



FCC RADIO TEST REPORT

FCC ID : 2AVRLS10W
Equipment : Tablet
Brand Name : BYJU'S
Model Name : please refer to section 1.1 of this test report
Applicant : Tangible Play Inc.
195 Page Mill Rd, Ste 105, Palo Alto, CA
94306 United States
Manufacturer : Tangible Play Inc.
195 Page Mill Rd, Ste 105, Palo Alto, CA
94306 United States
Standard : FCC Part 15 Subpart E §15.407

The product was received on Jan. 15, 2020 and testing was started from Jan. 28, 2020 and completed on Mar. 04, 2020. 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 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
FR9D1202E	01	Initial issue of report	Jun. 16, 2020
FR9D1202E	02	1. Revise the description at cover page 2. Revise model name	Jun. 26, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403 (i)	6dB & 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 7.34 dB at 34.050 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 16.34 dB at 0.520 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: Tina Chuang

1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Model Name	"LRN10WINA-ETLT2" (EVTLot2 device) "LRN10WINA" (Tf Device) "LRNS10WIW0" (Pilot+MP Device), India SKU, White "LRNS10WIW1" reserved for future supplier iterations, India SKU, White "LRNS10WIW2" reserved for future supplier iterations, India SKU, White "LRNS10WIW3" reserved for future supplier iterations, India SKU, White "LRNS10WIW4" reserved for future supplier iterations, India SKU, White "LRNS10WIW5" reserved for future supplier iterations, India SKU, White "LRNS10WIW6" reserved for future supplier iterations, India SKU, White "LRNS10WIW7" reserved for future supplier iterations, India SKU, White "LRNS10WIW8" reserved for future supplier iterations, India SKU, White "LRNS10WIW9" reserved for future supplier iterations, India SKU, White
	"LRNS10GIW0" reserved for future supplier iterations, India SKU, Grey "LRNS10GIW1" reserved for future supplier iterations, India SKU, Grey "LRNS10GIW2" reserved for future supplier iterations, India SKU, Grey "LRNS10GIW3" reserved for future supplier iterations, India SKU, Grey "LRNS10GIW4" reserved for future supplier iterations, India SKU, Grey "LRNS10GIW5" reserved for future supplier iterations, India SKU, Grey "LRNS10GIW6" reserved for future supplier iterations, India SKU, Grey "LRNS10GIW7" reserved for future supplier iterations, India SKU, Grey "LRNS10GIW8" reserved for future supplier iterations, India SKU, Grey "LRNS10GIW9" reserved for future supplier iterations, India SKU, Grey
	"LRNS10RIW0" reserved for future supplier iterations, India SKU, Red "LRNS10RIW1" reserved for future supplier iterations, India SKU, Red "LRNS10RIW2" reserved for future supplier iterations, India SKU, Red "LRNS10RIW3" reserved for future supplier iterations, India SKU, Red "LRNS10RIW4" reserved for future supplier iterations, India SKU, Red "LRNS10RIW5" reserved for future supplier iterations, India SKU, Red "LRNS10RIW6" reserved for future supplier iterations, India SKU, Red "LRNS10RIW7" reserved for future supplier iterations, India SKU, Red "LRNS10RIW8" reserved for future supplier iterations, India SKU, Red "LRNS10RIW9" reserved for future supplier iterations, India SKU, Red



Product Specification subjective to this standard	
Model Name	"LRNS10WUW0" reserved for future supplier iterations, US SKU, White "LRNS10WUW1" reserved for future supplier iterations, US SKU, White "LRNS10WUW2" reserved for future supplier iterations, US SKU, White "LRNS10WUW3" reserved for future supplier iterations, US SKU, White "LRNS10WUW4" reserved for future supplier iterations, US SKU, White "LRNS10WUW5" reserved for future supplier iterations, US SKU, White "LRNS10WUW6" reserved for future supplier iterations, US SKU, White "LRNS10WUW7" reserved for future supplier iterations, US SKU, White "LRNS10WUW8" reserved for future supplier iterations, US SKU, White "LRNS10WUW9" reserved for future supplier iterations, US SKU, White "LRNS10GUW0" reserved for future supplier iterations, US SKU, Grey "LRNS10GUW1" reserved for future supplier iterations, US SKU, Grey "LRNS10GUW2" reserved for future supplier iterations, US SKU, Grey "LRNS10GUW3" reserved for future supplier iterations, US SKU, Grey "LRNS10GUW4" reserved for future supplier iterations, US SKU, Grey "LRNS10GUW5" reserved for future supplier iterations, US SKU, Grey "LRNS10GUW6" reserved for future supplier iterations, US SKU, Grey "LRNS10GUW7" reserved for future supplier iterations, US SKU, Grey "LRNS10GUW8" reserved for future supplier iterations, US SKU, Grey "LRNS10GUW9" reserved for future supplier iterations, US SKU, Grey "LRNS10RUW0" reserved for future supplier iterations, US SKU, Red "LRNS10RUW1" reserved for future supplier iterations, US SKU, Red "LRNS10RUW2" reserved for future supplier iterations, US SKU, Red "LRNS10RUW3" reserved for future supplier iterations, US SKU, Red "LRNS10RUW4" reserved for future supplier iterations, US SKU, Red "LRNS10RUW5" reserved for future supplier iterations, US SKU, Red "LRNS10RUW6" reserved for future supplier iterations, US SKU, Red "LRNS10RUW7" reserved for future supplier iterations, US SKU, Red "LRNS10RUW8" reserved for future supplier iterations, US SKU, Red "LRNS10RUW9" reserved for future supplier iterations, US SKU, Red
Antenna Type	WLAN: PCB Antenna Bluetooth: PCB Antenna GPS: PCB 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	03CH07-HY

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

FCC designation No.: TW1190

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:

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.
3. The TAF code is not including all the FCC KDB listed without accreditation.

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)
5725-5850 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155 [#]	5775	165	5825

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 : Bluetooth Link + WLAN (5GHz) Link + Camera (Top) + Earphone + Adapter + SD Card

Ch. #		Band IV : 5725-5850 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

Remark: For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

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.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
4.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P : Unshielded, 1.2m DC O/P : Shielded, 1.8m
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A



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.

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.

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

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

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

26dB and 99% Occupied bandwidth are reporting only.

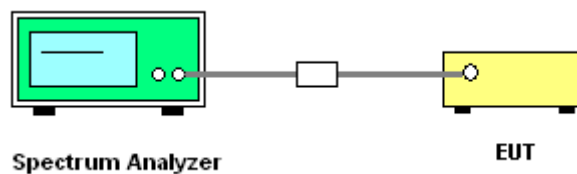
3.1.2 Measuring Instruments

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 for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

3.1.4 Test Setup

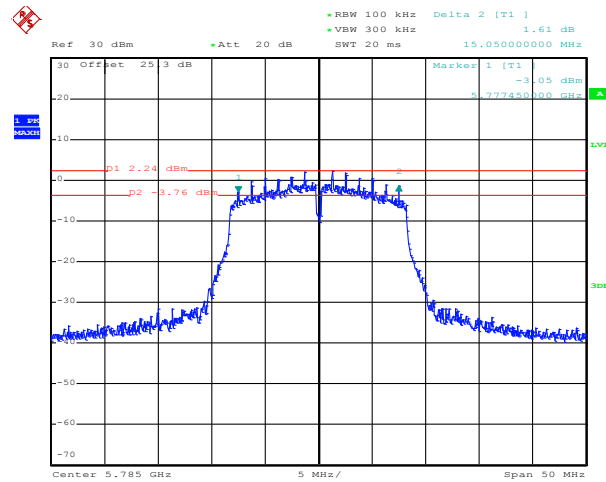


3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.

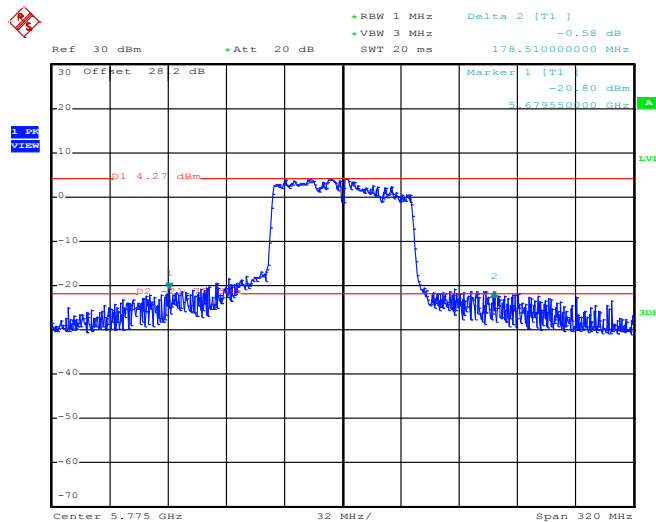


Minimum 6dB Bandwidth

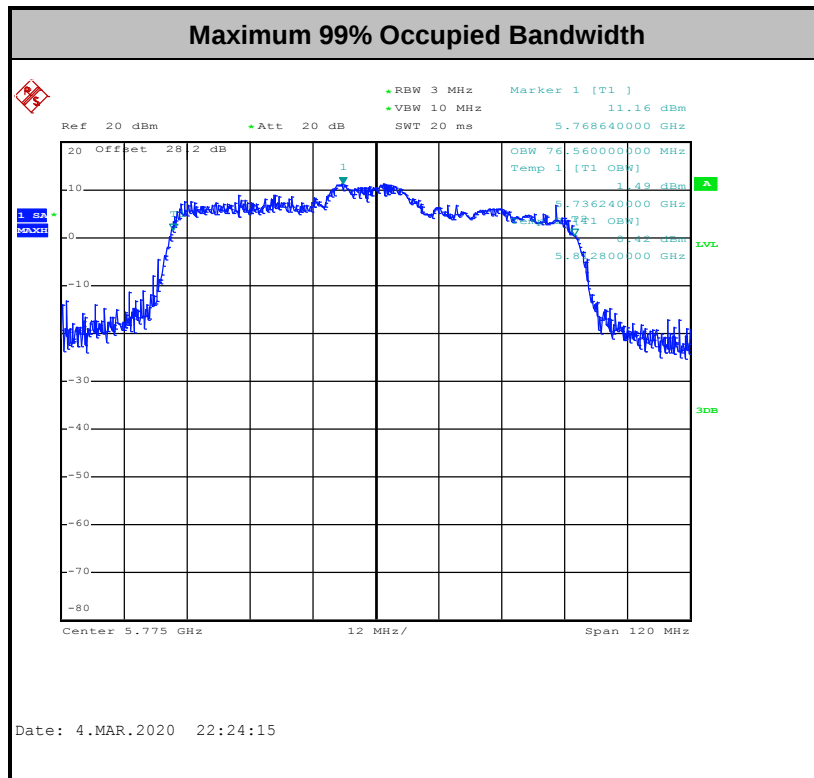


Date: 22.FEB.2020 02:35:38

Maximum 26dB Bandwidth



Date: 4.MAR.2020 22:22:16



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

For the band 5.725–5.85 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.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

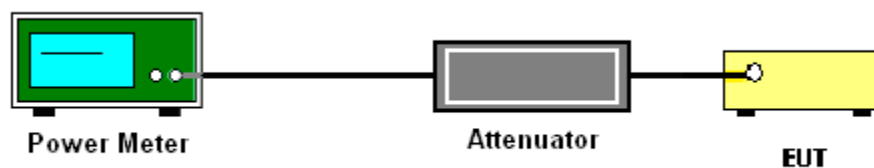
3.2.3 Test Procedures

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

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.

