



FCC RADIO TEST REPORT

FCC ID : TYM-J100
Equipment : Wireless Module
Brand Name : AVAYA
Model Name : J100
Marketing Name : J100 Wireless Module
Applicant : AVAYA
250 Sidney Street, Belleville, Ontario, K8P
3Z3, Canada
Manufacturer : Wistron Corporation
21th Fl., 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.
Standard : FCC Part 15 Subpart E §15.407

The product was received on Aug. 05, 2019 and testing was started from Sep. 16, 2019 and completed on Sep. 26, 2019. We, SPORTON INTERNATIONAL INC., EMC & Wireless Communications Laboratory, 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 report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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



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History of this test report

Report No.	Version	Description	Issued Date
FR980514D	01	Initial issue of report	Nov. 08, 2019



Summary of Test Result

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 1.85 dB at 5149.760 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 12.97 dB at 0.830 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Pass	-
3.7	15.203 15.407(a)	Antenna Requirement	Pass	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang**Report Producer: Yimin Ho**



1 General Description

1.1 Product Feature of Equipment Under Test

Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n and Wi-Fi 5GHz 802.11a/n/ac.

Product Specification subjective to this standard	
Antenna Type	WLAN: Chip Antenna Bluetooth: Chip Antenna

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH05-HY	CO05-HY

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

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH13-HY	

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

FCC designation No.: TW1190 and TW0007

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.
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ ANSI C63.10-2013

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.



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

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

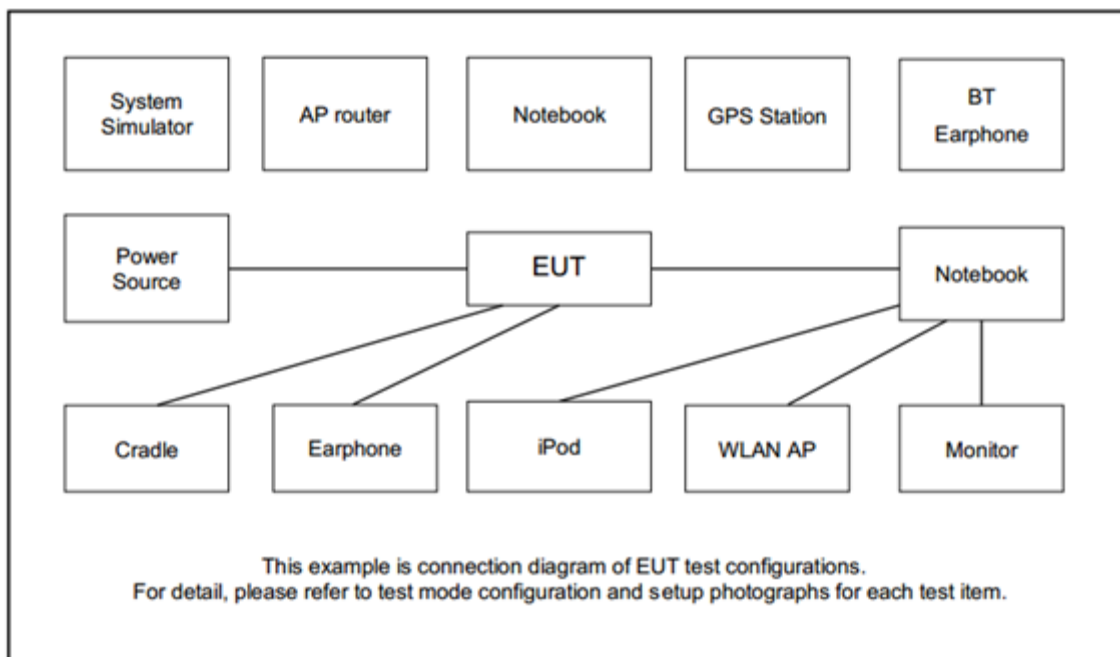
Final test modes are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	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 : WLAN 5GHz Tx

Ch. #		Band I : 5150-5250 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	36	36	38	-
M	Middle	40	40	-	42
H	High	48	48	46	-

2.3 Connection Diagram of Test System





2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Adapter	Phihong	PSAC12R-050	N/A	N/A	N/A
2.	Main board	DELL	N/A	N/A	N/A	N/A
3.	Notebook	DELL	Latitude E5480	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Notebook	DELL	Latitude E3340	FCC DoC/ Contains FCC ID: PD97260NGU	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “cmd” was installed in Notebook which was programmed in order to 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.

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.

$$\text{Offset} = \text{RF cable loss} + \text{attenuator factor}.$$

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

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 4.2 + 10 = 14.2 \text{ (dB)} \end{aligned}$$

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.

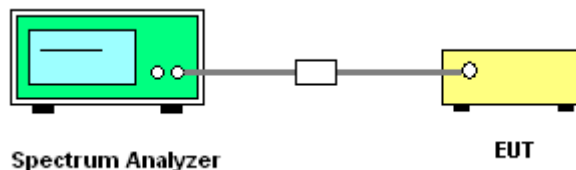
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

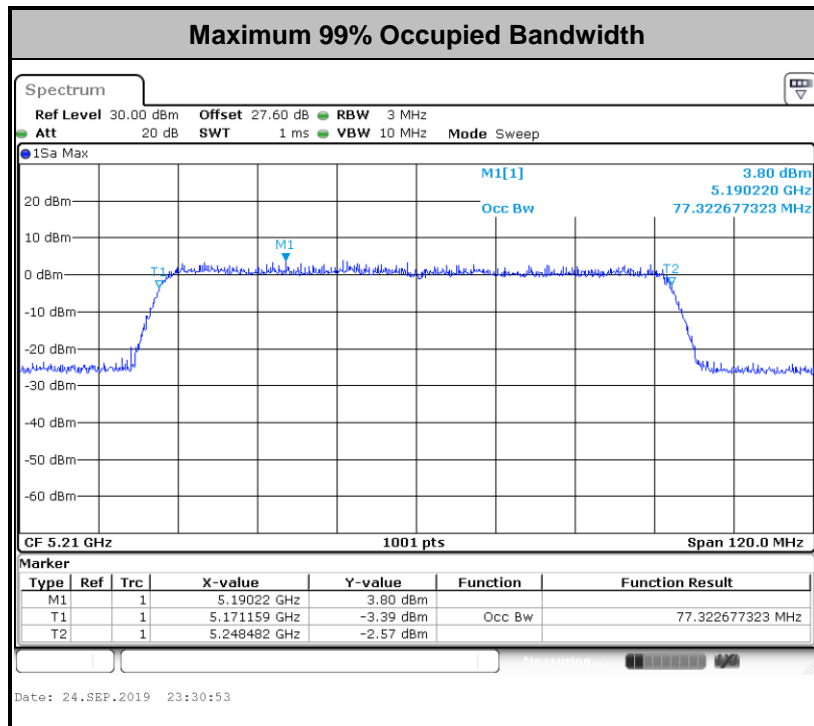
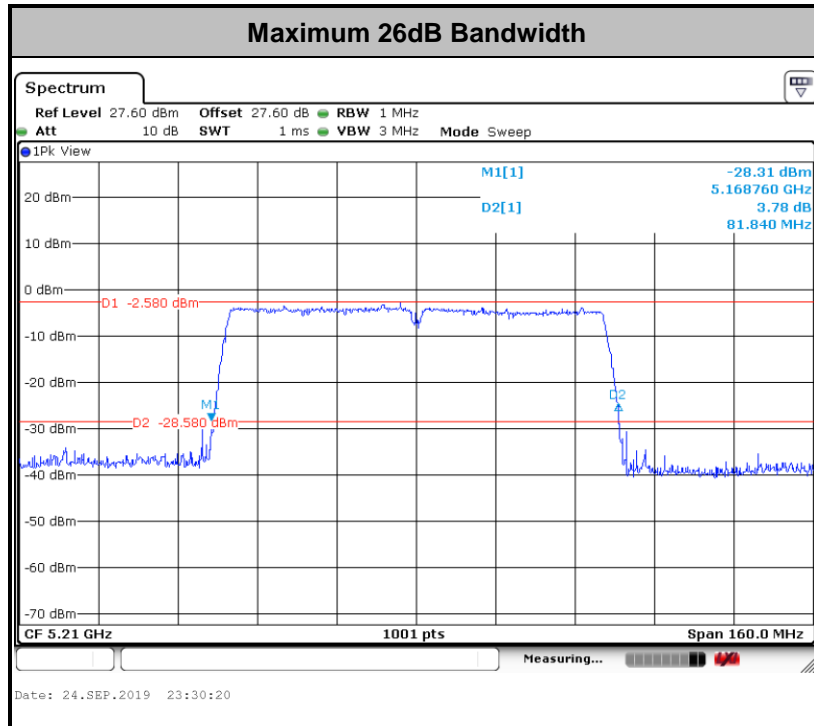
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB 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) $\geq 3 * RBW$.
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.



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

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.

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.

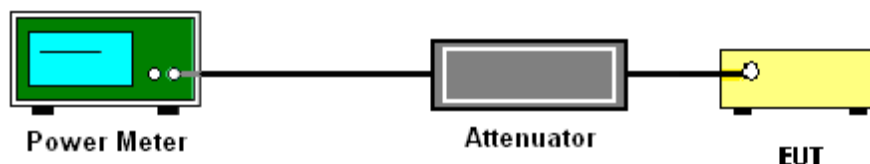
3.2.3 Test Procedures

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

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

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



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.

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.

3.3.3 Test Procedures

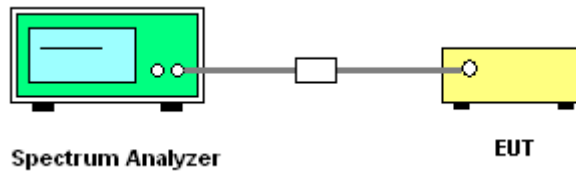
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section F) Maximum power spectral density.

