FCC RADIO TEST REPORT

FCC ID	:	UDX-60076015
Equipment	:	Wi-Fi Router
Brand Name	:	CISCO
Model name	:	MX67W-HW
Applicant	:	Cisco Systems, Inc. 170 West Tasman Drive, San Jose, CA 95134
Standard	:	FCC Part 15 Subpart E §15.407

The product was received on Mar. 14, 2018 and testing was started from Apr. 25, 2018 and completed on Jun. 12, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Jones Tsai

Approved by: Jones Tsai

SPORTON INTERTIONAL 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
FR831426D	01	Initial issue of report	Jul. 12, 2018

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 1.03 dB at 5649.800 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 15.59 dB at 0.368 MHz
3.6	15.407 (c)	Automatically Discontinue Transmission	Pass	-
3.7	15.203 & 15.407 (a)	Antenna Requirement	Pass	-

Reviewed by: Joseph Lin

Report Producer: Yuping Lin

1 General Description

1.1 Product Feature of Equipment Under Test

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

Product specification subjective to this standard	
Antenna Type	WLAN: Dipole Antenna

1.2 Modification of EUT

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

1.3 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.52, Huaya 1st Rd., 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.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	03CH13-HY

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

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 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 Antenna two degrees, the worst cases (Antenna 90 degree) 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.

MIMO 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

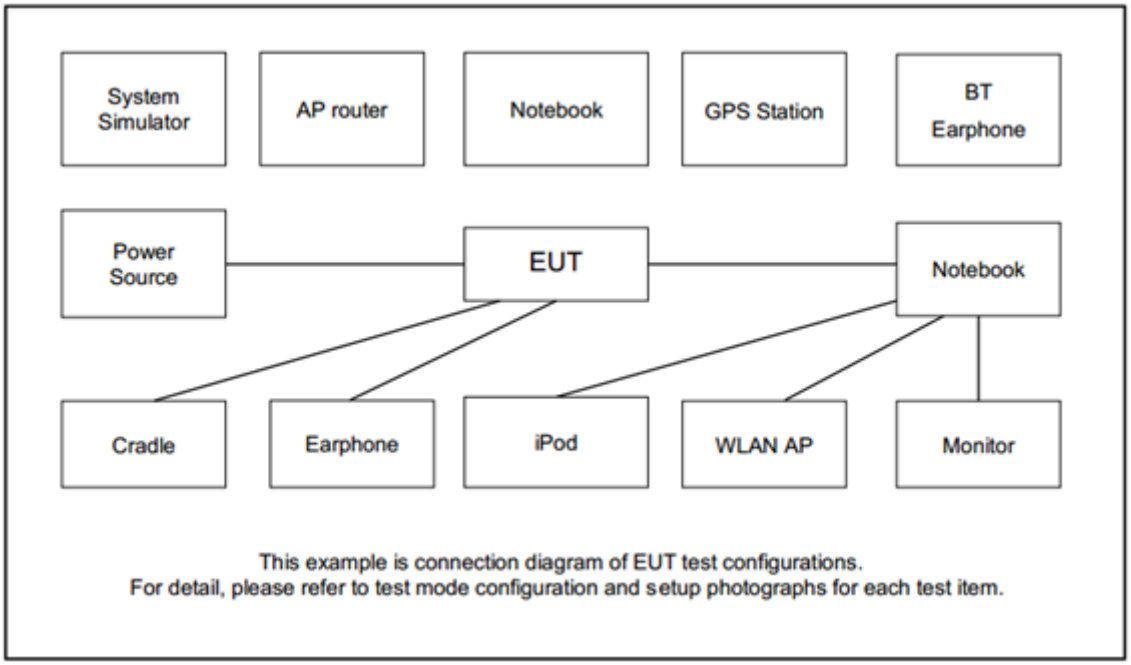
TXBF Mode (Power Only)

Modulation	Data Rate
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : RJ-45 Link (LAN) + RJ-45 Link (WAN) + WLAN (5GHz) Link + USB Link + Adapter

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



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	USB Flash Drive	Kingston	DataTraveler 100	FCC DoC	N/A	N/A

2.5 EUT Operation Test Setup

The RF and test items, utility “QRCT” 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.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

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.

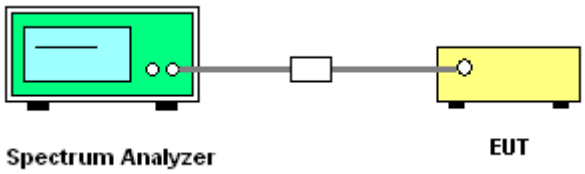
3.1.2 Measuring Instruments

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 ≥ 3 x 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.

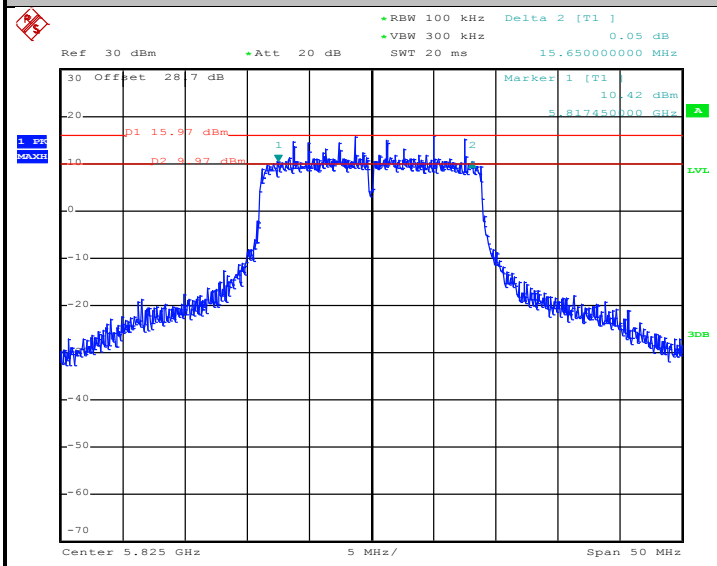
3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

Minimum 6dB Bandwidth



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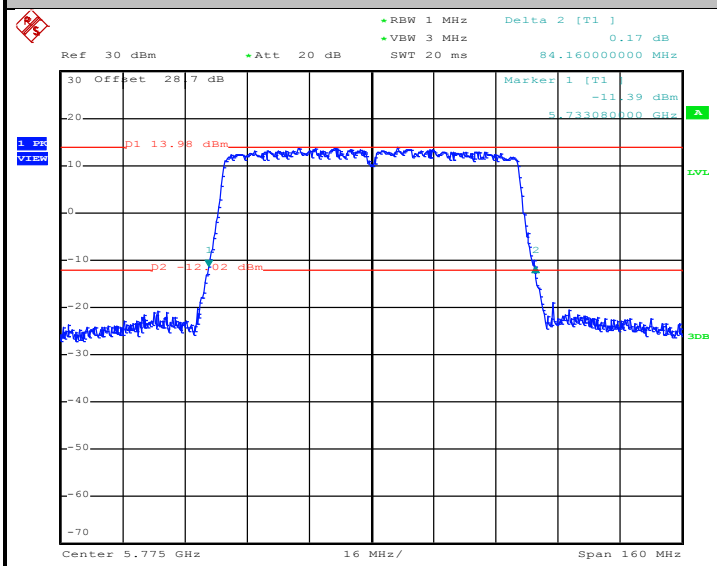
Maximum 26dB Bandwidth



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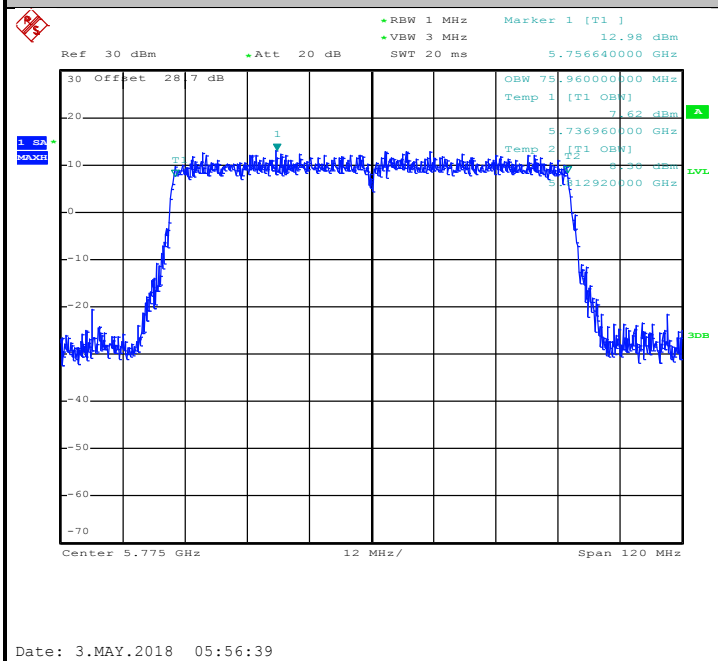
Maximum 99% Occupied Bandwidth



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

<CDD Modes>

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.

<TXBF Modes>

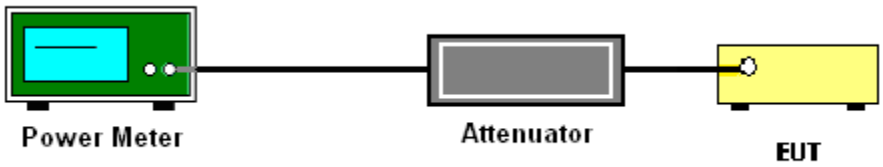
The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 for TXBF modes.

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.

Additional TXBF gain 10log (N = 2) has offset to the CDD mode in order to show compliance for TXBF mode.

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-2 #

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

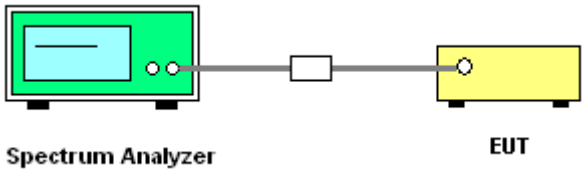
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(500kHz/RBW) to the test result.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

   Method (c): Measure and add 10 log(N_{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_{ANT}) dB is added to each spectrum value before comparing to the emission limit. The addition of 10 log(N_{ANT}) dB serves to apportion the emission limit among the N_{ANT} outputs so that each output is permitted to contribute no more than $1/N_{ANT}$ th of the PSD limit.

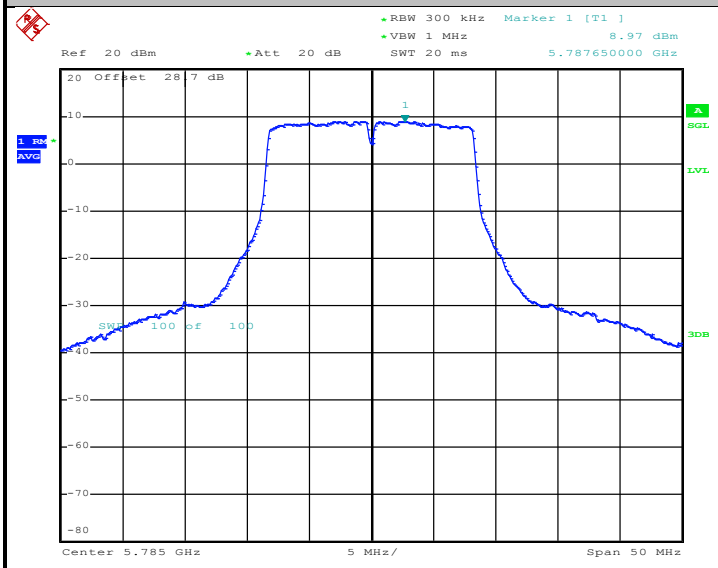
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

Worst Case Power Density (dBm/MHz) for MIMO Ant. 1



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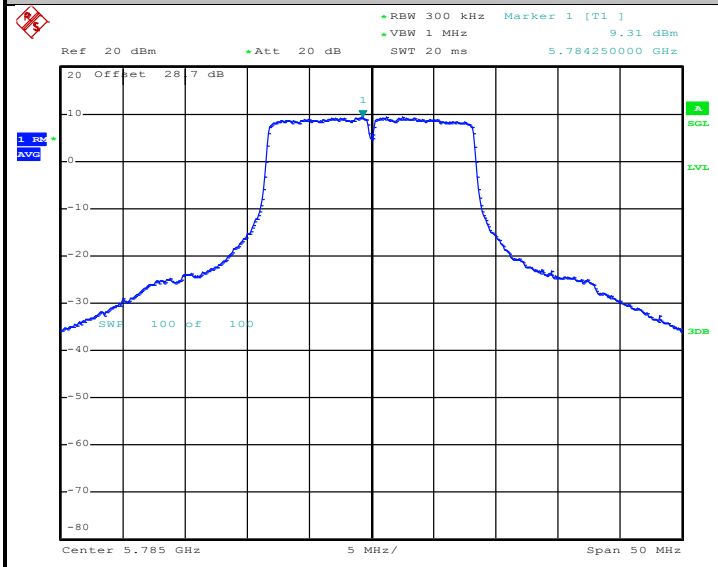
Worst Case Power Density (dBm/MHz) for MIMO Ant. 2



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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.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/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) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.[3]

(ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.[4]

Note 3: An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.

