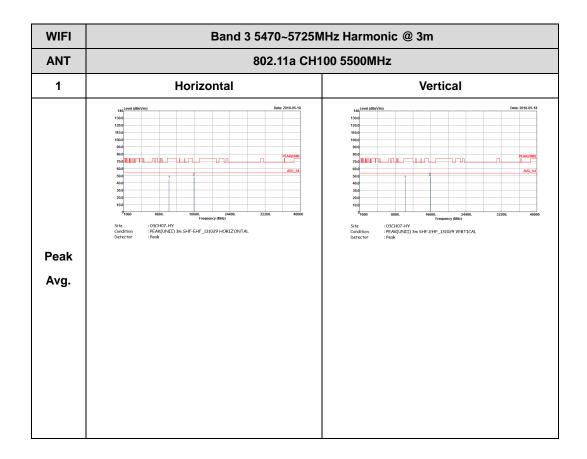
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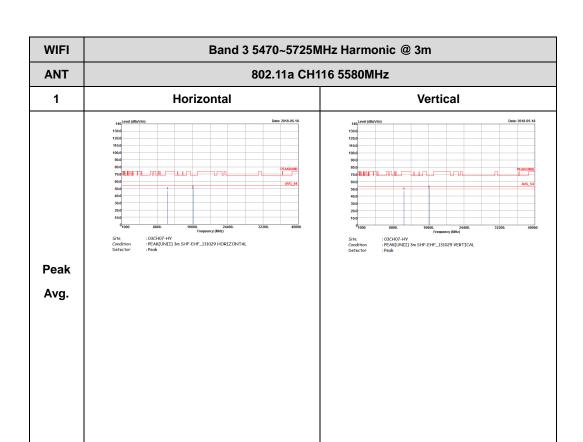
TEL: 886-3-327-3456 Page Number: D75 of D94

Band 3 - 5470~5725MHz WIFI 802.11a (Harmonic @ 3m)

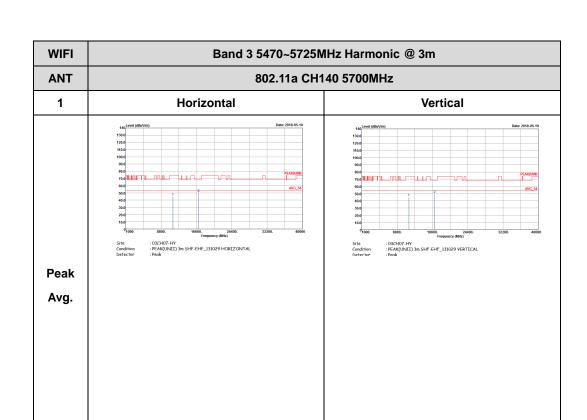
Report No.: FR852420-01D



TEL: 886-3-327-3456 Page Number : D76 of D94



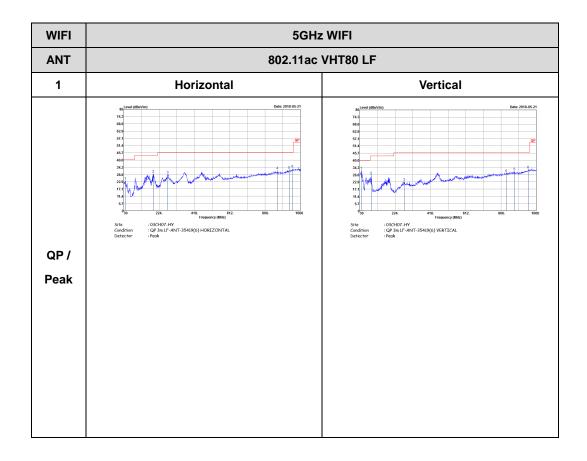
TEL: 886-3-327-3456 Page Number : D77 of D94



TEL: 886-3-327-3456 Page Number: D78 of D94

Emission below 1GHz 5GHz WIFI 802.11ac VHT80 (LF)

