

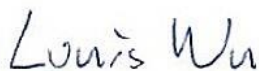


FCC RADIO TEST REPORT

FCC ID : UZ7TC26EK
Equipment : Touch computer
Brand Name : Zebra
Model Name : TC26EK
Applicant : Zebra Technologies Corporation
1 Zebra Plaza, Holtsville, NY 11742
Manufacturer : Zebra Technologies Corporation
1 Zebra Plaza, Holtsville, NY 11742
Standard : FCC Part 15 Subpart E §15.407

The product was received on Jan. 25, 2021 and testing was started from Jan. 28, 2021 and completed on Feb. 03, 2021. 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
FR002628-02F	01	Initial issue of report	Mar. 04, 2021

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 4.95 dB at 17978.000 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 15.45 dB at 13.560 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Pass	-
3.7	15.203 15.407(a)	Antenna Requirement	Pass	-

Declaration of Conformity:

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

Comments and Explanations:

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

Reviewed by: Wii Chang

Report Producer: Yimin Ho



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Touch computer
Brand Name	Zebra
Model Name	TC26EK
FCC ID	UZ7TC26EK
EUT supports Radios application	WCDMA/HSPA/LTE/NFC/GNSS WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
HW Version	EV1.5
SW Version	Android version 10
OS Version	FUSION_QA_2_1.3.0.019_Q
FW Version	Zebra/TC26PG/TC26:10/10-16-10.00-QG-U33-STD-HEL-04/115:userdebug/release-keys
MFD	13JAN21
EUT Stage	Engineering sample

Remark: The above EUT's information was declared by manufacturer.

Specification of Accessories				
AC Adapter	Brand Name	Zebra	Model Name	SAWA-65-20005A
Battery	Brand Name	Zebra	Model Name	BT-000409A
USB Cable 1 (TypeA plug to TypeC plug)	Brand Name	Zebra	Part Number	CBL-TC5X-USBC2A-01
USB Cable 2 (TypeA plug to TypeC plug)	Brand Name	Zebra	Part Number	CBL-TC2Y-USBC90A-01
Headset 3.5mm type with PTT/micassy	Brand Name	Zebra	Part Number	HDST-35MM-PTVP-01
Adapter Cable PTT headset (3.5mm to 3.5mm)	Brand Name	Zebra	Part Number	CBL-TC51-HDST35-01
Type C to 3.5mm adapter	Brand Name	Zebra	Part Number	ADP-USBC-35MM1-01
Snap on Trigger handle	Brand Name	Zebra	Part Number	TRG-TC2Y-SNP1-01
Belt Holster	Brand Name	Zebra	Part Number	SG-TC2Y-HLSTR1-01
Wearable Arm Mount	Brand Name	Zebra	Part Number	SG-TC2Y-ARMNT-01

1.2 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	5745 MHz ~ 5825 MHz
Maximum Output Power to Antenna	802.11a: 17.50 dBm / 0.0562 W 802.11n HT20: 17.70 dBm / 0.0589 W 802.11n HT40: 17.40 dBm / 0.0550 W 802.11ac VHT20: 17.80 dBm / 0.0603 W 802.11ac VHT40: 17.50 dBm / 0.0562 W 802.11ac VHT80: 17.60 dBm / 0.0575 W
99% Occupied Bandwidth	802.11a: 16.83 MHz 802.11ac VHT20: 18.03 MHz 802.11ac VHT40: 36.56 MHz 802.11ac VHT80: 76.36 MHz
Antenna Type / Gain	PIFA Antenna with gain 2.50 dBi
Type of Modulation	802.11a/n : OFDM (BPSK/QPSK/16QAM/64QAM) 802.11ac : OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)

Remark: The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

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. Wensan 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 (TAF Code: 3786)
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

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.
- ♦ 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.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

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

Note:

- 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.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20 (Covered by VHT20)	MCS0
802.11n HT40 (Covered by VHT40)	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 :WLAN (5GHz) Link + Bluetooth Link + NFC On + Battery + USB Cable 1 (Charging from AC Adapter)
Remark: For Radiated Test Cases, the tests were performed with USB Cable 1.	

Ch. #		Band IV : 5725-5850 MHz			
		802.11a	802.11ac VHT20	802.11ac VHT40	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.

802.11a RF Output Power (dBm)										
Power vs. Channel			Power vs Data Rate							
Channel	Frequency (MHz)	Data Rate (bps)	Channel	Data Rate (bps)						
		6M		9M	12M	18M	24M	36M	48M	54M
CH 149	5745	17.40	CH 157	17.40	17.40	17.30	17.30	17.30	17.30	17.40
CH 157	5785	17.50								
CH 165	5825	17.40								

802.11n HT20 RF Output Power (dBm)										
Power vs. Channel			Power vs Data Rate							
Channel	Frequency (MHz)	MCS Index	Channel	MCS Index						
		MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 149	5745	17.10	CH 157	17.60	17.50	17.50	17.40	17.40	17.40	17.40
CH 157	5785	17.70								
CH 165	5825	17.20								

802.11n HT40 RF Output Power (dBm)										
Power vs. Channel			Power vs Data Rate							
Channel	Frequency (MHz)	MCS Index	Channel	MCS Index						
		MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 151	5755	17.30	CH 159	17.30	17.20	17.20	17.30	17.30	17.30	17.20
CH 159	5795	17.40								

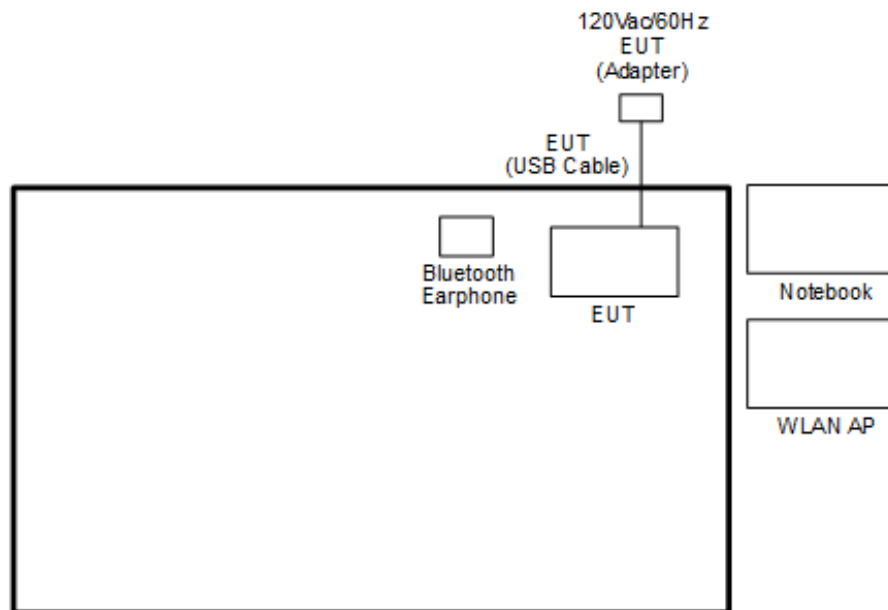
802.11ac VHT20 RF Output Power (dBm)											
Power vs. Channel			Power vs Data Rate								
Channel	Frequency (MHz)	MCS Index	Channel	MCS Index							
		MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
CH 149	5745	17.20	CH 157	17.70	17.60	17.60	17.50	17.50	17.50	17.50	17.50
CH 157	5785	17.80									
CH 165	5825	17.30									

802.11ac VHT40 RF Output Power (dBm)												
Power vs. Channel			Power vs Data Rate									
Channel	Frequency (MHz)	MCS Index	Channel	MCS Index								
		MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 151	5755	17.40	CH 159	17.40	17.30	17.30	17.40	17.40	17.40	17.30	17.30	17.30
CH 159	5795	17.50										

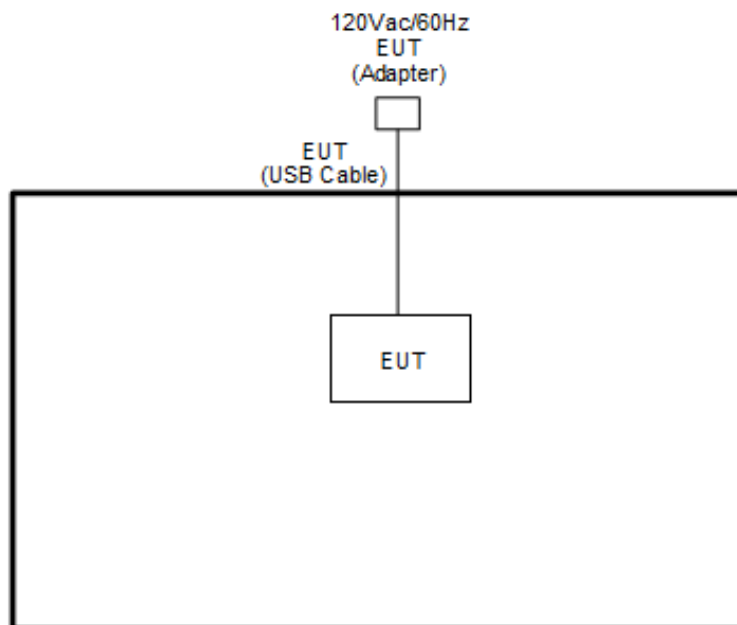
802.11ac VHT80 RF Output Power (dBm)												
Power vs. Channel			Power vs Data Rate									
Channel	Frequency (MHz)	MCS Index	Channel	MCS Index								
		MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 155	5775	17.60	CH 155	17.50	17.40	17.40	17.30	17.30	17.40	17.30	17.30	17.40

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	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, utility "QRCT4.0 v00142.0" 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.

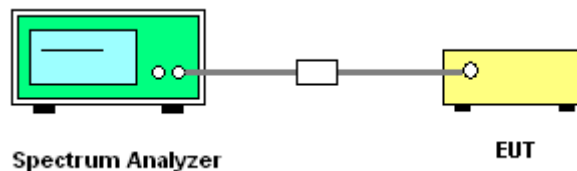
3.1.2 Measuring Instruments

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.