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

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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):

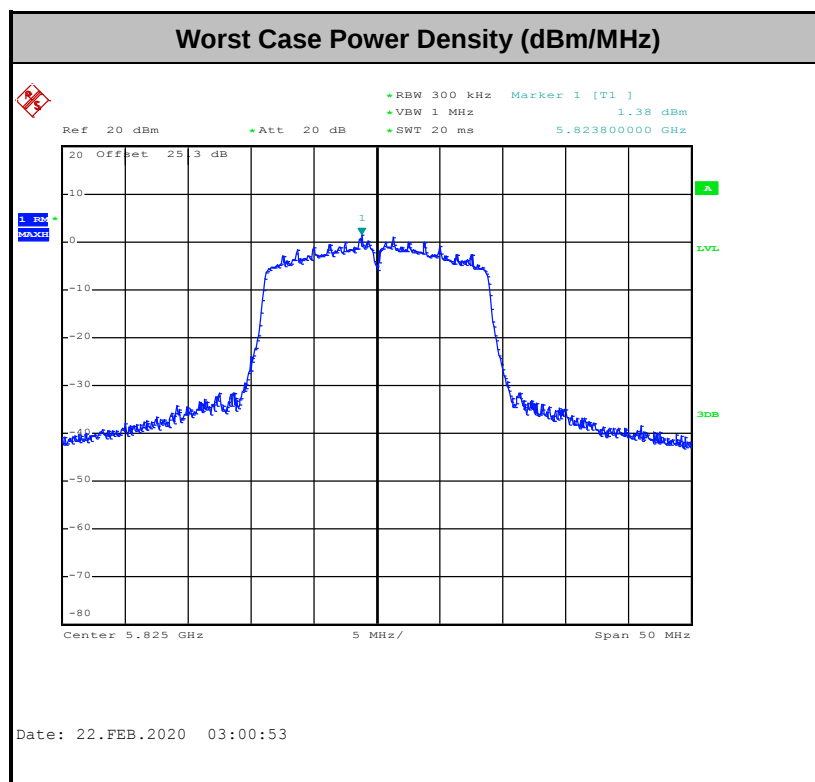
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 300 kHz.
 - Set VBW $\geq$ 1 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - Sweep time $\leq$ (number of points in sweep) $\times$ T, when duty cycle is less than 98 percent where T is the minimum transmission 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.



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 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

- (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.

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

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

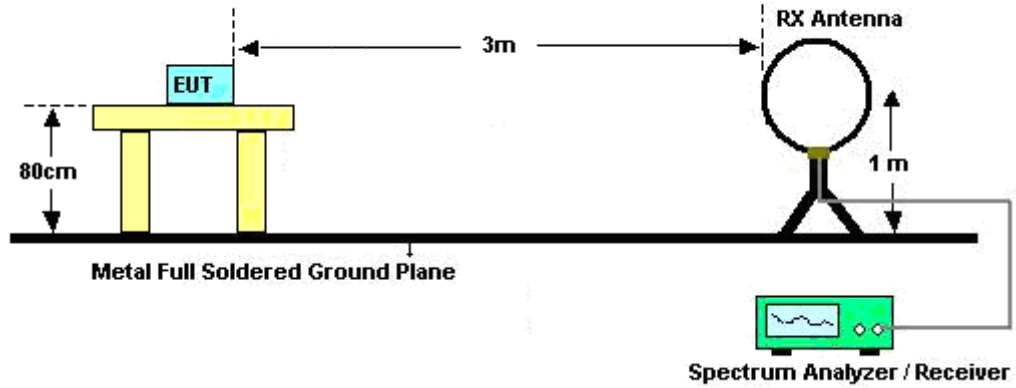
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.



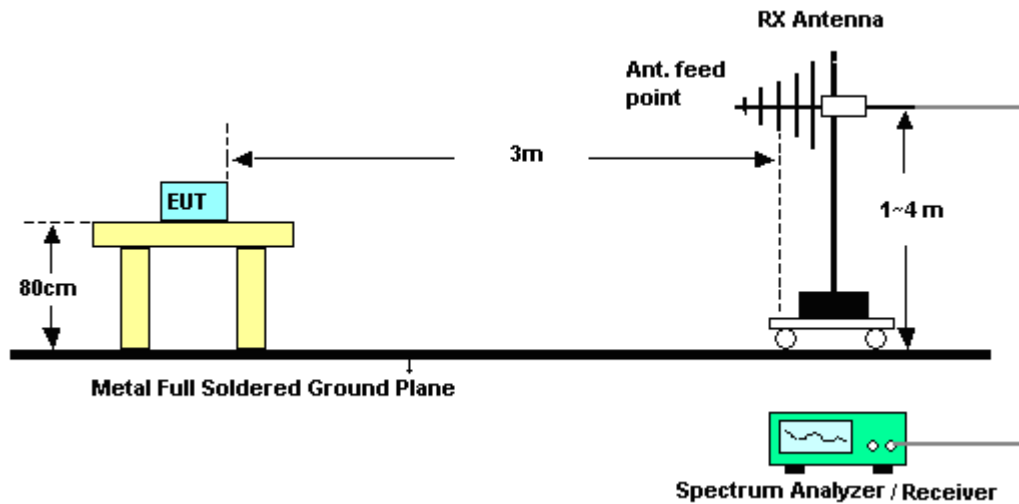
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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 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 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 Unwanted Radiated Emission (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.

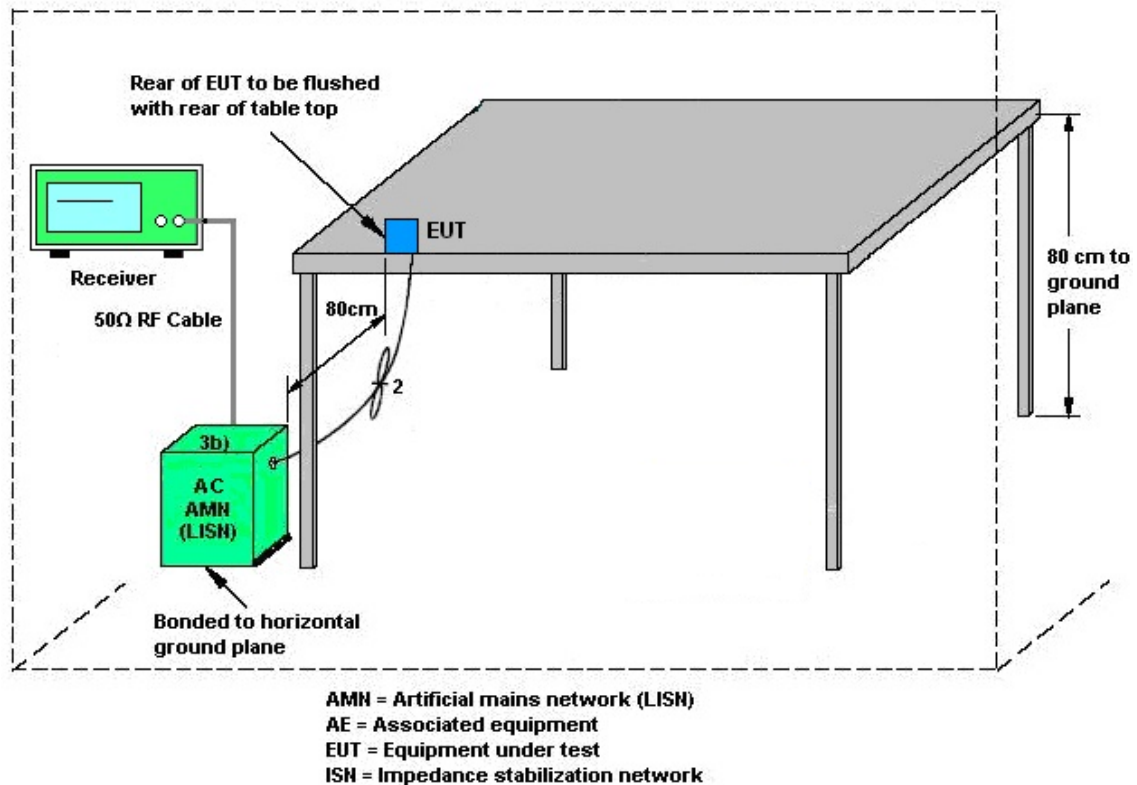
3.5.2 Measuring Instruments

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
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01 N-06	35419 & 03	30MHz~1GHz	Apr. 30, 2019	Jan. 28, 2020~Mar. 03, 2020	Apr. 29, 2020	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 06, 2019	Jan. 28, 2020~Mar. 03, 2020	Dec. 05, 2020	Radiation (03CH07-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz~26.5GHz	Jan. 18, 2020	Jan. 28, 2020~Mar. 03, 2020	Jan. 17, 2021	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2468	Thermo-hygrometer	Jan. 15, 2020	Jan. 28, 2020~Mar. 03, 2020	Jan. 14, 2021	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Dec. 26, 2019	Jan. 28, 2020~Mar. 03, 2020	Dec. 25, 2020	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz~18GHz	Apr. 24, 2019	Jan. 28, 2020~Mar. 03, 2020	Apr. 23, 2020	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	May. 20, 2019	Jan. 28, 2020~Mar. 03, 2020	May. 19, 2020	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Nov. 01, 2019	Jan. 28, 2020~Mar. 03, 2020	Oct. 31, 2020	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4, MY28655/4	9kHz~30MHz	Feb. 26, 2019	Jan. 28, 2020~Feb. 24, 2020	Feb. 25, 2020	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4, MY28655/4	9kHz~30MHz	Feb. 25, 2020	Feb. 25, 2020~Mar. 03, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	30MHz~1GHz	Feb. 26, 2019	Jan. 28, 2020~Feb. 24, 2020	Feb. 25, 2020	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	30MHz~1GHz	Feb. 25, 2020	Feb. 25, 2020~Mar. 03, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	1GHz~18GHz	Feb. 26, 2019	Jan. 28, 2020~Feb. 24, 2020	Feb. 25, 2020	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	1GHz~18GHz	Feb. 25, 2020	Feb. 25, 2020~Mar. 03, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2	18GHz~40GHz	Feb. 26, 2019	Jan. 28, 2020~Feb. 24, 2020	Feb. 25, 2020	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2	18GHz~40GHz	Feb. 25, 2020	Feb. 25, 2020~Mar. 03, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126	532078/1 26E	30MHz~18GHz	Sep. 19, 2019	Jan. 28, 2020~Mar. 03, 2020	Sep. 18, 2020	Radiation (03CH07-HY)
Controller	ChainTek	Chaintek 3000	N/A	Control Turn table	N/A	Jan. 28, 2020~Mar. 03, 2020	N/A	Radiation (03CH07-HY)
Controller	Max-Full	MF7802	MF780208368	Control Ant Mast	N/A	Jan. 28, 2020~Mar. 03, 2020	N/A	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Jan. 28, 2020~Mar. 03, 2020	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Jan. 28, 2020~Mar. 03, 2020	N/A	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz~40GHz	Nov. 26, 2019	Jan. 28, 2020~Mar. 03, 2020	Nov. 25, 2020	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Apr. 02, 2019	Jan. 28, 2020~Mar. 03, 2020	Apr. 01, 2020	Radiation (03CH07-HY)
Software	Audix	E3 6.2009-8-24	N/A	N/A	N/A	Jan. 28, 2020~Mar. 03, 2020	N/A	Radiation (03CH07-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 13, 2019	Jan. 28, 2020~Mar. 03, 2020	Dec. 12, 2020	Radiation (03CH07-HY)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	608-H2	41410069	N/A	Jun. 17, 2019	Feb. 05, 2020~ Mar. 04, 2020	Jun. 16, 2020	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054S NO10	10MHz~6GHz	Dec. 23, 2019	Feb. 05, 2020~ Mar. 04, 2020	Dec. 22, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Aug. 14, 2019	Feb. 05, 2020~ Mar. 04, 2020	Aug. 13, 2020	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1208382	N/A	Mar. 27, 2019	Feb. 05, 2020~ Mar. 04, 2020	Mar. 26, 2020	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jan. 30, 2020	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 15, 2019	Jan. 30, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Mar. 19, 2019	Jan. 30, 2020	Mar. 18, 2020	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 20, 2019	Jan. 30, 2020	Nov. 19, 2020	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jan. 30, 2020	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 02, 2020	Jan. 30, 2020	Jan. 01, 2021	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 02, 2020	Jan. 30, 2020	Jan. 01, 2021	Conduction (CO05-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.0
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.6
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.3
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Hank Hsu/Shiming Liu/AnAn Wu	Temperature:	21~25	°C
Test Date:	2020/02/05~2020/03/04	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