Note 4: Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedures

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 ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

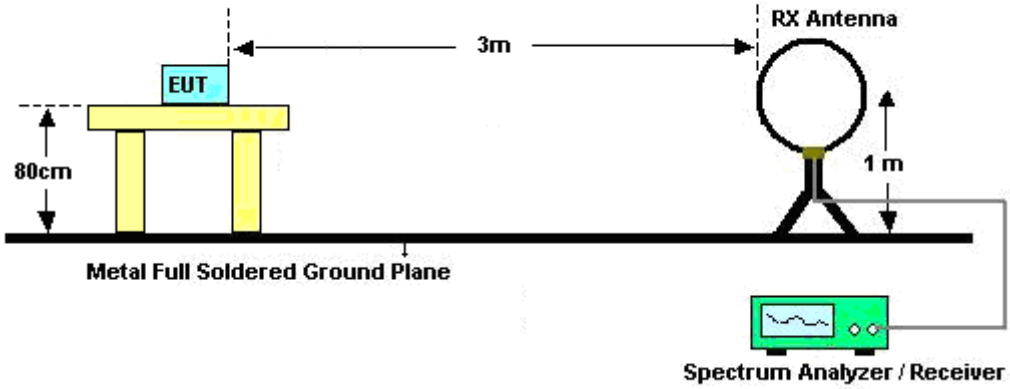
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 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.

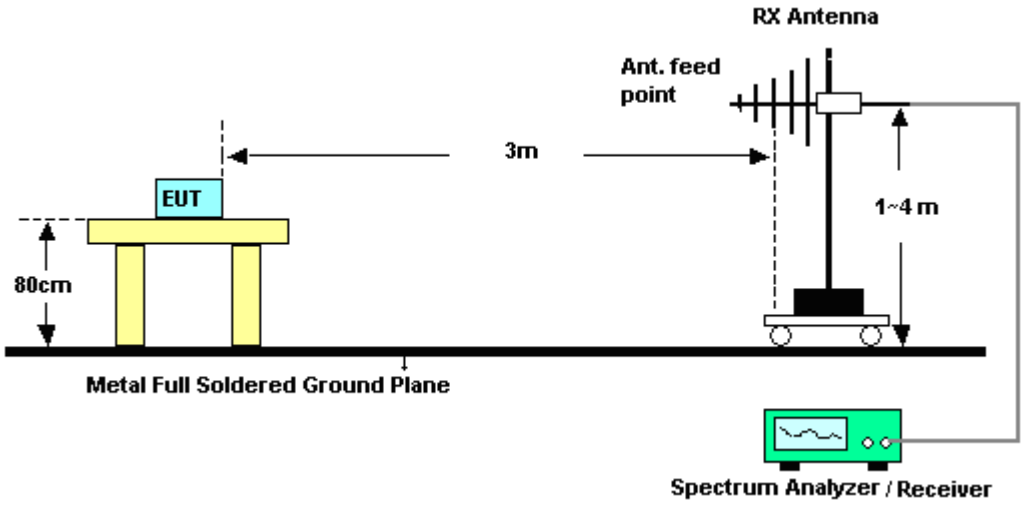
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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.
8. Additional TXBF gain 10log (N = 2) has offset to the CDD mode in order to show compliance for TXBF mode.

3.4.4 Test Setup

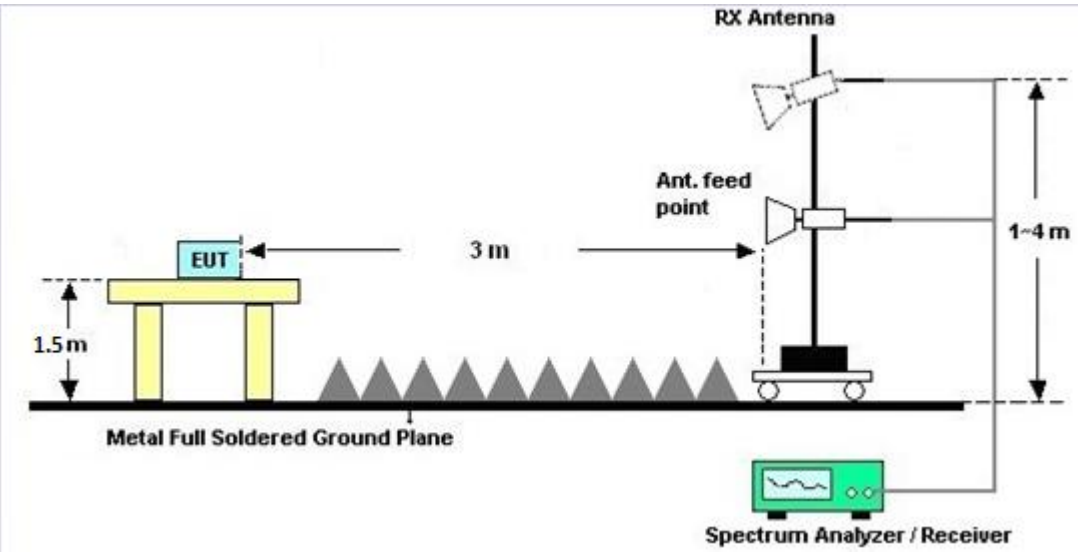
For radiated emissions below 30MHz



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 semi-Anechoic chamber, 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 (dBμV)	
	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.

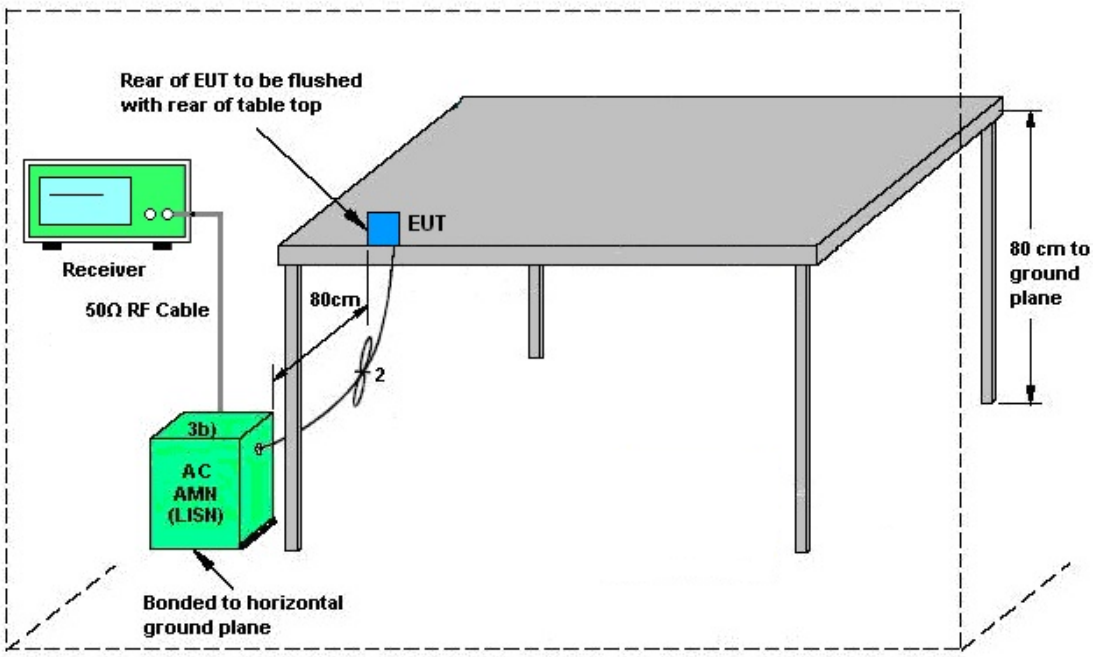
3.5.2 Measuring Instruments

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



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

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(NANT/NSS=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 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	DG for PSD	Power Limit Reduction	PSD Limit Reduction
	Ant. 1 (dBi)	Ant. 2 (dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	3.00	3.00	3.00	6.01	0.00	0.01

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)

TXBF modes

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;

G_k is the gain in dBi of the kth antenna.

The EUT supports beamforming for 802.11ac modes.

The directional gain calculation is following F)2)e)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.

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant 1	Ant 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	3.00	3.00	6.01	6.01	0.01	0.01

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 26, 2017	May 01, 2018~ May 15, 2018	Sep. 25, 2018	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 26, 2017	May 01, 2018~ May 15, 2018	Sep. 25, 2018	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9kHz ~ 30GHz	Nov. 13, 2017	May 01, 2018~ May 15, 2018	Nov. 12, 2018	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1300484	N/A	Mar. 01, 2018	May 01, 2018~ May 15, 2018	Feb. 28, 2019	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Apr. 25, 2018~ Apr. 26, 2018	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	3.6GHz	Dec. 08, 2017	Apr. 25, 2018~ Apr. 26, 2018	Dec. 07, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	Apr. 25, 2018~ Apr. 26, 2018	Nov. 29, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 08, 2017	Apr. 25, 2018~ Apr. 26, 2018	Dec. 07, 2018	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Apr. 25, 2018~ Apr. 26, 2018	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	Apr. 25, 2018~ Apr. 26, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 03, 2018	Apr. 25, 2018~ Apr. 26, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Nov. 10, 2017	Apr. 27, 2018 ~ Jun. 12, 2018	Nov. 09, 2018	Radiation (03CH13-HY)
Filter	Wainwright	WLKS1200-8SS	SN3	1.2G Low Pass	Nov. 21, 2017	Apr. 27, 2018 ~ Jun. 12, 2018	Nov. 20, 2018	Radiation (03CH13-HY)
Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 18, 2017	Apr. 27, 2018 ~ Jun. 12, 2018	Jul. 17, 2018	Radiation (03CH13-HY)
Filter	Woken	WHKX8-5272.5-6750-18000-40ST	SN2	6.75G Highpass	Jul. 17, 2017	Apr. 27, 2018 ~ Jun. 12, 2018	Jul. 16, 2018	Radiation (03CH13-HY)
Amplifier	Sonoma-Instrument	310 N	187282	9KHz~1GHz	Jan. 19, 2018	Apr. 27, 2018 ~ Jun. 12, 2018	Jan. 18, 2020	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800N1D01N-06	40103&07	30MHz to 1GHz	Jan. 10, 2018	Apr. 27, 2018 ~ Jun. 12, 2018	Jan. 09, 2019	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1241	1GHz ~ 18GHz	Jun. 15, 2017	Apr. 27, 2018 ~ Jun. 12, 2018	Jun. 14, 2018	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590074	1GHz~18GHz	May 22, 2017	Apr. 27, 2018 ~ May 01, 2018	May 21, 2018	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590074	1GHz~18GHz	May 21, 2018	Jun. 12, 2018	May 20, 2019	Radiation (03CH13-HY)
Preamplifier	Keysight	83017A	MY53270147	1GHz~26.5GHz	Feb. 02, 2018	Apr. 27, 2018 ~ Jun. 12, 2018	Feb. 01, 2019	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY55370526	10Hz~44GHz	Mar. 15, 2018	Apr. 27, 2018 ~ Jun. 12, 2018	Mar. 14, 2019	Radiation (03CH13-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Apr. 27, 2018 ~ Jun. 12, 2018	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Apr. 27, 2018 ~ Jun. 12, 2018	N/A	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 27, 2017	Apr. 27, 2018 ~ Jun. 12, 2018	Nov. 26, 2018	Radiation (03CH13-HY)
EMI Test Receiver	Agilent	N9038A (MXE)	MY53290053	20Hz to 26.5GHz	Jan. 16, 2018	Apr. 27, 2018 ~ Jun. 12, 2018	Jan. 15, 2019	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	MY1082/26EA	30M~18GHz	Oct. 17, 2017	Apr. 27, 2018 ~ Jun. 12, 2018	Oct. 16, 2018	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30M~40GHz	Oct. 17, 2017	Apr. 27, 2018 ~ Jun. 12, 2018	Oct. 16, 2018	Radiation (03CH13-HY)
Software	AUDIX	E3 6.2009-8-24c	RK-001124	N/A	N/A	Apr. 27, 2018 ~ Jun. 12, 2018	N/A	Radiation (03CH13-HY)

5 Uncertainty of Evaluation

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.9**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.4**

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.3**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Shiming Liu	Temperature:	21~25	°C
Test Date:	2018/5/1~2018/5/15	Relative Humidity:	51~54	%

<For CDD Mode>

Report Number : FR831426D

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

Band IV													
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	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	17.25	17.15	21.05	21.05	16.00	16.30	0.5		Pass
11a	6Mbps	2	157	5785	17.25	17.20	22.75	21.35	15.80	16.30	0.5		Pass
11a	6Mbps	2	165	5825	17.15	17.20	21.30	21.20	15.70	16.30	0.5		Pass
HT20	MCS0	2	149	5745	18.20	18.15	22.00	21.95	17.20	16.85	0.5		Pass
HT20	MCS0	2	157	5785	18.40	18.35	24.60	22.20	17.20	16.54	0.5		Pass
HT20	MCS0	2	165	5825	18.40	18.35	23.10	23.05	16.70	15.65	0.5		Pass
HT40	MCS0	2	151	5755	36.30	36.30	40.68	40.50	33.78	35.05	0.5		Pass
HT40	MCS0	2	159	5795	36.50	36.80	50.15	69.19	33.47	33.75	0.5		Pass
VHT80	MCS0	2	155	5775	75.96	75.96	83.52	84.16	75.84	75.84	0.5		Pass

