

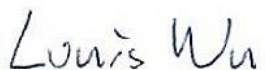


FCC RADIO TEST REPORT

FCC ID : 2AUPE-8959
Equipment : Digital Media Receiver
Model Name : T4E4AT
Applicant : Turley White LLC
35 Village Road, Suite 100
Middleton, MA 01949
United States
Standard : FCC Part 15 Subpart E §15.407

The product was received on May 07, 2020 and testing was started from May 21, 2020 and completed on Jul. 02, 2020. We, SPORTON INTERNATIONAL INC., EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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



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
FR020110-01F	01	Initial issue of report	Jul. 15, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)
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
3.5	15.207	AC Conducted Emission	Pass
3.6	15.407 (c)	Automatically Discontinue Transmission	Pass
3.7	15.203 & 15.407 (a)	Antenna Requirement	Pass

Declaration of Conformity:

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

Comments and Explanations:

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

Reviewed by: Wii Chang

Report Producer: Tina Chuang

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Digital Media Receiver
Model Name	T4E4AT
EUT supports Radios application	WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE Zigbee/FSK/LoRa

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz
Maximum Output Power to Antenna	MIMO <Ant. 1+2> 802.11a : 19.57 dBm / 0.0906 W 802.11n HT20 : 19.67 dBm / 0.0927 W 802.11n HT40 : 19.47 dBm / 0.0885 W 802.11ac VHT20: 19.57 dBm / 0.0906 W 802.11ac VHT40: 19.37 dBm / 0.0865 W 802.11ac VHT80: 18.93 dBm / 0.0782 W
99% Occupied Bandwidth	MIMO <Ant. 1> 802.11a : 16.70 MHz 802.11n HT20 : 17.70 MHz 802.11n HT40 : 36.40 MHz 802.11ac VHT80 : 76.20 MHz MIMO <Ant. 2> 802.11a : 16.65 MHz 802.11n HT20 : 17.70 MHz 802.11n HT40 : 36.40 MHz 802.11ac VHT80 : 76.32 MHz
Antenna Gain / Gain	<Ant. 1> : Loop Antenna with gain 3.71 dBi <Ant. 2> : Loop Antenna with gain 3.63 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Note: MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.

1.3 Modification of EUT

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

1.4 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.	
	03CH16-HY	

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

FCC designation No.: TW1190 and TW0007

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

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in two degrees (0 and 40). The worst cases (Degree 40) 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:

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

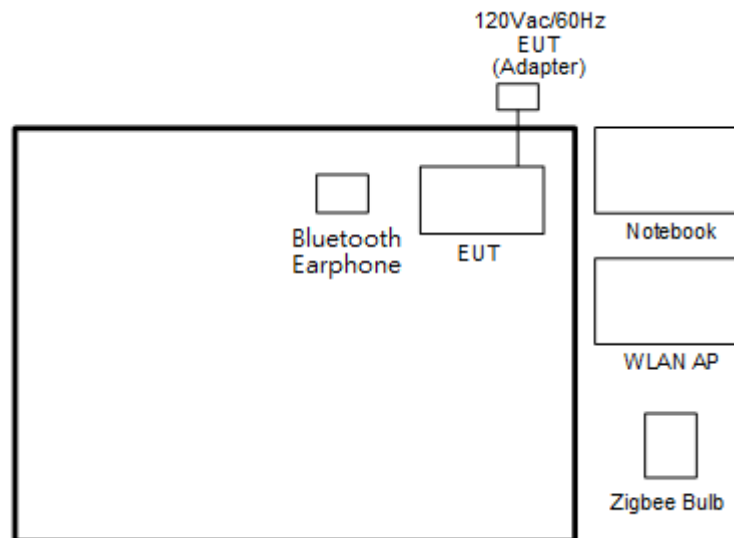
Test Cases	
AC Conducted Emission	Mode 1 : WLAN (5GHz) Link + Bluetooth Link + Zigbee Link + H-Pattern + Audio + Display 40 + Motor + Adapter

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	-

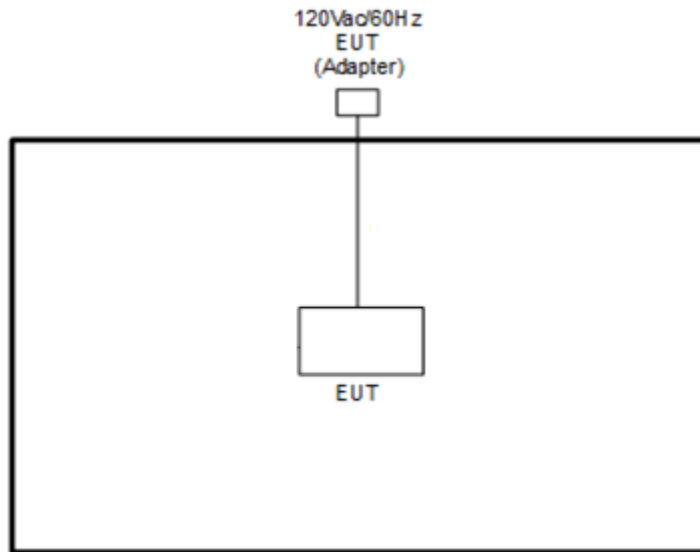
Remark: For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

2.3 Connection Diagram of Test System

<AC Conducted Emission Mode>



<WLAN Tx 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	PY700A2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8m
3.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Zigbee Bulb	OSRAM	73674	DZO-IQHOME	N/A	N/A



2.5 EUT Operation Test Setup

The RF test items, utility "Compliance V1.0.0.80" 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.

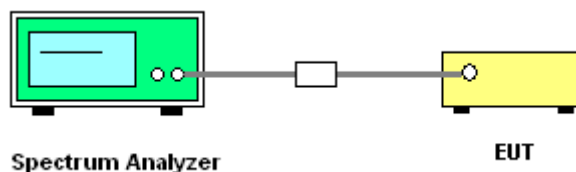
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

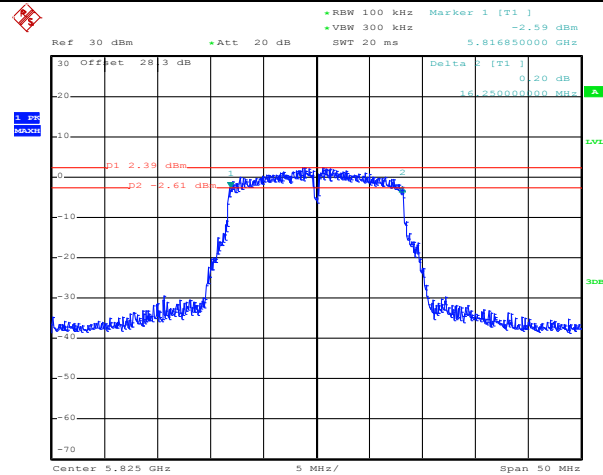
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is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

3.1.4 Test Setup

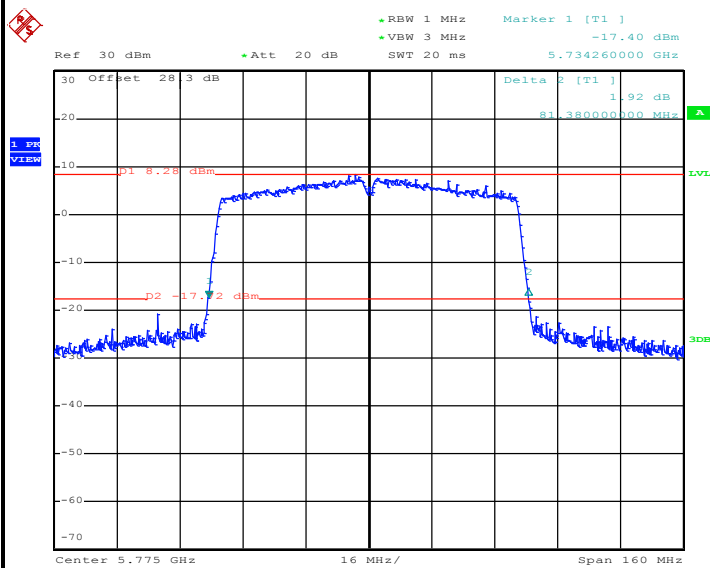


3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

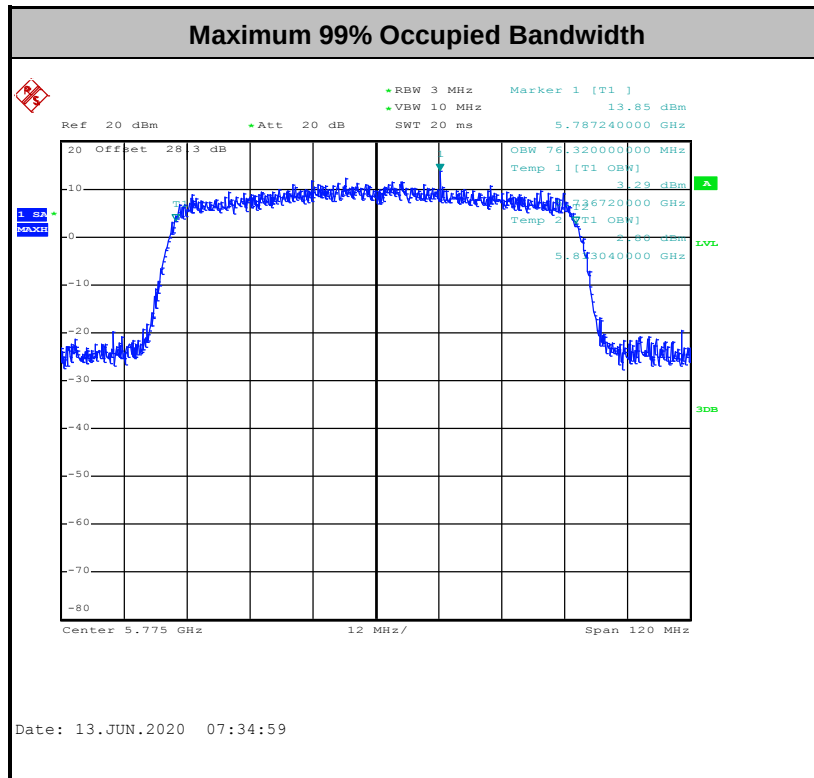
Please refer to Appendix A.

**Minimum 6dB Bandwidth**

Date: 13.JUN.2020 06:56:21

Maximum 26dB Bandwidth

Date: 13.JUN.2020 07:34:41



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.

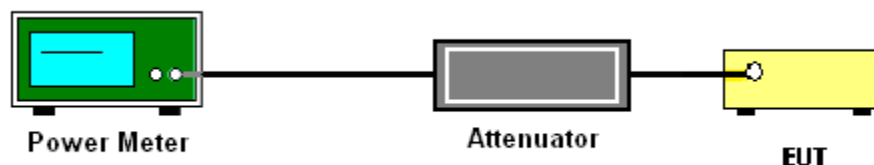
3.2.3 Test Procedures

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

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):

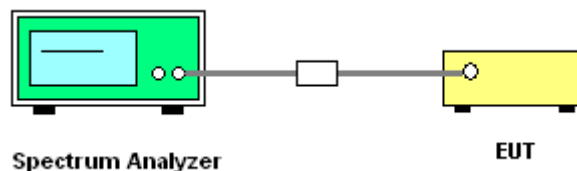
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW $\geq$ 1 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time $\leq$ (number of points in sweep) $\times$ T, when duty cycle is less than 98 percent where T is the minimum transmission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