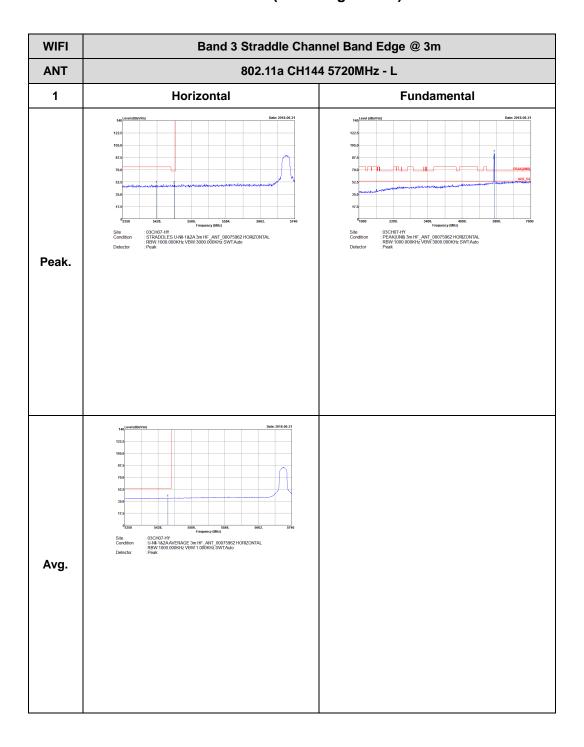
Report No. : FR852420-01D



TEL: 886-3-327-3456 Page Number: D79 of D94

Band 3 - Straddle Channel WIFI 802.11a (Band Edge @ 3m)

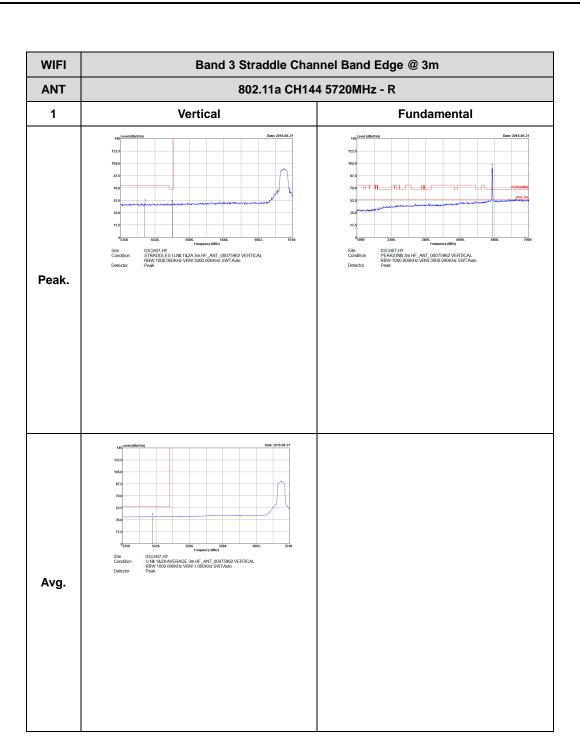
Report No.: FR852420-01D



TEL: 886-3-327-3456 Page Number : D80 of D94



TEL: 886-3-327-3456 Page Number: D81 of D94



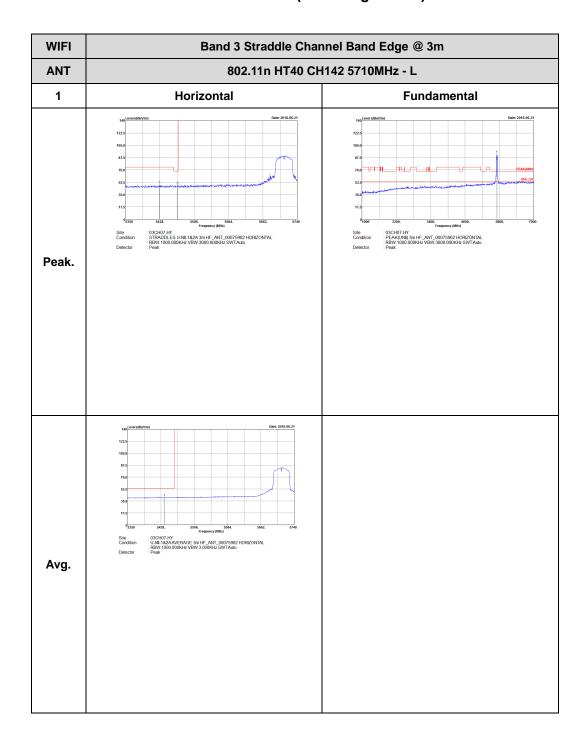
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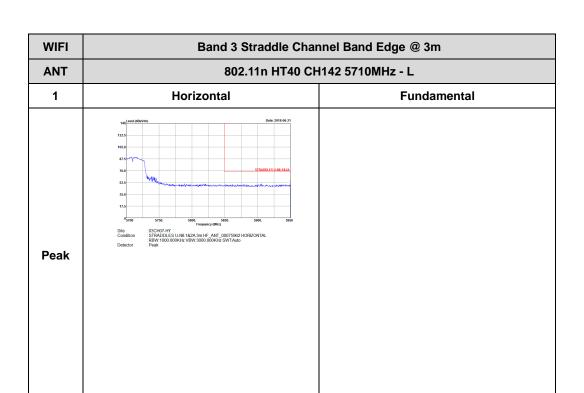
TEL: 886-3-327-3456 Page Number: D83 of D94

