FCC RADIO TEST REPORT

FCC ID	:	**HLZA24002**
Equipment	:	**Tablet PC**
Brand Name	:	**acer**
Model Name	:	**A24002**
Marketing Name	:	**Acer Iconia Tab A8 ,A8-11**
Applicant	:	**Acer Incorporated** **8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22181, Taiwan (R.O.C)**
Manufacturer	:	**Acer Incorporated** **8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22181, Taiwan (R.O.C)**
Standard	:	**FCC Part 15 Subpart E §15.407**

The product was received on Mar. 27, 2024 and testing was performed from Apr. 23, 2024 to May 25, 2024. We, Sporton International Inc. Wensan 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. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory
No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)

Table of Contents

History of this test report

Report No.	Version	Description	Issue Date
FR432784E	01	Initial issue of report	May 31, 2024

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	4.81 dB under the limit at 5633.25 MHz
3.5	15.207	AC Conducted Emission	Pass	9.67 dB under the limit at 0.58 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: Lewis Ho

Report Producer: Rebecca Wu

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature
General Specs Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ax, and Wi-Fi 5GHz 802.11a/n/ac/ax. **Antenna Type** WLAN: FPC Antenna Bluetooth: FPC Antenna

Antenna information		
5725 MHz ~ 5850 MHz	Peak Gain (dBi)	3.49

Remark: The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

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, CO07-HY, 03CH22-HY

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

FCC designation No.: TW3786

1.4 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.
- 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.

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

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

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

Single Mode

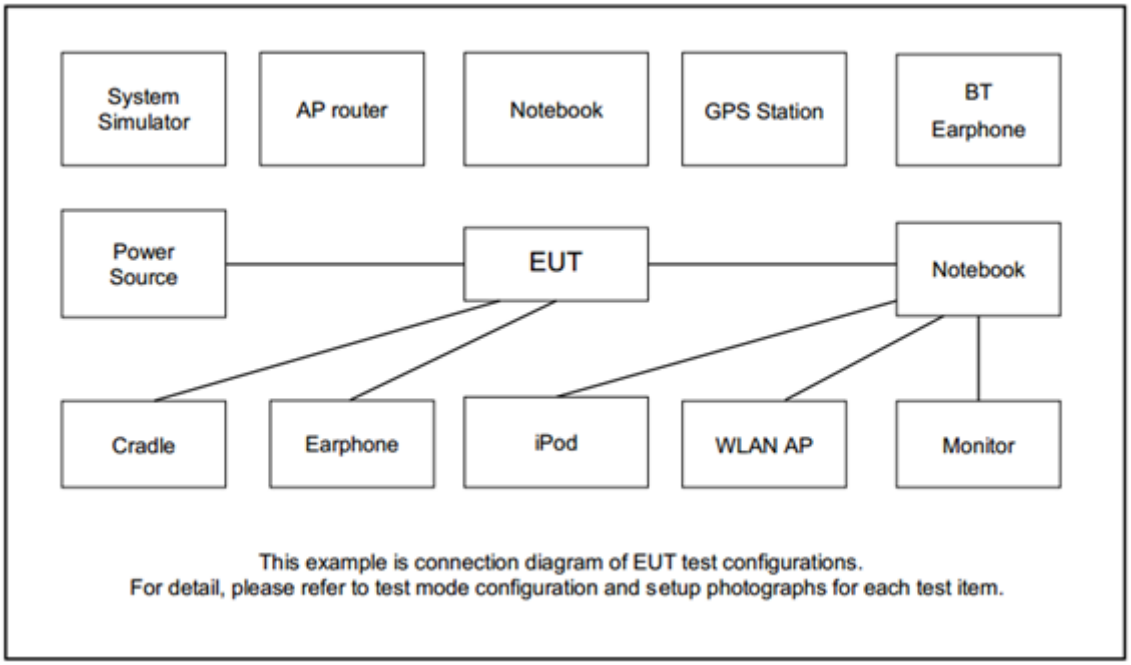
Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20 (Covered by HT20)	MCS0
802.11ac VHT40 (Covered by HT40)	MCS0
802.11ac VHT80	MCS0
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Earphone + USB Cable (Charging from Adapter)

Ch. #		Band IV：5725-5850 MHz				
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80	802.11ax HE80
L	Low	149	149	151	-	-
M	Middle	157	157	-	155	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



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC52	MSQ-RTAC4A00	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Earphone + Mic	Samsung	Ecouteur	N/A	Unshielded, 1.8m	N/A
5.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “adb command 1.0.36” was installed in EUT 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.

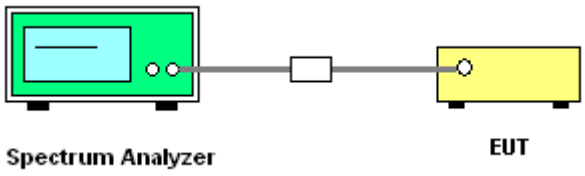
3.1.2 Measuring Instruments

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.

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.

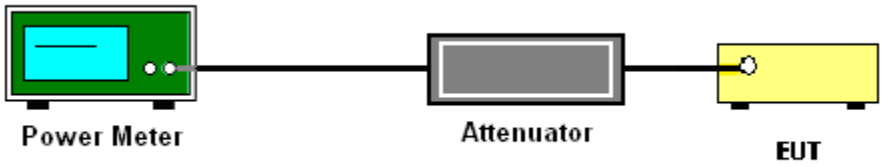
3.2.3 Test Procedures

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.

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.

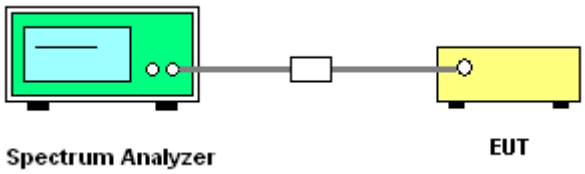
 # Method SA-2 #

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

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

1. The RF output of EUT 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.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

3.4 Unwanted Emissions Measurement

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

3.4.1 Limit of Unwanted Emissions

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

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

(2) Unwanted spurious emissions 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

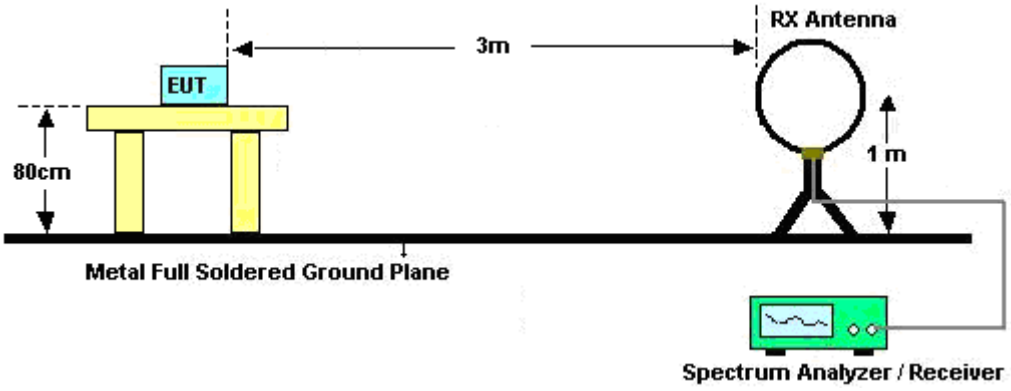
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000 MHz

   - 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.

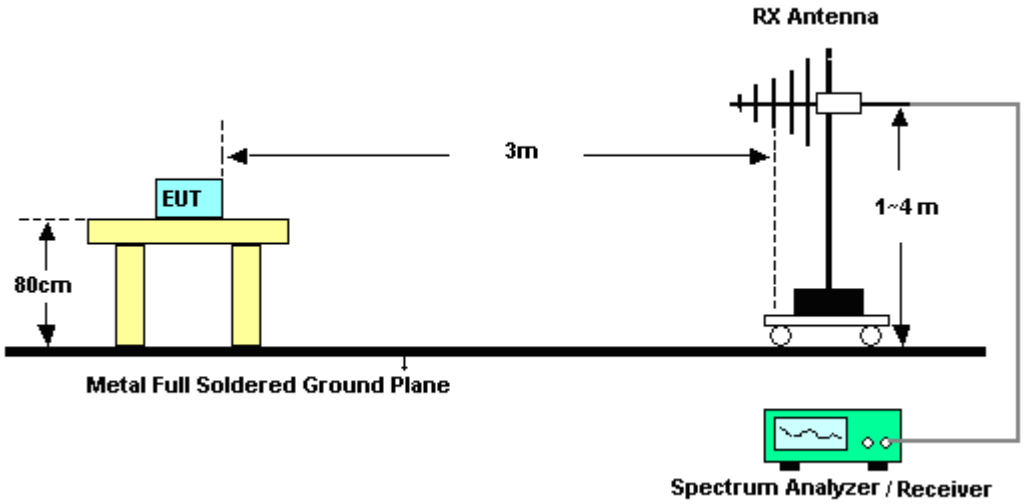
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit 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