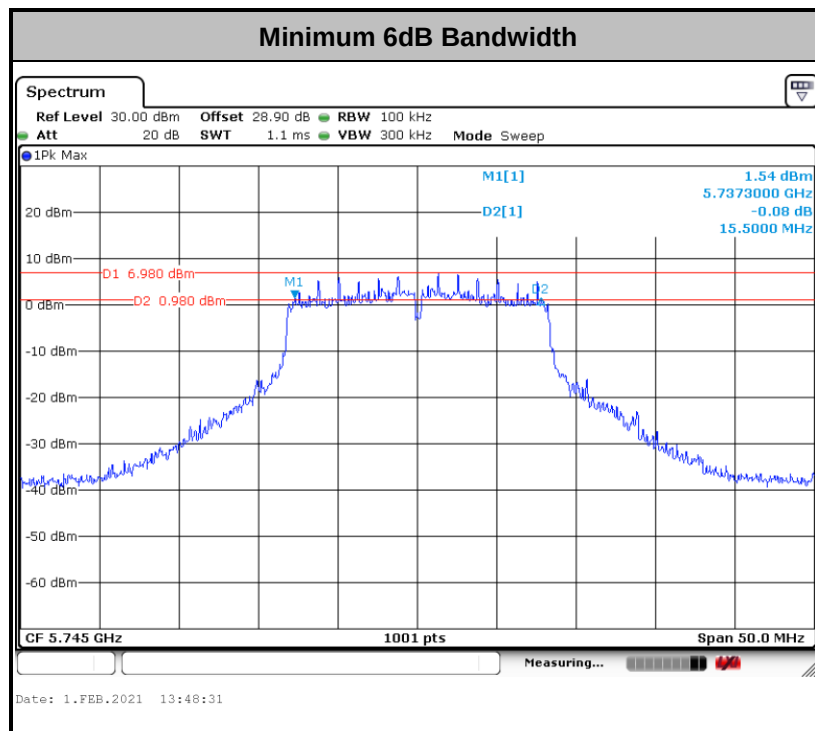
3.1.4 Test Setup

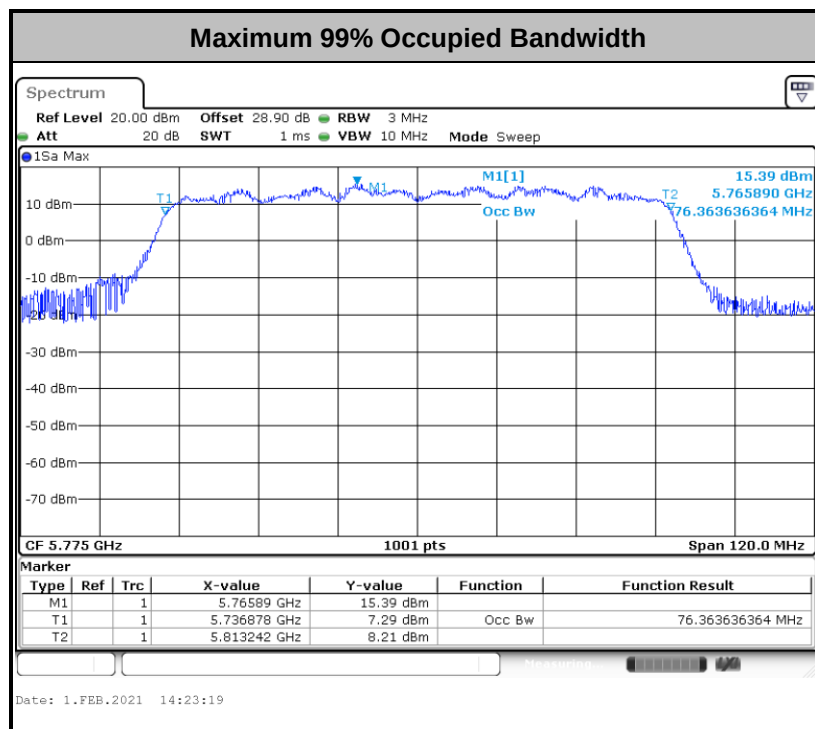
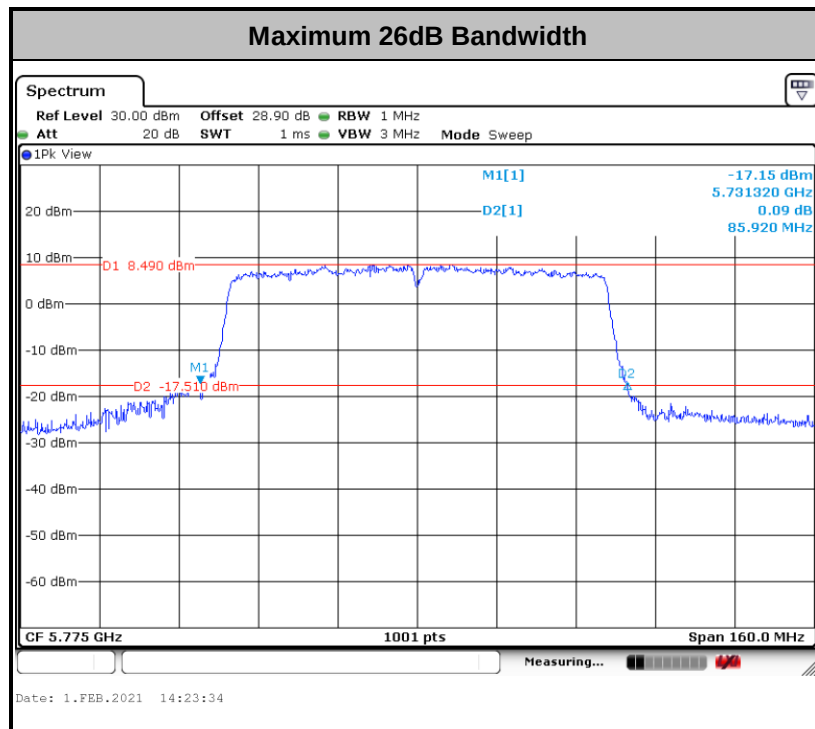


3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Test Engineer :	Kathy Chen	Temperature :	23.2~25.1℃
		Relative Humidity :	56.1~58.9%

Band IV single antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	149	5745	16.78	-	25.15	-	15.50	-	0.5	Pass
11a	6Mbps	1	157	5785	16.78	-	25.00	-	15.55	-	0.5	Pass
11a	6Mbps	1	165	5825	16.83	-	25.15	-	15.60	-	0.5	Pass
VHT20	MCS0	1	149	5745	17.98	-	26.25	-	16.55	-	0.5	Pass
VHT20	MCS0	1	157	5785	18.03	-	26.80	-	16.55	-	0.5	Pass
VHT20	MCS0	1	165	5825	17.98	-	26.50	-	16.75	-	0.5	Pass
VHT40	MCS0	1	151	5755	36.46	-	42.12	-	35.37	-	0.5	Pass
VHT40	MCS0	1	159	5795	36.56	-	41.94	-	35.28	-	0.5	Pass
VHT80	MCS0	1	155	5775	76.36	-	85.92	-	75.20	-	0.5	Pass





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.

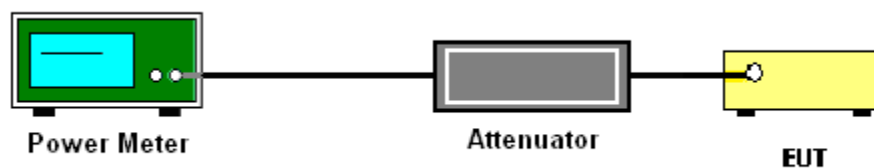
3.2.3 Test Procedures

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

Test Engineer :	Kathy Chen	Temperature :	23.2~25.1℃
		Relative Humidity :	56.1~58.9%

Band IV single antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	17.40	-		30.00	-	2.50	-	Pass
11a	6Mbps	1	157	5785	17.50	-		30.00	-	2.50	-	Pass
11a	6Mbps	1	165	5825	17.40	-		30.00	-	2.50	-	Pass
HT20	MCS0	1	149	5745	17.10	-		30.00	-	2.50	-	Pass
HT20	MCS0	1	157	5785	17.70	-		30.00	-	2.50	-	Pass
HT20	MCS0	1	165	5825	17.20	-		30.00	-	2.50	-	Pass
HT40	MCS0	1	151	5755	17.30	-		30.00	-	2.50	-	Pass
HT40	MCS0	1	159	5795	17.40	-		30.00	-	2.50	-	Pass
VHT20	MCS0	1	149	5745	17.20	-		30.00	-	2.50	-	Pass
VHT20	MCS0	1	157	5785	17.80	-		30.00	-	2.50	-	Pass
VHT20	MCS0	1	165	5825	17.30	-		30.00	-	2.50	-	Pass
VHT40	MCS0	1	151	5755	17.40	-		30.00	-	2.50	-	Pass
VHT40	MCS0	1	159	5795	17.50	-		30.00	-	2.50	-	Pass
VHT80	MCS0	1	155	5775	17.60	-		30.00	-	2.50	-	Pass

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

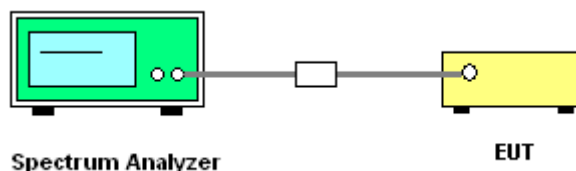
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section F) Maximum power spectral density.

Method SA-3

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

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 1 MHz.
 - Set VBW $\geq$ 3 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - Sweep time $\leq$ (number of points in sweep) $\times$ T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Detector = power averaging (rms).
 - Trace mode = max hold.
 - Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
 2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

3.3.4 Test Setup

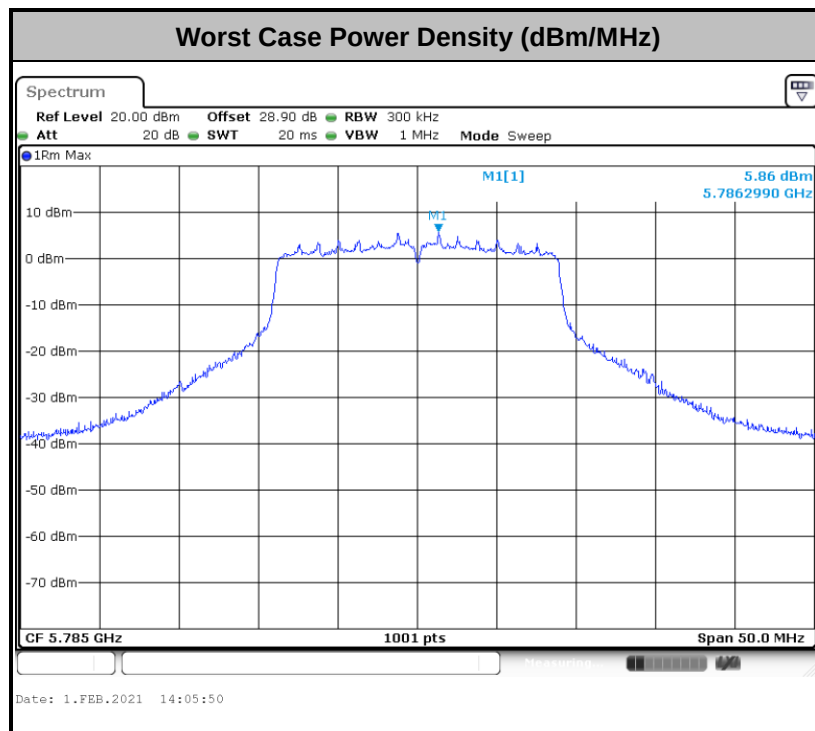




3.3.5 Test Result of Power Spectral Density

Test Engineer :	Kathy Chen	Temperature :	23.2~25.1℃
		Relative Humidity :	56.1~58.9%

Band IV single antenna														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	2.22	-	7.32	-		30.00	-	2.50	-	Pass
11a	6Mbps	1	157	5785	2.22	-	7.50	-		30.00	-	2.50	-	Pass
11a	6Mbps	1	165	5825	2.22	-	7.50	-		30.00	-	2.50	-	Pass
VHT20	MCS0	1	149	5745	2.22	-	7.27	-		30.00	-	2.50	-	Pass
VHT20	MCS0	1	157	5785	2.22	-	8.08	-		30.00	-	2.50	-	Pass
VHT20	MCS0	1	165	5825	2.22	-	7.35	-		30.00	-	2.50	-	Pass
VHT40	MCS0	1	151	5755	2.22	-	2.93	-		30.00	-	2.50	-	Pass
VHT40	MCS0	1	159	5795	2.22	-	3.18	-		30.00	-	2.50	-	Pass
VHT80	MCS0	1	155	5775	2.22	-	1.64	-		30.00	-	2.50	-	Pass



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.

<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.

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

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.

