FCC RADIO TEST REPORT

FCC ID	:	UZ7ET60AW
Equipment	:	Rugged 2 in 1 Android Tablet
Brand Name	:	Zebra
Model Name	:	ET60AW
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 Mar. 30, 2023 and testing was performed from Apr. 28, 2023 to May 31, 2023. 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 from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issue Date
FR332310F	01	Initial issue of report	Jun. 07, 2023

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	1.59 dB under the limit at 5639.000 MHz
3.5	15.207	AC Conducted Emission	Pass	5.29 dB under the limit at 13.560 MHz
3.6	15.203	Antenna Requirement	Pass	-

Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”.
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Keven Cheng
Report Producer: Ming Chen

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Rugged 2 in 1 Android Tablet
Brand Name	Zebra
Model Name	ET60AW
FCC ID	UZ7ET60AW
Sample 1	Standard sku
Sample 2	FRZ sku
EUT supports Radios application	NFC WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80/VHT160 WLAN 11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE
HW Version	EV2.1
SW Version	A13
FW Version	1.1.2.0.645.4
MFD	27MAR23
EUT Stage	Identical Prototype

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

Specification of Accessories				
Adapter	**Brand Name**	Zebra	**Part Number**	PWR-BGA15V45W-UC2-WW
Battery 1	**Brand Name**	Zebra	**Part Number**	BT-000471-0020
Battery 2	**Brand Name**	Zebra	**Part Number**	BT-000471-0820

Supported Unit Used in Test Configuration and System				
USB TYPE C to 3.5mm audio connector	**Brand Name**	Zebra	**Part Number**	ADP-USBC-35MM1-01
3.5mm Earphone	**Brand Name**	Zebra	**Part Number**	HDST-35MM-PTVP-01
USB TYPE C Earphone	**Brand Name**	Zebra	**Part Number**	HPST-USBC-PTT1-01
Headset Jumper	**Brand Name**	Zebra	**Part Number**	CBL-TC51-HDST35-01

1.2 Product Specification of Equipment Under Test

<table>
<tr><th colspan="2">Product Specification is subject to this standard</th></tr>
<tr><td>Tx/Rx Frequency Range</td><td>5745 MHz ~ 5825 MHz</td></tr>
<tr><td>Maximum Output Power to Antenna</td><td>MIMO <Ant. 7+8>
802.11a: 20.26 dBm / 0.1062 W
802.11n HT20: 20.01 dBm / 0.1002 W
802.11n HT40: 19.77 dBm / 0.0948 W
802.11ac VHT20: 20.11 dBm / 0.1026 W
802.11ac VHT40: 19.87 dBm / 0.0971 W
802.11ac VHT80: 19.84 dBm / 0.0964 W
802.11ax HE20: 20.21 dBm / 0.1050 W
802.11ax HE40: 19.97 dBm / 0.0993 W
802.11ax HE80: 19.94 dBm / 0.0986 W</td></tr>
<tr><td>99% Occupied Bandwidth</td><td>MIMO <Ant. 7>
802.11a: 16.53
802.11ax HE20: 18.88 MHz
802.11ax HE40: 37.96 MHz
802.11ax HE80: 77.32 MHz
MIMO <Ant. 8>
802.11a: 16.63 MHz
802.11ax HE20: 19.13 MHz
802.11ax HE40: 38.06 MHz
802.11ax HE80: 77.56 MHz</td></tr>
<tr><td>Antenna Type / Gain</td><td><Ant. 7>: Monopole Antenna with gain 3.17 dBi
<Ant. 8>: Monopole Antenna with gain 2.70 dBi</td></tr>
<tr><td>Type of Modulation</td><td>802.11n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
802.11ax : OFDMA
(BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM)</td></tr>
<tr><td>Antenna Function Description</td><td>
<table>
<tr><td></td><td>Ant. 7</td><td>Ant. 8</td></tr>
<tr><td>802.11a/n/ac/ax MIMO</td><td>V</td><td>V</td></tr>
</table>
</td></tr>
</table>

Remark:

1. MIMO Ant. 7+8 Directional Gain is a calculated result from MIMO Ant. 7 and MIMO Ant. 8. The formula used in calculation is documented in section 1.1.1.
2. Power of MIMO Ant. 7 + Ant. 8 is a calculated result from sum of the power MIMO Ant. 7 and MIMO Ant. 8.
3. The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

1.2.1 Antenna Directional Gain

<For CDD Mode>

Follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)ii)

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows:

For power measurements on IEEE 802.11 devices,

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

G_{ANT} is set equal to the gain of the antenna having the highest gain.

For PSD measurements, the directional gain calculation.

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

where

Each antenna is driven by no more than one spatial stream;
N_{SS} = the number of independent spatial streams of data;
N_{ANT} = the total number of antennas
$g_{j,k} = 10^{G_k / 20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;
G_k is the gain in dBi of the kth antenna.

As minimum N_{SS}=1 is supported by EUT, the formula can be simplified as:

Directional gain = $10*\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi

Where G1, G2….GN denote single antenna gain.

The directional gain “DG” is calculated as following table.

	Ant 7 (dBi)	Ant 8 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
Band IV	3.17	2.70	3.17	5.95	0.00	0.00

Calculation example:

If a device has two antenna, G_{ANT1}= 3.17dBi; G_{ANT2}=2.70dBi

Directional gain of power measurement = max(3.17, 2.70) + 0 = 3.17 dBi

Directional gain of PSD derived from formula which is

10 x log { { [10^ (3.17 dBi / 20) + 10^ (2.70 dBi / 20)] ^ 2 } / 2 }

= 5.95 dBi

Power and PSD limit reduction = Composite gain – 6dBi, (min = 0)

1.3 Modification of EUT

No modifications made to the EUT during the testing.

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 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	CO05-HY, 03CH07-HY
Remark	The Conducted Emission and Radiated Emission test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

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 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	TH05-HY (TAF Code: 3786)
Remark	The Conducted test item subcontracted to Sporton International Inc. Wensan Laboratory.

FCC designation No.: TW1190 and TW3786

1.5 Applicable Standards

According to the specifications declared by 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 the test items were validated and recorded in accordance with the standards without any modification during the testing.
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, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

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

Note:

1. The above Frequency and Channel with "*" are 802.11n HT40 and 802.11ac VHT40 and 802.11ax HE40.
2. The above Frequency and Channel with "#" are 802.11ac VHT80 and 802.11ax HE80.

2.2 Test Mode

This device support 26/52/106/242/484-tone RU but does not support 2x996-tone RU on 160MHz channel.

The PSD of partial RU is reduced to be smaller than full RU according to TCB workshop interim guidance Oct. 2018.

The 802.11ax mode is investigated among different tones, full resource units (RU), partial resource units. The partial RU has no higher power than full RU's, thus the full RU is chosen as main test configuration.

The 242-tone RU is covered by 20MHz channel, 484-tone RU is covered by 40MHz channel and 996-tone RU is covered by 80MHz channel.

The SISO mode conducted power is covered by MIMO mode per chain, so only the MIMO mode is tested.

The power for 802.11n and 802.11ac mode is smaller than 802.11ax mode, so all other conducted and radiated test is covered by 802.11ax mode.

The final test modes include the worst data rates for each modulation shown in the table below.

MIMO Mode

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20 (Covered by HE20)	MCS0
802.11n HT40 (Covered by HE40)	MCS0
802.11ac VHT20 (Covered by HE20)	MCS0
802.11ac VHT40 (Covered by HE40)	MCS0
802.11ac VHT80 (Covered by HE80)	MCS0
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0

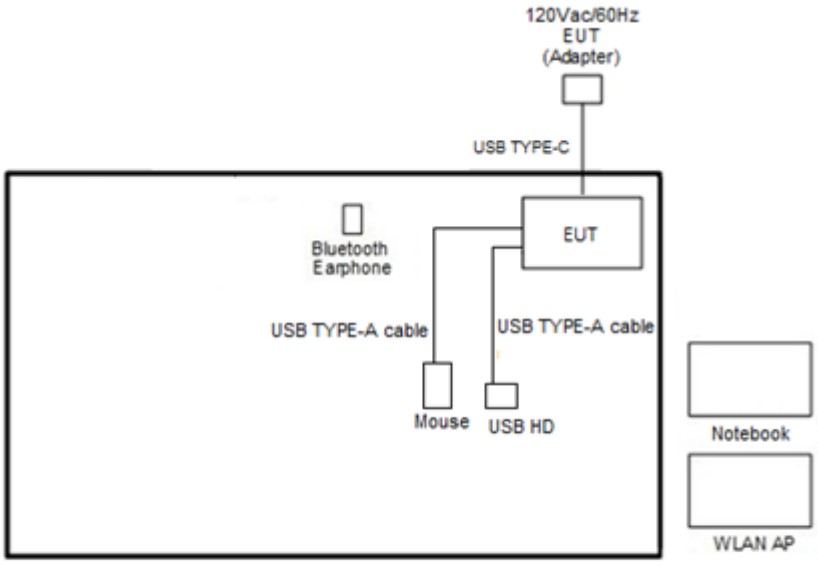
Test Cases	
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN (5GHz) Link + NFC on + USB TYPE-A cable (Data Link with USB HD) (Copy data from USB HD to eMMC) + USB TYPE-A with Mouse + USB TYPE-C (Charging from AC Adapter + Battery 1 for Sample 1
Remark: For Radiated Test Cases, the tests were performed with Battery 1 and Sample 1.	

Ch. #		Band IV：5725-5850 MHz			
		802.11a	802.11ax HE20	802.11ax HE40	802.11ax HE80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

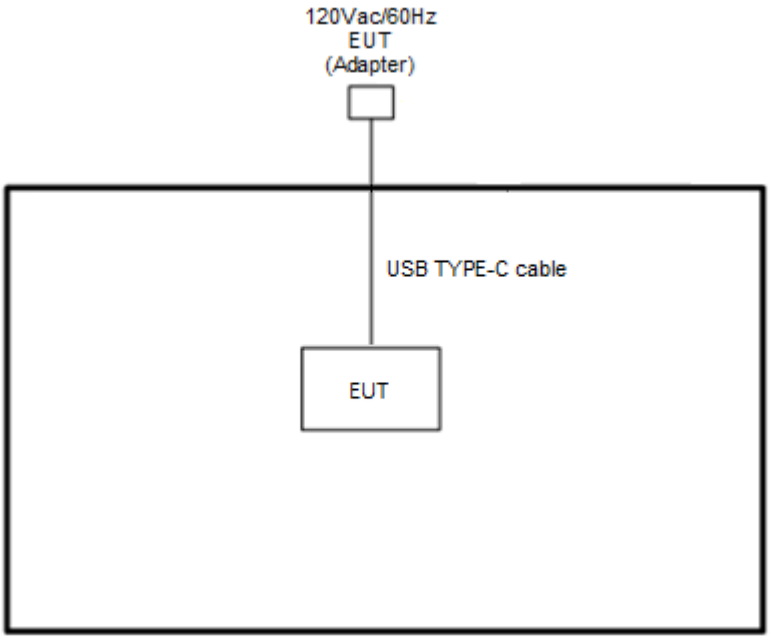
Remark: For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.

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	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7-RD0010	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude 3420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	USB HD	ADATA	HV620S-1T	FCC DoC	Shielded, 1.0m	N/A
5.	Mouse	MSI	S12-0400C40-AA3	FCC DoC	Shielded, 2.0m	N/A
6.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
7.	USB TYPE-C cable	N/A	N/A	N/A	N/A	N/A
8.	USB TYPE-A cable	N/A	N/A	N/A	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “QRCT Version 4.0.00206.0” 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 10 dB attenuator.

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

= 4.2 + 10 = 14.2 (dB)

3 Test Result

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

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

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

26dB and 99% Occupied bandwidth are reporting only.

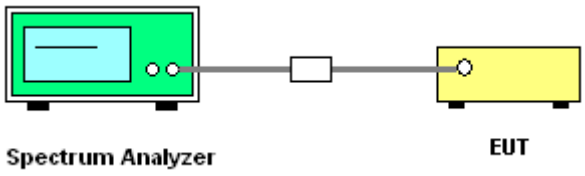
3.1.2 Measuring Instruments

Please refer to the measuring equipment list in 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 5.725-5.85 GHz
2. Set RBW = 100 kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

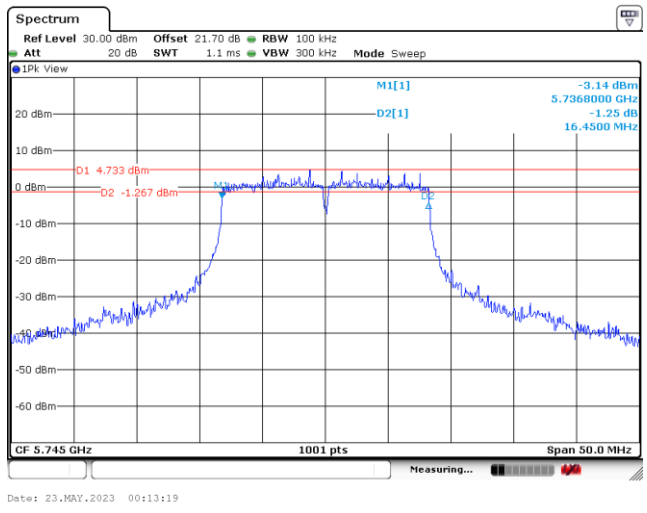
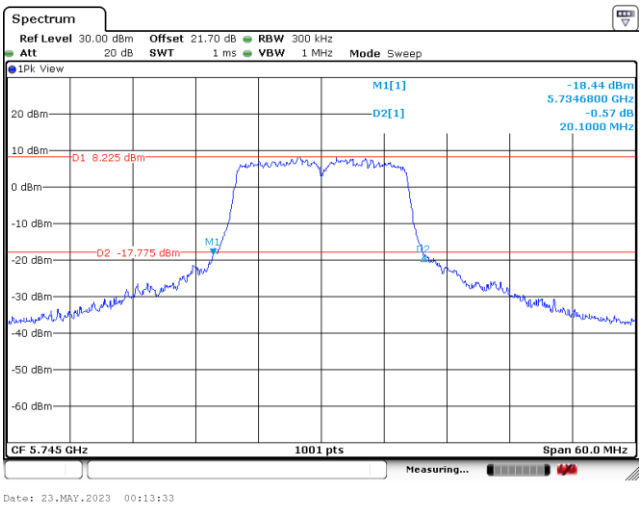
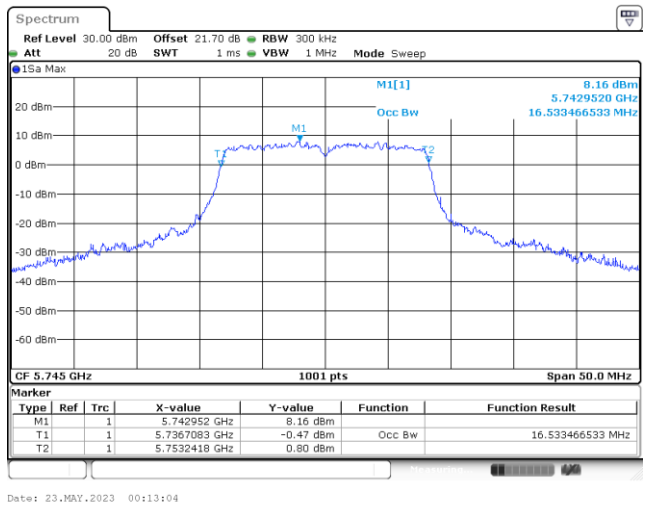
3.1.4 Test Setup



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

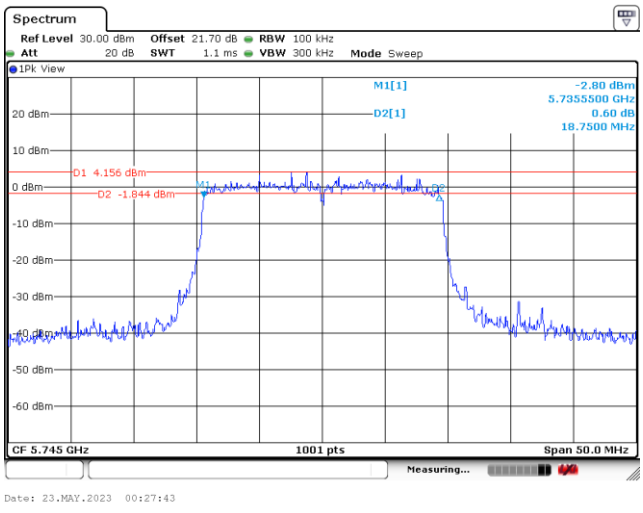
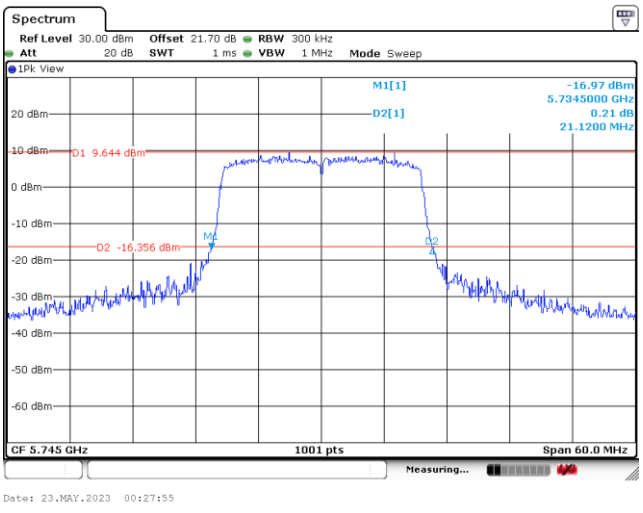
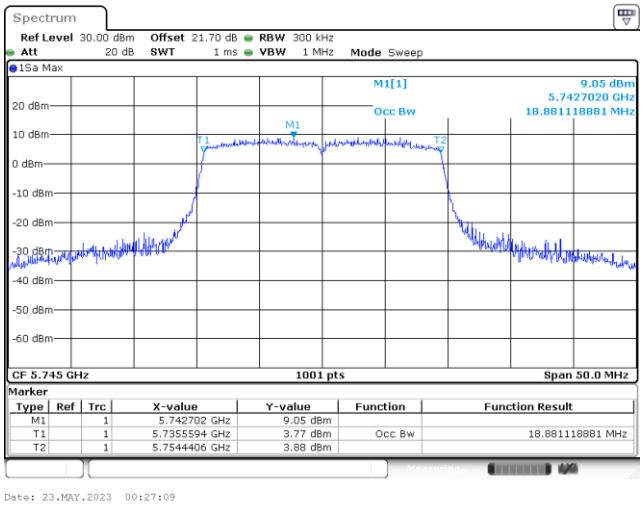
Please refer to Appendix A.