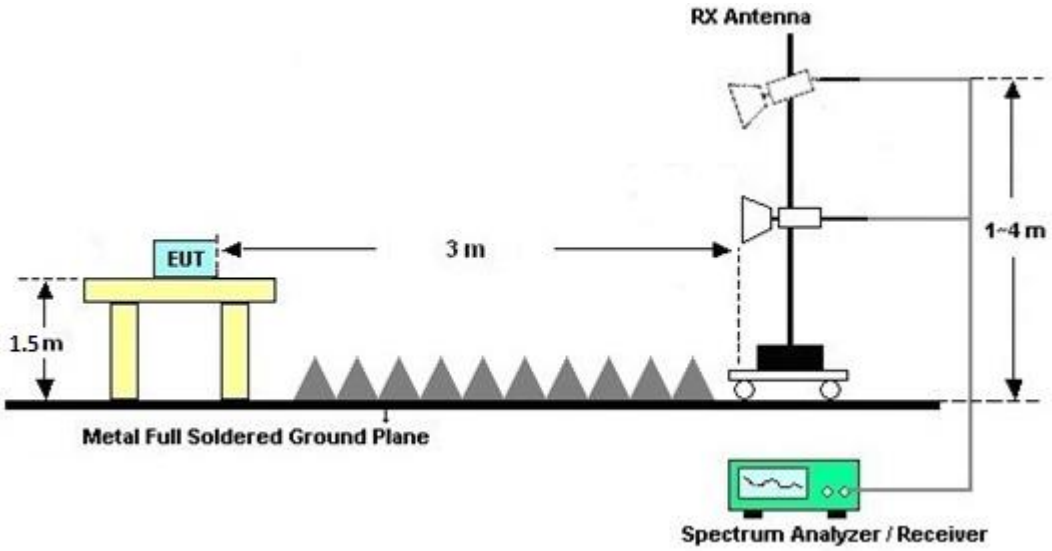
For radiated emissions below 30MHz



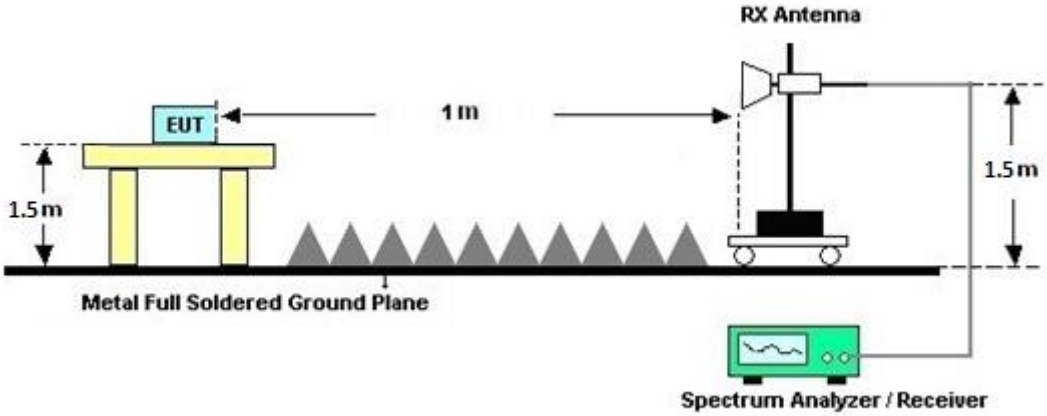
For radiated emissions from 30MHz to 1GHz



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.

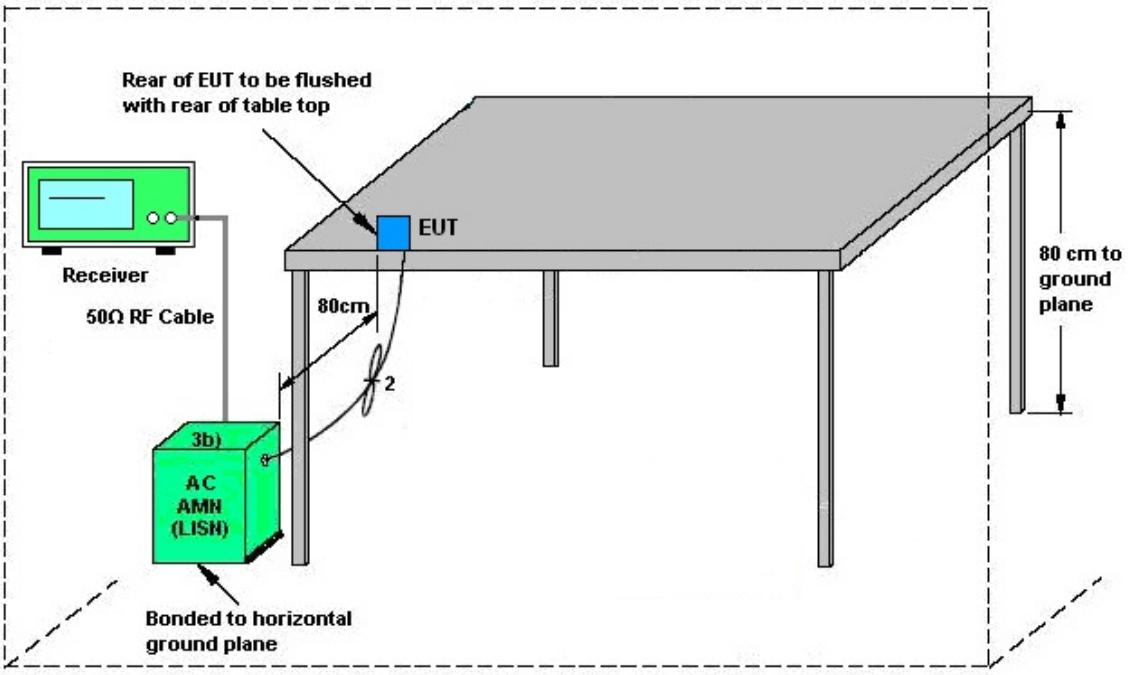
3.5.2 Measuring Instruments

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



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

3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 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
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9kHz~30MHz	Feb. 23, 2024	May 02, 2024~ May 25, 2024	Feb. 22, 2025	Radiation (03CH22-HY)
Bilog Antenna with 6dB	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	63304 & 002	30MHz~1GHz	Oct. 15, 2023	May 02, 2024~ May 25, 2024	Oct. 14, 2024	Radiation (03CH22-HY)
Amplifier	SONOMA	310N	421581	N/A	Jul. 15, 2023	May 02, 2024~ May 25, 2024	Jul. 14, 2024	Radiation (03CH22-HY)
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C04A18EN	1GHz~18GHz	Jul. 12, 2023	May 02, 2024~ May 25, 2024	Jul. 11, 2024	Radiation (03CH22-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	1224	18GHz-40GHz	Jul. 10, 2023	May 02, 2024~ May 25, 2024	Jul. 09, 2024	Radiation (03CH22-HY)
Amplifier	EMEC	EM01G18GA	060877	N/A	Sep. 28, 2023	May 02, 2024~ May 25, 2024	Sep. 27, 2024	Radiation (03CH22-HY)
Preamplifier	EMEC	EM18G40G	060801	18-40GHz	Jun. 27, 2023	May 02, 2024~ May 25, 2024	Jun. 26, 2024	Radiation (03CH22-HY)
Signal Analyzer	Keysight	N9010B	MY60241058	10Hz~44GHz	Jul. 06, 2023	May 02, 2024~ May 25, 2024	Jul. 05, 2024	Radiation (03CH22-HY)
Hygrometer	TECPEL	DTM-303A	TP211469	N/A	Jan. 03, 2024	May 02, 2024~ May 25, 2024	Jan. 02, 2025	Radiation (03CH22-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	May 02, 2024~ May 25, 2024	N/A	Radiation (03CH22-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	May 02, 2024~ May 25, 2024	N/A	Radiation (03CH22-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	May 02, 2024~ May 25, 2024	N/A	Radiation (03CH22-HY)
Software	Audix	E3 6.09824_2019122	RK-002347	N/A	N/A	May 02, 2024~ May 25, 2024	N/A	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 06, 2024	May 02, 2024~ May 25, 2024	Mar. 05, 2025	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804390/2,804611/2,804615/2	N/A	Oct. 24, 2023	May 02, 2024~ May 25, 2024	Oct. 23, 2024	Radiation (03CH22-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	May 02, 2024~ May 24, 2024	Nov. 06, 2024	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	17I00015SNO36 (NO:35)	10MHz~6GHz	Aug. 23, 2023	May 02, 2024~ May 24, 2024	Aug. 22, 2024	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV3044	101466	10HZ~44GHZ	Jan. 24, 2024	May 02, 2024~ May 24, 2024	Jan. 23, 2025	Conducted (TH05-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Apr. 23, 2024	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Apr. 23, 2024	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 20, 2023	Apr. 23, 2024	Oct. 19, 2024	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 14, 2024	Apr. 23, 2024	Mar. 13, 2025	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Mar. 10, 2024	Apr. 23, 2024	Mar. 09, 2025	Conduction (CO07-HY)
Four-Line V-Network	TESEQ	NNB 52	36122	N/A	Mar. 07, 2024	Apr. 23, 2024	Mar. 06, 2025	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 20, 2023	Apr. 23, 2024	Sep. 19, 2024	Conduction (CO07-HY)

5 Measurement Uncertainty

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.44 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.50 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.50 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.50 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.40 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Shiming Liu and Junyu Jhou	Temperature:	21~25	°C
Test Date:	2024/05/02 ~ 2024/05/24	Relative Humidity:	51~54	%

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

U-NII-3 single antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	1	149	5745	18.33	-	32.91	-	16.38	-	0.5	Pass
11a	6Mbps	1	157	5785	18.08	-	30.62	-	16.37	-	0.5	Pass
11a	6Mbps	1	165	5825	17.87	-	30.50	-	16.36	-	0.5	Pass
HT20	MCS0	1	149	5745	19.32	-	36.22	-	17.62	-	0.5	Pass
HT20	MCS0	1	157	5785	19.16	-	37.52	-	17.61	-	0.5	Pass
HT20	MCS0	1	165	5825	19.61	-	37.17	-	17.62	-	0.5	Pass
HT40	MCS0	1	151	5755	38.86	-	78.94	-	36.35	-	0.5	Pass
HT40	MCS0	1	159	5795	38.66	-	93.68	-	36.37	-	0.5	Pass
VHT80	MCS0	1	155	5775	76.88	-	180.86	-	76.35	-	0.5	Pass