Band 3 - Straddle Channel WIFI 802.11n HT40 (Band Edge @ 3m)

Report No.: FR852420-01D

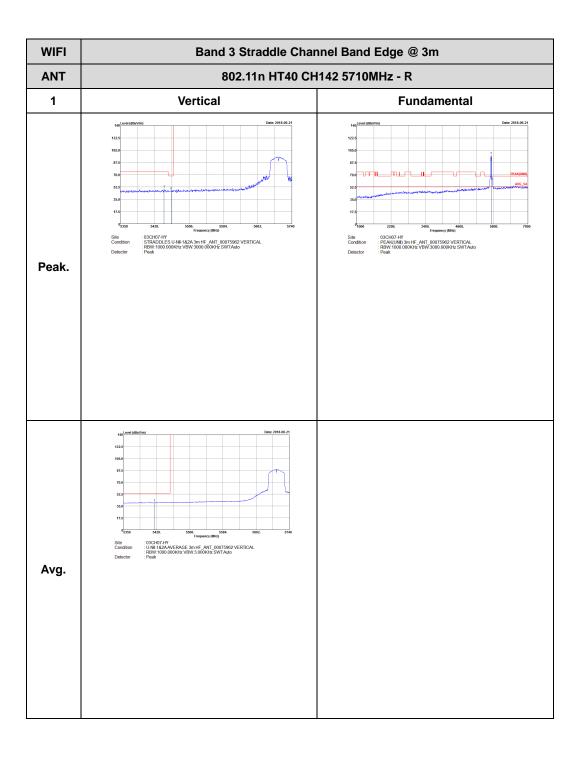


TEL: 886-3-327-3456 Page Number : D84 of D94

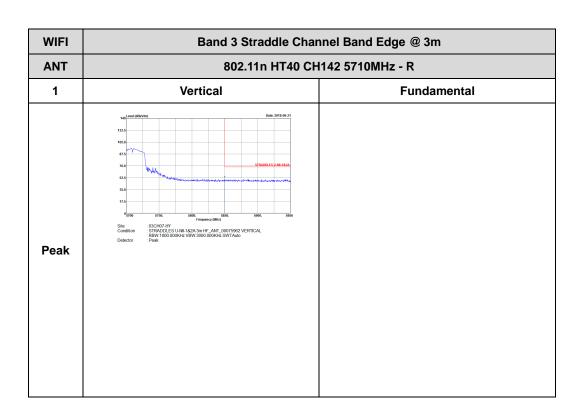


TEL: 886-3-327-3456 Page Number : D85 of D94





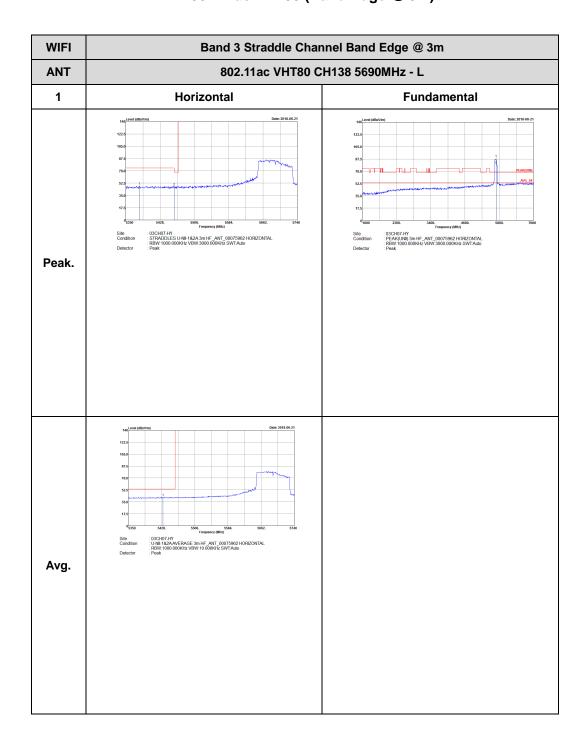
TEL: 886-3-327-3456 Page Number: D86 of D94



