

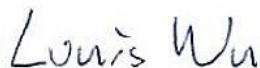
FCC RADIO TEST REPORT

FCC ID : ACJFZA3A
Equipment : Tablet Computer
Brand Name : Panasonic
Model name : FZ-A3
Marketing Name : FZ-A3
Applicant : Panasonic Corporation of North America
Two Riverfront Plaza, 9th Floor, Newark, NJ
07102-5490
Manufacturer : Panasonic Mobile Communications Co., Ltd.
600 Saedo-cho, Tsuzuki-ku, Yokohama City
224-8539, Japan
Standard : FCC Part 15 Subpart E §15.407

The product was received on Oct. 17, 2019 and testing was started from Nov. 27, 2019 and completed on Dec. 27, 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.



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
FR992410-01F	01	Initial issue of report	Jan. 10, 2020
FR992410-01F	02	1. Revise Connection Diagram of Test System 2. Add description of the worst case setup configs in section 2.2.	Jan. 16, 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 7.80 dB at 40.670 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 14.30 dB at 0.160 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, Wi-Fi 5GHz 802.11a/n/ac, NFC, and GNSS.

Product Specification subjective to this standard	
Antenna Type	WLAN: <Ant. 0> Monopole Antenna <Ant. 1> Monopole Antenna Bluetooth: Monopole Antenna GNSS: Monopole Antenna NFC: Loop 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.	
	03CH11-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.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

Remark:

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

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.

Single Mode

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

MIMO Mode

Modulation	Data Rate
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 + Battery 1 + Earphone + AC Adapter + Camera (Front) + NFC On + USB 2.0 Data Link with HDD (HDD to SD) + Internal Antenna + SD Card + Stylus Pen

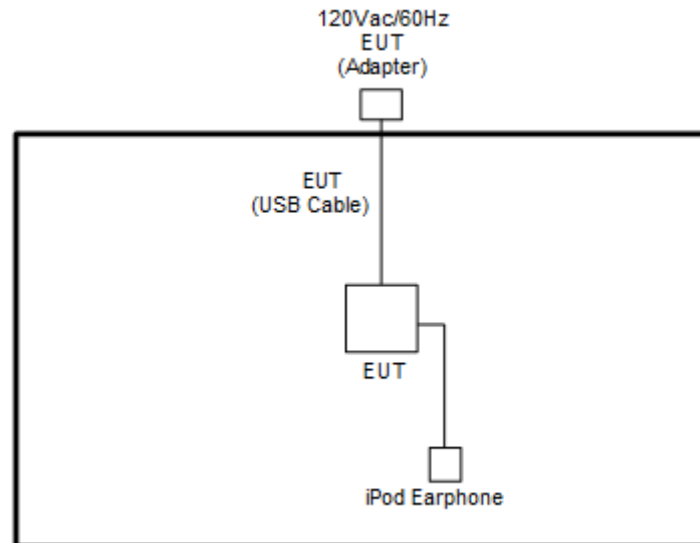
Remark:

- For radiated test cases, the tests were performed with Battery 1.
- For radiated test cases, because Ant.0 has the highest RF output power at preliminary test, and no other significantly frequencies found in conducted spurious emission.
- For radiated measurement, pre-scanned with 3 setup configs (EUT with Scanner backcover, EUT with USB backcover and EUT without backcover), the worse case (EUT without backcover) was recorded in this report.

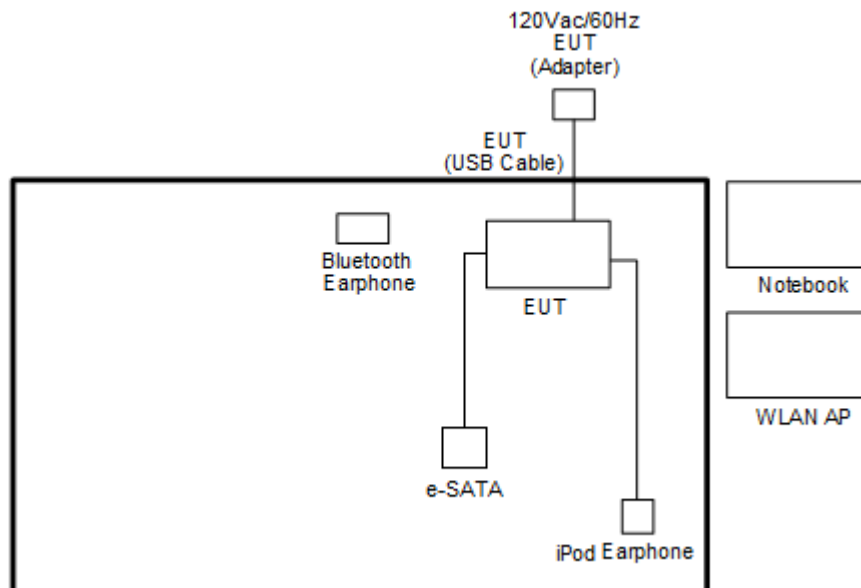
Ch. #		Band IV : 5725-5850 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	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
4.	e-SATA	dataTale	TQ-M12H	FCC DoC	Shielded, 0.5m	N/A
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
6.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility "QRCT v3.0-00271" 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.

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.

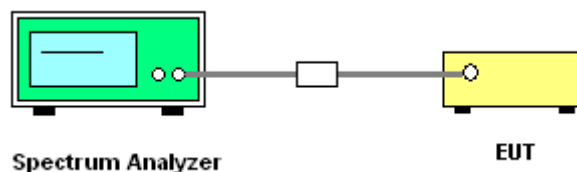
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

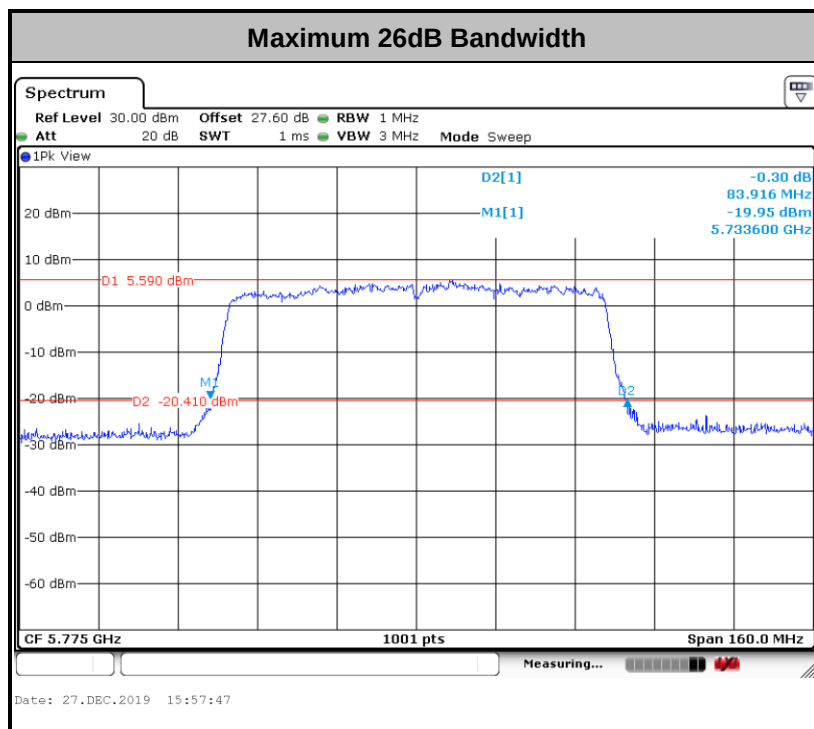
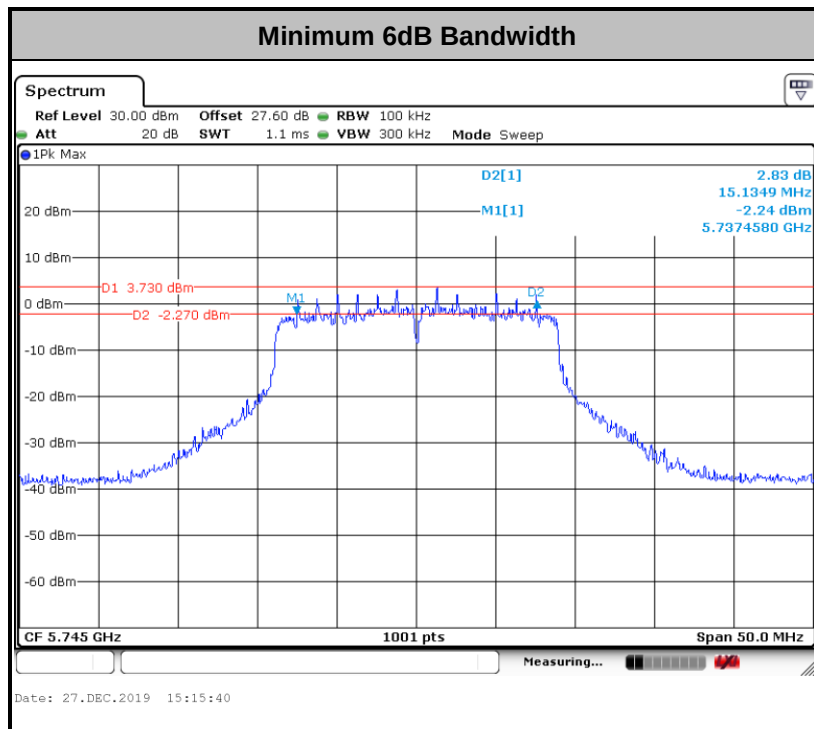
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

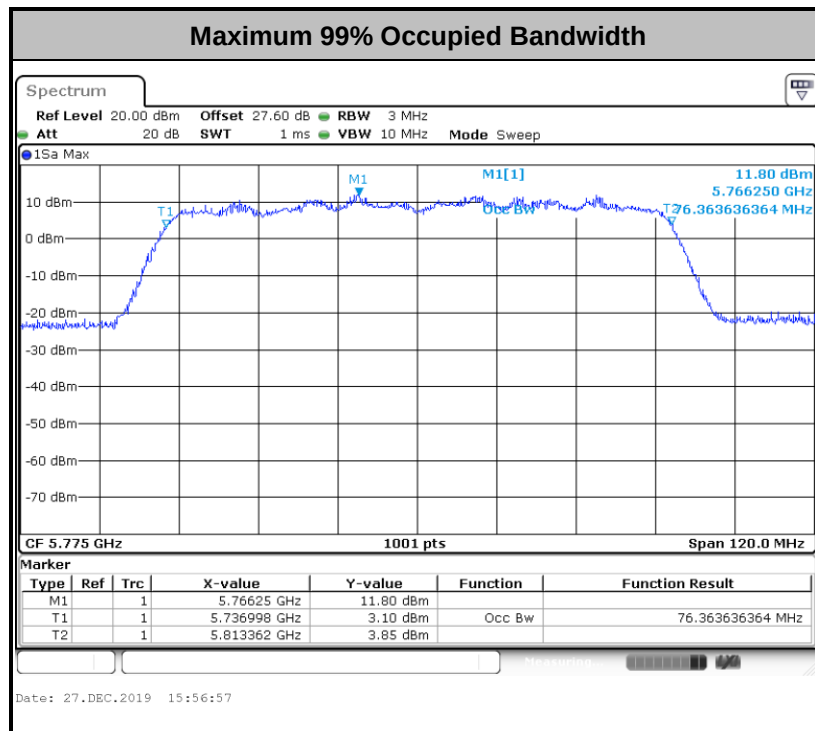
3.1.4 Test Setup



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

Please refer to Appendix A.





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.

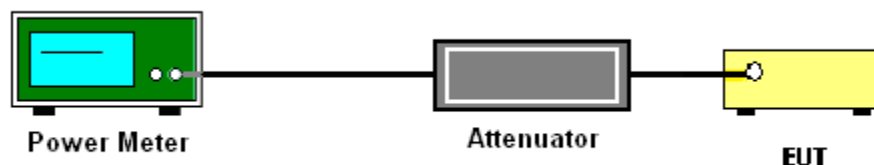
3.2.3 Test Procedures

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

Method PM-G (Measurement using a gated 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

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):

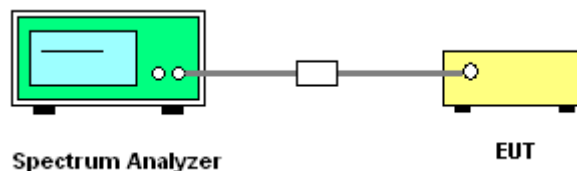
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW $\geq$ 1 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time $\leq$ (number of points in sweep) $\times$ T, when duty cycle is less than 98 percent where T is the minimum transmission 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 PSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Method (c): Measure and add $10 \log(N_{\text{ANT}})$ dB.

With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity $10 \log(N_{\text{ANT}})$ dB is added to each spectrum value before comparing to the emission limit. The addition of $10 \log(N_{\text{ANT}})$ dB serves to apportion the emission limit among the N_{ANT} outputs so that each output is permitted to contribute no more than $1/N_{\text{ANT}}^{\text{th}}$ of the PSD limit.