Band IV single antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	149	5745	16.60	-	21.65	-	15.10	-	0.5	Pass
11a	6Mbps	1	157	5785	16.60	-	21.60	-	15.05	-	0.5	Pass
11a	6Mbps	1	165	5825	16.60	-	21.55	-	15.10	-	0.5	Pass
HT20	MCS0	1	149	5745	17.65	-	26.35	-	15.10	-	0.5	Pass
HT20	MCS0	1	157	5785	17.65	-	27.40	-	15.10	-	0.5	Pass
HT20	MCS0	1	165	5825	17.65	-	27.30	-	15.10	-	0.5	Pass
HT40	MCS0	1	151	5755	36.20	-	52.65	-	35.10	-	0.5	Pass
HT40	MCS0	1	159	5795	36.30	-	41.58	-	35.07	-	0.5	Pass
VHT80	MCS0	1	155	5775	76.56	-	178.51	-	75.52	-	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV single antenna												
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	149	5745	13.30	-		30.00	-	4.81	-	Pass
11a	6Mbps	1	157	5785	13.10	-		30.00	-	4.81	-	Pass
11a	6Mbps	1	165	5825	13.40	-		30.00	-	4.81	-	Pass
HT20	MCS0	1	149	5745	12.90	-		30.00	-	4.81	-	Pass
HT20	MCS0	1	157	5785	12.80	-		30.00	-	4.81	-	Pass
HT20	MCS0	1	165	5825	12.90	-		30.00	-	4.81	-	Pass
HT40	MCS0	1	151	5755	12.80	-		30.00	-	4.81	-	Pass
HT40	MCS0	1	159	5795	12.90	-		30.00	-	4.81	-	Pass
VHT20	MCS0	1	149	5745	12.80	-		30.00	-	4.81	-	Pass
VHT20	MCS0	1	157	5785	12.70	-		30.00	-	4.81	-	Pass
VHT20	MCS0	1	165	5825	12.80	-		30.00	-	4.81	-	Pass
VHT40	MCS0	1	151	5755	12.70	-		30.00	-	4.81	-	Pass
VHT40	MCS0	1	159	5795	12.80	-		30.00	-	4.81	-	Pass
VHT80	MCS0	1	155	5775	12.90	-		30.00	-	4.81	-	Pass

TEST RESULTS DATA
Power Spectral Density

Band IV single antenna														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	2.22	-	3.00	-		30.00	-	4.81	-	Pass
11a	6Mbps	1	157	5785	2.22	-	2.92	-		30.00	-	4.81	-	Pass
11a	6Mbps	1	165	5825	2.22	-	3.51	-		30.00	-	4.81	-	Pass
HT20	MCS0	1	149	5745	2.22	-	3.38	-		30.00	-	4.81	-	Pass
HT20	MCS0	1	157	5785	2.22	-	2.98	-		30.00	-	4.81	-	Pass
HT20	MCS0	1	165	5825	2.22	-	3.60	-		30.00	-	4.81	-	Pass
HT40	MCS0	1	151	5755	2.22	-	-0.23	-		30.00	-	4.81	-	Pass
HT40	MCS0	1	159	5795	2.22	-	-0.13	-		30.00	-	4.81	-	Pass
VHT80	MCS0	1	155	5775	2.22	-	-2.59	-		30.00	-	4.81	-	Pass

Note: PSD Sum = Max PSD(Ant. 1, Ant. 2) + 10 log (n)



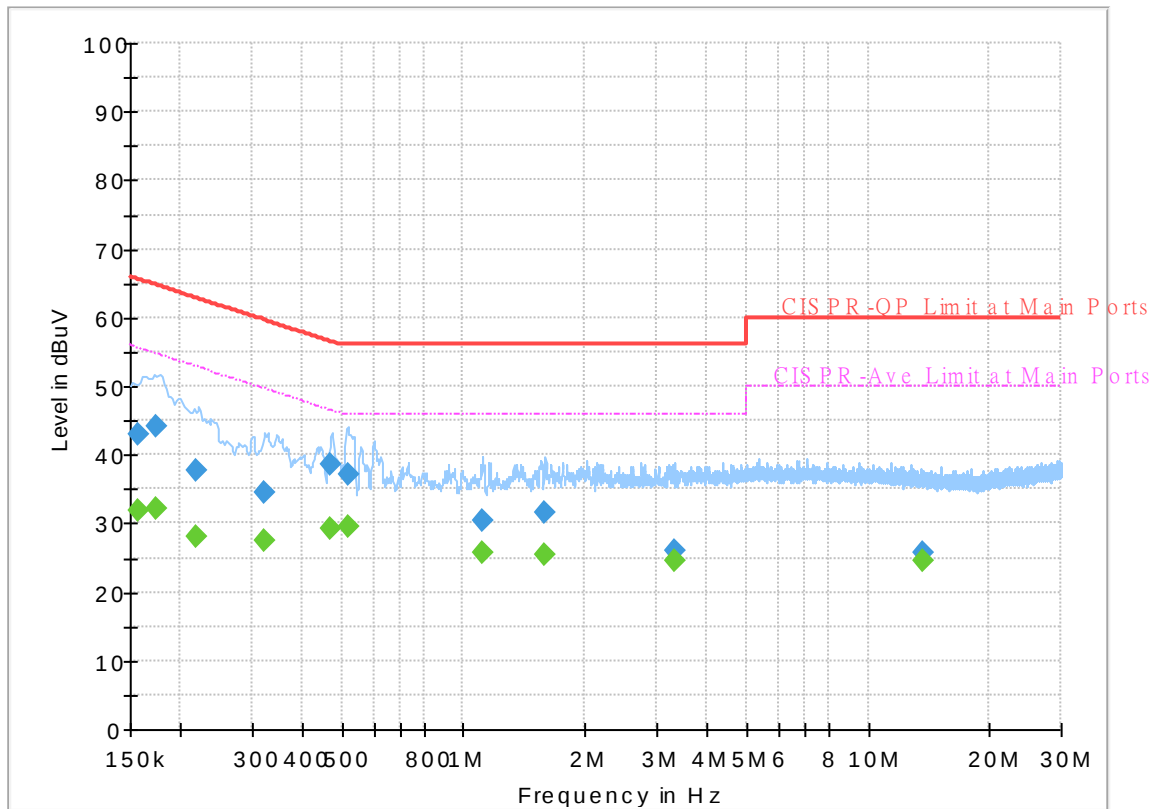
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Howard Huang	Temperature :	21~23°C
		Relative Humidity :	41~45%

EUT Information

Report NO : 9D1202
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



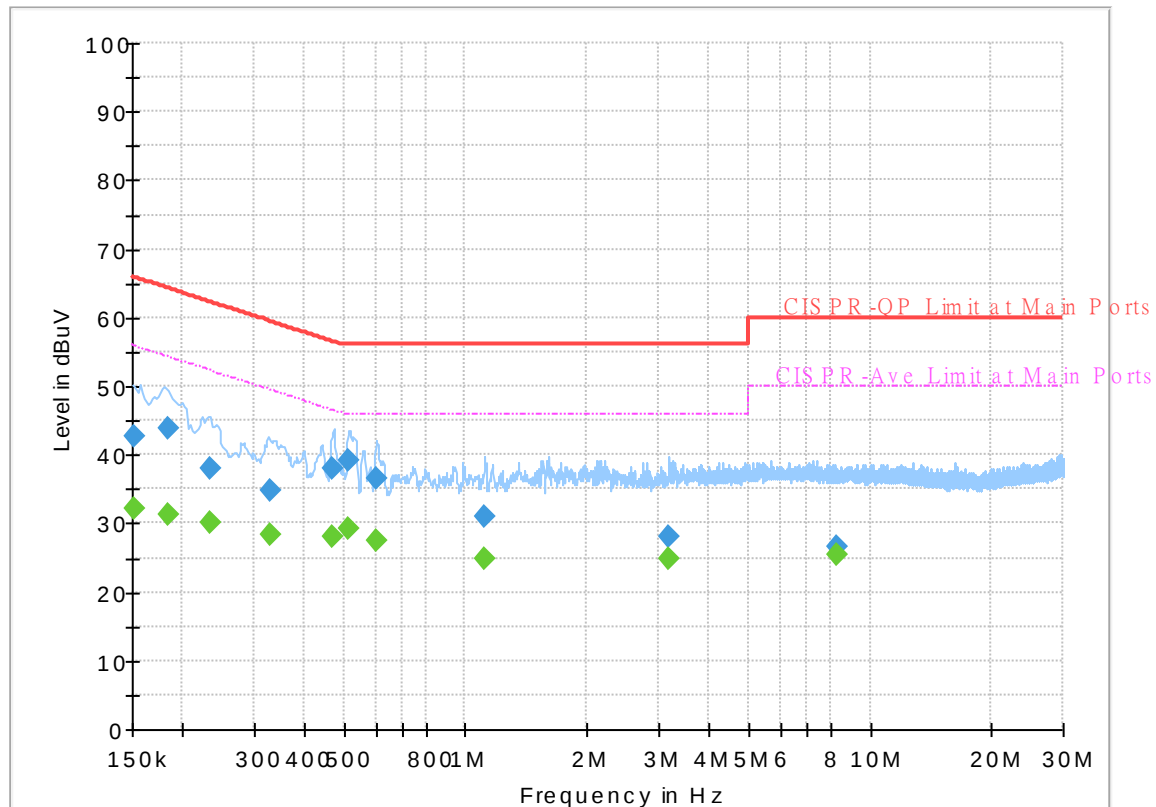
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.156750	---	31.96	55.63	23.67	L1	OFF	19.5
0.156750	43.02	---	65.63	22.61	L1	OFF	19.5
0.174750	---	32.02	54.73	22.71	L1	OFF	19.5
0.174750	44.09	---	64.73	20.64	L1	OFF	19.5
0.217590	---	28.04	52.91	24.87	L1	OFF	19.5
0.217590	37.74	---	62.91	25.17	L1	OFF	19.5
0.323070	---	27.43	49.63	22.20	L1	OFF	19.5
0.323070	34.60	---	59.63	25.03	L1	OFF	19.5
0.469590	---	29.11	46.52	17.41	L1	OFF	19.5
0.469590	38.64	---	56.52	17.88	L1	OFF	19.5
0.520260	---	29.66	46.00	16.34	L1	OFF	19.5
0.520260	37.03	---	56.00	18.97	L1	OFF	19.5
1.111020	---	25.77	46.00	20.23	L1	OFF	19.6
1.111020	30.40	---	56.00	25.60	L1	OFF	19.6
1.590000	---	25.50	46.00	20.50	L1	OFF	19.6
1.590000	31.49	---	56.00	24.51	L1	OFF	19.6
3.333750	---	24.57	46.00	21.43	L1	OFF	19.7
3.333750	25.92	---	56.00	30.08	L1	OFF	19.7
13.724700	---	24.65	50.00	25.35	L1	OFF	20.1
13.724700	25.77	---	60.00	34.23	L1	OFF	20.1