Method SA-3

(power averaging (rms) detection with max hold):

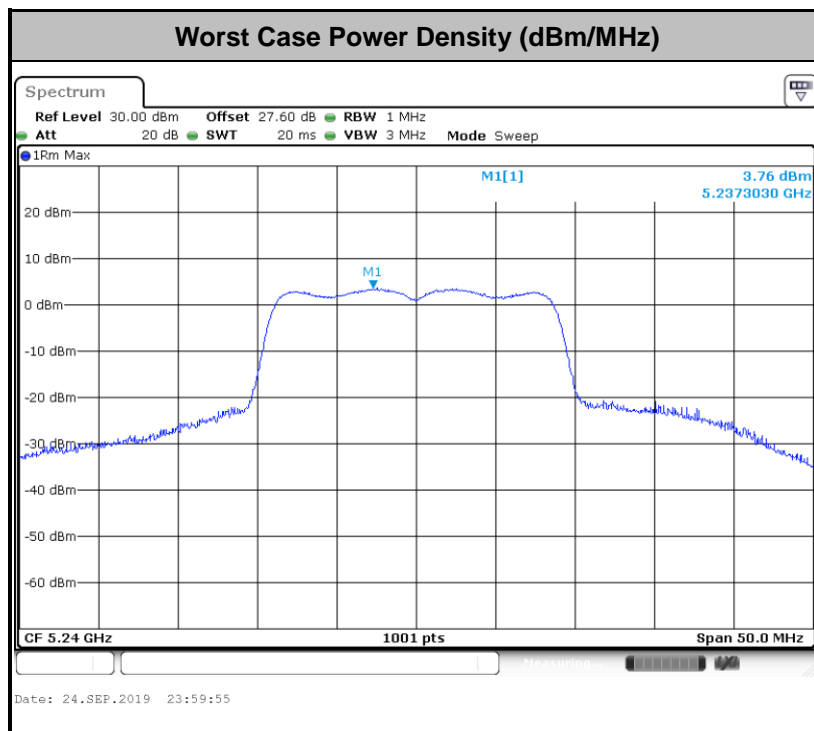
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 1 MHz.
 - Set VBW \geq 3 MHz
 - Number of points in sweep \geq 2 Span / RBW.
 - Sweep time \leq (number of points in sweep) \times T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
 - Detector = power averaging (rms).
 - Trace mode = max hold.
 - Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
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.



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



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.

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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (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.

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

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

- (3) KDB789033 D02 v02r01 G)2)c)
 - (i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit 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.
 - (ii) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are based on the use of a peak detector.

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

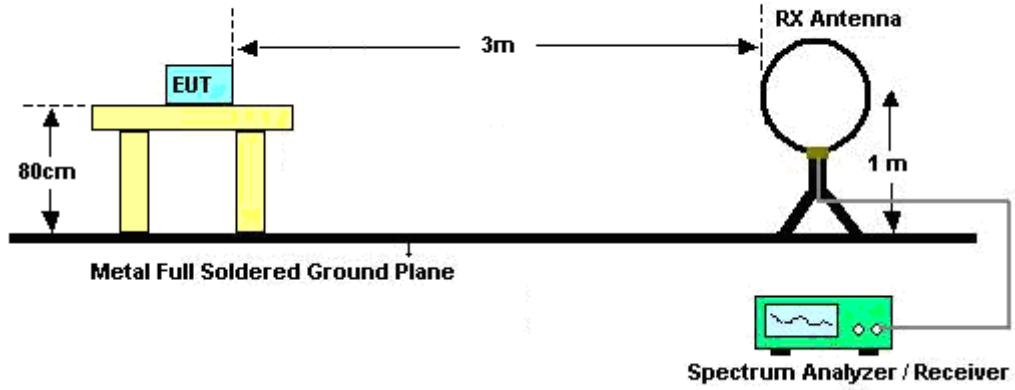


3.4.3 Test Procedures

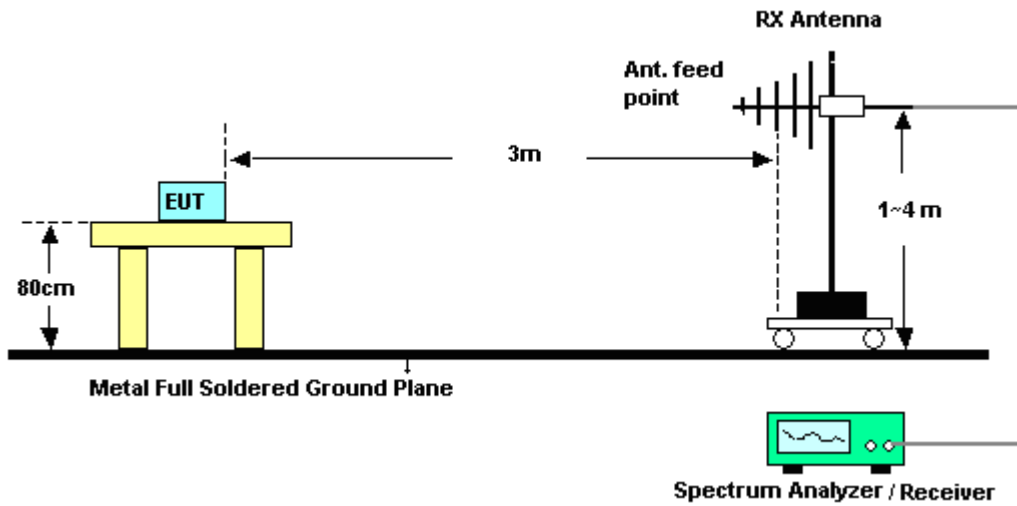
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak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

3.4.4 Test Setup

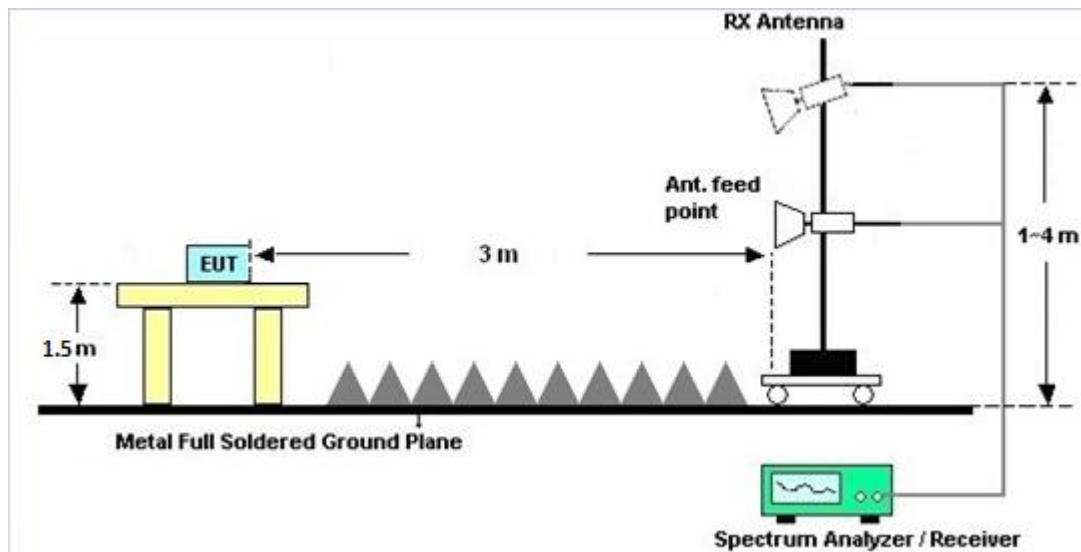
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



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 alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, 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.



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.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	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.

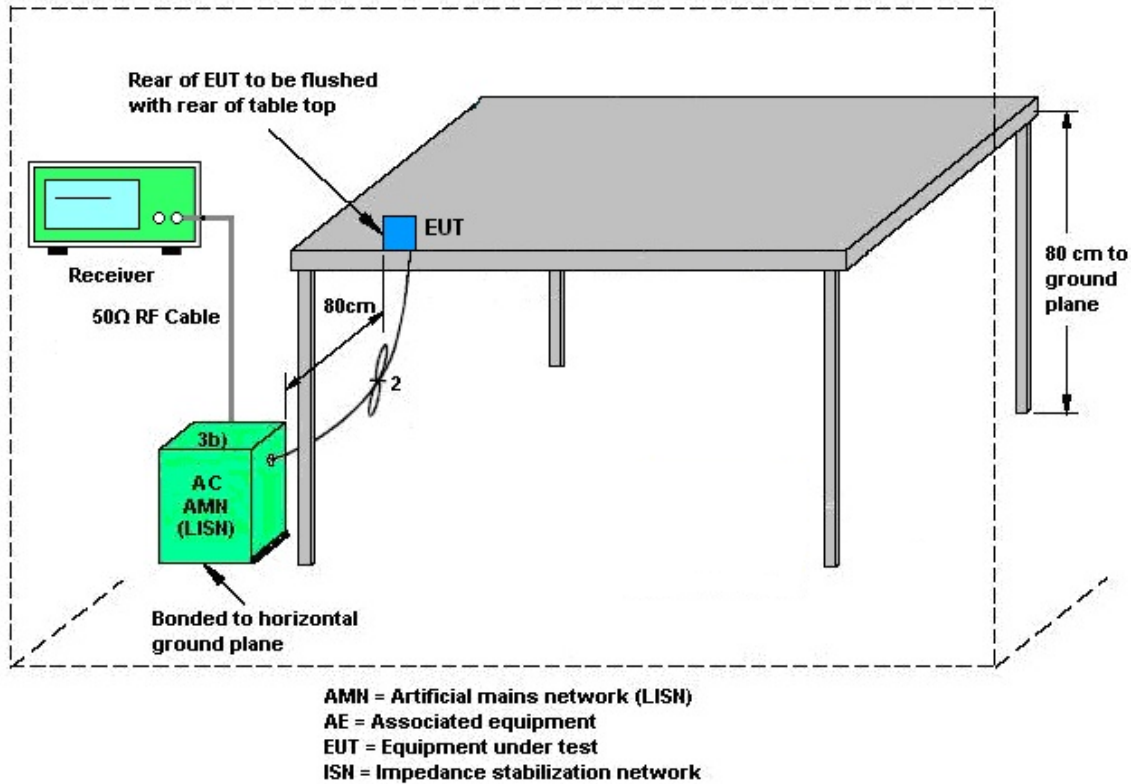
3.5.2 Measuring Instruments

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.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



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.

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.



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.