3.4.1 Measuring Instruments

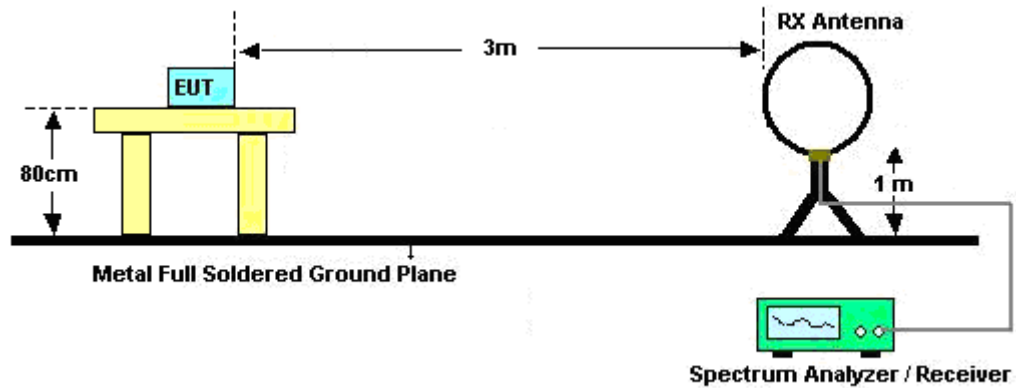
See list of measuring equipment of this test report.

3.4.2 Test Procedures

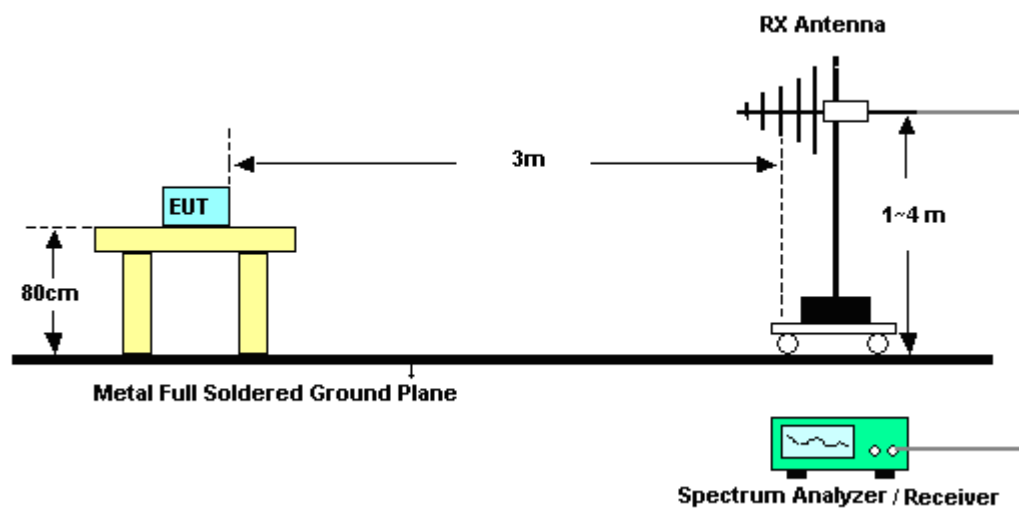
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
(1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold(2) Procedure for Peak Unwanted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

3.4.3 Test Setup

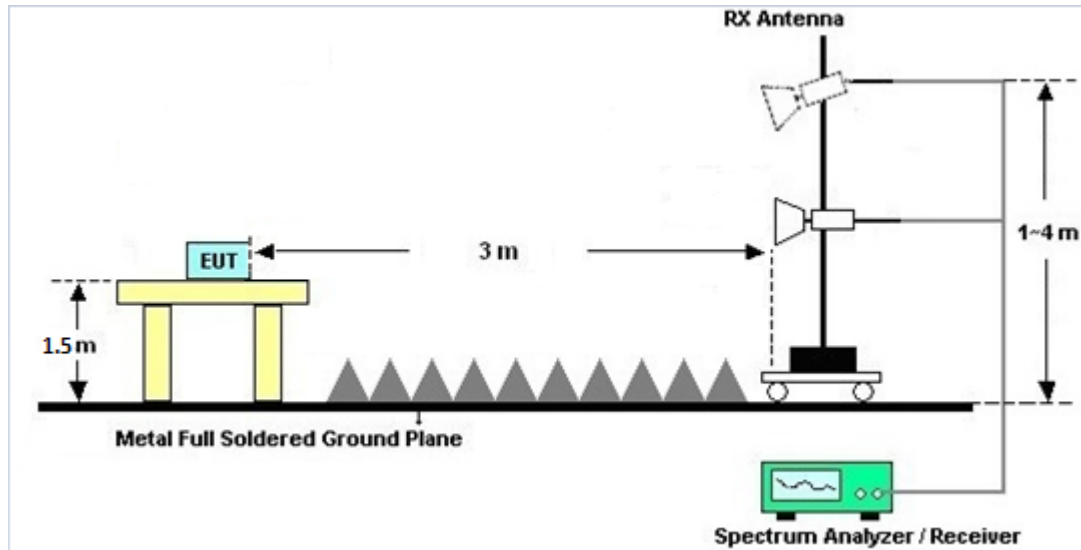
For radiated emissions below 30MHz



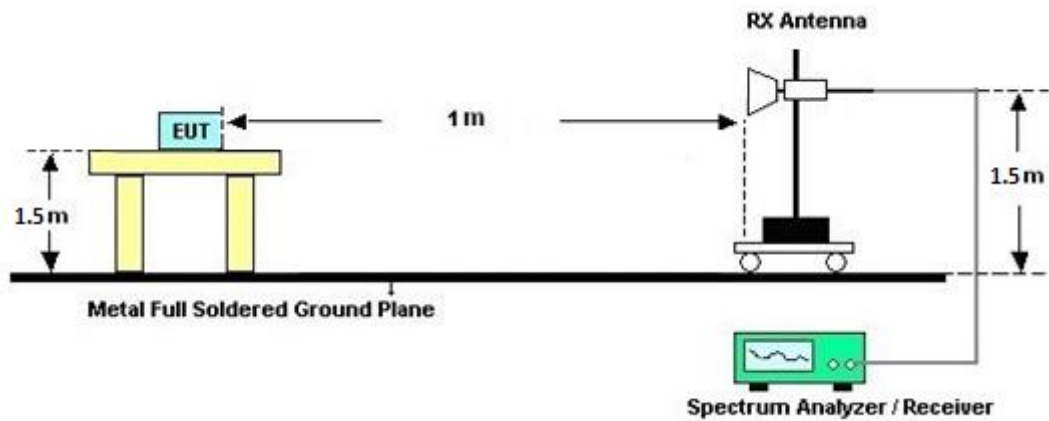
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



**3.4.4 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.

3.4.5 Test Result of Radiated Band Edges

Please refer to Appendix B and C.

3.4.6 Duty Cycle

Please refer to Appendix D.

3.4.7 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

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.

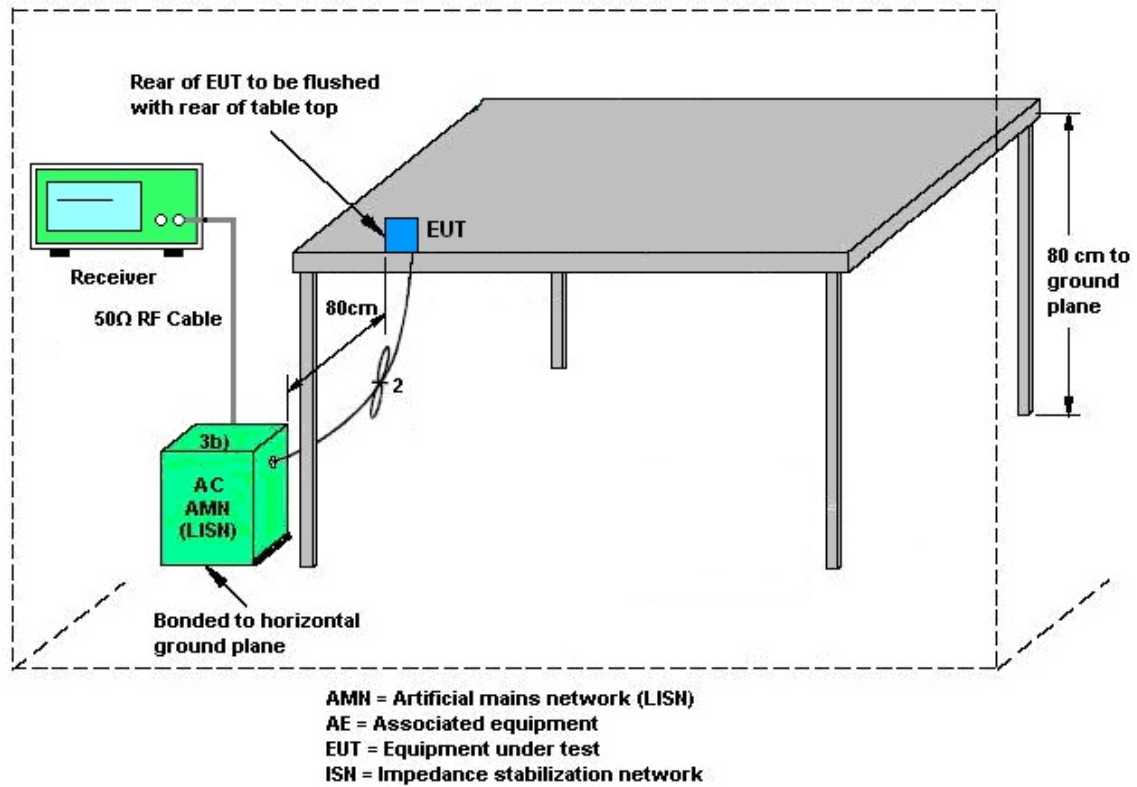
3.5.2 Measuring Instruments

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 A.



3.6 Automatically Discontinue Transmission

3.6.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.