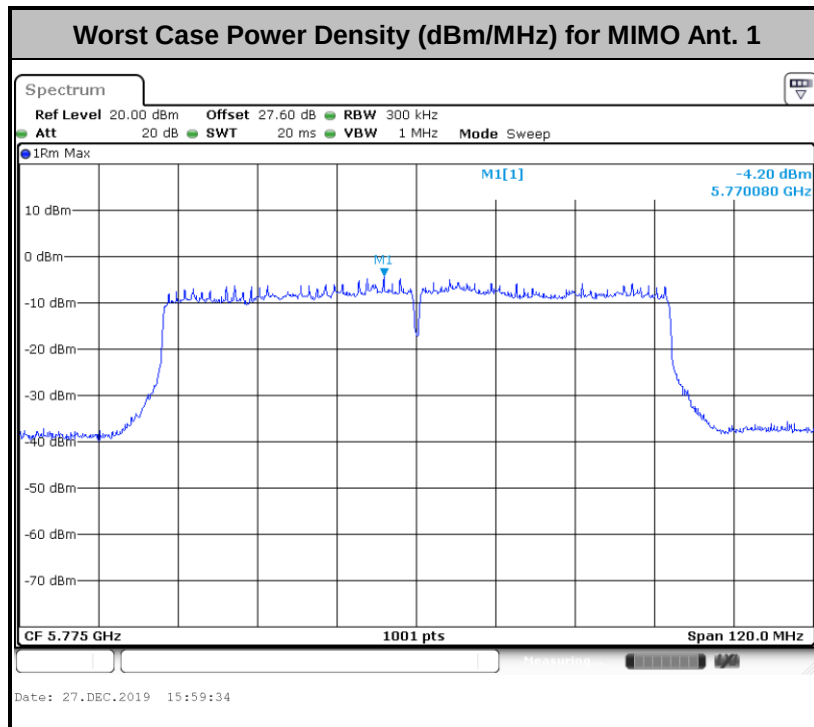
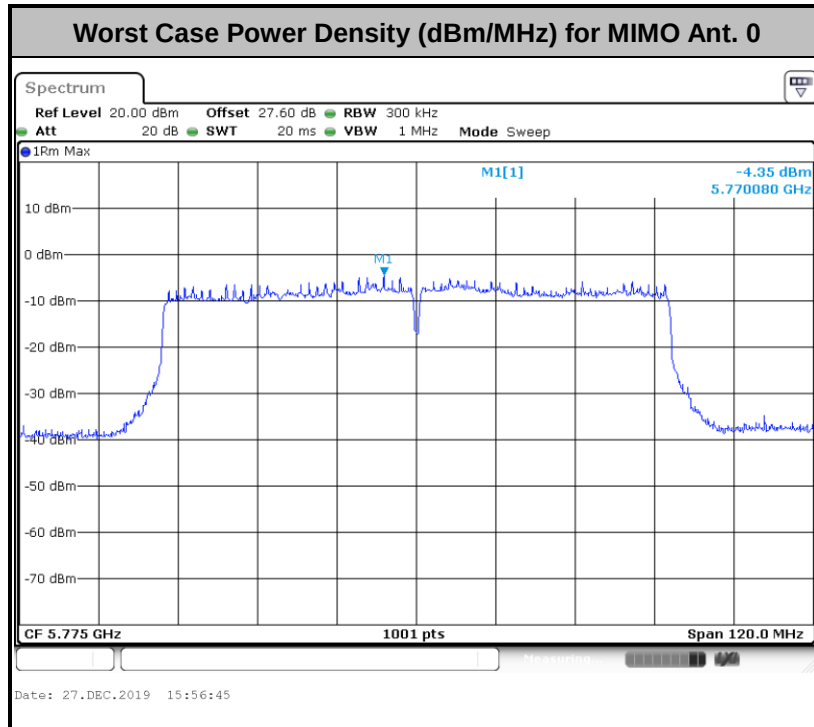
3.3.4 Test Setup





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.

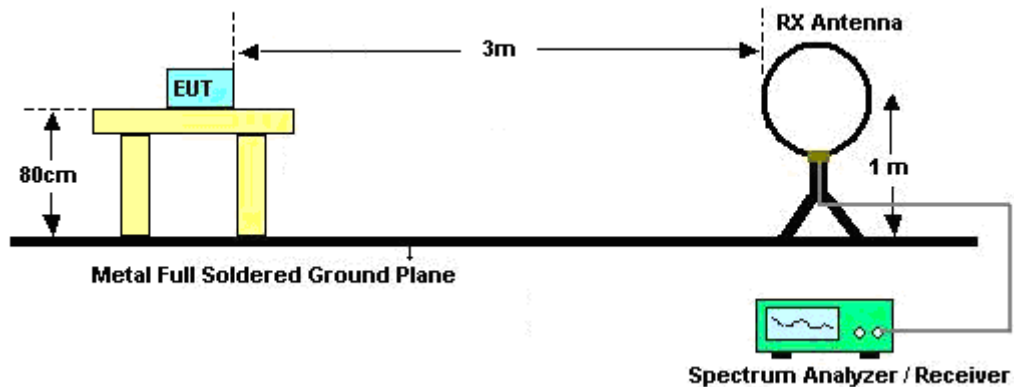
3.4.3 Test Procedures

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.

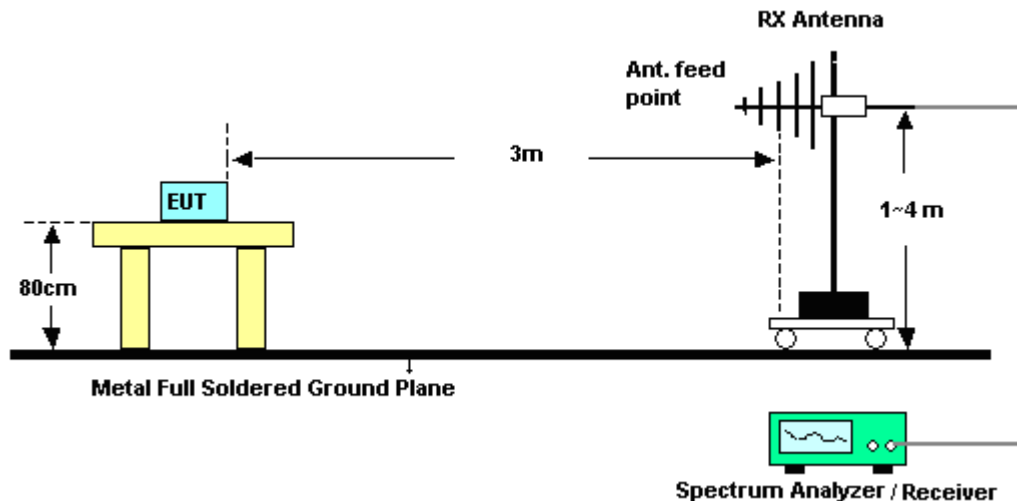
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

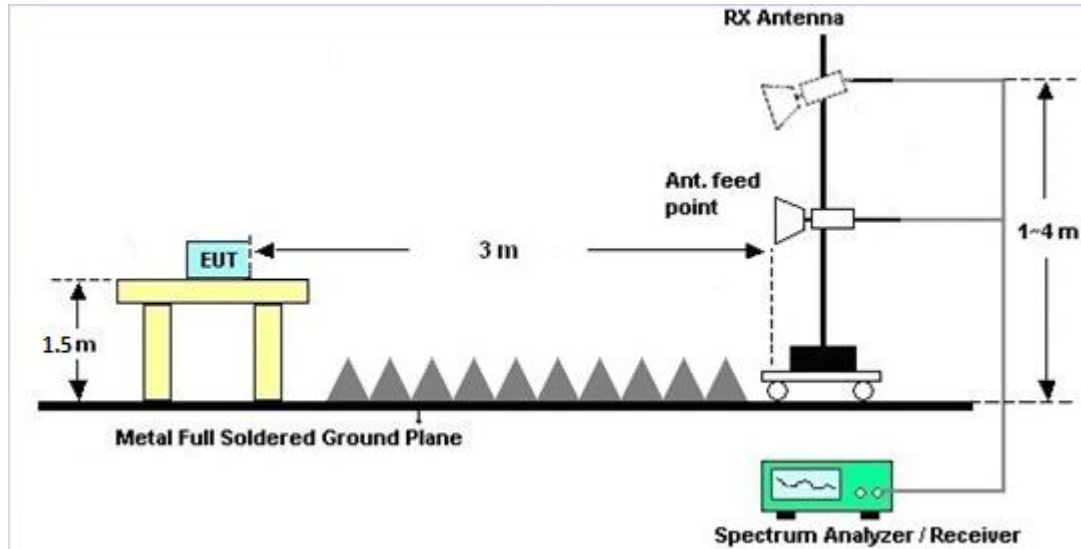
For radiated emissions below 30MHz



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.

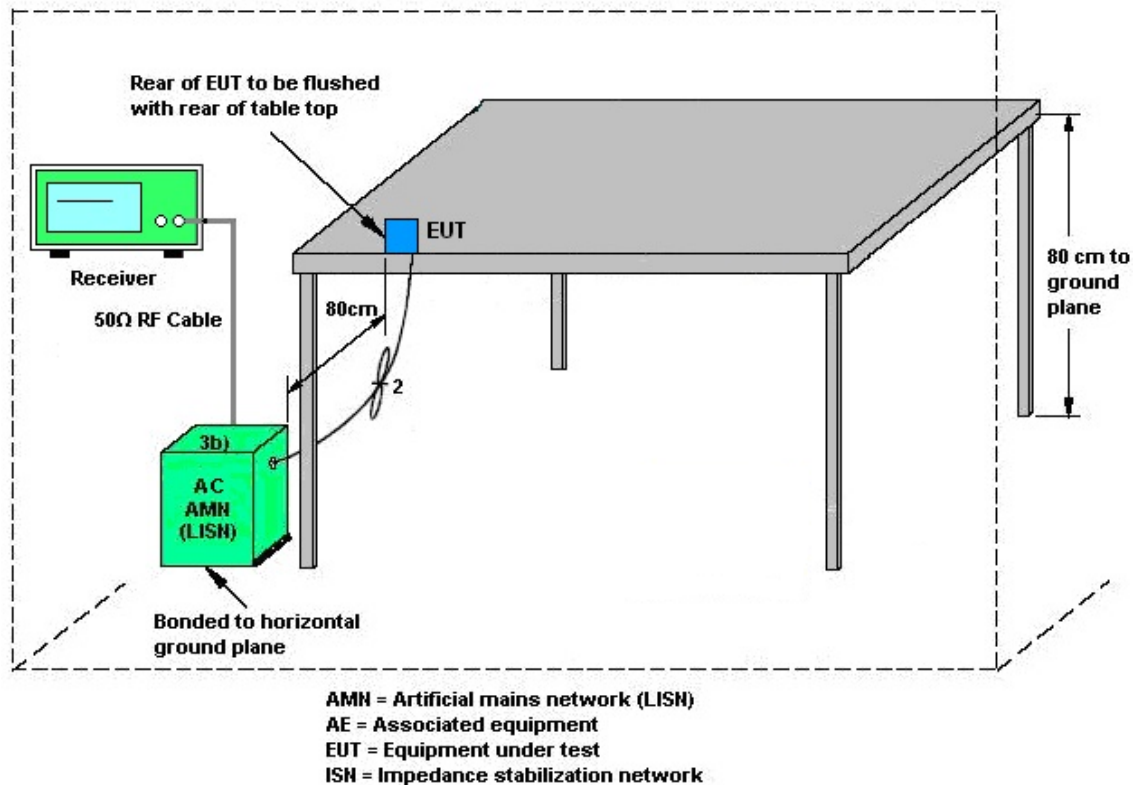
3.5.2 Measuring Instruments

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

<CDD Modes>

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(\text{NANT}/\text{NSS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $\text{NANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

<CDD Modes>						
			DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant. 0 (dBi)	Ant. 1 (dBi)				
Band IV	2.00	2.00	2.00	5.01	0.00	0.00

$\text{Power Limit Reduction} = \text{DG}(\text{Power}) - 6\text{dBi}, (\text{min} = 0)$

$\text{PSD Limit Reduction} = \text{DG}(\text{PSD}) - 6\text{dBi}, (\text{min} = 0)$



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 06, 2018	Nov. 27, 2019~ Dec. 04, 2019	Dec. 05, 2019	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 03, 2019	Nov. 27, 2019~ Dec. 04, 2019	Dec. 02, 2020	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 12, 2019	Nov. 27, 2019~ Dec. 04, 2019	Oct. 11, 2020	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-132 6	1GHz ~ 18GHz	Nov. 04, 2019	Nov. 27, 2019~ Dec. 04, 2019	Nov. 03, 2020	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 07, 2019	Nov. 27, 2019~ Dec. 04, 2019	Jan. 06, 2020	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY532700 80	1GHz~26.5GHz	Nov. 13, 2019	Nov. 27, 2019~ Dec. 04, 2019	Nov. 12, 2020	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY542004 86	10Hz ~ 44GHz	Oct. 28, 2019	Nov. 27, 2019~ Dec. 04, 2019	Oct. 27, 2020	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Nov. 27, 2019~ Dec. 04, 2019	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1~4m	N/A	Nov. 27, 2019~ Dec. 04, 2019	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Nov. 27, 2019~ Dec. 04, 2019	N/A	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA00101800 -30-10P	160118000 2	1GHz~18GHz	Aug. 01, 2019	Nov. 27, 2019~ Dec. 04, 2019	Jul. 31, 2020	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 576	18GHz- 40GHz	May 14, 2019	Nov. 27, 2019~ Dec. 04, 2019	May 13, 2020	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A (MXE)	MY554201 70	20MHz~8.4GHz	Mar. 08, 2019	Nov. 27, 2019~ Dec. 04, 2019	Mar. 07, 2020	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-00105 3	N/A	N/A	Nov. 27, 2019~ Dec. 04, 2019	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4 PE	9kHz-30MHz	Mar. 13, 2019	Nov. 27, 2019~ Dec. 04, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz-40GHz	Mar. 13, 2019	Nov. 27, 2019~ Dec. 04, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4 PE	30M-18G	Mar. 13, 2019	Nov. 27, 2019~ Dec. 04, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30MHz-40GHz	Mar. 13, 2019	Nov. 27, 2019~ Dec. 04, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
Filter	Wainwright	WLK4-1000-1 530-8000-40S S	SN11	1.53G Low Pass	Sep. 15, 2019	Nov. 27, 2019~ Dec. 04, 2019	Sep. 14, 2020	Radiation (03CH11-HY)
Filter	Wainwright	WHKX8-5872. 5-6750-18000 -40SS	SN3	6.75GHz High Pass	Sep. 16, 2019	Nov. 27, 2019~ Dec. 04, 2019	Sep. 15, 2020	Radiation (03CH11-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	Dec. 26, 2019~ Dec. 27, 2019	Jun. 16, 2020	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	17I00015S NO35	10MHz~6GHz	Jan. 15, 2019	Dec. 26, 2019~ Dec. 27, 2019	Jan. 14, 2020	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Jul. 15, 2019	Dec. 26, 2019~ Dec. 27, 2019	Jul. 14, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Aug. 14, 2019	Dec. 26, 2019~ Dec. 27, 2019	Aug. 13, 2020	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC120838 2	N/A	Mar. 27, 2019	Dec. 26, 2019~ Dec. 27, 2019	Mar. 26, 2020	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Dec. 05, 2019	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 15, 2019	Dec. 05, 2019	Nov. 14, 2020	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 20, 2019	Dec. 05, 2019	Nov. 19, 2020	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 15, 2019	Dec. 05, 2019	Nov. 14, 2020	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Dec. 05, 2019	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Dec. 31, 2018	Dec. 05, 2019	Dec. 30, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Dec. 31, 2018	Dec. 05, 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% ($U = 2Uc(y)$)	2.0
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2
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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% ($U = 2Uc(y)$)	3.12
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	KenWu	Temperature:	21~25	°C
Test Date:	2019/12/26~12/27	Relative Humidity:	51~54	%