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.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 07, 2019	Sep. 18, 2019~ Sep. 21, 2019	Jan. 06, 2020	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D& 00800N1D01 N-06	40103 & 07	30MHz~1GHz	Apr. 30, 2019	Sep. 18, 2019~ Sep. 21, 2019	Apr. 29, 2020	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-124 1	1GHz~18GHz	Jul. 02, 2019	Sep. 18, 2019~ Sep. 21, 2019	Jul. 01, 2020	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590074	1GHz~18GHz	May 20, 2019	Sep. 18, 2019~ Sep. 21, 2019	May 19, 2020	Radiation (03CH13-HY)
Preamplifier	Keysight	83017A	MY532701 47	1GHz~26.5GHz	Mar. 15, 2019	Sep. 18, 2019~ Sep. 21, 2019	Mar. 14, 2020	Radiation (03CH13-HY)
Amplifier	SONOMA	310N	187282	9kHz~1GHz	Dec. 18, 2018	Sep. 18, 2019~ Sep. 21, 2019	Dec. 17, 2019	Radiation (03CH13-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 06, 2018	Sep. 18, 2019~ Sep. 21, 2019	Dec. 04, 2018	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY553705 26	10Hz~44GHz	Mar. 19, 2019	Sep. 18, 2019~ Sep. 21, 2019	Mar. 18, 2020	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30M-18G	Feb. 13, 2019	Sep. 18, 2019~ Sep. 21, 2019	Feb. 12, 2020	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	804793/4	30M-18G	Feb. 13, 2019	Sep. 18, 2019~ Sep. 21, 2019	Feb. 12, 2020	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24961/ 4	30M-18G	Feb. 13, 2019	Sep. 18, 2019~ Sep. 21, 2019	Feb. 12, 2020	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY553705 26	10Hz~44GHz	Mar. 19, 2019	Sep. 18, 2019~ Sep. 21, 2019	Mar. 18, 2020	Radiation (03CH13-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1m~4m	N/A	Sep. 18, 2019~ Sep. 21, 2019	N/A	Radiation (03CH13-HY)
Software	AUDIX	E3 6.2009-8-24c	RK-001124	N/A	N/A	Sep. 18, 2019~ Sep. 21, 2019	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Sep. 18, 2019~ Sep. 21, 2019	N/A	Radiation (03CH13-HY)
EMI Test Receiver	Keysight	N9038A (MXE)	MY541300 85	20Hz ~ 8.4GHz	Nov. 01, 2018	Sep. 18, 2019~ Sep. 21, 2019	Oct. 31, 2019	Radiation (03CH13-HY)
Filter	Wainwright	WLKS1200-1 2SS	SN2	1.2GHz Low Pass Filter	Mar. 22, 2019	Sep. 18, 2019~ Sep. 21, 2019	Mar. 21, 2020	Radiation (03CH13-HY)
Filter	Woken	WHKX8-5272. 5-6750-18000 -40ST	SN5	6.75G Highpass	Mar.13, 2019	Sep. 18, 2019~ Sep. 21, 2019	Mar. 12, 2020	Radiation (03CH13-HY)
Power Sensor	DARE	RPR3006W	13I00030S NO32	9kHz~6GHz	Dec. 03, 2018	Sep. 16, 2019~ Sep. 25, 2019	Dec. 02, 2019	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 13, 2018	Sep. 16, 2019~ Sep. 25, 2019	Nov. 12, 2019	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC120838 2	N/A	Mar. 27, 2019	Sep. 16, 2019~ Sep. 25, 2019	Mar. 26, 2020	Conducted (TH05-HY)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Sep. 26, 2019	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 12, 2018	Sep. 26, 2019	Nov. 11, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 14, 2018	Sep. 26, 2019	Nov. 13, 2019	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Sep. 26, 2019	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Dec. 31, 2018	Sep. 26, 2019	Dec. 30, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Dec. 31, 2018	Sep. 26, 2019	Dec. 30, 2019	Conduction (CO05-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.2
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.9
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.4
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.3
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Derek Hsu	Temperature:	21~25	°C
Test Date:	2019/9/16~2019/09/25	Relative Humidity:	51~54	%
TX Tool	DutApiClass	TX Tool Version	2.0.0.96	

TEST RESULTS DATA
26dB and 99% OBW

Band I													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)		Note
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	36	5180	16.78	-	33.67	-	-	-	22.25	-	
11a	6Mbps	1	40	5200	16.83	-	30.97	-	-	-	22.26	-	
11a	6Mbps	1	48	5240	16.93	-	32.32	-	-	-	22.29	-	
HT20	MCS0	1	36	5180	17.73	-	37.01	-	-	-	22.49	-	
HT20	MCS0	1	40	5200	17.78	-	34.37	-	-	-	22.50	-	
HT20	MCS0	1	48	5240	17.98	-	38.56	-	-	-	22.55	-	
HT40	MCS0	1	38	5190	36.36	-	48.31	-	-	-	23.01	-	
HT40	MCS0	1	46	5230	37.66	-	75.25	-	-	-	23.01	-	
VHT80	MCS0	1	42	5210	77.32	-	81.84	-	-	-	23.01	-	

TEST RESULTS DATA
Average Power Table

FCC Band I												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	36	5180	13.50	-		24.00	-	2.40	-	Pass
11a	6Mbps	1	40	5200	13.60	-		24.00	-	2.40	-	Pass
11a	6Mbps	1	48	5240	13.80	-		24.00	-	2.40	-	Pass
HT20	MCS0	1	36	5180	13.70	-		24.00	-	2.40	-	Pass
HT20	MCS0	1	40	5200	13.60	-		24.00	-	2.40	-	Pass
HT20	MCS0	1	48	5240	13.80	-		24.00	-	2.40	-	Pass
HT40	MCS0	1	38	5190	10.40	-		24.00	-	2.40	-	Pass
HT40	MCS0	1	46	5230	13.00	-		24.00	-	2.40	-	Pass
VHT20	MCS0	1	36	5180	13.60	-		24.00	-	2.40	-	Pass
VHT20	MCS0	1	40	5200	13.50	-		24.00	-	2.40	-	Pass
VHT20	MCS0	1	48	5240	13.70	-		24.00	-	2.40	-	Pass
VHT40	MCS0	1	38	5190	10.30	-		24.00	-	2.40	-	Pass
VHT40	MCS0	1	46	5230	12.90	-		24.00	-	2.40	-	Pass
VHT80	MCS0	1	42	5210	6.10	-		24.00	-	2.40	-	Pass

TEST RESULTS DATA
Power Spectral Density

FCC Band I														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (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	0.00	-	3.54	-		11.00	-	2.40	-	Pass
11a	6Mbps	1	40	5200	0.00	-	3.41	-		11.00	-	2.40	-	Pass
11a	6Mbps	1	48	5240	0.00	-	3.47	-		11.00	-	2.40	-	Pass
HT20	MCS0	1	36	5180	0.00	-	3.02	-		11.00	-	2.40	-	Pass
HT20	MCS0	1	40	5200	0.00	-	3.31	-		11.00	-	2.40	-	Pass
HT20	MCS0	1	48	5240	0.00	-	3.76	-		11.00	-	2.40	-	Pass
HT40	MCS0	1	38	5190	0.00	-	-3.15	-		11.00	-	2.40	-	Pass
HT40	MCS0	1	46	5230	0.00	-	-0.07	-		11.00	-	2.40	-	Pass
VHT80	MCS0	1	42	5210	0.00	-	-10.42	-		11.00	-	2.40	-	Pass



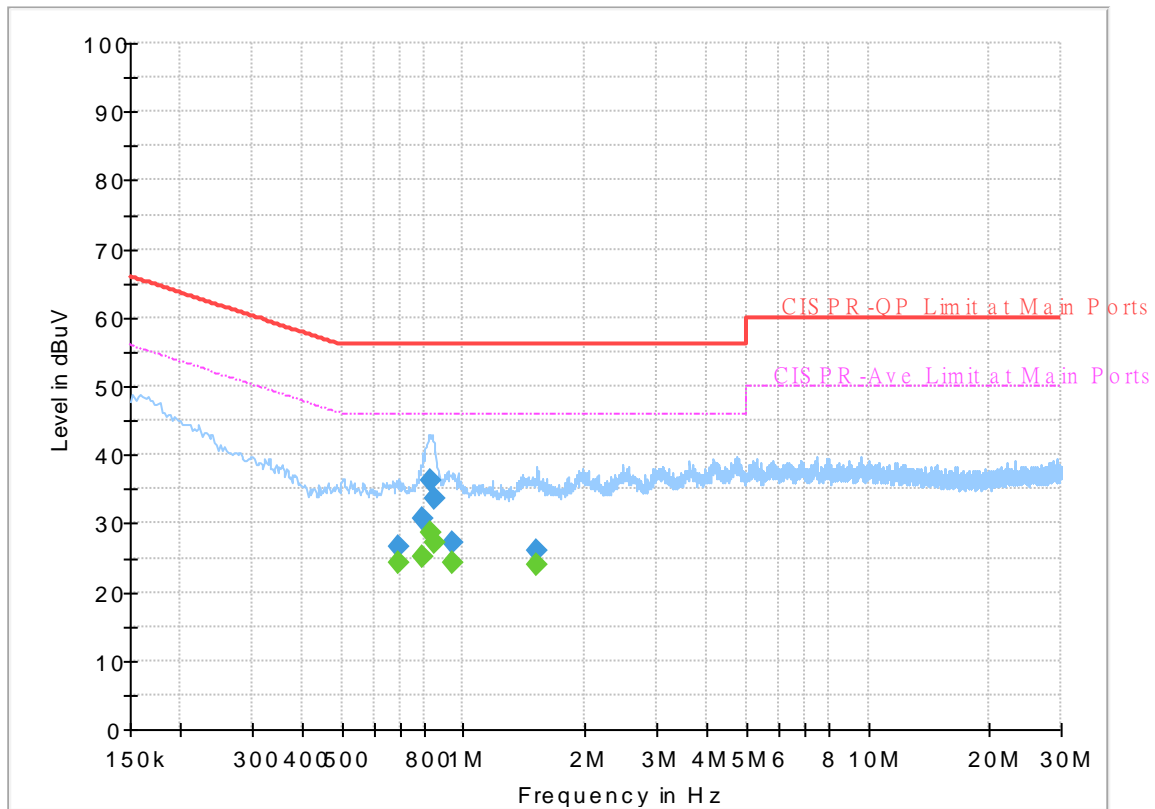
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Howard Lin	Temperature :	25.9~26.4°C
		Relative Humidity :	52.8~53.2%