EUT Information

Report NO : 9D1202
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)
0.152250	---	32.06	55.88	23.82	N	OFF	19.6
0.152250	42.70	---	65.88	23.18	N	OFF	19.6
0.183750	---	31.39	54.31	22.92	N	OFF	19.6
0.183750	43.91	---	64.31	20.40	N	OFF	19.6
0.233430	---	30.09	52.33	22.24	N	OFF	19.6
0.233430	37.96	---	62.33	24.37	N	OFF	19.6
0.330000	---	28.33	49.45	21.12	N	OFF	19.6
0.330000	34.93	---	59.45	24.52	N	OFF	19.6
0.468240	---	28.12	46.55	18.43	N	OFF	19.6
0.468240	37.97	---	56.55	18.58	N	OFF	19.6
0.512430	---	29.12	46.00	16.88	N	OFF	19.6
0.512430	39.32	---	56.00	16.68	N	OFF	19.6
0.601170	---	27.37	46.00	18.63	N	OFF	19.6
0.601170	36.43	---	56.00	19.57	N	OFF	19.6
1.119750	---	24.83	46.00	21.17	N	OFF	19.6
1.119750	30.98	---	56.00	25.02	N	OFF	19.6
3.176250	---	24.84	46.00	21.16	N	OFF	19.7
3.176250	27.94	---	56.00	28.06	N	OFF	19.7
8.265750	---	25.33	50.00	24.67	N	OFF	20.0
8.265750	26.54	---	60.00	33.46	N	OFF	20.0



Appendix C. Radiated Spurious Emission

Test Engineer :	Jesse Wang, Stan Hsieh, Ken Wu, and Nick Yu	Temperature :	21~23°C
		Relative Humidity :	49~53%

Band 4 - 5725~5850MHz

WIFI 802.11a (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)
802.11a CH 149 5745MHz		5600.4	50.78	-17.42	68.2	39.05	35	12.04	35.31	100	86	P	H
		5680.6	52.16	-38.72	90.88	40.46	34.85	12.17	35.32	100	86	P	H
		5717.2	61.19	-48.83	110.02	49.28	35	12.23	35.32	100	86	P	H
		5724.4	66.78	-54.05	120.83	54.85	35	12.25	35.32	100	86	P	H
	*	5745	108.15	-	-	96.19	35	12.28	35.32	100	86	P	H
	*	5745	100.4	-	-	88.44	35	12.28	35.32	100	86	A	H
													H
													H
		5620.4	49.9	-18.3	68.2	38.24	34.9	12.07	35.31	100	96	P	V
		5697	50.94	-52.05	102.99	39.06	35	12.2	35.32	100	96	P	V
		5717.4	58.78	-51.29	110.07	46.87	35	12.23	35.32	100	96	P	V
		5724.4	62.02	-58.81	120.83	50.09	35	12.25	35.32	100	96	P	V
	*	5745	105.75	-	-	93.79	35	12.28	35.32	100	96	P	V
	*	5745	98.15	-	-	86.19	35	12.28	35.32	100	96	A	V
													V
													V



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 157 5785MHz		5607.2	50.5	-17.7	68.2	38.76	35	12.05	35.31	100	71	P	H
		5680.4	51.08	-39.65	90.73	39.38	34.85	12.17	35.32	100	71	P	H
		5704	50.88	-55.44	106.32	38.99	35	12.21	35.32	100	71	P	H
		5724	50.85	-69.07	119.92	38.93	35	12.24	35.32	100	71	P	H
	*	5785	108.03	-	-	96.01	35	12.35	35.33	100	71	P	H
	*	5785	100.32	-	-	88.3	35	12.35	35.33	100	71	A	H
		5854.2	50.72	-61.9	112.62	38.59	35.07	12.4	35.34	100	71	P	H
		5873	51.81	-53.95	105.76	39.61	35.13	12.41	35.34	100	71	P	H
		5887.4	51.63	-44.36	95.99	39.43	35.13	12.41	35.34	100	71	P	H
		5947.6	50.91	-17.29	68.2	38.61	35.2	12.44	35.34	100	71	P	H
													H
													H
		5637.2	49.09	-19.11	68.2	37.5	34.8	12.1	35.31	100	101	P	V
		5688.2	49.5	-47	96.5	37.63	35	12.19	35.32	100	101	P	V
		5714.6	49.42	-59.87	109.29	37.51	35	12.23	35.32	100	101	P	V
		5724	50.52	-69.4	119.92	38.6	35	12.24	35.32	100	101	P	V
	*	5785	105.62	-	-	93.6	35	12.35	35.33	100	101	P	V
	*	5785	97.72	-	-	85.7	35	12.35	35.33	100	101	A	V
		5853.2	49.62	-65.28	114.9	37.56	35	12.4	35.34	100	101	P	V
		5862.6	49.5	-59.17	108.67	37.37	35.07	12.4	35.34	100	101	P	V
		5895	52.12	-38.24	90.36	39.84	35.2	12.42	35.34	100	101	P	V
		5933	51.2	-17	68.2	38.9	35.2	12.44	35.34	100	101	P	V
													V
													V



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 165 5825MHz	*	5825	108.85	-	-	96.8	35	12.38	35.33	100	71	P	H
	*	5825	101.15	-	-	89.1	35	12.38	35.33	100	71	A	H
		5852.6	59.14	-57.13	116.27	47.08	35	12.4	35.34	100	71	P	H
		5857.6	54.88	-55.19	110.07	42.75	35.07	12.4	35.34	100	71	P	H
		5897.6	52.06	-36.38	88.44	39.78	35.2	12.42	35.34	100	71	P	H
		5934.2	51.21	-16.99	68.2	38.91	35.2	12.44	35.34	100	71	P	H
													H
													H
	*	5825	105.85	-	-	93.8	35	12.38	35.33	100	104	P	V
	*	5825	98.15	-	-	86.1	35	12.38	35.33	100	104	A	V
		5850	59.52	-62.68	122.2	47.45	35	12.4	35.33	100	104	P	V
		5855.8	53.45	-57.13	110.58	41.32	35.07	12.4	35.34	100	104	P	V
		5898.2	50.96	-37.03	87.99	38.68	35.2	12.42	35.34	100	104	P	V
		5941.6	50.76	-17.44	68.2	38.46	35.2	12.44	35.34	100	104	P	V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 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 149 5745MHz		11490	45.78	-28.22	74	46.58	38.18	18.48	57.46	100	0	P	H
		17235	50.4	-17.8	68.2	41.95	41.53	22.95	56.03	100	0	P	H
													H
													H
		11490	47.02	-26.98	74	47.82	38.18	18.48	57.46	100	0	P	V
		17235	51.01	-17.19	68.2	42.56	41.53	22.95	56.03	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	45.78	-28.22	74	46.26	38.33	18.55	57.36	100	0	P	H
		17355	50.33	-17.87	68.2	41.75	41.5	23.02	55.94	100	0	P	H
													H
													H
		11570	47.18	-26.82	74	47.66	38.33	18.55	57.36	100	0	P	V
		17355	50.42	-17.78	68.2	41.84	41.5	23.02	55.94	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	46.32	-27.68	74	46.54	38.44	18.63	57.29	100	0	P	H
		17475	50.34	-17.86	68.2	41.77	41.33	23.09	55.85	100	0	P	H
													H
													H
		11650	49.39	-24.61	74	49.61	38.44	18.63	57.29	100	0	P	V
		17475	50.2	-18	68.2	41.63	41.33	23.09	55.85	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT20 (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)
802.11n HT20 CH 149 5745MHz		5623.6	51.79	-16.41	68.2	40.12	34.9	12.08	35.31	100	86	P	H
		5669	51.69	-30.61	82.3	40.01	34.85	12.15	35.32	100	86	P	H
		5718.6	61	-49.41	110.41	49.08	35	12.24	35.32	100	86	P	H
		5723.8	64.07	-55.39	119.46	52.15	35	12.24	35.32	100	86	P	H
	*	5745	107.55	-	-	95.59	35	12.28	35.32	100	86	P	H
	*	5745	100.05	-	-	88.09	35	12.28	35.32	100	86	A	H
													H
													H
		5635.8	50.57	-17.63	68.2	38.98	34.8	12.1	35.31	100	96	P	V
		5673.2	50.79	-34.62	85.41	39.1	34.85	12.16	35.32	100	96	P	V
		5719.6	58.39	-52.3	110.69	46.47	35	12.24	35.32	100	96	P	V
		5725	63.84	-58.36	122.2	51.91	35	12.25	35.32	100	96	P	V
	*	5745	105.17	-	-	93.21	35	12.28	35.32	100	96	P	V
	*	5745	97.55	-	-	85.59	35	12.28	35.32	100	96	A	V
													V
													V



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)
802.11n HT20 CH 157 5785MHz		5648	49.23	-18.97	68.2	37.62	34.8	12.12	35.31	100	71	P	H
		5679.4	49.97	-40.03	90	38.27	34.85	12.17	35.32	100	71	P	H
		5715.6	51.01	-58.56	109.57	39.1	35	12.23	35.32	100	71	P	H
		5721.8	50.38	-64.52	114.9	38.46	35	12.24	35.32	100	71	P	H
	*	5785	107.72	-	-	95.7	35	12.35	35.33	100	71	P	H
	*	5785	100.12	-	-	88.1	35	12.35	35.33	100	71	A	H
		5850.8	50.99	-69.39	120.38	38.93	35	12.4	35.34	100	71	P	H
		5871.4	51.77	-54.44	106.21	39.57	35.13	12.41	35.34	100	71	P	H
		5884.4	51.74	-46.48	98.22	39.54	35.13	12.41	35.34	100	71	P	H
		5945.2	51.45	-16.75	68.2	39.15	35.2	12.44	35.34	100	71	P	H
													H
													H
		5607.8	48.49	-19.71	68.2	36.75	35	12.05	35.31	100	101	P	V
		5665.2	49.87	-29.61	79.48	38.34	34.7	12.15	35.32	100	101	P	V
		5705.6	50.4	-56.37	106.77	38.51	35	12.21	35.32	100	101	P	V
		5723.6	48.82	-70.19	119.01	36.9	35	12.24	35.32	100	101	P	V
	*	5785	105.32	-	-	93.3	35	12.35	35.33	100	101	P	V
	*	5785	97.67	-	-	85.65	35	12.35	35.33	100	101	A	V
		5850	50.06	-72.14	122.2	37.99	35	12.4	35.33	100	101	P	V
		5871	50.93	-55.39	106.32	38.73	35.13	12.41	35.34	100	101	P	V
		5882.6	51.97	-47.59	99.56	39.77	35.13	12.41	35.34	100	101	P	V
		5949.4	49.76	-18.44	68.2	37.46	35.2	12.44	35.34	100	101	P	V
													V
													V