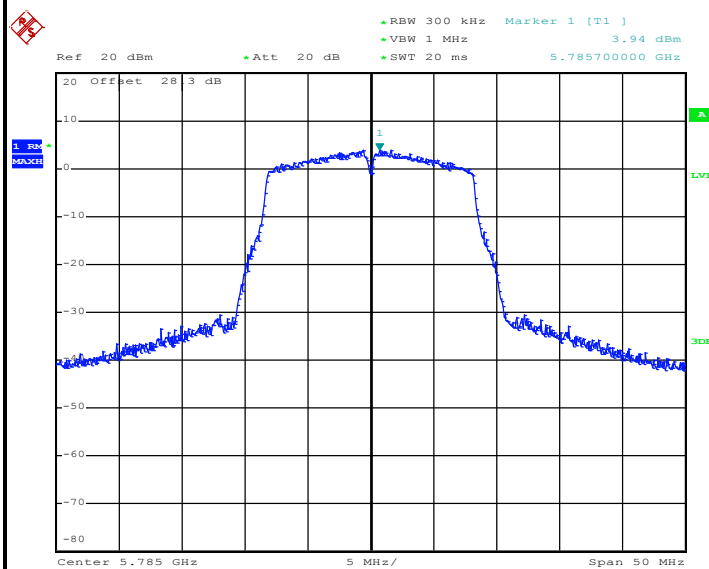


3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

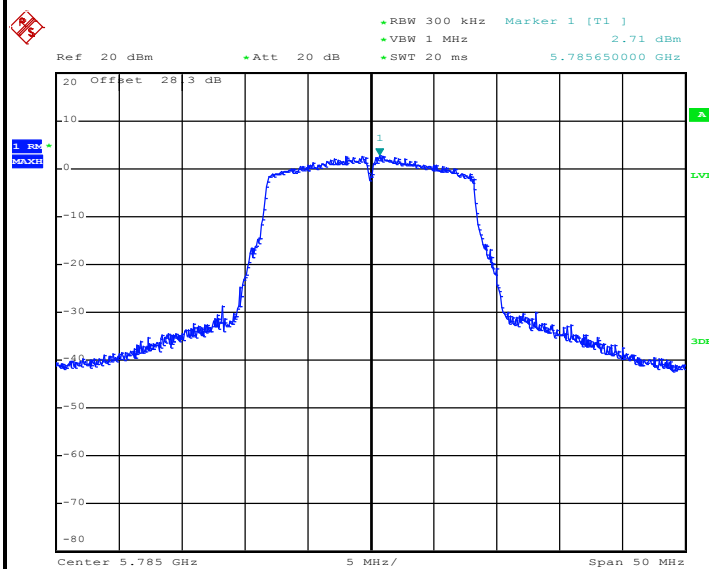


Worst Case Power Density (dBm/MHz) for MIMO Ant. 1



Date: 13.JUN.2020 06:33:41

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



Date: 13.JUN.2020 06:34:03

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

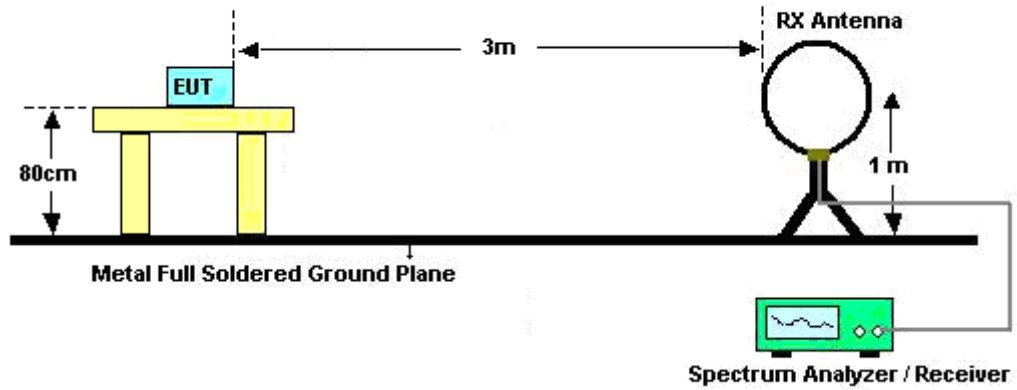
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.



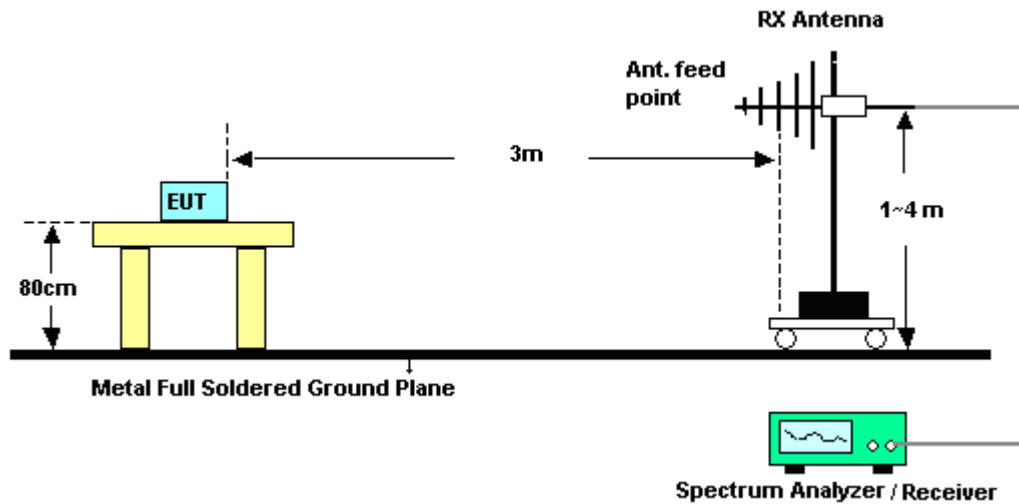
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband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

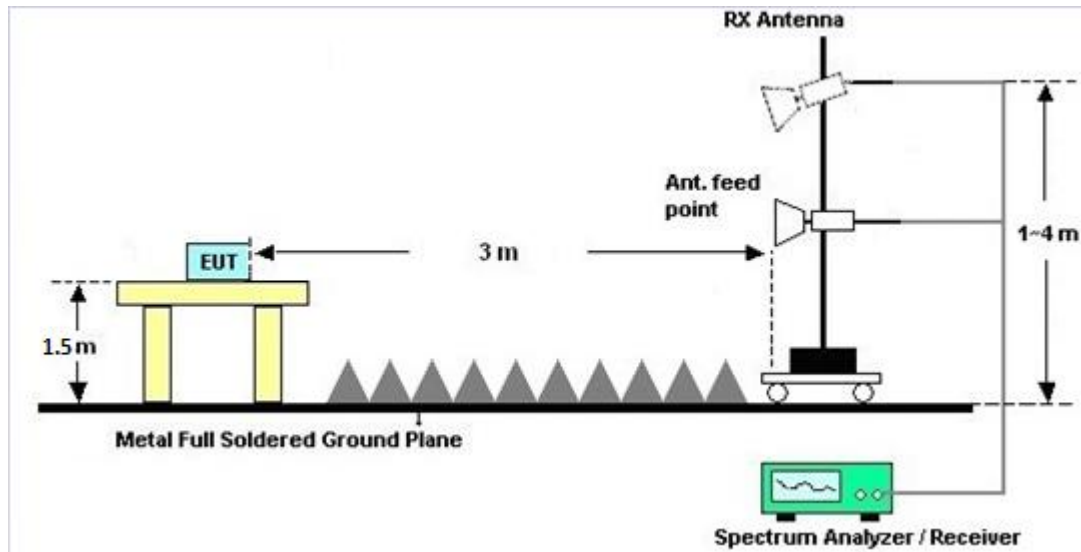
For radiated emissions below 30MHz



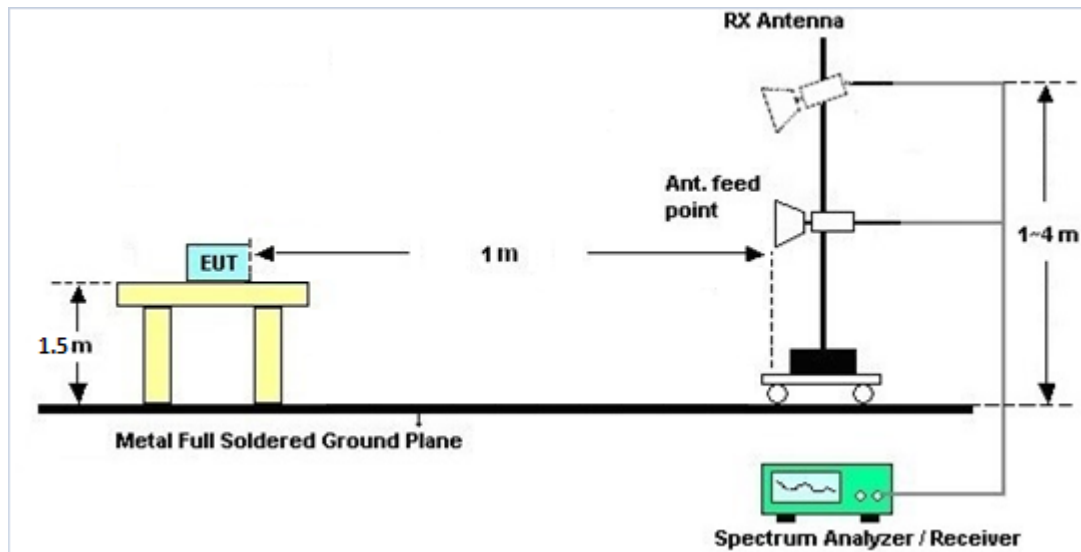
For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



For radiated emissions above 18GHz





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.

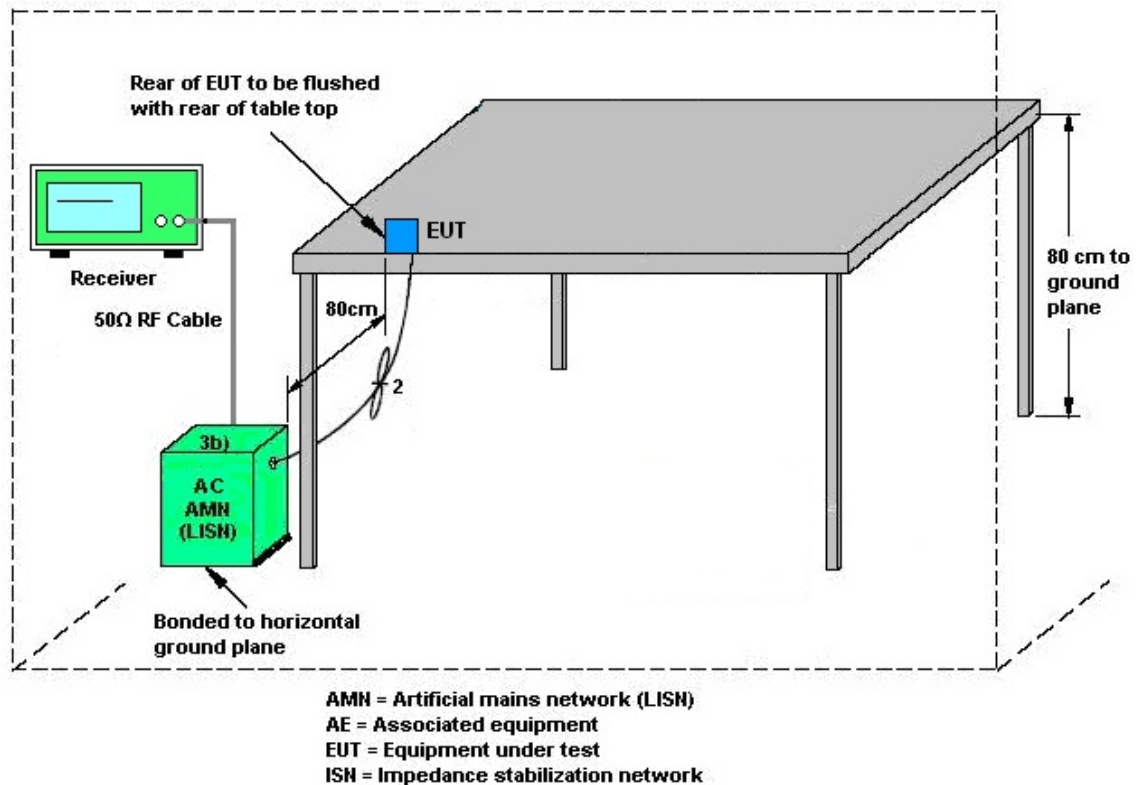
3.5.2 Measuring Instruments

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

EUT is verified this characteristic during the function check of normal sample associated with an access point:

- A. Information start: make EUT supply information to the access point.
- B. Information stop: stop supplying information to the access point.