3.7 Antenna Requirements

3.7.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jul. 14, 2020	Feb. 01, 2021~ Feb. 03, 2021	Jul. 13, 2021	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00802N1D01 N-06	47020 & 06	30MHz to 1GHz	Oct. 11, 2020	Feb. 01, 2021~ Feb. 03, 2021	Oct. 10, 2021	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1G	Sep. 30, 2020	Feb. 01, 2021~ Feb. 03, 2021	Sep. 29, 2021	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-152 2	1G~18GHz	Sep. 29, 2020	Feb. 01, 2021~ Feb. 03, 2021	Sep. 28, 2021	Radiation (03CH16-HY)
Amplifier	EMCI	EMC051845S E	980729	1-18GHz	Jul. 10, 2020	Feb. 01, 2021~ Feb. 03, 2021	Jul. 09, 2021	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 576	18GHz ~40GHz	May 22, 2020	Feb. 01, 2021~ Feb. 03, 2021	May 21, 2021	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY532702 64	1GHz~26.5GHz	Dec. 10, 2020	Feb. 01, 2021~ Feb. 03, 2021	Dec. 09, 2021	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A (MXE)	MY572901 11	3Hz~26.5GHz	Dec. 11, 2020	Feb. 01, 2021~ Feb. 03, 2021	Dec. 10, 2021	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11680/ 4PE	NA	Aug. 29, 2020	Feb. 01, 2021~ Feb. 03, 2021	Aug. 28, 2021	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11688/ 4PE	NA	Aug. 29, 2020	Feb. 01, 2021~ Feb. 03, 2021	Aug. 28, 2021	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	EC-A5-300 -5757	NA	Aug. 29, 2020	Feb. 01, 2021~ Feb. 03, 2021	Aug. 28, 2021	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Feb. 01, 2021~ Feb. 03, 2021	N/A	Radiation (03CH16-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Feb. 01, 2021~ Feb. 03, 2021	N/A	Radiation (03CH16-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Feb. 01, 2021~ Feb. 03, 2021	N/A	Radiation (03CH16-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Feb. 01, 2021~ Feb. 03, 2021	N/A	Radiation (03CH16-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jan. 29, 2021	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 11, 2020	Jan. 29, 2021	Sep. 10, 2021	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 18, 2020	Jan. 29, 2021	Nov. 17, 2021	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 16, 2020	Jan. 29, 2021	Nov. 15, 2021	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jan. 29, 2021	N/A	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 31, 2020	Jan. 29, 2021	Dec. 30, 2021	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBE CK	ESHVTS 9561-F N3-Z2	109561-F N0037308 51	9kHz-200MHz	Nov. 02, 2020	Jan. 29, 2021	Nov. 01, 2021	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34893241	N/A	Mar. 02, 2020	Jan. 28, 2021~ Feb. 02, 2021	Mar. 01, 2021	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054S NO10	10MHz~6GHz	Dec. 23, 2020	Jan. 28, 2021~ Feb. 02, 2021	Dec. 22, 2021	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz ~ 40GHz	Jul. 22, 2020	Jan. 28, 2021~ Feb. 02, 2021	Jul. 21, 2021	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2020	Jan. 28, 2021~ Feb. 02, 2021	Mar. 16, 2021	Conducted (TH05-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% ($U = 2Uc(y)$)	4.5
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.3
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7
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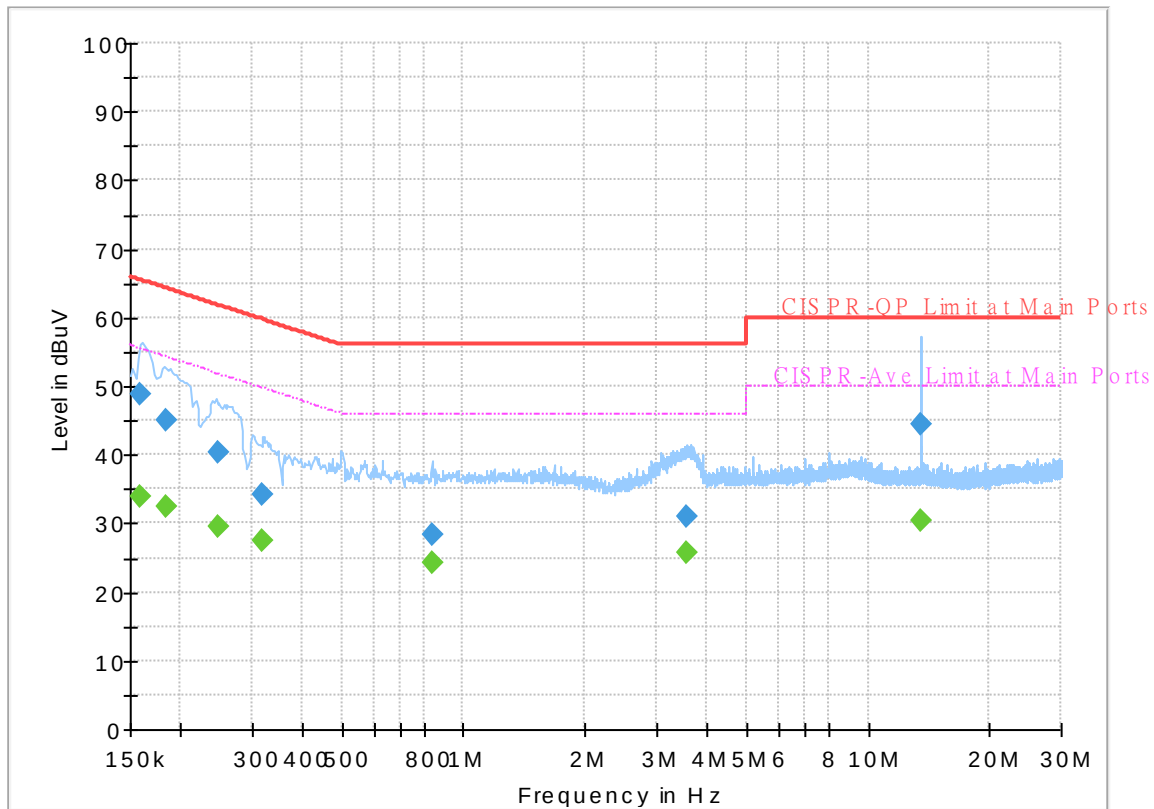
Appendix A. AC Conducted Emission Test Results

Test Engineer :	Tom Lee	Temperature :	23~26℃
		Relative Humidity :	40~50%

EUT Information

Report NO : 002628-02
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



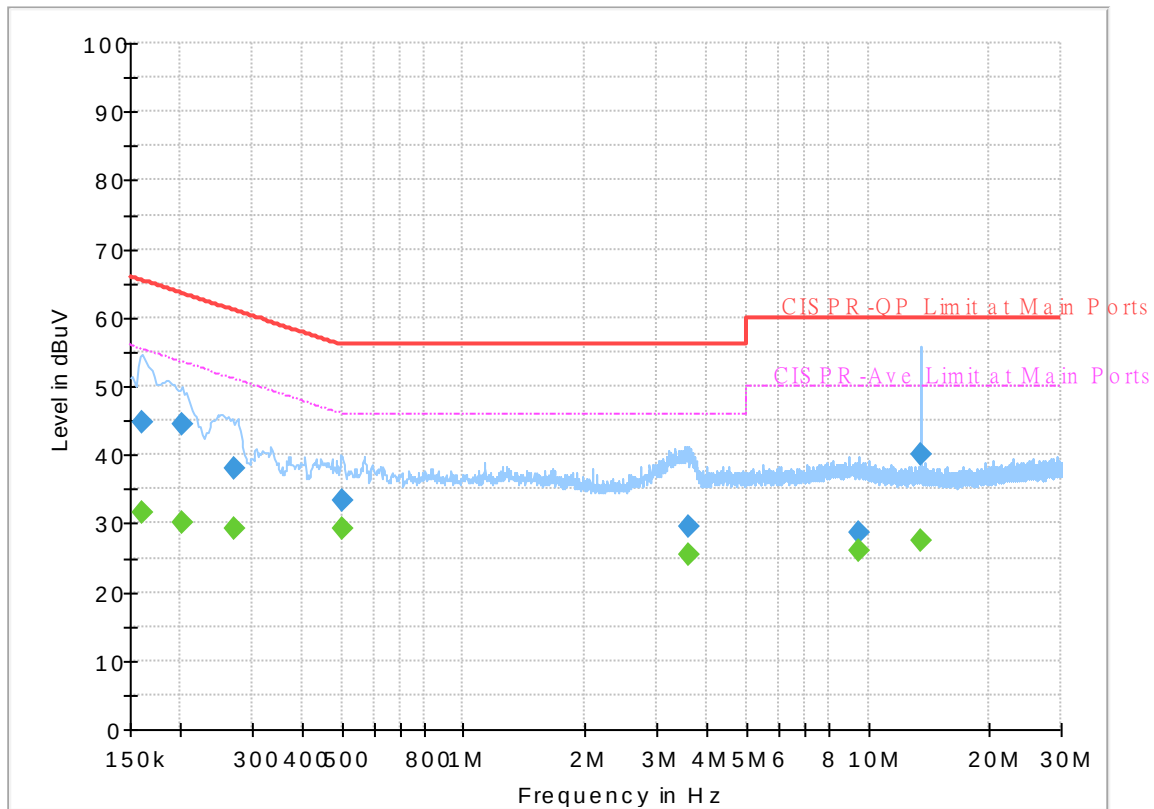
Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.158460	---	33.96	55.54	21.58	L1	OFF	19.7
0.158460	48.92	---	65.54	16.62	L1	OFF	19.7
0.183750	---	32.48	54.31	21.83	L1	OFF	19.7
0.183750	45.15	---	64.31	19.16	L1	OFF	19.7
0.247560	---	29.50	51.84	22.34	L1	OFF	19.7
0.247560	40.36	---	61.84	21.48	L1	OFF	19.7
0.316500	---	27.41	49.80	22.39	L1	OFF	19.7
0.316500	34.14	---	59.80	25.66	L1	OFF	19.7
0.834900	---	24.21	46.00	21.79	L1	OFF	20.2
0.834900	28.32	---	56.00	27.68	L1	OFF	20.2
3.576750	---	25.82	46.00	20.18	L1	OFF	20.1
3.576750	30.86	---	56.00	25.14	L1	OFF	20.1
13.560000	---	30.34	50.00	19.66	L1	OFF	20.3
13.560000	44.55	---	60.00	15.45	L1	OFF	20.3

EUT Information

Report NO : 002628-02
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)
0.161237	---	31.47	55.40	23.93	N	OFF	19.7
0.161237	44.76	---	65.40	20.64	N	OFF	19.7
0.201570	---	30.23	53.55	23.32	N	OFF	19.7
0.201570	44.36	---	63.55	19.19	N	OFF	19.7
0.271950	---	29.17	51.06	21.89	N	OFF	19.8
0.271950	38.12	---	61.06	22.94	N	OFF	19.8
0.499290	---	29.36	46.01	16.65	N	OFF	19.9
0.499290	33.24	---	56.01	22.77	N	OFF	19.9
3.598980	---	25.41	46.00	20.59	N	OFF	20.1
3.598980	29.47	---	56.00	26.53	N	OFF	20.1
9.523500	---	25.97	50.00	24.03	N	OFF	20.2
9.523500	28.57	---	60.00	31.43	N	OFF	20.2
13.560000	---	27.44	50.00	22.56	N	OFF	20.4
13.560000	40.11	---	60.00	19.89	N	OFF	20.4