Report Number : FR831426D

TEST RESULTS DATA
Average Power Table

Band IV																
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail	Power Setting	
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2			
11a	6Mbps	2	149	5745	0.17	0.17	22.77	23.22	26.01	30.00		3.00		Pass	22.5	
11a	6Mbps	2	157	5785	0.17	0.17	24.97	25.27	28.13	30.00		3.00		Pass	25	
11a	6Mbps	2	165	5825	0.17	0.17	23.42	23.87	26.66	30.00		3.00		Pass	23.5	
HT20	MCS0	2	149	5745	0.06	0.08	22.96	23.28	26.13	30.00		3.00		Pass	23	
HT20	MCS0	2	157	5785	0.06	0.08	25.01	25.48	28.26	30.00		3.00		Pass	25.5	
HT20	MCS0	2	165	5825	0.06	0.08	24.86	25.33	28.11	30.00		3.00		Pass	25.5	
HT40	MCS0	2	151	5755	0.14	0.14	22.79	23.17	26.00	30.00		3.00		Pass	22.5	
HT40	MCS0	2	159	5795	0.14	0.14	25.82	26.14	28.99	30.00		3.00		Pass	25.5	
VHT20	MCS0	2	149	5745	0.06	0.06	22.94	23.27	26.12	30.00		3.00		Pass	23	
VHT20	MCS0	2	157	5785	0.06	0.06	24.98	25.47	28.24	30.00		3.00		Pass	25.5	
VHT20	MCS0	2	165	5825	0.06	0.06	24.83	25.31	28.09	30.00		3.00		Pass	25.5	
VHT40	MCS0	2	151	5755	0.18	0.14	22.78	23.14	25.97	30.00		3.00		Pass	22.5	
VHT40	MCS0	2	159	5795	0.18	0.14	25.80	26.09	28.96	30.00		3.00		Pass	25.5	
VHT80	MCS0	2	155	5775	0.26	0.26	21.84	22.27	25.07	30.00		3.00		Pass	22	

Report Number : FR831426D

TEST RESULTS DATA
Power Spectral Density

Band IV																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		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	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	0.17	0.17	2.22		9.19	7.38	12.61	29.99		6.01		Pass
11a	6Mbps	2	157	5785	0.17	0.17	2.22		11.36	9.48	14.71	29.99		6.01		Pass
11a	6Mbps	2	165	5825	0.17	0.17	2.22		10.10	8.24	13.47	29.99		6.01		Pass
HT20	MCS0	2	149	5745	0.06	0.08	2.22		9.12	7.04	12.27	29.99		6.01		Pass
HT20	MCS0	2	157	5785	0.06	0.08	2.22		11.11	9.34	14.57	29.99		6.01		Pass
HT20	MCS0	2	165	5825	0.06	0.08	2.22		11.09	9.32	14.55	29.99		6.01		Pass
HT40	MCS0	2	151	5755	0.14	0.14	2.22		6.09	4.19	9.42	29.99		6.01		Pass
HT40	MCS0	2	159	5795	0.14	0.14	2.22		9.03	7.19	12.42	29.99		6.01		Pass
VHT80	MCS0	2	155	5775	0.26	0.26	2.22		1.77	-0.04	5.19	29.99		6.01		Pass

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

<TXBF Mode>

TEST RESULTS DATA
Average Power Table

Band IV																
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail	Power Setting	
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2			
HT20	MCS0	2	149	5745	0.06	0.08	19.95	20.27	23.12	29.99		6.01		Pass	20	
HT20	MCS0	2	157	5785	0.06	0.08	22.00	22.47	25.25	29.99		6.01		Pass	22.5	
HT20	MCS0	2	165	5825	0.06	0.08	21.85	22.32	25.10	29.99		6.01		Pass	22.5	
HT40	MCS0	2	151	5755	0.14	0.14	19.78	20.16	22.99	29.99		6.01		Pass	19.5	
HT40	MCS0	2	159	5795	0.14	0.14	22.81	23.13	25.98	29.99		6.01		Pass	22.5	
VHT20	MCS0	2	149	5745	0.06	0.06	19.93	20.26	23.11	29.99		6.01		Pass	20	
VHT20	MCS0	2	157	5785	0.06	0.06	21.97	22.46	25.23	29.99		6.01		Pass	22.5	
VHT20	MCS0	2	165	5825	0.06	0.06	21.82	22.30	25.08	29.99		6.01		Pass	22.5	
VHT40	MCS0	2	151	5755	0.18	0.14	19.77	20.13	22.96	29.99		6.01		Pass	19.5	
VHT40	MCS0	2	159	5795	0.18	0.14	22.79	23.08	25.95	29.99		6.01		Pass	22.5	
VHT80	MCS0	2	155	5775	0.26	0.26	18.83	19.26	22.06	29.99		6.01		Pass	19	

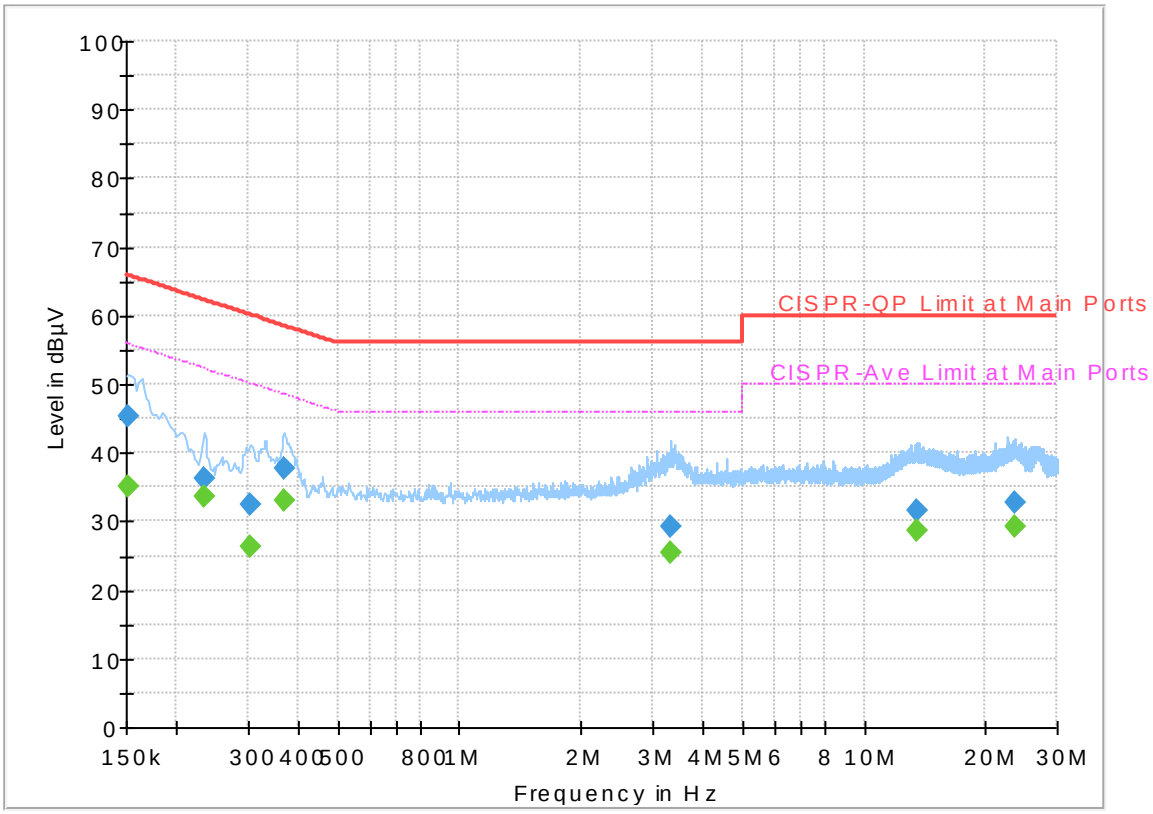
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Shareef Yu	**Temperature :**	24~25℃
		Relative Humidity :	58~62%

EUT Information

Report NO :	831426
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum



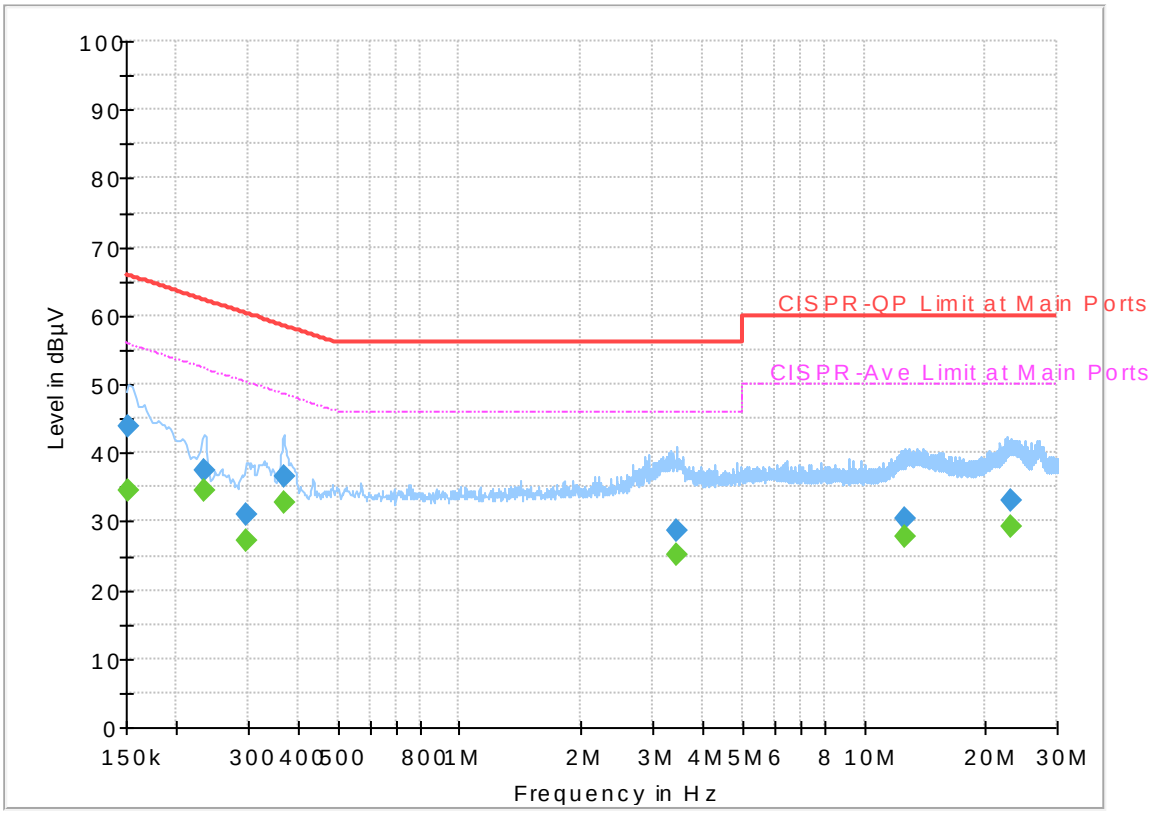
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	35.03	55.88	20.85	L1	OFF	19.5
0.152250	45.43	---	65.88	20.45	L1	OFF	19.5
0.233250	---	33.57	52.33	18.76	L1	OFF	19.5
0.233250	36.29	---	62.33	26.04	L1	OFF	19.5
0.305250	---	26.18	50.10	23.92	L1	OFF	19.5
0.305250	32.42	---	60.10	27.68	L1	OFF	19.5
0.368250	---	32.95	48.54	15.59	L1	OFF	19.5
0.368250	37.85	---	58.54	20.69	L1	OFF	19.5
3.324750	---	25.41	46.00	20.59	L1	OFF	19.6
3.324750	29.18	---	56.00	26.82	L1	OFF	19.6
13.461000	---	28.63	50.00	21.37	L1	OFF	19.7
13.461000	31.66	---	60.00	28.34	L1	OFF	19.7
23.615250	---	29.22	50.00	20.78	L1	OFF	19.8
23.615250	32.74	---	60.00	27.26	L1	OFF	19.8

EUT Information

Report NO :	831426
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	34.38	55.88	21.50	N	OFF	19.5
0.152250	43.85	---	65.88	22.03	N	OFF	19.5
0.233250	---	34.44	52.33	17.89	N	OFF	19.5
0.233250	37.29	---	62.33	25.04	N	OFF	19.5
0.298500	---	27.31	50.28	22.97	N	OFF	19.5
0.298500	31.10	---	60.28	29.18	N	OFF	19.5
0.368250	---	32.74	48.54	15.80	N	OFF	19.5
0.368250	36.63	---	58.54	21.91	N	OFF	19.5
3.426000	---	25.19	46.00	20.81	N	OFF	19.6
3.426000	28.60	---	56.00	27.40	N	OFF	19.6
12.599250	---	27.71	50.00	22.29	N	OFF	19.8
12.599250	30.52	---	60.00	29.48	N	OFF	19.8
23.025750	---	29.37	50.00	20.63	N	OFF	19.9
23.025750	33.01	---	60.00	26.99	N	OFF	19.9