<802.11a>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**NA**
	

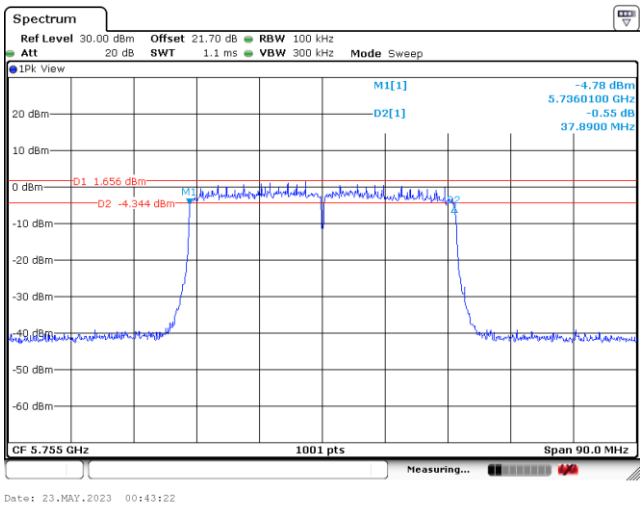
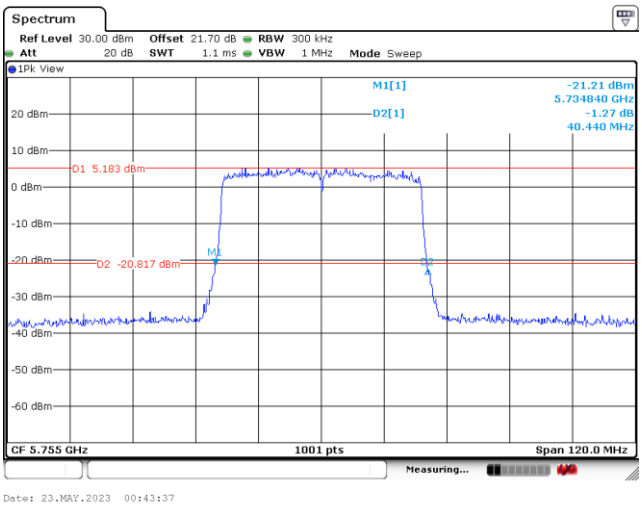
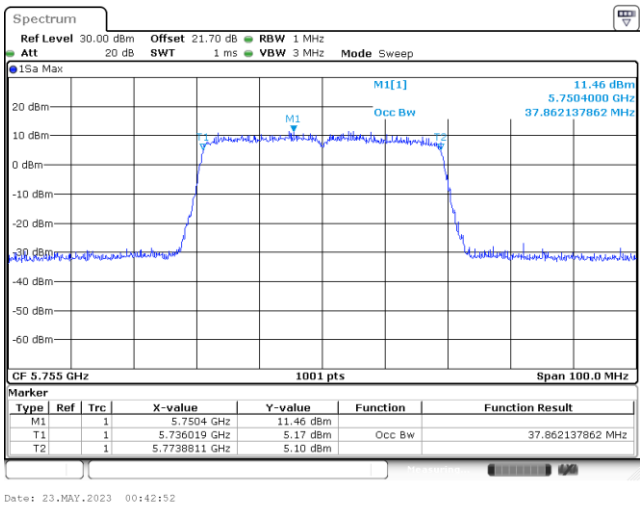
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<802.11ax HE20>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**NA**
	

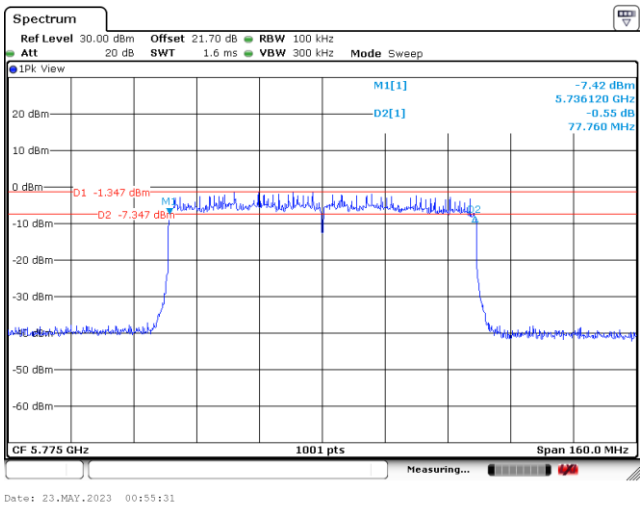
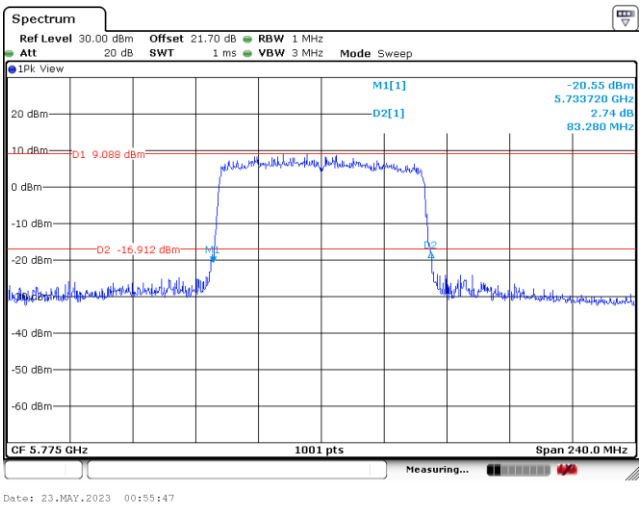
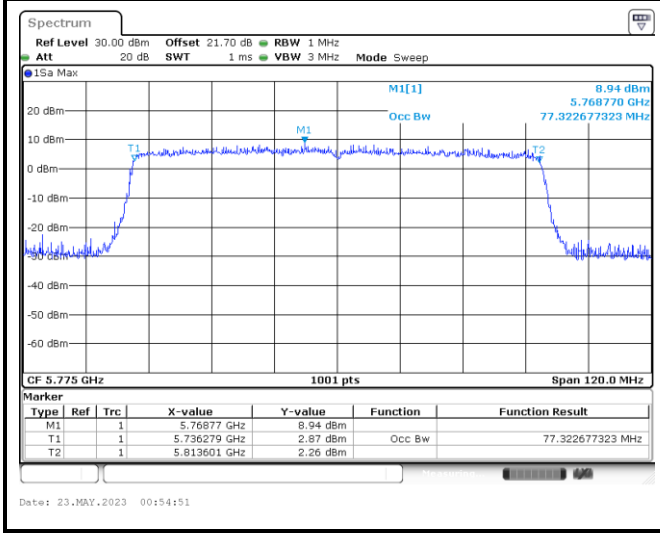
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<802.11ax HE40>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**NA**
	

Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<802.11ax HE80>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**NA**
	

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

Please refer to the measuring equipment list in this test report.

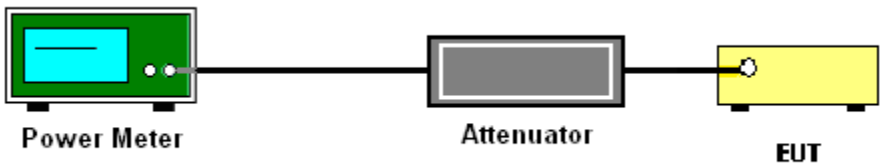
3.2.3 Test Procedures

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.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01

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

Please refer to the measuring equipment list in 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 #

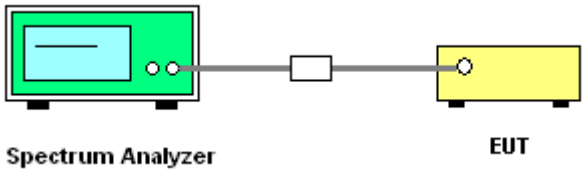
(power averaging (rms) detection with max hold):

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Add 10 log (500 kHz/RBW) to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement
- Sweep time ≤ (number of points in sweep) × 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 is connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
   Method (c): Measure and add 10 log(N_{ANT}) dB.
   With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity 10 log(N_{ANT}) dB is added to each spectrum value before comparing to the emission limit. The addition of 10 log(N_{ANT}) dB serves to apportion the emission limit among the N_{ANT} outputs so

that each output is permitted to contribute no more than $1/N_{ANT}$ th of the PSD limit.

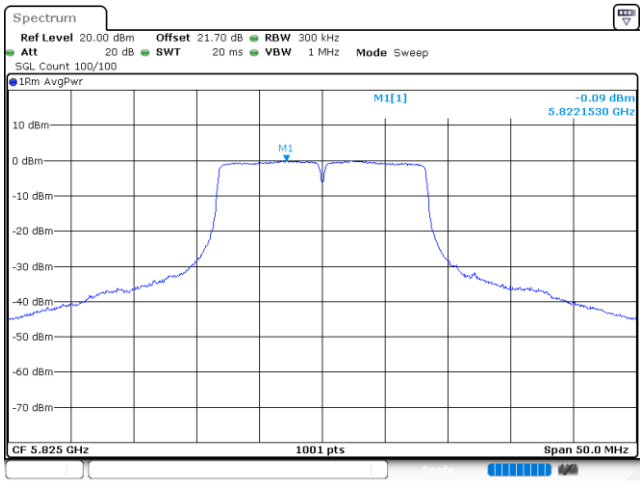
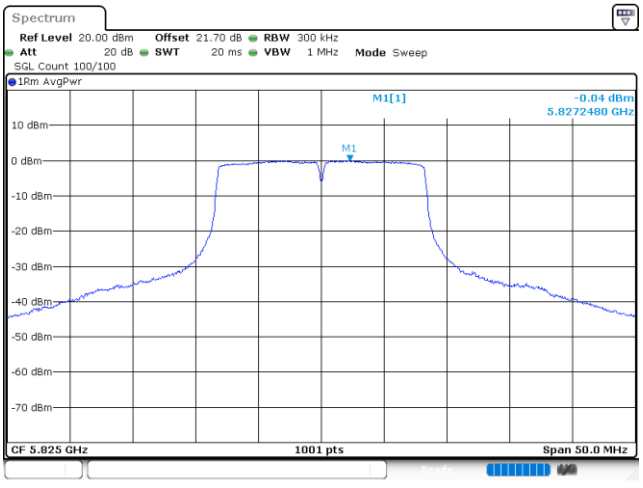
3.3.4 Test Setup



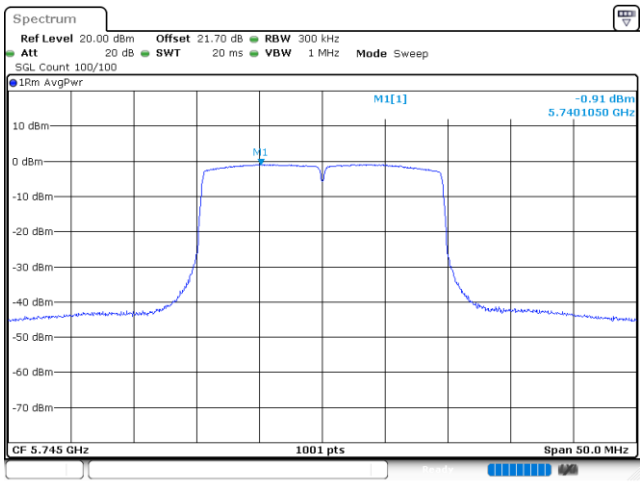
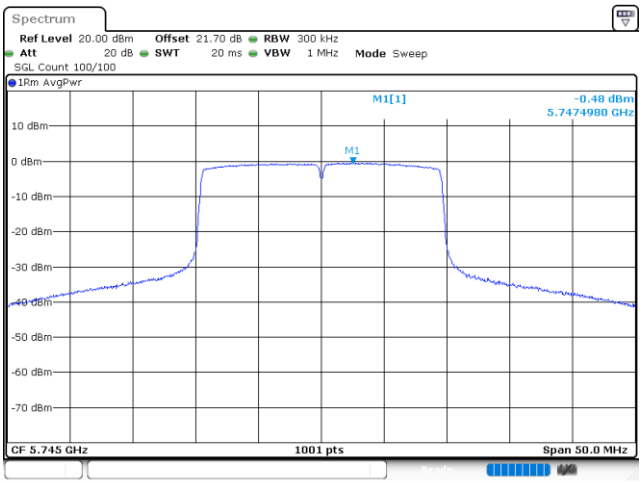
3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

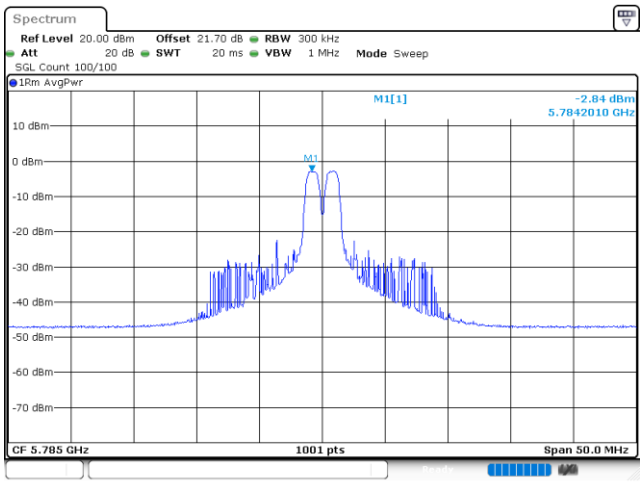
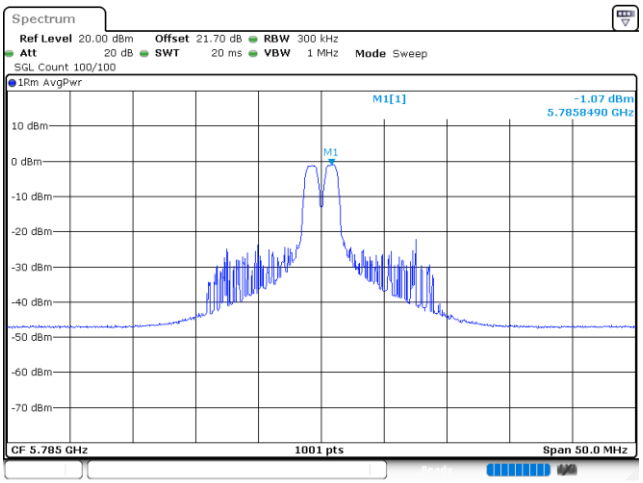
<802.11a>

Maximum Power Density Plot (dBm/300kHz)	
MIMO Ant. 7	**MIMO Ant. 8**
	

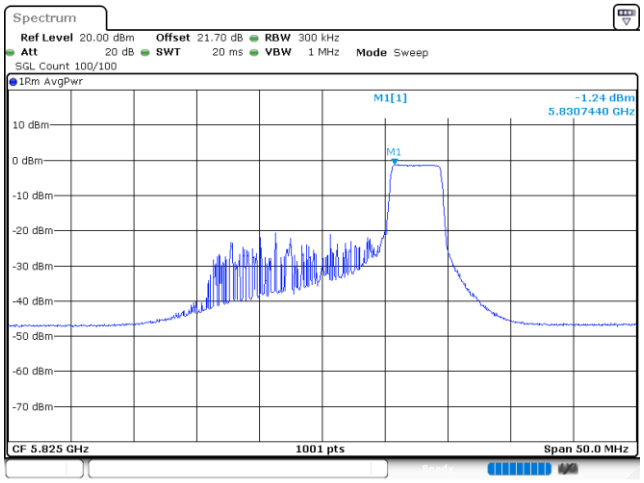
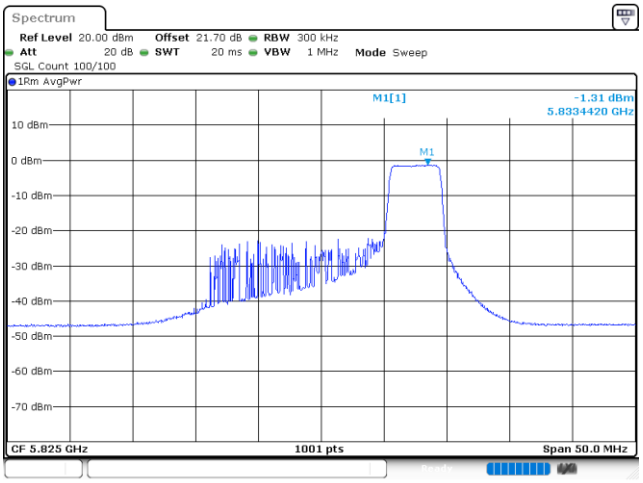
<802.11ax HE20>

Maximum Power Density Plot (dBm/300kHz)	
MIMO Ant. 7	**MIMO Ant. 8**
	

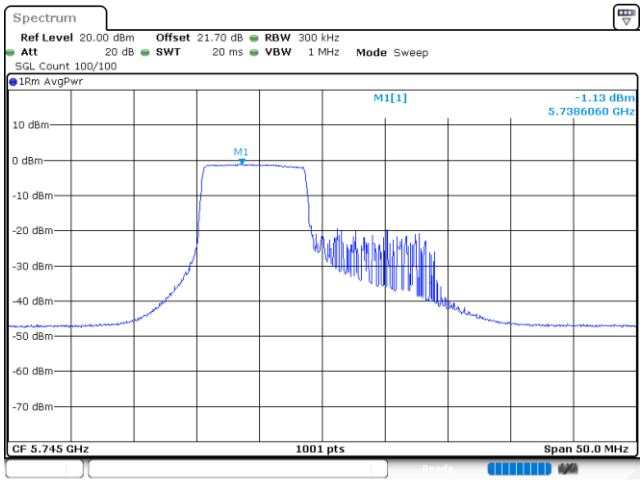
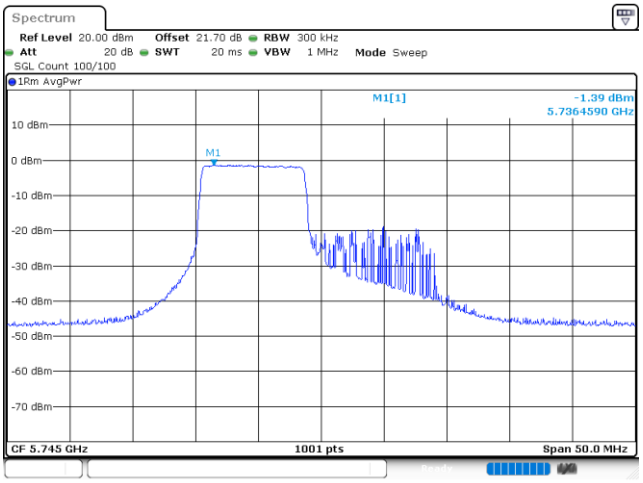
<802.11ax HE20 26RU>

Maximum Power Density Plot (dBm/300kHz)	
MIMO Ant. 7	**MIMO Ant. 8**
	

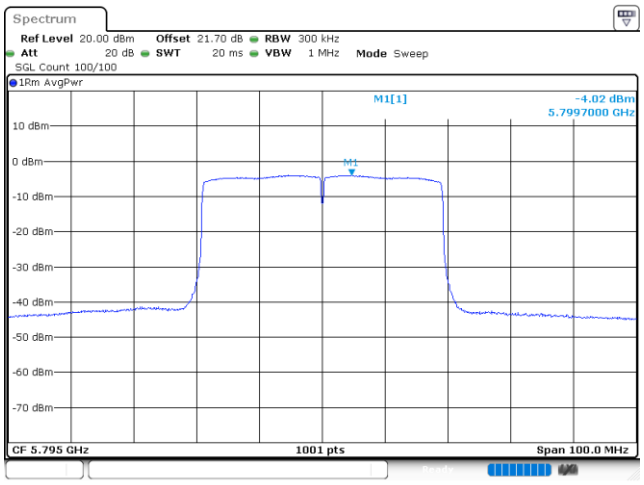
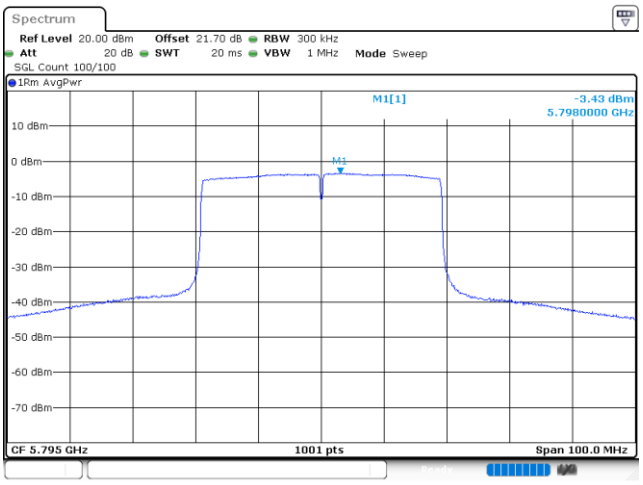
<802.11ax HE20 52RU>