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

Band IV single antenna												
Mod.	Data Rate	N _{Tx}	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1		
11a	6Mbps	1	149	5745	16.78	16.88	24.63	25.37	15.63	16.08	0.5	Pass
11a	6Mbps	1	157	5785	16.78	16.83	24.93	25.72	15.33	15.58	0.5	Pass
11a	6Mbps	1	165	5825	16.73	16.78	24.68	25.72	15.58	15.88	0.5	Pass

Band IV MIMO												
Mod.	Data Rate	N _{Tx}	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1		
HT20	MCS0	2	149	5745	17.98	18.03	24.88	25.37	15.13	16.68	0.5	Pass
HT20	MCS0	2	157	5785	17.93	18.08	24.53	25.72	15.78	16.83	0.5	Pass
HT20	MCS0	2	165	5825	18.03	18.03	24.88	26.07	15.73	16.68	0.5	Pass
HT40	MCS0	2	151	5755	36.46	36.46	41.90	41.54	35.33	35.51	0.5	Pass
HT40	MCS0	2	159	5795	36.56	36.46	41.81	41.99	35.69	35.69	0.5	Pass
VHT80	MCS0	2	155	5775	76.36	76.24	83.76	83.92	75.13	75.13	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV single antenna												
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	1	149	5745	13.30	13.10		30.00	30.00	2.00	2.00	Pass
11a	6Mbps	1	157	5785	13.30	13.20		30.00	30.00	2.00	2.00	Pass
11a	6Mbps	1	165	5825	13.40	13.30		30.00	30.00	2.00	2.00	Pass
HT20	MCS0	1	149	5745	13.20	13.00		30.00	30.00	2.00	2.00	Pass
HT20	MCS0	1	157	5785	13.10	13.20		30.00	30.00	2.00	2.00	Pass
HT20	MCS0	1	165	5825	13.30	13.20		30.00	30.00	2.00	2.00	Pass
HT40	MCS0	1	151	5755	13.40	13.40		30.00	30.00	2.00	2.00	Pass
HT40	MCS0	1	159	5795	13.40	13.50		30.00	30.00	2.00	2.00	Pass
VHT20	MCS0	1	149	5745	13.10	13.10		30.00	30.00	2.00	2.00	Pass
VHT20	MCS0	1	157	5785	13.00	13.10		30.00	30.00	2.00	2.00	Pass
VHT20	MCS0	1	165	5825	13.20	13.10		30.00	30.00	2.00	2.00	Pass
VHT40	MCS0	1	151	5755	13.30	13.30		30.00	30.00	2.00	2.00	Pass
VHT40	MCS0	1	159	5795	13.30	13.40		30.00	30.00	2.00	2.00	Pass
VHT80	MCS0	1	155	5775	13.40	13.30		30.00	30.00	2.00	2.00	Pass

Band IV MIMO												
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
HT20	MCS0	2	149	5745	13.30	13.20	16.26	30.00		2.00		Pass
HT20	MCS0	2	157	5785	13.30	13.30	16.31	30.00		2.00		Pass
HT20	MCS0	2	165	5825	13.30	13.30	16.31	30.00		2.00		Pass
HT40	MCS0	2	151	5755	13.50	13.50	16.51	30.00		2.00		Pass
HT40	MCS0	2	159	5795	13.50	13.60	16.56	30.00		2.00		Pass
VHT20	MCS0	2	149	5745	13.20	13.10	16.16	30.00		2.00		Pass
VHT20	MCS0	2	157	5785	13.10	13.20	16.16	30.00		2.00		Pass
VHT20	MCS0	2	165	5825	13.20	13.20	16.21	30.00		2.00		Pass
VHT40	MCS0	2	151	5755	13.40	13.40	16.41	30.00		2.00		Pass
VHT40	MCS0	2	159	5795	13.40	13.50	16.46	30.00		2.00		Pass
VHT80	MCS0	2	155	5775	13.50	13.40	16.46	30.00		2.00		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 0	Ant 1	Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	1	149	5745	2.22	2.22	3.93	3.31		30.00	30.00	2.00	2.00	Pass
11a	6Mbps	1	157	5785	2.22	2.22	3.36	3.66		30.00	30.00	2.00	2.00	Pass
11a	6Mbps	1	165	5825	2.22	2.22	3.76	3.70		30.00	30.00	2.00	2.00	Pass

Band IV MIMO														
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 0	Ant 1	Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
HT20	MCS0	2	149	5745	2.22		3.90	2.79	5.80	30.00		5.01		Pass
HT20	MCS0	2	157	5785	2.22		3.21	3.37	6.38	30.00		5.01		Pass
HT20	MCS0	2	165	5825	2.22		4.16	3.26	6.27	30.00		5.01		Pass
HT40	MCS0	2	151	5755	2.22		0.15	0.03	3.04	30.00		5.01		Pass
HT40	MCS0	2	159	5795	2.22		-0.07	0.01	3.02	30.00		5.01		Pass
VHT80	MCS0	2	155	5775	2.22		-2.13	-1.98	6.94	30.00		5.01		Pass

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



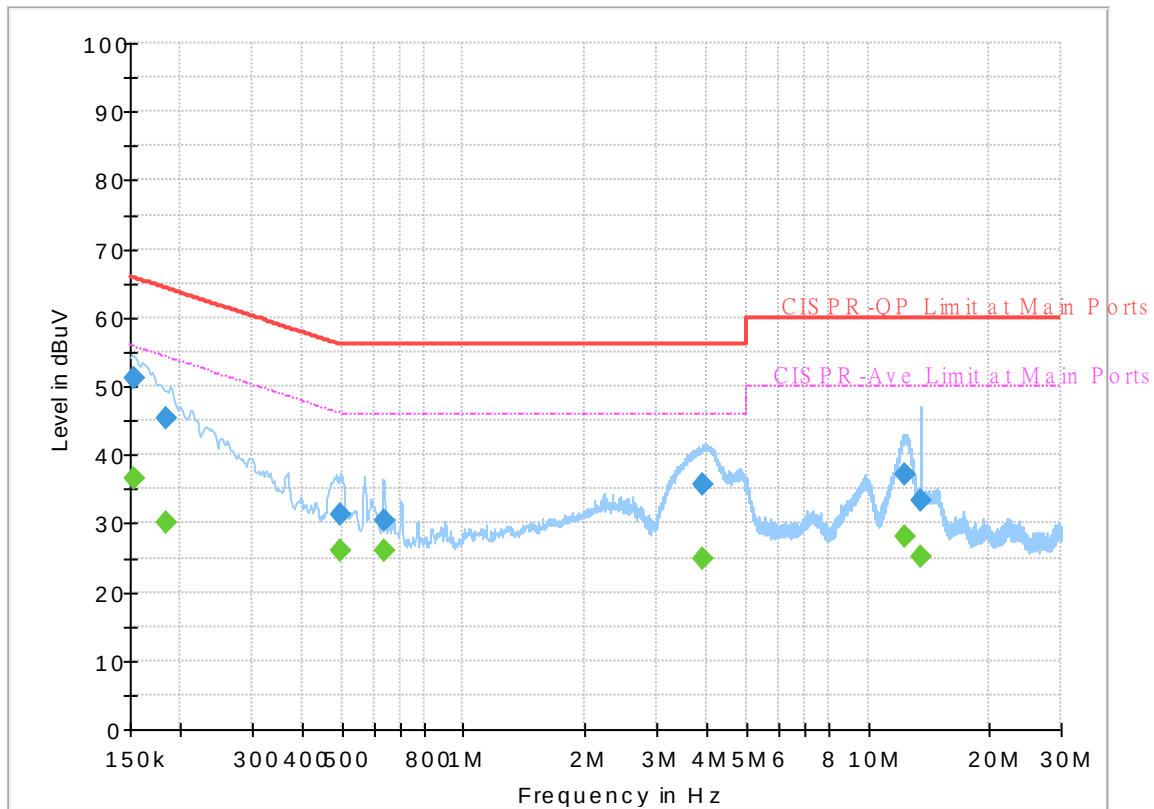
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Jimmy Chang	Temperature :	24~26℃
		Relative Humidity :	55~58%

EUT Information

Report NO : 992410-01
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



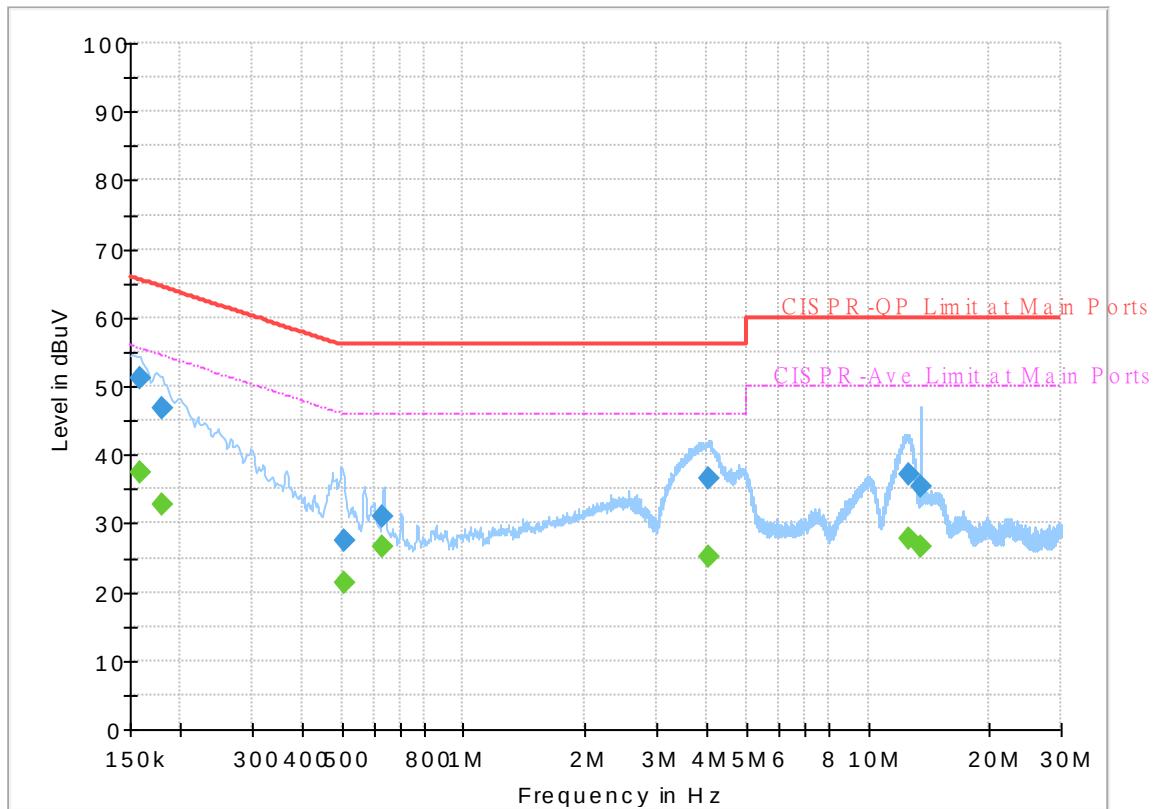
Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.154050	---	36.65	55.78	19.13	L1	OFF	19.5
0.154050	51.30	---	65.78	14.48	L1	OFF	19.5
0.183750	---	30.08	54.31	24.23	L1	OFF	19.5
0.183750	45.39	---	64.31	18.92	L1	OFF	19.5
0.495780	---	25.88	46.07	20.19	L1	OFF	19.5
0.495780	31.35	---	56.07	24.72	L1	OFF	19.5
0.636990	---	26.12	46.00	19.88	L1	OFF	19.5
0.636990	30.35	---	56.00	25.65	L1	OFF	19.5
3.909390	---	24.97	46.00	21.03	L1	OFF	19.6
3.909390	35.78	---	56.00	20.22	L1	OFF	19.6
12.380190	---	27.93	50.00	22.07	L1	OFF	19.7
12.380190	37.27	---	60.00	22.73	L1	OFF	19.7
13.560000	---	25.19	50.00	24.81	L1	OFF	19.7
13.560000	33.32	---	60.00	26.68	L1	OFF	19.7

EUT Information

Report NO : 992410-01
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)
0.159540	---	37.48	55.49	18.01	N	OFF	19.5
0.159540	51.19	---	65.49	14.30	N	OFF	19.5
0.179250	---	32.81	54.52	21.71	N	OFF	19.5
0.179250	46.71	---	64.52	17.81	N	OFF	19.5
0.507750	---	21.43	46.00	24.57	N	OFF	19.5
0.507750	27.44	---	56.00	28.56	N	OFF	19.5
0.633390	---	26.51	46.00	19.49	N	OFF	19.5
0.633390	31.02	---	56.00	24.98	N	OFF	19.5
4.021350	---	25.22	46.00	20.78	N	OFF	19.6
4.021350	36.44	---	56.00	19.56	N	OFF	19.6
12.561000	---	27.80	50.00	22.20	N	OFF	19.8
12.561000	37.15	---	60.00	22.85	N	OFF	19.8
13.560000	---	26.67	50.00	23.33	N	OFF	19.8
13.560000	35.44	---	60.00	24.56	N	OFF	19.8



Appendix C. Radiated Spurious Emission

Test Engineer :	Cookie Ku, Fu Chen, Troye Hsieh	Temperature :	18.1 ~ 26.1°C
		Relative Humidity :	37.2 ~ 68.2%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5646.8	54.85	-13.35	68.2	45.1	31.81	10.49	32.55	100	114	P	H
		5691.8	66.69	-32.46	99.15	56.67	32.05	10.51	32.54	100	114	P	H
		5719.475	68.85	-41.8	110.65	58.71	32.14	10.53	32.53	100	114	P	H
		5724.65	75.69	-45.71	121.4	65.54	32.15	10.53	32.53	100	114	P	H
	*	5745	117.85	-	-	107.64	32.19	10.54	32.52	100	114	P	H
	*	5745	110.51	-	-	100.3	32.19	10.54	32.52	100	114	A	H
													H
													H
		5646.575	50.75	-17.45	68.2	41	31.81	10.49	32.55	100	186	P	V
		5697.875	57.76	-45.87	103.63	47.69	32.09	10.51	32.53	100	186	P	V
		5710.475	59.68	-48.46	108.14	49.57	32.12	10.52	32.53	100	186	P	V
		5724.65	65.4	-56	121.4	55.25	32.15	10.53	32.53	100	186	P	V
	*	5745	108.55	-	-	98.34	32.19	10.54	32.52	100	186	P	V
	*	5745	101.09	-	-	90.88	32.19	10.54	32.52	100	186	A	V
													V
													V