Appendix C. Radiated Spurious Emission

Test Engineer :	Alex Jheng, Fu Chen and Wilson Wu	Temperature :	24.5~25°C
		Relative Humidity :	47~48%

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.	
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5606.6	62.75	-5.45	68.2	41.07	32.5	18.82	29.64	101	214	P	H
		5699.2	62.3	-42.31	104.61	40.57	32.59	18.81	29.67	101	214	P	H
		5714.6	62.41	-46.88	109.29	40.68	32.61	18.8	29.68	101	214	P	H
		5724.2	62.78	-57.6	120.38	41.04	32.62	18.8	29.68	101	214	P	H
	*	5745	111.57	-	-	89.83	32.64	18.79	29.69	101	214	P	H
	*	5745	104.69	-	-	82.95	32.64	18.79	29.69	101	214	A	H
													H
													H
		5643	66.82	-1.38	68.2	45.12	32.54	18.81	29.65	315	182	P	V
		5652.6	68.02	-2.11	70.13	46.29	32.56	18.82	29.65	315	182	P	V
		5719.2	65.6	-44.98	110.58	43.86	32.62	18.8	29.68	315	182	P	V
		5725	70.62	-51.58	122.2	48.88	32.62	18.8	29.68	315	182	P	V
	*	5745	123.98	-	-	102.24	32.64	18.79	29.69	315	182	P	V
	*	5745	116.26	-	-	94.52	32.64	18.79	29.69	315	182	A	V
													V
													V

WIFI Ant. 1+2	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)
		5603.8	62.33	-5.87	68.2	40.65	32.5	18.82	29.64	100	212	P	H
		5691.4	63	-35.86	98.86	41.27	32.59	18.81	29.67	100	212	P	H
		5715.2	62.05	-47.41	109.46	40.32	32.61	18.8	29.68	100	212	P	H
		5720.2	62.32	-48.94	111.26	40.58	32.62	18.8	29.68	100	212	P	H
	*	5785	114.58	-	-	92.83	32.68	18.79	29.72	100	212	P	H
	*	5785	106.73	-	-	84.98	32.68	18.79	29.72	100	212	A	H
		5854.8	60.55	-50.71	111.26	38.68	32.76	18.85	29.74	100	212	P	H
		5871.8	62.65	-43.44	106.09	40.75	32.78	18.87	29.75	100	212	P	H
		5882.2	62.74	-37.11	99.85	40.82	32.78	18.89	29.75	100	212	P	H
		5929.4	61.54	-6.66	68.2	39.55	32.83	18.93	29.77	100	212	P	H
													H
802.11a CH 157 5785MHz													H
		5639	62.43	-5.77	68.2	40.73	32.54	18.81	29.65	325	183	P	V
		5686.6	68.33	-26.99	95.32	46.6	32.59	18.81	29.67	325	183	P	V
		5711.6	62.15	-46.3	108.45	40.42	32.61	18.8	29.68	325	183	P	V
		5723.6	62.26	-56.75	119.01	40.52	32.62	18.8	29.68	325	183	P	V
	*	5785	125.47	-	-	103.72	32.68	18.79	29.72	325	183	P	V
	*	5785	118.15	-	-	96.4	32.68	18.79	29.72	325	183	A	V
		5854.2	62.09	-50.53	112.62	40.22	32.76	18.85	29.74	325	183	P	V
		5873.6	66.98	-38.61	105.59	45.08	32.78	18.87	29.75	325	183	P	V
		5883.6	69.15	-29.66	98.81	47.24	32.78	18.89	29.76	325	183	P	V
		5927.6	61.78	-6.42	68.2	39.79	32.83	18.93	29.77	325	183	P	V
													V
													V

WIFI Ant. 1+2	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)
	*	5825	110.72	-	-	88.91	32.73	18.81	29.73	100	151	P	H
	*	5825	103.3	-	-	81.49	32.73	18.81	29.73	100	151	A	H
		5851	63.54	-56.38	119.92	41.69	32.74	18.85	29.74	100	151	P	H
		5857.6	62.04	-48.03	110.07	40.17	32.76	18.85	29.74	100	151	P	H
		5897	63.02	-25.86	88.88	41.09	32.8	18.89	29.76	100	151	P	H
		5925.2	62.13	-6.07	68.2	40.14	32.83	18.93	29.77	100	151	P	H
													H
802.11a													H
CH 165	*	5825	123.05	-	-	101.24	32.73	18.81	29.73	200	265	P	V
5825MHz	*	5825	115.8	-	-	93.99	32.73	18.81	29.73	200	265	A	V
		5850	68.89	-53.31	122.2	47.04	32.74	18.85	29.74	200	265	P	V
		5858.2	66.13	-43.77	109.9	44.27	32.76	18.85	29.75	200	265	P	V
		5918.6	68.54	-4.38	72.92	46.57	32.81	18.93	29.77	200	265	P	V
		5928.6	66.92	-1.28	68.2	44.93	32.83	18.93	29.77	200	265	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+2	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		7660	46.67	-27.33	74	56.21	36.57	11.32	57.43	100	0	P	H
		11490	47.82	-26.18	74	51.57	39.91	12.75	56.41	100	0	P	H
		17235	49.04	-19.16	68.2	49.64	40.56	15.11	56.27	100	0	P	H
													H
		7660	49.42	-24.58	74	58.96	36.57	11.32	57.43	100	0	P	V
		11490	47.17	-26.83	74	50.92	39.91	12.75	56.41	100	0	P	V
		17235	49.92	-18.28	68.2	50.52	40.56	15.11	56.27	100	0	P	V
													V
802.11a CH 157 5785MHz		11570	46.33	-27.67	74	50.25	39.73	12.79	56.44	100	0	P	H
		17355	49.19	-19.01	68.2	49.66	40.84	15.15	56.46	100	0	P	H
													H
													H
		11570	47.2	-26.8	74	51.12	39.73	12.79	56.44	100	0	P	V
		17355	49.73	-18.47	68.2	50.2	40.84	15.15	56.46	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	46.22	-27.78	74	50.3	39.57	12.83	56.48	100	0	P	H
		17475	49.48	-18.72	68.2	49.81	41.12	15.2	56.65	100	0	P	H
													H
													H
		11650	46.62	-27.38	74	50.7	39.57	12.83	56.48	100	0	P	V
		17475	49.89	-18.31	68.2	50.22	41.12	15.2	56.65	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+2	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)
		5603	62.14	-6.06	68.2	40.46	32.5	18.82	29.64	100	217	P	H
		5655.4	63.86	-8.35	72.21	42.14	32.56	18.82	29.66	100	217	P	H
		5716.2	62.17	-47.57	109.74	40.44	32.61	18.8	29.68	100	217	P	H
		5721.8	61.89	-53.01	114.9	40.15	32.62	18.8	29.68	100	217	P	H
	*	5745	112.41	-	-	90.67	32.64	18.79	29.69	100	217	P	H
	*	5745	104.09	-	-	82.35	32.64	18.79	29.69	100	217	A	H
802.11n													H
HT20													H
CH 149		5649.8	67.17	-1.03	68.2	45.44	32.56	18.82	29.65	210	263	P	V
5745MHz		5651.6	67.18	-2.21	69.39	45.45	32.56	18.82	29.65	210	263	P	V
		5719	64.8	-45.72	110.52	43.06	32.62	18.8	29.68	210	263	P	V
		5724.6	68.51	-52.78	121.29	46.77	32.62	18.8	29.68	210	263	P	V
	*	5745	122.82	-	-	101.08	32.64	18.79	29.69	210	263	P	V
	*	5745	114.83	-	-	93.09	32.64	18.79	29.69	210	263	A	V
													V
													V

WIFI Ant. 1+2	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)
	*	5785	114.66	-	-	92.91	32.68	18.79	29.72	100	219	P	H
	*	5785	105.33	-	-	83.58	32.68	18.79	29.72	100	219	A	H
		5853.8	61.44	-52.1	113.54	39.57	32.76	18.85	29.74	100	219	P	H
		5863	61.93	-46.63	108.56	40.05	32.76	18.87	29.75	100	219	P	H
		5895	62.82	-27.54	90.36	40.89	32.8	18.89	29.76	100	219	P	H
		5937.6	61.5	-6.7	68.2	39.5	32.83	18.95	29.78	100	219	P	H
													H
													H
													H
													H
802.11n													H
HT20													H
CH 157	*	5785	124.89	-	-	103.14	32.68	18.79	29.72	199	264	P	V
5785MHz	*	5785	116.63	-	-	94.88	32.68	18.79	29.72	199	264	A	V
		5854.4	61.74	-50.43	112.17	39.87	32.76	18.85	29.74	199	264	P	V
		5873.2	69.02	-36.68	105.7	47.12	32.78	18.87	29.75	199	264	P	V
		5876.6	68.88	-35.13	104.01	46.98	32.78	18.87	29.75	199	264	P	V
		5941	62.29	-5.91	68.2	40.27	32.85	18.95	29.78	199	264	P	V
													V
													V
													V
													V
													V
													V

WIFI Ant. 1+2	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)
	*	5825	113.33	-	-	91.52	32.73	18.81	29.73	100	150	P	H
	*	5825	104.71	-	-	82.9	32.73	18.81	29.73	100	150	A	H
		5850	65.67	-56.53	122.2	43.82	32.74	18.85	29.74	100	150	P	H
		5855	64.43	-46.37	110.8	42.56	32.76	18.85	29.74	100	150	P	H
		5880.6	63.68	-37.36	101.04	41.76	32.78	18.89	29.75	100	150	P	H
		5926.4	62.44	-5.76	68.2	40.45	32.83	18.93	29.77	100	150	P	H
802.11n													H
HT20													H
CH 165	*	5825	124.93	-	-	103.12	32.73	18.81	29.73	209	265	P	V
5825MHz	*	5825	116.73	-	-	94.92	32.73	18.81	29.73	209	265	A	V
		5853	77.84	-37.52	115.36	55.99	32.74	18.85	29.74	209	265	P	V
		5857	75.74	-34.5	110.24	53.87	32.76	18.85	29.74	209	265	P	V
		5915.8	69.47	-5.51	74.98	47.5	32.81	18.93	29.77	209	265	P	V
		5928.4	66.6	-1.6	68.2	44.61	32.83	18.93	29.77	209	265	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+2	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)
		7660	45.81	-28.19	74	55.35	36.57	11.32	57.43	100	0	P	H
		11490	47.39	-26.61	74	51.14	39.91	12.75	56.41	100	0	P	H
802.11n		17235	49.43	-18.77	68.2	50.03	40.56	15.11	56.27	100	0	P	H
HT20													H
CH 149		7660	48.77	-25.23	74	58.31	36.57	11.32	57.43	100	0	P	V
5745MHz		11490	47.74	-26.26	74	51.49	39.91	12.75	56.41	100	0	P	V
		17235	49.56	-18.64	68.2	50.16	40.56	15.11	56.27	100	0	P	V
													V
		11570	46.28	-27.72	74	50.2	39.73	12.79	56.44	100	0	P	H
		17355	49.02	-19.18	68.2	49.49	40.84	15.15	56.46	100	0	P	H
802.11n													H
HT20													H
CH 157		11570	46.85	-27.15	74	50.77	39.73	12.79	56.44	100	0	P	V
5785MHz		17355	49.07	-19.13	68.2	49.54	40.84	15.15	56.46	100	0	P	V
													V
													V
		11650	47.07	-26.93	74	51.15	39.57	12.83	56.48	100	0	P	H
		17475	50.82	-17.38	68.2	51.15	41.12	15.2	56.65	100	0	P	H
802.11n													H
HT20													H
CH 165		11650	46.26	-27.74	74	50.34	39.57	12.83	56.48	100	0	P	V
5825MHz		17475	49.42	-18.78	68.2	49.75	41.12	15.2	56.65	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+2	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)
		5649.4	62.89	-5.31	68.2	41.18	32.54	18.82	29.65	100	212	P	H
		5698.2	63.38	-40.49	103.87	41.65	32.59	18.81	29.67	100	212	P	H
		5718.2	63.6	-46.7	110.3	41.86	32.62	18.8	29.68	100	212	P	H
		5725	67.28	-54.92	122.2	45.54	32.62	18.8	29.68	100	212	P	H
	*	5755	109.1	-	-	87.33	32.66	18.8	29.69	100	212	P	H
	*	5755	101.43	-	-	79.66	32.66	18.8	29.69	100	212	A	H
		5853	61.86	-53.5	115.36	40.01	32.74	18.85	29.74	100	212	P	H
		5858	62.71	-47.25	109.96	40.85	32.76	18.85	29.75	100	212	P	H
		5905.8	62.81	-19.56	82.37	40.85	32.81	18.91	29.76	100	212	P	H
		5930	61.93	-6.27	68.2	39.94	32.83	18.93	29.77	100	212	P	H
802.11n													H
HT40													H
CH 151		5649	66.75	-1.45	68.2	45.04	32.54	18.82	29.65	201	239	P	V
5755MHz		5667.8	67.81	-13.6	81.41	46.09	32.57	18.81	29.66	201	239	P	V
		5719.8	74.36	-36.38	110.74	52.62	32.62	18.8	29.68	201	239	P	V
		5724.2	75.86	-44.52	120.38	54.12	32.62	18.8	29.68	201	239	P	V
	*	5755	120.5	-	-	98.73	32.66	18.8	29.69	201	239	P	V
	*	5755	112.6	-	-	90.83	32.66	18.8	29.69	201	239	A	V
		5854.2	65.58	-47.04	112.62	43.71	32.76	18.85	29.74	201	239	P	V
		5857.6	65.79	-44.28	110.07	43.92	32.76	18.85	29.74	201	239	P	V
		5922.2	63.46	-6.8	70.26	41.47	32.83	18.93	29.77	201	239	P	V
		5948.2	62.25	-5.95	68.2	40.23	32.85	18.95	29.78	201	239	P	V
													V
													V