Maximum Power Density Plot (dBm/300kHz)	
MIMO Ant. 7	**MIMO Ant. 8**
	

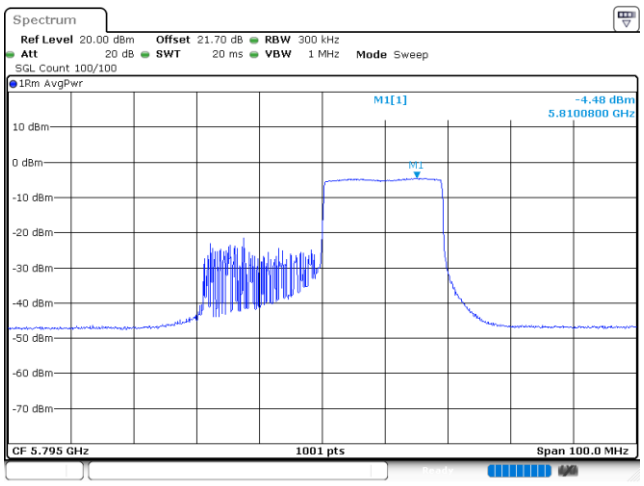
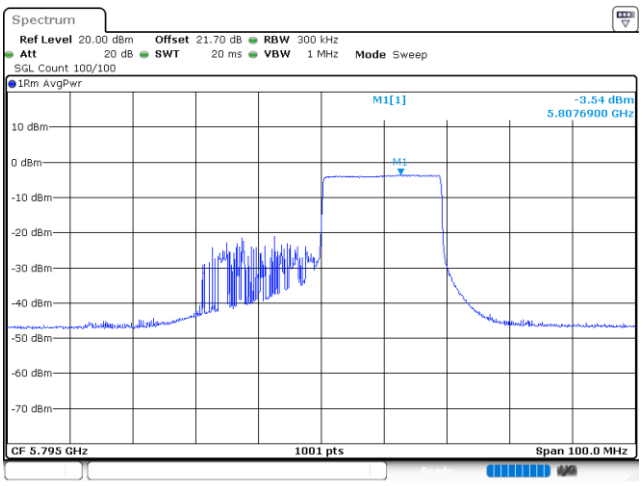
<802.11ax HE20 106RU>

Maximum Power Density Plot (dBm/300kHz)	
MIMO Ant. 7	**MIMO Ant. 8**
	

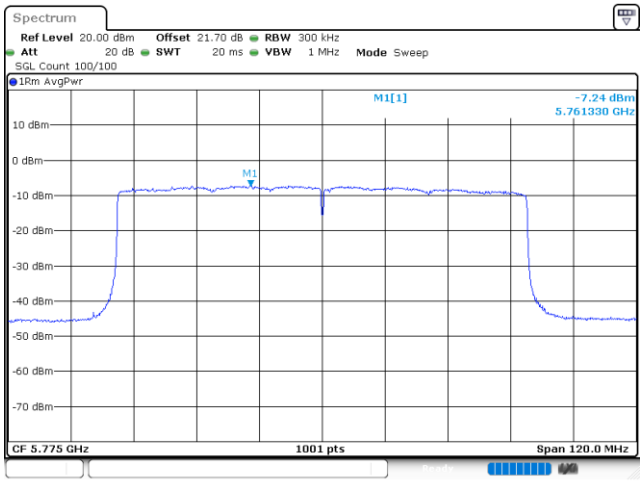
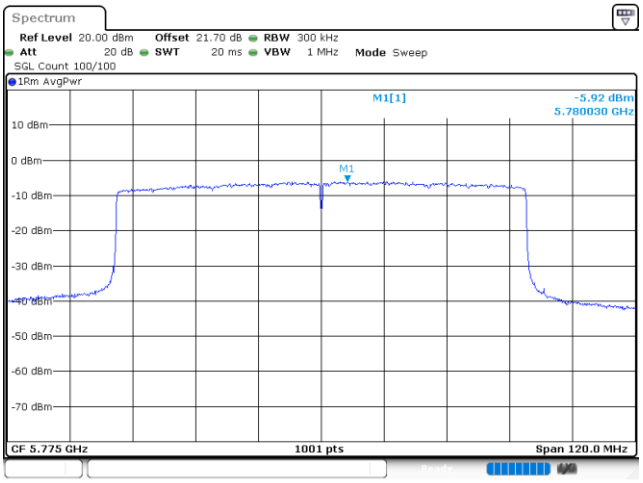
<802.11ax HE40>

Maximum Power Density Plot (dBm/300kHz)	
MIMO Ant. 7	**MIMO Ant. 8**
	

802.11ax HE40 242RU>

Maximum Power Density Plot (dBm/300kHz)	
MIMO Ant. 7	**MIMO Ant. 8**
	

<802.11ax HE80>

Maximum Power Density Plot (dBm/300kHz)	
MIMO Ant. 7	**MIMO Ant. 8**
	

<802.11ax HE80 484RU>

Maximum Power Density Plot (dBm/300kHz)	
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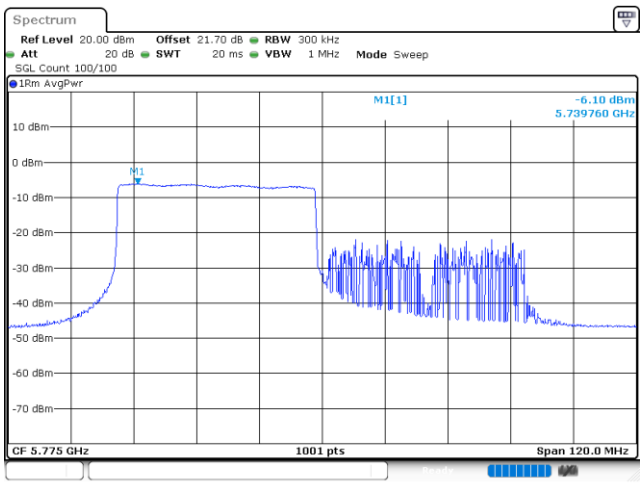
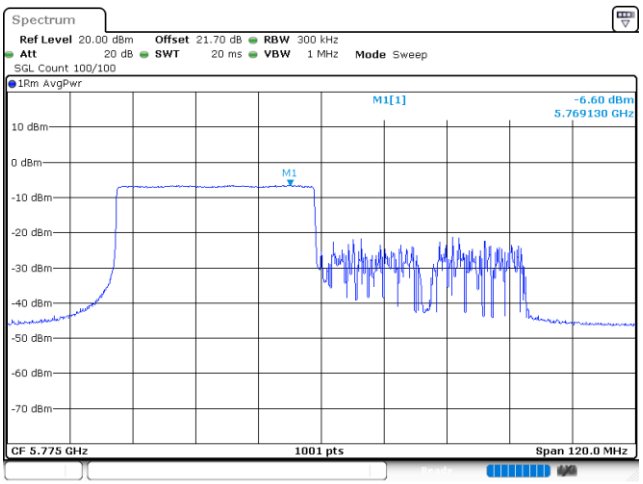
	

3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5.725-5.85 GHz band:

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

(2) Unwanted spurious emissions falls in restricted bands shall comply with the general field strength limits as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Note: The following formula is used to convert the EIRP to field strength.

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

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.3

(3) KDB789033 D02 v02r01 G)2)c)

(i) 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

Please refer to the measuring equipment list in 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 1000 MHz

   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

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

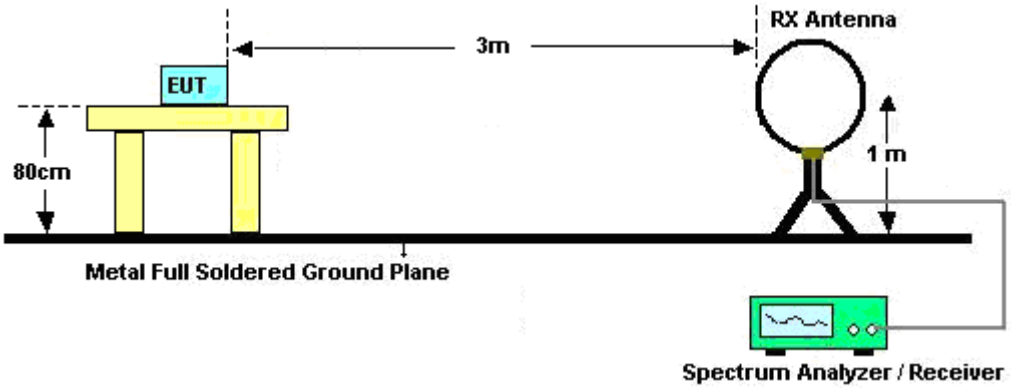
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT is set 3 meters away from the receiving antenna which is 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 is 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. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin

against QP limit line, the position is marked as "-".

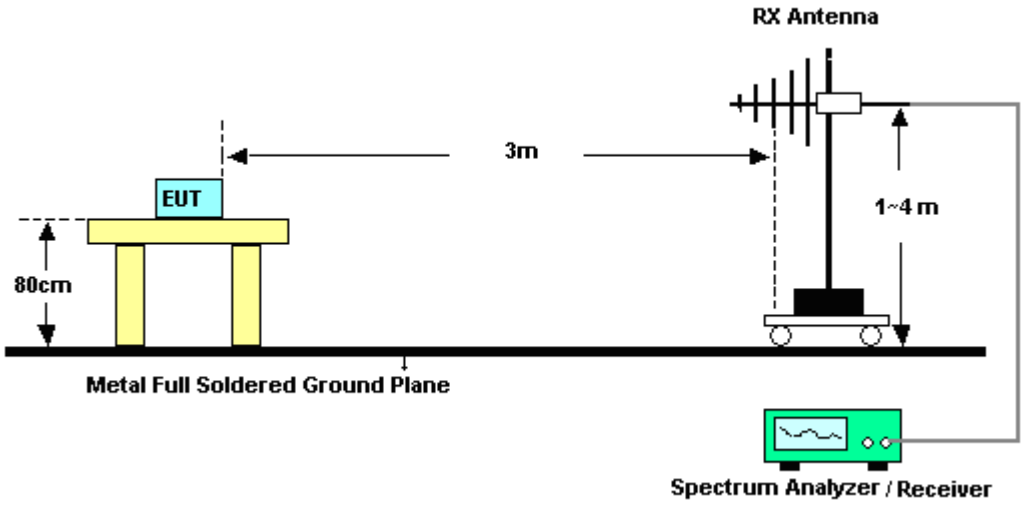
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies.
   When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".

3.4.4 Test Setup

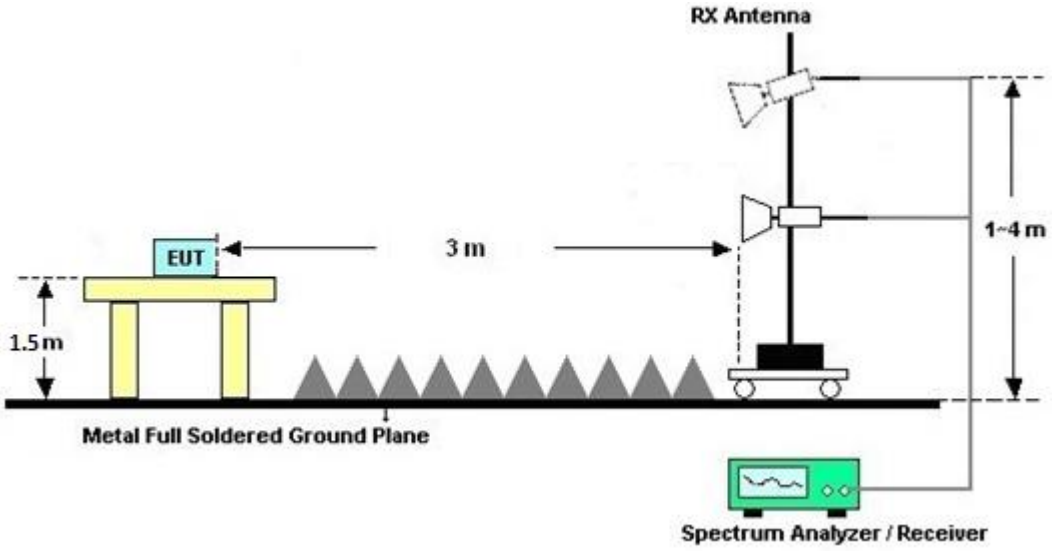
For radiated emissions below 30MHz



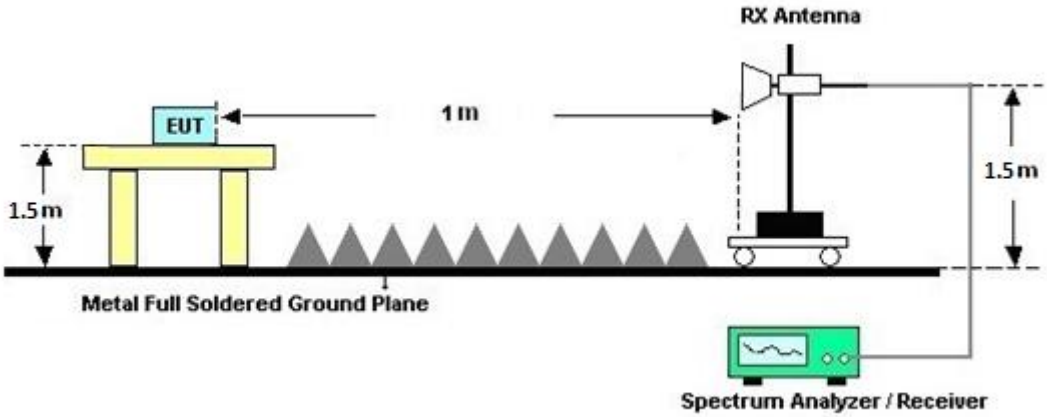
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.4.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement 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 (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

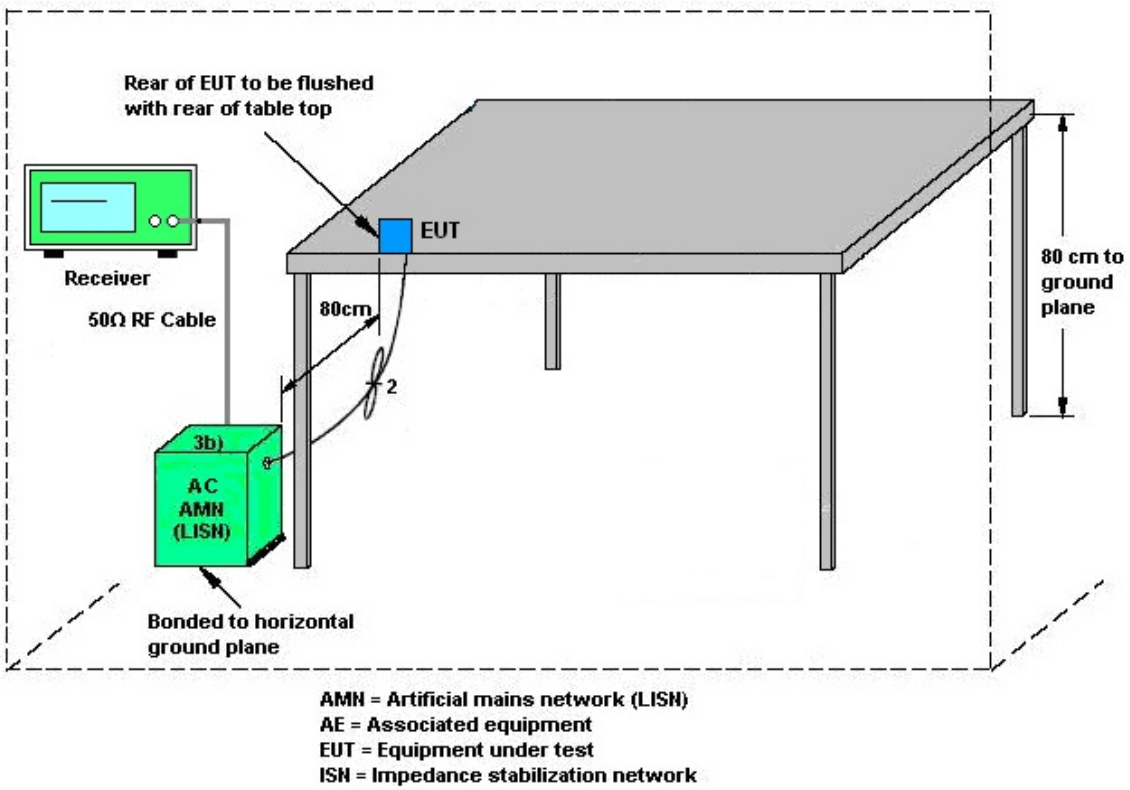
3.5.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is 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 shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
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 Antenna Requirements

3.6.1 Standard Applicable

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 17, 2022	Apr. 28, 2023~ Jun 01, 2023	Nov. 16, 2023	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 12 (NO:113)	10MHz~6GHz	Dec. 13, 2022	Apr. 28, 2023~ Jun 01, 2023	Dec. 12, 2023	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz(amp)	Aug. 03, 2022	Apr. 28, 2023~ Jun 01, 2023	Aug. 02, 2023	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Apr. 24, 2023	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2022	Apr. 24, 2023	Nov. 30, 2023	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2022	Apr. 24, 2023	Nov. 16, 2023	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 17, 2022	Apr. 24, 2023	Nov. 16, 2023	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Apr. 24, 2023	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Aug. 01, 2022	Apr. 24, 2023	Jul. 31, 2023	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 29, 2022	Apr. 24, 2023	Dec. 28, 2023	Conduction (CO05-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	35419 & 03	30MHz~1GHz	Apr. 23, 2023	May 30, 2023~ May 31, 2023	Apr. 22, 2024	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 01, 2022	May 30, 2023~ May 31, 2023	Nov. 30, 2023	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Feb. 28, 2023	May 30, 2023~ May 31, 2023	Feb. 27, 2024	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz~18GHz	Apr. 20, 2023	May 30, 2023~ May 31, 2023	Apr. 19, 2024	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	Oct. 03, 2022	May 30, 2023~ May 31, 2023	Oct. 02, 2023	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Mar. 24, 2023	May 30, 2023~ May 31, 2023	Mar. 23, 2024	Radiation (03CH07-HY)
Preamplifier	EMEC	EM18G40G	0600789	18-40GHz	Jul. 21, 2022	May 30, 2023~ May 31, 2023	Jul. 20, 2023	Radiation (03CH07-HY)
Spectrum Analyzer	Keysight	Keysight	MY60241058	10Hz~44GHz	Jul. 07, 2022	May 30, 2023~ May 31, 2023	Jul. 06, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY15682/4	30MHz to 18GHz	Feb. 22, 2023	May 30, 2023~ May 31, 2023	Feb. 21, 2024	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4	9kHz to 18GHz	Feb. 22, 2023	May 30, 2023~ May 31, 2023	Feb. 21, 2024	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4	9kHz to 18GHz	Feb. 22, 2023	May 30, 2023~ May 31, 2023	Feb. 21, 2024	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126	532078/126E	30MHz~18GHz	Sep. 16, 2022	May 30, 2023~ May 31, 2023	Sep. 15, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2	18GHz~40GHz	Feb. 22, 2023	May 30, 2023~ May 31, 2023	Feb. 21, 2024	Radiation (03CH07-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Controller	EMEC	EM1000	N/A	Control Ant Mast	N/A	May 30, 2023~ May 31, 2023	N/A	Radiation (03CH07-HY)
Controller	MF	MF-7802	N/A	Control Turn table	N/A	May 30, 2023~ May 31, 2023	N/A	Radiation (03CH07-HY)
Antenna Mast	EMEC	AM-BS-4500E	N/A	Boresight mast 1M~4M	N/A	May 30, 2023~ May 31, 2023	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	May 30, 2023~ May 31, 2023	N/A	Radiation (03CH07-HY)
Software	Audix	E3	N/A	N/A	N/A	May 30, 2023~ May 31, 2023	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2495	N/A	Mar. 14, 2023	May 30, 2023~ May 31, 2023	Mar. 13, 2024	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100472	20Hz~26.5GHz	Feb. 13, 2023	May 30, 2023~ May 31, 2023	Feb. 12, 2024	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz~40GHz	Nov. 24, 2022	May 30, 2023~ May 31, 2023	Nov. 23, 2023	Radiation (03CH07-HY)

5 Measurement Uncertainty

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.5dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.5 dB

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.5 dB

Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.2 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.3 dB

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Sylvia Li / Hank Hsu	Temperature:	21~25	°C
Test Date:	2023/04/28~2023/06/01	Relative Humidity:	51~54	%

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

U-NII-3 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 7	Ant 8	Ant 7	Ant 8	Ant 7	Ant 8		
11a	6Mbps	2	149	5745	16.53	16.63	20.10	25.02	16.45	16.45	0.5	Pass
11a	6Mbps	2	157	5785	16.53	16.48	20.40	21.06	16.45	16.45	0.5	Pass
11a	6Mbps	2	165	5825	16.53	16.48	20.04	21.12	16.45	16.45	0.5	Pass