EUT Information

Report NO : 980514
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

Full Spectrum



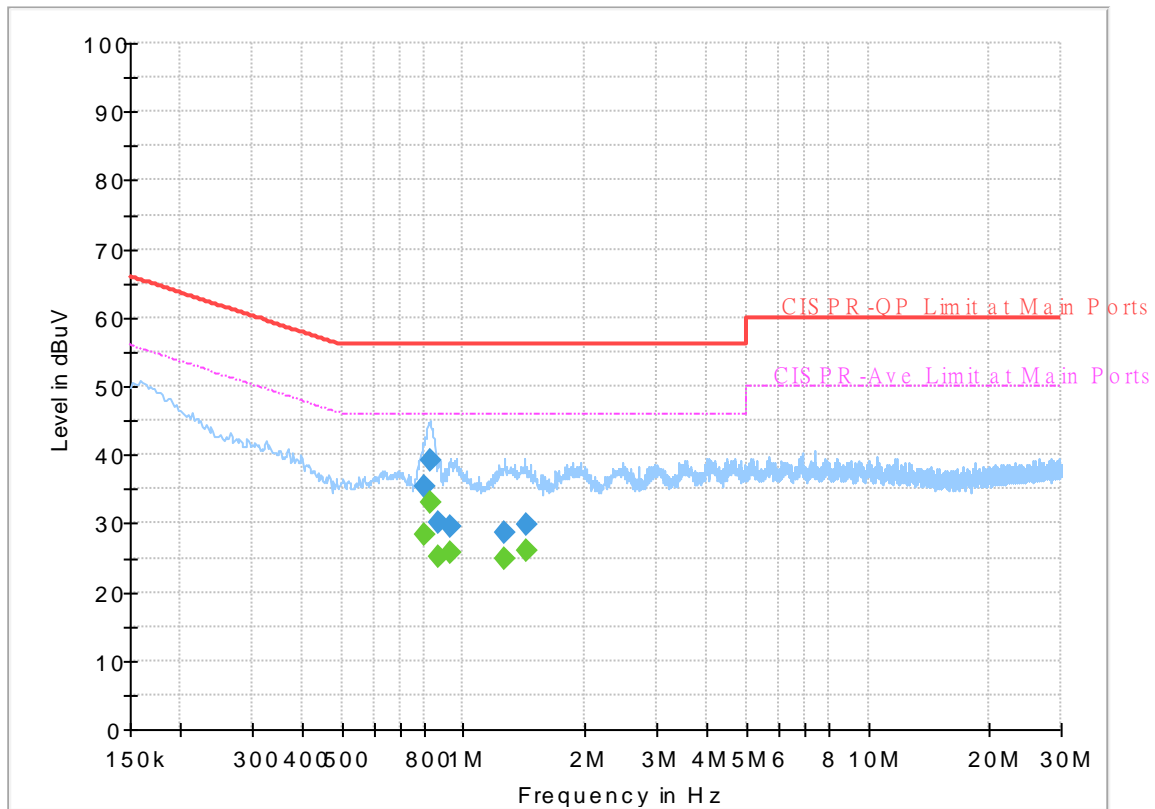
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.692250	---	24.35	46.00	21.65	L1	OFF	19.4
0.692250	26.50	---	56.00	29.50	L1	OFF	19.4
0.795750	---	25.25	46.00	20.75	L1	OFF	19.4
0.795750	30.85	---	56.00	25.15	L1	OFF	19.4
0.827250	---	28.79	46.00	17.21	L1	OFF	19.5
0.827250	36.29	---	56.00	19.71	L1	OFF	19.5
0.845250	---	27.16	46.00	18.84	L1	OFF	19.5
0.845250	33.72	---	56.00	22.28	L1	OFF	19.5
0.944250	---	24.30	46.00	21.70	L1	OFF	19.5
0.944250	27.28	---	56.00	28.72	L1	OFF	19.5
1.518000	---	23.97	46.00	22.03	L1	OFF	19.5
1.518000	25.95	---	56.00	30.05	L1	OFF	19.5

EUT Information

Report NO : 980514
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.804750	---	28.38	46.00	17.62	N	OFF	19.5
0.804750	35.25	---	56.00	20.75	N	OFF	19.5
0.829500	---	33.03	46.00	12.97	N	OFF	19.5
0.829500	39.14	---	56.00	16.86	N	OFF	19.5
0.870000	---	25.11	46.00	20.89	N	OFF	19.5
0.870000	30.25	---	56.00	25.75	N	OFF	19.5
0.926250	---	25.78	46.00	20.22	N	OFF	19.5
0.926250	29.65	---	56.00	26.35	N	OFF	19.5
1.263750	---	24.77	46.00	21.23	N	OFF	19.5
1.263750	28.65	---	56.00	27.35	N	OFF	19.5
1.432500	---	26.09	46.00	19.91	N	OFF	19.5
1.432500	29.71	---	56.00	26.29	N	OFF	19.5



Appendix C. Radiated Spurious Emission

Test Engineer :	Ryan Lin, J.C. Liang and Wilson Wu	Temperature :	21.5~23.5°C
		Relative Humidity :	46.5~49.5%

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	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)	Peak Avg. (P/A)	Pol. (H/V)	
802.11a CH 36 5180MHz		5148.46	60.75	-13.25	74	52.16	32	6.08	29.49	100	259	P	H	
		5149.76	51.1	-2.9	54	42.51	32	6.08	29.49	100	259	A	H	
	*	5180	108.01	-	-	99.58	31.82	6.1	29.49	100	259	P	H	
	*	5180	99.97	-	-	91.54	31.82	6.1	29.49	100	259	A	H	
													H	
														H
			5149.76	57.22	-16.78	74	48.63	32	6.08	29.49	100	79	P	V
			5150	46.93	-7.07	54	38.34	32	6.08	29.49	100	79	A	V
	*		5180	102.59	-	-	94.16	31.82	6.1	29.49	100	79	P	V
	*		5180	95.64	-	-	87.21	31.82	6.1	29.49	100	79	A	V
														V
														V
802.11a CH 40 5200MHz		5127.92	50.97	-23.03	74	42.38	32	6.07	29.48	109	259	P	H	
		5127.14	43.31	-10.69	54	34.72	32	6.07	29.48	109	259	A	H	
	*	5200	106.61	-	-	98.3	31.7	6.11	29.5	109	259	P	H	
	*	5200	98.88	-	-	90.57	31.7	6.11	29.5	109	259	A	H	
			5397	47.59	-26.41	74	39.41	31.59	6.12	29.53	109	259	P	H
			5447.96	39.12	-14.88	54	30.7	31.79	6.17	29.54	109	259	A	H
			5102.44	49.79	-24.21	74	41.21	32	6.06	29.48	117	82	P	V
			5127.66	41.76	-12.24	54	33.17	32	6.07	29.48	117	82	A	V
	*		5200	102.46	-	-	94.15	31.7	6.11	29.5	117	82	P	V
	*		5200	95.01	-	-	86.7	31.7	6.11	29.5	117	82	A	V
			5417.72	47.23	-26.77	74	38.96	31.67	6.14	29.54	117	82	P	V
			5459.16	38.97	-15.03	54	30.51	31.82	6.18	29.54	117	82	A	V



802.11a CH 48 5240MHz		5034.06	50.3	-23.7	74	42.01	31.74	6.02	29.47	100	259	P	H
		5098.02	41.2	-12.8	54	32.64	31.99	6.05	29.48	100	259	A	H
	*	5240	107.26	-	-	99.19	31.46	6.11	29.5	100	259	P	H
	*	5240	99.68	-	-	91.61	31.46	6.11	29.5	100	259	A	H
		5418	48.53	-25.47	74	40.26	31.67	6.14	29.54	100	259	P	H
		5453	39.26	-14.74	54	30.82	31.81	6.17	29.54	100	259	A	H
		5048.88	49.42	-24.58	74	41.06	31.8	6.03	29.47	271	306	P	V
		5092.3	40.66	-13.34	54	32.12	31.97	6.05	29.48	271	306	A	V
	*	5240	103.91	-	-	95.84	31.46	6.11	29.5	271	306	P	V
	*	5240	96.06	-	-	87.99	31.46	6.11	29.5	271	306	A	V
		5384.96	47.51	-26.49	74	39.38	31.54	6.12	29.53	271	306	P	V
		5457.2	39.11	-14.89	54	30.66	31.81	6.18	29.54	271	306	A	V
Remark	<ol style="list-style-type: none"> 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 												



Band 1 5150~5250MHz
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)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz		10360	47.4	-20.8	68.2	54.71	39.74	9.91	56.96	100	0	P	H
		15540	56.82	-17.18	74	62.06	38.76	12.65	56.65	210	25	P	H
		15540	44.49	-9.51	54	49.73	38.76	12.65	56.65	210	25	A	H
													H
		10360	46.95	-21.25	68.2	54.26	39.74	9.91	56.96	100	0	P	V
		15540	54.98	-19.02	74	60.22	38.76	12.65	56.65	206	62	P	V
		15540	43.91	-10.09	54	49.15	38.76	12.65	56.65	206	62	A	V
802.11a CH 40 5200MHz		10400	46.66	-21.54	68.2	53.77	39.9	9.93	56.94	100	0	P	H
		15600	57.08	-16.92	74	62.58	38.4	12.68	56.58	216	25	P	H
		15600	45.05	-8.95	54	50.55	38.4	12.68	56.58	216	25	A	H
													H
		10400	47.11	-21.09	68.2	54.22	39.9	9.93	56.94	100	0	P	V
		15600	56.45	-17.55	74	61.95	38.4	12.68	56.58	198	64	P	V
		15600	43.51	-10.49	54	49.01	38.4	12.68	56.58	198	64	A	V
802.11a CH 48 5240MHz		10480	47.75	-20.45	68.2	54.71	39.98	9.97	56.91	100	0	P	H
		15720	59.93	-14.07	74	65.53	38.1	12.74	56.44	201	26	P	H
		15720	49.29	-4.71	54	54.89	38.1	12.74	56.44	201	26	A	H
													H
		10480	47.63	-20.57	68.2	54.59	39.98	9.97	56.91	100	0	P	V
		15720	58.32	-15.68	74	63.92	38.1	12.74	56.44	196	64	P	V
		15720	46.65	-7.35	54	52.25	38.1	12.74	56.44	196	64	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**Band 1 5150~5250MHz
WIFI 802.11n HT20 (Band Edge @ 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)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
802.11n HT20 CH 36 5180MHz		5147.68	62.93	-11.07	74	54.34	32	6.08	29.49	100	259	P	H	
		5149.76	52.15	-1.85	54	43.56	32	6.08	29.49	100	259	A	H	
	*	5180	106.78	-	-	98.35	31.82	6.1	29.49	100	259	P	H	
	*	5180	99.08	-	-	90.65	31.82	6.1	29.49	100	259	A	H	
													H	
													H	
			5150	57.53	-16.47	74	48.94	32	6.08	29.49	281	314	P	V
			5149.24	48.34	-5.66	54	39.75	32	6.08	29.49	281	314	A	V
		*	5180	102.72	-	-	94.29	31.82	6.1	29.49	281	314	P	V
		*	5180	94.92	-	-	86.49	31.82	6.1	29.49	281	314	A	V
													V	
													V	
802.11n HT20 CH 40 5200MHz		5117	50.98	-23.02	74	42.4	32	6.06	29.48	105	258	P	H	
		5127.92	43.94	-10.06	54	35.35	32	6.07	29.48	105	258	A	H	
	*	5200	106.01	-	-	97.7	31.7	6.11	29.5	105	258	P	H	
	*	5200	98.87	-	-	90.56	31.7	6.11	29.5	105	258	A	H	
			5433.68	48.13	-25.87	74	39.79	31.73	6.15	29.54	105	258	P	H
			5459.16	39.26	-14.74	54	30.8	31.82	6.18	29.54	105	258	A	H
			5023.92	50.13	-23.87	74	41.88	31.7	6.01	29.46	280	314	P	V
			5128.44	42.1	-11.9	54	33.51	32	6.07	29.48	280	314	A	V
		*	5200	101.98	-	-	93.67	31.7	6.11	29.5	280	314	P	V
		*	5200	94.87	-	-	86.56	31.7	6.11	29.5	280	314	A	V
		5430.32	48.25	-25.75	74	39.92	31.72	6.15	29.54	280	314	P	V	
		5459.16	39.08	-14.92	54	30.62	31.82	6.18	29.54	280	314	A	V	