WIFI Ant. 1+2	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)
		5635.2	62.28	-5.92	68.2	40.58	32.54	18.81	29.65	100	212	P	H
		5685.8	63.45	-31.27	94.72	41.72	32.59	18.81	29.67	100	212	P	H
		5707.8	63.95	-43.44	107.39	42.22	32.61	18.8	29.68	100	212	P	H
		5722.2	64.38	-51.44	115.82	42.64	32.62	18.8	29.68	100	212	P	H
	*	5795	111.52	-	-	89.76	32.69	18.79	29.72	100	212	P	H
	*	5795	103.46	-	-	81.7	32.69	18.79	29.72	100	212	A	H
		5850.2	67.82	-53.92	121.74	45.97	32.74	18.85	29.74	100	212	P	H
		5858.4	65.55	-44.3	109.85	43.69	32.76	18.85	29.75	100	212	P	H
		5877.8	63.07	-40.05	103.12	41.17	32.78	18.87	29.75	100	212	P	H
		5950	62.31	-5.89	68.2	40.29	32.85	18.95	29.78	100	212	P	H
802.11n													H
HT40													H
CH 159		5645.8	62.45	-5.75	68.2	40.74	32.54	18.82	29.65	201	274	P	V
5795MHz		5697.6	67.82	-35.61	103.43	46.09	32.59	18.81	29.67	201	274	P	V
		5714	70.5	-38.62	109.12	48.77	32.61	18.8	29.68	201	274	P	V
		5724	71.82	-48.1	119.92	50.08	32.62	18.8	29.68	201	274	P	V
	*	5795	122.72	-	-	100.96	32.69	18.79	29.72	201	274	P	V
	*	5795	114.71	-	-	92.95	32.69	18.79	29.72	201	274	A	V
		5851.2	78.52	-40.94	119.46	56.67	32.74	18.85	29.74	201	274	P	V
		5855	74.79	-36.01	110.8	52.92	32.76	18.85	29.74	201	274	P	V
		5884.4	69.99	-28.23	98.22	48.08	32.78	18.89	29.76	201	274	P	V
		5927.2	63.41	-4.79	68.2	41.42	32.83	18.93	29.77	201	274	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+2	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)
		7671	45.66	-28.34	74	55.21	36.57	11.31	57.43	100	0	P	H
		11510	46.97	-27.03	74	50.71	39.9	12.76	56.4	100	0	P	H
802.11n		17265	48.64	-19.56	68.2	49.21	40.64	15.12	56.33	100	0	P	H
HT40													H
CH 151		7671	48.9	-25.1	74	58.45	36.57	11.31	57.43	100	0	P	V
5755MHz		11510	46.59	-27.41	74	50.33	39.9	12.76	56.4	100	0	P	V
		17265	48.99	-19.21	68.2	49.56	40.64	15.12	56.33	100	0	P	V
													V
		11590	46.79	-27.21	74	50.76	39.69	12.79	56.45	100	0	P	H
		17385	49.57	-18.63	68.2	49.99	40.92	15.17	56.51	100	0	P	H
802.11n													H
HT40													H
CH 159		11590	47.97	-26.03	74	51.94	39.69	12.79	56.45	100	0	P	V
5795MHz		17385	50.36	-17.84	68.2	50.78	40.92	15.17	56.51	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+2	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)
		5648.6	63.2	-5	68.2	41.49	32.54	18.82	29.65	102	212	P	H
		5685.4	64.16	-30.27	94.43	42.43	32.59	18.81	29.67	102	212	P	H
		5703	65.01	-41.03	106.04	43.27	32.61	18.8	29.67	102	212	P	H
		5724.8	67.06	-54.68	121.74	45.32	32.62	18.8	29.68	102	212	P	H
	*	5775	105.08	-	-	83.32	32.68	18.79	29.71	102	212	P	H
	*	5775	96.68	-	-	74.92	32.68	18.79	29.71	102	212	A	H
		5851.4	62.44	-56.57	119.01	40.59	32.74	18.85	29.74	102	212	P	H
		5857.6	63.78	-46.29	110.07	41.91	32.76	18.85	29.74	102	212	P	H
		5881.6	63.48	-36.82	100.3	41.56	32.78	18.89	29.75	102	212	P	H
		5926.8	62.2	-6	68.2	40.21	32.83	18.93	29.77	102	212	P	H
802.11ac													H
VHT80													H
CH 155		5644	66.45	-1.75	68.2	44.75	32.54	18.81	29.65	199	239	P	V
5775MHz		5683.8	71.03	-22.22	93.25	49.3	32.59	18.81	29.67	199	239	P	V
		5719.4	74.04	-36.59	110.63	52.3	32.62	18.8	29.68	199	239	P	V
		5720.6	75.52	-36.65	112.17	53.78	32.62	18.8	29.68	199	239	P	V
	*	5775	115.81	-	-	94.05	32.68	18.79	29.71	199	239	P	V
	*	5775	107.83	-	-	86.07	32.68	18.79	29.71	199	239	A	V
		5852.2	70.35	-46.83	117.18	48.5	32.74	18.85	29.74	199	239	P	V
		5860	71.63	-37.77	109.4	49.77	32.76	18.85	29.75	199	239	P	V
		5878.8	70.53	-31.85	102.38	48.63	32.78	18.87	29.75	199	239	P	V
		5935.8	63.99	-4.21	68.2	41.99	32.83	18.95	29.78	199	239	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+2	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)
		7484	44.32	-29.68	74	54.18	36.47	11.15	57.48	100	0	P	H
		11550	47.6	-26.4	74	51.47	39.78	12.78	56.43	100	0	P	H
802.11ac		17325	49.59	-18.61	68.2	50.1	40.76	15.14	56.41	100	0	P	H
VHT80													H
CH 155		7484	49.51	-24.49	74	59.37	36.47	11.15	57.48	100	0	P	V
5775MHz		11550	47.14	-26.86	74	51.01	39.78	12.78	56.43	100	0	P	V
		17325	49.96	-18.24	68.2	50.47	40.76	15.14	56.41	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

5GHz WIFI 802.11n HT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		163.11	24.37	-19.13	43.5	38.71	16.38	1.56	32.28	-	-	P	H
		173.1	24.25	-19.25	43.5	39.32	15.54	1.67	32.28	-	-	P	H
		300	35.7	-10.3	46	46.43	19.3	2.1	32.13	-	-	P	H
		374.9	40.16	-5.84	46	48.89	21.07	2.35	32.15	100	0	P	H
		500.2	35.44	-10.56	46	41.02	23.96	2.66	32.2	-	-	P	H
		899.9	37.78	-8.22	46	36.71	29.03	3.55	31.51	-	-	P	H
													H
													H
													H
													H
5GHz													H
802.11n													H
HT20		59.7	27.43	-12.57	40	46.62	12.06	1.06	32.31	-	-	P	V
LF		172.29	25.34	-18.16	43.5	40.33	15.62	1.67	32.28	-	-	P	V
		300	31.78	-14.22	46	42.51	19.3	2.1	32.13	-	-	P	V
		374.9	34.89	-11.11	46	43.62	21.07	2.35	32.15	-	-	P	V
		500.2	35.9	-10.1	46	41.48	23.96	2.66	32.2	100	0	P	V
		899.9	35.65	-10.35	46	34.58	29.03	3.55	31.51	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		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)

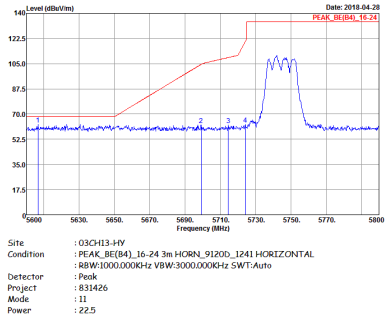
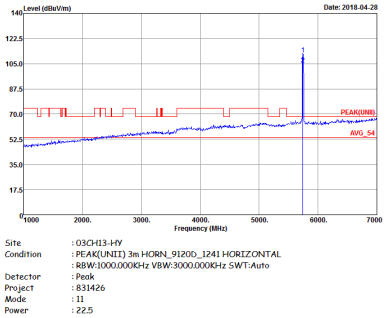
Both peak and average measured complies with the limit line, so test result is "PASS".

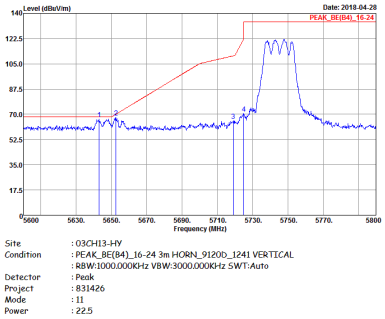
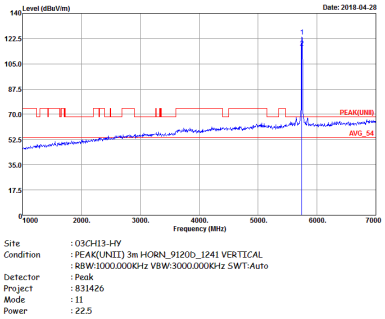
Appendix D. Radiated Spurious Emission Plots

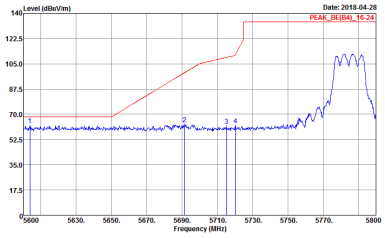
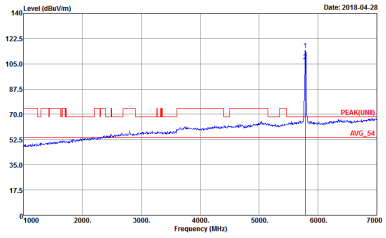
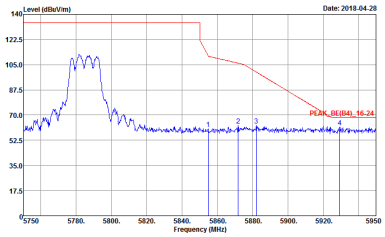
Test Engineer :	Alex Jheng, Fu Chen and Wilson Wu	Temperature :	24.5~25°C
		Relative Humidity :	47~48%

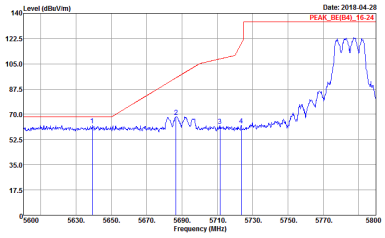
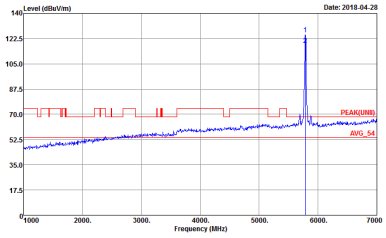
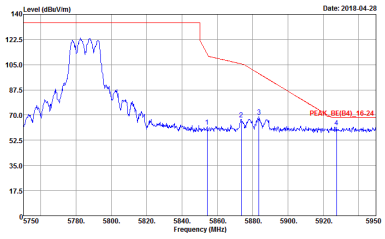
Band 4 - 5725~5850MHz

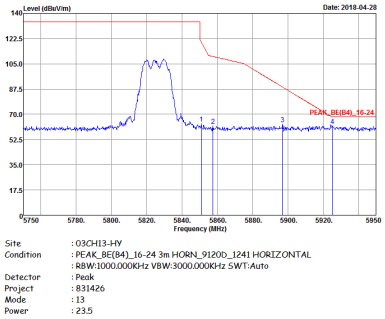
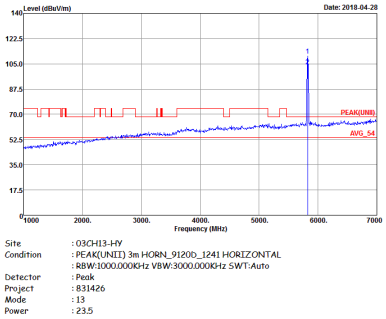
WIFI 802.11a (Band Edge @ 3m)