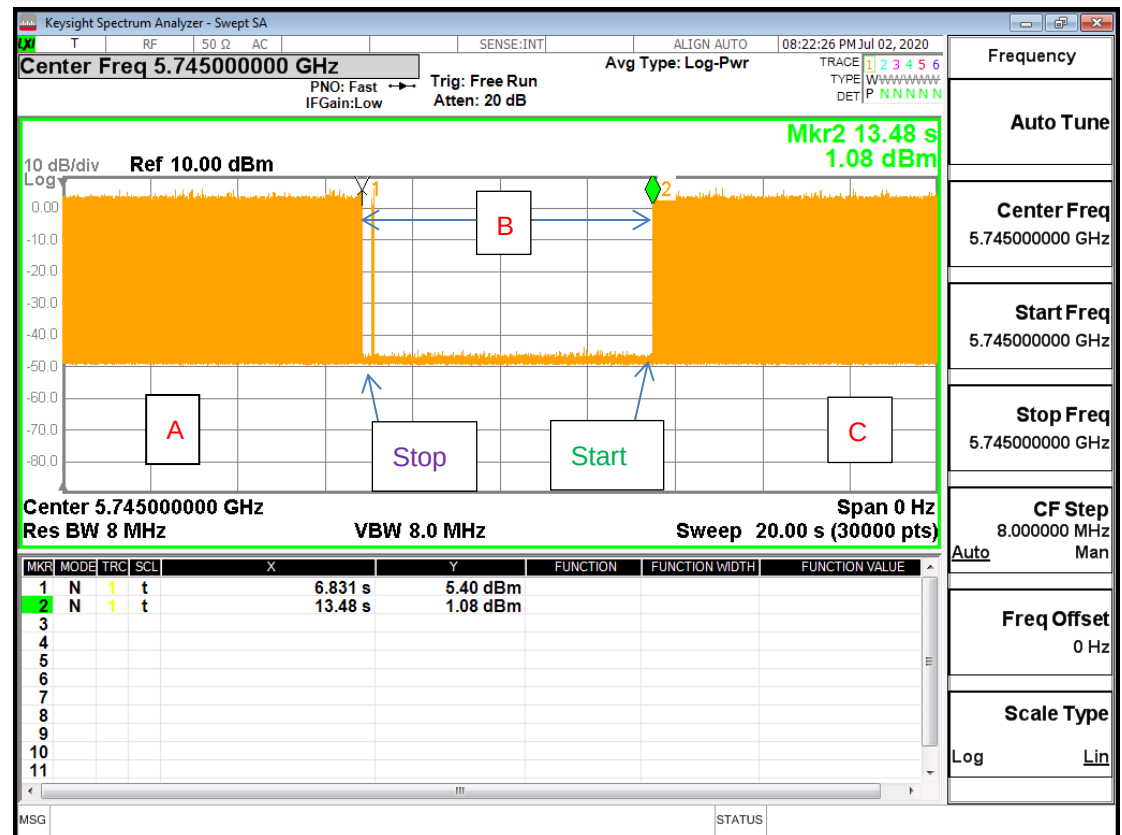
While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving.

- C. Information start: make EUT supply information to the access point again.

The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.



5745MHz



Note : The control / signalling information during the period B is precluded.

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 = G_{ANT} + Array Gain, where Array Gain is as follows.

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

Array Gain = $10 \log(N_{ANT}/N_{SS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

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

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} 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	DG	Power	PSD
			for	for	Limit	Limit
	Ant. 1	Ant. 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	3.71	3.63	3.71	6.68	0.00	0.68

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

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



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jun. 22, 2020	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 15, 2019	Jun. 22, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 07, 2019	Jun. 22, 2020	Nov. 06, 2020	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 15, 2019	Jun. 22, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jun. 22, 2020	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 02, 2020	Jun. 22, 2020	Jan. 01, 2021	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 02, 2020	Jun. 22, 2020	Jan. 01, 2021	Conduction (CO05-HY)
Hygrometer	Testo	608-H2	41410069	N/A	Jun. 17, 2019	May 26, 2020~ Jun. 13, 2020	Jun. 16, 2020	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054S NO10	10MHz~6GHz	Dec. 23, 2019	May 26, 2020~ Jun. 13, 2020	Dec. 22, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Aug. 14, 2019	May 26, 2020~ Jun. 13, 2020	Aug. 13, 2020	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC130048 4	N/A	Aug. 22, 2019	May 26, 2020~ Jun. 13, 2020	Aug. 21, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Keysight	N9010A	MY560704 12	10Hz~7GHz	Aug. 27, 2019	Jul. 02, 2020	Aug. 26, 2020	Conducted (TH05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 09, 2020	May 21, 2020~ Jun. 18, 2020	Jan. 08, 2021	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL6111D&0 0802N1D01N- 06	47020&06	30MHz to 1GHz	Oct. 12, 2019	May 21, 2020~ Jun. 18, 2020	Oct. 11, 2020	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-152 2	1G~18GHz	Sep. 19, 2019	May 21, 2020~ Jun. 18, 2020	Sep. 18, 2020	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170 980	18GHz~40GHz	Jan. 10, 2020	May 21, 2020~ Jun. 18, 2020	Jan. 09, 2021	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1G	Oct. 01, 2019	May 21, 2020~ Jun. 18, 2020	Sep. 30, 2020	Radiation (03CH16-HY)
Preamplifier	Jet-Power	JPA0118-55-3 03	171000180 0055006	1GHz~18GHz	May 07, 2020	May 21, 2020~ Jun. 18, 2020	May 06, 2021	Radiation (03CH16-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~40GHz	Dec. 13, 2019	May 21, 2020~ Jun. 18, 2020	Dec. 12, 2020	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY532702 64	1GHz~26.5GHz	Dec. 11, 2019	May 21, 2020~ Jun. 18, 2020	Dec.10, 2020	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY572901 11	3Hz~26.5GHz	Dec. 05, 2019	May 21, 2020~ Jun. 18, 2020	Dec. 04, 2020	Radiation (03CH16-HY)
Spectrum Analyzer	Agilent	E4446A	MY501801 36	3Hz~44GHz	May 04, 2020	May 21, 2020~ Jun. 18, 2020	May 03, 2021	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11680/ 4PE	NA	Aug. 30, 2019	May 21, 2020~ Jun. 18, 2020	Aug. 29, 2020	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11688/ 4PE	NA	Aug. 30, 2019	May 21, 2020~ Jun. 18, 2020	Aug. 29, 2020	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	EC-A5-300 -5757	NA	Aug. 30, 2019	May 21, 2020~ Jun. 18, 2020	Aug. 29, 2020	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	May 21, 2020~ Jun. 18, 2020	N/A	Radiation (03CH16-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.3
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.7
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.9
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Hank Hsu	Temperature:	21.3~23.7	°C
Test Date:	2020/5/26~2020/6/13	Relative Humidity:	47.2~57.8	%

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

Band IV MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	2	149	5745	16.60	16.60	21.40	21.45	16.30	16.35	0.5	Pass
11a	6Mbps	2	157	5785	16.60	16.65	21.45	21.40	16.30	16.30	0.5	Pass
11a	6Mbps	2	165	5825	16.70	16.60	21.50	21.50	16.35	16.25	0.5	Pass
HT20	MCS0	2	149	5745	17.70	17.70	21.90	22.00	17.55	17.55	0.5	Pass
HT20	MCS0	2	157	5785	17.70	17.70	21.65	22.05	17.55	17.50	0.5	Pass
HT20	MCS0	2	165	5825	17.70	17.70	21.85	21.80	17.55	17.50	0.5	Pass
HT40	MCS0	2	151	5755	36.30	36.30	41.94	42.03	36.27	36.36	0.5	Pass
HT40	MCS0	2	159	5795	36.40	36.40	41.70	41.91	36.36	36.36	0.5	Pass
VHT80	MCS0	2	155	5775	76.20	76.32	81.28	81.38	76.48	76.48	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	16.70	15.90	19.33	30.00		3.71		Pass
11a	6Mbps	2	157	5785	16.90	16.00	19.48	30.00		3.71		Pass
11a	6Mbps	2	165	5825	16.80	16.30	19.57	30.00		3.71		Pass
HT20	MCS0	2	149	5745	16.90	15.90	19.44	30.00		3.71		Pass
HT20	MCS0	2	157	5785	16.70	16.10	19.42	30.00		3.71		Pass
HT20	MCS0	2	165	5825	16.90	16.40	19.67	30.00		3.71		Pass
HT40	MCS0	2	151	5755	16.80	16.10	19.47	30.00		3.71		Pass
HT40	MCS0	2	159	5795	16.60	16.20	19.41	30.00		3.71		Pass
VHT20	MCS0	2	149	5745	16.80	15.80	19.34	30.00		3.71		Pass
VHT20	MCS0	2	157	5785	16.60	16.00	19.32	30.00		3.71		Pass
VHT20	MCS0	2	165	5825	16.80	16.30	19.57	30.00		3.71		Pass
VHT40	MCS0	2	151	5755	16.70	16.00	19.37	30.00		3.71		Pass
VHT40	MCS0	2	159	5795	16.50	16.10	19.31	30.00		3.71		Pass
VHT80	MCS0	2	155	5775	16.30	15.50	18.93	30.00		3.71		Pass

TEST RESULTS DATA
Power Spectral Density

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 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	2.22		5.82	4.47	8.83	29.32		6.68		Pass
11a	6Mbps	2	157	5785	2.22		6.16	4.93	9.17	29.32		6.68		Pass
11a	6Mbps	2	165	5825	2.22		5.73	4.84	8.74	29.32		6.68		Pass
HT20	MCS0	2	149	5745	2.22		5.25	4.49	8.26	29.32		6.68		Pass
HT20	MCS0	2	157	5785	2.22		5.94	4.70	8.95	29.32		6.68		Pass
HT20	MCS0	2	165	5825	2.22		5.03	4.63	8.04	29.32		6.68		Pass
HT40	MCS0	2	151	5755	2.22		2.33	1.47	5.34	29.32		6.68		Pass
HT40	MCS0	2	159	5795	2.22		2.57	1.48	5.58	29.32		6.68		Pass
VHT80	MCS0	2	155	5775	2.22		-0.28	-1.52	2.73	29.32		6.68		Pass

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



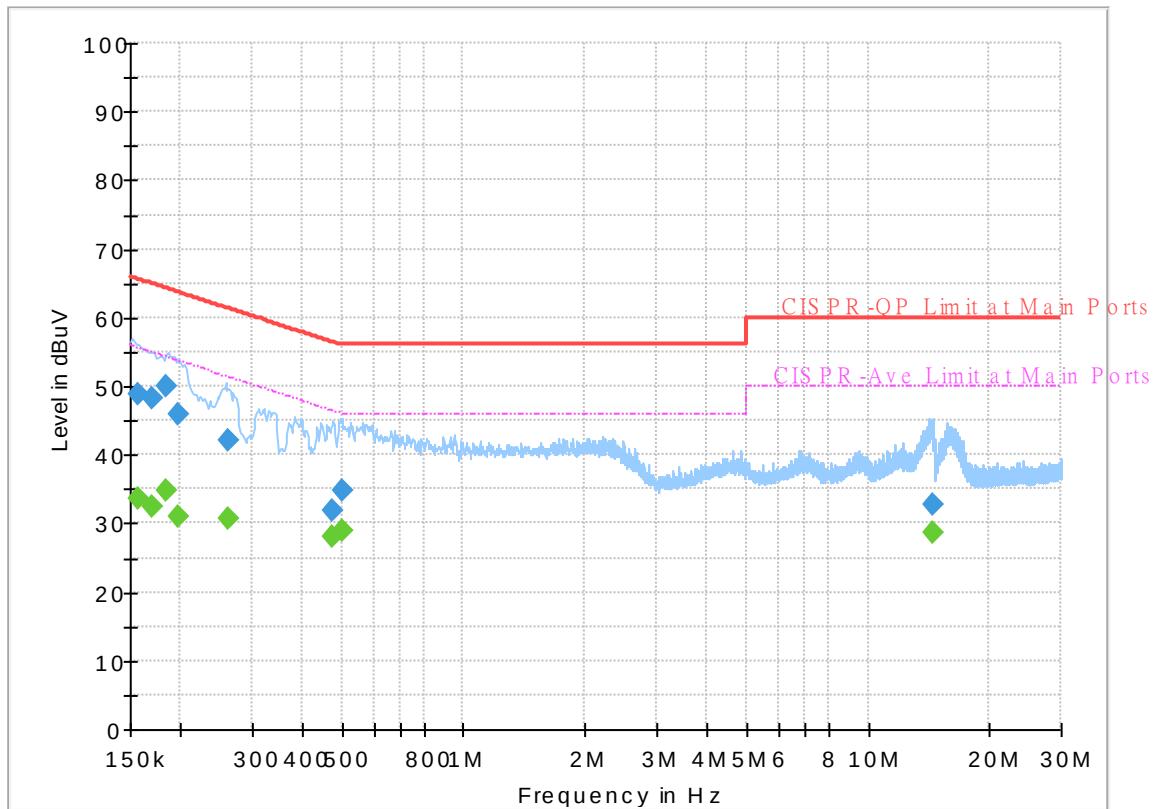
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Tom Lee	Temperature :	22~25℃
		Relative Humidity :	42~50%