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)
802.11n HT20 CH 165 5825MHz	*	5825	108.35	-	-	96.3	35	12.38	35.33	100	71	P	H
	*	5825	100.65	-	-	88.6	35	12.38	35.33	100	71	A	H
		5851.4	61.7	-57.31	119.01	49.64	35	12.4	35.34	100	71	P	H
		5857.4	56.86	-53.27	110.13	44.73	35.07	12.4	35.34	100	71	P	H
		5899.6	52.27	-34.69	86.96	39.99	35.2	12.42	35.34	100	71	P	H
		5938.2	51.36	-16.84	68.2	39.06	35.2	12.44	35.34	100	71	P	H
													H
													H
	*	5825	105.25	-	-	93.2	35	12.38	35.33	100	104	P	V
	*	5825	97.65	-	-	85.6	35	12.38	35.33	100	104	A	V
		5854	57.3	-55.78	113.08	45.17	35.07	12.4	35.34	100	104	P	V
		5856.6	54.51	-55.84	110.35	42.38	35.07	12.4	35.34	100	104	P	V
		5881.8	51.72	-48.43	100.15	39.52	35.13	12.41	35.34	100	104	P	V
		5941.2	50.39	-17.81	68.2	38.09	35.2	12.44	35.34	100	104	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 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)
802.11n HT20 CH 149 5745MHz		11490	46.05	-27.95	74	46.85	38.18	18.48	57.46	100	0	P	H
		17235	50.04	-18.16	68.2	41.59	41.53	22.95	56.03	100	0	P	H
													H
													H
		11490	45.98	-28.02	74	46.78	38.18	18.48	57.46	100	0	P	V
		17235	50.5	-17.7	68.2	42.05	41.53	22.95	56.03	100	0	P	V
													V
													V
802.11n HT20 CH 157 5785MHz		11570	46.86	-27.14	74	47.34	38.33	18.55	57.36	100	0	P	H
		17355	50.57	-17.63	68.2	41.99	41.5	23.02	55.94	100	0	P	H
													H
													H
		11570	45.82	-28.18	74	46.3	38.33	18.55	57.36	100	0	P	V
		17355	50.68	-17.52	68.2	42.1	41.5	23.02	55.94	100	0	P	V
													V
													V
802.11n HT20 CH 165 5825MHz		11650	46.6	-27.4	74	46.82	38.44	18.63	57.29	100	0	P	H
		17475	49.73	-18.47	68.2	41.16	41.33	23.09	55.85	100	0	P	H
													H
													H
		11650	47.74	-26.26	74	47.96	38.44	18.63	57.29	100	0	P	V
		17475	49.97	-18.23	68.2	41.4	41.33	23.09	55.85	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT40 (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)
802.11n HT40 CH 151 5755MHz		5622.4	49.59	-18.61	68.2	37.92	34.9	12.08	35.31	102	96	P	H
		5699.8	53.88	-51.17	105.05	42	35	12.2	35.32	102	96	P	H
		5717.6	65.74	-44.39	110.13	53.83	35	12.23	35.32	102	96	P	H
		5722.4	68.2	-48.07	116.27	56.28	35	12.24	35.32	102	96	P	H
	*	5755	102.99	-	-	91.02	35	12.3	35.33	102	96	P	H
	*	5755	94.77	-	-	82.8	35	12.3	35.33	102	96	A	H
		5850.2	49.27	-72.47	121.74	37.21	35	12.4	35.34	102	96	P	H
		5857	49.29	-60.95	110.24	37.16	35.07	12.4	35.34	102	96	P	H
		5882.2	49.73	-50.12	99.85	37.53	35.13	12.41	35.34	102	96	P	H
		5938.6	50.12	-18.08	68.2	37.82	35.2	12.44	35.34	102	96	P	H
													H
													H
		5627.2	49.65	-18.55	68.2	37.98	34.9	12.08	35.31	102	84	P	V
		5699	54.21	-50.25	104.46	42.33	35	12.2	35.32	102	84	P	V
		5718.6	59.79	-50.62	110.41	47.87	35	12.24	35.32	102	84	P	V
		5721	63.15	-49.93	113.08	51.23	35	12.24	35.32	102	84	P	V
	*	5755	101.04	-	-	89.07	35	12.3	35.33	102	84	P	V
	*	5755	93.17	-	-	81.2	35	12.3	35.33	102	84	A	V
		5853.6	50.52	-63.47	113.99	38.39	35.07	12.4	35.34	102	84	P	V
		5859.6	50.46	-59.05	109.51	38.33	35.07	12.4	35.34	102	84	P	V
		5919.6	50.79	-21.39	72.18	38.5	35.2	12.43	35.34	102	84	P	V
		5931.8	49.57	-18.63	68.2	37.27	35.2	12.44	35.34	102	84	P	V
													V
													V



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)
802.11n HT40 CH 159 5795MHz		5632.4	50.56	-17.64	68.2	38.88	34.9	12.09	35.31	113	70	P	H
		5682.6	49.72	-42.64	92.36	38.01	34.85	12.18	35.32	113	70	P	H
		5706.2	50.79	-56.15	106.94	38.89	35	12.22	35.32	113	70	P	H
		5723.2	53.96	-64.14	118.1	42.04	35	12.24	35.32	113	70	P	H
	*	5795	105.05	-	-	93.02	35	12.36	35.33	113	70	P	H
	*	5795	97.19	-	-	85.16	35	12.36	35.33	113	70	A	H
		5853.4	54.14	-60.31	114.45	42.08	35	12.4	35.34	113	70	P	H
		5861.8	54.96	-53.93	108.89	42.83	35.07	12.4	35.34	113	70	P	H
		5886.2	52.01	-44.87	96.88	39.81	35.13	12.41	35.34	113	70	P	H
		5933.8	51.32	-16.88	68.2	39.02	35.2	12.44	35.34	113	70	P	H
													H
													H
		5644.2	49.13	-19.07	68.2	37.53	34.8	12.11	35.31	100	105	P	V
		5694	49.03	-51.75	100.78	37.15	35	12.2	35.32	100	105	P	V
		5715.6	49.23	-60.34	109.57	37.32	35	12.23	35.32	100	105	P	V
		5722.6	49.53	-67.2	116.73	37.61	35	12.24	35.32	100	105	P	V
	*	5795	102.33	-	-	90.3	35	12.36	35.33	100	105	P	V
	*	5795	94.13	-	-	82.1	35	12.36	35.33	100	105	A	V
		5850.2	53.13	-68.61	121.74	41.07	35	12.4	35.34	100	105	P	V
		5855.6	50.81	-59.82	110.63	38.68	35.07	12.4	35.34	100	105	P	V
		5915.2	50.88	-24.55	75.43	38.59	35.2	12.43	35.34	100	105	P	V
		5938.8	50.35	-17.85	68.2	38.05	35.2	12.44	35.34	100	105	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 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)
802.11n HT40 CH 151 5755MHz		11510	45.91	-28.09	74	46.63	38.2	17.99	57.43	100	0	P	H
		17265	49.84	-18.36	68.2	41.41	41.47	22.09	56	100	0	P	H
													H
													H
		11510	45.49	-28.51	74	46.21	38.2	17.99	57.43	100	0	P	V
		17265	50.1	-18.1	68.2	41.67	41.47	22.09	56	100	0	P	V
													V
													V
802.11n HT40 CH 159 5795MHz		11590	46.65	-27.35	74	47.05	38.37	18.57	57.34	100	0	P	H
		17385	50.32	-17.88	68.2	41.62	41.57	23.04	55.91	100	0	P	H
													H
													H
		11590	46.56	-27.44	74	46.96	38.37	18.57	57.34	100	0	P	V
		17385	50	-18.2	68.2	41.3	41.57	23.04	55.91	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (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)
802.11ac VHT80 CH 155 5775MHz		5640.4	55.08	-13.12	68.2	43.48	34.8	12.11	35.31	112	70	P	H
		5699.8	65.14	-39.91	105.05	53.26	35	12.2	35.32	112	70	P	H
		5718.6	65.74	-44.67	110.41	53.82	35	12.24	35.32	112	70	P	H
		5724.4	67.28	-53.55	120.83	55.35	35	12.25	35.32	112	70	P	H
	*	5775	101.31	-	-	89.31	35	12.33	35.33	112	70	P	H
	*	5775	94.19	-	-	82.19	35	12.33	35.33	112	70	A	H
		5853.2	61.89	-53.01	114.9	49.83	35	12.4	35.34	112	70	P	H
		5869.2	64.49	-42.33	106.82	52.36	35.07	12.4	35.34	112	70	P	H
		5904.6	61.48	-21.78	83.26	49.2	35.2	12.42	35.34	112	70	P	H
		5935	50.65	-17.55	68.2	38.35	35.2	12.44	35.34	112	70	P	H
													H
													H
		5647	50.03	-18.17	68.2	38.42	34.8	12.12	35.31	105	101	P	V
		5695.6	59.77	-42.19	101.96	47.89	35	12.2	35.32	105	101	P	V
		5719.6	63.38	-47.31	110.69	51.46	35	12.24	35.32	105	101	P	V
		5723.6	63.25	-55.76	119.01	51.33	35	12.24	35.32	105	101	P	V
	*	5775	99.75	-	-	87.75	35	12.33	35.33	105	101	P	V
	*	5775	92.1	-	-	80.1	35	12.33	35.33	105	101	A	V
		5852	61.15	-56.49	117.64	49.09	35	12.4	35.34	105	101	P	V
		5869	58.8	-48.08	106.88	46.67	35.07	12.4	35.34	105	101	P	V
		5876.6	53.98	-50.03	104.01	41.78	35.13	12.41	35.34	105	101	P	V
		5945.8	51.39	-16.81	68.2	39.09	35.2	12.44	35.34	105	101	P	V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												

**Band 4 5725~5850MHz****WIFI 802.11ac VHT80 (Harmonic @ 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)
802.11ac VHT80 CH 155 5775MHz		11550	45.23	-28.77	74	45.77	38.3	18.54	57.38	100	0	P	H
		17325	49.95	-18.25	68.2	41.48	41.43	23	55.96	100	0	P	H
													H
													H
		11550	45.26	-28.74	74	45.8	38.3	18.54	57.38	100	0	P	V
		17325	50.52	-17.68	68.2	42.05	41.43	23	55.96	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