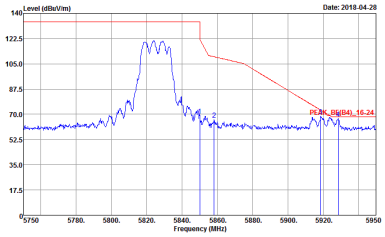
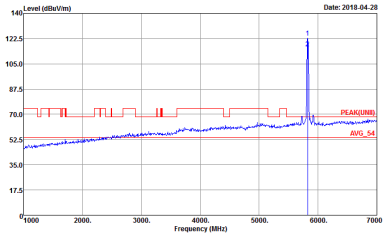
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 11 Power : 22.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 11 Power : 22.5

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 12 Power : 25	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 12 Power : 25
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 12 Power : 25	Left blank

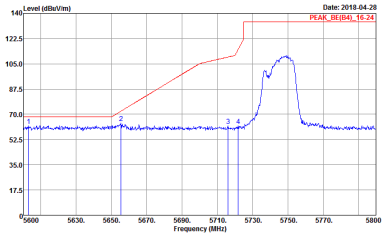
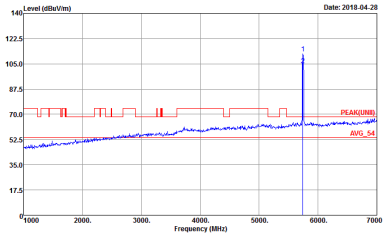
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 12 Power : 25	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 12 Power : 25
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 12 Power : 25	Left blank

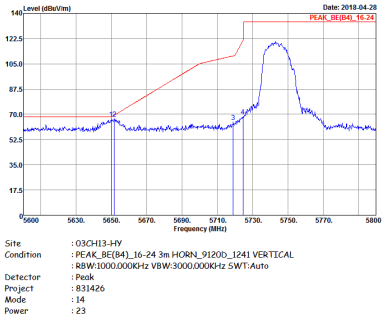
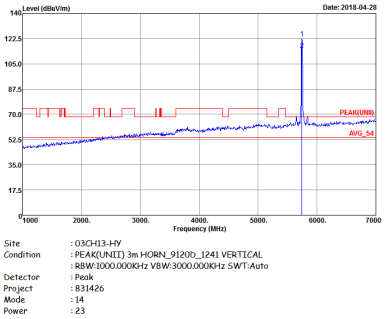
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 13 Power : 23.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 13 Power : 23.5

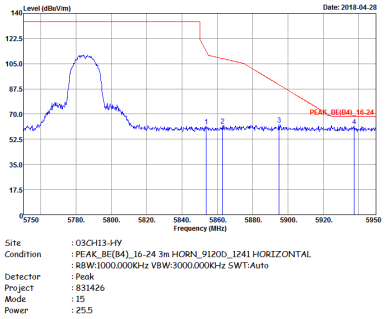
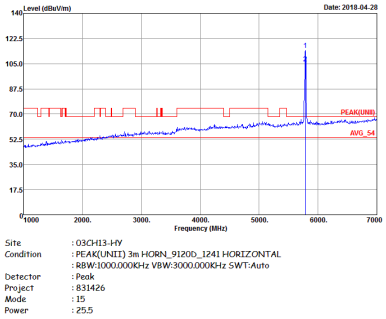
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 13 Power : 23.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 13 Power : 23.5

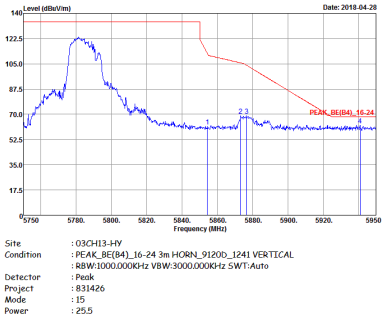
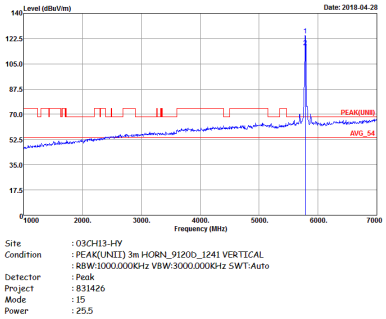
Band 4 5725~5850MHz

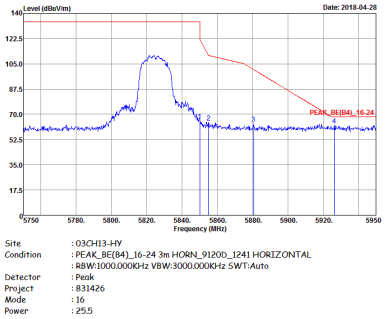
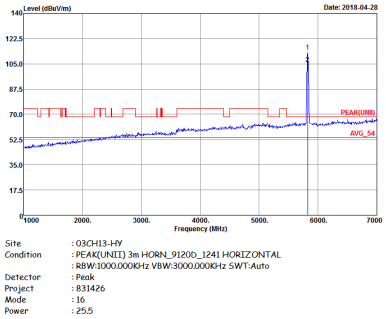
WIFI 802.11n HT20 (Band Edge @ 3m)

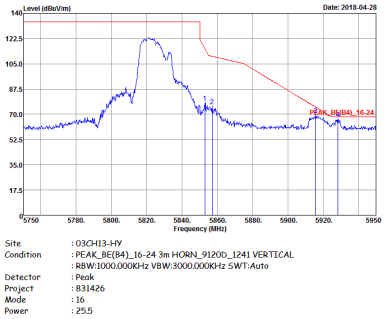
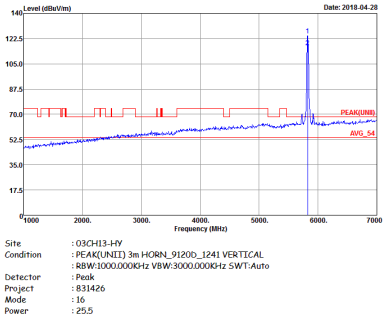
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 14 Power : 23	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 14 Power : 23

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 14 Power : 23	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 14 Power : 23

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 15 Power : 25.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 15 Power : 25.5

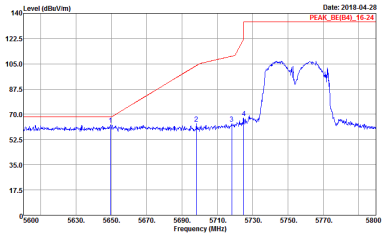
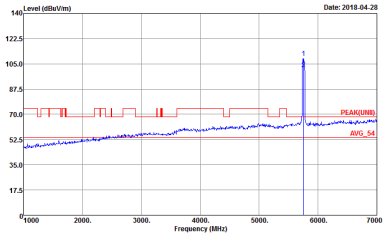
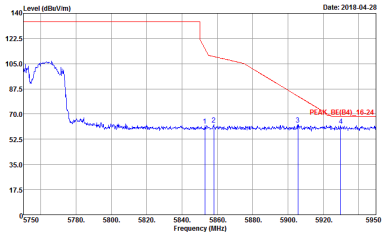
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Vertical	Fundamental
Peak		

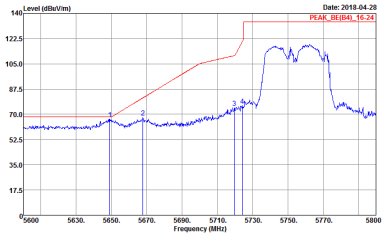
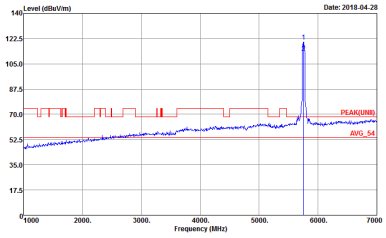
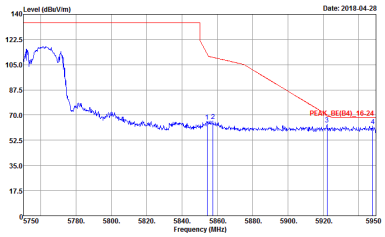
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 16 Power : 25.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 16 Power : 25.5

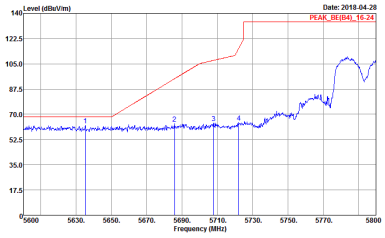
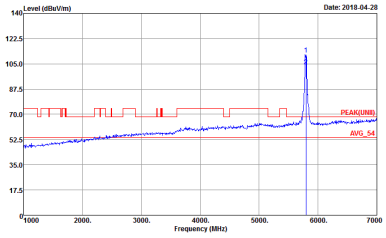
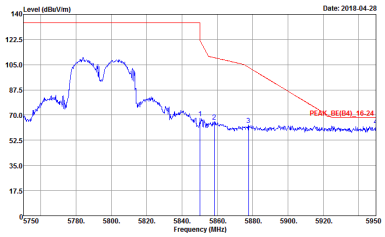
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Vertical	Fundamental
Peak		

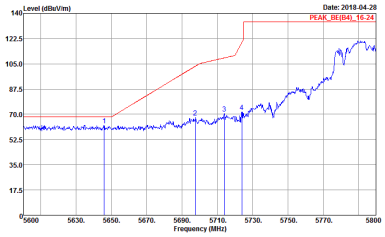
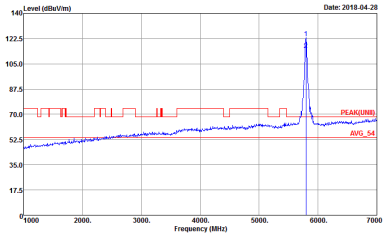
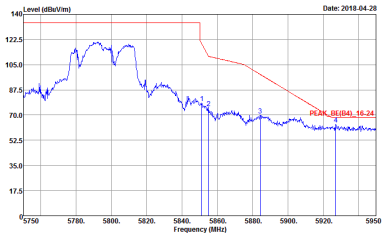
Band 4 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 17 Power : 22.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 17 Power : 22.5
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 17 Power : 22.5	Left blank

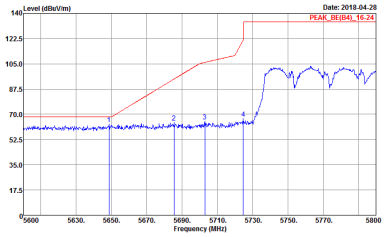
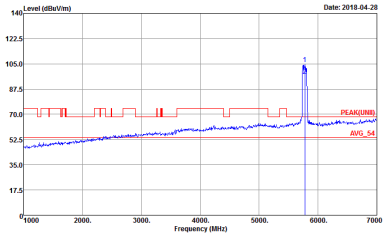
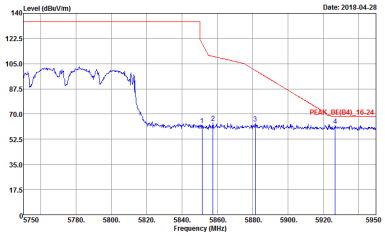
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 17 Power : 22.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 17 Power : 22.5
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 17 Power : 22.5	Left blank

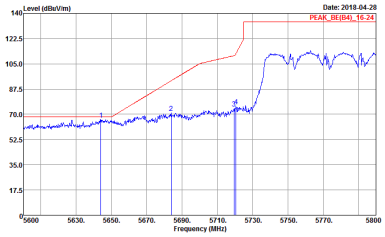
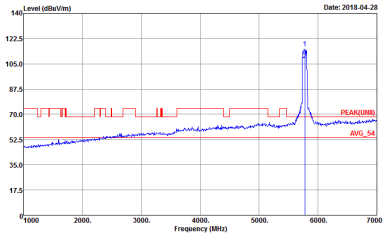
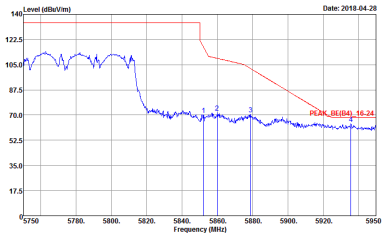
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 18 Power : 25.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 18 Power : 25.5
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 18 Power : 25.5	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 18 Power : 25.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 18 Power : 25.5
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 18 Power : 25.5	Left blank

Band 4 5725~5850MHz

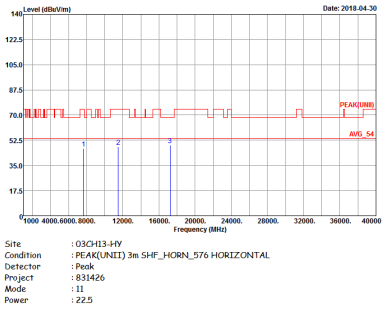
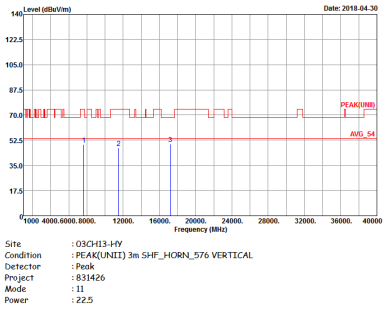
WIFI 802.11ac VHT80 (Band Edge @ 3m)