EUT Information

Report NO : 020110-01
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

Full Spectrum



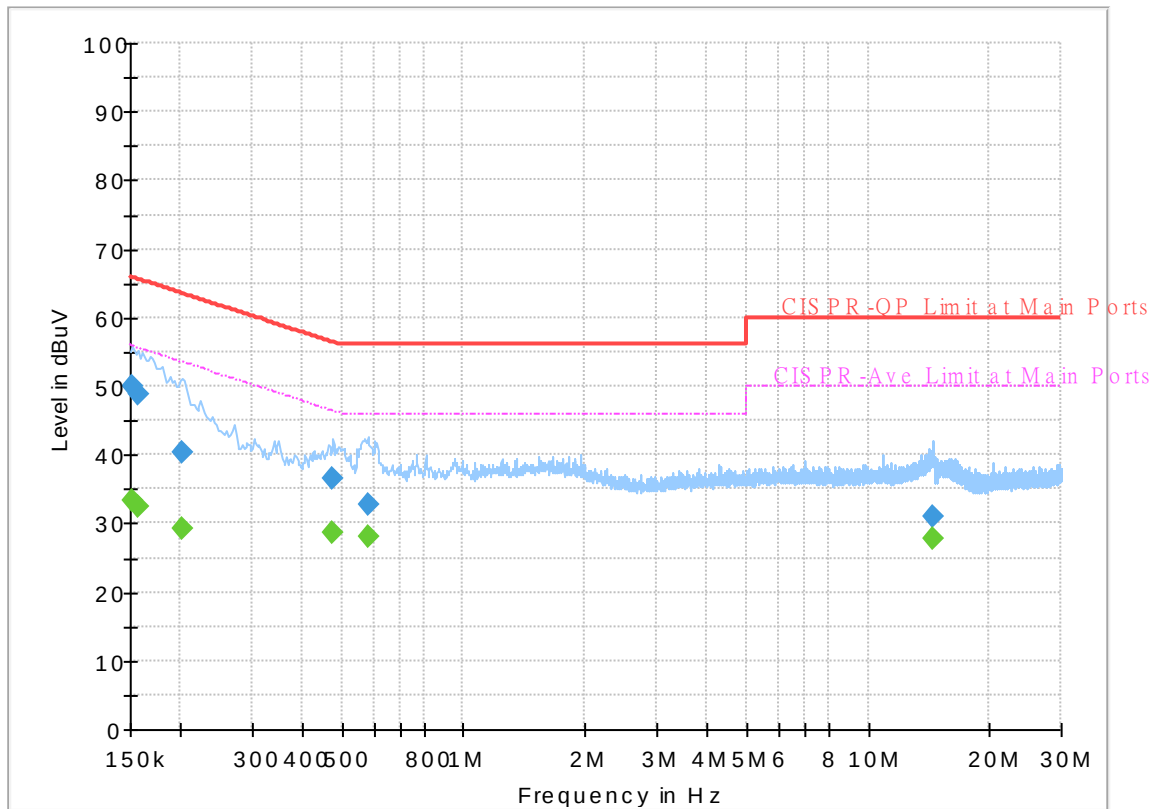
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.156750	---	33.55	55.63	22.08	L1	OFF	19.6
0.156750	48.82	---	65.63	16.81	L1	OFF	19.6
0.169190	---	32.45	55.00	22.55	L1	OFF	19.6
0.169190	48.24	---	65.00	16.76	L1	OFF	19.6
0.183750	---	34.69	54.31	19.62	L1	OFF	19.6
0.183750	49.92	---	64.31	14.39	L1	OFF	19.6
0.197250	---	31.02	53.73	22.71	L1	OFF	19.6
0.197250	45.88	---	63.73	17.85	L1	OFF	19.6
0.262500	---	30.85	51.35	20.50	L1	OFF	19.6
0.262500	42.17	---	61.35	19.18	L1	OFF	19.6
0.471750	---	28.00	46.48	18.48	L1	OFF	19.6
0.471750	32.01	---	56.48	24.47	L1	OFF	19.6
0.503250	---	28.82	46.00	17.18	L1	OFF	19.6
0.503250	34.92	---	56.00	21.08	L1	OFF	19.6
14.408250	---	28.61	50.00	21.39	L1	OFF	20.2
14.408250	32.88	---	60.00	27.12	L1	OFF	20.2

EUT Information

Report NO : 020110-01
 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)
0.152250	---	33.40	55.88	22.48	N	OFF	19.5
0.152250	49.88	---	65.88	16.00	N	OFF	19.5
0.156750	---	32.47	55.63	23.16	N	OFF	19.5
0.156750	48.84	---	65.63	16.79	N	OFF	19.5
0.201660	---	29.26	53.54	24.28	N	OFF	19.5
0.201660	40.43	---	63.54	23.11	N	OFF	19.5
0.471750	---	28.62	46.48	17.86	N	OFF	19.5
0.471750	36.54	---	56.48	19.94	N	OFF	19.5
0.582990	---	27.93	46.00	18.07	N	OFF	19.5
0.582990	32.64	---	56.00	23.36	N	OFF	19.5
14.449920	---	27.74	50.00	22.26	N	OFF	19.9
14.449920	31.08	---	60.00	28.92	N	OFF	19.9



Appendix C. Radiated Spurious Emission

Test Engineer :	Karl Hou, Andy Yang and CR Liao	Temperature :	20~25°C
		Relative Humidity :	50~60%

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		5646.8	56.04	-12.16	68.2	40.35	31.7	13.03	29.04	310	117	P	H
		5672.6	56.54	-28.42	84.96	40.75	31.75	13.08	29.04	310	117	P	H
		5718.2	67.11	-43.19	110.3	51.12	31.87	13.15	29.03	310	117	P	H
		5724.6	71.82	-49.47	121.29	55.79	31.9	13.16	29.03	310	117	P	H
	*	5745	113.32	-	-	97.17	31.98	13.19	29.02	310	117	P	H
	*	5745	105.82	-	-	89.67	31.98	13.19	29.02	310	117	A	H
		5649.6	56.51	-11.69	68.2	40.81	31.7	13.04	29.04	193	135	P	V
		5690.8	57.24	-41.18	98.42	41.38	31.78	13.11	29.03	193	135	P	V
		5719.6	71.11	-39.58	110.69	55.11	31.88	13.15	29.03	193	135	P	V
		5724.4	75.46	-45.37	120.83	59.43	31.9	13.16	29.03	193	135	P	V
	*	5745	117.21	-	-	101.06	31.98	13.19	29.02	193	135	P	V
	*	5745	109.62	-	-	93.47	31.98	13.19	29.02	193	135	A	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)
802.11a CH 157 5785MHz		5637.6	54.31	-13.89	68.2	38.64	31.7	13.02	29.05	280	118	P	H
		5675.8	55.25	-32.08	87.33	39.46	31.75	13.08	29.04	280	118	P	H
		5710	55.7	-52.3	108	39.75	31.84	13.14	29.03	280	118	P	H
		5722.4	54.91	-61.36	116.27	38.89	31.89	13.16	29.03	280	118	P	H
	*	5785	113.4	-	-	97.08	32.07	13.26	29.01	280	118	P	H
	*	5785	106.03	-	-	89.71	32.07	13.26	29.01	280	118	A	H
		5855	55.12	-55.68	110.8	38.69	32.11	13.31	28.99	280	118	P	H
		5862	55.25	-53.59	108.84	38.8	32.12	13.32	28.99	280	118	P	H
		5878	55.72	-47.25	102.97	39.22	32.16	13.33	28.99	280	118	P	H
		5929.6	54.74	-13.46	68.2	38.04	32.32	13.36	28.98	280	118	P	H
		5634.4	56.1	-12.1	68.2	40.43	31.7	13.02	29.05	200	134	P	V
		5681	57.32	-33.86	91.18	41.51	31.76	13.09	29.04	200	134	P	V
		5701.2	57.05	-48.49	105.54	41.16	31.8	13.12	29.03	200	134	P	V
		5724.2	56.06	-64.32	120.38	40.03	31.9	13.16	29.03	200	134	P	V
	*	5785	117.46	-	-	101.14	32.07	13.26	29.01	200	134	P	V
	*	5785	109.95	-	-	93.63	32.07	13.26	29.01	200	134	A	V
		5833.6	57.38	-76.82	134.2	40.98	32.1	13.3	29	200	134	P	V
		5855	56.37	-54.43	110.8	39.94	32.11	13.31	28.99	200	134	P	V
		5880.2	56.93	-44.41	101.34	40.43	32.16	13.33	28.99	200	134	P	V
		5935.2	54.92	-13.28	68.2	38.2	32.34	13.36	28.98	200	134	P	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)
802.11a CH 165 5825MHz	*	5825	113.18	-	-	96.78	32.1	13.3	29	276	120	P	H
	*	5825	105.83	-	-	89.43	32.1	13.3	29	276	120	A	H
		5850.8	68.45	-51.93	120.38	52.04	32.1	13.31	29	276	120	P	H
		5856.6	63.09	-47.26	110.35	46.66	32.11	13.31	28.99	276	120	P	H
		5878.4	56.34	-46.33	102.67	39.84	32.16	13.33	28.99	276	120	P	H
		5948.8	55.75	-12.45	68.2	38.95	32.4	13.37	28.97	276	120	P	H
	*	5825	117.13	-	-	100.73	32.1	13.3	29	204	135	P	V
	*	5825	109.54	-	-	93.14	32.1	13.3	29	204	135	A	V
		5850.4	70.89	-50.4	121.29	54.48	32.1	13.31	29	204	135	P	V
		5855.2	67.28	-43.46	110.74	50.85	32.11	13.31	28.99	204	135	P	V
		5875.4	57	-47.9	104.9	40.51	32.15	13.33	28.99	204	135	P	V
		5937.2	55.91	-12.29	68.2	39.18	32.35	13.36	28.98	204	135	P	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		9192	53.41	-20.59	74	56.12	38.34	17.86	58.91	400	128	P	H
		9192	47.52	-6.48	54	50.23	38.34	17.86	58.91	400	128	A	H
		11490	56.07	-17.93	74	56.21	40.1	20.66	60.9	235	147	P	H
		11490	44.92	-9.08	54	45.06	40.1	20.66	60.9	235	147	A	H
		17235	51.63	-16.57	68.2	43.13	40.84	26.48	58.82	100	0	P	H
		9192	54.79	-19.21	74	57.5	38.34	17.86	58.91	225	192	P	V
		9192	49.75	-4.25	54	52.46	38.34	17.86	58.91	225	192	A	V
		11490	56.73	-17.27	74	56.87	40.1	20.66	60.9	100	176	P	V
		11490	45.34	-8.66	54	45.48	40.1	20.66	60.9	100	176	P	V
		17235	51.2	-17	68.2	42.7	40.84	26.48	58.82	100	0	A	V
802.11a CH 157 5785MHz		11570	56.55	-17.45	74	56.88	39.89	20.76	60.98	237	185	P	H
		11570	45.7	-8.3	54	46.03	39.89	20.76	60.98	237	185	A	H
		17355	53.66	-14.54	68.2	44.26	41.38	26.69	58.67	100	0	P	H
		11570	57.57	-16.43	74	57.9	39.89	20.76	60.98	100	176	P	V
		11570	46.37	-7.63	54	46.7	39.89	20.76	60.98	100	176	A	V
		17355	54.22	-13.98	68.2	44.82	41.38	26.69	58.67	100	0	P	V
802.11a CH 165 5825MHz		9320	54.33	-19.67	74	56.55	38.94	17.95	59.11	400	129	P	H
		9320	48.89	-5.11	54	51.11	38.94	17.95	59.11	400	129	A	H
		11650	55.13	-18.87	74	55.76	39.6	20.85	61.08	211	222	P	H
		11650	44.03	-9.97	54	44.66	39.6	20.85	61.08	211	222	A	H
		17475	53.86	-14.34	68.2	43.53	41.97	26.89	58.53	100	0	P	H
		9320	56.08	-17.92	74	58.3	38.94	17.95	59.11	219	192	P	V
		9320	50.99	-3.01	54	53.21	38.94	17.95	59.11	219	192	A	V
		11650	56.69	-17.31	74	57.32	39.6	20.85	61.08	101	178	P	V
		11650	45.56	-8.44	54	46.19	39.6	20.85	61.08	101	178	A	V
		17475	53.65	-14.55	68.2	43.32	41.97	26.89	58.53	100	0	P	V