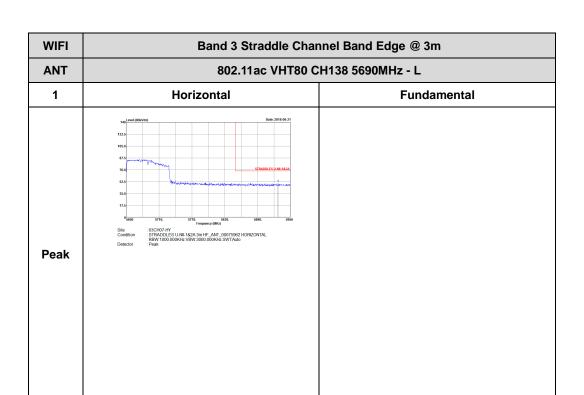
TEL: 886-3-327-3456 Page Number: D87 of D94

Band 3 - Straddle Channel WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No.: FR852420-01D



TEL: 886-3-327-3456 Page Number: D88 of D94



TEL: 886-3-327-3456 Page Number : D89 of D94

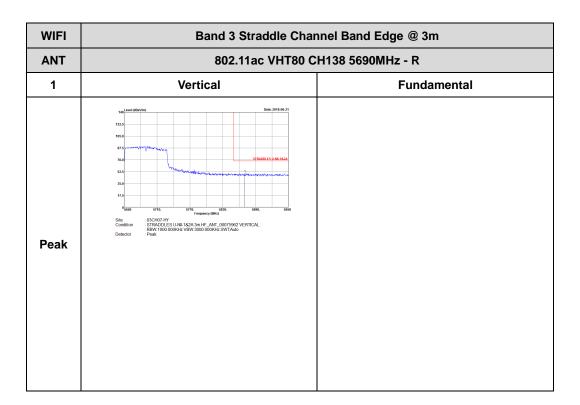


FAX: 886-3-328-4978

WIFI Band 3 Straddle Channel Band Edge @ 3m ANT 802.11ac VHT80 CH138 5690MHz - R 1 Vertical **Fundamental** : 03CH07-HY : STRADDLES U-NIL-1&2A 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWTAuto : Peak Peak. : 03CH07-HY : U-NIL-182A-AVERAGE 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWTAuto : Peak Avg.

Report No. : FR852420-01D

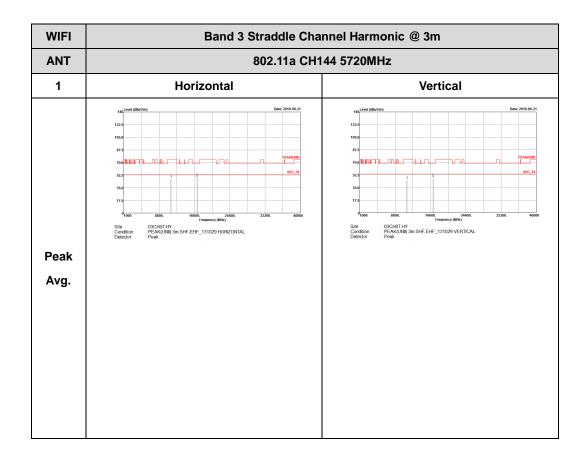
TEL: 886-3-327-3456 Page Number : D90 of D94



TEL: 886-3-327-3456 Page Number : D91 of D94

Band 3 - Straddle Channel WIFI 802.11a (Harmonic @ 3m)

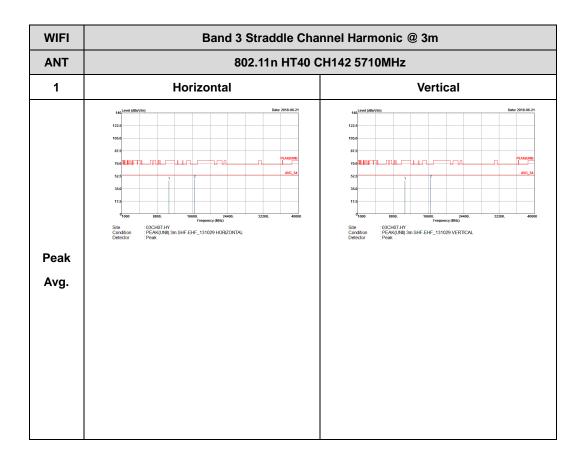
Report No. : FR852420-01D



TEL: 886-3-327-3456 Page Number: D92 of D94

Band 3 – Straddle Channel WIFI 802.11n HT40 (Harmonic @ 3m)