TEST RESULTS DATA
Average Power Table

U-NII-3 MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 7	Ant 8	SUM	Ant 7	Ant 8	Ant 7	Ant 8	
11a	6Mbps	2	149	5745	17.10	17.40	20.26	30.00		3.17		Pass
11a	6Mbps	2	157	5785	16.50	17.30	19.93	30.00		3.17		Pass
11a	6Mbps	2	165	5825	17.00	17.40	20.21	30.00		3.17		Pass
HT20	MCS0	2	149	5745	16.80	17.20	20.01	30.00		3.17		Pass
HT20	MCS0	2	157	5785	16.20	17.00	19.63	30.00		3.17		Pass
HT20	MCS0	2	165	5825	16.80	17.10	19.96	30.00		3.17		Pass
HT40	MCS0	2	151	5755	16.40	17.10	19.77	30.00		3.17		Pass
HT40	MCS0	2	159	5795	16.40	17.10	19.77	30.00		3.17		Pass
VHT20	MCS0	2	149	5745	16.90	17.30	20.11	30.00		3.17		Pass
VHT20	MCS0	2	157	5785	16.30	17.10	19.73	30.00		3.17		Pass
VHT20	MCS0	2	165	5825	16.90	17.20	20.06	30.00		3.17		Pass
VHT40	MCS0	2	151	5755	16.50	17.20	19.87	30.00		3.17		Pass
VHT40	MCS0	2	159	5795	16.50	17.20	19.87	30.00		3.17		Pass
VHT80	MCS0	2	155	5775	16.30	17.30	19.84	30.00		3.17		Pass

TEST RESULTS DATA
Power Spectral Density

U-NII-3 MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		10log (500kHz /RBW) Factor (dB)		Average Power Density with Duty Factor (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 7	Ant 8	Ant 7	Ant 8	SUM	Ant 7	Ant 8	Ant 7	Ant 8	
11a	6Mbps	2	149	5745	0.00	0.00	2.22		2.04	2.01	5.05	30.00		3.17		Pass
11a	6Mbps	2	157	5785	0.00	0.00	2.22		1.69	1.53	4.70	30.00		3.17		Pass
11a	6Mbps	2	165	5825	0.00	0.00	2.22		2.13	2.18	5.19	30.00		3.17		Pass

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

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

U-NII-3 MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
						Ant 7	Ant 8	Ant 7	Ant 8	Ant 7	Ant 8		
HE20	MSC0	2	149	5745	Full	18.88	19.13	21.12	29.46	18.75	18.30	0.5	Pass
HE20	MSC0	2	157	5785	Full	18.88	18.98	20.94	21.30	18.60	19.00	0.5	Pass
HE20	MSC0	2	165	5825	Full	18.88	18.93	21.36	21.30	19.05	18.65	0.5	Pass
HE40	MCS0	2	151	5755	Full	37.86	38.06	40.44	40.32	37.89	37.89	0.5	Pass
HE40	MCS0	2	159	5795	Full	37.96	38.06	40.32	40.32	37.71	37.98	0.5	Pass
HE80	MSC0	2	155	5775	Full	77.32	77.56	83.28	123.84	77.76	77.60	0.5	Pass

TEST RESULTS DATA
Average Power Table

U-NII-3 MIMO															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
						Ant 1	Ant 2	Ant 7	Ant 8	SUM	Ant 7	Ant 8	Ant 7	Ant 8	
HE20	MSC0	2	149	5745	Full	0.00	0.00	17.00	17.40	20.21	30.00		3.17		Pass
HE20	MSC0	2	149	5745	26/0	0.63	0.57	7.60	7.80	10.71	30.00		3.17		Pass
HE20	MSC0	2	149	5745	52/37	0.68	0.66	10.70	10.90	13.81	30.00		3.17		Pass
HE20	MSC0	2	149	5745	106/53	0.62	0.66	14.10	14.00	17.06	30.00		3.17		Pass
HE20	MSC0	2	157	5785	Full	0.00	0.00	16.40	17.20	19.83	30.00		3.17		Pass
HE20	MSC0	2	157	5785	26/4	0.63	0.57	4.30	6.00	8.24	30.00		3.17		Pass
HE20	MSC0	2	157	5785	52/38	0.68	0.66	9.10	10.30	12.75	30.00		3.17		Pass
HE20	MSC0	2	157	5785	106/53	0.62	0.66	12.40	13.60	16.05	30.00		3.17		Pass
HE20	MSC0	2	165	5825	Full	0.00	0.00	17.00	17.30	20.16	30.00		3.17		Pass
HE20	MSC0	2	165	5825	26/8	0.63	0.57	7.60	7.50	10.56	30.00		3.17		Pass
HE20	MSC0	2	165	5825	52/40	0.68	0.66	10.70	10.60	13.66	30.00		3.17		Pass
HE20	MSC0	2	165	5825	106/54	0.62	0.66	13.80	14.00	16.91	30.00		3.17		Pass
HE40	MCS0	2	151	5755	Full	0.00	0.00	16.60	17.30	19.97	30.00		3.17		Pass
HE40	MCS0	2	151	5755	242/61	0.00	0.00	14.80	15.10	17.96	30.00		3.17		Pass
HE40	MCS0	2	159	5795	Full	0.00	0.00	16.60	17.30	19.97	30.00		3.17		Pass
HE40	MCS0	2	159	5795	242/62	0.00	0.00	14.00	14.90	17.48	30.00		3.17		Pass
HE80	MSC0	2	155	5775	Full	0.03	0.04	16.40	17.40	19.94	30.00		3.17		Pass
HE80	MSC0	2	155	5775	484/65	0.03	0.03	15.10	15.00	18.06	30.00		3.17		Pass
HE80	MSC0	2	155	5775	484/66	0.03	0.03	13.70	14.70	17.24	30.00		3.17		Pass

Report Number : FR332310F

TEST RESULTS DATA
Power Spectral Density

U-NII-3 MIMO																
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		10log (500kHz /RBW) Factor (dB)		Average Power Density with Duty Factor (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
						Ant 1	Ant 2	Ant 7	Ant 8	Ant 7	Ant 8	SUM	Ant 7	Ant 8	Ant 7	Ant 8	
HE20	MSC0	2	149	5745	Full	0.00	0.00	2.22		1.31	1.74	4.75	30.00		3.17		Pass
HE20	MSC0	2	149	5745	26/0	0.63	0.57	2.22		1.30	1.47	4.48	30.00		3.17		Pass
HE20	MSC0	2	149	5745	52/37	0.68	0.66	2.22		1.66	1.47	4.67	30.00		3.17		Pass
HE20	MSC0	2	149	5745	106/53	0.62	0.66	2.22		1.71	1.49	4.72	30.00		3.17		Pass
HE20	MSC0	2	157	5785	Full	0.00	0.00	2.22		0.96	1.73	4.74	30.00		3.17		Pass
HE20	MSC0	2	157	5785	26/4	0.63	0.57	2.22		0.01	1.72	4.73	30.00		3.17		Pass
HE20	MSC0	2	157	5785	52/38	0.68	0.66	2.22		0.30	1.48	4.49	30.00		3.17		Pass
HE20	MSC0	2	157	5785	106/53	0.62	0.66	2.22		0.20	1.39	4.40	30.00		3.17		Pass
HE20	MSC0	2	165	5825	Full	0.00	0.00	2.22		1.45	1.71	4.72	30.00		3.17		Pass
HE20	MSC0	2	165	5825	26/8	0.63	0.57	2.22		1.63	1.45	4.64	30.00		3.17		Pass
HE20	MSC0	2	165	5825	52/40	0.68	0.66	2.22		1.66	1.57	4.67	30.00		3.17		Pass
HE20	MSC0	2	165	5825	106/54	0.62	0.66	2.22		1.70	1.59	4.71	30.00		3.17		Pass
HE40	MCS0	2	151	5755	Full	0.00	0.00	2.22		-1.99	-1.47	1.54	30.00		3.17		Pass
HE40	MCS0	2	151	5755	242/61	0.00	0.00	2.22		-1.53	-1.50	1.51	30.00		3.17		Pass
HE40	MCS0	2	159	5795	Full	0.00	0.00	2.22		-1.80	-1.21	1.80	30.00		3.17		Pass
HE40	MCS0	2	159	5795	242/62	0.00	0.00	2.22		-2.26	-1.32	1.69	30.00		3.17		Pass
HE80	MSC0	2	155	5775	Full	0.03	0.04	2.22		-4.99	-3.66	-0.65	30.00		3.17		Pass
HE80	MSC0	2	155	5775	484/65	0.03	0.03	2.22		-3.85	-4.35	-0.84	30.00		3.17		Pass
HE80	MSC0	2	155	5775	484/66	0.03	0.03	2.22		-5.29	-4.03	-1.02	30.00		3.17		Pass

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

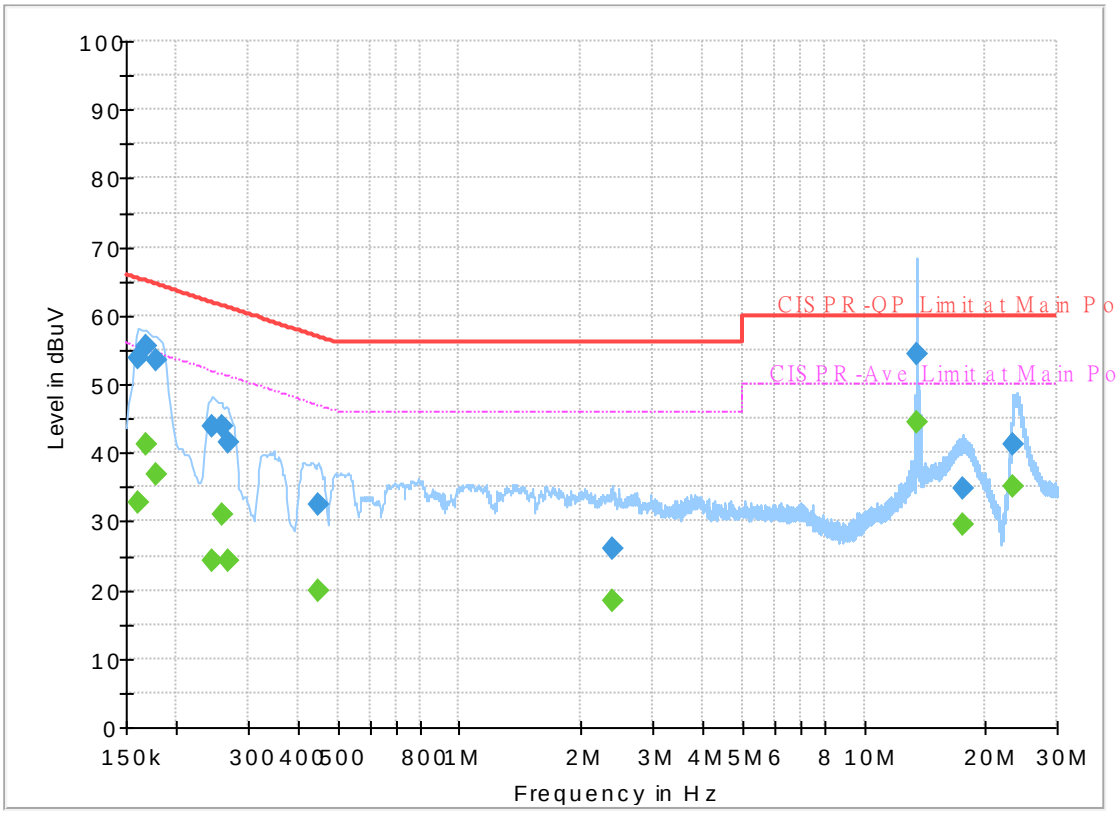
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Calvin Wang	**Temperature :**	23~26℃
		Relative Humidity :	45~55%

EUT Information

Report NO :	332310
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum



Final_Result

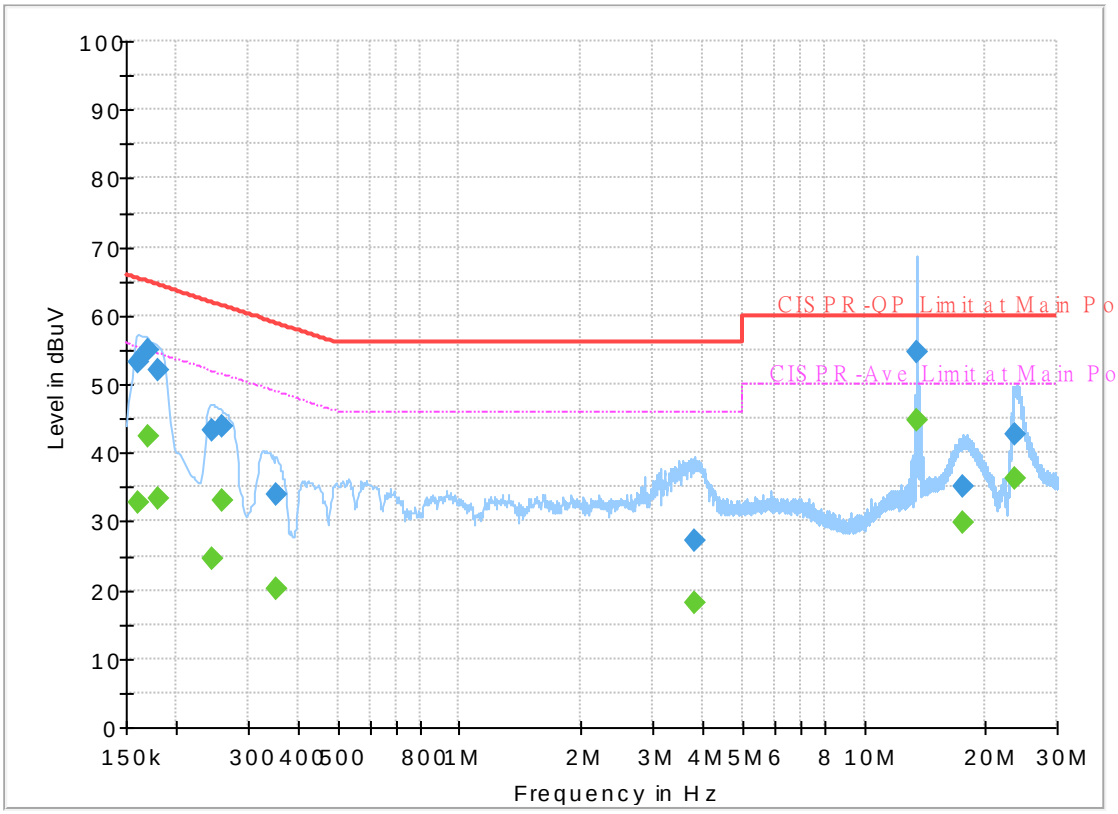
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.161250	---	32.63	55.40	22.77	L1	OFF	19.8
0.161250	53.71	---	65.40	11.69	L1	OFF	19.8
0.168000	---	41.17	55.06	13.89	L1	OFF	19.8
0.168000	55.45	---	65.06	9.61	L1	OFF	19.8
0.177000	---	36.76	54.63	17.87	L1	OFF	19.8
0.177000	53.54	---	64.63	11.09	L1	OFF	19.8
0.244500	---	24.24	51.94	27.70	L1	OFF	19.8
0.244500	43.73	---	61.94	18.21	L1	OFF	19.8
0.258000	---	31.05	51.50	20.45	L1	OFF	19.8
0.258000	43.84	---	61.50	17.66	L1	OFF	19.8
0.267000	---	24.16	51.21	27.05	L1	OFF	19.8
0.267000	41.59	---	61.21	19.62	L1	OFF	19.8
0.449250	---	19.85	46.89	27.04	L1	OFF	19.8
0.449250	32.55	---	56.89	24.34	L1	OFF	19.8
2.388750	---	18.45	46.00	27.55	L1	OFF	19.9
2.388750	26.08	---	56.00	29.92	L1	OFF	19.9
13.560000	---	44.34	50.00	5.66	L1	OFF	20.0
13.560000	54.47	---	60.00	5.53	L1	OFF	20.0
17.598750	---	29.47	50.00	20.53	L1	OFF	20.0
17.598750	34.93	---	60.00	25.07	L1	OFF	20.0
23.448750	---	34.97	50.00	15.03	L1	OFF	20.0

23.448750	**41.23**	**---**	**60.00**	**18.77**	**L1**	**OFF**	**20.0**

EUT Information

Report NO :	332310
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)
0.161250	---	32.65	55.40	22.75	N	OFF	19.8
0.161250	53.16	---	65.40	12.24	N	OFF	19.8
0.170250	---	42.36	54.95	12.59	N	OFF	19.8
0.170250	55.02	---	64.95	9.93	N	OFF	19.8
0.179250	---	33.43	54.52	21.09	N	OFF	19.8
0.179250	52.12	---	64.52	12.40	N	OFF	19.8
0.244500	---	24.67	51.94	27.27	N	OFF	19.8
0.244500	43.13	---	61.94	18.81	N	OFF	19.8
0.258000	---	33.16	51.50	18.34	N	OFF	19.8
0.258000	43.91	---	61.50	17.59	N	OFF	19.8
0.352500	---	20.22	48.90	28.68	N	OFF	19.8
0.352500	33.87	---	58.90	25.03	N	OFF	19.8
3.826500	---	18.25	46.00	27.75	N	OFF	19.9
3.826500	27.12	---	56.00	28.88	N	OFF	19.9
13.560000	---	44.60	50.00	5.40	N	OFF	20.1
13.560000	54.71	---	60.00	5.29	N	OFF	20.1
17.657250	---	29.75	50.00	20.25	N	OFF	20.1
17.657250	35.23	---	60.00	24.77	N	OFF	20.1
23.493750	---	36.37	50.00	13.63	N	OFF	20.2
23.493750	42.66	---	60.00	17.34	N	OFF	20.2