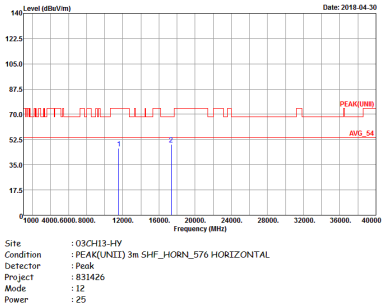
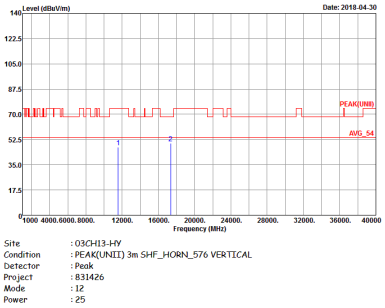
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 19 Power : 22	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 19 Power : 22
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 19 Power : 22	Left blank

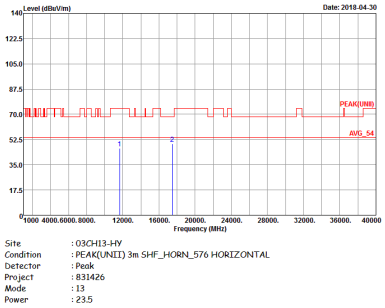
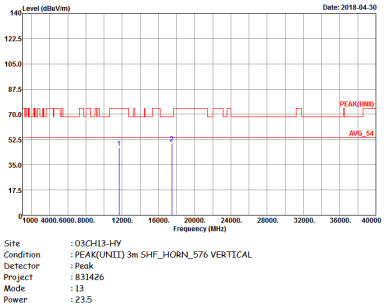
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 19 Power : 22	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 19 Power : 22
Peak	 Site : 03CH13-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 831426 Mode : 19 Power : 22	Left blank

Band 4 - 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

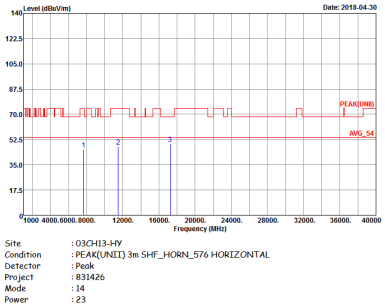
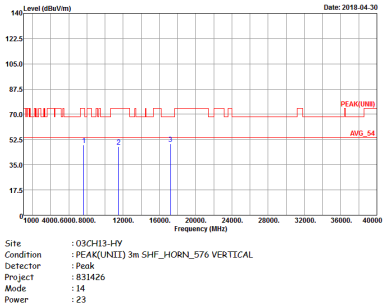
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

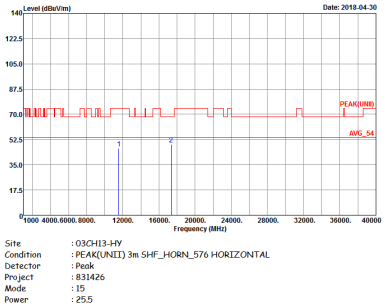
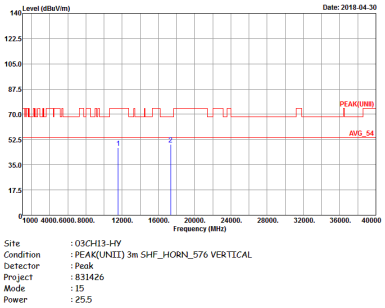
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 HORIZONTAL Detector : Peak Project : 831426 Mode : 12 Power : 25	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 VERTICAL Detector : Peak Project : 831426 Mode : 12 Power : 25

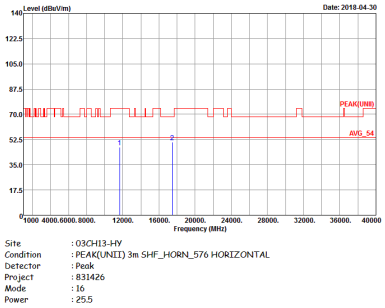
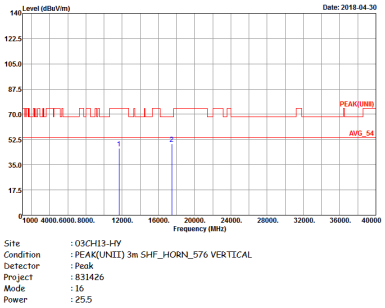
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 HORIZONTAL Detector : Peak Project : 831426 Mode : 13 Power : 23.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 VERTICAL Detector : Peak Project : 831426 Mode : 13 Power : 23.5

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

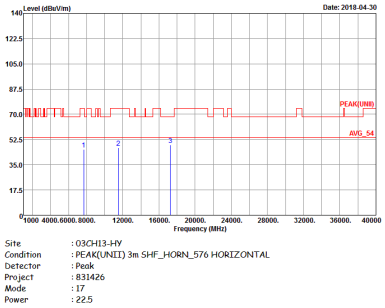
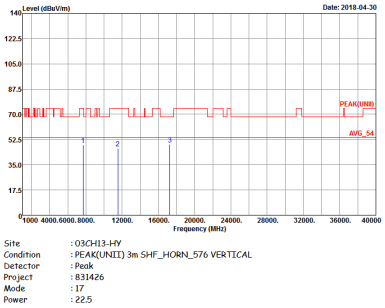
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

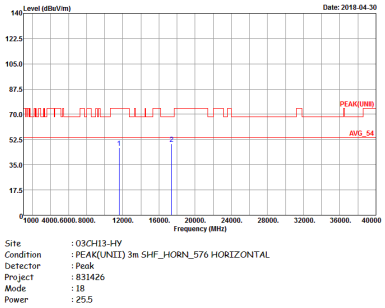
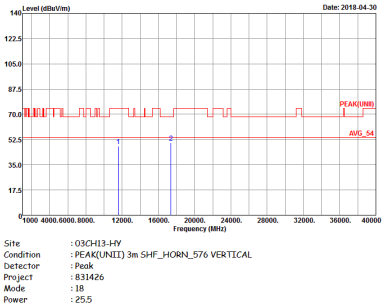
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 HORIZONTAL Detector : Peak Project : 831426 Mode : 15 Power : 25.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 VERTICAL Detector : Peak Project : 831426 Mode : 15 Power : 25.5

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 HORIZONTAL Detector : Peak Project : 831426 Mode : 16 Power : 25.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 VERTICAL Detector : Peak Project : 831426 Mode : 16 Power : 25.5

Band 4 5725~5850MHz

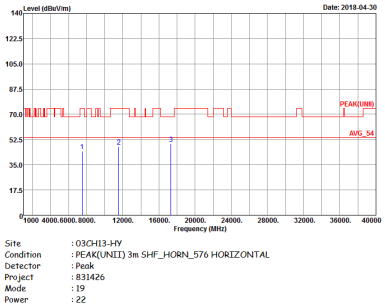
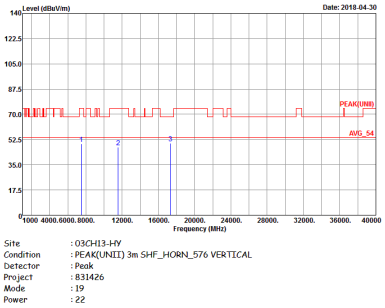
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 HORIZONTAL Detector : Peak Project : 831426 Mode : 17 Power : 22.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 VERTICAL Detector : Peak Project : 831426 Mode : 17 Power : 22.5

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 HORIZONTAL Detector : Peak Project : 831426 Mode : 18 Power : 25.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m SHF_HORN_576 VERTICAL Detector : Peak Project : 831426 Mode : 18 Power : 25.5

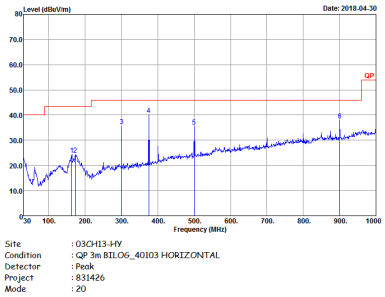
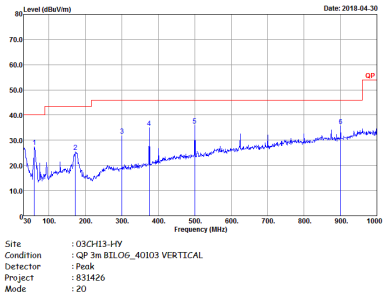
Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

5GHz WIFI 802.11n HT20 (LF)

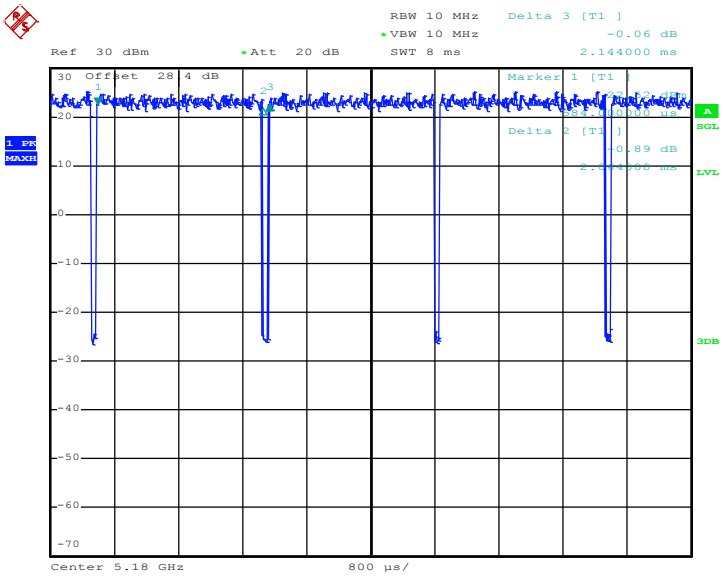
WIFI	5GHz 5725~5850MHz	
ANT	802.11n HT20 LF	
1+2	Horizontal	Vertical
QP / Peak		

Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle (%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor (dB)
1+2	802.11a for Ant. 1	96.27	2064.00	0.48	1kHz	0.17
1+2	802.11a for Ant. 2	96.27	2064.00	0.48	1kHz	0.17
1+2	5GHz 802.11n HT20 for Ant. 1	98.58	-	-	10Hz	0.06
1+2	5GHz 802.11n HT20 for Ant. 2	98.23	-	-	10Hz	0.08
1+2	5GHz 802.11n HT40 for Ant. 1	96.83	2440.00	0.41	1kHz	0.14
1+2	5GHz 802.11n HT40 for Ant. 2	96.80	2420.00	0.41	1kHz	0.14
1+2	5GHz 802.11ac VHT20 for Ant. 1	98.58	-	-	10Hz	0.06
1+2	5GHz 802.11ac VHT20 for Ant. 2	98.58	-	-	10Hz	0.06
1+2	5GHz 802.11ac VHT40 for Ant. 1	96.03	2420.00	0.41	1kHz	0.18
1+2	5GHz 802.11ac VHT40 for Ant. 2	96.80	2420.00	0.41	1kHz	0.14
1+2	5GHz 802.11ac VHT80 for Ant. 1	94.26	1150.00	0.87	1kHz	0.26
1+2	5GHz 802.11ac VHT80 for Ant. 2	94.26	1150.00	0.87	1kHz	0.26