Appendix B. Radiated Spurious Emission

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

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5620	53.84	-14.36	68.2	38.3	31.66	13.66	29.78	145	327	P	H
		5697.6	60.65	-42.78	103.43	45.03	31.7	13.73	29.81	145	327	P	H
		5719.6	64.82	-45.87	110.69	49.06	31.82	13.75	29.81	145	327	P	H
		5722.6	69.15	-47.58	116.73	53.37	31.84	13.75	29.81	145	327	P	H
	*	5745	112.4	-	-	96.48	31.97	13.77	29.82	145	327	P	H
	*	5745	104.36	-	-	88.44	31.97	13.77	29.82	145	327	A	H
													H
													H
		5609	53.91	-14.29	68.2	38.35	31.68	13.65	29.77	107	37	P	V
		5695.8	57.45	-44.65	102.1	41.83	31.69	13.73	29.8	107	37	P	V
		5719.6	60.39	-50.3	110.69	44.63	31.82	13.75	29.81	107	37	P	V
		5721	61.1	-51.98	113.08	45.33	31.83	13.75	29.81	107	37	P	V
	*	5745	105.43	-	-	89.51	31.97	13.77	29.82	107	37	P	V
	*	5745	97.3	-	-	81.38	31.97	13.77	29.82	107	37	A	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		5606.6	53.76	-14.44	68.2	38.19	31.69	13.65	29.77	145	329	P	H
		5696.4	53.31	-49.24	102.55	37.69	31.69	13.73	29.8	145	329	P	H
		5701.2	54.96	-50.58	105.54	39.33	31.71	13.73	29.81	145	329	P	H
		5720.2	55.13	-56.13	111.26	39.37	31.82	13.75	29.81	145	329	P	H
	*	5785	112.51	-	-	96.54	32	13.81	29.84	145	329	P	H
	*	5785	104.82	-	-	88.85	32	13.81	29.84	145	329	A	H
		5853.2	55.9	-59	114.9	39.84	32.11	13.81	29.86	145	329	P	H
		5860.4	58.21	-51.08	109.29	42.15	32.12	13.81	29.87	145	329	P	H
		5883	55.33	-43.93	99.26	39.23	32.17	13.81	29.88	145	329	P	H
		5940.2	54.03	-14.17	68.2	37.84	32.28	13.81	29.9	145	329	P	H
													H
													H
		5631.4	53.64	-14.56	68.2	38.11	31.64	13.67	29.78	100	34	P	V
		5659.8	53.61	-21.87	75.48	38.09	31.62	13.69	29.79	100	34	P	V
		5703.6	54.08	-52.13	106.21	38.44	31.72	13.73	29.81	100	34	P	V
		5721.8	53.13	-61.77	114.9	37.36	31.83	13.75	29.81	100	34	P	V
	*	5785	104.69	-	-	88.72	32	13.81	29.84	100	34	P	V
	*	5785	96.89	-	-	80.92	32	13.81	29.84	100	34	A	V
		5850.8	53.5	-66.88	120.38	37.45	32.1	13.81	29.86	100	34	P	V
		5871.4	53.47	-52.74	106.21	37.39	32.14	13.81	29.87	100	34	P	V
		5876.2	54.33	-49.98	104.31	38.24	32.15	13.81	29.87	100	34	P	V
		5934.6	54.5	-13.7	68.2	38.32	32.27	13.81	29.9	100	34	P	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz	*	5825	112.06	-	-	96.04	32.05	13.82	29.85	152	329	P	H
	*	5825	104.27	-	-	88.25	32.05	13.82	29.85	152	329	A	H
		5853	62.75	-52.61	115.36	46.69	32.11	13.81	29.86	152	329	P	H
		5858	66.79	-43.17	109.96	50.73	32.12	13.81	29.87	152	329	P	H
		5876	62.34	-42.12	104.46	46.25	32.15	13.81	29.87	152	329	P	H
		5932	54.44	-13.76	68.2	38.26	32.26	13.81	29.89	152	329	P	H
													H
													H
	*	5825	104.42	-	-	88.4	32.05	13.82	29.85	100	35	P	V
	*	5825	96.47	-	-	80.45	32.05	13.82	29.85	100	35	A	V
		5854.4	57.84	-54.33	112.17	41.78	32.11	13.81	29.86	100	35	P	V
		5861.4	58.91	-50.1	109.01	42.85	32.12	13.81	29.87	100	35	P	V
		5903.4	54.65	-29.5	84.15	38.51	32.21	13.81	29.88	100	35	P	V
		5945	53.99	-14.21	68.2	37.79	32.29	13.81	29.9	100	35	P	V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	49.4	-24.6	74	44.89	39.91	20.11	55.51	100	0	P	H
		17235	50.01	-18.19	68.2	40.68	40.9	25.16	56.73	100	0	P	H
		17956	60.07	-13.93	74	43.53	48.38	25.44	57.28	100	0	P	H
		17956	47.65	-6.35	54	31.11	48.38	25.44	57.28	100	0	A	H
		11490	49.73	-24.27	74	45.22	39.91	20.11	55.51	100	0	P	V
		17235	50.77	-17.43	68.2	41.44	40.9	25.16	56.73	100	0	P	V
		17967	60.65	-13.35	74	43.89	48.61	25.44	57.29	100	0	P	V
		17967	47.96	-6.04	54	31.2	48.61	25.44	57.29	100	0	A	V
802.11a CH 157 5785MHz		11570	48.65	-25.35	74	44.15	39.76	20.18	55.44	100	0	P	H
		17355	50.29	-17.91	68.2	40.38	41.6	25.21	56.9	100	0	P	H
		17978	60.88	-13.12	74	43.89	48.84	25.44	57.29	100	0	P	H
		17978	49.05	-4.95	54	32.06	48.84	25.44	57.29	100	0	A	H
		11570	48.62	-25.38	74	44.12	39.76	20.18	55.44	100	0	P	V
		17355	50.66	-17.54	68.2	40.75	41.6	25.21	56.9	100	0	P	V
		17978	61.23	-12.77	74	44.24	48.84	25.44	57.29	100	0	P	V
		17978	49.03	-4.97	54	32.04	48.84	25.44	57.29	100	0	A	V
802.11a CH 165 5825MHz		11650	48.9	-25.1	74	44.5	39.55	20.23	55.38	100	0	P	H
		17475	50.29	-17.91	68.2	39.65	42.45	25.25	57.06	100	0	P	H
		18000	61.37	-12.63	74	43.92	49.3	25.45	57.3	100	0	P	H
		18000	48.7	-5.3	54	31.25	49.3	25.45	57.3	100	0	A	H
		11650	49.11	-24.89	74	44.71	39.55	20.23	55.38	100	0	P	V
		17475	50.54	-17.66	68.2	39.9	42.45	25.25	57.06	100	0	P	V
		18000	61.53	-12.47	74	44.08	49.3	25.45	57.3	100	0	P	V
		18000	48.56	-5.44	54	31.11	49.3	25.45	57.3	100	0	A	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 VHT20 (Band Edge @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20 CH 149 5745MHz		5610	54.46	-13.74	68.2	38.9	31.68	13.65	29.77	144	329	P	H
		5698.4	64.73	-39.29	104.02	49.11	31.7	13.73	29.81	144	329	P	H
		5717.4	66.88	-43.19	110.07	51.14	31.8	13.75	29.81	144	329	P	H
		5723.4	67.58	-50.97	118.55	51.8	31.84	13.75	29.81	144	329	P	H
	*	5745	111.87	-	-	95.95	31.97	13.77	29.82	144	329	P	H
	*	5745	104.17	-	-	88.25	31.97	13.77	29.82	144	329	A	H
													H
													H
		5612.6	53.43	-14.77	68.2	37.88	31.67	13.65	29.77	101	35	P	V
		5694.4	53.79	-47.28	101.07	38.18	31.69	13.72	29.8	101	35	P	V
		5720	61.11	-49.69	110.8	45.35	31.82	13.75	29.81	101	35	P	V
		5722	59.88	-55.48	115.36	44.11	31.83	13.75	29.81	101	35	P	V
	*	5745	104.3	-	-	88.38	31.97	13.77	29.82	101	35	P	V
	*	5745	96.64	-	-	80.72	31.97	13.77	29.82	101	35	A	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20 CH 157 5785MHz		5629.4	53.73	-14.47	68.2	38.2	31.64	13.67	29.78	153	329	P	H
		5683.2	54.36	-38.44	92.8	38.78	31.67	13.71	29.8	153	329	P	H
		5711.8	55.57	-52.94	108.51	39.87	31.77	13.74	29.81	153	329	P	H
		5725	55.05	-67.15	122.2	39.27	31.85	13.75	29.82	153	329	P	H
	*	5785	112.79	-	-	96.82	32	13.81	29.84	153	329	P	H
	*	5785	105.13	-	-	89.16	32	13.81	29.84	153	329	A	H
		5850.4	61.08	-60.21	121.29	45.03	32.1	13.81	29.86	153	329	P	H
		5863.2	58.88	-49.62	108.5	42.81	32.13	13.81	29.87	153	329	P	H
		5876.6	55.7	-48.31	104.01	39.61	32.15	13.81	29.87	153	329	P	H
		5925.8	54.42	-13.78	68.2	38.25	32.25	13.81	29.89	153	329	P	H
													H
													H
		5628.8	53.68	-14.52	68.2	38.15	31.64	13.67	29.78	100	35	P	V
		5656.8	53.32	-19.93	73.25	37.81	31.61	13.69	29.79	100	35	P	V
		5711.6	53.09	-55.36	108.45	37.39	31.77	13.74	29.81	100	35	P	V
		5722.6	54.47	-62.26	116.73	38.69	31.84	13.75	29.81	100	35	P	V
	*	5785	105.46	-	-	89.49	32	13.81	29.84	100	35	P	V
	*	5785	97.72	-	-	81.75	32	13.81	29.84	100	35	A	V
		5853.4	54.08	-60.37	114.45	38.02	32.11	13.81	29.86	100	35	P	V
		5858	53.86	-56.1	109.96	37.8	32.12	13.81	29.87	100	35	P	V
		5885	54.95	-42.82	97.77	38.85	32.17	13.81	29.88	100	35	P	V
		5932.8	53.88	-14.32	68.2	37.69	32.27	13.81	29.89	100	35	P	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20 CH 165 5825MHz	*	5825	110.87	-	-	94.85	32.05	13.82	29.85	146	327	P	H
	*	5825	103.22	-	-	87.2	32.05	13.82	29.85	146	327	A	H
		5851.8	65.63	-52.47	118.1	49.58	32.1	13.81	29.86	146	327	P	H
		5862.6	65.55	-43.12	108.67	49.48	32.13	13.81	29.87	146	327	P	H
		5882.6	62.68	-36.88	99.56	46.58	32.17	13.81	29.88	146	327	P	H
		5930.8	54.86	-13.34	68.2	38.68	32.26	13.81	29.89	146	327	P	H
													H
													H
	*	5825	101.93	-	-	85.91	32.05	13.82	29.85	306	318	P	V
	*	5825	94.34	-	-	78.32	32.05	13.82	29.85	306	318	A	V
		5854.6	53.59	-58.12	111.71	37.53	32.11	13.81	29.86	306	318	P	V
		5867.8	58.39	-48.82	107.21	42.31	32.14	13.81	29.87	306	318	P	V
		5882.2	54.02	-45.83	99.85	37.93	32.16	13.81	29.88	306	318	P	V
		5927.8	53.62	-14.58	68.2	37.44	32.26	13.81	29.89	306	318	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 VHT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20 CH 149 5745MHz		11490	48.62	-25.38	74	44.11	39.91	20.11	55.51	100	0	P	H
		17235	50.34	-17.86	68.2	41.01	40.9	25.16	56.73	100	0	P	H
		17978	61.29	-12.71	74	44.3	48.84	25.44	57.29	100	0	P	H
		17978	48.24	-5.76	54	31.25	48.84	25.44	57.29	100	0	A	H
		11490	49.02	-24.98	74	44.51	39.91	20.11	55.51	100	0	P	V
		17235	51.42	-16.78	68.2	42.09	40.9	25.16	56.73	100	0	P	V
		17967	60.81	-13.19	74	44.05	48.61	25.44	57.29	100	0	P	V
		17967	47.94	-6.06	54	31.18	48.61	25.44	57.29	100	0	A	V
802.11ac VHT20 CH 157 5785MHz		11570	48.94	-25.06	74	44.44	39.76	20.18	55.44	100	0	P	H
		17355	51.48	-16.72	68.2	41.57	41.6	25.21	56.9	100	0	P	H
		17967	60.75	-13.25	74	43.99	48.61	25.44	57.29	100	0	P	H
		17967	47.91	-6.09	54	31.15	48.61	25.44	57.29	100	0	A	H
		11570	48.85	-25.15	74	44.35	39.76	20.18	55.44	100	0	P	V
		17355	51.19	-17.01	68.2	41.28	41.6	25.21	56.9	100	0	P	V
		17967	60.83	-13.17	74	44.07	48.61	25.44	57.29	100	0	P	V
		17967	48	-6	54	31.24	48.61	25.44	57.29	100	0	A	V
802.11ac VHT20 CH 165 5825MHz		11650	49.44	-24.56	74	45.04	39.55	20.23	55.38	100	0	P	H
		17475	50.8	-17.4	68.2	40.16	42.45	25.25	57.06	100	0	P	H
		18000	61.12	-12.88	74	43.67	49.3	25.45	57.3	100	0	P	H
		18000	48.48	-5.52	54	31.03	49.3	25.45	57.3	100	0	A	H
		11650	49.08	-24.92	74	44.68	39.55	20.23	55.38	100	0	P	V
		17475	50.86	-17.34	68.2	40.22	42.45	25.25	57.06	100	0	P	V
		17956	59.97	-14.03	74	43.43	48.38	25.44	57.28	100	0	P	V
		17956	48.72	-5.28	54	32.18	48.38	25.44	57.28	100	0	A	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 VHT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 151 5755MHz		5617.6	55.04	-13.16	68.2	39.49	31.66	13.66	29.77	148	327	P	H
		5693.4	60.45	-39.88	100.33	44.84	31.69	13.72	29.8	148	327	P	H
		5717	65.7	-44.26	109.96	49.96	31.8	13.75	29.81	148	327	P	H
		5724.2	66.77	-53.61	120.38	50.99	31.85	13.75	29.82	148	327	P	H
	*	5755	109.17	-	-	93.22	32	13.78	29.83	148	327	P	H
	*	5755	101.19	-	-	85.24	32	13.78	29.83	148	327	A	H
		5851.4	54.44	-64.57	119.01	38.39	32.1	13.81	29.86	148	327	P	H
		5857.6	55.92	-54.15	110.07	39.86	32.12	13.81	29.87	148	327	P	H
		5921.4	54.6	-16.25	70.85	38.44	32.24	13.81	29.89	148	327	P	H
		5925	54.45	-13.75	68.2	38.28	32.25	13.81	29.89	148	327	P	H
													H
													H
		5606.4	52.83	-15.37	68.2	37.26	31.69	13.65	29.77	314	325	P	V
		5680.4	53.77	-36.96	90.73	38.2	31.66	13.71	29.8	314	325	P	V
		5719.2	57.29	-53.29	110.58	41.53	31.82	13.75	29.81	314	325	P	V
		5724.8	59.22	-62.52	121.74	43.44	31.85	13.75	29.82	314	325	P	V
	*	5755	99.4	-	-	83.45	32	13.78	29.83	314	325	P	V
	*	5755	91.58	-	-	75.63	32	13.78	29.83	314	325	A	V
		5853.6	53.2	-60.79	113.99	37.14	32.11	13.81	29.86	314	325	P	V
		5868.2	54.09	-53.01	107.1	38.01	32.14	13.81	29.87	314	325	P	V
		5917.8	54.22	-19.29	73.51	38.06	32.24	13.81	29.89	314	325	P	V
		5931.4	54.18	-14.02	68.2	38	32.26	13.81	29.89	314	325	P	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 159 5795MHz		5616	54.73	-13.47	68.2	39.18	31.67	13.65	29.77	150	327	P	H
		5689.2	54.97	-42.27	97.24	39.37	31.68	13.72	29.8	150	327	P	H
		5710.6	54.86	-53.31	108.17	39.17	31.76	13.74	29.81	150	327	P	H
		5720.2	57.2	-54.06	111.26	41.44	31.82	13.75	29.81	150	327	P	H
	*	5795	108.89	-	-	92.91	32	13.82	29.84	150	327	P	H
	*	5795	100.74	-	-	84.76	32	13.82	29.84	150	327	A	H
		5854.6	59.77	-51.94	111.71	43.71	32.11	13.81	29.86	150	327	P	H
		5870	59.67	-46.93	106.6	43.59	32.14	13.81	29.87	150	327	P	H
		5885	57.35	-40.42	97.77	41.25	32.17	13.81	29.88	150	327	P	H
		5946	54.49	-13.71	68.2	38.29	32.29	13.81	29.9	150	327	P	H
													H
													H
		5623.8	54.21	-13.99	68.2	38.68	31.65	13.66	29.78	308	331	P	V
		5686.6	53.83	-41.49	95.32	38.24	31.67	13.72	29.8	308	331	P	V
		5703	52.9	-53.14	106.04	37.26	31.72	13.73	29.81	308	331	P	V
		5721.2	53.09	-60.45	113.54	37.32	31.83	13.75	29.81	308	331	P	V
	*	5795	100.39	-	-	84.41	32	13.82	29.84	308	331	P	V
	*	5795	92.2	-	-	76.22	32	13.82	29.84	308	331	A	V
		5855	53.6	-57.2	110.8	37.54	32.11	13.81	29.86	308	331	P	V
		5872	54.19	-51.85	106.04	38.11	32.14	13.81	29.87	308	331	P	V
		5921.6	55.35	-15.36	70.71	39.19	32.24	13.81	29.89	308	331	P	V
		5939.4	53.82	-14.38	68.2	37.63	32.28	13.81	29.9	308	331	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 VHT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 151 5755MHz		11510	48.57	-25.43	74	44.05	39.88	20.13	55.49	100	0	P	H
		17265	50.64	-17.56	68.2	41.25	40.99	25.17	56.77	100	0	P	H
		17967	60.92	-13.08	74	44.16	48.61	25.44	57.29	100	0	P	H
		17967	47.97	-6.03	54	31.21	48.61	25.44	57.29	100	0	A	H
		11510	48.53	-25.47	74	44.01	39.88	20.13	55.49	100	0	P	V
		17265	50.84	-17.36	68.2	41.45	40.99	25.17	56.77	100	0	P	V
		18000	61.33	-12.67	74	43.88	49.3	25.45	57.3	100	0	P	V
		18000	48.71	-5.29	54	31.26	49.3	25.45	57.3	100	0	A	V
802.11ac VHT40 CH 159 5795MHz		11590	48.36	-25.64	74	43.88	39.72	20.19	55.43	100	0	P	H
		17385	50.39	-17.81	68.2	40.25	41.86	25.22	56.94	100	0	P	H
		17956	60.68	-13.32	74	44.14	48.38	25.44	57.28	100	0	P	H
		17956	47.92	-6.08	54	31.38	48.38	25.44	57.28	100	0	A	H
		11590	49.04	-24.96	74	44.56	39.72	20.19	55.43	100	0	P	V
		17385	50.9	-17.3	68.2	40.76	41.86	25.22	56.94	100	0	P	V
		17978	60.81	-13.19	74	43.82	48.84	25.44	57.29	100	0	P	V
		17978	48.14	-5.86	54	31.15	48.84	25.44	57.29	100	0	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 155 5775MHz		5648	55.29	-12.91	68.2	39.8	31.6	13.68	29.79	149	328	P	H
		5698	69.44	-34.29	103.73	53.82	31.7	13.73	29.81	149	328	P	H
		5706.4	71.02	-35.97	106.99	55.35	31.74	13.74	29.81	149	328	P	H
		5721.2	75.72	-37.82	113.54	59.95	31.83	13.75	29.81	149	328	P	H
	*	5775	106.38	-	-	90.41	32	13.8	29.83	149	328	P	H
	*	5775	98.33	-	-	82.36	32	13.8	29.83	149	328	A	H
		5853.6	66.85	-47.14	113.99	50.79	32.11	13.81	29.86	149	328	P	H
		5856	66.69	-43.83	110.52	50.64	32.11	13.81	29.87	149	328	P	H
		5875	61.16	-44.04	105.2	45.07	32.15	13.81	29.87	149	328	P	H
		5935.8	54.34	-13.86	68.2	38.16	32.27	13.81	29.9	149	328	P	H
													H
													H
		5601	54.24	-13.96	68.2	38.67	31.7	13.64	29.77	311	330	P	V
		5691.4	55.37	-43.49	98.86	39.77	31.68	13.72	29.8	311	330	P	V
		5717.6	56.49	-53.64	110.13	40.74	31.81	13.75	29.81	311	330	P	V
		5721.2	56.88	-56.66	113.54	41.11	31.83	13.75	29.81	311	330	P	V
	*	5775	96.83	-	-	80.86	32	13.8	29.83	311	330	P	V
	*	5775	89.35	-	-	73.38	32	13.8	29.83	311	330	A	V
		5851.6	59.61	-58.94	118.55	43.56	32.1	13.81	29.86	311	330	P	V
		5858.6	59.61	-50.18	109.79	43.55	32.12	13.81	29.87	311	330	P	V
		5875.4	54.98	-49.92	104.9	38.89	32.15	13.81	29.87	311	330	P	V
		5937.6	54.22	-13.98	68.2	38.03	32.28	13.81	29.9	311	330	P	V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												