Appendix C. Radiated Spurious Emission

Test Engineer :	Jesse Wang, Stan Hsieh and Ken Wu	**Temperature :**	24.5~26.4°C
		Relative Humidity :	48.6~61.1%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
7+8		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		5635.6	50.66	-17.54	68.2	37.2	34.9	12.47	33.91	379	152	P	H
		5651	51.99	-16.95	68.94	38.53	34.9	12.47	33.91	379	152	P	H
		5718.6	64.65	-45.76	110.41	51.04	35.04	12.5	33.93	379	152	P	H
		5724.4	70.83	-50	120.83	57.21	35.05	12.5	33.93	379	152	P	H
	*	5745	108.96	-	-	95.28	35.09	12.52	33.93	379	152	P	H
	*	5745	101.96	-	-	88.28	35.09	12.52	33.93	379	152	A	H
													H
802.11a													H
CH 149		5608.4	52.26	-15.94	68.2	38.8	34.9	12.46	33.9	100	64	P	V
5745MHz		5687.8	51.02	-45.18	96.2	37.47	34.98	12.49	33.92	100	64	P	V
		5717.8	68.61	-41.57	110.18	55	35.04	12.5	33.93	100	64	P	V
		5723.2	70.84	-47.26	118.1	57.22	35.05	12.5	33.93	100	64	P	V
	*	5745	112.13	-	-	98.45	35.09	12.52	33.93	100	64	P	V
	*	5745	104.9	-	-	91.22	35.09	12.52	33.93	100	64	A	V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		5613.8	52.41	-15.79	68.2	38.95	34.9	12.46	33.9	380	132	P	H
		5687	51.43	-44.18	95.61	37.89	34.97	12.49	33.92	380	132	P	H
		5717.2	50.92	-59.1	110.02	37.32	35.03	12.5	33.93	380	132	P	H
		5723.2	49.07	-69.03	118.1	35.45	35.05	12.5	33.93	380	132	P	H
	*	5785	109.9	-	-	96.21	35.1	12.53	33.94	380	132	P	H
	*	5785	102.96	-	-	89.27	35.1	12.53	33.94	380	132	A	H
		5853.6	51.6	-62.39	113.99	37.85	35.11	12.6	33.96	380	132	P	H
		5855.4	50.71	-59.98	110.69	36.96	35.11	12.6	33.96	380	132	P	H
		5892.4	50.39	-41.9	92.29	36.5	35.18	12.68	33.97	380	132	P	H
		5945.4	51.25	-16.95	68.2	37.21	35.2	12.83	33.99	380	132	P	H
													H
802.11a CH 157 5785MHz													H
		5643	50.1	-18.1	68.2	36.64	34.9	12.47	33.91	108	61	P	V
		5663.8	50.62	-27.82	78.44	37.11	34.93	12.49	33.91	108	61	P	V
		5717.4	50.24	-59.83	110.07	36.64	35.03	12.5	33.93	108	61	P	V
		5724.4	49.16	-71.67	120.83	35.54	35.05	12.5	33.93	108	61	P	V
	*	5785	112.73	-	-	99.04	35.1	12.53	33.94	108	61	P	V
	*	5785	105.56	-	-	91.87	35.1	12.53	33.94	108	61	A	V
		5851.2	51.56	-67.9	119.46	37.82	35.1	12.6	33.96	108	61	P	V
		5865.6	51.16	-56.67	107.83	37.32	35.13	12.68	33.97	108	61	P	V
		5884.6	51.46	-46.61	98.07	37.58	35.17	12.68	33.97	108	61	P	V
		5932.4	50.35	-17.85	68.2	36.38	35.2	12.75	33.98	108	61	P	V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	*	5825	109.65	-	-	95.9	35.1	12.6	33.95	398	141	P	H
	*	5825	102.69	-	-	88.94	35.1	12.6	33.95	398	141	A	H
		5852	62.34	-55.3	117.64	48.6	35.1	12.6	33.96	398	141	P	H
		5856.4	58.26	-52.15	110.41	44.51	35.11	12.6	33.96	398	141	P	H
		5908.8	51.95	-28.2	80.15	37.98	35.2	12.75	33.98	398	141	P	H
		5949.4	50.98	-17.22	68.2	36.94	35.2	12.83	33.99	398	141	P	H
													H
802.11a													H
CH 165	*	5825	112.74	-	-	98.99	35.1	12.6	33.95	104	60	P	V
5825MHz	*	5825	105.72	-	-	91.97	35.1	12.6	33.95	104	60	A	V
		5852.4	66.33	-50.4	116.73	52.59	35.1	12.6	33.96	104	60	P	V
		5856.6	60.92	-49.43	110.35	47.17	35.11	12.6	33.96	104	60	P	V
		5876.2	51.29	-53.02	104.31	37.43	35.15	12.68	33.97	104	60	P	V
		5946.2	52.32	-15.88	68.2	38.28	35.2	12.83	33.99	104	60	P	V
													V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	45.7	-28.3	74	44.82	38.19	19.76	57.07	-	-	P	H
		17235	50.75	-17.45	68.2	41.17	41.4	23.81	55.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		11490	46	-28	74	45.12	38.19	19.76	57.07	-	-	P	V
		17235	50.31	-17.89	68.2	40.73	41.4	23.81	55.63	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
		11570	45.36	-28.64	74	44.24	38.27	19.83	56.98	-	-	P	H
		17355	51.44	-16.76	68.2	41.65	41.51	23.91	55.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
802.11a CH 157 5785MHz													H
		11570	46.2	-27.8	74	45.08	38.27	19.83	56.98	-	-	P	V
		17355	51.09	-17.11	68.2	41.3	41.51	23.91	55.63	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
		11650	46.88	-27.12	74	45.48	38.4	19.91	56.91	-	-	P	H
		17475	51.22	-16.98	68.2	41.4	41.45	24	55.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
802.11a CH 165 5825MHz													H
		11650	46.22	-27.78	74	44.82	38.4	19.91	56.91	-	-	P	V
		17475	50.71	-17.49	68.2	40.89	41.45	24	55.63	-	-	P	V
													V
													V
													V
													V
													V
													V
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													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Band 4 5725~5850MHz

WIFI 802.11ax HE20_Full (Band Edge @ 3m)

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		5627.2	51.94	-16.26	68.2	38.47	34.9	12.47	33.9	381	151	P	H
		5696.6	56.93	-45.76	102.69	43.37	34.99	12.49	33.92	381	151	P	H
		5718.6	67.27	-43.14	110.41	53.66	35.04	12.5	33.93	381	151	P	H
		5722.2	73.23	-42.59	115.82	59.62	35.04	12.5	33.93	381	151	P	H
	*	5745	110.35	-	-	96.67	35.09	12.52	33.93	381	151	P	H
	*	5745	102.1	-	-	88.42	35.09	12.52	33.93	381	151	A	H
802.11ax													H
HE20 Full													H
CH 149		5645.2	50.76	-17.44	68.2	37.3	34.9	12.47	33.91	100	65	P	V
5745MHz		5699.2	61.68	-42.93	104.61	48.11	35	12.49	33.92	100	65	P	V
		5719.8	73.32	-37.42	110.74	59.71	35.04	12.5	33.93	100	65	P	V
		5722.2	74.34	-41.48	115.82	60.73	35.04	12.5	33.93	100	65	P	V
	*	5745	112.34	-	-	98.66	35.09	12.52	33.93	100	65	P	V
	*	5745	104.83	-	-	91.15	35.09	12.52	33.93	100	65	A	V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		5616.8	52.36	-15.84	68.2	38.9	34.9	12.46	33.9	400	135	P	H
		5653.4	50.77	-19.96	70.73	37.3	34.91	12.47	33.91	400	135	P	H
		5718	50.37	-59.87	110.24	36.76	35.04	12.5	33.93	400	135	P	H
		5723.8	52.43	-67.03	119.46	38.81	35.05	12.5	33.93	400	135	P	H
	*	5785	111.92	-	-	98.23	35.1	12.53	33.94	400	135	P	H
	*	5785	103.38	-	-	89.69	35.1	12.53	33.94	400	135	A	H
		5850.8	49.49	-70.89	120.38	35.75	35.1	12.6	33.96	400	135	P	H
		5864.6	52.95	-55.16	108.11	39.1	35.13	12.68	33.96	400	135	P	H
		5894.6	50.78	-39.88	90.66	36.88	35.19	12.68	33.97	400	135	P	H
		5933.4	50.62	-17.58	68.2	36.65	35.2	12.75	33.98	400	135	P	H
802.11ax													H
HE20 Full													H
CH 157		5618	51.51	-16.69	68.2	38.05	34.9	12.46	33.9	100	61	P	V
5785MHz		5678.8	51.4	-38.15	89.55	37.87	34.96	12.49	33.92	100	61	P	V
		5715.4	53.62	-55.89	109.51	40.02	35.03	12.5	33.93	100	61	P	V
		5724.6	57.23	-64.06	121.29	43.61	35.05	12.5	33.93	100	61	P	V
	*	5785	113.41	-	-	99.72	35.1	12.53	33.94	100	61	P	V
	*	5785	104.77	-	-	91.08	35.1	12.53	33.94	100	61	A	V
		5853.6	59.23	-54.76	113.99	45.48	35.11	12.6	33.96	100	61	P	V
		5856	56.09	-54.43	110.52	42.34	35.11	12.6	33.96	100	61	P	V
		5878.4	52.85	-49.82	102.67	38.98	35.16	12.68	33.97	100	61	P	V
		5948	51.14	-17.06	68.2	37.1	35.2	12.83	33.99	100	61	P	V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	*	5825	111.42	-	-	97.21	35.1	13.06	33.95	358	135	P	H
	*	5825	103.3	-	-	89.09	35.1	13.06	33.95	358	135	A	H
		5850.8	63.05	-57.33	120.38	48.84	35.1	13.07	33.96	358	135	P	H
		5858.2	64.73	-45.17	109.9	50.49	35.12	13.08	33.96	358	135	P	H
		5878.2	53.22	-49.6	102.82	38.86	35.16	13.17	33.97	358	135	P	H
		5936.2	51.42	-16.78	68.2	36.94	35.2	13.26	33.98	358	135	P	H
802.11ax													H
HE20 Full													H
CH 165	*	5825	113.94	-	-	100.19	35.1	12.6	33.95	102	60	P	V
5825MHz	*	5825	105.11	-	-	91.36	35.1	12.6	33.95	102	60	A	V
		5850.6	75.25	-45.58	120.83	61.51	35.1	12.6	33.96	102	60	P	V
		5858.8	66.41	-43.32	109.73	52.65	35.12	12.6	33.96	102	60	P	V
		5880.8	57.9	-42.99	100.89	44.03	35.16	12.68	33.97	102	60	P	V
		5939.4	52.18	-16.02	68.2	38.21	35.2	12.75	33.98	102	60	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 802.11ax HE20 Full (Harmonic @ 3m)

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
		11490	45.43	-28.57	74	44.55	38.19	19.76	57.07	-	-	P	H
		17235	50.23	-17.97	68.2	40.65	41.4	23.81	55.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
802.11ax													H
HE20 Full													H
CH 149		11490	46.02	-27.98	74	45.14	38.19	19.76	57.07	-	-	P	V
5745MHz		17235	49.75	-18.45	68.2	40.17	41.4	23.81	55.63	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		11570	45.37	-28.63	74	44.25	38.27	19.83	56.98	-	-	P	H
		17355	50.73	-17.47	68.2	40.94	41.51	23.91	55.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
802.11ax													H
HE20 Full													H
CH 157		11570	46.34	-27.66	74	45.22	38.27	19.83	56.98	-	-	P	V
5785MHz		17355	50.7	-17.5	68.2	40.91	41.51	23.91	55.63	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
		11650	46.31	-27.69	74	44.91	38.4	19.91	56.91	-	-	P	H
		17475	50.95	-17.25	68.2	41.13	41.45	24	55.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
802.11ax													H
HE20 Full													H
CH 165		11650	46.18	-27.82	74	44.78	38.4	19.91	56.91	-	-	P	V
5825MHz		17475	50.05	-18.15	68.2	40.23	41.45	24	55.63	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Band 4 5725~5850MHz

WIFI 802.11ax HE20_Partial 106 (Band Edge @ 3m)

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		5629.8	52.08	-16.12	68.2	38.61	34.9	12.47	33.9	329	132	P	H
		5696.8	68.89	-33.95	102.84	55.33	34.99	12.49	33.92	329	132	P	H
		5715	78.85	-30.55	109.4	65.25	35.03	12.5	33.93	329	132	P	H
		5724.4	81.68	-39.15	120.83	68.06	35.05	12.5	33.93	329	132	P	H
	*	5745	113.02	-	-	99.34	35.09	12.52	33.93	329	132	P	H
802.11ax	*	5745	105	-	-	91.32	35.09	12.52	33.93	329	132	A	H
HE20													H
Partial													H
106/53		5648.2	54.57	-13.63	68.2	41.11	34.9	12.47	33.91	100	60	P	V
CH 149		5699.8	75.97	-29.08	105.05	62.4	35	12.49	33.92	100	60	P	V
5745MHz		5712.8	80.57	-28.22	108.79	66.97	35.03	12.5	33.93	100	60	P	V
		5722.2	81.2	-34.62	115.82	67.59	35.04	12.5	33.93	100	60	P	V
	*	5745	114.57	-	-	100.89	35.09	12.52	33.93	100	60	P	V
	*	5745	107.05	-	-	93.37	35.09	12.52	33.93	100	60	A	V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	*	5825	112.67	-	-	98.92	35.1	12.6	33.95	306	142	P	H
	*	5825	104.35	-	-	90.6	35.1	12.6	33.95	306	142	A	H
		5851	82.61	-37.31	119.92	68.87	35.1	12.6	33.96	306	142	P	H
		5858.8	78.98	-30.75	109.73	65.22	35.12	12.6	33.96	306	142	P	H
		5878.8	72.29	-30.09	102.38	58.42	35.16	12.68	33.97	306	142	P	H
802.11ax		5934.4	57.69	-10.51	68.2	43.72	35.2	12.75	33.98	306	142	P	H
HE20													H
Partial													H
106/54	*	5825	115.71	-	-	101.96	35.1	12.6	33.95	102	60	P	V
CH 165	*	5825	107.06	-	-	93.31	35.1	12.6	33.95	102	60	A	V
5825MHz		5852.2	86.06	-31.12	117.18	72.32	35.1	12.6	33.96	102	60	P	V
		5857.6	81.21	-28.86	110.07	67.45	35.12	12.6	33.96	102	60	P	V
		5878.8	77.89	-24.49	102.38	64.02	35.16	12.68	33.97	102	60	P	V
		5932	62.7	-5.5	68.2	48.73	35.2	12.75	33.98	102	60	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 802.11ax HE40_Full (Band Edge @ 3m)

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		5647.8	51.8	-16.4	68.2	38.34	34.9	12.47	33.91	378	151	P	H
		5698.4	60.65	-43.37	104.02	47.08	35	12.49	33.92	378	151	P	H
		5719.2	65.85	-44.73	110.58	52.24	35.04	12.5	33.93	378	151	P	H
		5720.6	68.42	-43.75	112.17	54.81	35.04	12.5	33.93	378	151	P	H
	*	5755	107.05	-	-	93.37	35.1	12.52	33.94	378	151	P	H
	*	5755	98.9	-	-	85.22	35.1	12.52	33.94	378	151	A	H
		5851.4	52.06	-66.95	119.01	38.32	35.1	12.6	33.96	378	151	P	H
		5865.2	51.81	-56.13	107.94	37.96	35.13	12.68	33.96	378	151	P	H
		5878.8	52	-50.38	102.38	38.13	35.16	12.68	33.97	378	151	P	H
		5934	50.65	-17.55	68.2	36.68	35.2	12.75	33.98	378	151	P	H
802.11ax													H
HE40 Full													H
CH 151		5621	53.35	-14.85	68.2	39.88	34.9	12.47	33.9	100	60	P	V
5755MHz		5696.6	60.13	-42.56	102.69	46.57	34.99	12.49	33.92	100	60	P	V
		5718.8	69.46	-41	110.46	55.85	35.04	12.5	33.93	100	60	P	V
		5720.2	73.12	-38.14	111.26	59.51	35.04	12.5	33.93	100	60	P	V
	*	5755	111.04	-	-	97.36	35.1	12.52	33.94	100	60	P	V
	*	5755	101.62	-	-	87.94	35.1	12.52	33.94	100	60	A	V
		5852	53.18	-64.46	117.64	39.44	35.1	12.6	33.96	100	60	P	V
		5864.4	53.88	-54.29	108.17	40.03	35.13	12.68	33.96	100	60	P	V
		5895.8	54.17	-35.6	89.77	40.27	35.19	12.68	33.97	100	60	P	V
		5925.6	51.9	-16.3	68.2	37.93	35.2	12.75	33.98	100	60	P	V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		5642	50.97	-17.23	68.2	37.51	34.9	12.47	33.91	400	135	P	H
		5667.2	52.15	-28.81	80.96	38.64	34.93	12.49	33.91	400	135	P	H
		5705.6	50.52	-56.25	106.77	36.93	35.01	12.5	33.92	400	135	P	H
		5720.2	49.65	-61.61	111.26	36.04	35.04	12.5	33.93	400	135	P	H
	*	5795	109.87	-	-	96.19	35.1	12.53	33.95	400	135	P	H
	*	5795	100.04	-	-	86.36	35.1	12.53	33.95	400	135	A	H
		5854.4	54.66	-57.51	112.17	40.91	35.11	12.6	33.96	400	135	P	H
		5859.8	53.21	-56.24	109.45	39.45	35.12	12.6	33.96	400	135	P	H
		5897	52.8	-36.08	88.88	38.9	35.19	12.68	33.97	400	135	P	H
		5948.8	51.73	-16.47	68.2	37.69	35.2	12.83	33.99	400	135	P	H
802.11ax													H
HE40 Full													H
CH 159		5640.2	51.29	-16.91	68.2	37.83	34.9	12.47	33.91	104	60	P	V
5795MHz		5657.2	51.8	-21.75	73.55	38.33	34.91	12.47	33.91	104	60	P	V
		5719.8	53.57	-57.17	110.74	39.96	35.04	12.5	33.93	104	60	P	V
		5723.6	55.47	-63.54	119.01	41.85	35.05	12.5	33.93	104	60	P	V
	*	5795	112.04	-	-	98.36	35.1	12.53	33.95	104	60	P	V
	*	5795	102.23	-	-	88.55	35.1	12.53	33.95	104	60	A	V
		5850.2	61.37	-60.37	121.74	47.63	35.1	12.6	33.96	104	60	P	V
		5861.6	58.04	-50.91	108.95	44.2	35.12	12.68	33.96	104	60	P	V
		5881.2	58.12	-42.47	100.59	44.25	35.16	12.68	33.97	104	60	P	V
		5927.8	52.78	-15.42	68.2	38.81	35.2	12.75	33.98	104	60	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 802.11ax HE40_Full (Harmonic @ 3m)

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		11510	45.79	-28.21	74	44.82	38.21	19.8	57.04	-	-	P	H
		17265	49.54	-18.66	68.2	39.93	41.4	23.84	55.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
802.11ax													H
HE40 Full													H
CH 151		11510	46.24	-27.76	74	45.27	38.21	19.8	57.04	-	-	P	V
5755MHz		17265	49.63	-18.57	68.2	40.02	41.4	23.84	55.63	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
		11590	45.4	-28.6	74	44.21	38.29	19.87	56.97	-	-	P	H
		17385	50.86	-17.34	68.2	40.98	41.57	23.94	55.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
802.11ax													H
HE40 Full													H
CH 159		11590	46.03	-27.97	74	44.84	38.29	19.87	56.97	-	-	P	V
5795MHz		17385	50.39	-17.81	68.2	40.51	41.57	23.94	55.63	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Band 4 5725~5850MHz

WIFI 802.11ax HE40_Partial 242 (Band Edge @ 3m)

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5648.4	66.27	-1.93	68.2	52.81	34.9	12.47	33.91	312	133	P	H
		5696	72.4	-29.85	102.25	58.84	34.99	12.49	33.92	312	133	P	H
		5717	75.1	-34.86	109.96	61.5	35.03	12.5	33.93	312	133	P	H
		5724.2	76.76	-43.62	120.38	63.14	35.05	12.5	33.93	312	133	P	H
	*	5755	110.46	-	-	96.78	35.1	12.52	33.94	312	133	P	H
	*	5755	102.63	-	-	88.95	35.1	12.52	33.94	312	133	A	H
		5850.4	63.47	-57.82	121.29	49.73	35.1	12.6	33.96	312	133	P	H
		5874	64.2	-41.28	105.48	50.34	35.15	12.68	33.97	312	133	P	H
		5880.2	63.31	-38.03	101.34	49.44	35.16	12.68	33.97	312	133	P	H
		5946.4	59.51	-8.69	68.2	45.47	35.2	12.83	33.99	312	133	P	H
802.11ax													
HE40													H
Partial													H
242/61		5639	66.61	-1.59	68.2	53.15	34.9	12.47	33.91	100	60	P	V
CH 151		5699.8	76.12	-28.93	105.05	62.55	35	12.49	33.92	100	60	P	V
5755MHz		5710.6	78.58	-29.59	108.17	64.98	35.02	12.5	33.92	100	60	P	V
		5721.2	78.86	-34.68	113.54	65.25	35.04	12.5	33.93	100	60	P	V
	*	5755	112.97	-	-	99.29	35.1	12.52	33.94	100	60	P	V
	*	5755	104.26	-	-	90.58	35.1	12.52	33.94	100	60	A	V
		5850	72.4	-49.8	122.2	58.66	35.1	12.6	33.96	100	60	P	V
		5865.6	69.75	-38.08	107.83	55.91	35.13	12.68	33.97	100	60	P	V
		5898.4	69.11	-18.74	87.85	55.2	35.2	12.68	33.97	100	60	P	V
		5937	60.46	-7.74	68.2	46.49	35.2	12.75	33.98	100	60	P	V
													V
													V