WIFI Ant. 0	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		5634	53.04	-15.16	68.2	43.28	31.83	10.48	32.55	100	113	P	H
		5697.5	56.63	-46.73	103.36	46.57	32.08	10.51	32.53	100	113	P	H
		5715.75	59.51	-50.1	109.61	49.39	32.13	10.52	32.53	100	113	P	H
		5723.5	62.58	-56.2	118.78	52.43	32.15	10.53	32.53	100	113	P	H
	*	5785	117.22	-	-	106.9	32.27	10.56	32.51	100	113	P	H
	*	5785	110.33	-	-	100.01	32.27	10.56	32.51	100	113	A	H
		5852	62.34	-55.3	117.64	51.84	32.4	10.59	32.49	100	113	P	H
		5858	61.7	-48.26	109.96	51.18	32.42	10.59	32.49	100	113	P	H
		5875	58.77	-46.43	105.2	48.21	32.45	10.6	32.49	100	113	P	H
		5945.25	54.37	-13.83	68.2	43.53	32.68	10.63	32.47	100	113	P	H
													H
													H
		5624.25	51.24	-16.96	68.2	41.48	31.85	10.47	32.56	100	123	P	V
		5698.25	51.78	-52.13	103.91	41.71	32.09	10.51	32.53	100	123	P	V
		5719.75	51.93	-58.8	110.73	41.79	32.14	10.53	32.53	100	123	P	V
		5722	53.99	-61.37	115.36	43.85	32.14	10.53	32.53	100	123	P	V
	*	5785	108.66	-	-	98.34	32.27	10.56	32.51	100	123	P	V
	*	5785	101.58	-	-	91.26	32.27	10.56	32.51	100	123	A	V
		5852	55.26	-62.38	117.64	44.76	32.4	10.59	32.49	100	123	P	V
		5875	53.43	-51.77	105.2	42.87	32.45	10.6	32.49	100	123	P	V
		5897.25	54.34	-34.36	88.7	43.72	32.49	10.61	32.48	100	123	P	V
		5947	53.01	-15.19	68.2	42.15	32.69	10.63	32.46	100	123	P	V
													V
													V



WIFI Ant. 0	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	117.93	-	-	107.5	32.35	10.58	32.5	100	118	P	H
	*	5825	110.53	-	-	100.1	32.35	10.58	32.5	100	118	A	H
		5851.19	70.1	-49.39	119.49	59.6	32.4	10.59	32.49	100	118	P	H
		5858.365	69.87	-39.99	109.86	59.35	32.42	10.59	32.49	100	118	P	H
		5875.38	66.57	-38.35	104.92	56	32.45	10.6	32.48	100	118	P	H
		5925.4	58.55	-9.65	68.2	47.8	32.6	10.62	32.47	100	118	P	H
													H
													H
	*	5825	107.33	-	-	96.9	32.35	10.58	32.5	101	121	P	V
	*	5825	100.11	-	-	89.68	32.35	10.58	32.5	101	121	A	V
		5849.96	59.59	-74.61	134.2	49.09	32.4	10.59	32.49	101	121	P	V
		5862.055	59.56	-49.26	108.82	49.04	32.42	10.59	32.49	101	121	P	V
		5890.55	56.64	-37.02	93.66	46.03	32.48	10.61	32.48	101	121	P	V
		5932.78	51.94	-16.26	68.2	41.16	32.63	10.62	32.47	101	121	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. 0	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	47.22	-26.78	74	51.08	39.61	17.48	60.95	100	0	P	H
		17235	48.53	-19.67	68.2	46.59	40.17	22.06	60.29	100	0	P	H
													H
													H
		11490	46.91	-27.09	74	50.77	39.61	17.48	60.95	100	0	P	V
		17235	48.3	-19.9	68.2	46.36	40.17	22.06	60.29	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	47.64	-26.36	74	51.57	39.46	17.6	60.99	100	0	P	H
		17355	48.55	-19.65	68.2	46.29	40.49	22.18	60.41	100	0	P	H
													H
													H
		11570	47.24	-26.76	74	51.17	39.46	17.6	60.99	100	0	P	V
		17355	48.53	-19.67	68.2	46.27	40.49	22.18	60.41	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	48.51	-25.49	74	52.69	39.15	17.72	61.05	100	0	P	H
		17475	48.55	-19.65	68.2	45.62	41.17	22.28	60.52	100	0	P	H
													H
													H
		11650	47.67	-26.33	74	51.85	39.15	17.72	61.05	100	0	P	V
		17475	47.81	-20.39	68.2	44.88	41.17	22.28	60.52	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 802.11a (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.	
0		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11a LF		40.67	26.48	-13.52	40	39.25	18.85	0.86	32.48	-	-	P	H
		206.54	23.7	-19.8	43.5	39.44	14.84	1.99	32.57	-	-	P	H
		268.62	24.11	-21.89	46	34.52	19.66	2.26	32.33	-	-	P	H
		939.86	32.38	-13.62	46	29.75	29.52	4.31	31.2	-	-	P	H
		948.59	32.69	-13.31	46	29.45	29.99	4.34	31.09	-	-	P	H
		958.29	33.6	-12.4	46	29.63	30.57	4.36	30.96	100	0	P	H
													H
													H
													H
													H
													H
													H
													H
		40.67	32.2	-7.8	40	44.97	18.85	0.86	32.48	100	0	P	V
		119.24	22.51	-20.99	43.5	36.33	17.13	1.47	32.42	-	-	P	V
		239.52	23.74	-22.26	46	37.77	16.28	2.13	32.44	-	-	P	V
		917.55	31.99	-14.01	46	30.29	28.94	4.26	31.5	-	-	P	V
		933.07	32.63	-13.37	46	30.36	29.26	4.3	31.29	-	-	P	V
		946.65	33.73	-12.27	46	30.61	29.9	4.33	31.11	-	-	P	V
													V
													V
													V
													V
													V
												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 149 5745MHz		5644.6	55.17	-13.03	68.2	45.43	31.81	10.48	32.55	100	113	P	H
		5699	65.88	-38.58	104.46	55.81	32.09	10.51	32.53	100	113	P	H
		5710.8	67.47	-40.76	108.23	57.36	32.12	10.52	32.53	100	113	P	H
		5725	74.83	-47.37	122.2	64.68	32.15	10.53	32.53	100	113	P	H
	*	5745	117.5	-	-	107.29	32.19	10.54	32.52	100	113	P	H
	*	5745	109.96	-	-	99.75	32.19	10.54	32.52	100	113	A	H
													H
													H
		5640.8	52.07	-16.13	68.2	42.32	31.82	10.48	32.55	108	264	P	V
		5698.6	63.13	-41.04	104.17	53.06	32.09	10.51	32.53	108	264	P	V
		5720	69.71	-41.09	110.8	59.57	32.14	10.53	32.53	108	264	P	V
		5725	78.38	-43.82	122.2	68.23	32.15	10.53	32.53	108	264	P	V
	*	5745	115.11	-	-	104.9	32.19	10.54	32.52	108	264	P	V
	*	5745	107.72	-	-	97.51	32.19	10.54	32.52	108	264	A	V
													V
													V



WIFI Ant. 0+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		5627	51.56	-16.64	68.2	41.79	31.85	10.47	32.55	100	117	P	H
		5692.5	54.38	-45.29	99.67	44.35	32.06	10.51	32.54	100	117	P	H
		5719	60.66	-49.86	110.52	50.52	32.14	10.53	32.53	100	117	P	H
		5721.75	54.43	-60.36	114.79	44.29	32.14	10.53	32.53	100	117	P	H
	*	5785	117.64	-	-	107.32	32.27	10.56	32.51	100	117	P	H
	*	5785	109.91	-	-	99.59	32.27	10.56	32.51	100	117	A	H
		5852.75	61.27	-54.66	115.93	50.76	32.41	10.59	32.49	100	117	P	H
		5856.75	54.48	-55.83	110.31	43.97	32.41	10.59	32.49	100	117	P	H
		5881.75	55.56	-44.63	100.19	44.98	32.46	10.6	32.48	100	117	P	H
		5930.5	53.33	-14.87	68.2	42.56	32.62	10.62	32.47	100	117	P	H
													H
													H
		5619.5	50.82	-17.38	68.2	41.05	31.86	10.47	32.56	108	264	P	V
		5698.25	52.88	-51.03	103.91	42.81	32.09	10.51	32.53	108	264	P	V
		5712.5	55.91	-52.79	108.7	45.8	32.12	10.52	32.53	108	264	P	V
		5720.5	52.59	-59.35	111.94	42.45	32.14	10.53	32.53	108	264	P	V
	*	5785	114.43	-	-	104.11	32.27	10.56	32.51	108	264	P	V
	*	5785	105.92	-	-	95.6	32.27	10.56	32.51	108	264	A	V
		5850.5	53.61	-67.45	121.06	43.11	32.4	10.59	32.49	108	264	P	V
		5861	56.15	-52.97	109.12	45.63	32.42	10.59	32.49	108	264	P	V
		5900.75	52.56	-33.55	86.11	41.93	32.5	10.61	32.48	108	264	P	V
		5934	51.03	-17.17	68.2	40.24	32.64	10.62	32.47	108	264	P	V
													V
													V



WIFI Ant. 0+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	117.63	-	-	107.2	32.35	10.58	32.5	100	122	P	H
	*	5825	110.06	-	-	99.63	32.35	10.58	32.5	100	122	A	H
		5854.4	71.7	-40.47	112.17	61.19	32.41	10.59	32.49	100	122	P	H
		5859.2	71.09	-38.53	109.62	60.57	32.42	10.59	32.49	100	122	P	H
		5880.8	67.48	-33.41	100.89	56.9	32.46	10.6	32.48	100	122	P	H
		5927	54.99	-13.21	68.2	44.23	32.61	10.62	32.47	100	122	P	H
													H
													H
	*	5825	115.38	-	-	104.95	32.35	10.58	32.5	100	256	P	V
	*	5825	107.43	-	-	97	32.35	10.58	32.5	100	256	A	V
		5850.2	72.42	-49.32	121.74	61.92	32.4	10.59	32.49	100	256	P	V
		5855.4	70.27	-40.42	110.69	59.76	32.41	10.59	32.49	100	256	P	V
		5875.4	68.02	-36.88	104.9	57.45	32.45	10.6	32.48	100	256	P	V
		5931.8	56.78	-11.42	68.2	46	32.63	10.62	32.47	100	256	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. 0+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	47.94	-26.06	74	51.8	39.61	17.01	60.95	100	0	P	H
		17235	48.05	-20.15	68.2	46.11	40.17	21.56	60.29	100	0	P	H
													H
													H
		11490	47.53	-26.47	74	51.39	39.61	17.01	60.95	100	0	P	V
		17235	47.85	-20.35	68.2	45.91	40.17	21.56	60.29	100	0	P	V
													V
													V
802.11n HT20 CH 157 5785MHz		11570	47.49	-26.51	74	51.42	39.46	17.12	60.99	100	0	P	H
		17355	48.49	-19.71	68.2	46.23	40.49	21.67	60.41	100	0	P	H
													H
													H
		11570	49.12	-24.88	74	53.05	39.46	17.12	60.99	100	0	P	V
		17355	48.81	-19.39	68.2	46.55	40.49	21.67	60.41	100	0	P	V
													V
													V
802.11n HT20 CH 165 5825MHz		11650	48.34	-25.66	74	52.52	39.15	17.24	61.05	100	0	P	H
		17475	49.1	-19.1	68.2	46.17	41.17	21.77	60.52	100	0	P	H
													H
													H
		11650	47.57	-26.43	74	51.75	39.15	17.24	61.05	100	0	P	V
		17475	48.69	-19.51	68.2	45.76	41.17	21.77	60.52	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. 0+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		5643.75	55.8	-12.4	68.2	46.06	31.81	10.48	32.55	100	118	P	H
		5690.5	64.79	-33.41	98.2	54.78	32.04	10.51	32.54	100	118	P	H
		5719.75	74.36	-36.37	110.73	64.22	32.14	10.53	32.53	100	118	P	H
		5725	75.21	-46.99	122.2	65.06	32.15	10.53	32.53	100	118	P	H
	*	5755	115.11	-	-	104.87	32.21	10.55	32.52	100	118	P	H
	*	5755	107.41	-	-	97.17	32.21	10.55	32.52	100	118	A	H
		5851.25	59.77	-59.58	119.35	49.27	32.4	10.59	32.49	100	118	P	H
		5857.25	58.95	-51.22	110.17	48.44	32.41	10.59	32.49	100	118	P	H
		5883.5	57.4	-41.49	98.89	46.81	32.47	10.6	32.48	100	118	P	H
		5939	53.58	-14.62	68.2	42.76	32.66	10.63	32.47	100	118	P	H
													H
													H
		5642.75	51.56	-16.64	68.2	41.82	31.81	10.48	32.55	106	260	P	V
		5687.25	58.85	-36.95	95.8	48.86	32.02	10.51	32.54	106	260	P	V
		5718.25	78.96	-31.35	110.31	68.82	32.14	10.53	32.53	106	260	P	V
		5725	80.93	-41.27	122.2	70.78	32.15	10.53	32.53	106	260	P	V
	*	5755	112.05	-	-	101.81	32.21	10.55	32.52	106	260	P	V
	*	5755	104.31	-	-	94.07	32.21	10.55	32.52	106	260	A	V
		5850.5	56.64	-64.42	121.06	46.14	32.4	10.59	32.49	106	260	P	V
		5868.25	55.88	-51.21	107.09	45.33	32.44	10.6	32.49	106	260	P	V
		5881.5	52.57	-47.8	100.37	41.99	32.46	10.6	32.48	106	260	P	V
		5934.75	51.2	-17	68.2	40.41	32.64	10.62	32.47	106	260	P	V
													V
													V