TEST RESULTS DATA
Average Power Table

U-NII-3 single antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	17.20	-	-	30.00	-	3.49	-	Pass
11a	6Mbps	1	157	5785	16.50	-		30.00	-	3.49	-	Pass
11a	6Mbps	1	165	5825	15.80	-		30.00	-	3.49	-	Pass
HT20	MCS0	1	149	5745	17.20	-		30.00	-	3.49	-	Pass
HT20	MCS0	1	157	5785	17.00	-		30.00	-	3.49	-	Pass
HT20	MCS0	1	165	5825	17.40	-		30.00	-	3.49	-	Pass
HT40	MCS0	1	151	5755	17.00	-		30.00	-	3.49	-	Pass
HT40	MCS0	1	159	5795	16.90	-		30.00	-	3.49	-	Pass
VHT20	MCS0	1	149	5745	17.10	-		30.00	-	3.49	-	Pass
VHT20	MCS0	1	157	5785	16.90	-		30.00	-	3.49	-	Pass
VHT20	MCS0	1	165	5825	17.30	-		30.00	-	3.49	-	Pass
VHT40	MCS0	1	151	5755	16.70	-		30.00	-	3.49	-	Pass
VHT40	MCS0	1	159	5795	16.50	-		30.00	-	3.49	-	Pass
VHT80	MCS0	1	155	5775	17.00	-		30.00	-	3.49	-	Pass

Report Number : FR432784E

TEST RESULTS DATA
Power Spectral Density

U-NII-3 single antenna																
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 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	0.19	-	2.22	-	2.51	-		30.00	-	3.49	-	Pass
11a	6Mbps	1	157	5785	0.19	-	2.22	-	1.90	-		30.00	-	3.49	-	Pass
11a	6Mbps	1	165	5825	0.19	-	2.22	-	1.29	-		30.00	-	3.49	-	Pass
HT20	MCS0	1	149	5745	0.12	-	2.22	-	2.14	-		30.00	-	3.49	-	Pass
HT20	MCS0	1	157	5785	0.12	-	2.22	-	1.96	-	-	30.00	-	3.49	-	Pass
HT20	MCS0	1	165	5825	0.12	-	2.22	-	2.40	-		30.00	-	3.49	-	Pass
HT40	MCS0	1	151	5755	0.19	-	2.22	-	-0.96	-		30.00	-	3.49	-	Pass
HT40	MCS0	1	159	5795	0.19	-	2.22	-	-0.99	-		30.00	-	3.49	-	Pass
VHT80	MCS0	1	155	5775	0.39	-	2.22	-	-4.25	-		30.00	-	3.49	-	Pass

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

U-NII-3 single antenna													
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 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	1	149	5745	Full	19.69	-	37.92	-	19.02	-	0.5	Pass
HE20	MCS0	1	157	5785	Full	19.67	-	32.95	-	19.02	-	0.5	Pass
HE20	MCS0	1	165	5825	Full	19.80	-	39.96	-	19.02	-	0.5	Pass
HE40	MCS0	1	151	5755	Full	39.43	-	71.65	-	38.14	-	0.5	Pass
HE40	MCS0	1	159	5795	Full	39.39	-	60.80	-	38.05	-	0.5	Pass
HE80	MCS0	1	155	5775	Full	77.95	-	126.11	-	77.90	-	0.5	Pass

TEST RESULTS DATA
Average Power Table

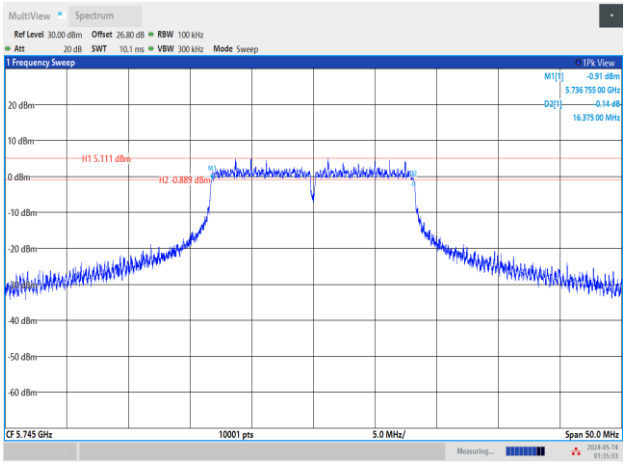
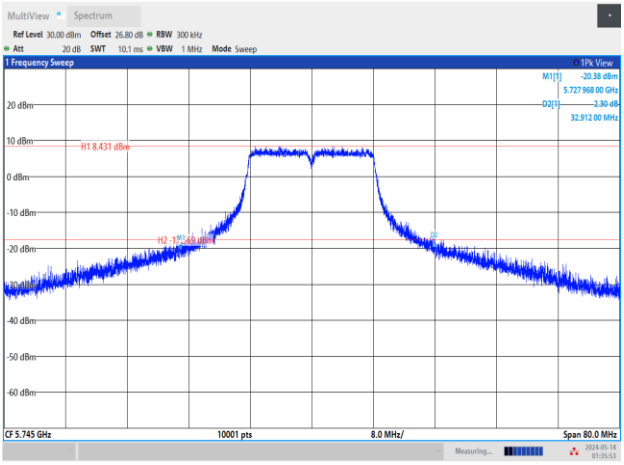
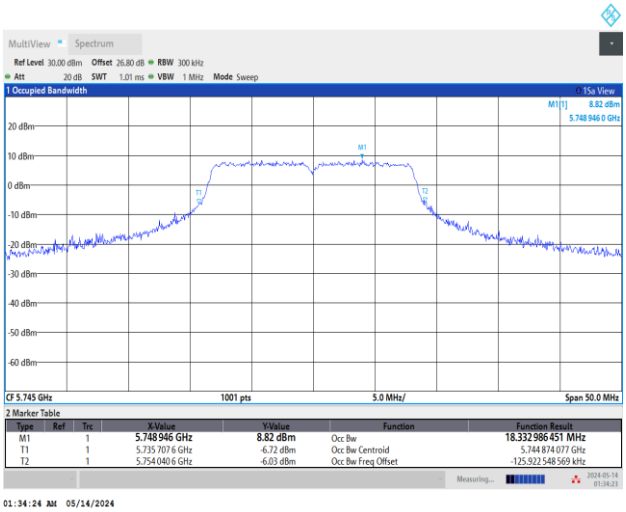
U-NII-3 single antenna													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
						Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
HE20	MCS0	1	149	5745	Full	17.10	-	-	30.00	-	3.49	-	Pass
HE20	MCS0	1	157	5785	Full	16.90	-		30.00	-	3.49	-	Pass
HE20	MCS0	1	165	5825	Full	17.30	-		30.00	-	3.49	-	Pass
HE40	MCS0	1	151	5755	Full	16.90	-		30.00	-	3.49	-	Pass
HE40	MCS0	1	159	5795	Full	16.80	-		30.00	-	3.49	-	Pass
HE80	MCS0	1	155	5775	Full	16.90	-		30.00	-	3.49	-	Pass

TEST RESULTS DATA
Power Spectral Density

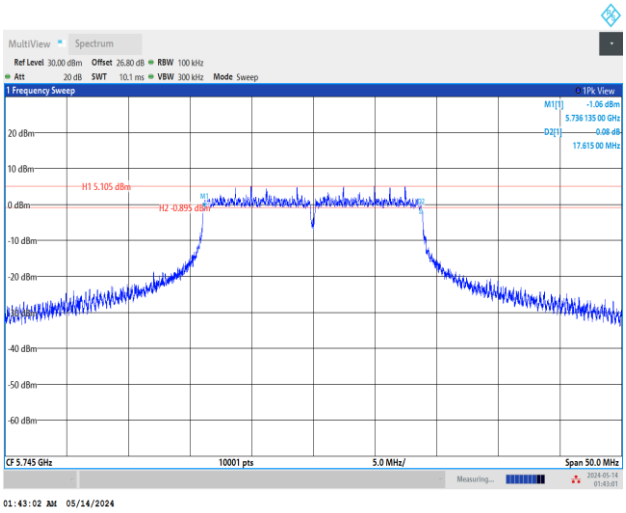
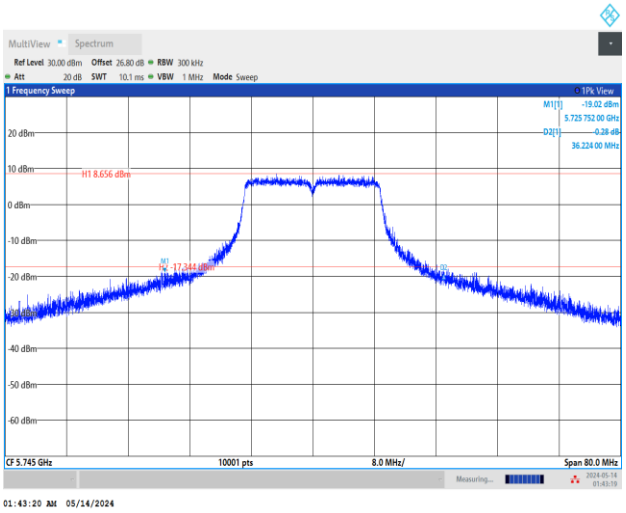
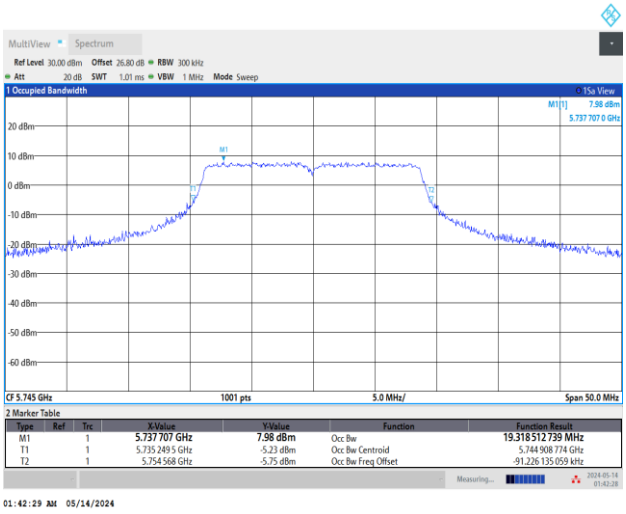
U-NII-3 single antenna																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		10log (500kHz /RBW) Factor (dB)		Average Power Density with Duty Factor (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
						Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
HE20	MCS0	1	149	5745	Full	0.26	-	2.22	-	1.70	-	-	30.00	-	3.49	-	Pass
HE20	MCS0	1	157	5785	Full	0.26	-	2.22	-	1.82	-		30.00	-	3.49	-	Pass
HE20	MCS0	1	165	5825	Full	0.26	-	2.22	-	2.10	-		30.00	-	3.49	-	Pass
HE40	MCS0	1	151	5755	Full	0.45	-	2.22	-	-1.20	-		30.00	-	3.49	-	Pass
HE40	MCS0	1	159	5795	Full	0.45	-	2.22	-	-0.89	-		30.00	-	3.49	-	Pass
HE80	MCS0	1	155	5775	Full	0.90	-	2.22	-	-4.12	-		30.00	-	3.49	-	Pass