**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)
802.11n HT20 CH 149 5745MHz		5647.8	55.31	-12.89	68.2	39.61	31.7	13.04	29.04	283	118	P	H
		5698.6	57.66	-46.51	104.17	41.77	31.8	13.12	29.03	283	118	P	H
		5719.6	69.23	-41.46	110.69	53.23	31.88	13.15	29.03	283	118	P	H
		5721.8	72.39	-42.51	114.9	56.38	31.89	13.15	29.03	283	118	P	H
	*	5745	113.44	-	-	97.29	31.98	13.19	29.02	283	118	P	H
	*	5745	105.81	-	-	89.66	31.98	13.19	29.02	283	118	A	H
		5639.8	55.6	-12.6	68.2	39.93	31.7	13.02	29.05	193	135	P	V
		5698.2	58.58	-45.29	103.87	42.69	31.8	13.12	29.03	193	135	P	V
		5719.8	73.4	-37.34	110.74	57.4	31.88	13.15	29.03	193	135	P	V
		5721.8	75.37	-39.53	114.9	59.36	31.89	13.15	29.03	193	135	P	V
	*	5745	117.94	-	-	101.79	31.98	13.19	29.02	193	135	P	V
	*	5745	109.59	-	-	93.44	31.98	13.19	29.02	193	135	A	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)
802.11n HT20 CH 157 5785MHz		5629.8	55.19	-13.01	68.2	39.53	31.7	13.01	29.05	307	115	P	H
		5691	55.67	-42.89	98.56	39.81	31.78	13.11	29.03	307	115	P	H
		5706	55.17	-51.71	106.88	39.25	31.82	13.13	29.03	307	115	P	H
		5721.8	54.33	-60.57	114.9	38.32	31.89	13.15	29.03	307	115	P	H
	*	5785	112.83	-	-	96.51	32.07	13.26	29.01	307	115	P	H
	*	5785	105.33	-	-	89.01	32.07	13.26	29.01	307	115	A	H
		5853.2	54.62	-60.28	114.9	38.2	32.11	13.31	29	307	115	P	H
		5855.2	54.79	-55.95	110.74	38.36	32.11	13.31	28.99	307	115	P	H
		5908.8	54.77	-25.38	80.15	38.16	32.24	13.35	28.98	307	115	P	H
		5939.2	54.92	-13.28	68.2	38.17	32.36	13.36	28.97	307	115	P	H
		5607.6	54.84	-13.36	68.2	39.22	31.7	12.97	29.05	207	135	P	V
		5664.8	56.33	-22.86	79.19	40.58	31.73	13.06	29.04	207	135	P	V
		5717.2	57.04	-52.98	110.02	41.05	31.87	13.15	29.03	207	135	P	V
		5724.6	56.75	-64.54	121.29	40.72	31.9	13.16	29.03	207	135	P	V
	*	5785	117.02	-	-	100.7	32.07	13.26	29.01	207	135	P	V
	*	5785	109.27	-	-	92.95	32.07	13.26	29.01	207	135	A	V
		5851.6	55.99	-62.56	118.55	39.58	32.1	13.31	29	207	135	P	V
		5864.2	55.78	-52.44	108.22	39.32	32.13	13.32	28.99	207	135	P	V
		5892	56.42	-36.16	92.58	39.89	32.18	13.34	28.99	207	135	P	V
		5925.4	55.22	-12.98	68.2	38.54	32.3	13.36	28.98	207	135	P	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)
802.11n HT20 CH 165 5825MHz	*	5825	113.04	-	-	96.64	32.1	13.3	29	314	119	P	H
	*	5825	105.23	-	-	88.83	32.1	13.3	29	314	119	A	H
		5853.8	66.61	-46.93	113.54	50.19	32.11	13.31	29	314	119	P	H
		5855.6	63.07	-47.56	110.63	46.64	32.11	13.31	28.99	314	119	P	H
		5919.8	56.39	-15.64	72.03	39.74	32.28	13.35	28.98	314	119	P	H
		5932	56.04	-12.16	68.2	39.33	32.33	13.36	28.98	314	119	P	H
	*	5825	116.95	-	-	100.55	32.1	13.3	29	189	134	P	V
	*	5825	109.35	-	-	92.95	32.1	13.3	29	189	134	A	V
		5850	70.92	-51.28	122.2	54.51	32.1	13.31	29	189	134	P	V
		5855	68.52	-42.28	110.8	52.09	32.11	13.31	28.99	189	134	P	V
		5923	56.88	-12.79	69.67	40.22	32.29	13.35	28.98	189	134	P	V
		5928	56.56	-11.64	68.2	39.87	32.31	13.36	28.98	189	134	P	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)
802.11n HT20 CH 149 5745MHz		9192	49.75	-24.25	74	52.46	38.34	17.86	58.91	100	0	P	H
		11490	57.14	-16.86	74	57.28	40.1	20.66	60.9	233	187	P	H
		11490	45.56	-8.44	54	45.7	40.1	20.66	60.9	233	187	A	H
		17235	53.18	-15.02	68.2	44.68	40.84	26.48	58.82	100	0	P	H
		9192	55.42	-18.58	74	58.13	38.34	17.86	58.91	146	145	P	V
		9192	50.48	-3.52	54	53.19	38.34	17.86	58.91	146	145	A	V
		11490	58.2	-15.8	74	58.34	40.1	20.66	60.9	105	174	P	V
		11490	46.54	-7.46	54	46.68	40.1	20.66	60.9	105	174	A	V
		17235	53.49	-14.71	68.2	44.99	40.84	26.48	58.82	100	0	P	V
802.11n HT20 CH 157 5785MHz		11570	56.21	-17.79	74	56.54	39.89	20.76	60.98	225	187	P	H
		11570	45.1	-8.9	54	45.43	39.89	20.76	60.98	225	187	A	H
		17355	53.99	-14.21	68.2	44.59	41.38	26.69	58.67	100	0	P	H
		11570	57.32	-16.68	74	57.65	39.89	20.76	60.98	100	176	P	V
		11570	46.02	-7.98	54	46.35	39.89	20.76	60.98	100	176	A	V
		17355	54.32	-13.88	68.2	44.92	41.38	26.69	58.67	100	0	P	V
802.11n HT20 CH 165 5825MHz		9320	49.82	-24.18	74	52.04	38.94	17.95	59.11	100	0	P	H
		11650	54.61	-19.39	74	55.24	39.6	20.85	61.08	212	220	P	H
		11650	43.9	-10.1	54	44.53	39.6	20.85	61.08	212	220	A	H
		17475	54.86	-13.34	68.2	44.53	41.97	26.89	58.53	100	0	P	H
		9320	54.96	-19.04	74	57.18	38.94	17.95	59.11	144	148	P	V
		9320	49.55	-4.45	54	51.77	38.94	17.95	59.11	144	148	A	V
		11650	55.94	-18.06	74	56.57	39.6	20.85	61.08	105	175	P	V
		11650	44.74	-9.26	54	45.37	39.6	20.85	61.08	105	175	A	V
		17475	55.45	-12.75	68.2	45.12	41.97	26.89	58.53	100	0	P	V



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)
802.11n HT40 CH 151 5755MHz		5600.6	54.91	-13.29	68.2	39.31	31.7	12.96	29.06	328	119	P	H
		5699.4	65.08	-39.68	104.76	49.19	31.8	13.12	29.03	328	119	P	H
		5718.8	67.51	-42.95	110.46	51.51	31.88	13.15	29.03	328	119	P	H
		5722.6	69.59	-47.14	116.73	53.57	31.89	13.16	29.03	328	119	P	H
	*	5755	110.6	-	-	94.4	32.01	13.21	29.02	328	119	P	H
	*	5755	102.69	-	-	86.49	32.01	13.21	29.02	328	119	A	H
		5850.4	54.75	-66.54	121.29	38.34	32.1	13.31	29	328	119	P	H
		5859.6	54.74	-54.77	109.51	38.29	32.12	13.32	28.99	328	119	P	H
		5884.6	54.58	-43.49	98.07	38.07	32.17	13.33	28.99	328	119	P	H
		5949.8	55.23	-12.97	68.2	38.43	32.4	13.37	28.97	328	119	P	H
		5609.8	55.41	-12.79	68.2	39.78	31.7	12.98	29.05	203	134	P	V
		5700	66.85	-38.35	105.2	50.96	31.8	13.12	29.03	203	134	P	V
		5718.2	72.34	-37.96	110.3	56.35	31.87	13.15	29.03	203	134	P	V
		5725	73.19	-49.01	122.2	57.16	31.9	13.16	29.03	203	134	P	V
	*	5755	114.52	-	-	98.32	32.01	13.21	29.02	203	134	P	V
	*	5755	106.51	-	-	90.31	32.01	13.21	29.02	203	134	A	V
		5854.8	55.41	-55.85	111.26	38.98	32.11	13.31	28.99	203	134	P	V
		5857.6	56.08	-53.99	110.07	39.64	32.12	13.31	28.99	203	134	P	V
		5890.8	55.46	-38.01	93.47	38.94	32.18	13.33	28.99	203	134	P	V
		5925.2	55.28	-12.92	68.2	38.6	32.3	13.36	28.98	203	134	P	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)
802.11n HT40 CH 159 5795MHz		5646.8	53.63	-14.57	68.2	37.94	31.7	13.03	29.04	304	120	P	H
		5686	55.26	-39.61	94.87	39.43	31.77	13.1	29.04	304	120	P	H
		5718.2	55.88	-54.42	110.3	39.89	31.87	13.15	29.03	304	120	P	H
		5725	57.64	-64.56	122.2	41.61	31.9	13.16	29.03	304	120	P	H
	*	5795	109.98	-	-	93.63	32.09	13.27	29.01	304	120	P	H
	*	5795	102.59	-	-	86.24	32.09	13.27	29.01	304	120	A	H
		5851.6	62.42	-56.13	118.55	46.01	32.1	13.31	29	304	120	P	H
		5859.6	60.04	-49.47	109.51	43.59	32.12	13.32	28.99	304	120	P	H
		5908.4	55.6	-24.85	80.45	39	32.23	13.35	28.98	304	120	P	H
		5933	54.33	-13.87	68.2	37.62	32.33	13.36	28.98	304	120	P	H
		5613.6	55.1	-13.1	68.2	39.47	31.7	12.98	29.05	195	135	P	V
		5695	56.74	-44.77	101.51	40.87	31.79	13.11	29.03	195	135	P	V
		5719.6	61.21	-49.48	110.69	45.21	31.88	13.15	29.03	195	135	P	V
		5723.8	61.26	-58.2	119.46	45.23	31.9	13.16	29.03	195	135	P	V
	*	5795	114.2	-	-	97.85	32.09	13.27	29.01	195	135	P	V
	*	5795	106.39	-	-	90.04	32.09	13.27	29.01	195	135	A	V
		5851.4	66.77	-52.24	119.01	50.36	32.1	13.31	29	195	135	P	V
		5855	64.94	-45.86	110.8	48.51	32.11	13.31	28.99	195	135	P	V
		5878.2	59.15	-43.67	102.82	42.65	32.16	13.33	28.99	195	135	P	V
		5927	56.08	-12.12	68.2	39.39	32.31	13.36	28.98	195	135	P	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)
802.11n HT40 CH 151 5755MHz		11510	54.56	-19.44	74	54.7	40.07	20.7	60.91	229	185	P	H
		11510	43.8	-10.2	54	43.94	40.07	20.7	60.91	229	185	A	H
		17265	54.02	-14.18	68.2	45.31	40.96	26.53	58.78	100	0	P	H
		11510	55.41	-18.59	74	55.55	40.07	20.7	60.91	106	174	P	V
		11510	44.29	-9.71	54	44.43	40.07	20.7	60.91	106	174	A	V
		17265	53.29	-14.91	68.2	44.58	40.96	26.53	58.78	100	0	P	V
802.11n HT40 CH 159 5795MHz		11590	54.7	-19.3	74	55.1	39.83	20.78	61.01	236	185	P	H
		11590	43.92	-10.08	54	44.32	39.83	20.78	61.01	236	185	A	H
		17385	54.76	-13.44	68.2	45.14	41.52	26.74	58.64	100	0	P	H
		11590	55.41	-18.59	74	55.81	39.83	20.78	61.01	106	176	P	V
		11590	44.55	-9.45	54	44.95	39.83	20.78	61.01	106	176	A	V
		17385	54.42	-13.78	68.2	44.8	41.52	26.74	58.64	100	0	P	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)
802.11ac VHT80 CH 155 5775MHz		5645.8	57	-11.2	68.2	41.32	31.7	13.03	29.05	278	119	P	H
		5699	68.56	-35.9	104.46	52.67	31.8	13.12	29.03	278	119	P	H
		5712.4	70.17	-38.5	108.67	54.21	31.85	13.14	29.03	278	119	P	H
		5722	72.74	-42.62	115.36	56.72	31.89	13.16	29.03	278	119	P	H
	*	5775	107.26	-	-	90.98	32.05	13.24	29.01	278	119	P	H
	*	5775	99.73	-	-	83.45	32.05	13.24	29.01	278	119	A	H
		5854.4	66.68	-45.49	112.17	50.25	32.11	13.31	28.99	278	119	P	H
		5856.6	67.93	-42.42	110.35	51.5	32.11	13.31	28.99	278	119	P	H
		5878.4	61.59	-41.08	102.67	45.09	32.16	13.33	28.99	278	119	P	H
		5932.4	54.56	-13.64	68.2	37.85	32.33	13.36	28.98	278	119	P	H
		5649.4	62.52	-5.68	68.2	46.82	31.7	13.04	29.04	203	135	P	V
		5698.6	71.04	-33.13	104.17	55.15	31.8	13.12	29.03	203	135	P	V
		5719	72.87	-37.65	110.52	56.87	31.88	13.15	29.03	203	135	P	V
		5724.6	73.9	-47.39	121.29	57.87	31.9	13.16	29.03	203	135	P	V
	*	5775	111.7	-	-	95.42	32.05	13.24	29.01	203	135	P	V
	*	5775	103.14	-	-	86.86	32.05	13.24	29.01	203	135	A	V
		5855	70.11	-40.69	110.8	53.68	32.11	13.31	28.99	203	135	P	V
		5856.4	70.6	-39.81	110.41	54.17	32.11	13.31	28.99	203	135	P	V
		5877.2	64.63	-38.94	103.57	48.14	32.15	13.33	28.99	203	135	P	V
		5947	56.41	-11.79	68.2	39.62	32.39	13.37	28.97	203	135	P	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)
802.11ac VHT80 CH 155 5775MHz		11550	53.45	-20.55	74	53.72	39.95	20.74	60.96	237	187	P	H
		11550	43.11	-10.89	54	43.38	39.95	20.74	60.96	237	187	A	H
		17325	54.12	-14.08	68.2	44.97	41.22	26.64	58.71	100	0	P	H
		11550	54.11	-19.89	74	54.38	39.95	20.74	60.96	100	174	P	V
		11550	43.35	-10.65	54	43.62	39.95	20.74	60.96	100	174	A	V
		17325	54.16	-14.04	68.2	45.01	41.22	26.64	58.71	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**Band 4 5725~5850MHz****Emission above 18GHz****5GHz WIFI 802.11a (SHF)**