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		5644.4	57.73	-10.47	68.2	44.27	34.9	12.47	33.91	400	141	P	H
		5668.6	60.32	-21.68	82	46.8	34.94	12.49	33.91	400	141	P	H
		5705.6	62.24	-44.53	106.77	48.65	35.01	12.5	33.92	400	141	P	H
		5720.6	53.31	-58.86	112.17	39.7	35.04	12.5	33.93	400	141	P	H
	*	5795	111.85	-	-	98.17	35.1	12.53	33.95	400	141	P	H
	*	5795	103.28	-	-	89.6	35.1	12.53	33.95	400	141	A	H
		5851.6	65.72	-52.83	118.55	51.98	35.1	12.6	33.96	400	141	P	H
		5859.8	65.32	-44.13	109.45	51.56	35.12	12.6	33.96	400	141	P	H
		5877.8	66.25	-36.87	103.12	52.38	35.16	12.68	33.97	400	141	P	H
802.11ax		5937	62.74	-5.46	68.2	48.77	35.2	12.75	33.98	400	141	P	H
HE40													H
Partial													H
242/62		5606	56.87	-11.33	68.2	43.41	34.9	12.46	33.9	105	61	P	V
CH 159		5677.2	56.4	-31.97	88.37	42.88	34.95	12.49	33.92	105	61	P	V
5795MHz		5705.6	60.05	-46.72	106.77	46.46	35.01	12.5	33.92	105	61	P	V
		5722.4	60.82	-55.45	116.27	47.21	35.04	12.5	33.93	105	61	P	V
	*	5795	115.07	-	-	101.39	35.1	12.53	33.95	105	61	P	V
	*	5795	106.05	-	-	92.37	35.1	12.53	33.95	105	61	A	V
		5850.6	77.39	-43.44	120.83	63.65	35.1	12.6	33.96	105	61	P	V
		5858.6	75.52	-34.27	109.79	61.76	35.12	12.6	33.96	105	61	P	V
		5878.2	71.01	-31.81	102.82	57.14	35.16	12.68	33.97	105	61	P	V
		5927.2	64.95	-3.25	68.2	50.98	35.2	12.75	33.98	105	61	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 802.11ax HE80_Full (Band Edge @ 3m)

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5648.8	55.45	-12.75	68.2	41.99	34.9	12.47	33.91	100	117	P	H
		5697.2	60.5	-42.64	103.14	46.94	34.99	12.49	33.92	100	117	P	H
		5717.2	61.99	-48.03	110.02	48.39	35.03	12.5	33.93	100	117	P	H
		5723.4	64.6	-53.95	118.55	50.98	35.05	12.5	33.93	100	117	P	H
	*	5775	103.3	-	-	89.62	35.1	12.52	33.94	100	117	P	H
	*	5775	94.14	-	-	80.46	35.1	12.52	33.94	100	117	A	H
		5854.8	58.18	-53.08	111.26	44.43	35.11	12.6	33.96	100	117	P	H
		5858.2	61.23	-48.67	109.9	47.47	35.12	12.6	33.96	100	117	P	H
		5876.4	57.41	-46.75	104.16	43.55	35.15	12.68	33.97	100	117	P	H
		5933.6	51.85	-16.35	68.2	37.88	35.2	12.75	33.98	100	117	P	H
802.11ax													H
HE80 Full													H
CH 155		5639.2	57.53	-10.67	68.2	44.07	34.9	12.47	33.91	100	205	P	V
5775MHz		5695.6	65.37	-36.59	101.96	51.81	34.99	12.49	33.92	100	205	P	V
		5713.8	67.29	-41.78	109.07	53.69	35.03	12.5	33.93	100	205	P	V
		5723.8	62.47	-56.99	119.46	48.85	35.05	12.5	33.93	100	205	P	V
	*	5775	106.06	-	-	92.38	35.1	12.52	33.94	100	205	P	V
	*	5775	96.99	-	-	83.31	35.1	12.52	33.94	100	205	A	V
		5853.4	67.69	-46.76	114.45	53.94	35.11	12.6	33.96	100	205	P	V
		5857.4	64.28	-45.85	110.13	50.53	35.11	12.6	33.96	100	205	P	V
		5876	62.73	-41.73	104.46	48.87	35.15	12.68	33.97	100	205	P	V
		5936	55.16	-13.04	68.2	41.19	35.2	12.75	33.98	100	205	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 802.11ax HE80_Full (Harmonic @ 3m)

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
		11550	46.6	-27.4	74	45.52	38.25	19.83	57	-	-	P	H
		17325	50	-18.2	68.2	40.3	41.45	23.88	55.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
802.11ax													H
HE80 Full													H
CH 155		11550	46.34	-27.66	74	45.26	38.25	19.83	57	-	-	P	V
5775MHz		17325	50.07	-18.13	68.2	40.37	41.45	23.88	55.63	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Band 4 5725~5850MHz

WIFI 802.11ax HE80_Partial 484 (Band Edge @ 3m)

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBµV/m)	Margin (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)
		5632	51.83	-16.37	68.2	38.36	34.9	12.47	33.9	400	150	P	H
		5682.8	60.9	-31.61	92.51	47.36	34.97	12.49	33.92	400	150	P	H
		5713	68.83	-40.01	108.84	55.23	35.03	12.5	33.93	400	150	P	H
		5723.8	62.1	-57.36	119.46	48.48	35.05	12.5	33.93	400	150	P	H
	*	5775	103.59	-	-	89.91	35.1	12.52	33.94	400	150	P	H
	*	5775	95.76	-	-	82.08	35.1	12.52	33.94	400	150	A	H
		5854	55.02	-58.06	113.08	41.27	35.11	12.6	33.96	400	150	P	H
		5863.8	69	-39.33	108.33	55.15	35.13	12.68	33.96	400	150	P	H
		5878.4	63.57	-39.1	102.67	49.7	35.16	12.68	33.97	400	150	P	H
802.11ax		5937	51.03	-17.17	68.2	37.06	35.2	12.75	33.98	400	150	P	H
HE80													H
Partial													H
484/65		5641.4	61.11	-7.09	68.2	47.65	34.9	12.47	33.91	100	62	P	V
CH 155		5682.8	65.68	-26.83	92.51	52.14	34.97	12.49	33.92	100	62	P	V
5775MHz		5718.8	73.88	-36.58	110.46	60.27	35.04	12.5	33.93	100	62	P	V
		5722.2	74.8	-41.02	115.82	61.19	35.04	12.5	33.93	100	62	P	V
	*	5775	108.03	-	-	94.35	35.1	12.52	33.94	100	62	P	V
	*	5775	99.15	-	-	85.47	35.1	12.52	33.94	100	62	A	V
		5853.6	63.37	-50.62	113.99	49.62	35.11	12.6	33.96	100	62	P	V
		5871.2	62.12	-44.14	106.26	48.27	35.14	12.68	33.97	100	62	P	V
		5885.2	67.45	-30.18	97.63	53.57	35.17	12.68	33.97	100	62	P	V
		5925	51.24	-16.96	68.2	37.27	35.2	12.75	33.98	100	62	P	V
													V
													V

Remark

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

WIFI Ant. 7+8	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5648.8	65.51	-2.69	68.2	52.05	34.9	12.47	33.91	400	135	P	H
		5689.4	68.31	-29.07	97.38	54.76	34.98	12.49	33.92	400	135	P	H
		5710	68.21	-39.79	108	54.61	35.02	12.5	33.92	400	135	P	H
		5724.8	69.53	-52.21	121.74	55.91	35.05	12.5	33.93	400	135	P	H
	*	5775	106.43	-	-	92.75	35.1	12.52	33.94	400	135	P	H
	*	5775	98.82	-	-	85.14	35.1	12.52	33.94	400	135	A	H
		5850.4	67.8	-53.49	121.29	54.06	35.1	12.6	33.96	400	135	P	H
		5857.6	70.77	-39.3	110.07	57.01	35.12	12.6	33.96	400	135	P	H
		5897	66.16	-22.72	88.88	52.26	35.19	12.68	33.97	400	135	P	H
802.11ax		5942.8	62.36	-5.84	68.2	48.32	35.2	12.83	33.99	400	135	P	H
HE80													H
Partial													H
484/66		5646.6	66.22	-1.98	68.2	52.76	34.9	12.47	33.91	106	61	P	V
CH 155		5688.2	71.25	-25.25	96.5	57.7	34.98	12.49	33.92	106	61	P	V
5775MHz		5712.2	78.39	-30.23	108.62	64.8	35.02	12.5	33.93	106	61	P	V
		5721.4	74.17	-39.82	113.99	60.56	35.04	12.5	33.93	106	61	P	V
	*	5775	109.66	-	-	95.98	35.1	12.52	33.94	106	61	P	V
	*	5775	101.3	-	-	87.62	35.1	12.52	33.94	106	61	A	V
		5851	77.09	-42.83	119.92	63.35	35.1	12.6	33.96	100	55	P	V
		5862.4	76.72	-32.01	108.73	62.88	35.12	12.68	33.96	100	55	P	V
		5877	73.65	-30.06	103.71	59.79	35.15	12.68	33.97	100	55	P	V
		5938.6	66.28	-1.92	68.2	52.31	35.2	12.75	33.98	100	55	P	V
													V
													V

Remark

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

Emission below 1GHz

5GHz WIFI 802.11ax HE40 Full (LF @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
7+8		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE40 Full LF		30.27	31.12	-8.88	40	35.8	24.04	1.36	30.08	400	0	P	H
		43.77	27.34	-12.66	40	38.39	17.55	1.36	29.96	400	0	P	H
		57.81	22.4	-17.6	40	39.13	11.89	1.36	29.98	400	0	P	H
		339.2	32.12	-13.88	46	39.12	19.98	2.9	29.88	100	0	P	H
		855.8	31.64	-14.36	46	27.08	28.96	4.86	29.26	100	0	P	H
		945.4	33.14	-12.86	46	26.82	30.03	5.14	28.85	100	0	P	H
													H
													H
													H
													H
													H
													H
		30	33.72	-6.28	40	38.33	24.11	1.36	30.08	400	0	P	V
		35.67	31.95	-8.05	40	38.9	21.67	1.36	29.98	400	0	P	V
		39.45	29.39	-10.61	40	38.11	19.87	1.36	29.95	400	0	P	V
		790	30.86	-15.14	46	27.84	27.89	4.74	29.61	100	0	P	V
		885.2	32.54	-13.46	46	27.86	28.75	5.03	29.1	100	0	P	V
		958.7	34.43	-11.57	46	27.45	30.63	5.14	28.79	100	0	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

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

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

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
7+8		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5650	55.45	-12.75	68.2	54.51	32.22	4.58	35.86	103	308	P	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. Margin (dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 68.2(dBμV/m)

= -12.75 (dB)

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

Appendix D. Radiated Spurious Emission Plots

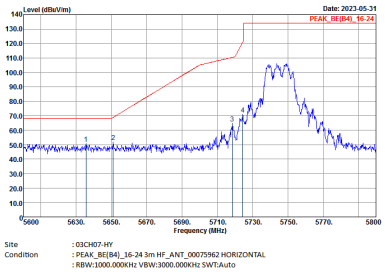
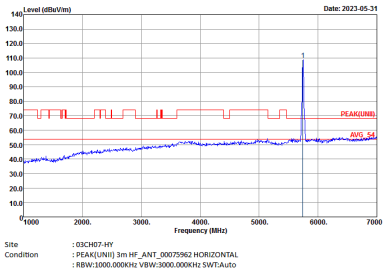
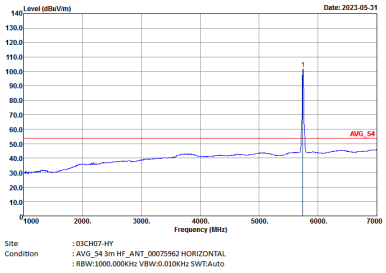
Test Engineer :	Jesse Wang, Stan Hsieh and Ken Wu	**Temperature :**	24.5~26.4°C
		Relative Humidity :	48.6~61.1%

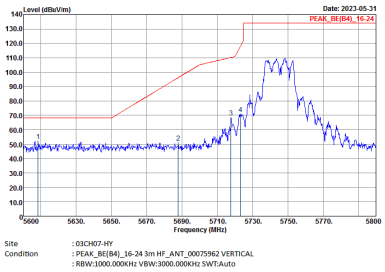
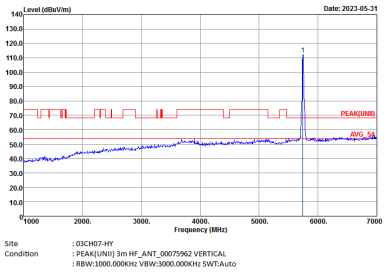
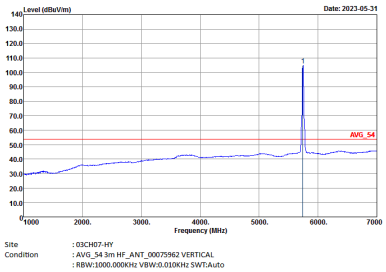
Note symbol

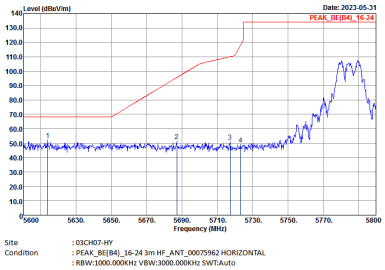
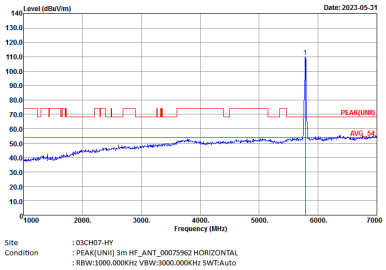
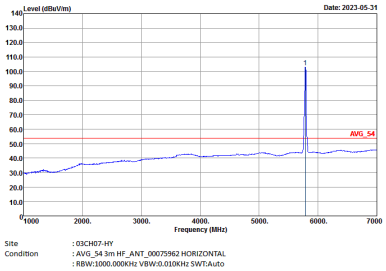
-L	**Low channel location**
-R	**High channel location**

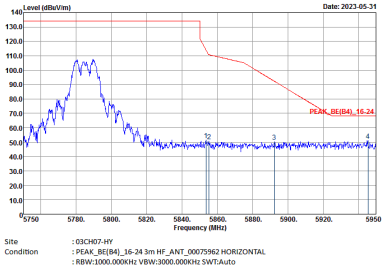
Band 4 - 5725~5850MHz

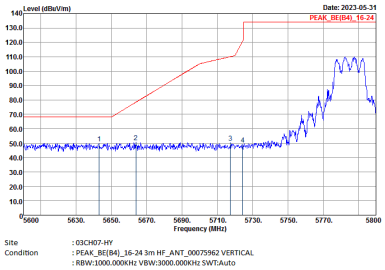
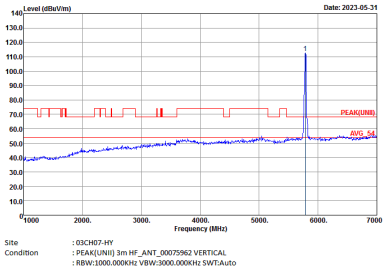
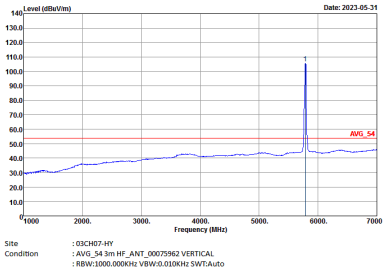
WIFI 802.11a (Band Edge @ 3m)

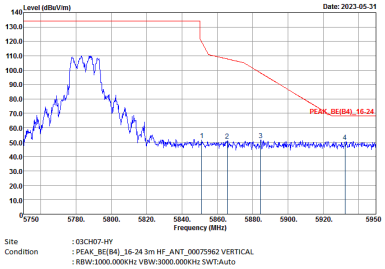
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

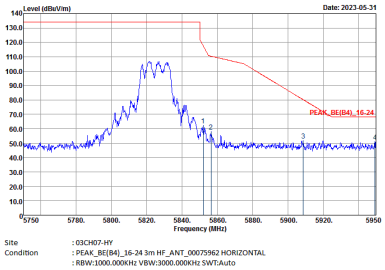
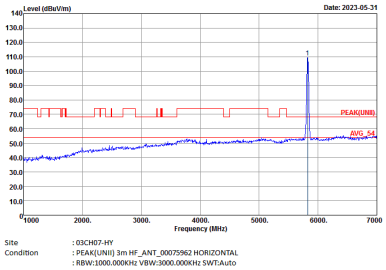
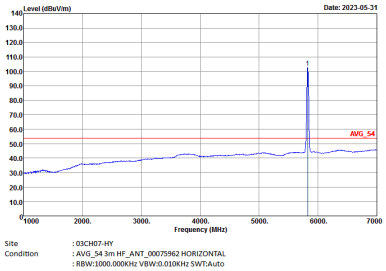
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

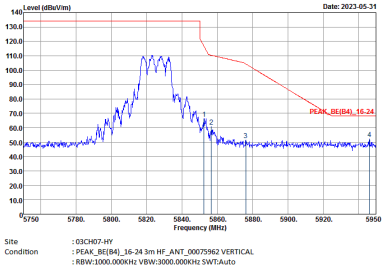
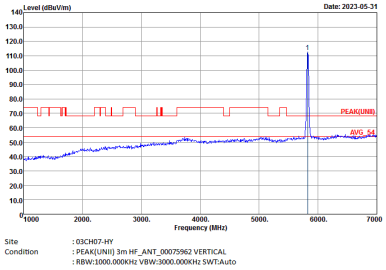
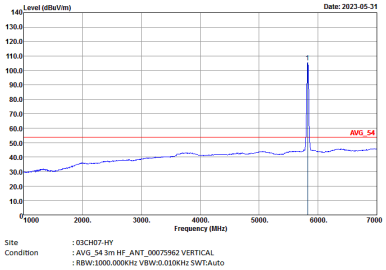
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
7+8	Horizontal	Fundamental
Peak		Left blank

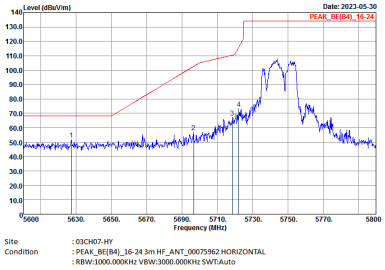
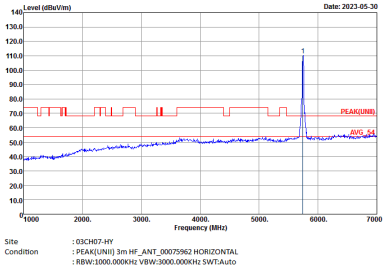
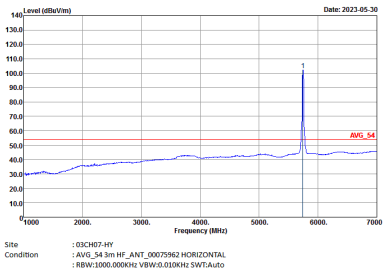
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

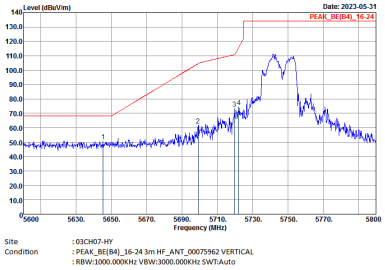
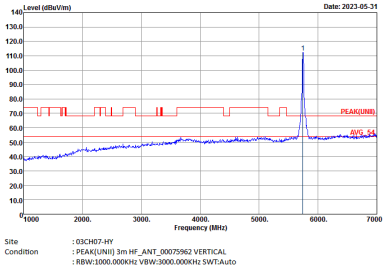
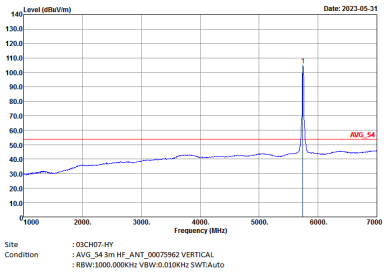
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
7+8	Vertical	Fundamental
Peak		Left blank

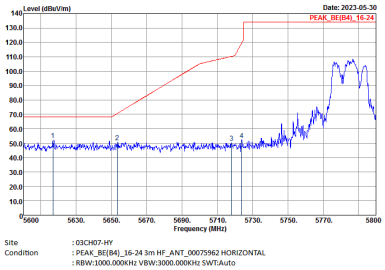
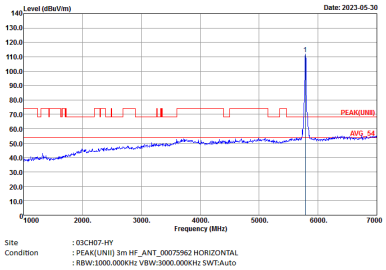
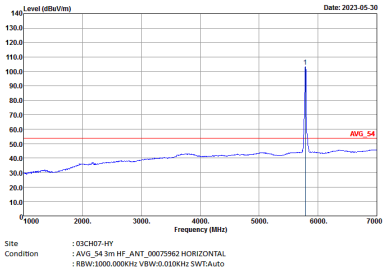
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