WIFI Ant. 0+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		5606.25	51.65	-16.55	68.2	41.86	31.89	10.46	32.56	100	117	P	H
		5686.75	54.91	-40.52	95.43	44.92	32.02	10.51	32.54	100	117	P	H
		5718.75	60.63	-49.82	110.45	50.49	32.14	10.53	32.53	100	117	P	H
		5723.5	61.22	-57.56	118.78	51.07	32.15	10.53	32.53	100	117	P	H
	*	5795	115.13	-	-	104.78	32.29	10.57	32.51	100	117	P	H
	*	5795	107.93	-	-	97.58	32.29	10.57	32.51	100	117	A	H
		5852.5	65.9	-50.6	116.5	55.39	32.41	10.59	32.49	100	117	P	H
		5857.5	64.63	-45.47	110.1	54.11	32.42	10.59	32.49	100	117	P	H
		5876.5	60.06	-44.03	104.09	49.49	32.45	10.6	32.48	100	117	P	H
		5935	54.42	-13.78	68.2	43.63	32.64	10.62	32.47	100	117	P	H
													H
													H
		5601.75	51.72	-16.48	68.2	41.92	31.9	10.46	32.56	100	258	P	V
		5700	56.31	-48.89	105.2	46.23	32.1	10.51	32.53	100	258	P	V
		5719.25	60.68	-49.91	110.59	50.54	32.14	10.53	32.53	100	258	P	V
		5721	60.71	-52.37	113.08	50.57	32.14	10.53	32.53	100	258	P	V
	*	5795	113.21	-	-	102.86	32.29	10.57	32.51	100	258	P	V
	*	5795	104.64	-	-	94.29	32.29	10.57	32.51	100	258	A	V
		5853	66.62	-48.74	115.36	56.11	32.41	10.59	32.49	100	258	P	V
		5860.5	65.24	-44.02	109.26	54.72	32.42	10.59	32.49	100	258	P	V
		5877.75	61.4	-41.76	103.16	50.82	32.46	10.6	32.48	100	258	P	V
		5925	53.68	-14.52	68.2	42.93	32.6	10.62	32.47	100	258	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. 0+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	47.19	-26.81	74	51.03	39.58	17.03	60.93	100	0	P	H
		17265	48.6	-19.6	68.2	46.71	40.13	21.59	60.33	100	0	P	H
													H
													H
		11510	47.74	-26.26	74	51.58	39.58	17.03	60.93	100	0	P	V
		17265	48.15	-20.05	68.2	46.26	40.13	21.59	60.33	100	0	P	V
													V
													V
802.11n HT40 CH 159 5795MHz		11590	47.24	-26.76	74	51.2	39.42	17.15	61.01	100	0	P	H
		17385	48.81	-19.39	68.2	46.36	40.69	21.69	60.44	100	0	P	H
													H
													H
		11590	48.07	-25.93	74	52.03	39.42	17.15	61.01	100	0	P	V
		17385	48.61	-19.59	68.2	46.16	40.69	21.69	60.44	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. 0+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		5649.5	58.32	-9.88	68.2	48.58	31.8	10.49	32.55	100	119	P	H
		5699	69.77	-34.69	104.46	59.7	32.09	10.51	32.53	100	119	P	H
		5719.25	72.39	-38.2	110.59	62.25	32.14	10.53	32.53	100	119	P	H
		5723.75	71.73	-47.62	119.35	61.58	32.15	10.53	32.53	100	119	P	H
	*	5775	111.27	-	-	100.97	32.25	10.56	32.51	100	119	P	H
	*	5775	103.14	-	-	92.84	32.25	10.56	32.51	100	119	A	H
		5853.5	73.63	-40.59	114.22	63.12	32.41	10.59	32.49	100	119	P	H
		5855	71.89	-38.91	110.8	61.38	32.41	10.59	32.49	100	119	P	H
		5875.5	67.84	-36.99	104.83	57.27	32.45	10.6	32.48	100	119	P	H
		5929.75	54.58	-13.62	68.2	43.81	32.62	10.62	32.47	100	119	P	H
													H
													H
		5644	57.02	-11.18	68.2	47.28	31.81	10.48	32.55	117	262	P	V
		5697	70.13	-32.86	102.99	60.07	32.08	10.51	32.53	117	262	P	V
		5717.5	74.79	-35.31	110.1	64.67	32.13	10.52	32.53	117	262	P	V
		5720.5	74.45	-37.49	111.94	64.31	32.14	10.53	32.53	117	262	P	V
	*	5775	108.91	-	-	98.61	32.25	10.56	32.51	117	262	P	V
	*	5775	100.98	-	-	90.68	32.25	10.56	32.51	117	262	A	V
		5851	73.89	-46.03	119.92	63.39	32.4	10.59	32.49	117	262	P	V
		5856.5	72.12	-38.26	110.38	61.61	32.41	10.59	32.49	117	262	P	V
		5877.5	65.1	-38.24	103.34	54.52	32.46	10.6	32.48	117	262	P	V
		5933	52.77	-15.43	68.2	41.99	32.63	10.62	32.47	117	262	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. 0+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	47.72	-26.28	74	51.63	39.5	17.09	60.98	100	0	P	H
		17325	48.2	-20	68.2	46.15	40.27	21.64	60.37	100	0	P	H
													H
													H
		11550	47.95	-26.05	74	51.86	39.5	17.09	60.98	100	0	P	V
		17325	47.95	-20.25	68.2	45.9	40.27	21.64	60.37	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average 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.	
0+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”.

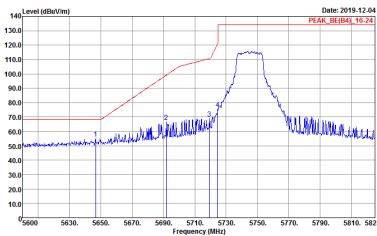
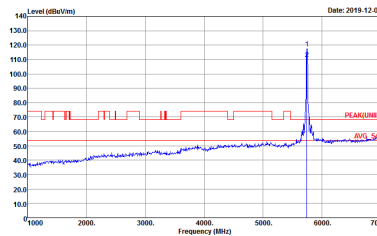


Appendix D. Radiated Spurious Emission Plots

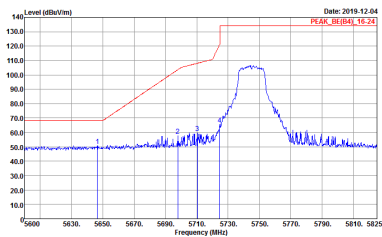
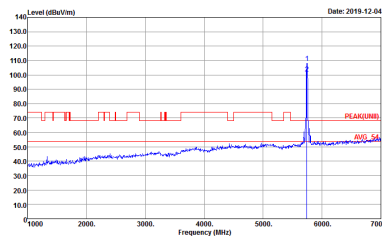
Test Engineer :	Cookie Ku, Fu Chen, Troye Hsieh	Temperature :	18.1 ~ 26.1°C
		Relative Humidity :	37.2 ~ 68.2%

Band 4 - 5725~5850MHz

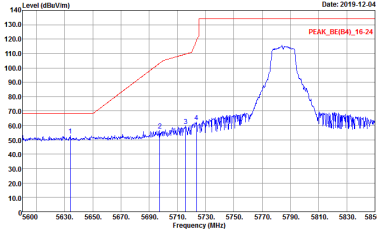
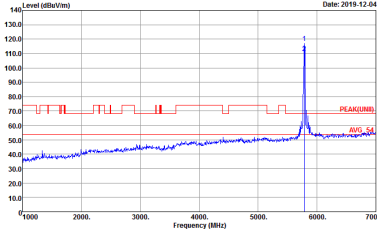
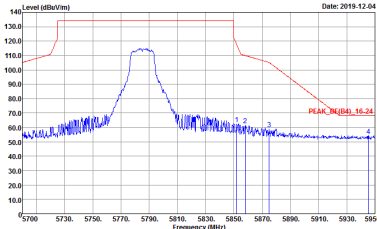
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
0	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 17.5	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 17.5

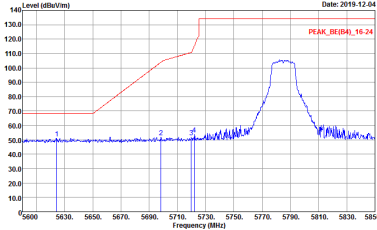
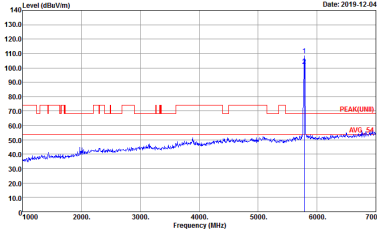
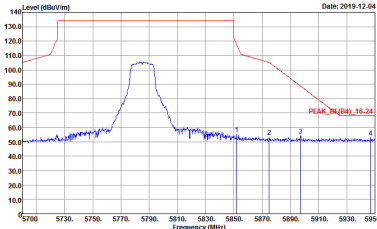


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
0	Vertical	Fundamental
Peak	 Site : 03CH11-AY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17.5	 Site : 03CH11-AY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17.5

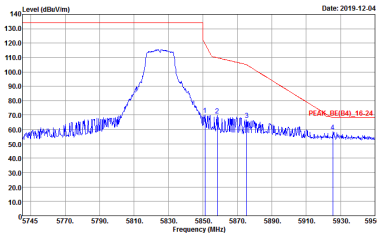
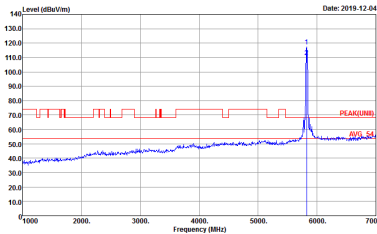


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
0	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 17.5	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 17.5
	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 17.5	Left blank

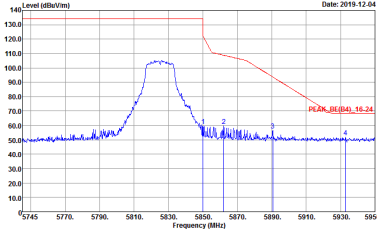
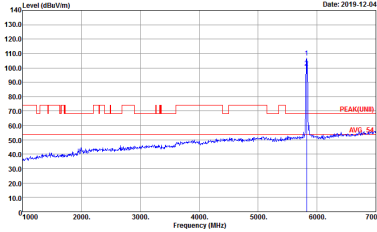


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
0	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17.5	 Site : 03CH11-HY Condition : PEAK(FUND) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17.5
	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17.5	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
0	Horizontal	Fundamental
Peak	 Site : 03CH11-14Y Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 17.5	 Site : 03CH11-14Y Condition : PEAK(UNIT) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 17.5

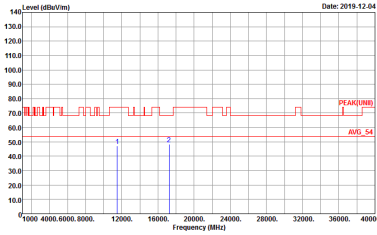
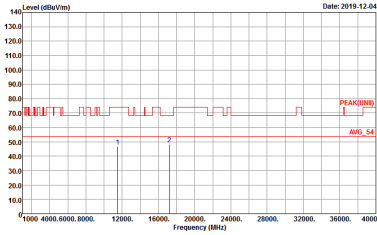


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
0	Vertical	Fundamental
Peak	 Site : 03CH11-14Y Condition : PEAK_8E(84)_16-24 3m HORN 91200-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17.5	 Site : 03CH11-14Y Condition : PEAK(UNIT) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17.5



Band 4 - 5725~5850MHz

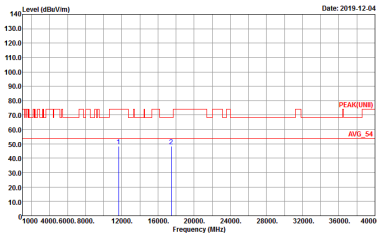
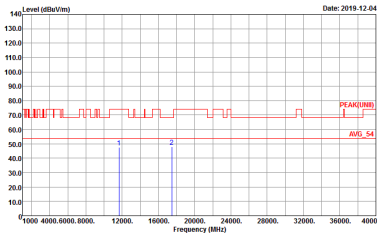
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
0	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01

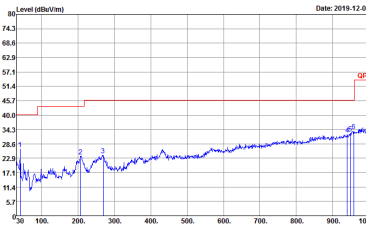
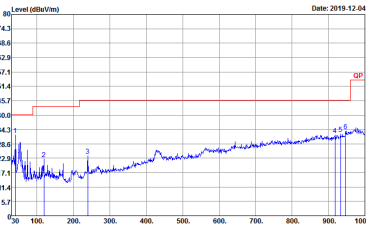


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
0	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2019-12-04 Frequency (MHz) Site : 03CH11-14Y Condition : PEAK(UNIT) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01	Level (dBuV/m) Date: 2019-12-04 Frequency (MHz) Site : 03CH11-14Y Condition : PEAK(UNIT) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
0	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-14Y Condition : PEAK(UNIT) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01	 Site : 03CH11-14Y Condition : PEAK(UNIT) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01

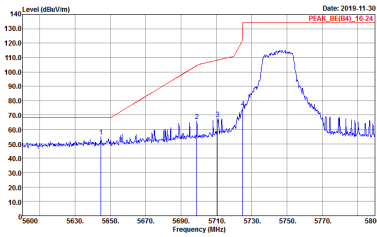
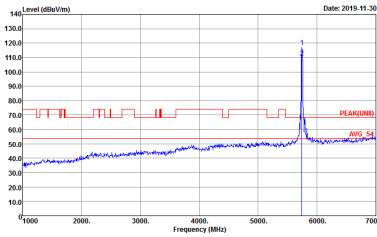
Emission below 1GHz
5GHz WIFI 802.11a (LF)

WIFI	5GHz 5725~5850MHz	
ANT	802.11a LF	
0	Horizontal	Vertical
QP / Peak	 Site : 03CH11-HY Condition : QP 3m BT-LOG 6111D-LF_ETC HORIZONTAL Detector : Peak Project : 992410-01	 Site : 03CH11-HY Condition : QP 3m BT-LOG 6111D-LF_ETC VERTICAL Detector : Peak Project : 992410-01

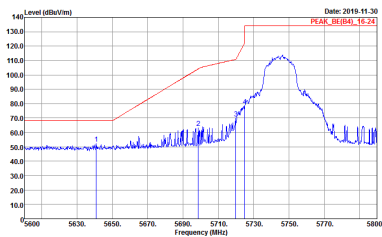
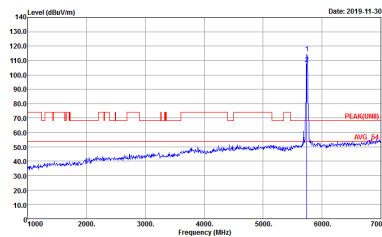


Band 4 - 5725~5850MHz

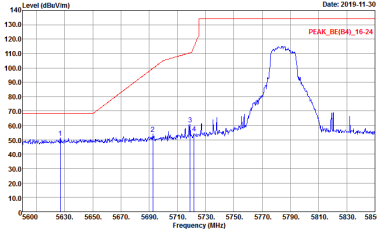
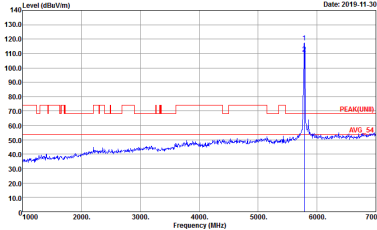
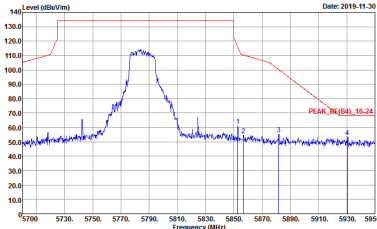
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_RE(84)_16-24 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 17	 Site : 03CH11-HY Condition : PEAK(FUND) 3m HORN 9120D-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 17