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11a SHF		33620	43.44	-24.76	68.2	38.9	41.08	17.9	54.44	150	0	P	H
		38020	47.52	-20.68	68.2	40.39	43.14	19.99	56	150	0	P	H
		33620	44.29	-23.91	68.2	39.75	41.08	17.9	54.44	150	0	P	V
		38108	47.07	-21.13	68.2	39.91	43.29	19.85	55.98	150	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11a LF		71.71	29.19	-10.81	40	47.79	12.31	1.44	32.35	-	-	P	H
		111.48	35.14	-8.36	43.5	48.74	16.85	1.81	32.26	100	0	P	H
		477.17	26.03	-19.97	46	30.84	23.62	3.69	32.12	-	-	P	H
		563.5	28.64	-17.36	46	30.41	26.14	4.07	31.98	-	-	P	H
		867.11	31.59	-14.41	46	29.57	29.03	5.06	32.07	-	-	P	H
		945.68	34.03	-11.97	46	29.55	30.56	5.3	31.38	-	-	P	H
		43.58	33.09	-6.91	40	46.97	17.38	1.09	32.35	-	-	P	V
		87.23	33.24	-6.76	40	49.68	14.28	1.58	32.3	-	-	P	V
		112.45	36.86	-6.64	43.5	50.31	16.99	1.82	32.26	100	0	P	V
		576.11	29.25	-16.75	46	31.31	25.79	4.11	31.96	-	-	P	V
		896.21	37.5	-8.5	46	35.32	28.98	5.14	31.94	-	-	P	V
		957.32	34.97	-11.03	46	29.97	30.91	5.33	31.24	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

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



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(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

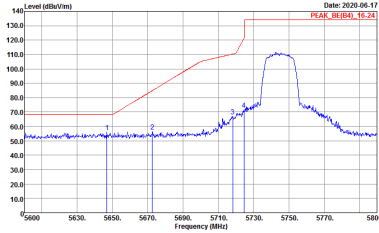
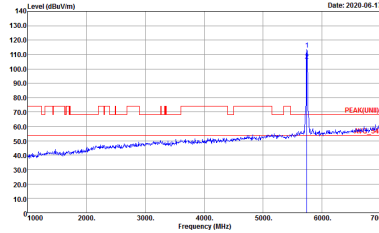
Test Engineer :	Karl Hou, Andy Yang and CR Liao	Temperature :	20~25°C
		Relative Humidity :	50~60%

Note symbol

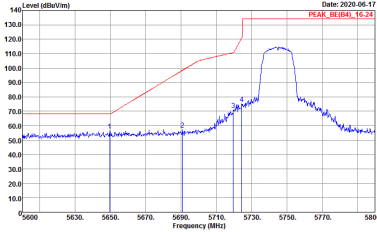
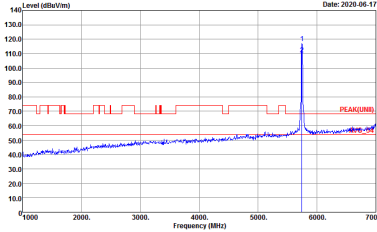
-L	Low channel location
-R	High channel location

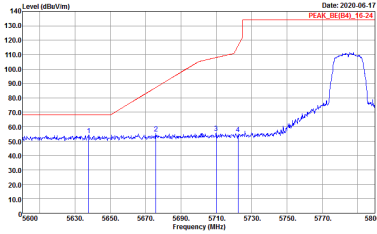
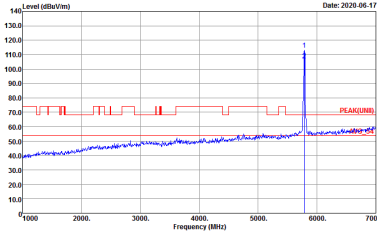
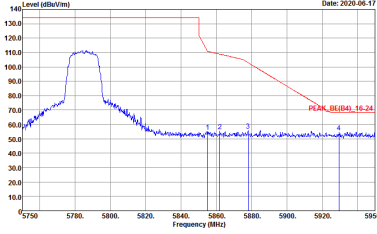


Band 4 - 5725~5850MHz
WIFI 802.11a (Band Edge @ 3m)

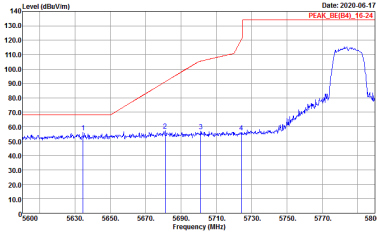
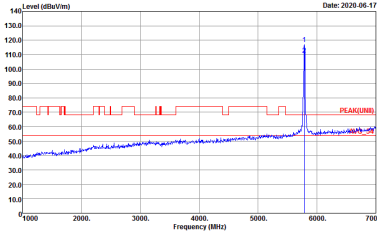
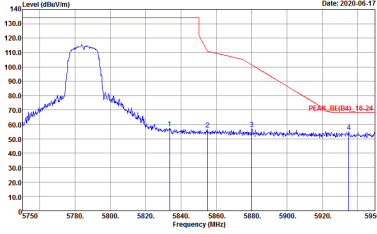
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak 020110-01	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak 020110-01



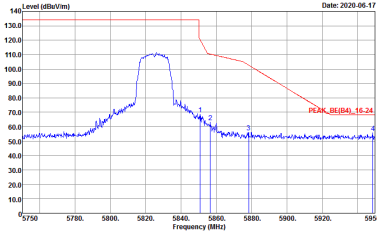
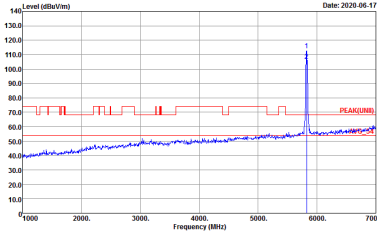
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_8E(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNI) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	Left blank

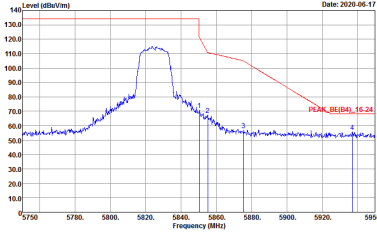
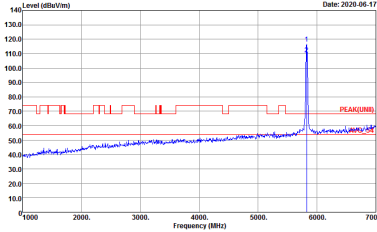


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	Left blank



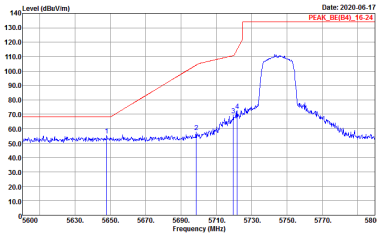
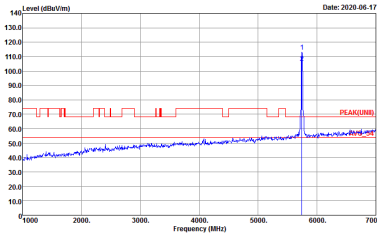
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01



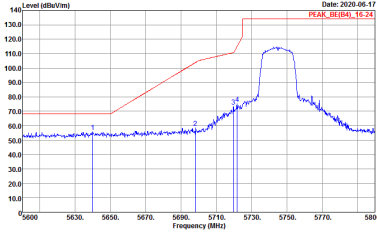
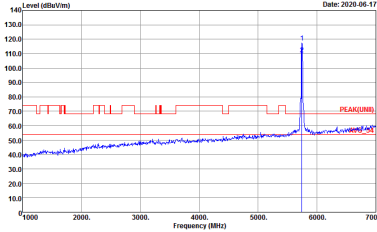
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01



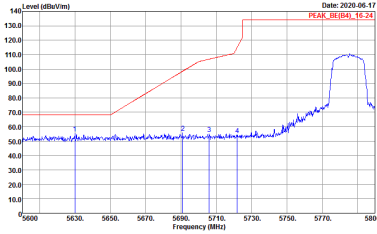
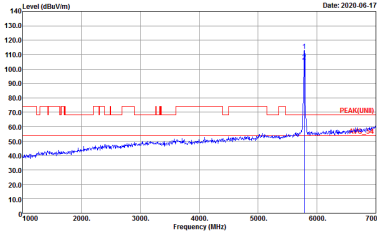
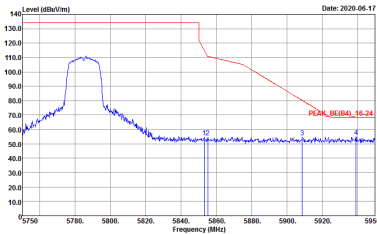
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01