802.11n HT20 CH 48 5240MHz		5065.78	49.66	-24.34	74	41.23	31.86	6.04	29.47	100	258	P	H
		5087.1	41.11	-12.89	54	32.59	31.95	6.05	29.48	100	258	A	H
	*	5240	106.79	-	-	98.72	31.46	6.11	29.5	100	258	P	H
	*	5240	99.65	-	-	91.58	31.46	6.11	29.5	100	258	A	H
		5430.6	48.42	-25.58	74	40.09	31.72	6.15	29.54	100	258	P	H
		5459.72	39.16	-14.84	54	30.7	31.82	6.18	29.54	100	258	A	H
		5077.48	49.58	-24.42	74	41.1	31.91	6.04	29.47	284	312	P	V
		5089.7	40.54	-13.46	54	32.01	31.96	6.05	29.48	284	312	A	V
	*	5240	103.27	-	-	95.2	31.46	6.11	29.5	284	312	P	V
	*	5240	95.98	-	-	87.91	31.46	6.11	29.5	284	312	A	V
		5387.2	48.59	-25.41	74	40.45	31.55	6.12	29.53	284	312	P	V
	5456.08	39.22	-14.78	54	30.77	31.81	6.18	29.54	284	312	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11n HT20 (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)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 36 5180MHz		10360	47.17	-21.03	68.2	54.48	39.74	9.91	56.96	100	0	P	H
		15540	55.63	-18.37	74	60.87	38.76	12.65	56.65	216	26	P	H
		15540	44.58	-9.42	54	49.82	38.76	12.65	56.65	216	26	A	H
													H
		10360	46.83	-21.37	68.2	54.14	39.74	9.91	56.96	100	0	P	V
		15540	54.45	-19.55	74	59.69	38.76	12.65	56.65	200	63	P	V
		15540	43.37	-10.63	54	48.61	38.76	12.65	56.65	200	63	A	V
													V
802.11n HT20 CH 40 5200MHz		10400	46.26	-21.94	68.2	53.37	39.9	9.93	56.94	100	0	P	H
		15600	56.62	-17.38	74	62.12	38.4	12.68	56.58	211	26	P	H
		15600	45.23	-8.77	54	50.73	38.4	12.68	56.58	211	26	A	H
													H
		10400	46.43	-21.77	68.2	53.54	39.9	9.93	56.94	100	0	P	V
		15600	56.55	-17.45	74	62.05	38.4	12.68	56.58	206	64	P	V
		15600	43.72	-10.28	54	49.22	38.4	12.68	56.58	206	64	A	V
													V
802.11n HT20 CH 48 5240MHz		10480	47.64	-20.56	68.2	54.6	39.98	9.97	56.91	100	0	P	H
		15720	58.94	-15.06	74	64.54	38.1	12.74	56.44	208	25	P	H
		15720	48.31	-5.69	54	53.91	38.1	12.74	56.44	208	25	A	H
													H
		10480	48.16	-20.04	68.2	55.12	39.98	9.97	56.91	100	0	P	V
		15720	57.16	-16.84	74	62.76	38.1	12.74	56.44	202	63	P	V
		15720	46.23	-7.77	54	51.83	38.1	12.74	56.44	202	63	A	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11n HT40 (Band Edge @ 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)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 CH 38 5190MHz		5149.24	57.68	-16.32	74	49.09	32	6.08	29.49	100	259	P	H
		5149.76	50.79	-3.21	54	42.2	32	6.08	29.49	100	259	A	H
	*	5190	100.54	-	-	92.17	31.76	6.1	29.49	100	259	P	H
	*	5190	93.51	-	-	85.14	31.76	6.1	29.49	100	259	A	H
		5456.08	47.71	-26.29	74	39.26	31.81	6.18	29.54	100	259	P	H
		5439.84	40.18	-13.82	54	31.8	31.76	6.16	29.54	100	259	A	H
		5149.5	58.95	-15.05	74	50.36	32	6.08	29.49	281	306	P	V
		5149.24	47.55	-6.45	54	38.96	32	6.08	29.49	281	306	A	V
	*	5190	97.05	-	-	88.68	31.76	6.1	29.49	281	306	P	V
	*	5190	89.5	-	-	81.13	31.76	6.1	29.49	281	306	A	V
		5404.28	46.83	-27.17	74	38.62	31.62	6.12	29.53	281	306	P	V
		5459.44	39.69	-14.31	54	31.23	31.82	6.18	29.54	281	306	A	V
802.11n HT40 CH 46 5230MHz		5133.12	53.68	-20.32	74	45.09	32	6.07	29.48	100	258	P	H
		5148.72	43.87	-10.13	54	35.28	32	6.08	29.49	100	258	A	H
	*	5230	103.62	-	-	95.49	31.52	6.11	29.5	100	258	P	H
	*	5230	96.16	-	-	88.03	31.52	6.11	29.5	100	258	A	H
		5420.24	48.62	-25.38	74	40.34	31.68	6.14	29.54	100	258	P	H
		5374.04	40.19	-13.81	54	32.1	31.5	6.12	29.53	100	258	A	H
		5145.08	50.33	-23.67	74	41.74	32	6.08	29.49	274	313	P	V
		5149.5	41.93	-12.07	54	33.34	32	6.08	29.49	274	313	A	V
	*	5230	99.08	-	-	90.95	31.52	6.11	29.5	274	313	P	V
	*	5230	92.04	-	-	83.91	31.52	6.11	29.5	274	313	A	V
		5359.76	47.52	-26.48	74	39.48	31.44	6.12	29.52	274	313	P	V
		5458.6	39.96	-14.04	54	31.5	31.82	6.18	29.54	274	313	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11n HT40 (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)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 CH 38 5190MHz		10380	46.2	-22	68.2	53.41	39.82	9.92	56.95	100	0	P	H
		15570	53.3	-20.7	74	58.68	38.58	12.66	56.62	300	166	P	H
		15570	38.69	-15.31	54	44.07	38.58	12.66	56.62	300	166	A	H
													H
		10380	46.49	-21.71	68.2	53.7	39.82	9.92	56.95	100	0	P	V
		15570	44.85	-29.15	74	50.23	38.58	12.66	56.62	100	0	P	V
													V
													V
802.11n HT40 CH 46 5230MHz		10460	47.05	-21.15	68.2	54.05	39.96	9.96	56.92	100	0	P	H
		15690	43.89	-30.11	74	49.51	38.13	12.72	56.47	100	0	P	H
													H
													H
		10460	47.39	-20.81	68.2	54.39	39.96	9.96	56.92	100	0	P	V
		15690	44.44	-29.56	74	50.06	38.13	12.72	56.47	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant.	Note	Frequency (MHz)	Level (dBμV/m)	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)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 42 5210MHz		5144.82	55.96	-18.04	74	47.37	32	6.08	29.49	100	259	P	H
		5139.62	51.01	-2.99	54	42.42	32	6.08	29.49	100	259	A	H
	*	5210	94.4	-	-	86.15	31.64	6.11	29.5	100	259	P	H
	*	5210	86.67	-	-	78.42	31.64	6.11	29.5	100	259	A	H
		5453	47.52	-26.48	74	39.08	31.81	6.17	29.54	100	259	P	H
		5451.04	41.16	-12.84	54	32.73	31.8	6.17	29.54	100	259	A	H
		5141.96	53.13	-20.87	74	44.54	32	6.08	29.49	281	313	P	V
		5141.96	47.15	-6.85	54	38.56	32	6.08	29.49	281	313	A	V
	*	5210	89.55	-	-	81.3	31.64	6.11	29.5	281	313	P	V
	*	5210	82.91	-	-	74.66	31.64	6.11	29.5	281	313	A	V
		5444.88	48.44	-25.56	74	40.04	31.78	6.16	29.54	281	313	P	V
	5440.96	40.93	-13.07	54	32.55	31.76	6.16	29.54	281	313	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (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)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT80 CH 42 5210MHz		10420	46.6	-21.6	68.2	53.67	39.92	9.94	56.93	100	0	P	H
		15630	45.63	-28.37	74	51.16	38.31	12.7	56.54	100	0	P	H
													H
													H
		10420	46.88	-21.32	68.2	53.95	39.92	9.94	56.93	100	0	P	V
		15630	45.02	-28.98	74	50.55	38.31	12.7	56.54	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz
WIFI 802.11n HT20 (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)	
802.11n HT20 LF		141.55	35.83	-7.67	43.5	49.83	17.16	1.02	32.18	100	0	P	H	
		167.74	33.63	-9.87	43.5	49.18	15.5	1.11	32.16	-	-	P	H	
		239.52	29.09	-16.91	46	43.07	16.85	1.31	32.14	-	-	P	H	
		431.58	30.53	-15.47	46	38.59	22.33	1.77	32.16	-	-	P	H	
		854.5	31.85	-14.15	46	32.06	28.8	2.62	31.63	-	-	P	H	
		941.8	33.62	-12.38	46	31.95	30.07	2.65	31.05	-	-	P	H	
														H
														H
														H
														H
														H
														H
			42.61	30.37	-9.63	40	44.11	18.03	0.52	32.29	100	0	P	V
			134.76	32.24	-11.26	43.5	46.13	17.3	1	32.19	-	-	P	V
			261.83	26.87	-19.13	46	37.99	19.66	1.37	32.15	-	-	P	V
			600.36	32.21	-13.79	46	37.12	25.21	2.12	32.24	-	-	P	V
			856.44	31.89	-14.11	46	32.09	28.8	2.62	31.62	-	-	P	V
			957.32	33.87	-12.13	46	31.46	30.65	2.68	30.92	-	-	P	V
													V	
													V	
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



Note symbol

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



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

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	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

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(dBµV/m) – Limit Line(dBµV/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(dBµV) – 35.86 (dB)
 = 55.45 (dBµV/m)
2. Over Limit(dB)
 = Level(dBµV/m) – Limit Line(dBµV/m)
 = 55.45(dBµV/m) – 74(dBµV/m)
 = -18.55(dB)

For Average 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) + 42.6(dBµV) – 35.86 (dB)
 = 43.54 (dBµV/m)
2. Over Limit(dB) = Level(dBµV/m) – Limit Line(dBµV/m)
 = 43.54(dBµV/m) – 54(dBµV/m)
 = -10.46(dB)

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



Appendix D. Radiated Spurious Emission Plots

Test Engineer :	Ryan Lin, J.C. Liang and Wilson Wu	Temperature :	21.5~23.5°C
		Relative Humidity :	46.5~49.5%