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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 155 5775MHz		11550	49.22	-24.78	74	44.72	39.8	20.16	55.46	100	0	P	H
		17325	51.29	-16.91	68.2	41.62	41.32	25.2	56.85	100	0	P	H
		17967	60.86	-13.14	74	44.1	48.61	25.44	57.29	100	0	P	H
		17967	48.21	-5.79	54	31.45	48.61	25.44	57.29	100	0	A	H
		11550	48.89	-25.11	74	44.39	39.8	20.16	55.46	100	0	P	V
		17325	50.81	-17.39	68.2	41.14	41.32	25.2	56.85	100	0	P	V
		17945	60.13	-13.87	74	43.83	48.15	25.43	57.28	100	0	P	V
		17945	47.95	-6.05	54	31.65	48.15	25.43	57.28	100	0	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission above 18GHz

5GHz WIFI 802.11ac VHT80 (SHF)

[illegible]



Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (LF)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
5GHz 802.11ac VHT80 LF		93.05	27.88	-15.62	43.5	43.85	15.19	1.47	32.63	-	-	P	H
		268.62	21.42	-24.58	46	31.93	19.39	2.76	32.66	-	-	P	H
		488.81	25.15	-20.85	46	30.07	23.97	3.74	32.63	-	-	P	H
		647.89	28.38	-17.62	46	30.06	26.49	4.37	32.54	-	-	P	H
		782.72	30.64	-15.36	46	30.49	28.07	4.86	32.78	-	-	P	H
		884.57	32.04	-13.96	46	30.2	29.1	5.23	32.49	100	0	P	H
													H
													H
													H
													H
													H
													H
		50.37	33.02	-6.98	40	50.7	14.2	0.97	32.85	100	0	P	V
		187.14	26.38	-17.12	43.5	41.95	15.05	2.25	32.87	-	-	P	V
		462.62	24.41	-21.59	46	29.81	23.51	3.64	32.55	-	-	P	V
		588.72	28.15	-17.85	46	30.91	25.74	4.17	32.67	-	-	P	V
		717.73	35.33	-10.67	46	36.08	27.1	4.63	32.48	-	-	P	V
		879.72	32.45	-13.55	46	30.62	29.13	5.21	32.51	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

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



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)
 = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
 = 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
 = 55.45 (dBμV/m)
2. Over Limit(dB)
 = Level(dBμV/m) – Limit Line(dBμV/m)
 = 55.45(dBμV/m) – 74(dBμV/m)
 = -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)
 = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
 = 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
 = 43.54 (dBμV/m)
2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)
 = 43.54(dBμV/m) – 54(dBμV/m)
 = -10.46(dB)