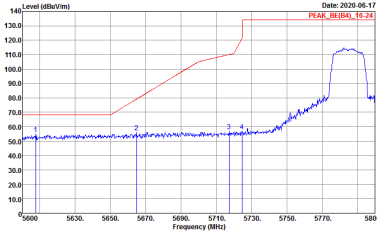
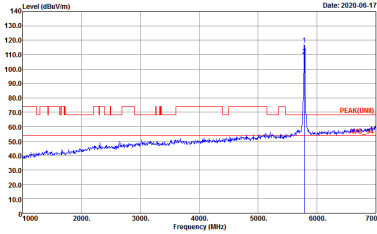
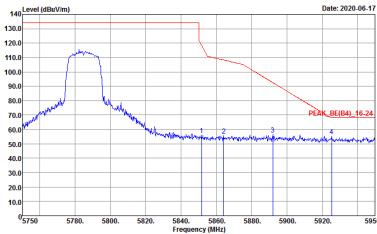


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01

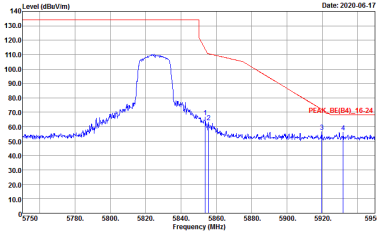
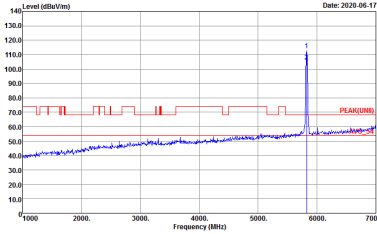


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	Left blank

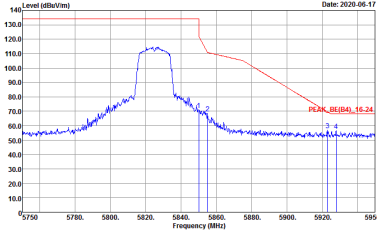
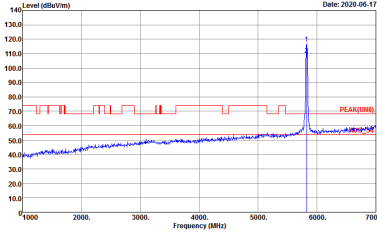


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	Left blank



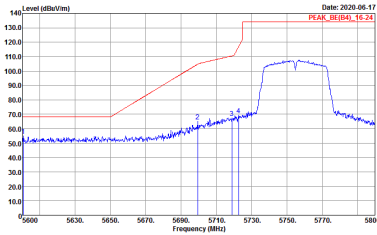
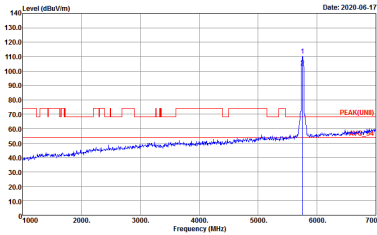
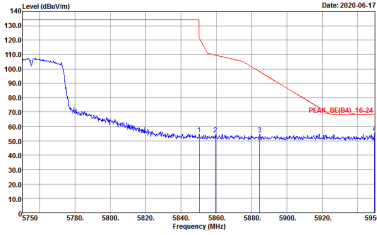
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01



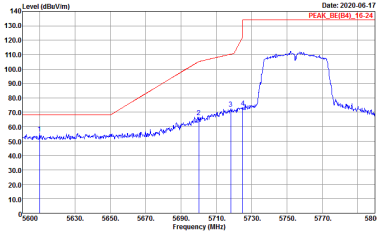
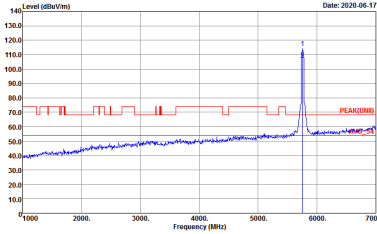
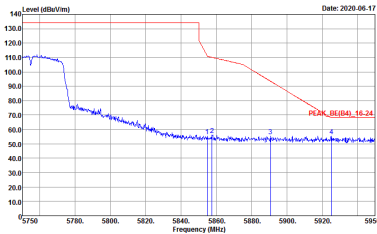
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_8E(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNI) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01



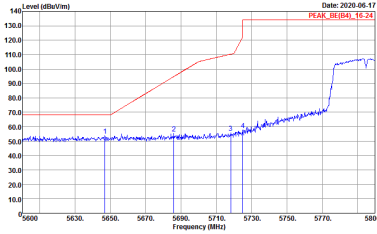
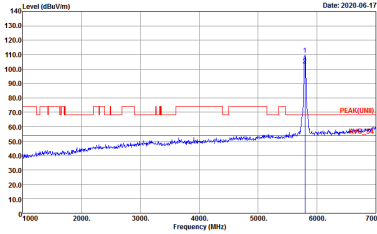
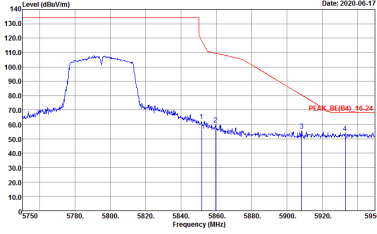
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 020110-01
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 020110-01	Left blank

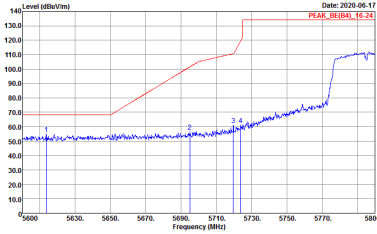
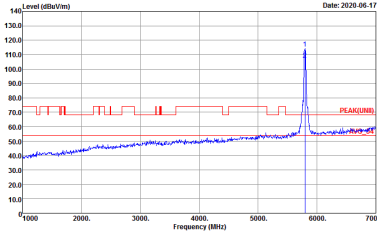
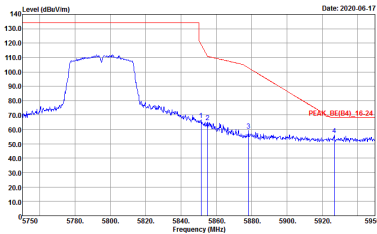


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	Left blank



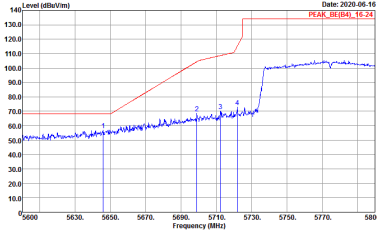
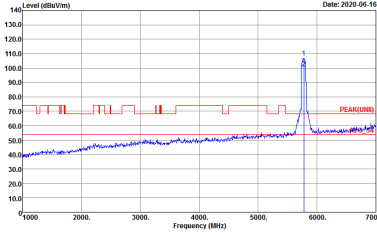
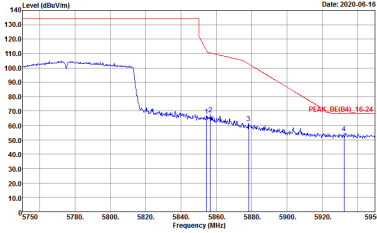
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	Left blank



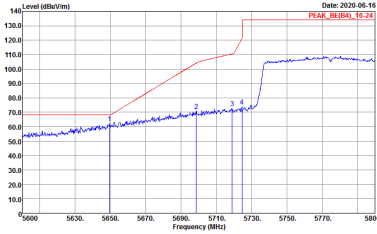
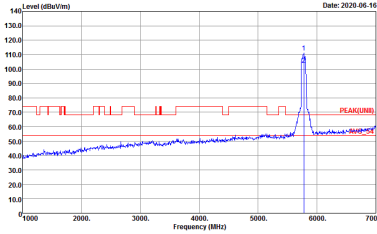
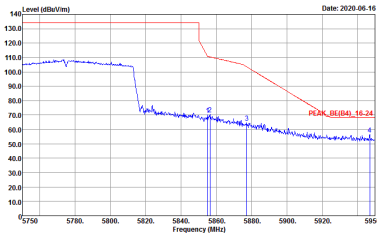
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	Left blank



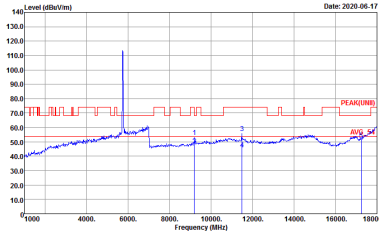
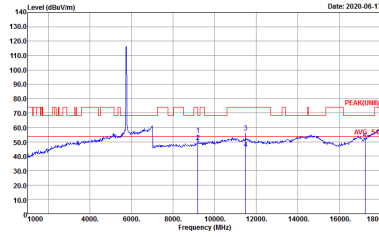
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	Left blank

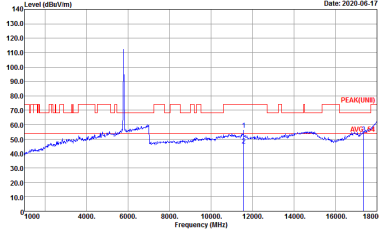
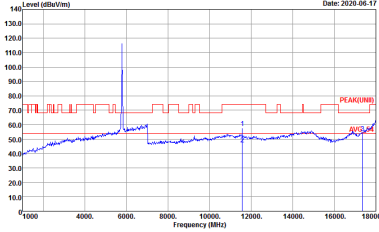


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 020110-01	Left blank

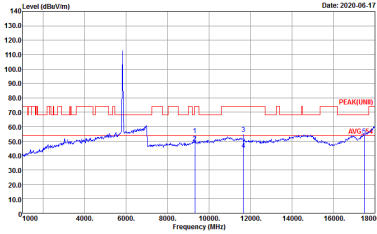
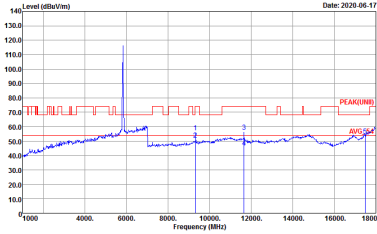
Band 4 - 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 020110-01



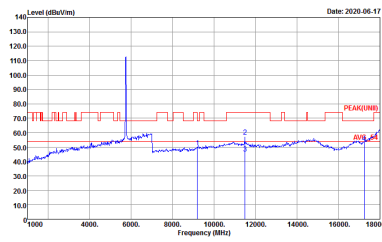
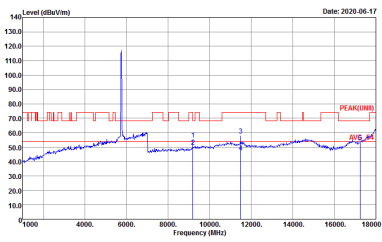
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HV Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH16-HV Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 020110-01



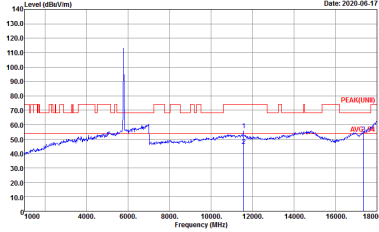
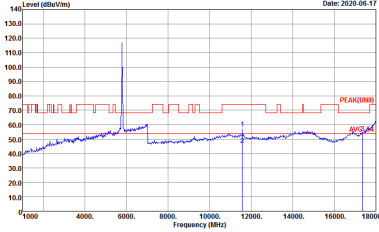
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HV Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH16-HV Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 020110-01



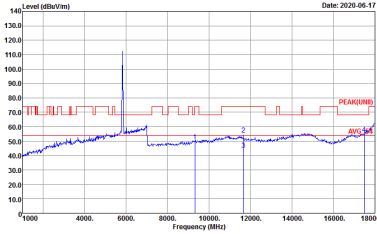
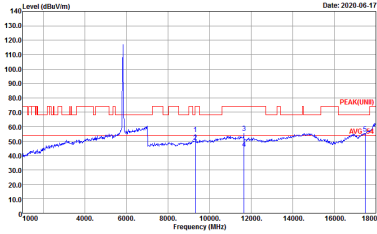
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 020110-01

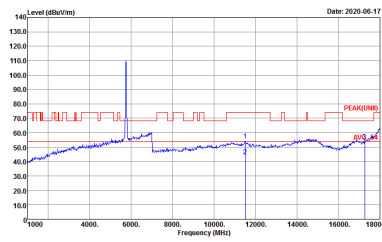
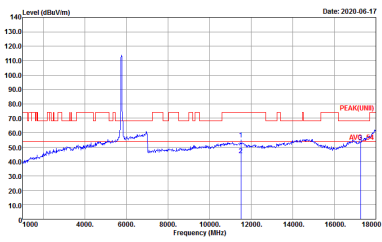