Note symbol

-L	Low channel location
-R	High channel location



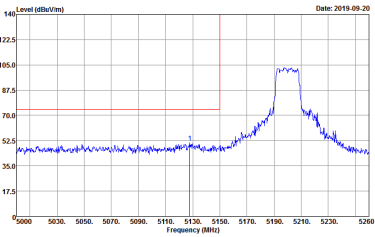
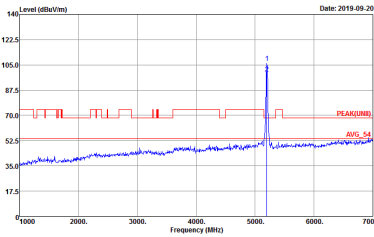
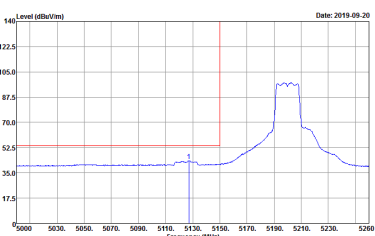
Band 1 - 5150~5250MHz
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH36 5180MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_SE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH13-HY Condition : PEAK(FUN) 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

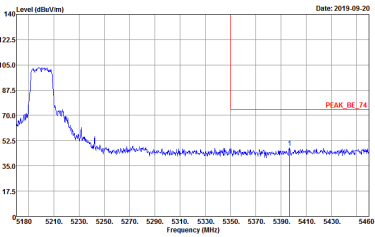
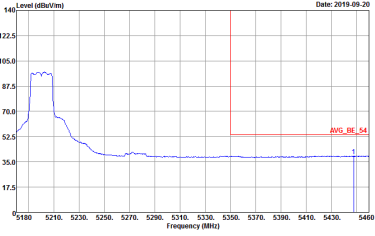


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH36 5180MHz	
1	Vertical	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH13-HY Condition : PEAK(FUND) 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

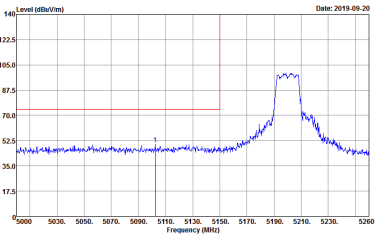
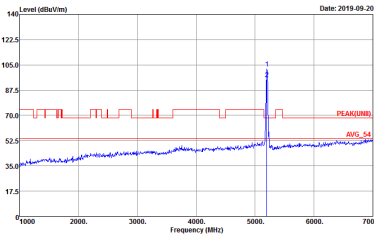
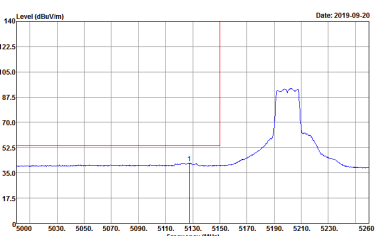


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH40 5200MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK(LINE) 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

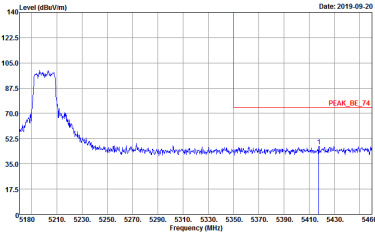
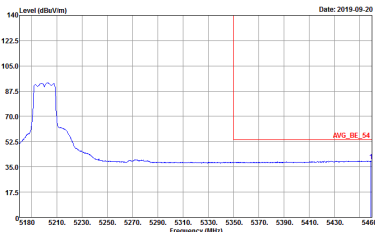


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH40 5200MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

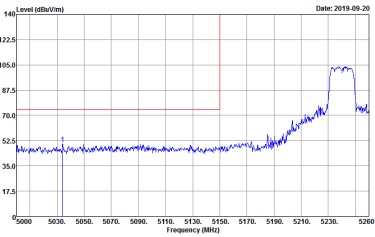
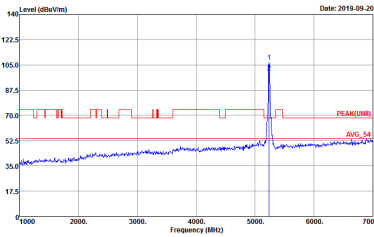
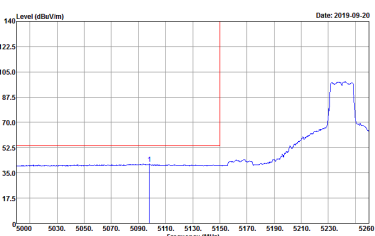


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH40 5200MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK(FUN1) 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

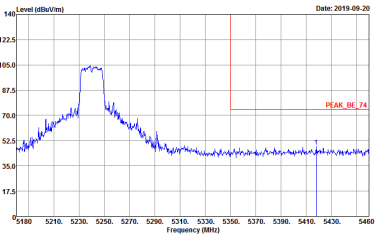
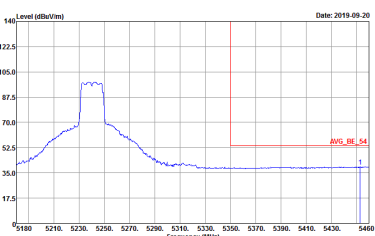


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH40 5200MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK(FUND) 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

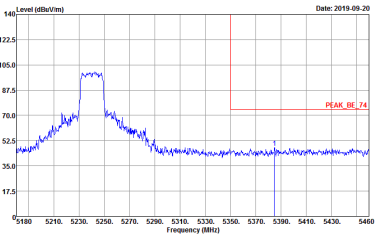
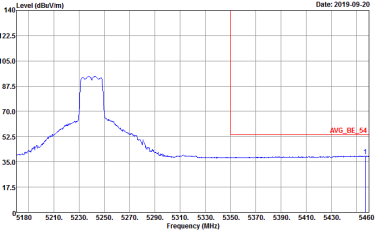


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz - L	
1	Vertical	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH13-HY Condition : PEAK(FUND) 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11a CH48 5240MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank



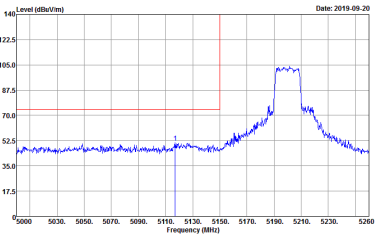
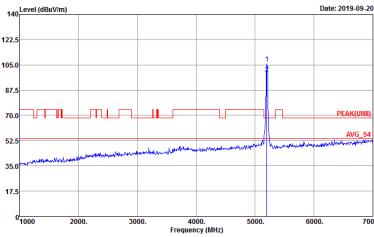
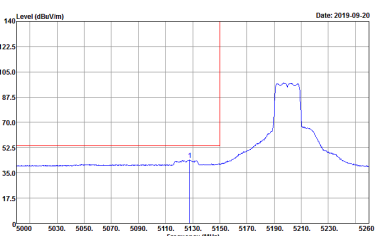
**Band 1 5150~5250MHz
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT20 CH36 5180MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH13-HY Condition : PEAK(UWB) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	Left blank

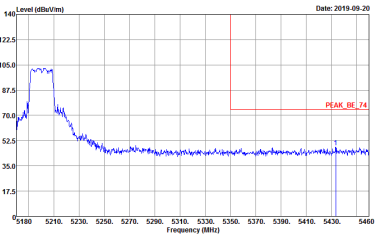
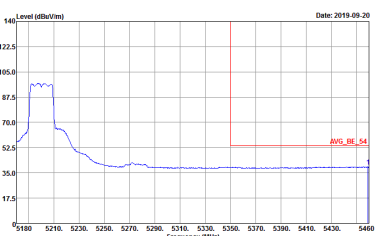


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT20 CH36 5180MHz	
1	Vertical	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH13-HY Condition : PEAK(FUND) 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

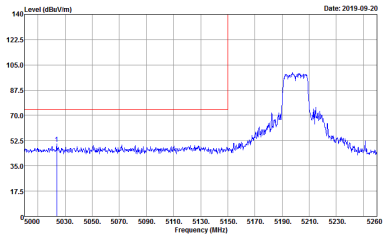
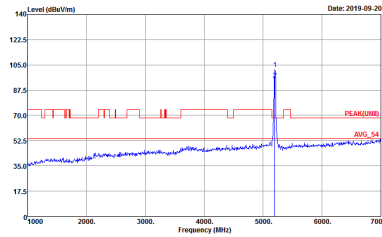
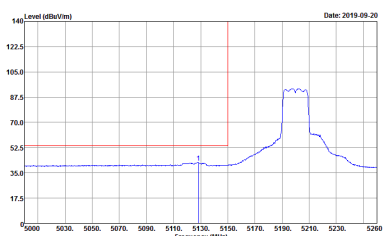


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT20 CH40 5200MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK(LINE) 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

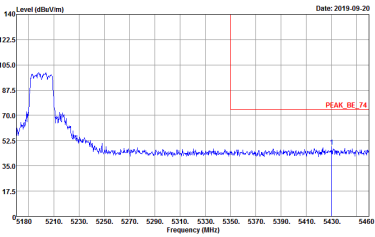
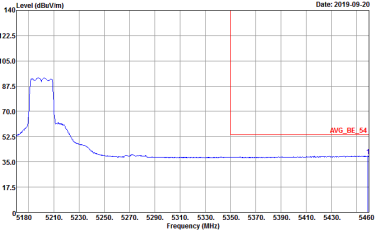


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT20 CH40 5200MHz - R	
1	Horizontal	Fundamental
<p>Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Left blank</p>
<p>Avg.</p>	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	<p>Left blank</p>

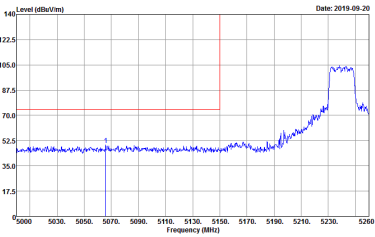
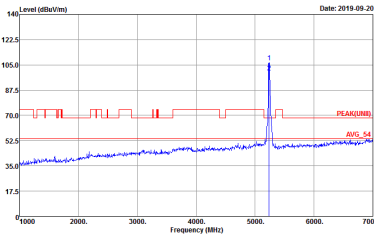
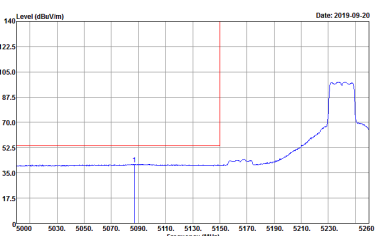


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT20 CH40 5200MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK(FUND) 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

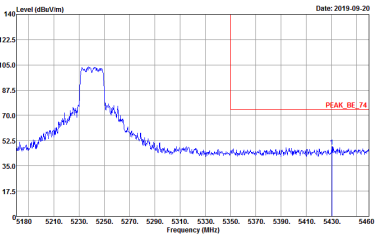
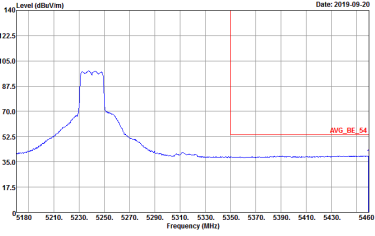


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT20 CH40 5200MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