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

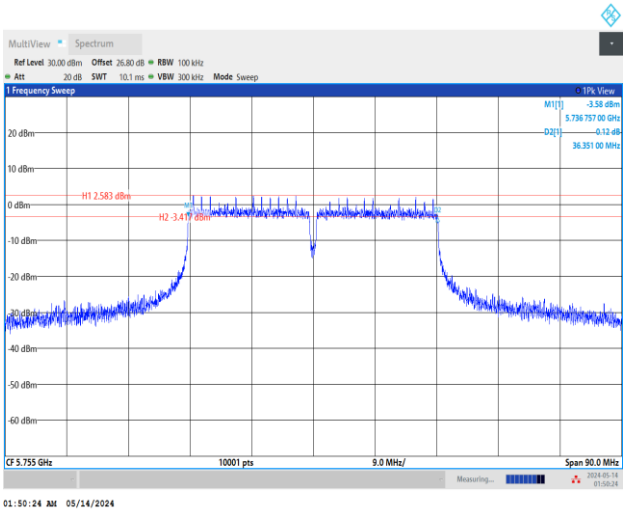
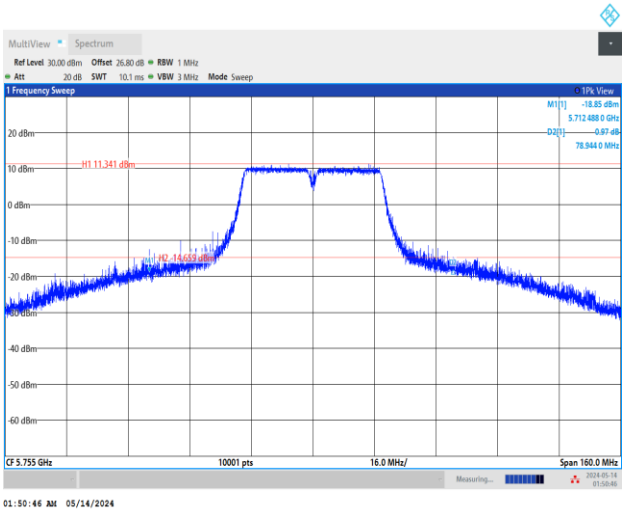
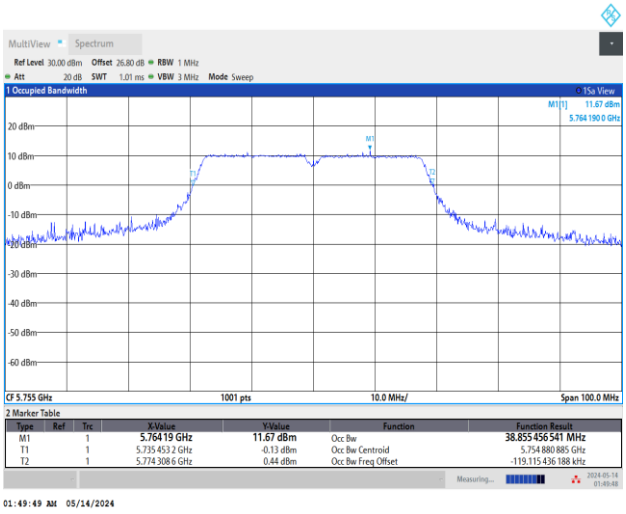
<802.11a>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**N/A**
	

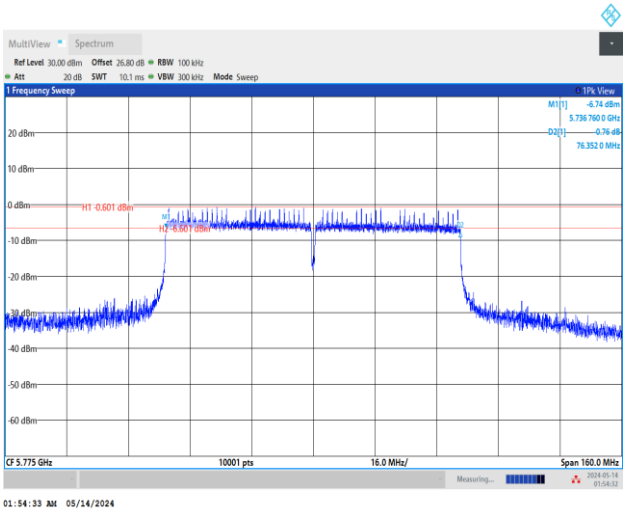
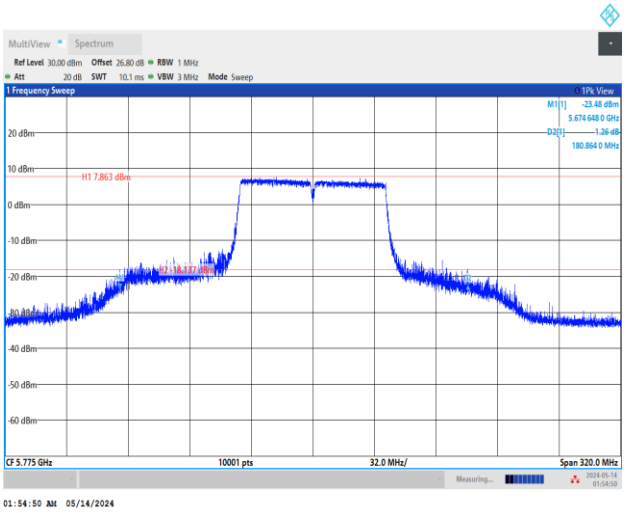
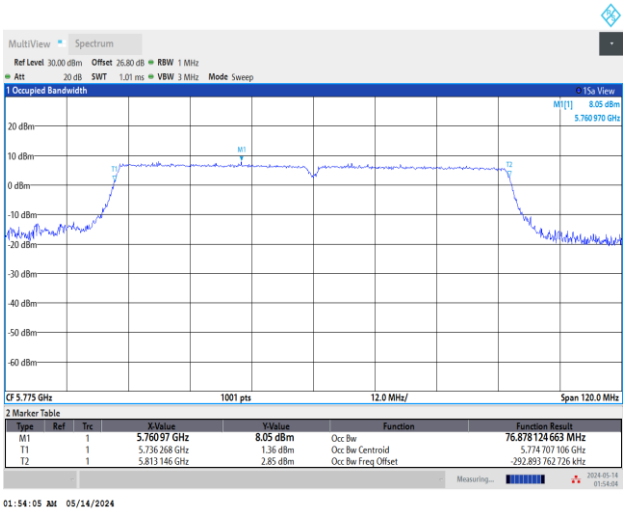
<802.11n HT20>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**N/A**
	

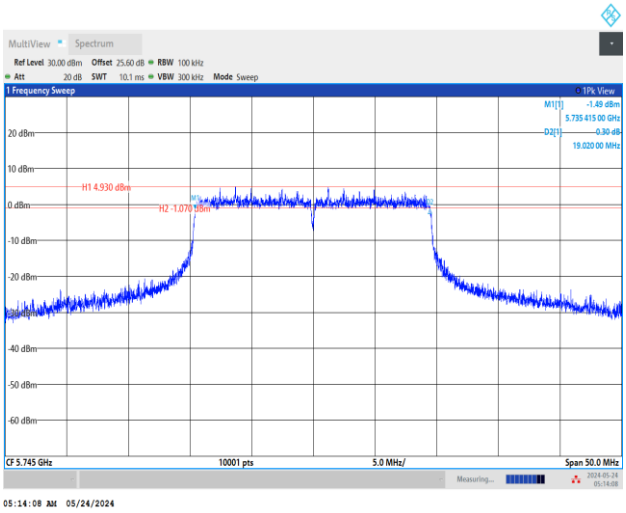
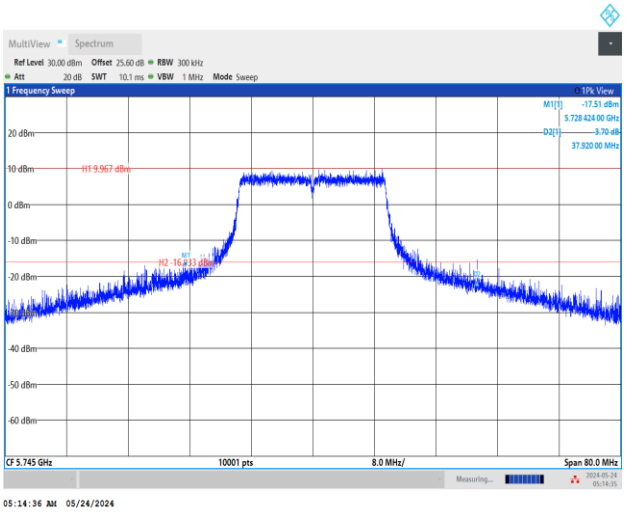
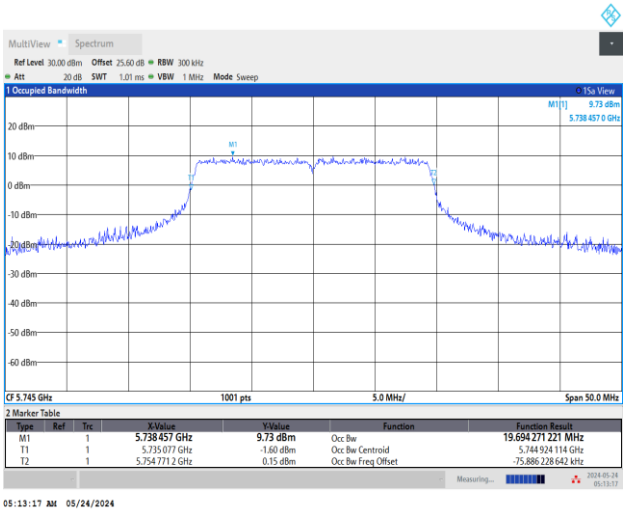
<802.11n HT40>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**N/A**
	