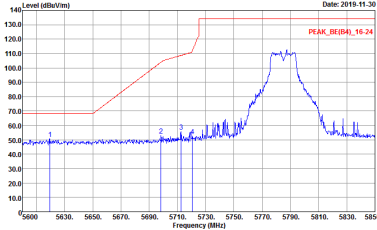
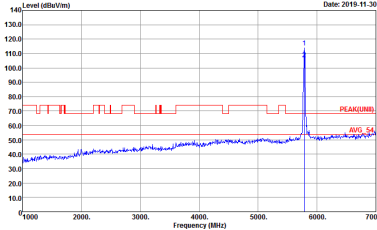
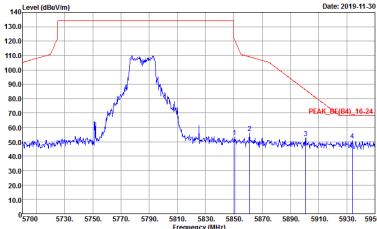


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH11-MY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17	 Site : 03CH11-MY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17

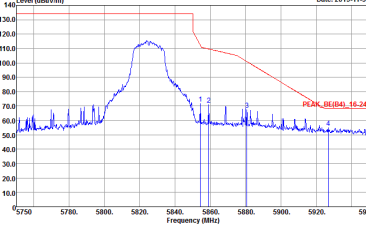
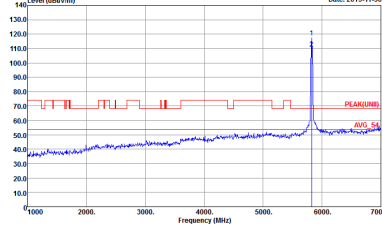


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 17	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 17
	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 17	Left blank

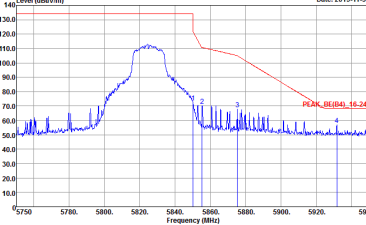
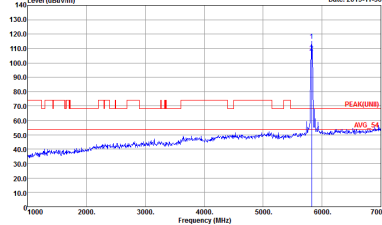


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17
	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 17	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH11-14Y Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 17	 Site : 03CH11-14Y Condition : PEAK(UNIT) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 17

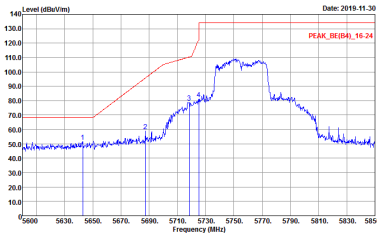
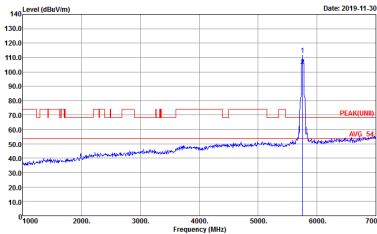
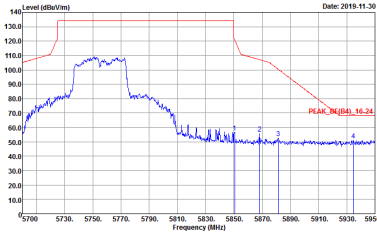


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH11-14Y Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 17	 Site : 03CH11-14Y Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 17

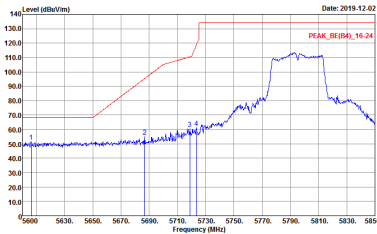
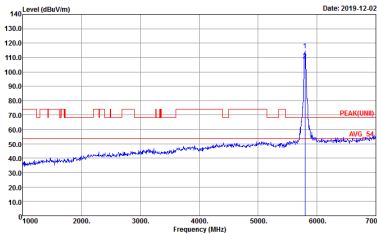
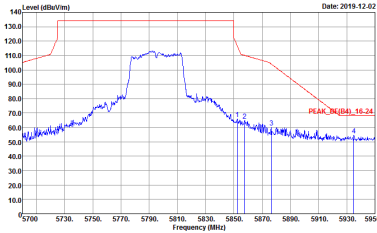


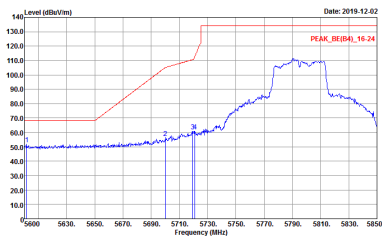
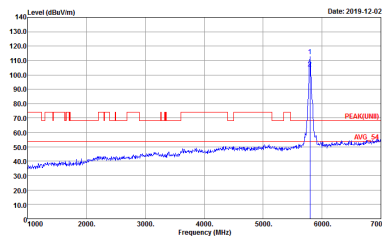
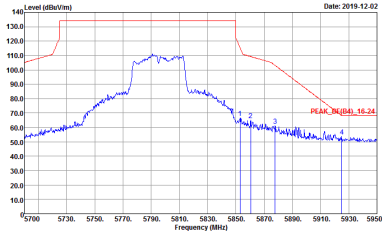
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
0+1	Horizontal	Fundamental
Peak	Site : 03CH11-HY Condition : PEAK_RE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 16.5	Site : 03CH11-HY Condition : PEAK_UN(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 16.5
Peak	Site : 03CH11-HY Condition : PEAK_RE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 16.5	Left blank

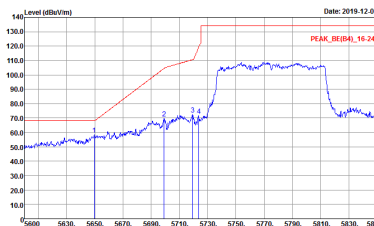
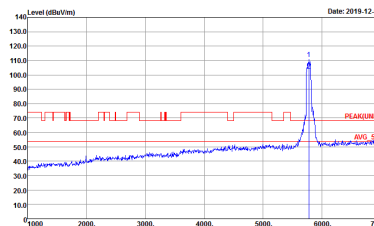
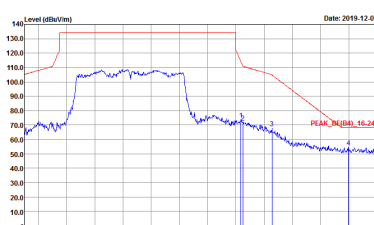
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 16.5	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 16.5
	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 16.5	Left blank

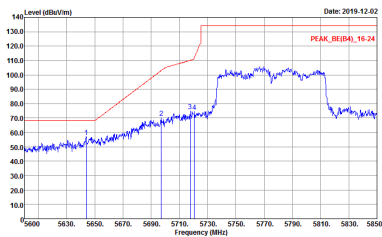
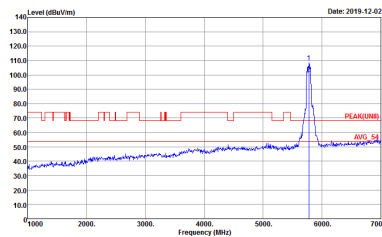
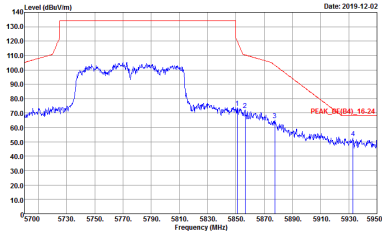


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 16.5	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 16.5
	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01 Setting : 16.5	Left blank

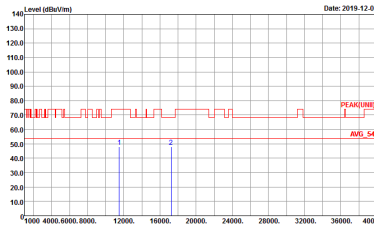
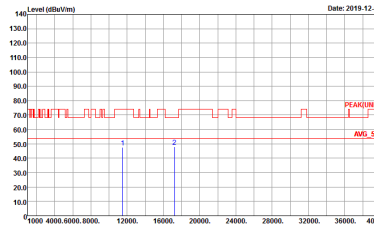
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 16.5	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 16.5
	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 16.5	Left blank

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

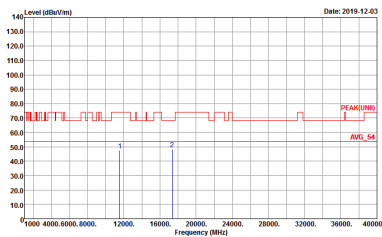
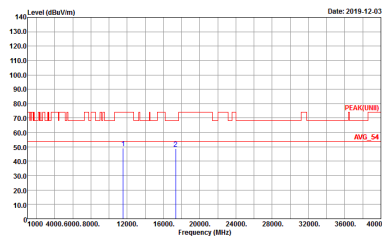
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
0+1	Horizontal	Fundamental
Peak	 Date: 2019-12-02 PEAK_RE(B4)_16-24 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 16	 Date: 2019-12-02 PEAK_UN(B4)_16-24 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 16
Peak	 Date: 2019-12-02 PEAK_RE(B4)_16-24 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 992410-01 Setting : 16	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 16	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 16
	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF VERTICAL Detector : Peak Project : 992410-01 Setting : 16	Left blank

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

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 992410-01	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-14Y Condition : PEAK(UHB) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01	 Site : 03CH11-14Y Condition : PEAK(UHB) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 992410-01

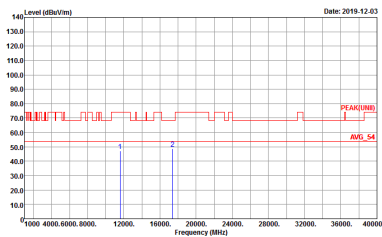
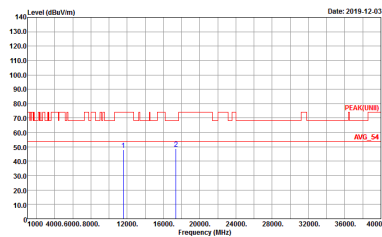


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
0+1	Horizontal	Vertical
Peak Avg.	Site : 03CH11-14Y Condition : PEAK(UHB) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01	Site : 03CH11-14Y Condition : PEAK(UHB) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 992410-01



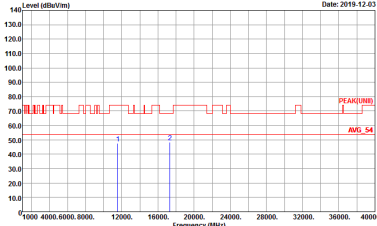
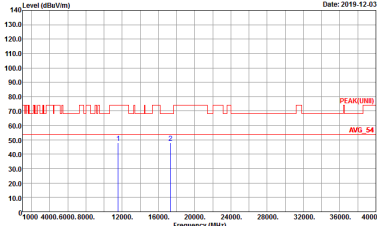
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
0+1	Horizontal	Vertical
Peak Avg.	Site : 03CHI1-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 992410-01	Site : 03CHI1-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Level (dBuV/m) Date: 2019-12-03 Frequency (MHz) Site : 03CH11-14Y Condition : PEAK(UNII) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 992410-01	 Level (dBuV/m) Date: 2019-12-03 Frequency (MHz) Site : 03CH11-14Y Condition : PEAK(UNII) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 992410-01

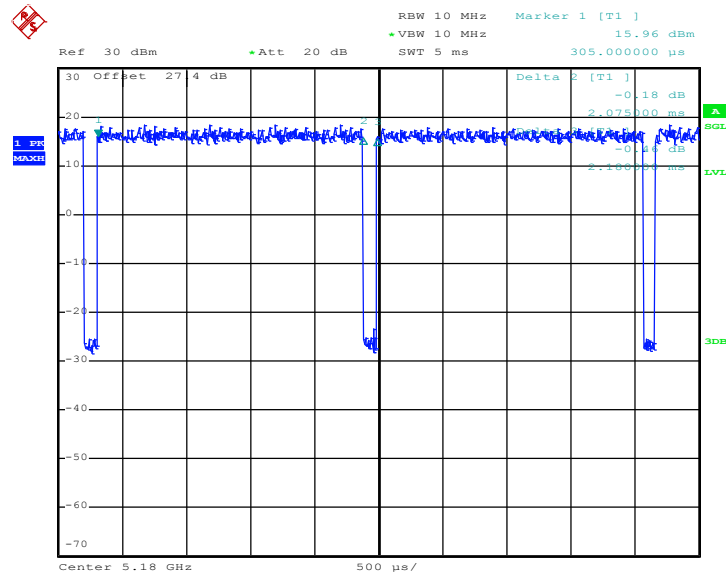


Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

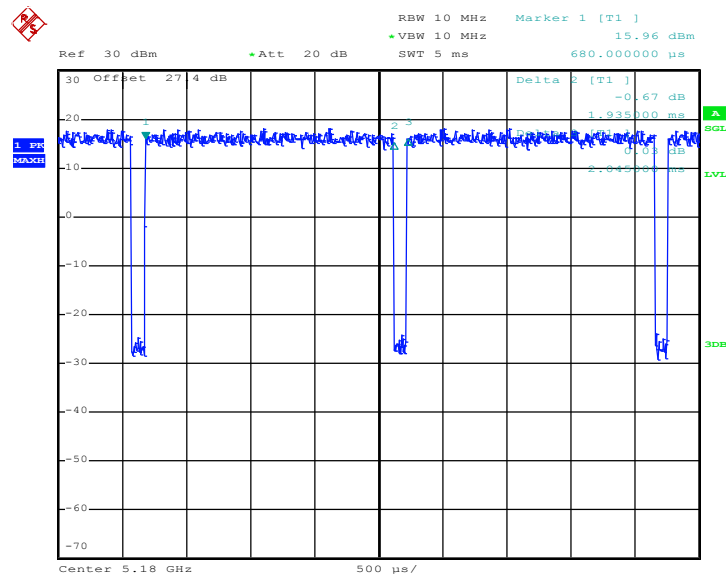
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CHI1-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 992410-01	 Site : 03CHI1-HY Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 992410-01

Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
0	802.11a	95.18	2075	0.48	1kHz	0.21
1	802.11a	95.16	2065	0.48	1kHz	0.22
0	5GHz 802.11n HT20	94.62	1935	0.52	1kHz	0.24
1	5GHz 802.11n HT20	94.36	1925	0.52	1kHz	0.25
0+1	5GHz 802.11n HT20 for Ant. 0	94.62	1935	0.52	1kHz	0.24
0+1	5GHz 802.11n HT20 for Ant. 1	94.85	1935	0.52	1kHz	0.23
0	5GHz 802.11n HT40	91.23	947	1.06	3kHz	0.40
1	5GHz 802.11n HT40	90.39	941	1.06	3kHz	0.44
0+1	5GHz 802.11n HT40 for Ant. 0	91.67	947	1.06	3kHz	0.38
0+1	5GHz 802.11n HT40 for Ant. 1	90.22	941	1.06	3kHz	0.45
0	5GHz 802.11ac VHT20	94.87	1940	0.52	1kHz	0.23
1	5GHz 802.11ac VHT20	94.62	1935	0.52	1kHz	0.24
0+1	5GHz 802.11ac VHT20 for Ant. 0	94.39	1935	0.52	1kHz	0.25
0+1	5GHz 802.11ac VHT20 for Ant. 1	94.62	1935	0.52	1kHz	0.24
0	5GHz 802.11ac VHT40	91.07	948	1.05	3kHz	0.41
1	5GHz 802.11ac VHT40	90.32	952	1.05	3kHz	0.44
0+1	5GHz 802.11ac VHT40 for Ant. 0	91.35	950	1.05	3kHz	0.39
0+1	5GHz 802.11ac VHT40 for Ant. 1	90.83	951	1.05	3kHz	0.42
0	5GHz 802.11ac VHT80	88.41	732	1.37	3kHz	0.53
1	5GHz 802.11ac VHT80	89.98	732	1.37	3kHz	0.46
0+1	5GHz 802.11ac VHT80 for Ant. 0	87.62	736	1.36	3kHz	0.57
0+1	5GHz 802.11ac VHT80 for Ant. 1	88.83	732	1.37	3kHz	0.51

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802.11a


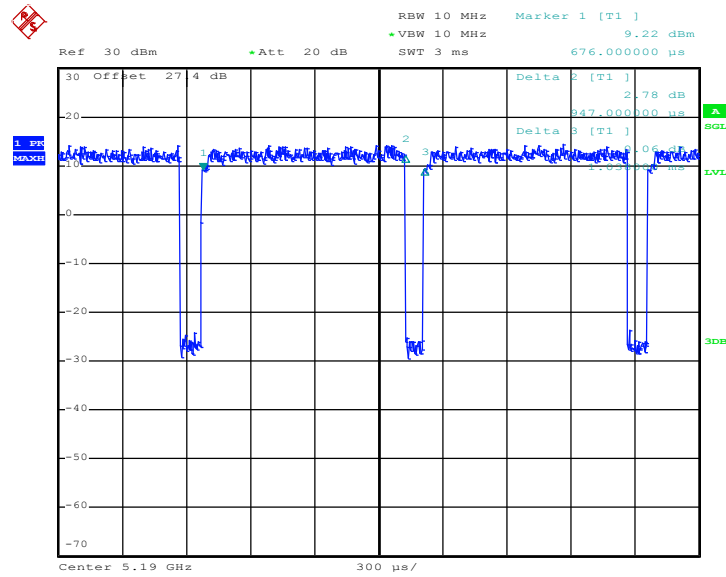
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802.11n HT20


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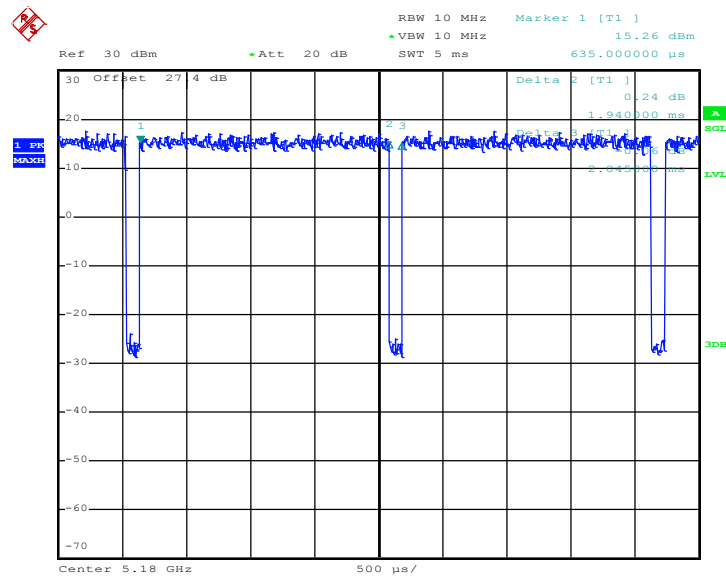


802.11n HT40



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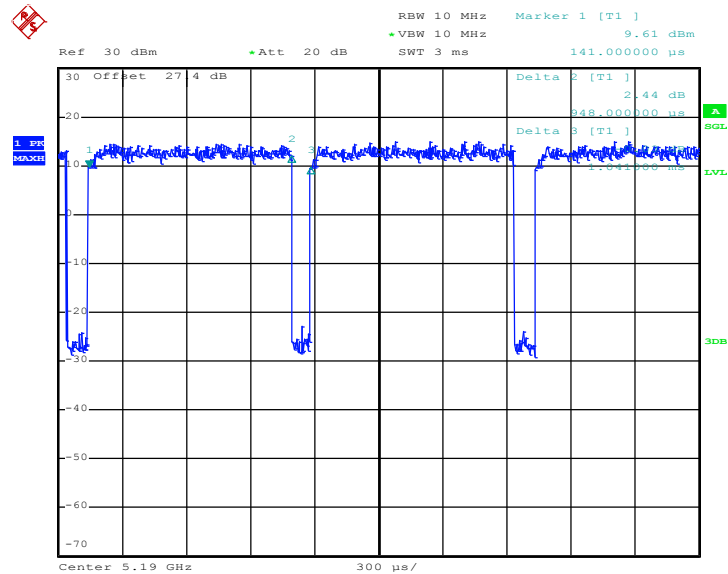
802.11ac VHT20



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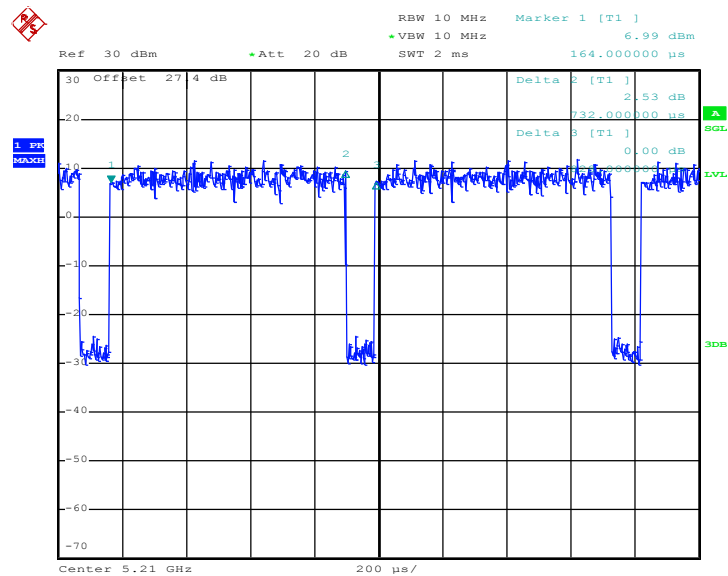


802.11ac VHT40



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802.11ac VHT80

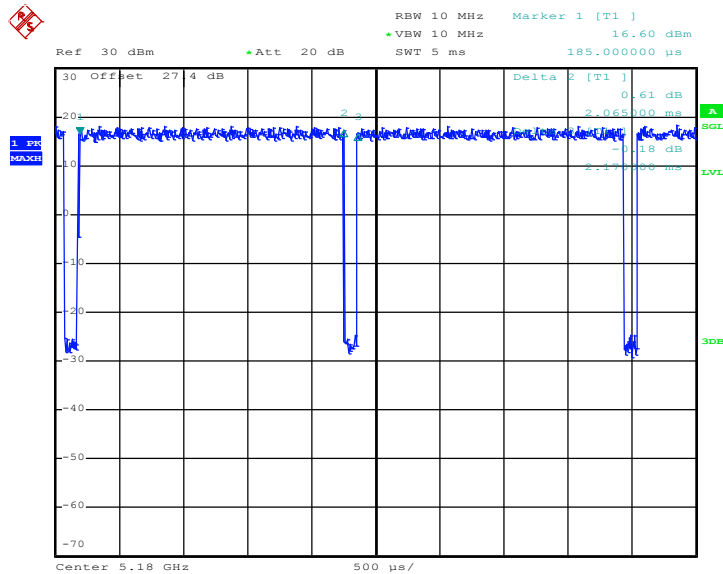


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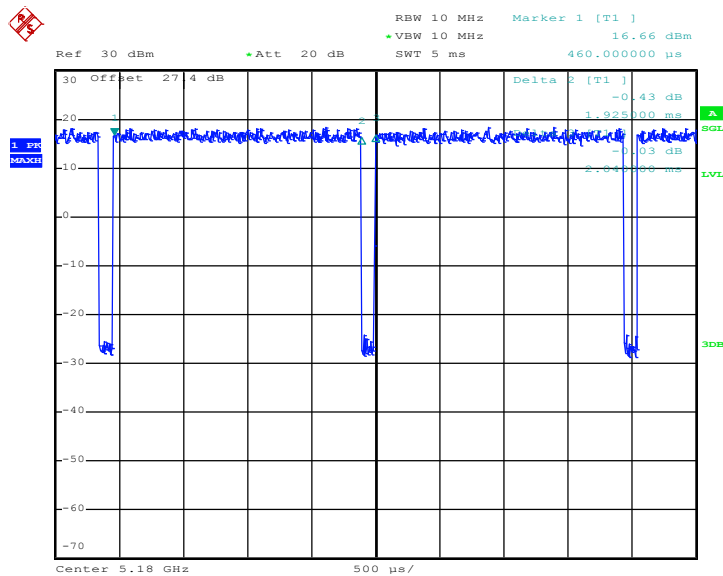
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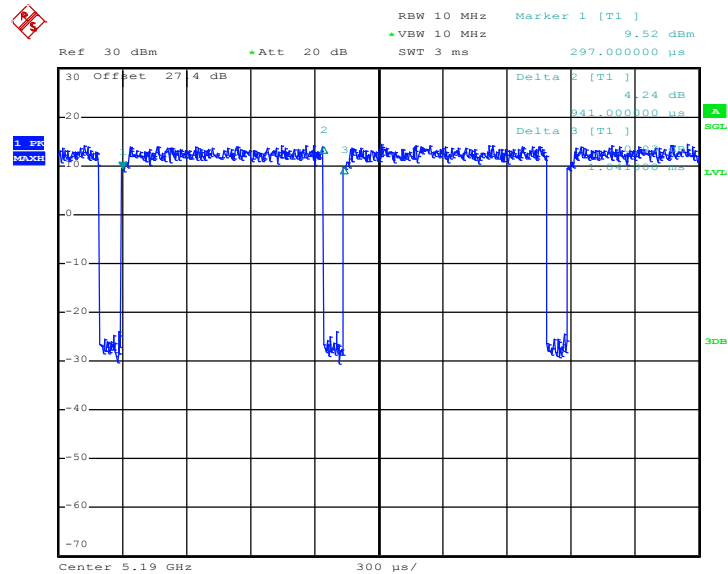
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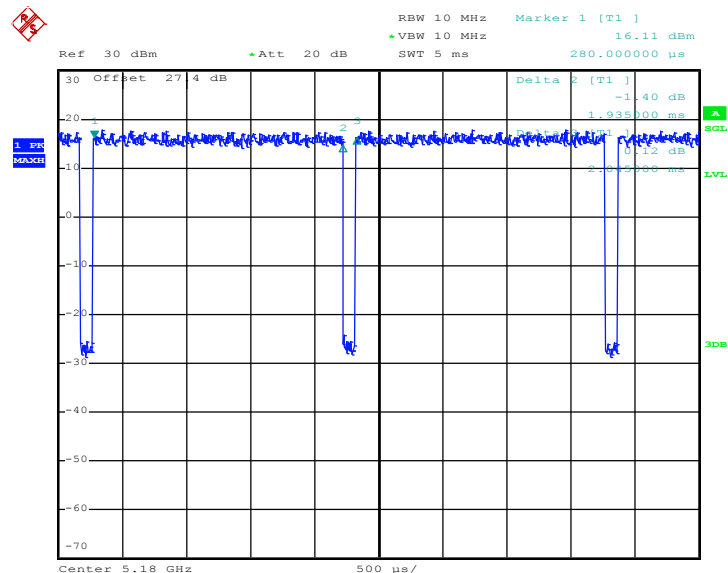


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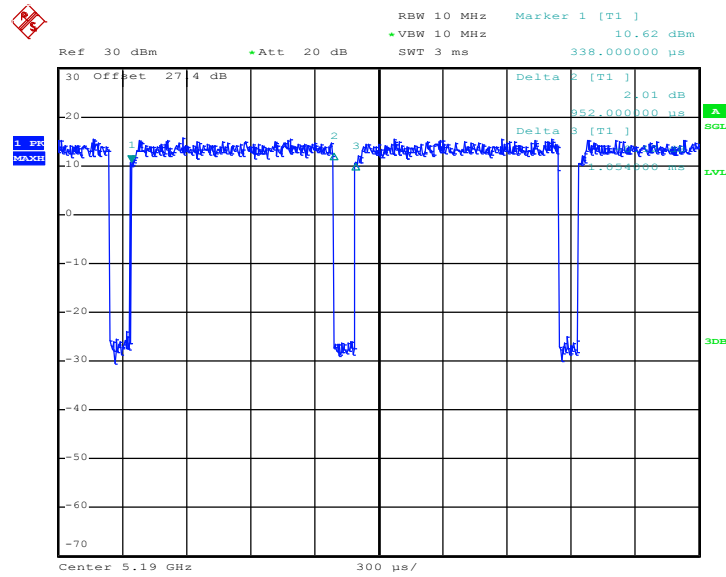
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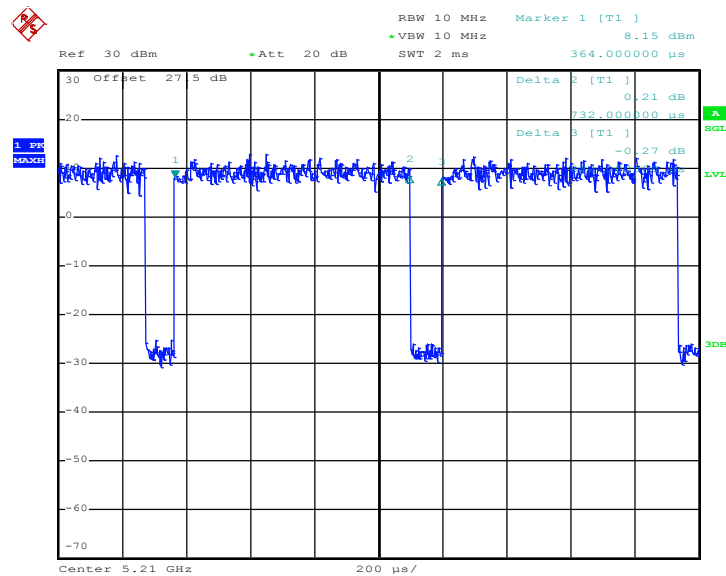