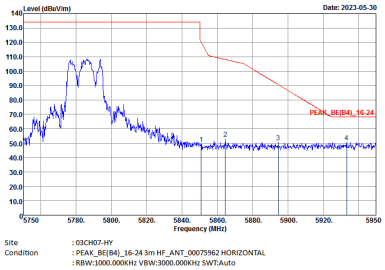
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

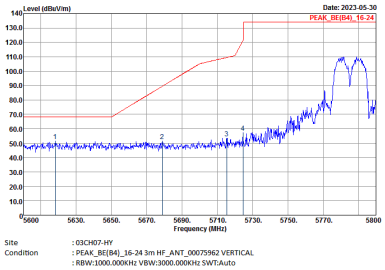
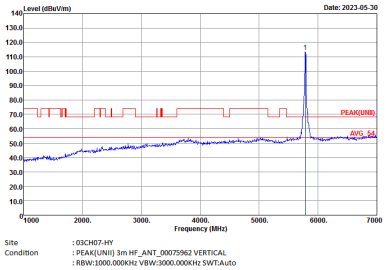
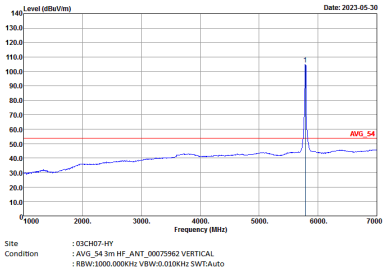
Band 4 5725~5850MHz
WIFI 802.11ax HE20 Full (Band Edge @ 3m)

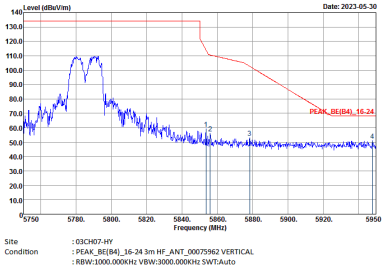
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

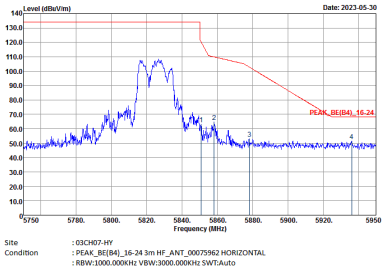
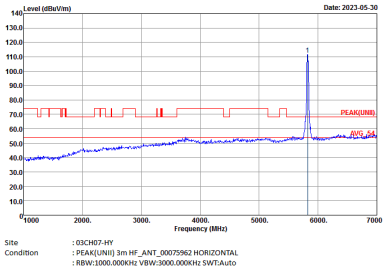
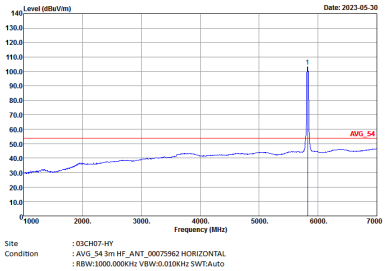
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

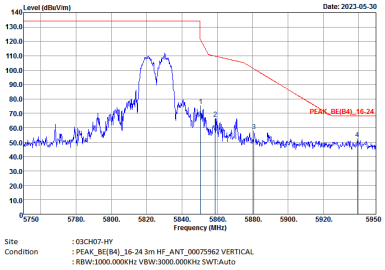
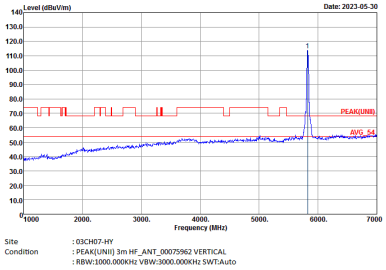
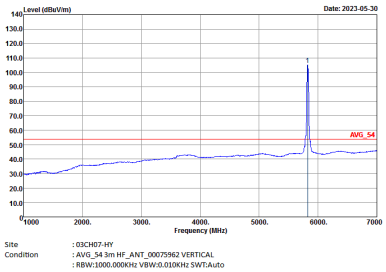
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
7+8	Horizontal	Fundamental
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

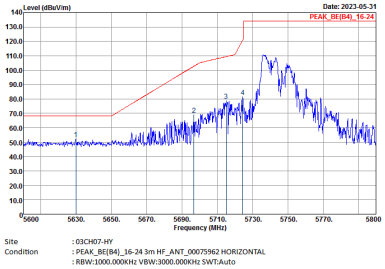
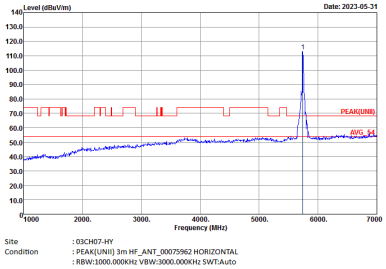
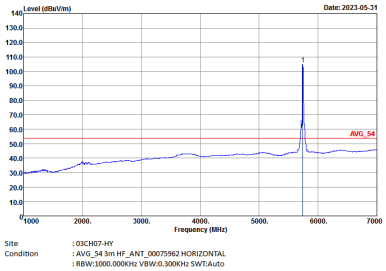
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
7+8	Vertical	Fundamental
Peak		Left blank

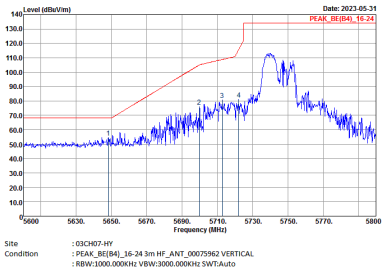
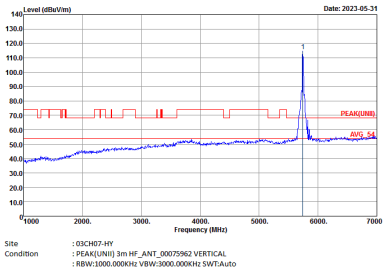
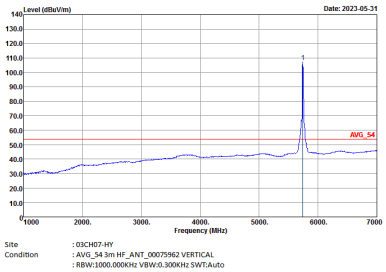
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

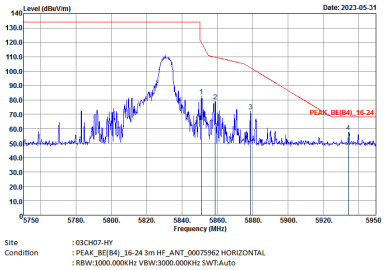
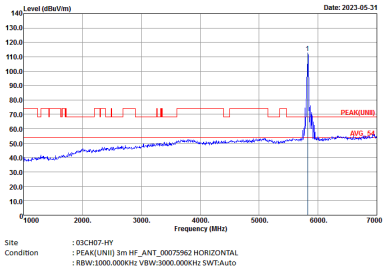
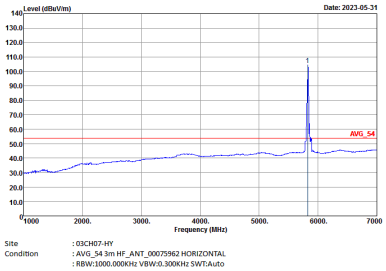
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

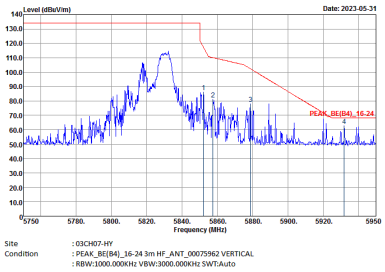
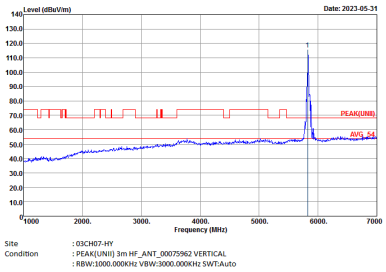
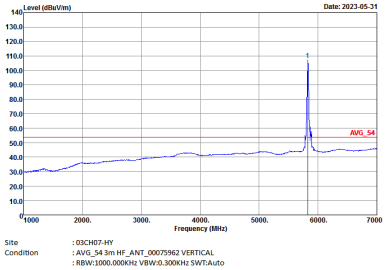
Band 4 5725~5850MHz

WIFI 802.11ax HE20 Partial 106 (Band Edge @ 3m)

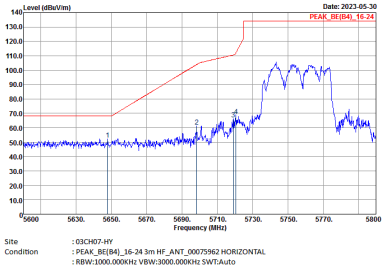
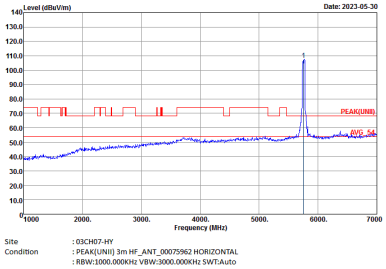
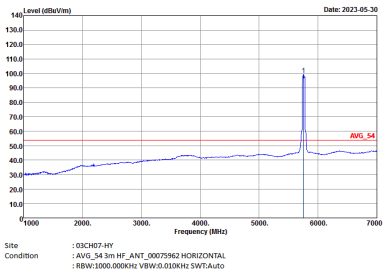
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/53 CH149 5745MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

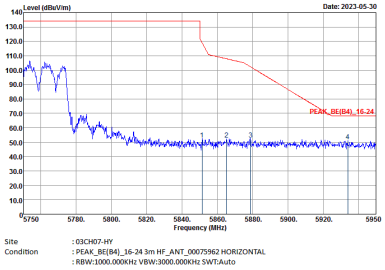
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/53 CH149 5745MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

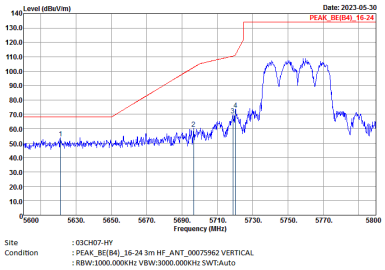
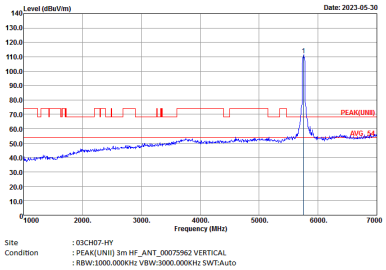
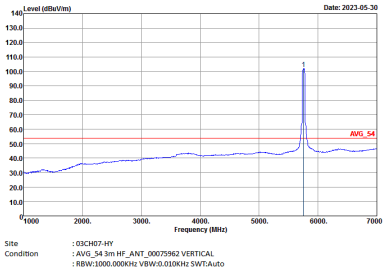
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/54 CH165 5825MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

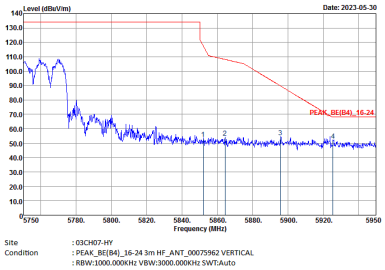
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/54 CH165 5825MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

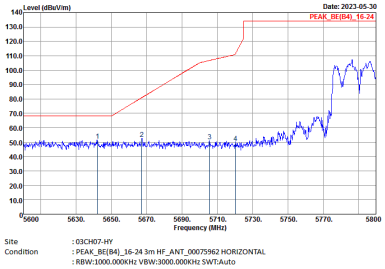
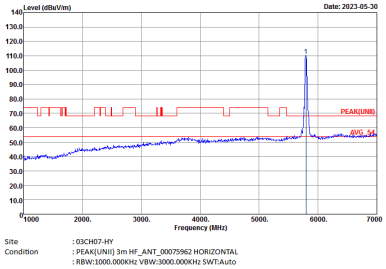
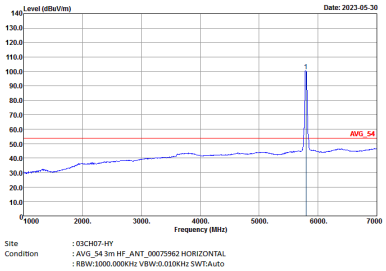
Band 4 5725~5850MHz
WIFI 802.11ax HE40 Full (Band Edge @ 3m)

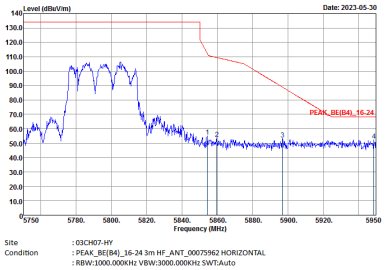
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

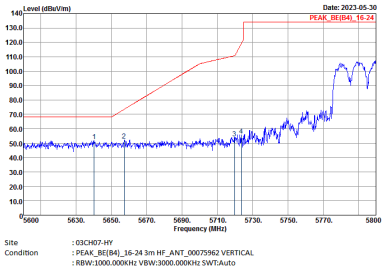
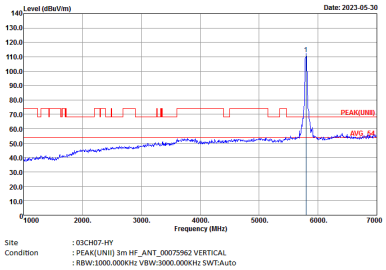
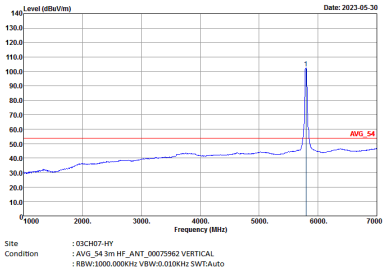
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
7+8	Horizontal	Fundamental
Peak		Left blank

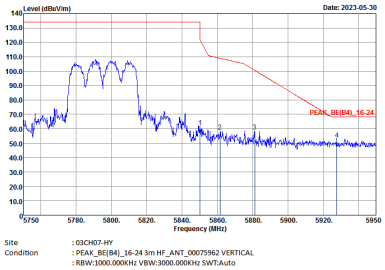
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
7+8	Vertical	Fundamental
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

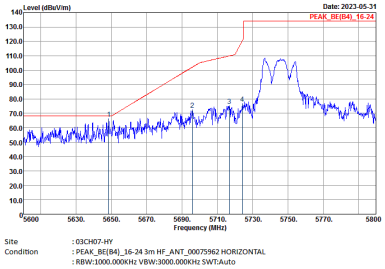
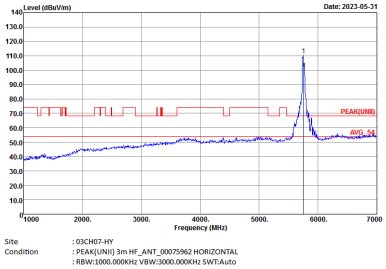
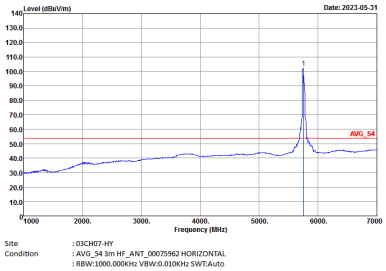
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
7+8	Horizontal	Fundamental
Peak		Left blank

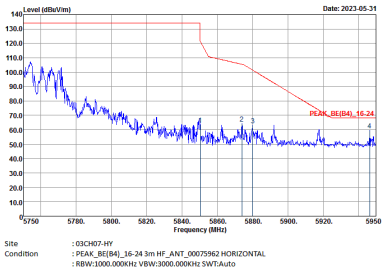
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

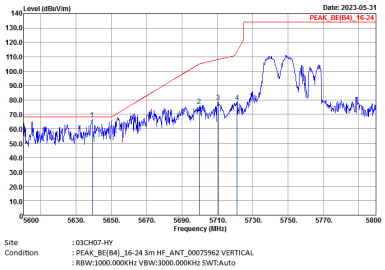
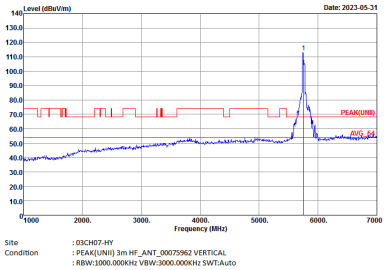
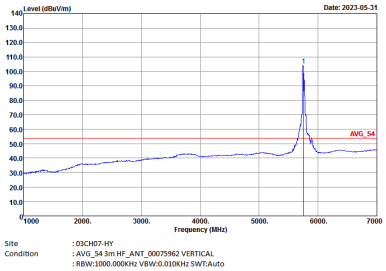
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
7+8	Vertical	Fundamental
Peak		Left blank

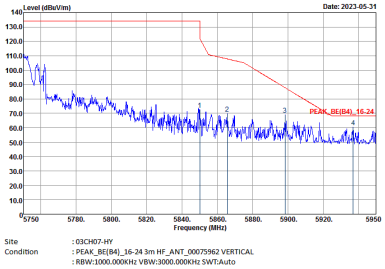
Band 4 5725~5850MHz

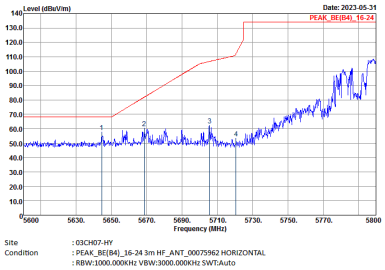
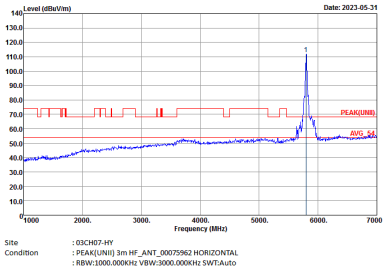
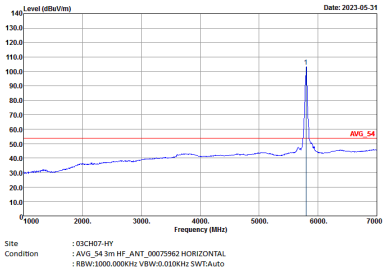
WIFI 802.11ax HE40 Partial 242 (Band Edge @ 3m)

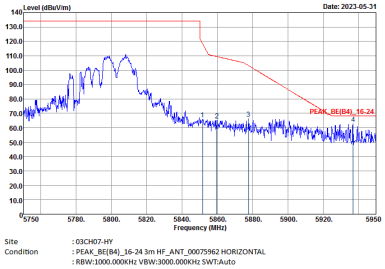
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/61 CH151 5755MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

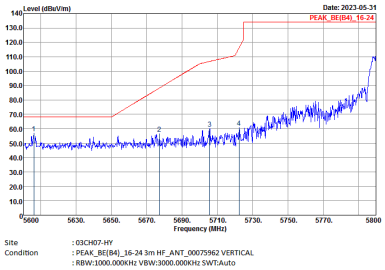
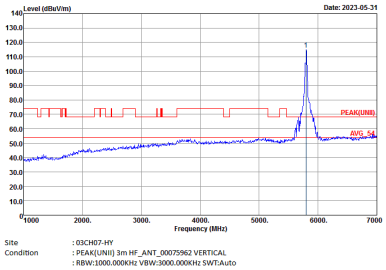
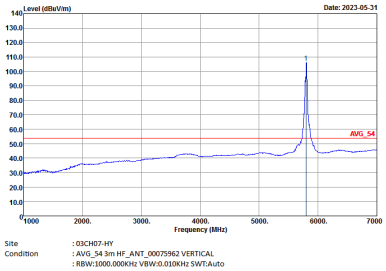
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/61 CH151 5755MHz	
7+8	Horizontal	Fundamental
Peak		Left blank