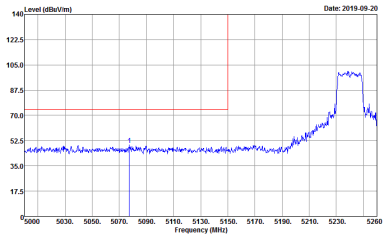
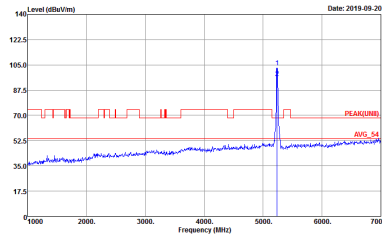
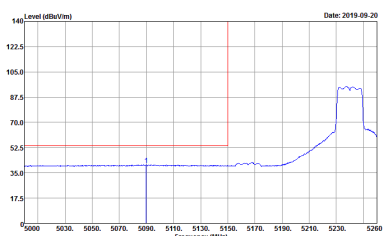


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT20 CH48 5240MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK(FUND) 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank

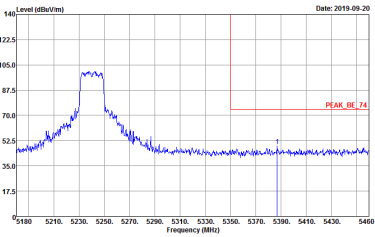
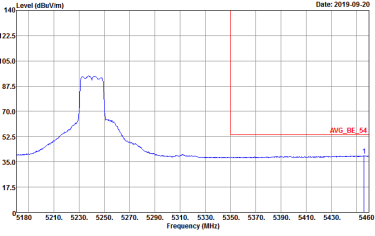


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT20 CH48 5240MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT20 CH48 5240MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK(FUND) 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank



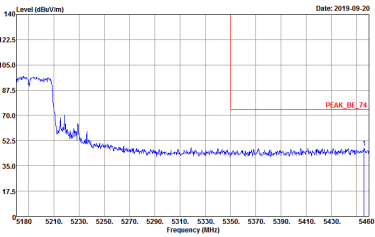
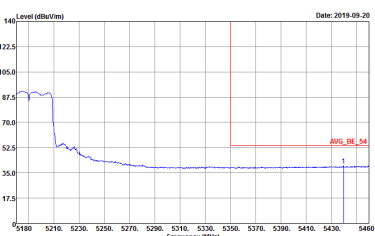
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT20 CH48 5240MHz - R	
1	Vertical	Fundamental
<p>Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Left blank</p>
<p>Avg.</p>	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	<p>Left blank</p>



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

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Site : 03CH13-HY Condition : PEAK(UWB) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	<p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>	Left blank

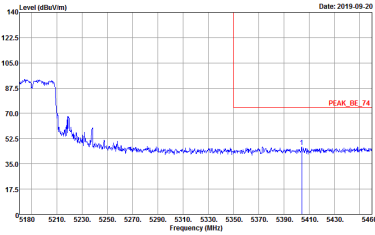
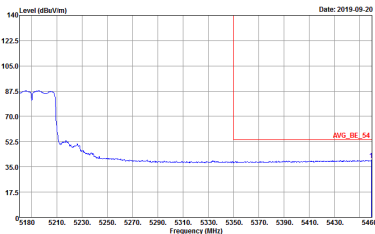


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	Left blank

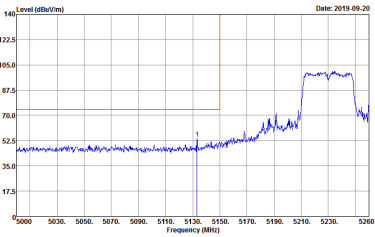
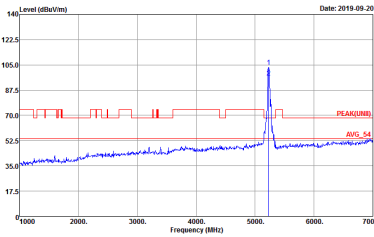
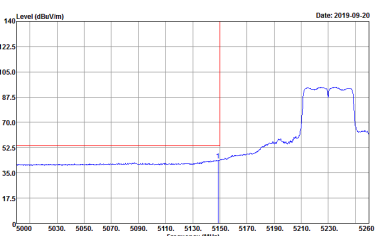


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
1	Vertical	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL :RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH13-HY Condition : PEAK(FUND) 3m HORN_9120D_1241 VERTICAL :RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_9120D_1241 VERTICAL :RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	Left blank

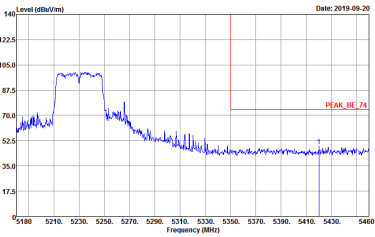
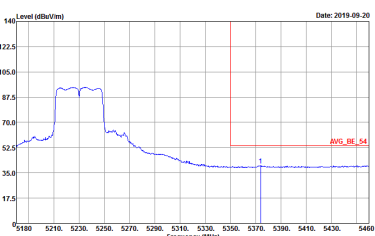


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	Left blank

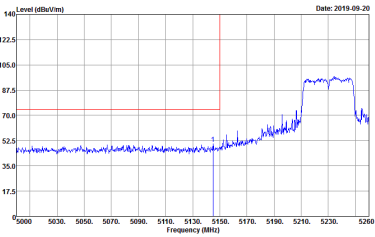
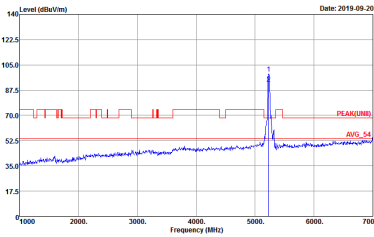
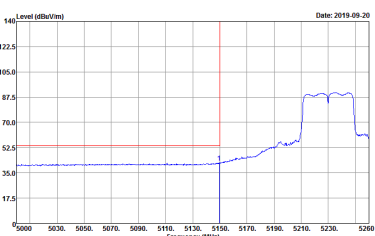


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH46 5230MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK(LINE) 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	Left blank

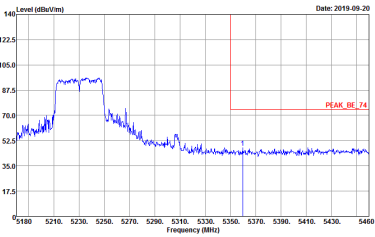
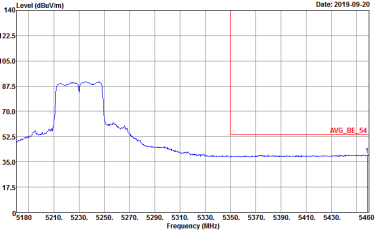


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH46 5230MHz - R	
1	Horizontal	Fundamental
<p>Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Left blank</p>
<p>Avg.</p>	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	<p>Left blank</p>



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH46 5230MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK(FUND) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	Left blank



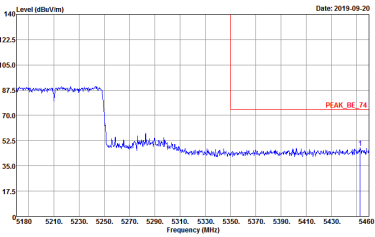
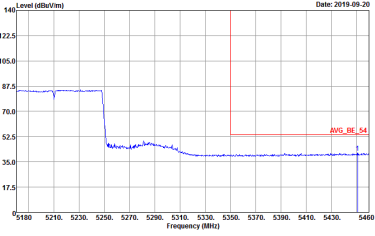
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH46 5230MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	Left blank



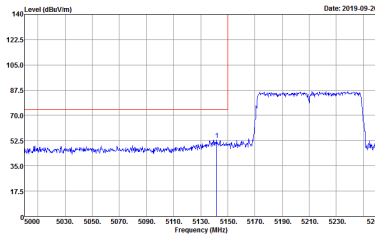
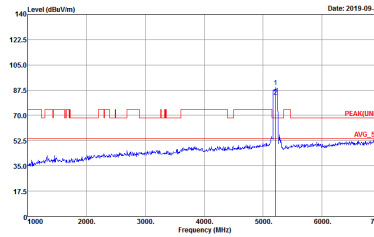
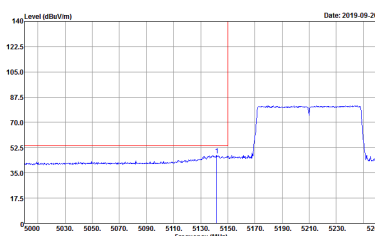
Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz - L	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:30.000KHz SWT:Auto</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK(FUND) 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AV6_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz - R	
1	Vertical	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	<p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto</p>	Left blank



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

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH36 5180MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH13-HY Condition : PEAK(UNI) 3m HORN_91200_1241 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH13-HY Condition : PEAK(UNI) 3m HORN_91200_1241 VERTICAL Detector : Peak</p>



WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH40 5200MHz	
1	Horizontal	Vertical
Peak Avg.	<div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> </div> <div style="width: 45%;"> </div> </div>	



WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11a CH48 5240MHz	
1	Horizontal	Vertical
Peak Avg.	<div style="display: flex; justify-content: space-around;"> <div data-bbox="430 560 813 840"> <p>Site : 03CH13-HY Condition : PEAK(LINE1) 3m HORN_91200_1241 HORIZONTAL Detector : Peak</p> </div> <div data-bbox="877 560 1260 840"> <p>Site : 03CH13-HY Condition : PEAK(LINE1) 3m HORN_91200_1241 VERTICAL Detector : Peak</p> </div> </div>	



**Band 1 5150~5250MHz
WIFI 802.11n HT20 (Harmonic @ 3m)**

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11n HT20 CH36 5180MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL Detector : Peak</p>



WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11n HT20 CH40 5200MHz	
1	Horizontal	Vertical
Peak Avg.	<div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> </div> <div style="width: 45%;"> </div> </div>	



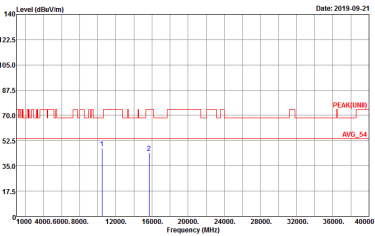
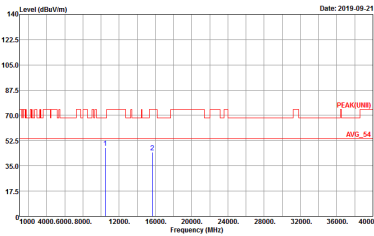
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11n HT20 CH48 5240MHz	
1	Horizontal	Vertical
Peak Avg.	<div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> </div> <div style="width: 45%;"> </div> </div>	



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

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11n HT40 CH38 5190MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL Detector : Peak</p>



WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11n HT40 CH46 5230MHz	
1	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH13-HY Condition : PEAR(LINE1) 3m HORN_91200_1241 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH13-HY Condition : PEAR(LINE1) 3m HORN_91200_1241 VERTICAL Detector : Peak</p>



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

WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH42 5210MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL Detector : Peak</p>



Emission below 1GHz
5GHz WIFI 802.11n HT20 (LF)