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

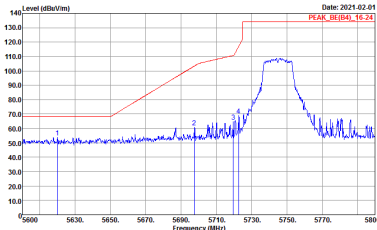
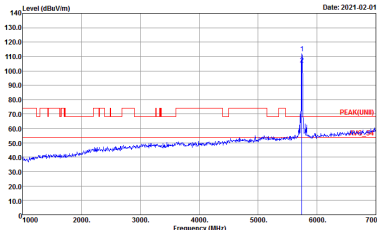


Appendix C. Radiated Spurious Emission Plots

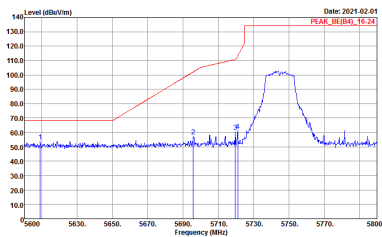
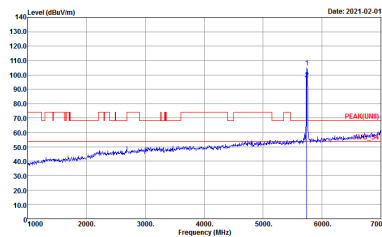
Test Engineer :	Karl Hou, Caster Liao and Andy Yang	Temperature :	20~25°C
		Relative Humidity :	50~60%

Band 4 - 5725~5850MHz

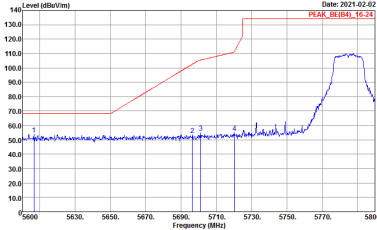
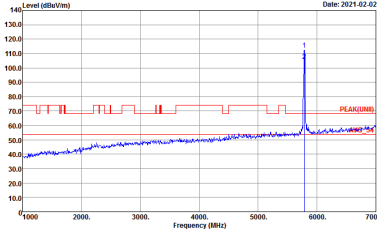
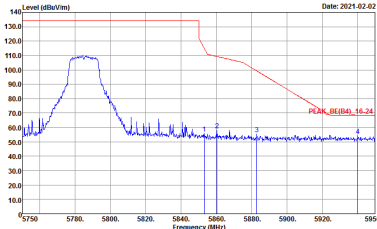
WIFI 802.11a (Band Edge @ 3m)

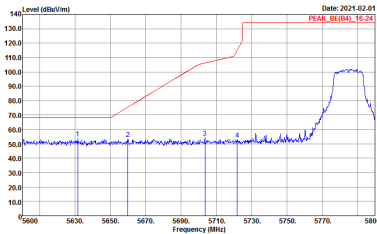
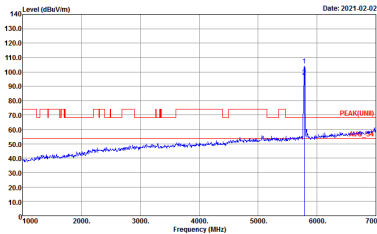
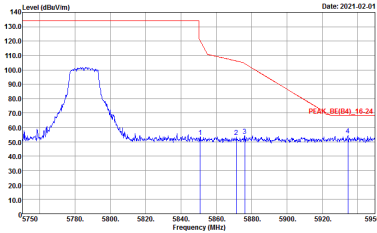
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02



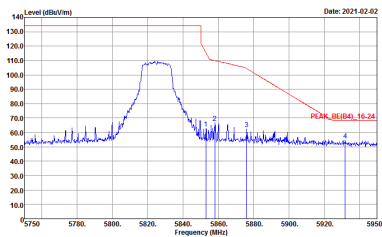
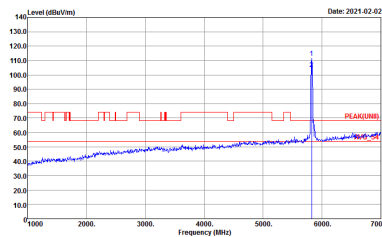
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH16-11Y Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02	 Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02



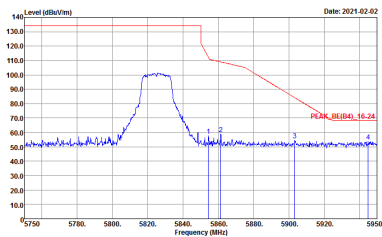
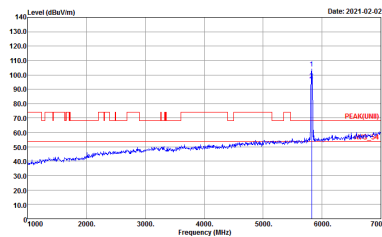
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02
	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02
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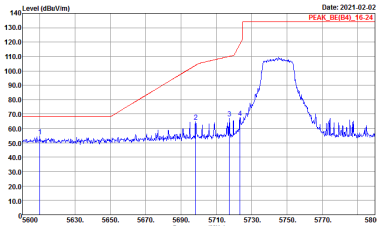
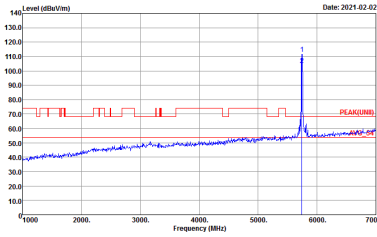
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ANT	802.11a CH165 5825MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-11Y Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02	 Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02



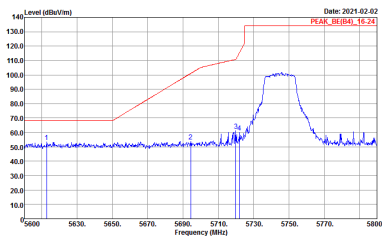
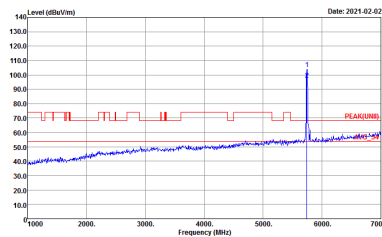
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH165-11Y Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02	 Site : 03CH165-11Y Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02

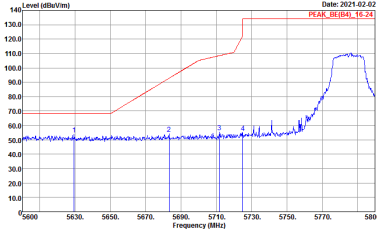
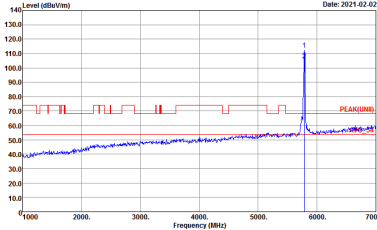
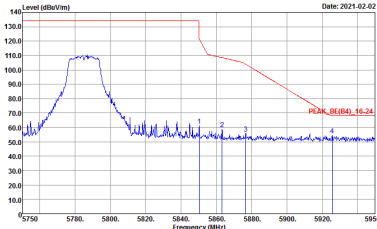


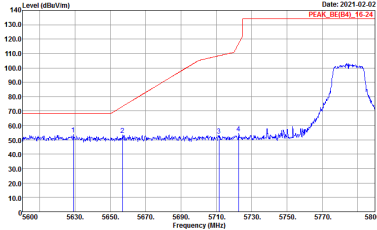
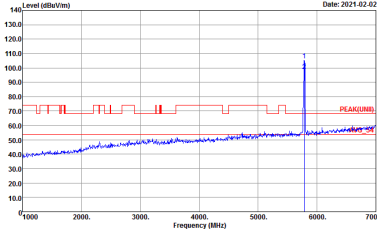
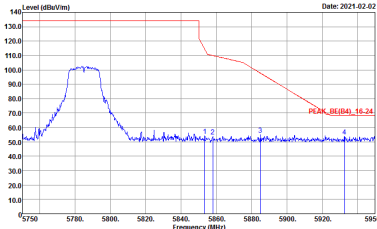
Band 4 5725~5850MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(84)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02

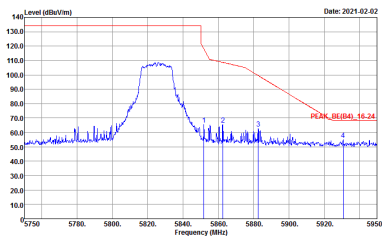
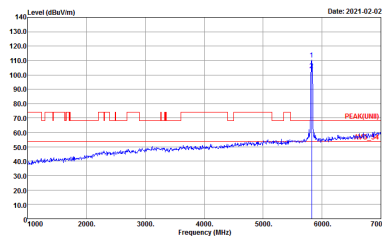


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1	Vertical	Fundamental
Peak Avg.	 Site : 03CH16-11Y Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02	 Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02

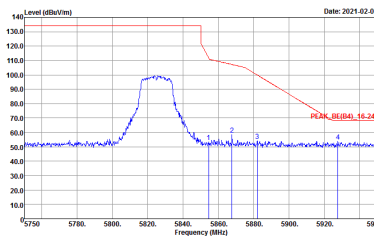
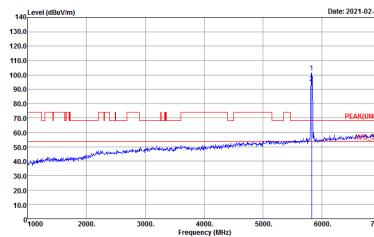
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH157 5785MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02
	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH157 5785MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02
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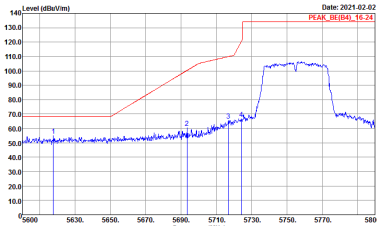
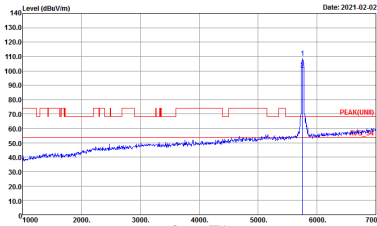
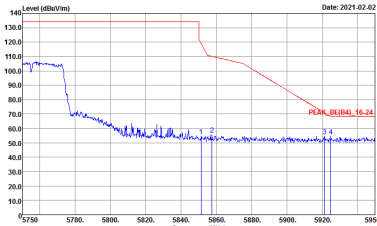
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-11Y Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02



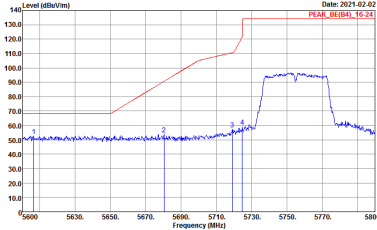
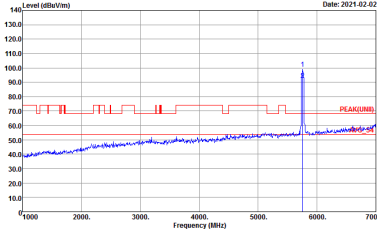
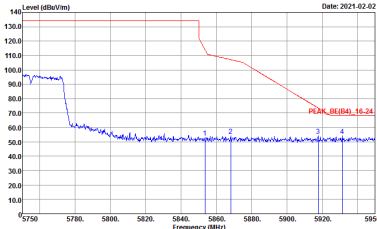
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1	Vertical	Fundamental
Peak Avg.	 Site : 03CH16-11Y Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02	 Site : 03CH16-11Y Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 002628-02