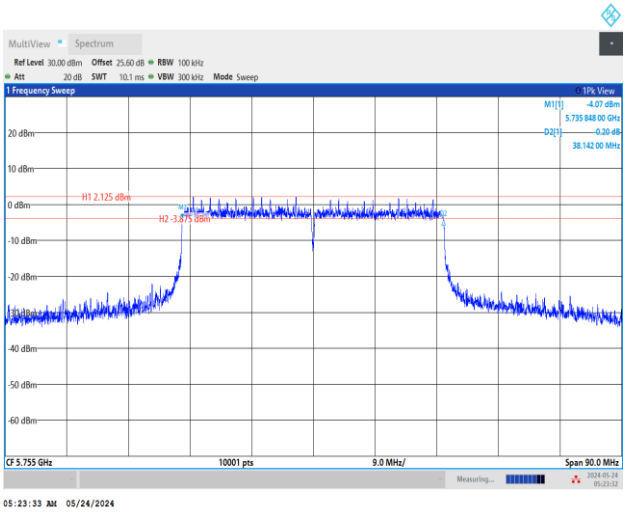
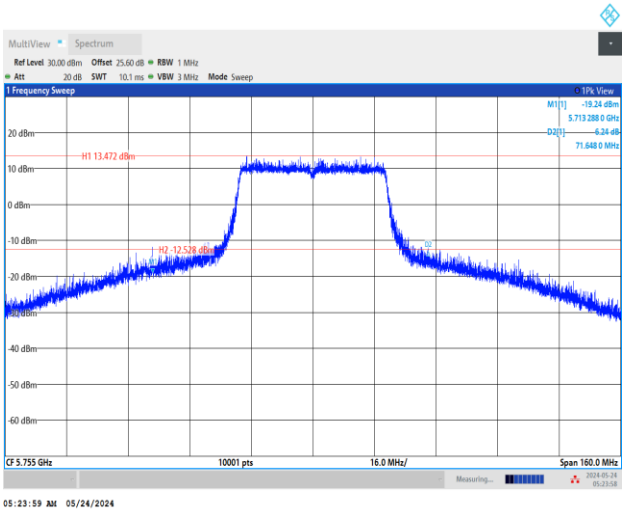
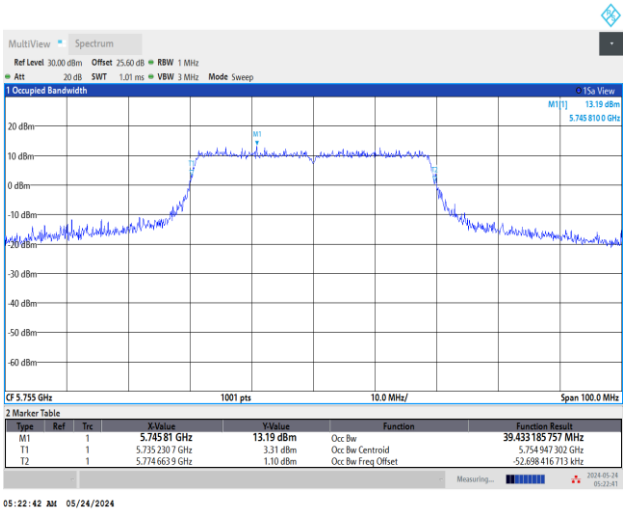
<802.11ac VHT80>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**N/A**
	

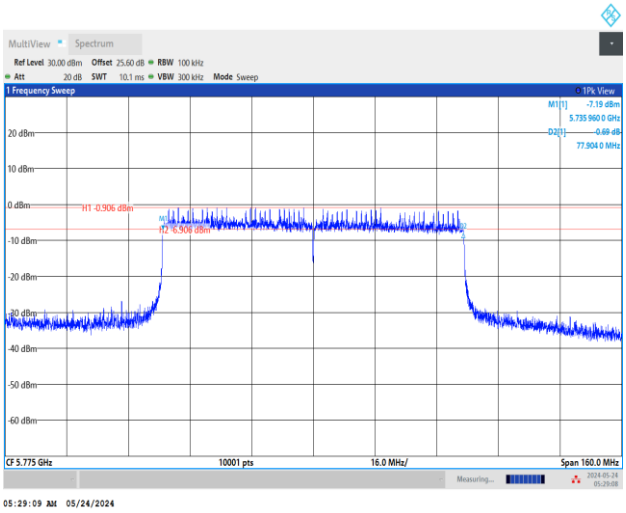
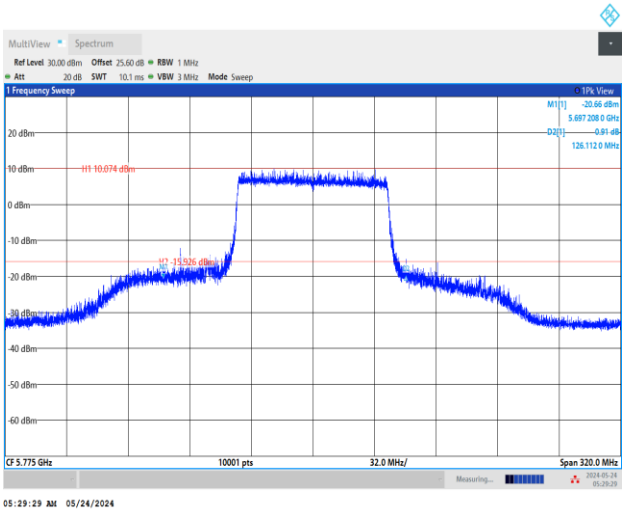
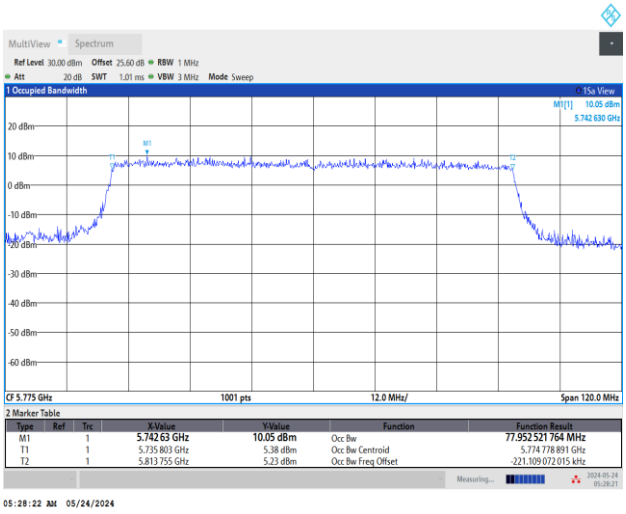
<802.11ax HE20>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**N/A**
	

<802.11ax HE40>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**N/A**
	

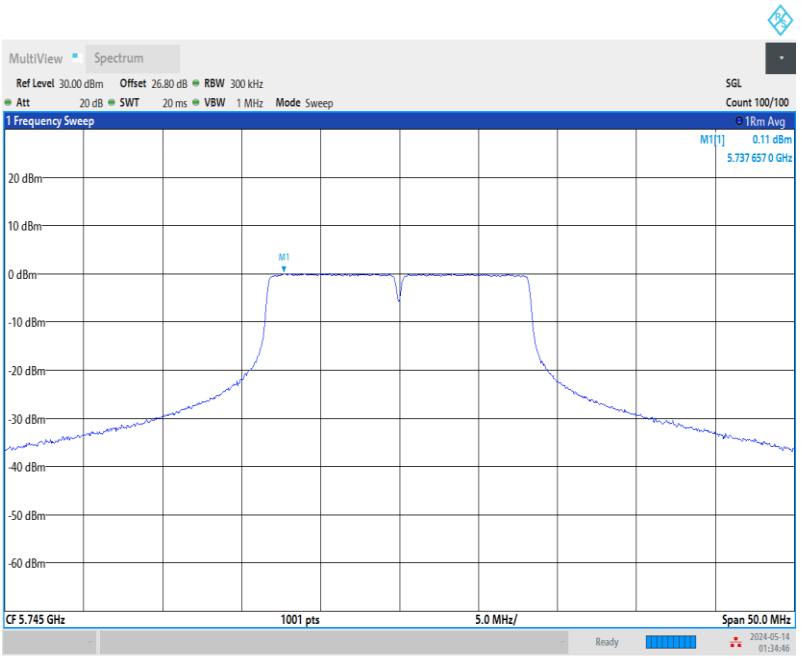
<802.11ax HE80>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**N/A**
	

Test Result of Power Spectral Density

<802.11a>

Maximum Power Density Plot (dBm/300kHz)

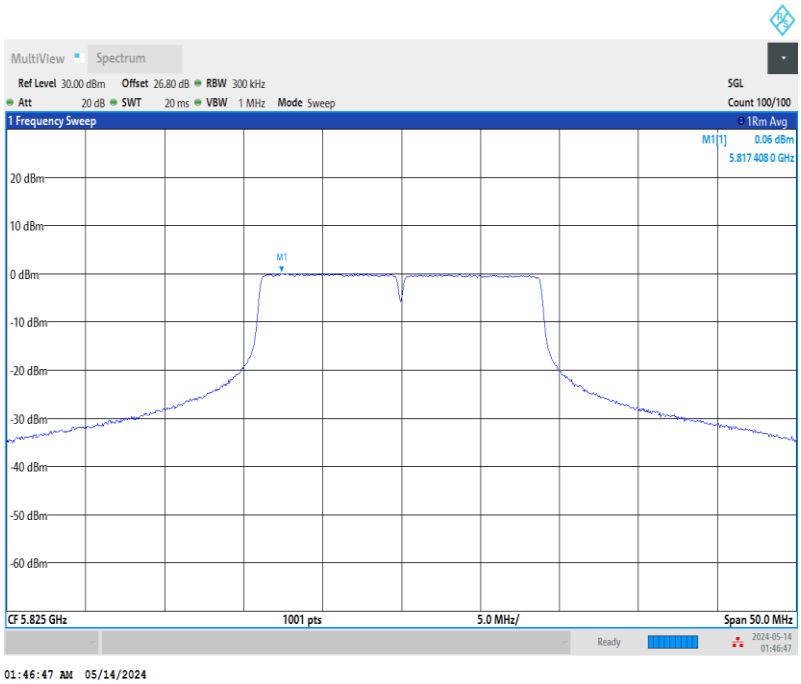


Note:

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

<802.11n HT20>

Maximum Power Density Plot (dBm/300kHz)

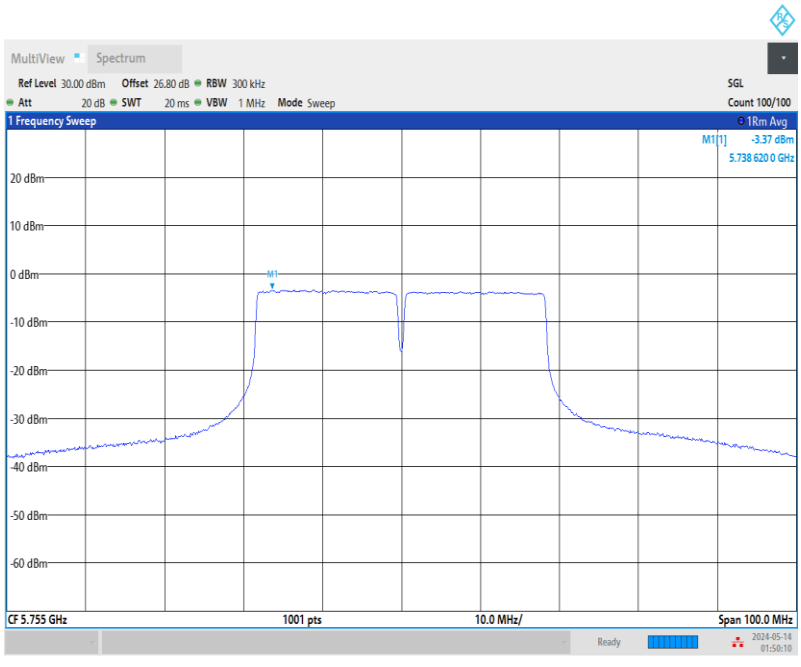


Note:

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

<802.11n HT40>

Maximum Power Density Plot (dBm/300kHz)

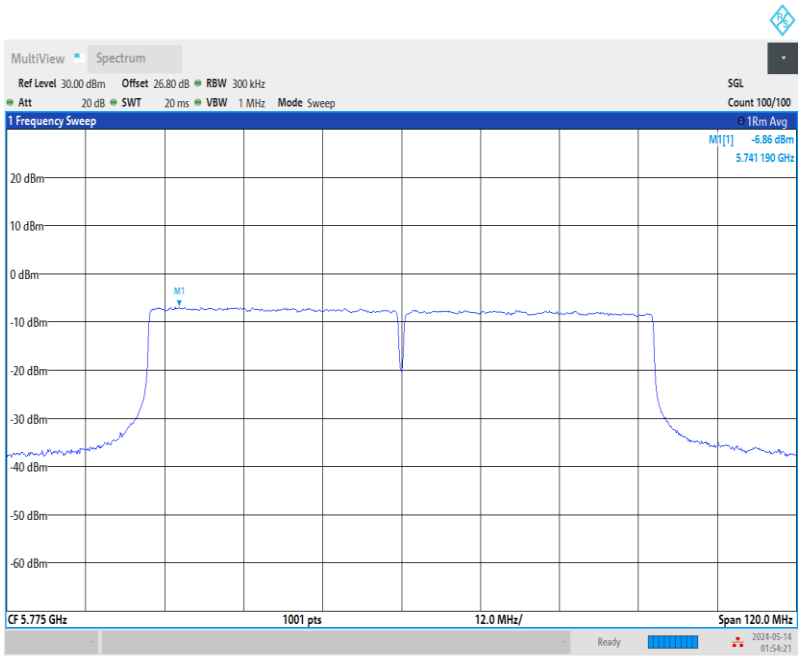


Note:

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

<802.11ac VHT80>

Maximum Power Density Plot (dBm/300kHz)

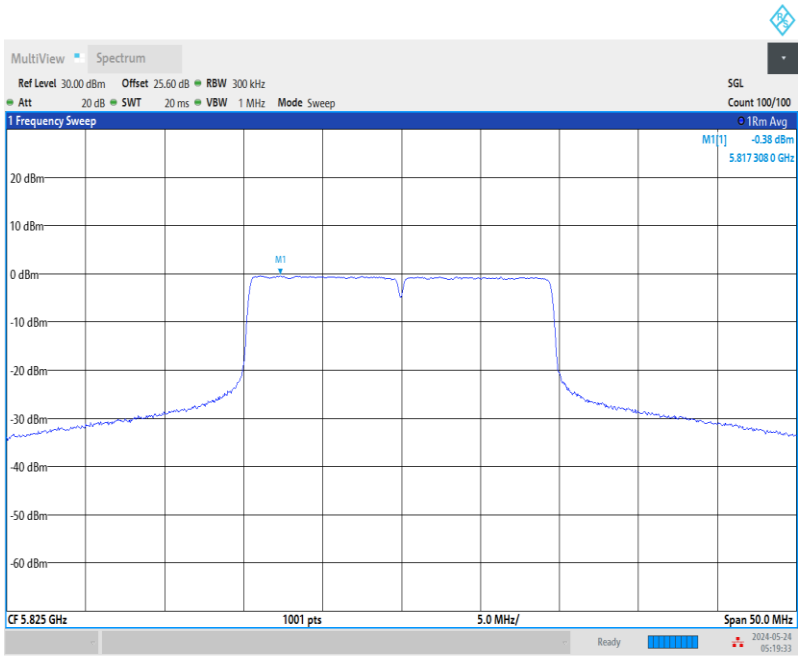


Note:

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

<802.11ax HE20>

Maximum Power Density Plot (dBm/300kHz)

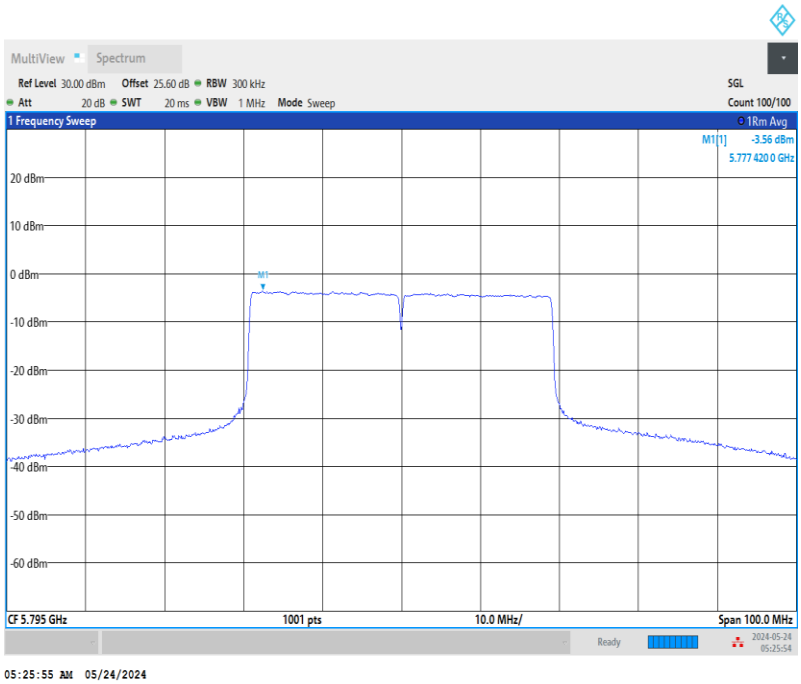


Note:

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

<802.11ax HE40>

Maximum Power Density Plot (dBm/300kHz)

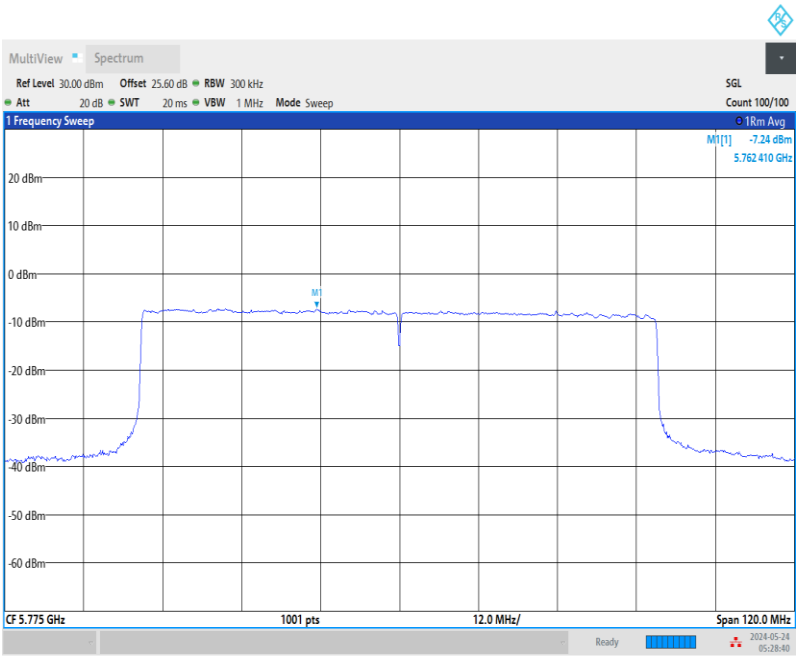


Note:

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

<802.11ax HE80>

Maximum Power Density Plot (dBm/300kHz)



Note:

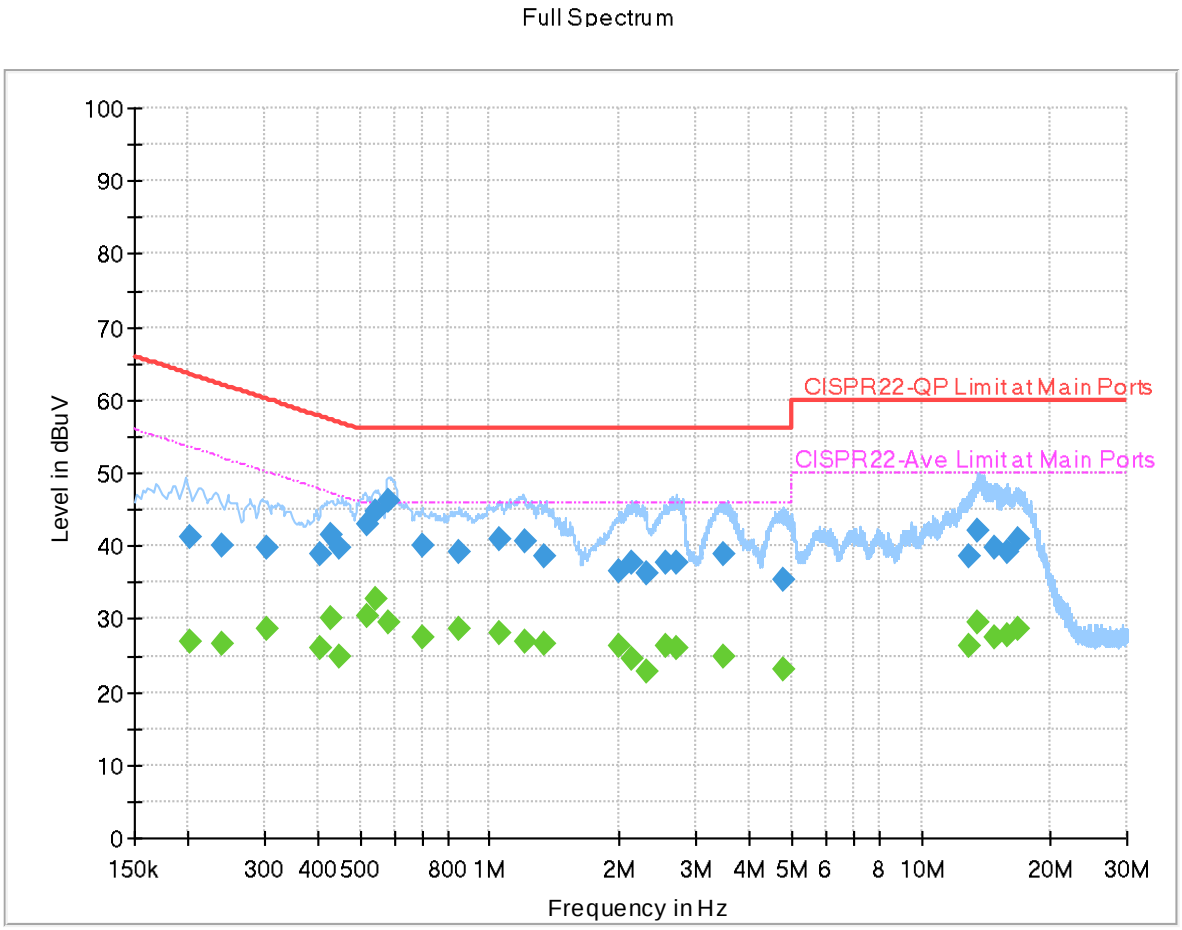
1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

Appendix B. AC Conducted Emission Test Results

Test Engineer :	Louis Chung	**Temperature :**	22.2~23.3℃
		Relative Humidity :	42.7~60.1%

EUT Information

Report NO :	432784
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line



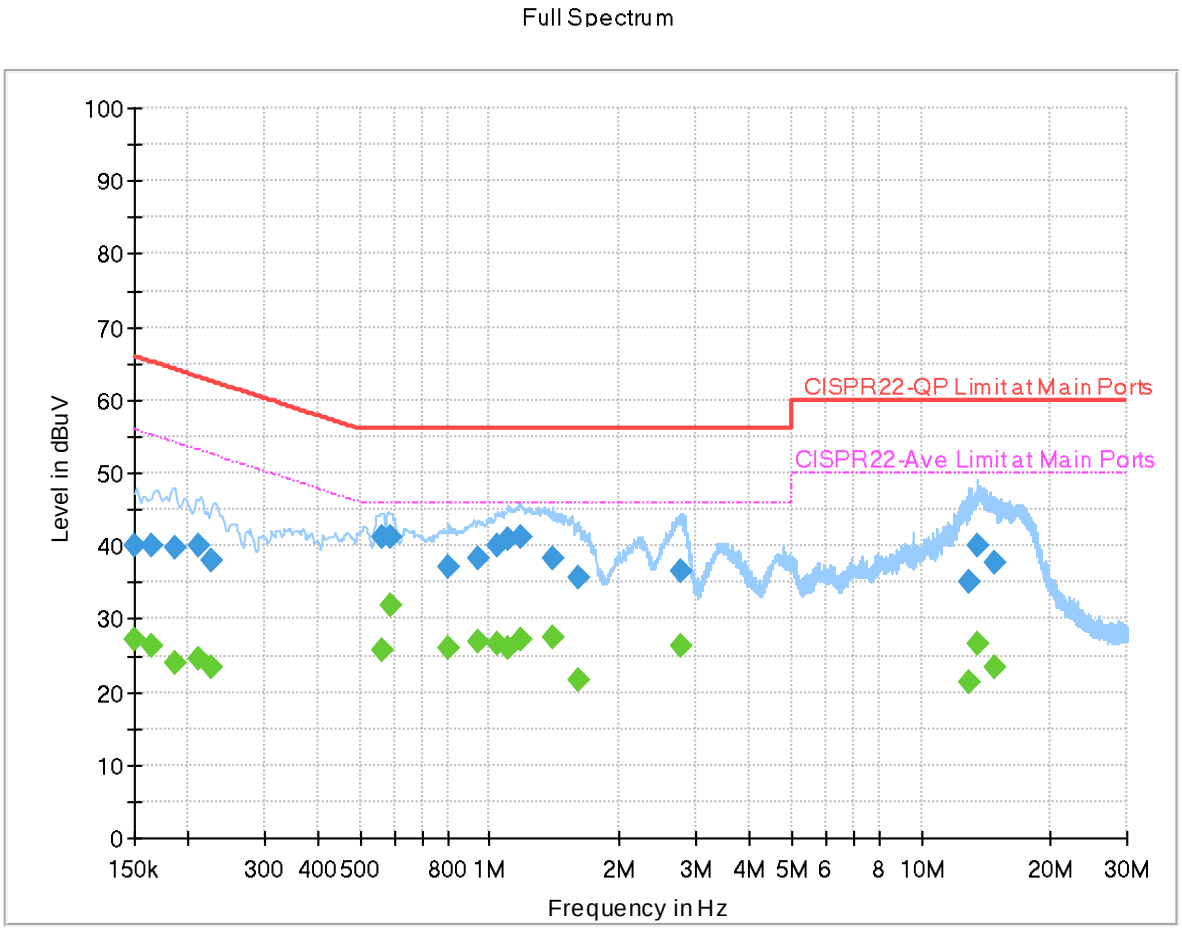
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.201750	---	26.99	53.54	26.55	L1	OFF	19.9
0.201750	41.27	---	63.54	22.27	L1	OFF	19.9
0.240180	---	26.69	52.09	25.40	L1	OFF	19.9
0.240180	40.16	---	62.09	21.93	L1	OFF	19.9
0.303000	---	28.53	50.16	21.63	L1	OFF	19.9
0.303000	39.73	---	60.16	20.43	L1	OFF	19.9
0.406500	---	26.01	47.72	21.71	L1	OFF	19.9
0.406500	38.78	---	57.72	18.94	L1	OFF	19.9
0.427830	---	30.19	47.30	17.11	L1	OFF	19.9
0.427830	41.61	---	57.30	15.69	L1	OFF	19.9
0.449700	---	24.81	46.88	22.07	L1	OFF	19.9
0.449700	39.86	---	56.88	17.02	L1	OFF	19.9
0.518190	---	30.37	46.00	15.63	L1	OFF	19.9
0.518190	42.89	---	56.00	13.11	L1	OFF	19.9
0.546000	---	32.68	46.00	13.32	L1	OFF	19.9
0.546000	44.64	---	56.00	11.36	L1	OFF	19.9
0.581010	---	29.67	46.00	16.33	L1	OFF	19.9
0.581010	46.33	---	56.00	9.67	L1	OFF	19.9
0.699000	---	27.63	46.00	18.37	L1	OFF	19.9

0.699000	40.05	---	56.00	15.95	L1	OFF	19.9
0.849930	---	28.61	46.00	17.39	L1	OFF	19.9
0.849930	39.23	---	56.00	16.77	L1	OFF	19.9
1.050900	---	28.00	46.00	18.00	L1	OFF	19.9
1.050900	40.88	---	56.00	15.12	L1	OFF	19.9
1.200570	---	26.89	46.00	19.11	L1	OFF	19.9
1.200570	40.77	---	56.00	15.23	L1	OFF	19.9
1.342500	---	26.67	46.00	19.33	L1	OFF	19.9
1.342500	38.62	---	56.00	17.38	L1	OFF	19.9
1.987530	---	26.19	46.00	19.81	L1	OFF	19.9
1.987530	36.43	---	56.00	19.57	L1	OFF	19.9
2.137560	---	24.62	46.00	21.38	L1	OFF	20.0
2.137560	37.70	---	56.00	18.30	L1	OFF	20.0
2.306850	---	22.77	46.00	23.23	L1	OFF	20.0
2.306850	36.17	---	56.00	19.83	L1	OFF	20.0
2.546250	---	26.38	46.00	19.62	L1	OFF	20.0
2.546250	37.61	---	56.00	18.39	L1	OFF	20.0
2.699700	---	25.97	46.00	20.03	L1	OFF	20.0
2.699700	37.67	---	56.00	18.33	L1	OFF	20.0
3.466320	---	24.82	46.00	21.18	L1	OFF	20.0
3.466320	38.88	---	56.00	17.12	L1	OFF	20.0
4.795260	---	23.21	46.00	22.79	L1	OFF	20.0
4.795260	35.46	---	56.00	20.54	L1	OFF	20.0
12.837300	---	26.35	50.00	23.65	L1	OFF	20.1
12.837300	38.50	---	60.00	21.50	L1	OFF	20.1
13.558020	---	29.52	50.00	20.48	L1	OFF	20.1
13.558020	42.02	---	60.00	17.98	L1	OFF	20.1
14.718750	---	27.51	50.00	22.49	L1	OFF	20.1
14.718750	39.71	---	60.00	20.29	L1	OFF	20.1
15.857340	---	27.86	50.00	22.14	L1	OFF	20.1
15.857340	39.31	---	60.00	20.69	L1	OFF	20.1
16.779750	---	28.79	50.00	21.21	L1	OFF	20.1
16.779750	40.82	---	60.00	19.18	L1	OFF	20.1