WIFI	5GHz WIFI	
ANT	802.11n HT20 LF	
1	Horizontal	Vertical
QP / Peak	<p>Site : 03CH13-HY Condition : QP 3m BIL06_40103 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH13-HY Condition : QP 3m BIL06_40103 VERTICAL Detector : Peak</p>

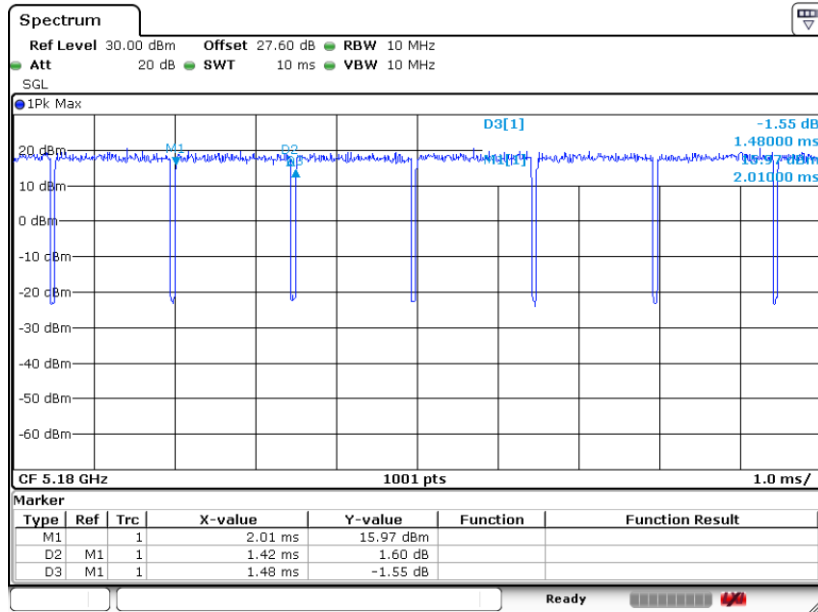


Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
802.11a	95.95	1420	0.70	1kHz	0.18
5GHz 802.11n HT20	95.71	1340	0.75	1kHz	0.19
5GHz 802.11n HT40	91.74	666	1.50	3kHz	0.37
5GHz 802.11ac VHT20	95.74	1350	0.74	1kHz	0.19
5GHz 802.11ac VHT40	92.47	675	1.48	3kHz	0.34
5GHz 802.11ac VHT80	85.13	332	3.01	10kHz	0.70

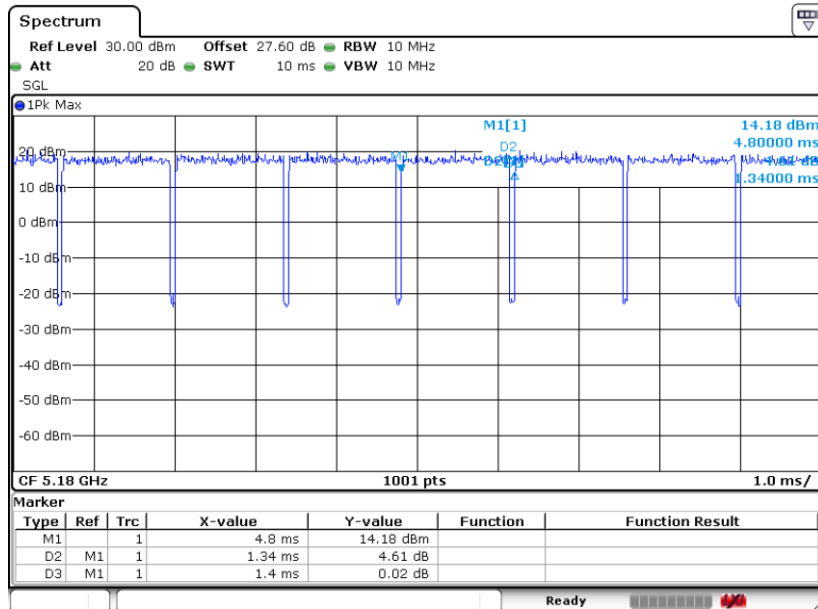


802.11a



Date: 16.SEP.2019 22:14:39

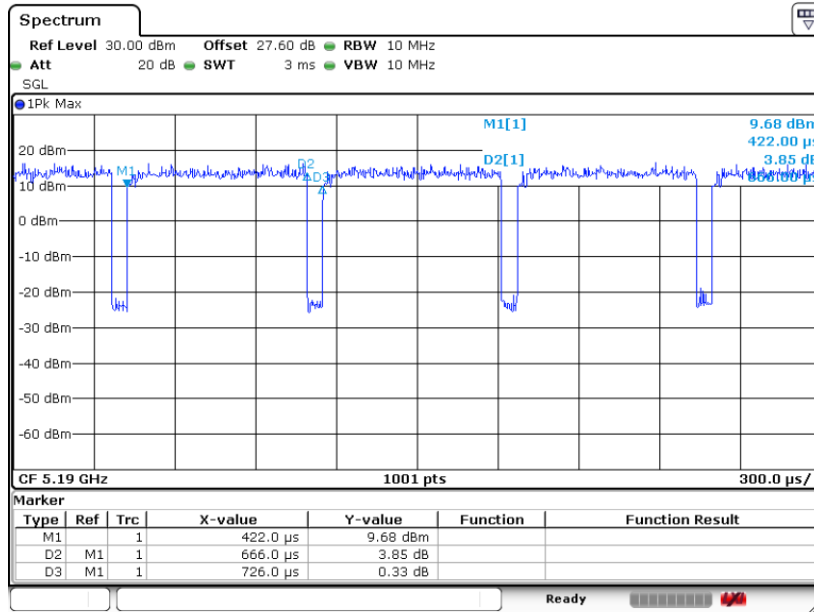
802.11n HT20



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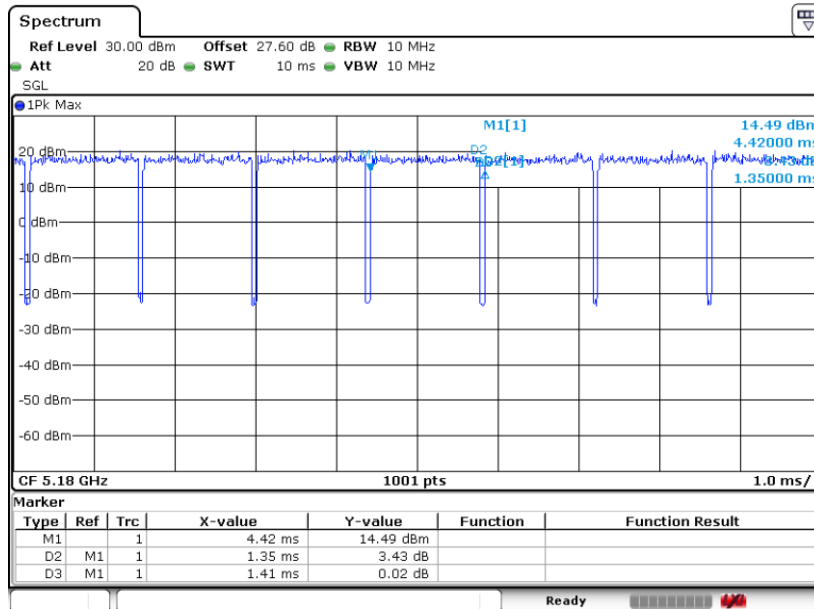


802.11n HT40



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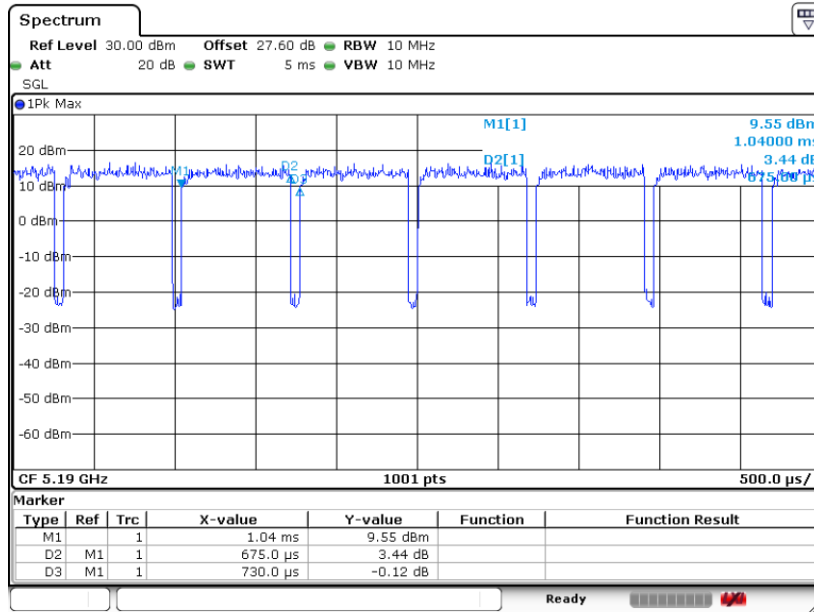
802.11ac VHT20



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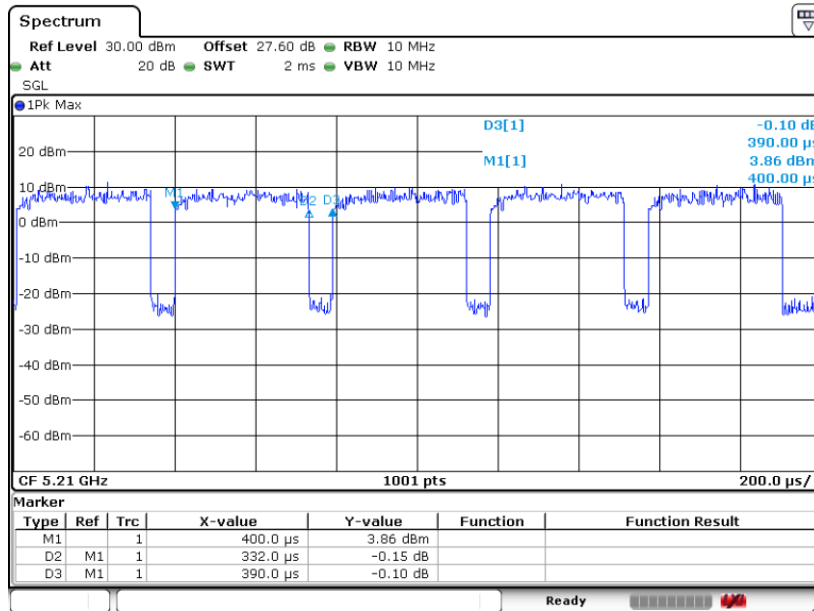


802.11ac VHT40



Date: 16.SEP.2019 23:44:49

802.11ac VHT80



Date: 16.SEP.2019 23:52:48