5GHz WIFI 802.11ac VHT80 (LF)

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)
5GHz 802.11ac VHT80 LF		80.22	31.6	-8.4	40	46.69	13.28	1.62	29.99	100	0	P	H
		151.23	31.98	-11.52	43.5	42.7	16.98	2.22	29.92	-	-	P	H
		220.89	35.8	-10.2	46	47.7	15.41	2.52	29.83	-	-	P	H
		752.9	31.24	-14.76	46	28.54	27.78	4.35	29.43	-	-	P	H
		856.5	32.24	-13.76	46	27.67	28.93	4.72	29.08	-	-	P	H
		950.3	33.47	-12.53	46	26.58	30.39	5.06	28.56	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
		34.05	32.66	-7.34	40	38.87	22.57	1.2	29.98	100	0	P	V
		79.14	31.86	-8.14	40	47.05	13.19	1.61	29.99	-	-	P	V
		153.12	32.4	-11.1	43.5	43.21	16.89	2.22	29.92	-	-	P	V
		770.4	30.24	-15.76	46	27.33	27.91	4.37	29.37	-	-	P	V
		875.4	31.89	-14.11	46	27.08	28.93	4.9	29.02	-	-	P	V
		957.3	34.25	-11.75	46	26.95	30.75	5.06	28.51	-	-	P	V
													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	P eak or A verage
H/V	H orizontal or V ertical



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

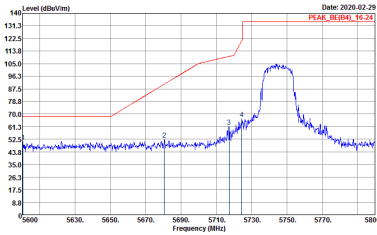
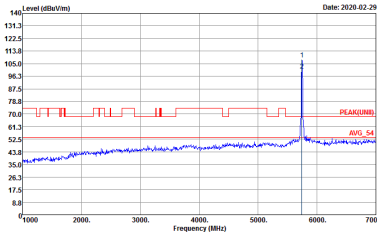
Test Engineer :	Jesse Wang, Stan Hsieh, Ken Wu, and Nick Yu	Temperature :	21~23°C
		Relative Humidity :	49~53%

Note symbol

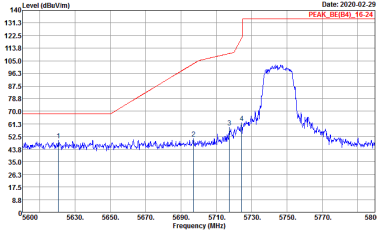
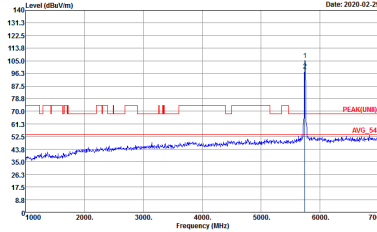
-L	Low channel location
-R	High channel location

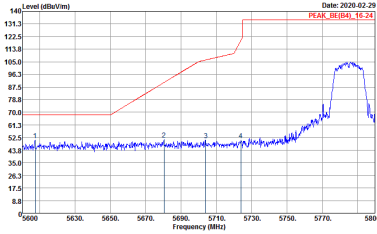
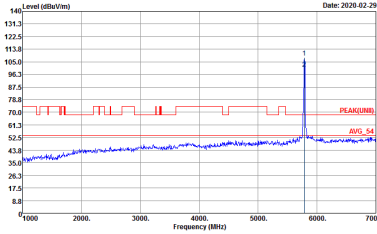
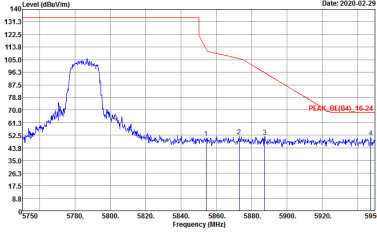


Band 4 - 5725~5850MHz
WIFI 802.11a (Band Edge @ 3m)

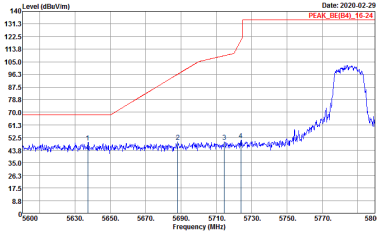
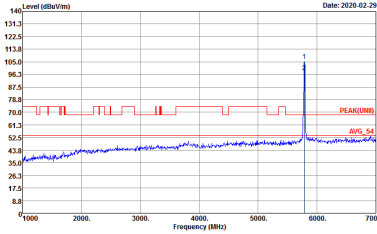
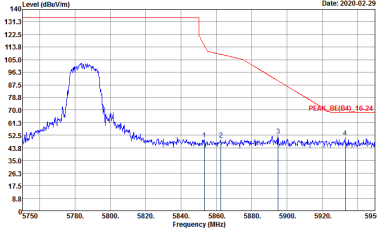
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 901202 Mode : 38	 Site : 03CH07-HY Condition : PEAK(UNII)_3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 901202 Mode : 38



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 38	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 38

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 39	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 39
	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 39	Left blank

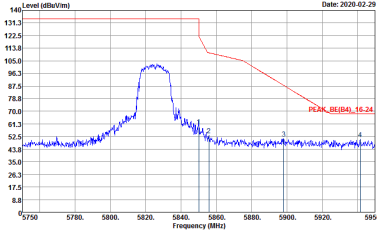
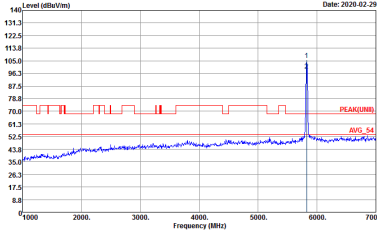


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 39	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 39
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 39	Left blank



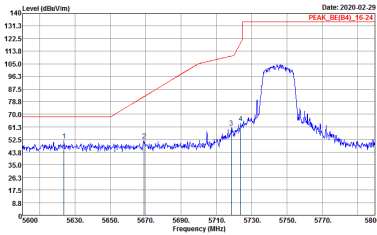
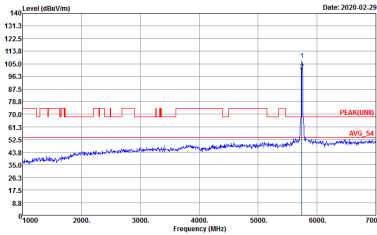
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Fundamental
Peak	Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 40	Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 40

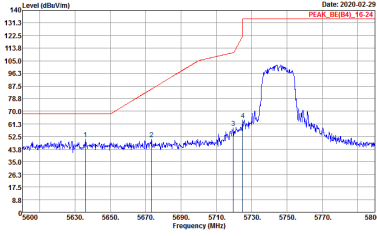
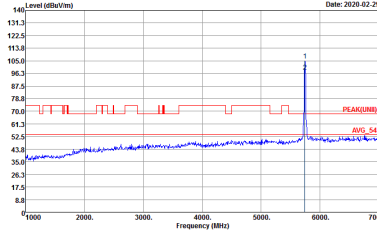


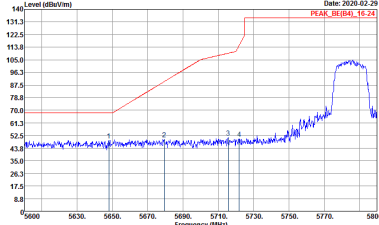
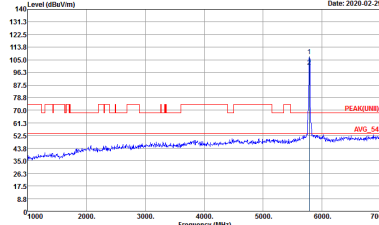
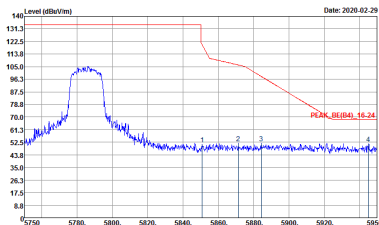
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 40	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 40

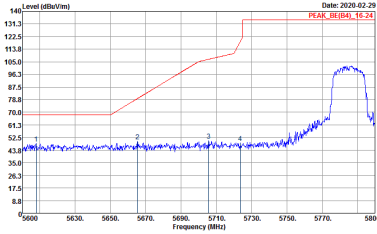
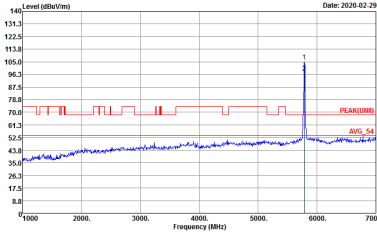
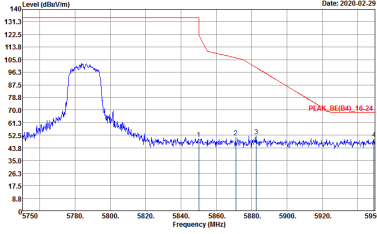


Band 4 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

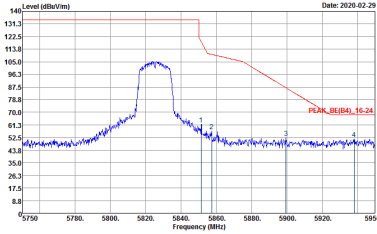
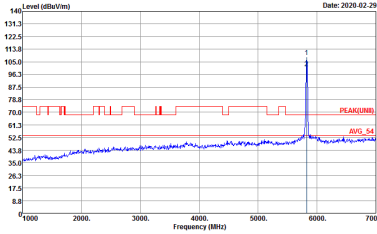
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_RE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 901202 Mode : 41	 Site : 03CH07-HY Condition : PEAK(FUN) 3m HF_ANT_00075962 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 901202 Mode : 41

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 41	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 41

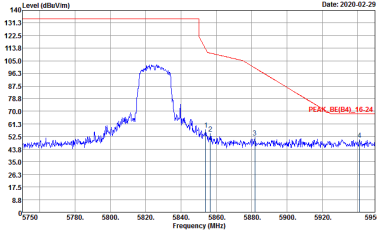
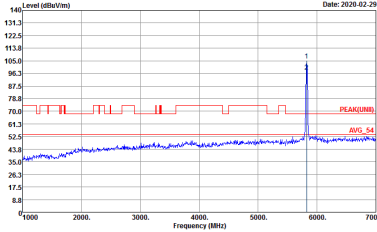
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 42	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 42
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 42	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 42	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 42
	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 42	Left blank



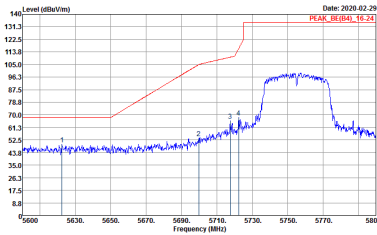
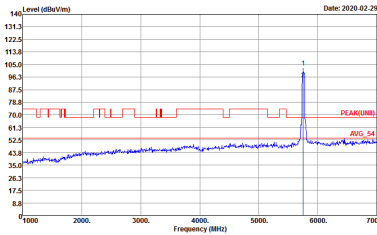
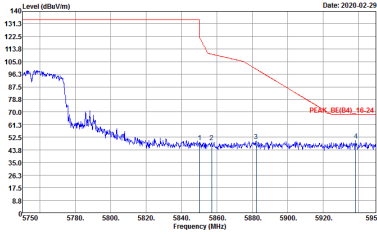
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 43	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 43