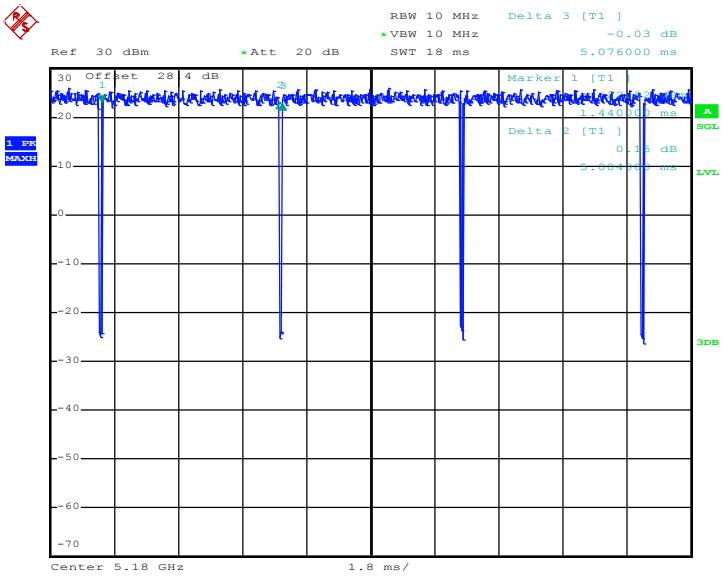
MIMO <Ant. 1>

802.11a



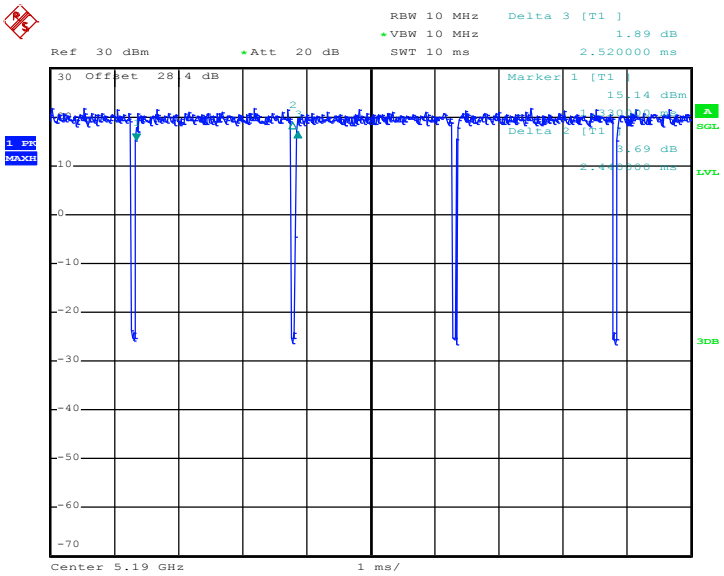
Date: 1.MAY.2018 07:09:28

802.11n HT20



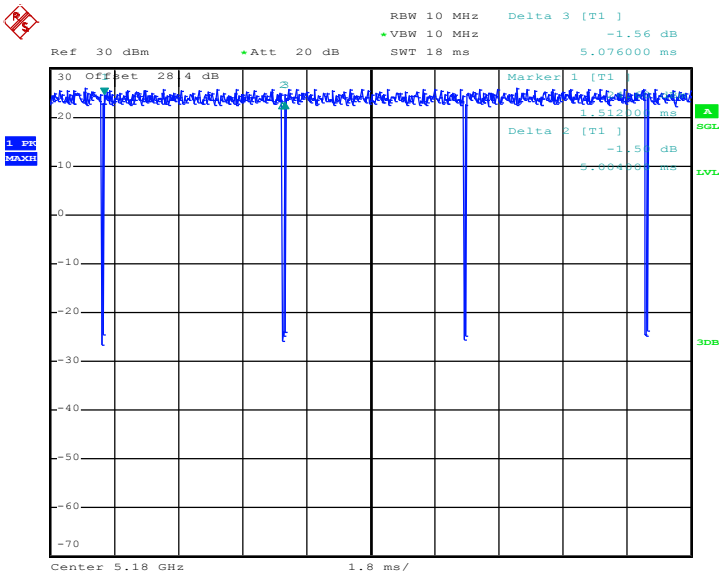
Date: 1.MAY.2018 07:12:14

802.11n HT40



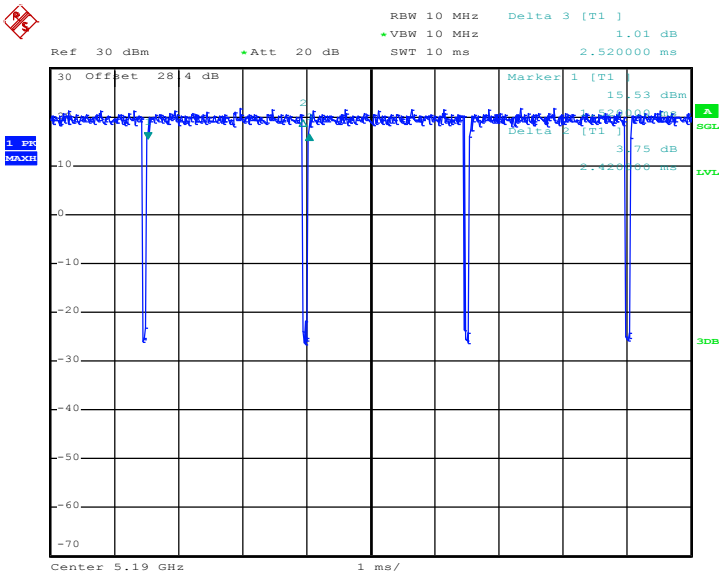
Date: 1.MAY.2018 07:17:39

802.11ac VHT20



Date: 1.MAY.2018 07:14:59

802.11ac VHT40



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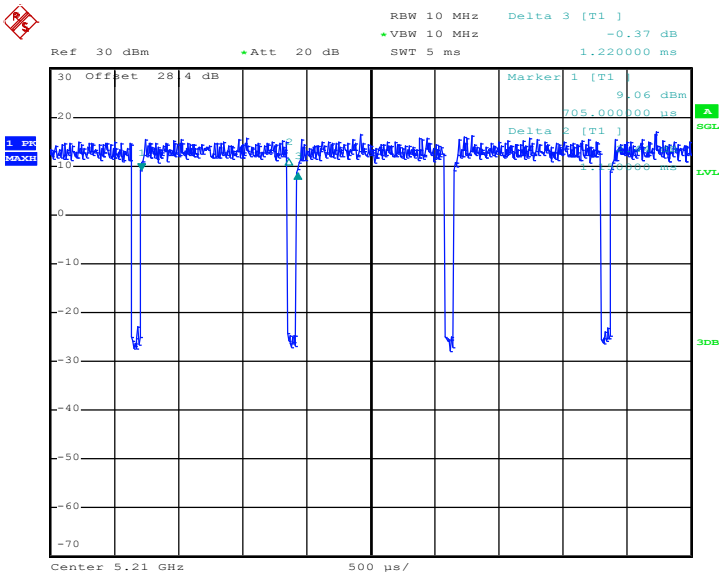

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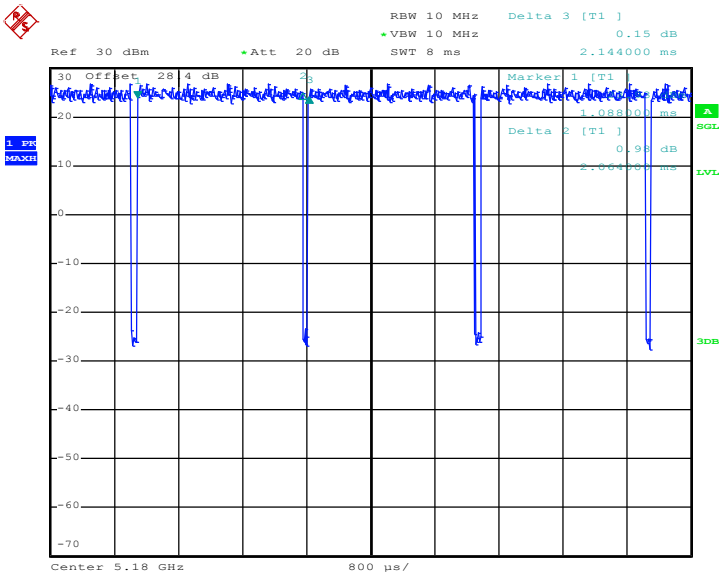
802.11a



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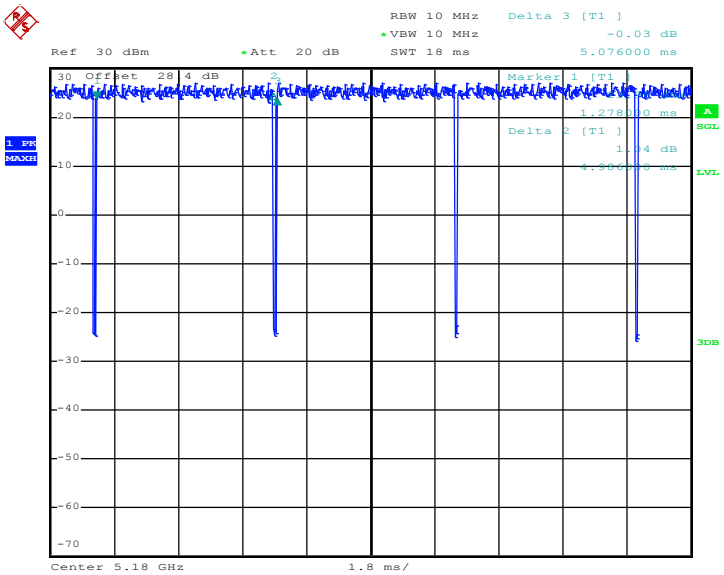

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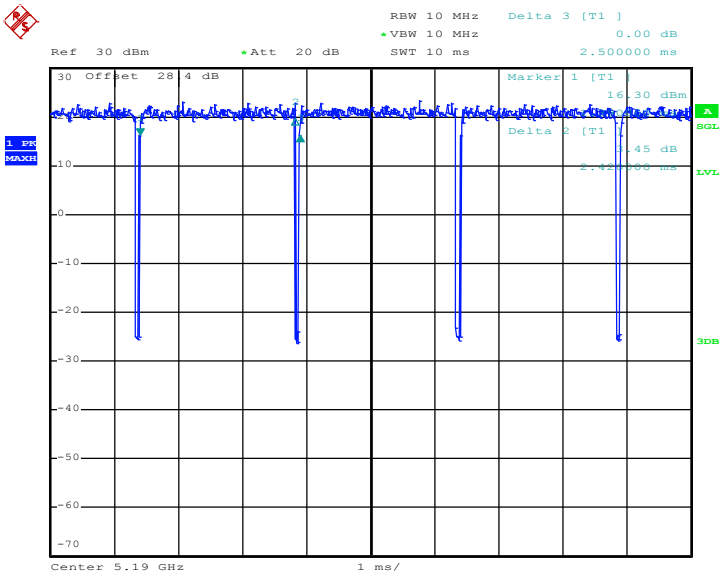

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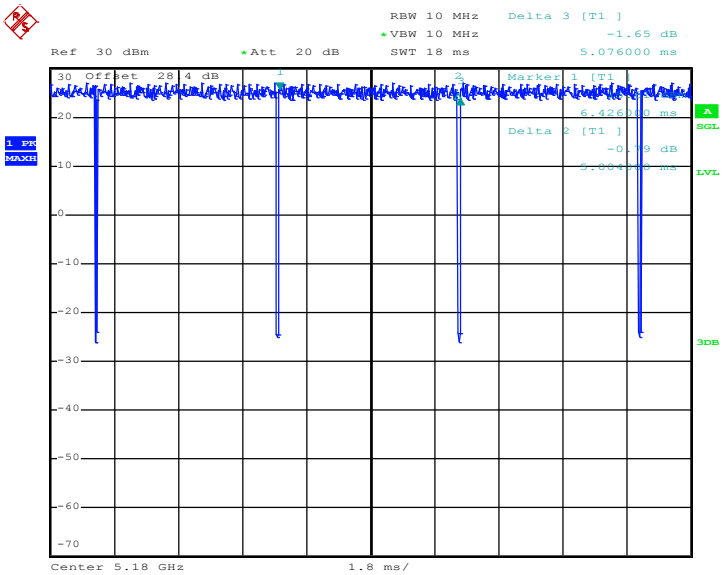

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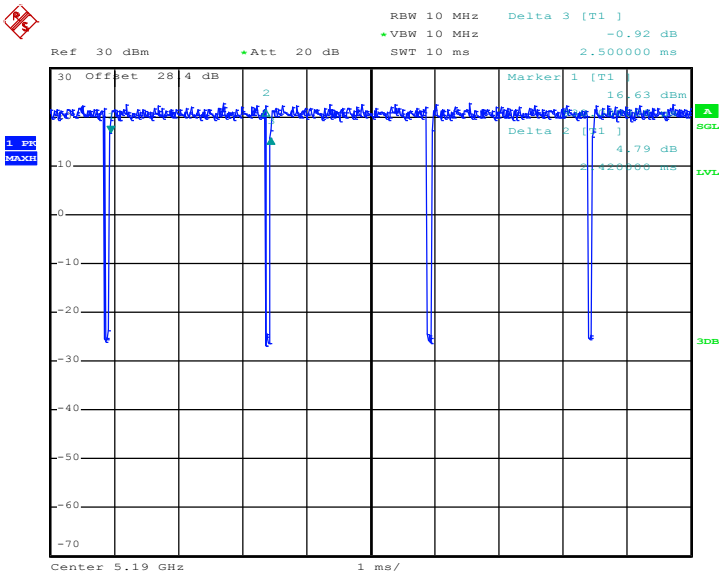

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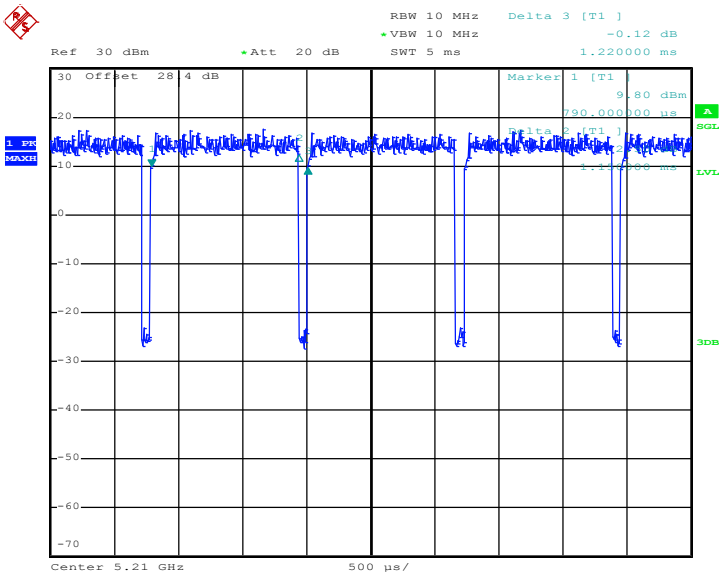

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