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 020110-01

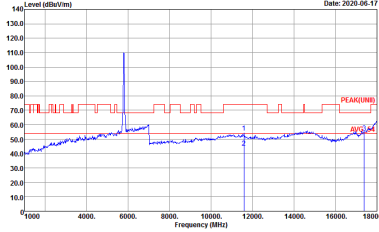
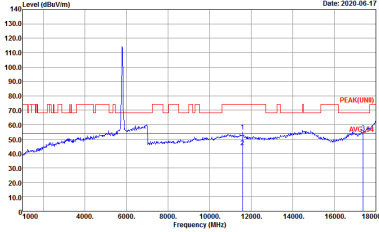


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HV Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH16-HV Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 020110-01

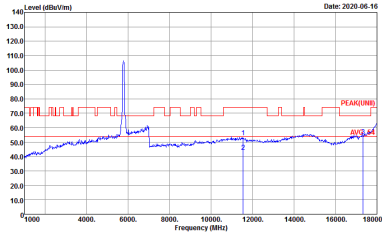
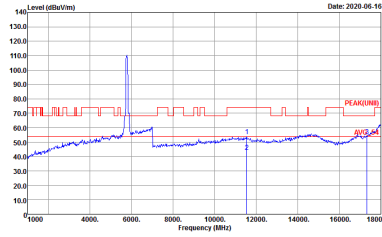
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 020110-01

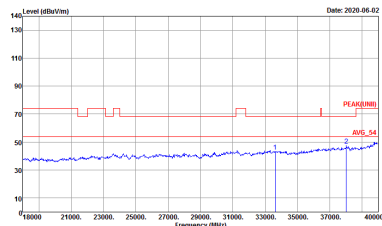
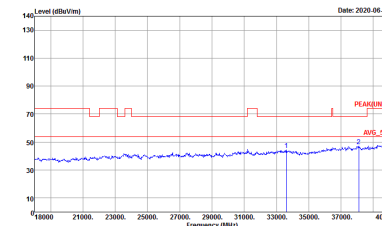


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HV Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH16-HV Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 020110-01

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

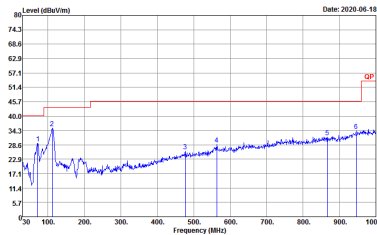
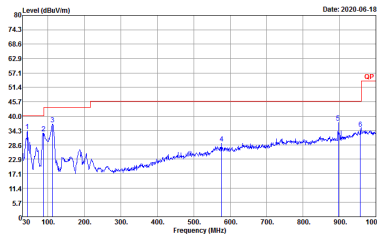
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 020110-01

Emission above 18GHz
5GHz WIFI 802.11a (SHF)

WIFI	5GHz WIFI	
ANT	802.11a SHF	
1+2	Horizontal	Vertical
QP / Peak	 Site : 03CH10-HY Condition : PEAK(UNIT) In SHF HORN BBH49170584 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH10-HY Condition : PEAK(UNIT) In SHF HORN BBH49170584 VERTICAL Detector : Peak Project : 020110-01



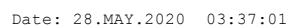
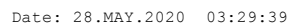
Emission below 1GHz
5GHz WIFI 802.11a (LF)

WIFI	5GHz WIFI	
ANT	802.11a LF	
1+2	Horizontal	Vertical
QP / Peak	 Site : 03CH16-HY Condition : QP 3m B1LOG_47020M06 HORIZONTAL Detector : Peak Project : 020110-01	 Site : 03CH16-HY Condition : QP 3m B1LOG_47020M06 VERTICAL Detector : Peak Project : 020110-01



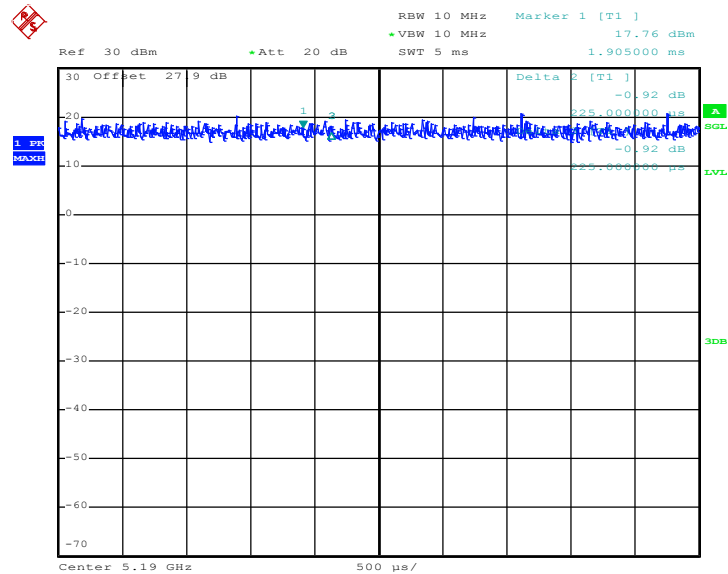
Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1+2	802.11a for Ant 1	100.00	-	-	10Hz	0.00
1+2	802.11a for Ant 2	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11n HT20 for Ant 1	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11n HT20 for Ant 2	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11n HT40 for Ant 1	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11n HT40 for Ant 2	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ac VHT80 for Ant 1	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ac VHT80 for Ant 2	100.00	-	-	10Hz	0.00



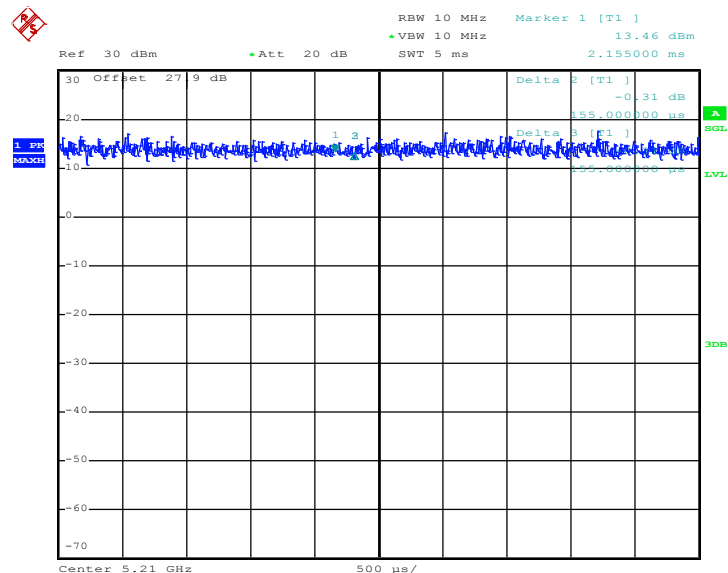


802.11n HT40



Date: 28.MAY.2020 03:39:03

802.11ac VHT80

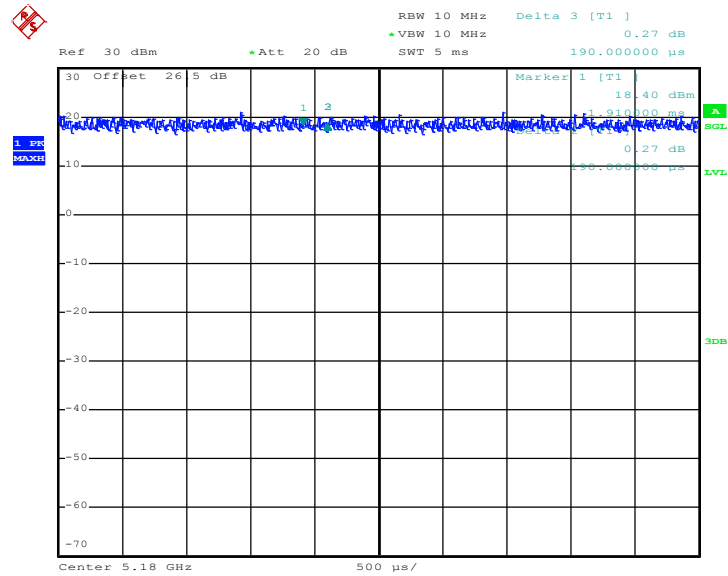


Date: 28.MAY.2020 03:45:44



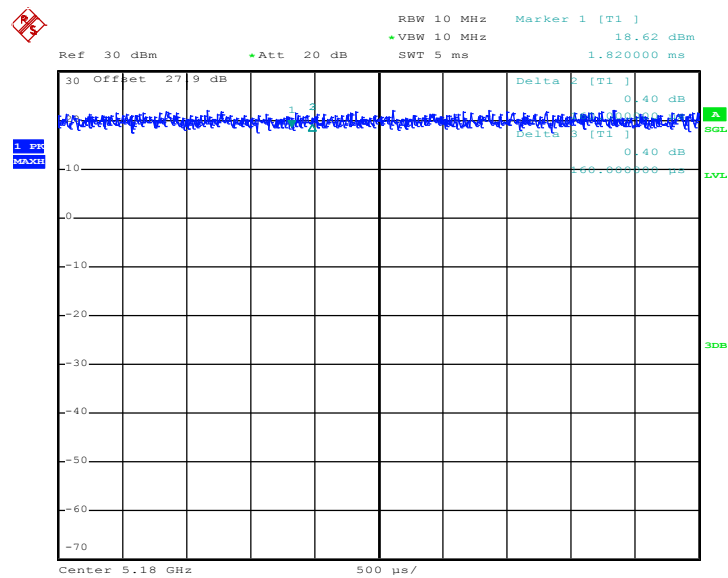
MIMO<Ant. 2>

802.11a

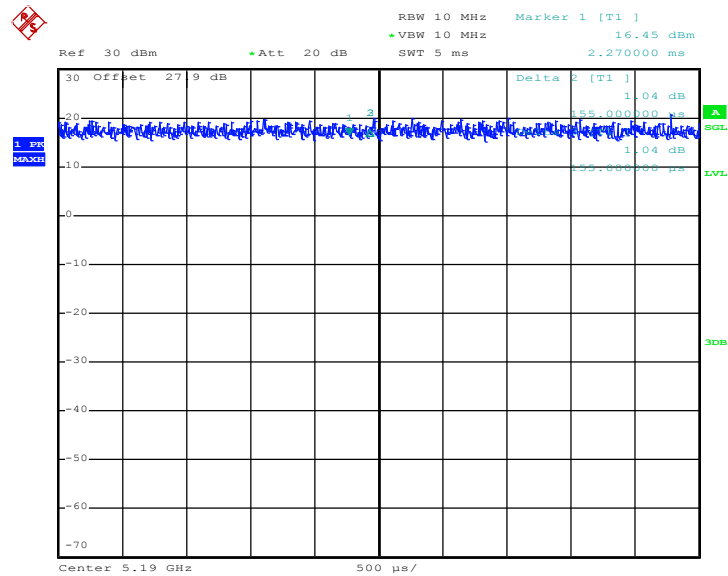


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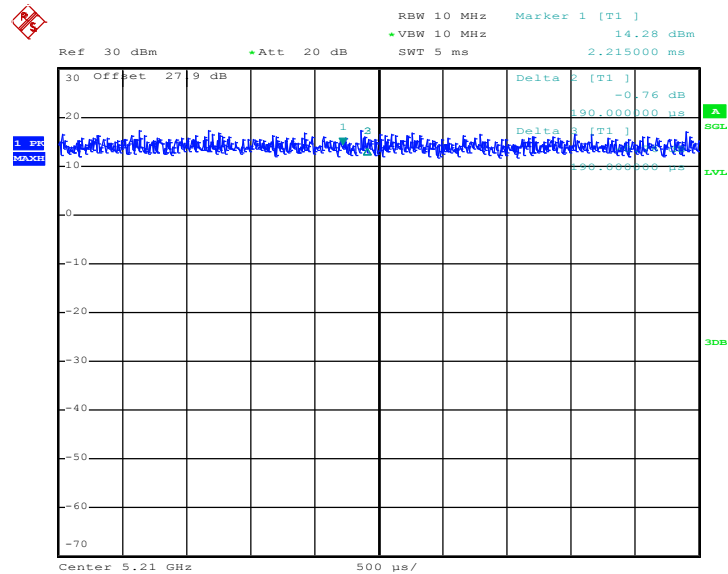
802.11n HT20



Date: 28.MAY.2020 03:37:59

802.11n HT40


Date: 28.MAY.2020 03:40:26

802.11ac VHT80


Date: 28.MAY.2020 03:46:27

———THE END—————