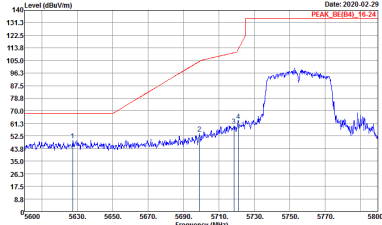
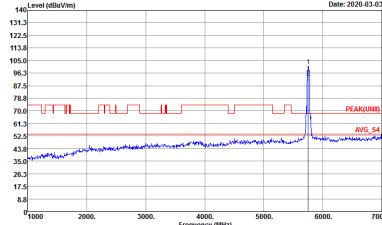
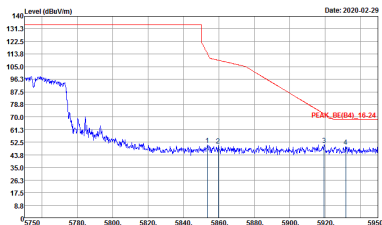


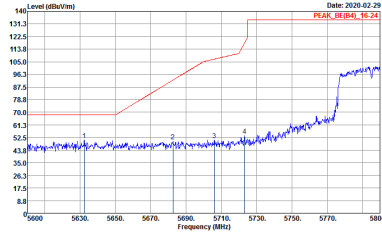
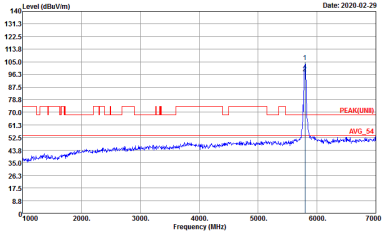
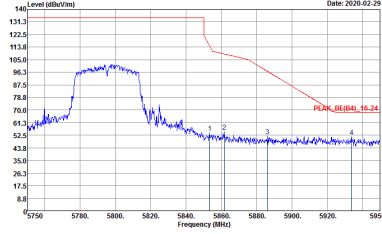
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 43	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 43

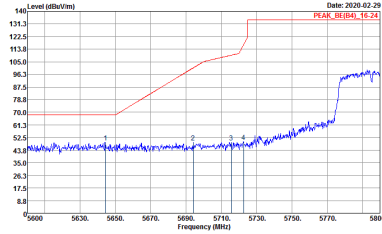
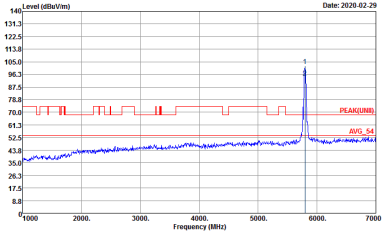
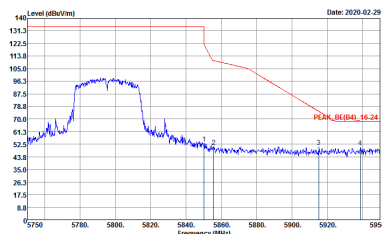


Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 901202 Mode : 44	 Site : 03CH07-HY Condition : PEAK(LIN) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 901202 Mode : 44
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 901202 Mode : 44	Left blank

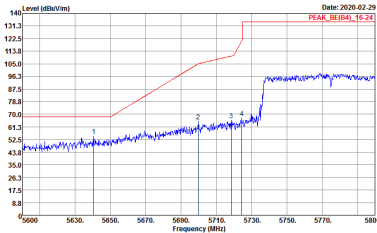
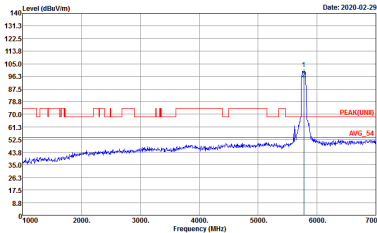
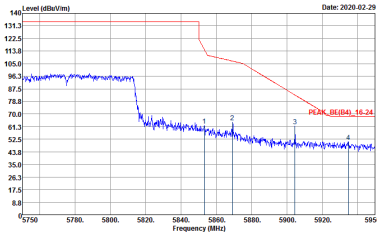
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 44	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 44
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 44	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 45	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 45
	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 45	Left blank

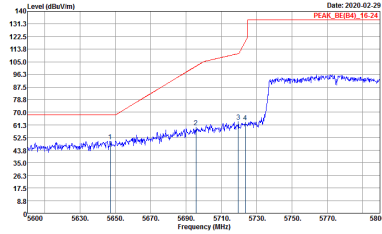
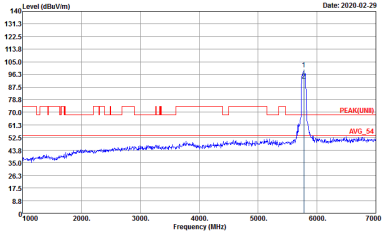
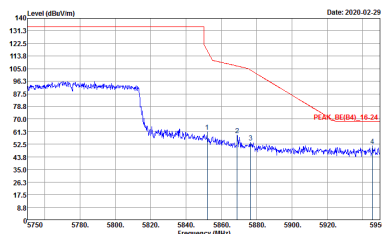
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 45	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 45
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 45	Left blank



Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

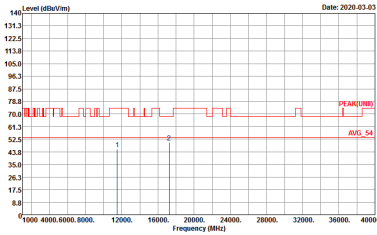
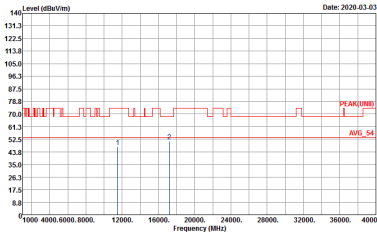
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 46	 Site : 03CH07-HY Condition : PEAK(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 46
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 46	Left blank



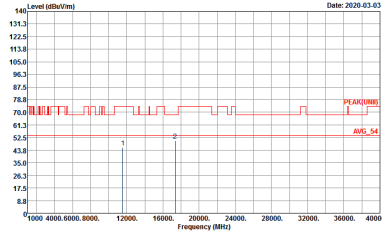
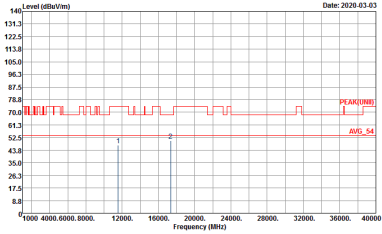
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 46	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 46
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 46	Left blank



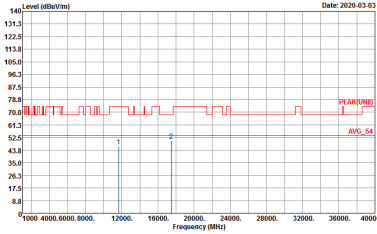
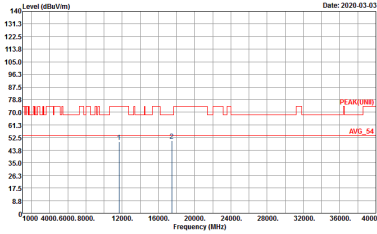
Band 4 - 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 901202 Mode : 38	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 901202 Mode : 38



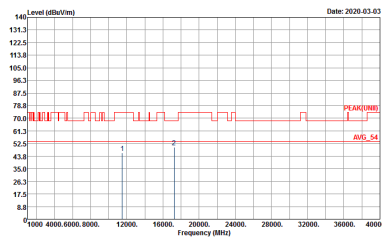
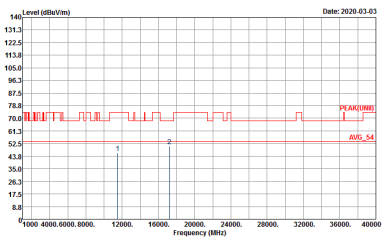
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_0007596Z HORIZONTAL Detector : Peak Project : 901202 Mode : 39	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_0007596Z VERTICAL Detector : Peak Project : 901202 Mode : 39



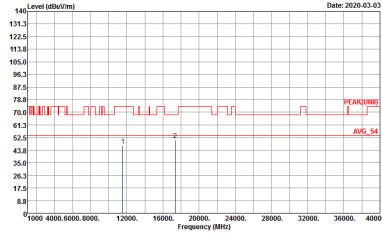
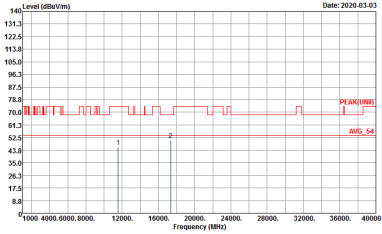
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_0007596Z HORIZONTAL Detector : Peak Project : 901202 Mode : 40	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_0007596Z VERTICAL Detector : Peak Project : 901202 Mode : 40



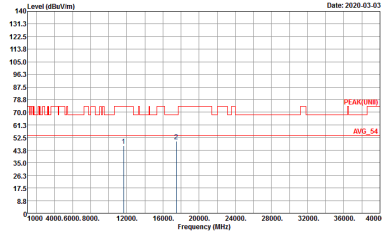
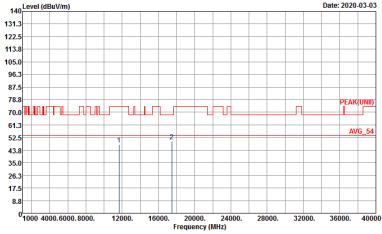
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 41	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 41



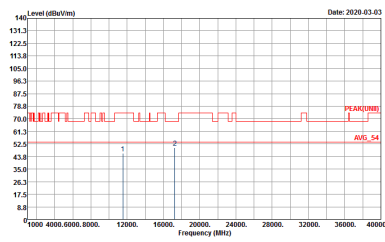
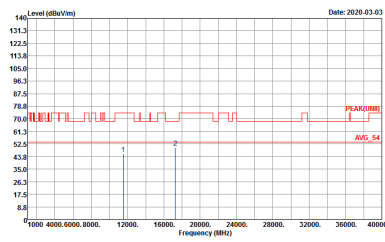
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_0007596Z HORIZONTAL Detector : Peak Project : 901202 Mode : 42	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_0007596Z VERTICAL Detector : Peak Project : 901202 Mode : 42



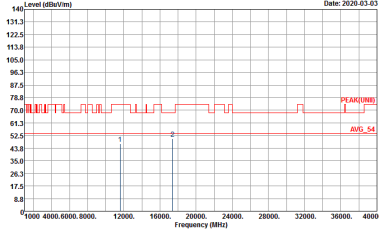
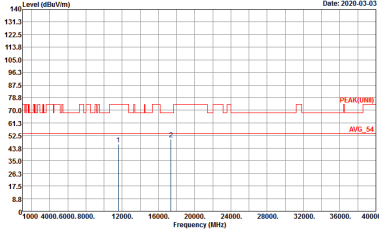
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNB) 3m HF_ANT_0007596Z HORIZONTAL Detector : Peak Project : 901202 Mode : 43	 Site : 03CH07-HY Condition : PEAK(UNB) 3m HF_ANT_0007596Z VERTICAL Detector : Peak Project : 901202 Mode : 43