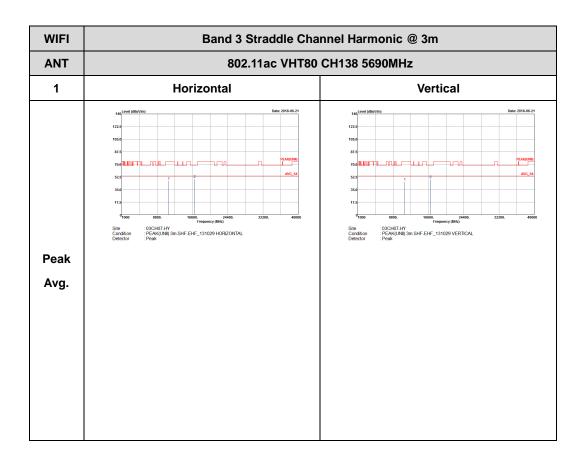
Report No. : FR852420-01D



TEL: 886-3-327-3456 Page Number: D93 of D94

Band 3 - Straddle Channel WIFI 802.11ac VHT80 (Harmonic @ 3m)

Report No. : FR852420-01D



TEL: 886-3-327-3456 Page Number : D94 of D94

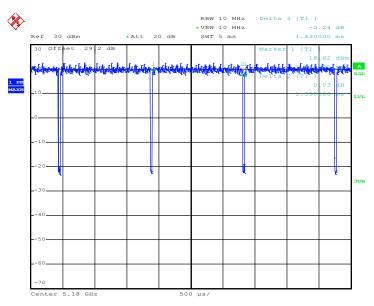
Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
802.11a	97.20	1390	0.72	1kHz	0.12
5GHz 802.11n HT20	97.01	1300	0.77	1kHz	0.13
5GHz 802.11n HT40	93.86	642	1.56	3kHz	0.28
5GHz 802.11ac VHT20	97.04	1310	0.76	1kHz	0.13
5GHz 802.11ac VHT40	93.91	648	1.54	3kHz	0.27
5GHz 802.11ac VHT80	90.00	324	3.09	10kHz	0.46

Report No. : FR852420-01D

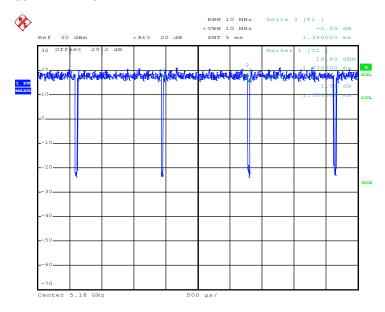
TEL: 886-3-327-3456 Page Number : E-1 of 4





Date: 15.MAY.2018 00:25:03

802.11n HT20

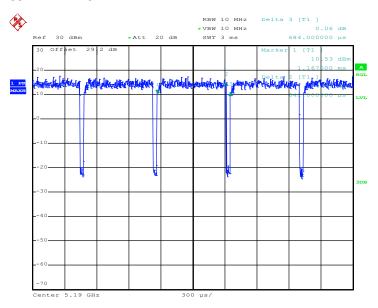


Date: 15.MAY.2018 00:42:25

FAX: 886-3-328-4978

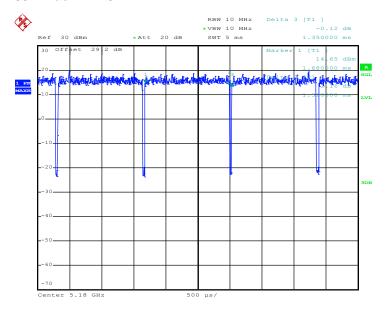
TEL: 886-3-327-3456 Page Number : E-2 of 4





Date: 15.MAY.2018 00:50:34

802.11ac VHT20

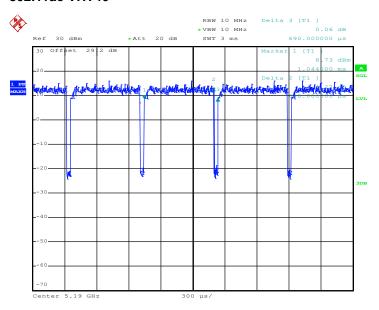


Date: 15.MAY.2018 01:07:42

FAX: 886-3-328-4978

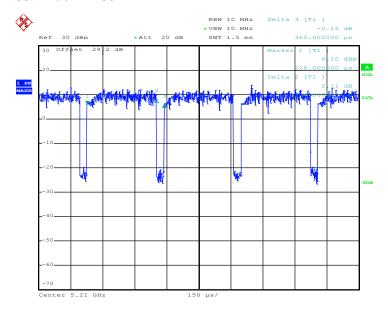
TEL: 886-3-327-3456 Page Number : E-3 of 4

802.11ac VHT40



Date: 15.MAY.2018 01:21:39

802.11ac VHT80



Date: 15.MAY.2018 01:34:12

FAX: 886-3-328-4978

TEL: 886-3-327-3456 Page Number : E-4 of 4