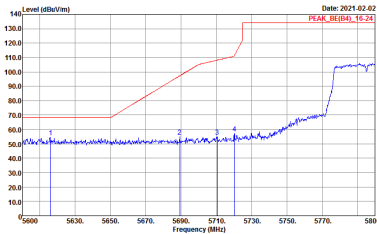
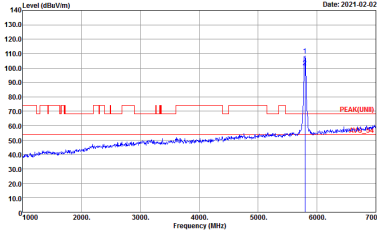
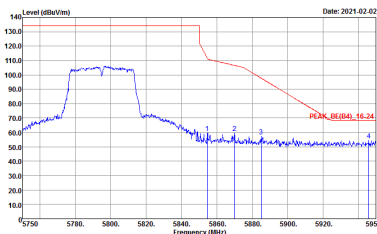
Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)

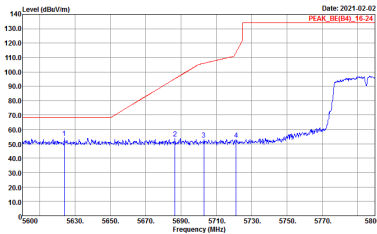
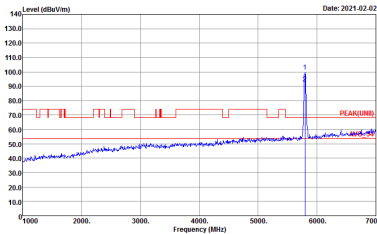
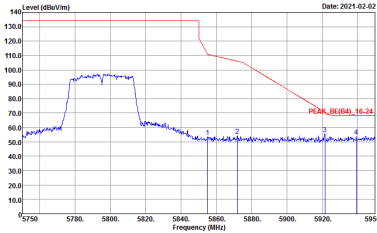
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02
	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02
	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1	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 : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Project : 002628-02
	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Project : 002628-02	Left blank

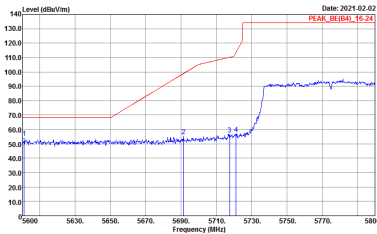
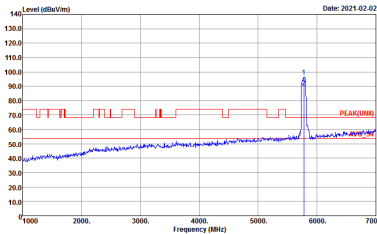
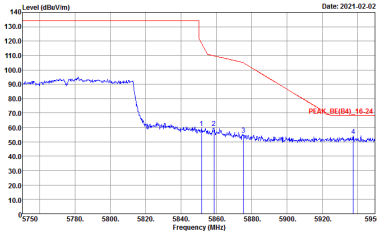
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02
	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02	Left blank



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

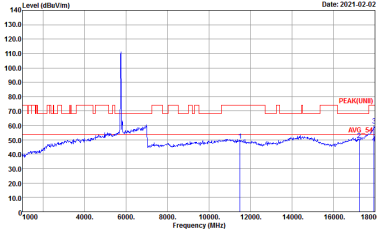
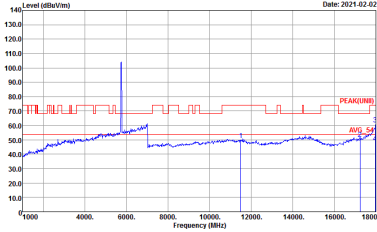
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Fundamental
Peak	Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02
	Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	Left blank



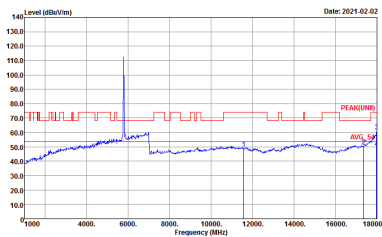
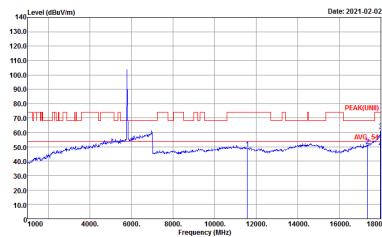
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02
	 Site : 03CH16-HY Condition : PEAK_BE(B4)_16-24 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02	Left blank



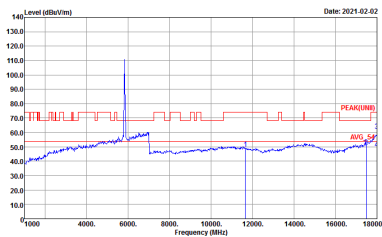
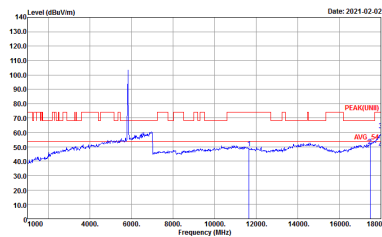
Band 4 - 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02



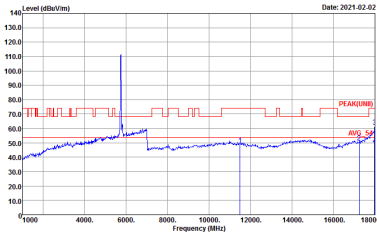
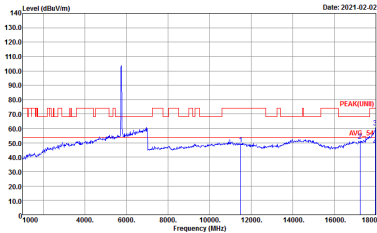
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-11Y Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-11Y Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02



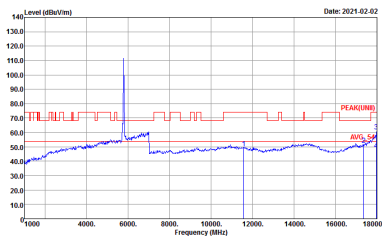
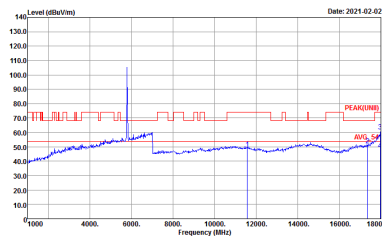
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-11Y Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-11Y Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02



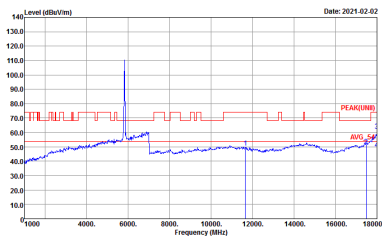
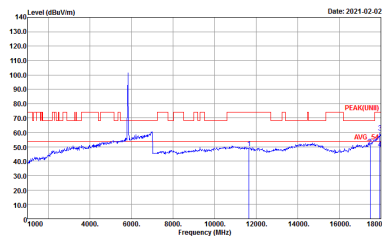
Band 4 5725~5850MHz
WIFI 802.11ac VHT20 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02

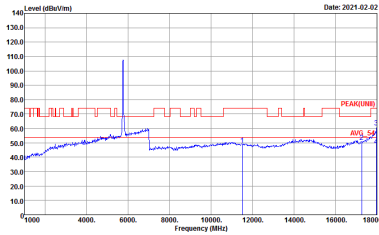
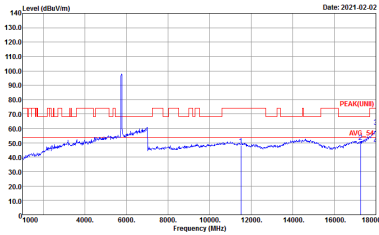


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-11Y Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-11Y Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02

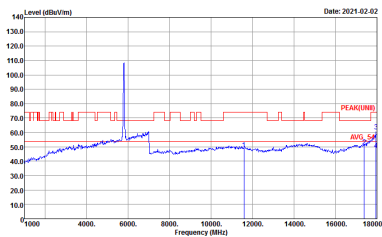
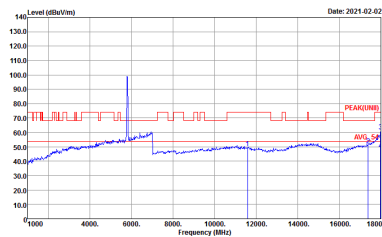


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-11Y Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-11Y Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02

Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Harmonic @ 3m)

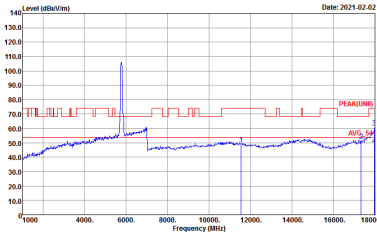
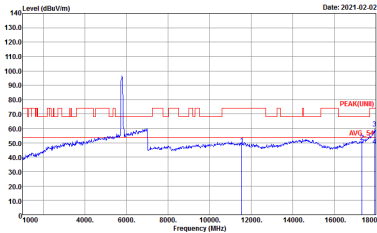
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH151 5755MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02



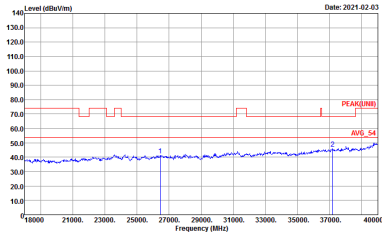
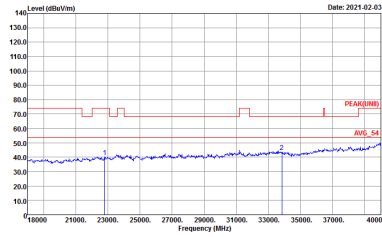
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH159 5795MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-11Y Condition : PEAK(UNII) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-11Y Condition : PEAK(UNII) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02



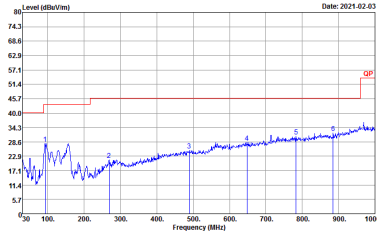
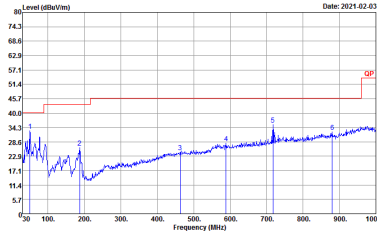
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 3m 91200_1522 VERTICAL Detector : Peak Project : 002628-02

Emission above 18GHz
5GHz WIFI 802.11ac VHT80 (SHF)

WIFI	5GHz WIFI	
ANT	802.11ac VHT80 SHF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH16-HY Condition : PEAK(UNIT) 1m SHF HORN BBH49170584 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : PEAK(UNIT) 1m SHF HORN BBH49170584 VERTICAL Detector : Peak Project : 002628-02

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

WIFI	5GHz WIFI	
ANT	802.11ac VHT80 LF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH16-HY Condition : QP 3m B1LOG_47020606 HORIZONTAL Detector : Peak Project : 002628-02	 Site : 03CH16-HY Condition : QP 3m B1LOG_47020606 VERTICAL Detector : Peak Project : 002628-02



Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
802.11a	98.57	-	-	10Hz	0.06
5GHz 802.11ac VHT20	97.97	1930	0.52	1kHz	0.09
5GHz 802.11ac VHT40	96.45	950	1.05	3kHz	0.16
5GHz 802.11ac VHT80	93.00	465	2.15	3kHz	0.32