Band 4 5725~5850MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

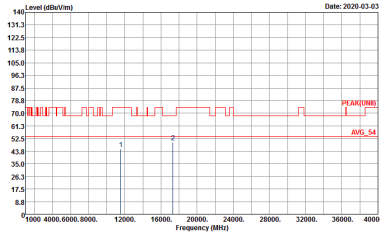
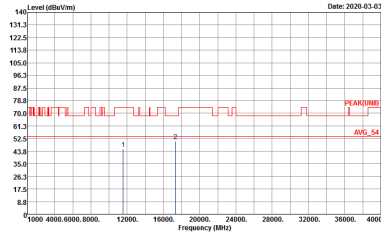
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNIT) 3m HF_ANT_0007596Z HORIZONTAL Detector : Peak Project : 9D1202 Mode : 44	 Site : 03CH07-HY Condition : PEAK(UNIT) 3m HF_ANT_0007596Z VERTICAL Detector : Peak Project : 9D1202 Mode : 44



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_0007596Z HORIZONTAL Detector : Peak Project : 901202 Mode : 45	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_0007596Z VERTICAL Detector : Peak Project : 901202 Mode : 45

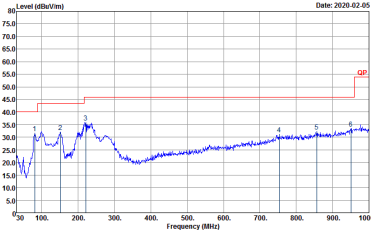
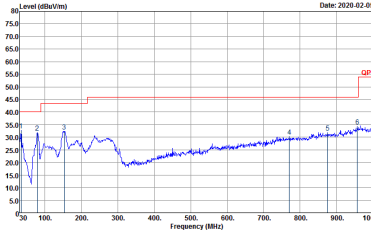


Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak Project : 9D1202 Mode : 46	 Site : 03CH07-HY Condition : PEAK(UNI) 3m HF_ANT_00075962 VERTICAL Detector : Peak Project : 9D1202 Mode : 46



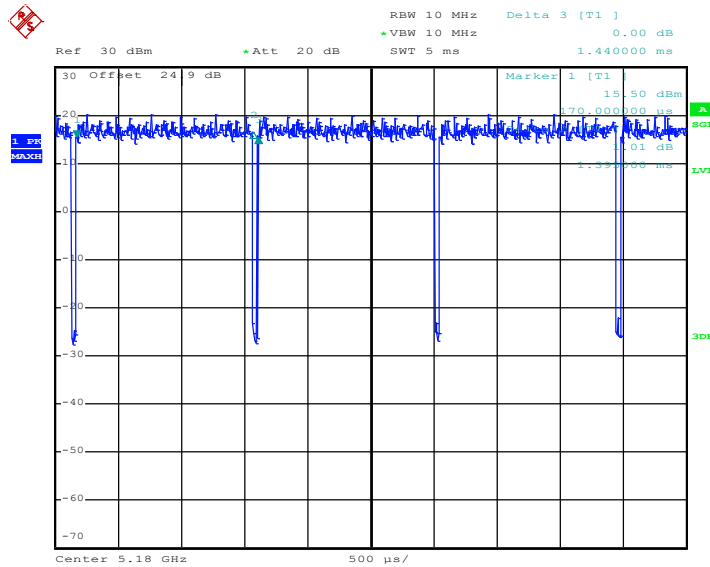
Emission below 1GHz
5GHz WIFI 802.11ac VHT80 (LF)

WIFI	5GHz WIFI	
ANT	802.11ac VHT80 LF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(G) HORIZONTAL Detector : Peak Project : 901202 Mode : 47	 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(G) VERTICAL Detector : Peak Project : 901202 Mode : 47

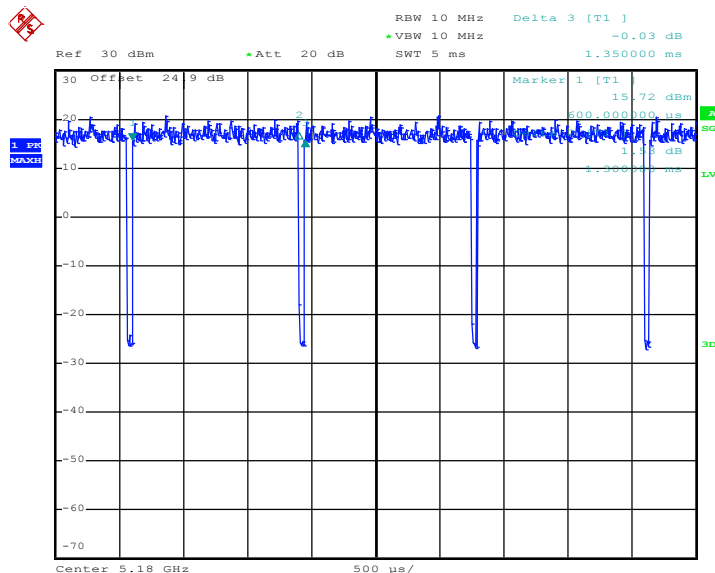


Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
802.11a	96.88	1395	0.72	1kHz	0.14
5GHz 802.11n HT20	96.30	1300	0.77	1kHz	0.16
5GHz 802.11n HT40	93.85	641	1.56	3kHz	0.28
5GHz 802.11ac VHT20	96.69	1315	0.76	1kHz	0.15
5GHz 802.11ac VHT40	94.10	654	1.53	3kHz	0.26
5GHz 802.11ac VHT80	90.00	324	3.09	4kHz	0.46

802.11a


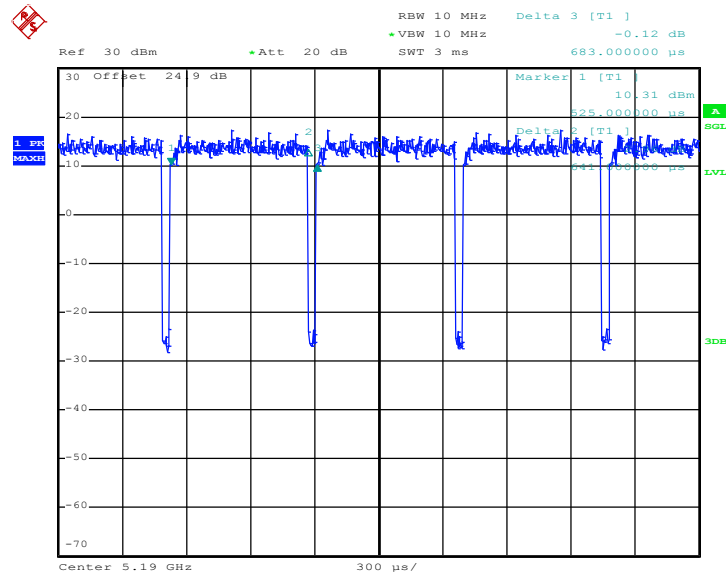
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802.11n HT20


Date: 19.FEB.2020 01:17:59

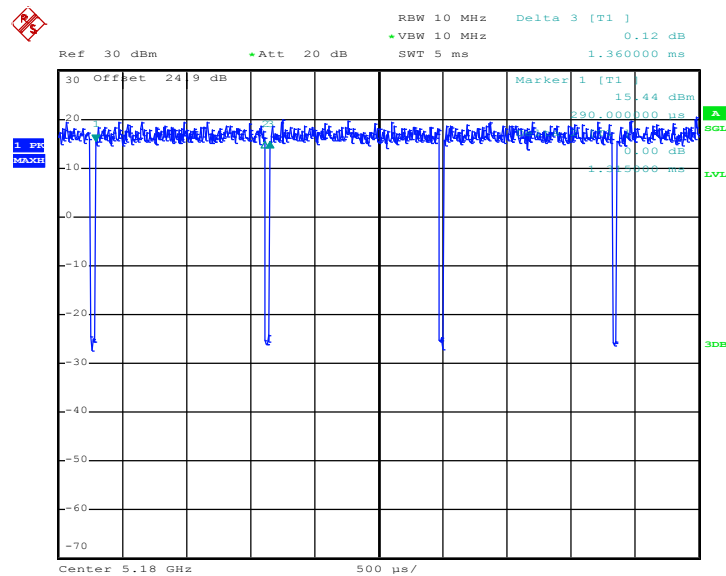


802.11n HT40



Date: 19.FEB.2020 01:43:54

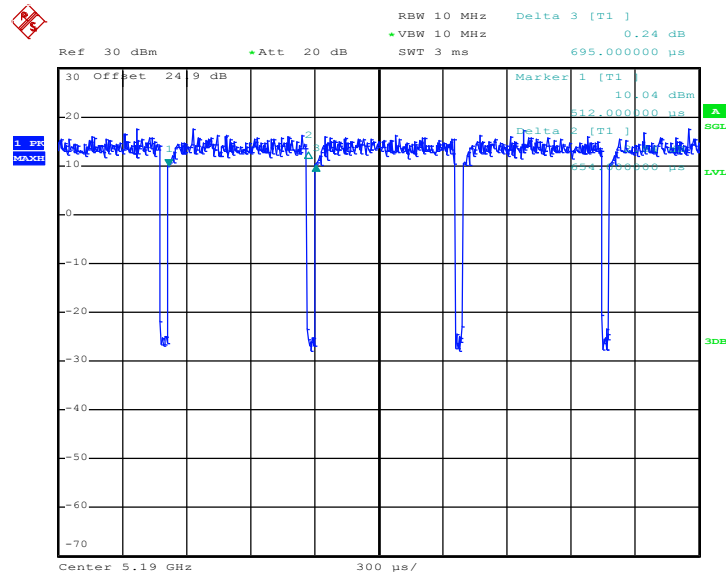
802.11ac VHT20



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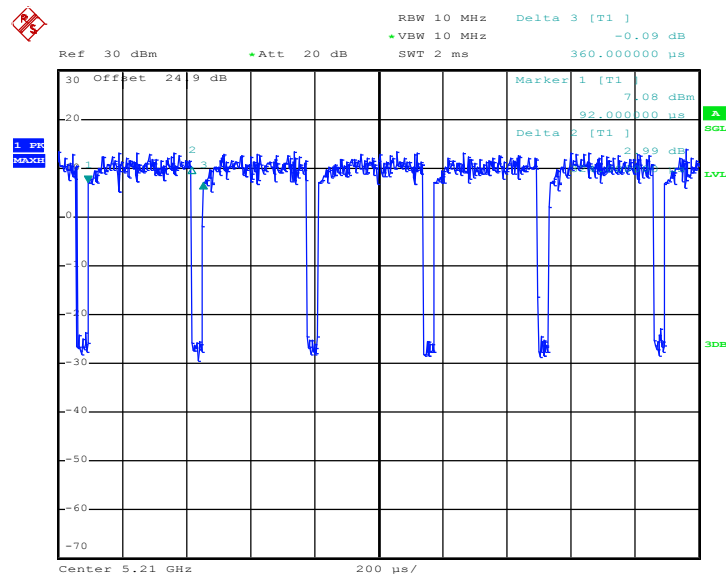


802.11ac VHT40



Date: 19.FEB.2020 01:52:43

802.11ac VHT80



Date: 19.FEB.2020 01:58:51