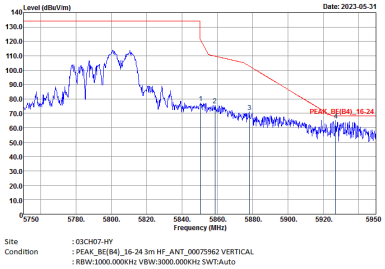
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/61 CH151 5755MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/61 CH151 5755MHz	
7+8	Vertical	Fundamental
Peak		Left blank

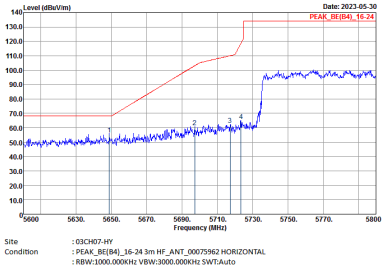
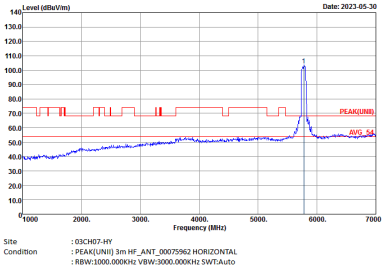
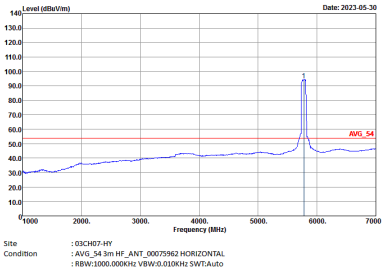
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/62 CH159 5795MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

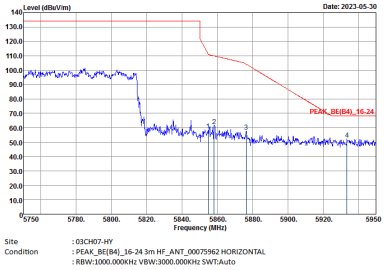
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/62 CH159 5795MHz	
7+8	Horizontal	Fundamental
Peak		Left blank

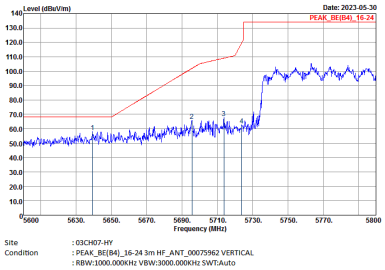
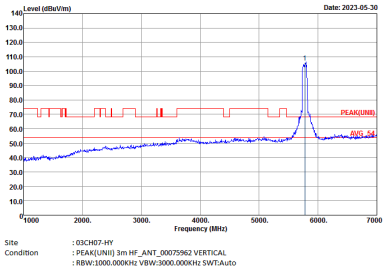
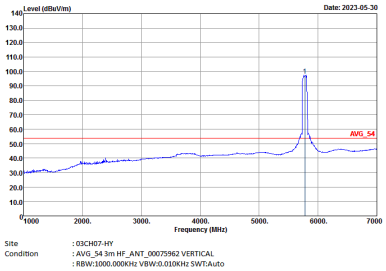
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/62 CH159 5795MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

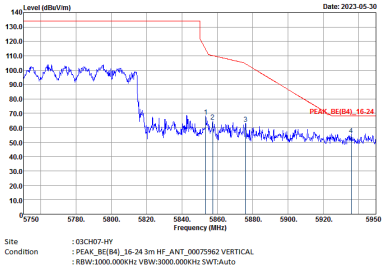
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/62 CH159 5795MHz	
7+8	Vertical	Fundamental
Peak		Left blank

Band 4 5725~5850MHz
WIFI 802.11ax HE80 Full (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

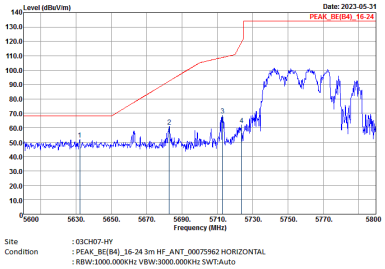
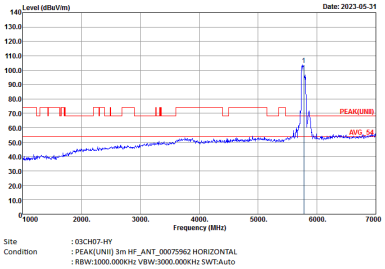
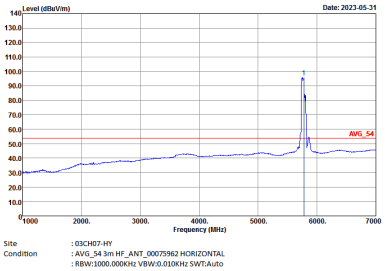
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
7+8	Horizontal	Fundamental
Peak		Left blank

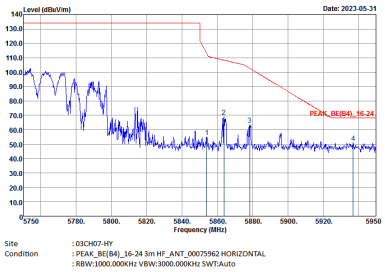
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

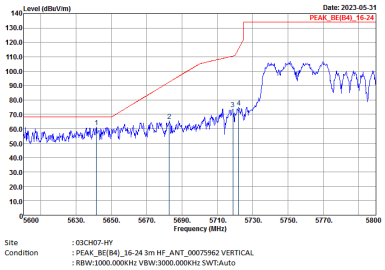
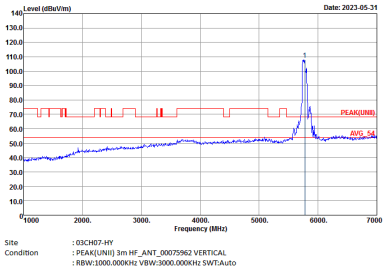
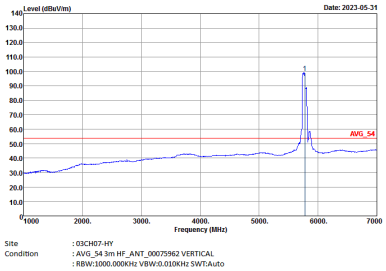
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
7+8	Vertical	Fundamental
Peak		Left blank

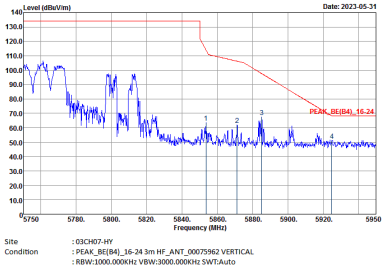
Band 4 5725~5850MHz

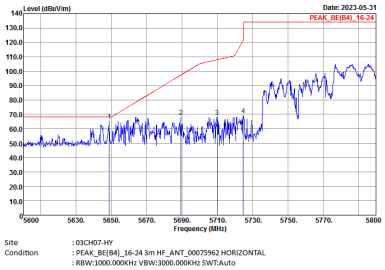
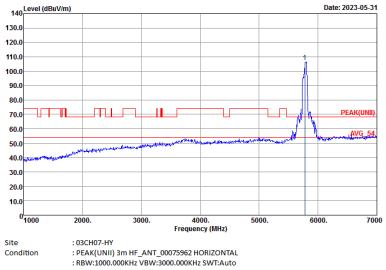
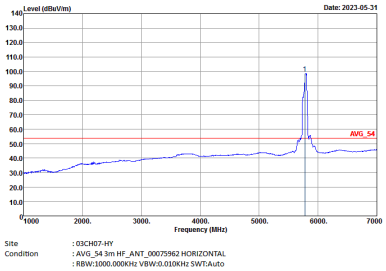
WIFI 802.11ax HE80 Partial 484 (Band Edge @ 3m)

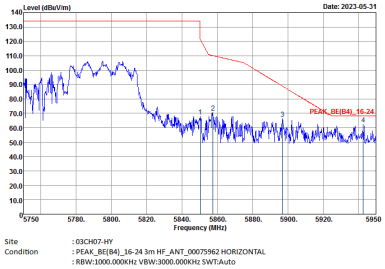
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/65 CH155 5775MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

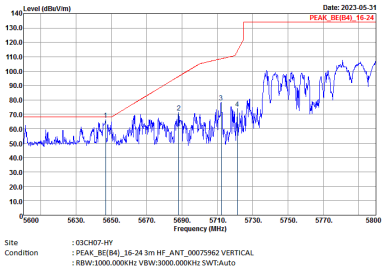
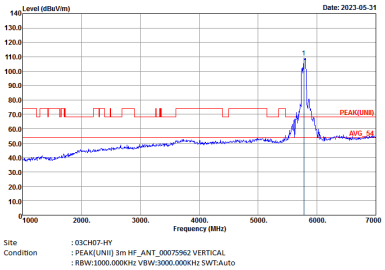
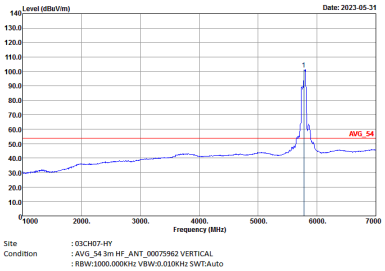
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/65 CH155 5775MHz	
7+8	Horizontal	Fundamental
Peak		Left blank

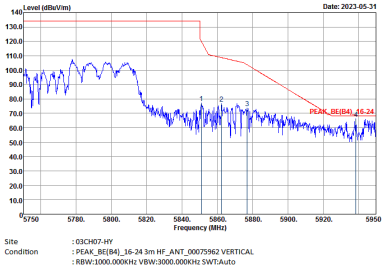
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/65 CH155 5775MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/65 CH155 5775MHz	
7+8	Vertical	Fundamental
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/66 CH155 5775MHz	
7+8	Horizontal	Fundamental
Peak		
Avg	Left blank	

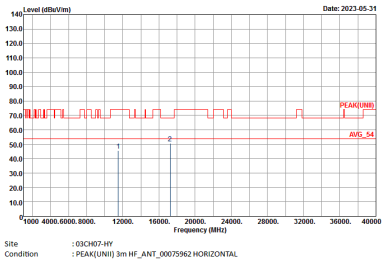
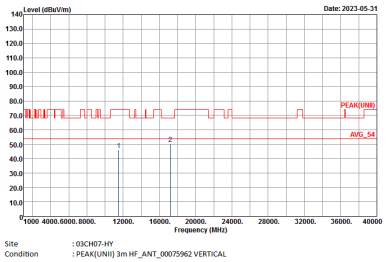
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/66 CH155 5775MHz	
7+8	Horizontal	Fundamental
Peak		Left blank

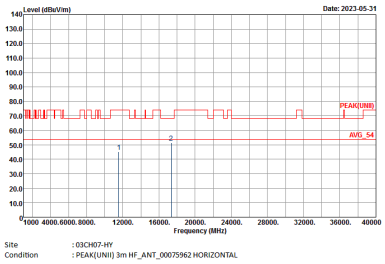
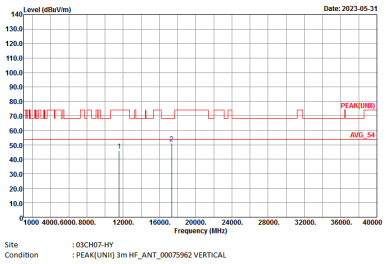
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/66 CH155 5775MHz	
7+8	Vertical	Fundamental
Peak		
Avg	Left blank	

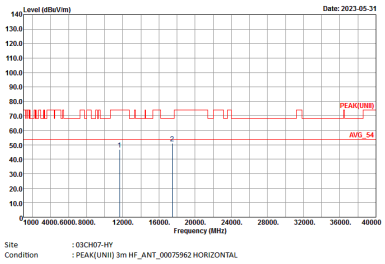
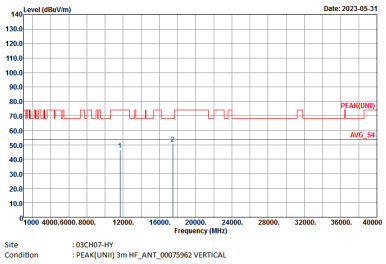
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/66 CH155 5775MHz	
7+8	Vertical	Fundamental
Peak		Left blank

Band 4 - 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

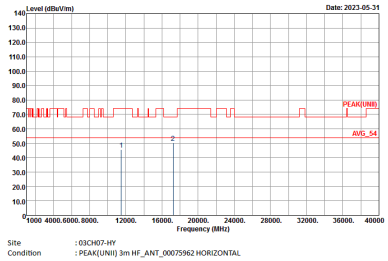
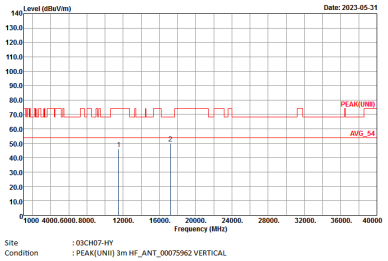
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
7+8	Horizontal	Vertical
Peak Avg.		

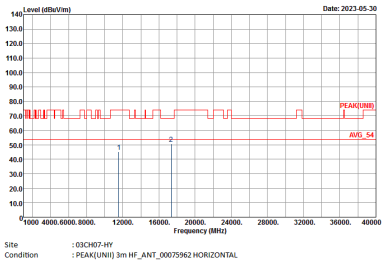
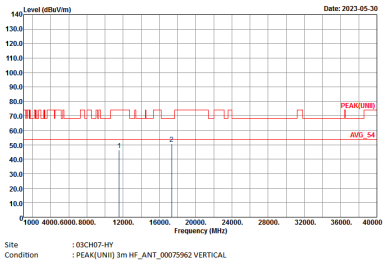
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
7+8	Horizontal	Vertical
Peak Avg.		

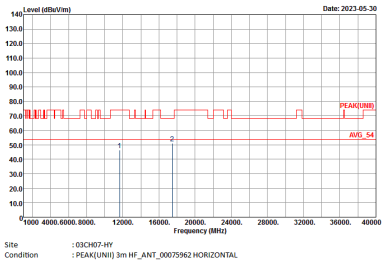
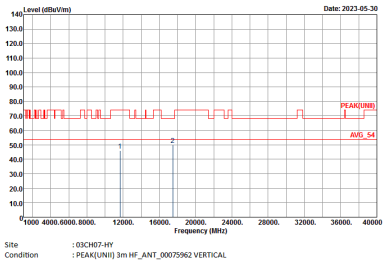
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
7+8	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz

WIFI 802.11ax HE20 Full (Harmonic @ 3m)

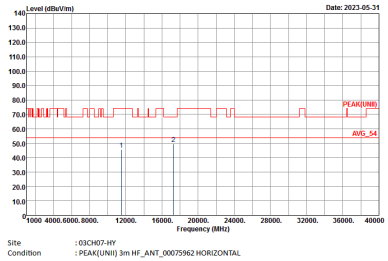
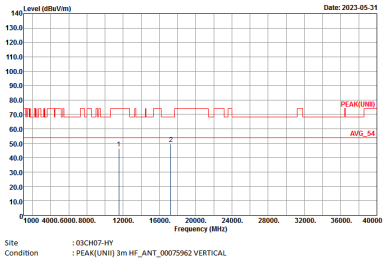
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
7+8	Horizontal	Vertical
Peak Avg.		

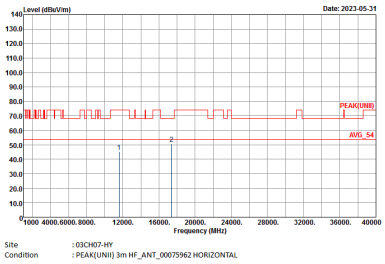
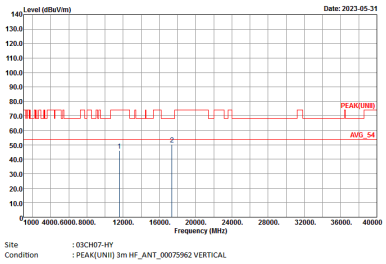
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH157 5785MHz	
7+8	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
7+8	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz

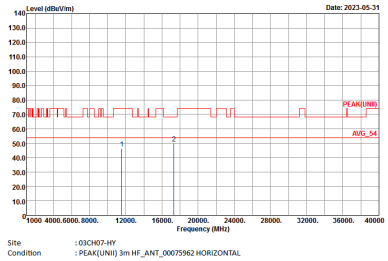
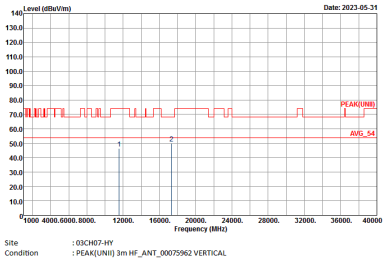
WIFI 802.11ax HE40 Full (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
7+8	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
7+8	Horizontal	Vertical
Peak Avg.		

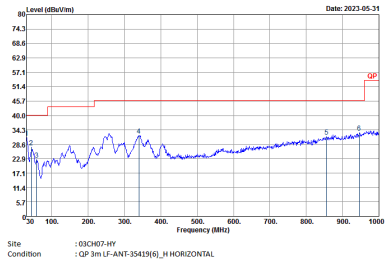
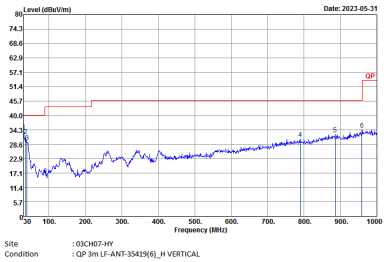
Band 4 5725~5850MHz

WIFI 802.11ax HE80 Full (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
7+8	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

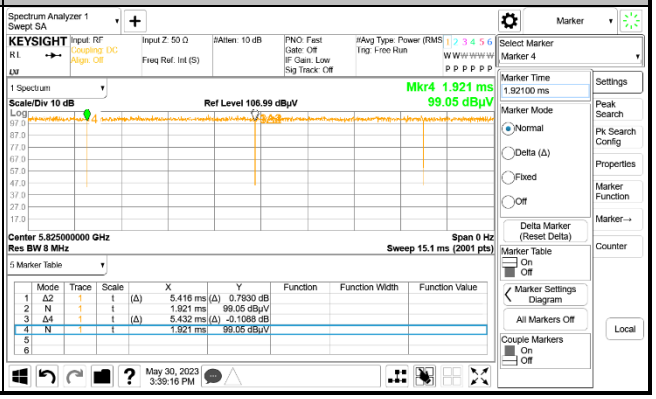
5GHz WIFI 802.11ax HE40 Full (LF @ 3m)

WIFI	5GHz WIFI	
ANT	802.11ax HE40 Full LF	
7+8	Horizontal	Vertical
QP / Peak		

Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
7+8	802.11a	99.05	-	-	10Hz
7+8	5GHz 802.11ax HE20 Full RU	99.71	-	-	10Hz
7+8	5GHz 802.11ax HE20 106 RU	97.65	4570	0.22	300Hz
7+8	5GHz 802.11ax HE40 Full RU	99.15	-	-	10Hz
7+8	5GHz 802.11ax HE40 242 RU	99.28	-	-	10Hz
7+8	5GHz 802.11ax HE80 Full RU	99.33	-	-	10Hz
7+8	5GHz 802.11ax HE80 484 RU	98.95	-	-	10Hz

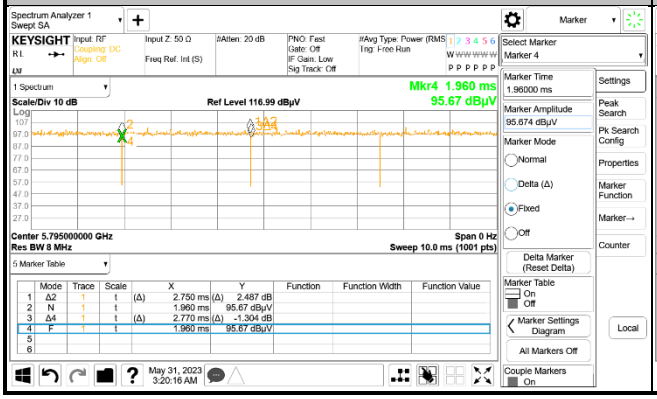
MIMO <Ant. 7+8>

802.11a	802.11ax HE20 Full RU
	

802.11ax HE20 106 RU

802.11ax HE40 Full RU

802.11ax HE40 242 RU



802.11ax HE80 Full RU

802.11ax HE80 484 RU