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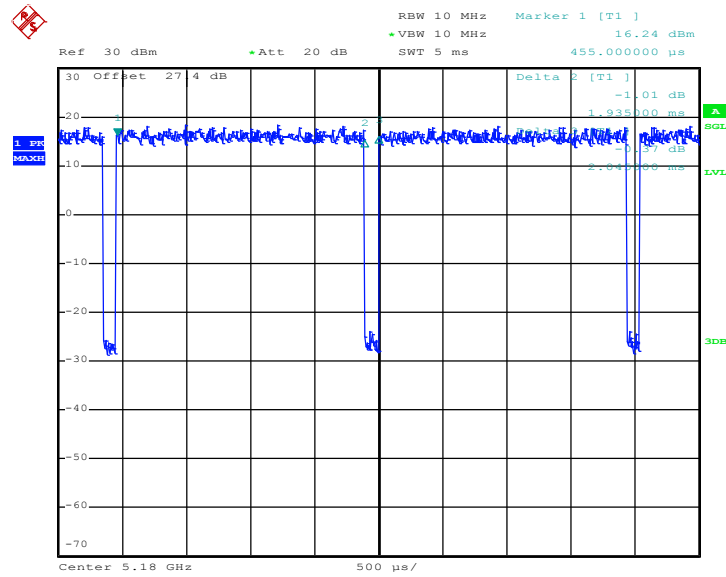


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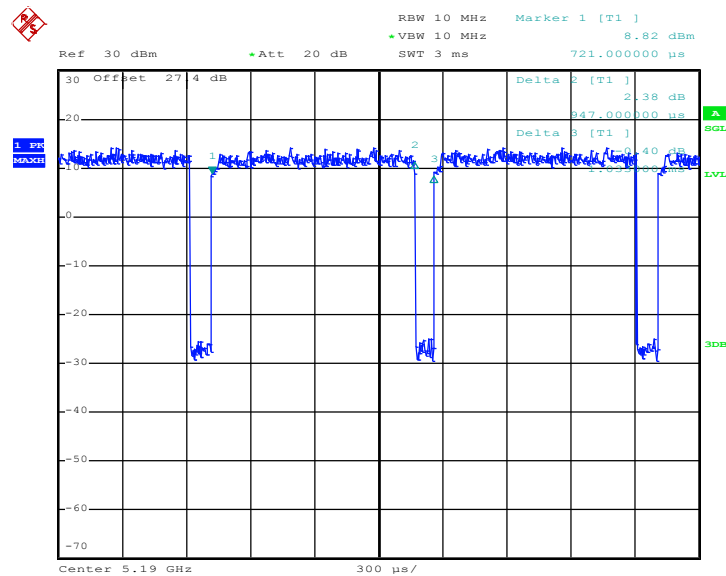
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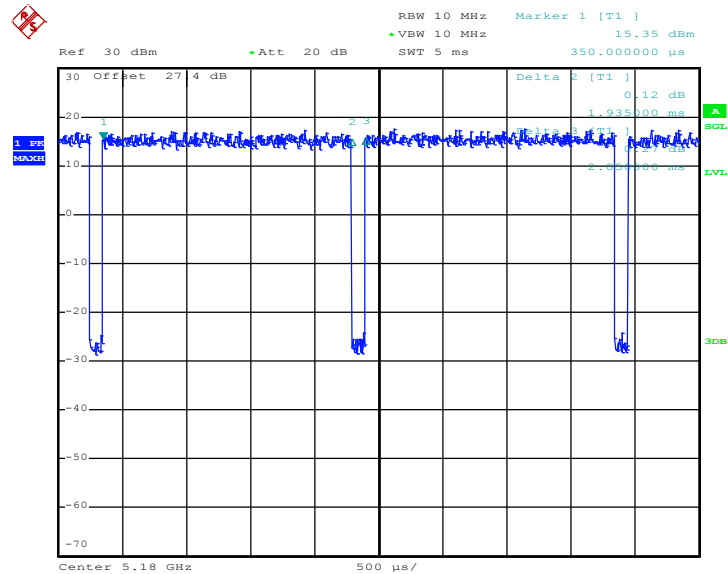
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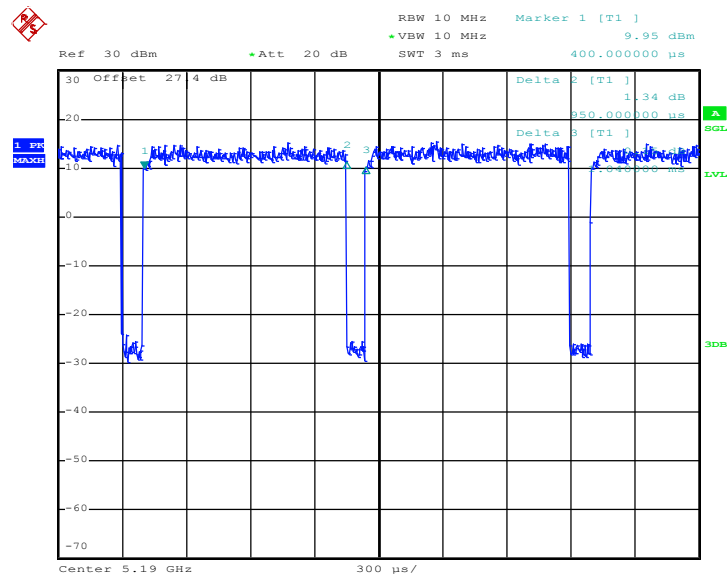


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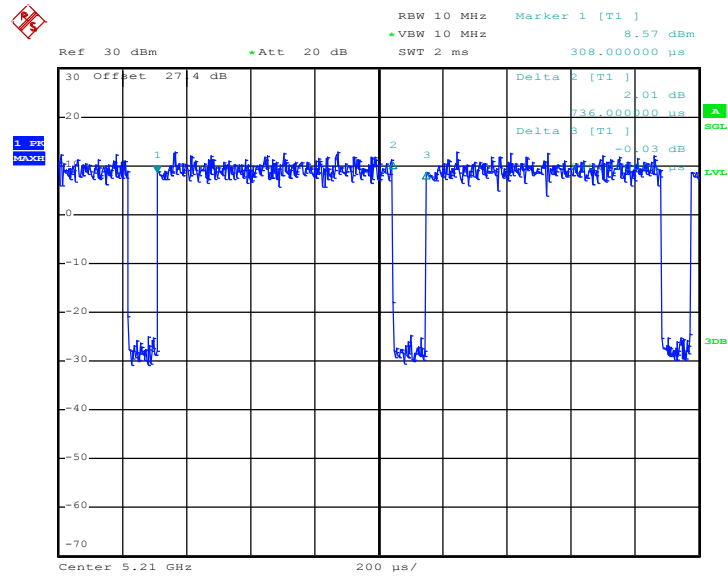
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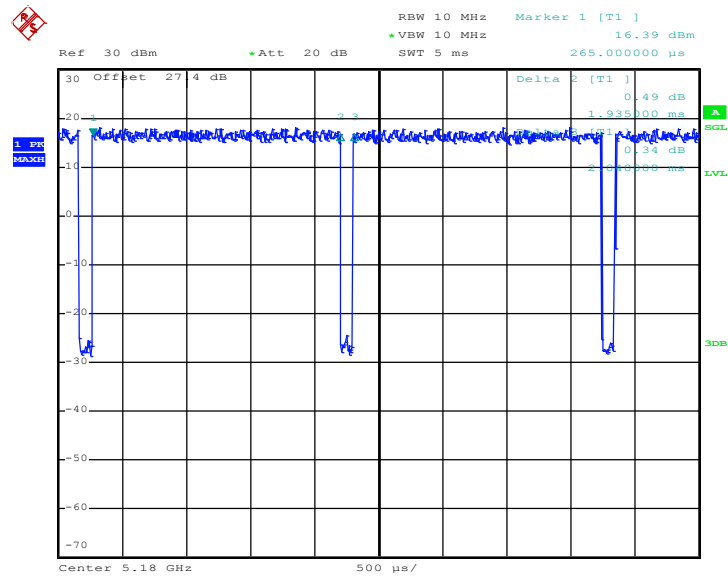
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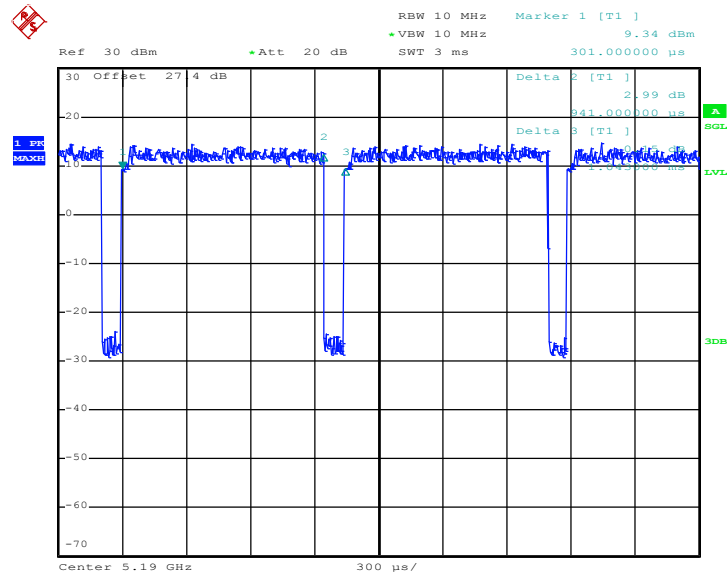
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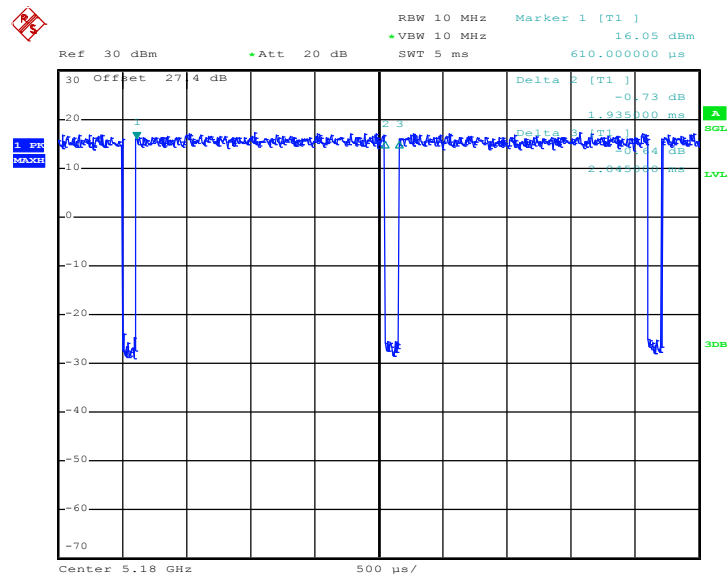


802.11n HT40



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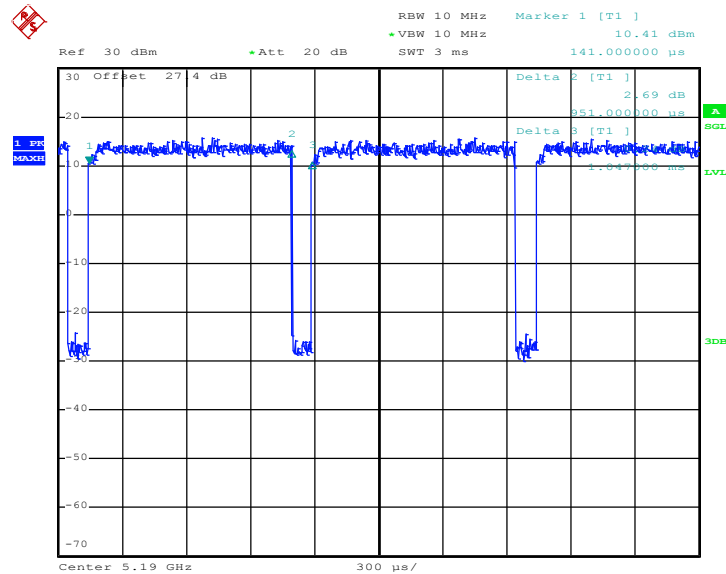
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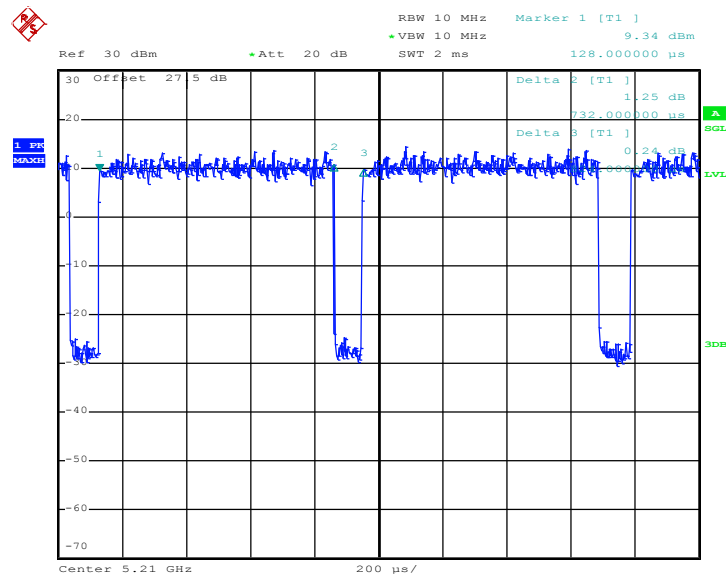


802.11ac VHT40



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802.11ac VHT80



Date: 1.JAN.2003 00:40:08