EUT Information

Report NO :	432784
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150405	---	27.20	55.98	28.78	N	OFF	19.9
0.150405	40.00	---	65.98	25.98	N	OFF	19.9
0.164220	---	26.20	55.25	29.05	N	OFF	19.9
0.164220	40.09	---	65.25	25.16	N	OFF	19.9
0.186900	---	23.88	54.17	30.29	N	OFF	19.9
0.186900	39.71	---	64.17	24.46	N	OFF	19.9
0.210660	---	24.66	53.18	28.52	N	OFF	19.9
0.210660	39.99	---	63.18	23.19	N	OFF	19.9
0.226500	---	23.39	52.58	29.19	N	OFF	19.9
0.226500	37.90	---	62.58	24.68	N	OFF	19.9
0.564360	---	25.73	46.00	20.27	N	OFF	19.9
0.564360	41.20	---	56.00	14.80	N	OFF	19.9
0.589110	---	31.91	46.00	14.09	N	OFF	19.9
0.589110	41.30	---	56.00	14.70	N	OFF	19.9
0.798000	---	26.16	46.00	19.84	N	OFF	19.9
0.798000	37.17	---	56.00	18.83	N	OFF	19.9
0.940740	---	26.96	46.00	19.04	N	OFF	19.9
0.940740	38.20	---	56.00	17.80	N	OFF	19.9
1.045500	---	26.63	46.00	19.37	N	OFF	19.9

1.045500	39.98	---	56.00	16.02	N	OFF	19.9
1.107240	---	25.94	46.00	20.06	N	OFF	19.9
1.107240	40.89	---	56.00	15.11	N	OFF	19.9
1.181310	---	27.19	46.00	18.81	N	OFF	19.9
1.181310	41.21	---	56.00	14.79	N	OFF	19.9
1.396500	---	27.40	46.00	18.60	N	OFF	19.9
1.396500	38.40	---	56.00	17.60	N	OFF	19.9
1.605570	---	21.58	46.00	24.42	N	OFF	19.9
1.605570	35.78	---	56.00	20.22	N	OFF	19.9
2.762880	---	26.23	46.00	19.77	N	OFF	20.0
2.762880	36.53	---	56.00	19.47	N	OFF	20.0
12.968880	---	21.37	50.00	28.63	N	OFF	20.1
12.968880	35.01	---	60.00	24.99	N	OFF	20.1
13.559910	---	26.46	50.00	23.54	N	OFF	20.1
13.559910	40.09	---	60.00	19.91	N	OFF	20.1
14.760150	---	23.53	50.00	26.47	N	OFF	20.1
14.760150	37.71	---	60.00	22.29	N	OFF	20.1

Appendix C. Radiated Spurious Emission

Test Engineer :	Bank Lin, Ken Kuo, and Karl Hou	Temperature :	21.3~23.5°C
		Relative Humidity :	51~58%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5617.1	49.89	-18.31	68.2	37.52	33.3	13.4	34.33	103	58	P	H
		5693.375	63.17	-37.15	100.32	50.38	33.67	13.51	34.39	103	58	P	H
		5717.225	72.38	-37.64	110.02	59.44	33.8	13.55	34.41	103	58	P	H
		5724.2	74.08	-46.3	120.38	61.08	33.85	13.56	34.41	103	58	P	H
	*	5745	107.36	-	-	94.23	33.97	13.59	34.43	103	58	P	H
	*	5745	100.08	-	-	86.95	33.97	13.59	34.43	103	58	A	H
													H
													H
		5612.825	50.56	-17.64	68.2	38.22	33.28	13.39	34.33	308	242	P	V
		5699.9	58.61	-46.52	105.13	45.78	33.7	13.52	34.39	308	242	P	V
		5718.35	68.11	-42.23	110.34	55.16	33.81	13.55	34.41	308	242	P	V
		5721.725	72.07	-42.66	114.73	59.1	33.83	13.55	34.41	308	242	P	V
	*	5745	106.78	-	-	93.65	33.97	13.59	34.43	308	242	P	V
	*	5745	99.12	-	-	85.99	33.97	13.59	34.43	308	242	A	V
													V
													V

WIFI Ant. 1	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)
		5641.5	49.7	-18.5	68.2	37.17	33.45	13.43	34.35	113	108	P	H
		5682	49.55	-42.37	91.92	36.81	33.63	13.49	34.38	113	108	P	H
		5719.75	52.25	-58.48	110.73	39.29	33.82	13.55	34.41	113	108	P	H
		5725	55.82	-66.38	122.2	42.82	33.85	13.56	34.41	113	108	P	H
	*	5785	107.79	-	-	94.6	34	13.65	34.46	113	108	P	H
	*	5785	99.57	-	-	86.38	34	13.65	34.46	113	108	A	H
		5850.5	53.79	-67.27	121.06	40.69	33.9	13.71	34.51	113	108	P	H
		5859.25	54.07	-55.54	109.61	40.95	33.92	13.71	34.51	113	108	P	H
		5892.25	51.1	-41.3	92.4	37.93	33.98	13.73	34.54	113	108	P	H
		5948.25	50.51	-17.69	68.2	37.32	34	13.77	34.58	113	108	P	H
													H
802.11a CH 157 5785MHz													H
		5639.75	49.63	-18.57	68.2	37.11	33.44	13.43	34.35	320	243	P	V
		5672.75	50.47	-34.61	85.08	37.77	33.59	13.48	34.37	320	243	P	V
		5718.75	52.21	-58.24	110.45	39.26	33.81	13.55	34.41	320	243	P	V
		5724.25	53.53	-66.96	120.49	40.53	33.85	13.56	34.41	320	243	P	V
	*	5785	106.95	-	-	93.76	34	13.65	34.46	320	243	P	V
	*	5785	98.71	-	-	85.52	34	13.65	34.46	320	243	A	V
		5850.25	52.45	-69.18	121.63	39.35	33.9	13.71	34.51	320	243	P	V
		5860	52.57	-56.83	109.4	39.45	33.92	13.71	34.51	320	243	P	V
		5911	51.95	-26.58	78.53	38.75	34	13.75	34.55	320	243	P	V
		5941	50.2	-18	68.2	37.01	34	13.77	34.58	320	243	P	V
													V
													V

WIFI Ant. 1	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	108.45	-	-	95.3	33.95	13.69	34.49	119	109	P	H
	*	5825	100.27	-	-	87.12	33.95	13.69	34.49	119	109	A	H
		5851.8	70.21	-47.89	118.1	57.11	33.9	13.71	34.51	119	109	P	H
		5856.2	67.69	-42.77	110.46	54.58	33.91	13.71	34.51	119	109	P	H
		5876.8	58.82	-45.04	103.86	45.68	33.95	13.72	34.53	119	109	P	H
		5948.4	50.21	-17.99	68.2	37.02	34	13.77	34.58	119	109	P	H
													H
802.11a													H
CH 165	*	5825	108.35	-	-	95.2	33.95	13.69	34.49	349	246	P	V
5825MHz	*	5825	100.33	-	-	87.18	33.95	13.69	34.49	349	246	A	V
		5852.6	69.11	-47.16	116.27	56	33.91	13.71	34.51	349	246	P	V
		5857	66.04	-44.2	110.24	52.93	33.91	13.71	34.51	349	246	P	V
		5876.2	58.04	-46.27	104.31	44.9	33.95	13.72	34.53	349	246	P	V
		5943.4	50.32	-17.88	68.2	37.13	34	13.77	34.58	349	246	P	V
													V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	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	50.55	-23.45	74	31.42	38.98	20.12	39.97	-	-	P	H
		11490	40.55	-13.45	54	21.42	38.98	20.12	39.97	-	-	A	H
		17235	51.3	-16.9	68.2	32.28	40.57	24.72	46.27	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		11490	51.67	-22.33	74	32.54	38.98	20.12	39.97	-	-	P	V
		11490	40.45	-13.55	54	21.32	38.98	20.12	39.97	-	-	A	V
		17235	51.08	-17.12	68.2	32.06	40.57	24.72	46.27	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V

WIFI Ant. 1	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	52.4	-21.6	74	33.2	39.06	20.19	40.05	-	-	P	H
		11570	41.16	-12.84	54	21.96	39.06	20.19	40.05	-	-	A	H
		17355	51.57	-16.63	68.2	32.65	40.5	24.82	46.4	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
802.11a CH 157 5785MHz		11570	51.14	-22.86	74	31.94	39.06	20.19	40.05	-	-	P	V
		11570	40.98	-13.02	54	21.78	39.06	20.19	40.05	-	-	A	V
		17355	51.59	-16.61	68.2	32.67	40.5	24.82	46.4	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V

WIFI Ant. 1	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 165 5825MHz		11650	51.47	-22.53	74	32.34	39	20.27	40.14	-	-	P	H
		11650	40.91	-13.09	54	21.78	39	20.27	40.14	-	-	A	H
		17475	50.81	-17.39	68.2	31.82	40.6	24.91	46.52	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		11650	51.11	-22.89	74	31.98	39	20.27	40.14	-	-	P	V
		11650	40.82	-13.18	54	21.69	39	20.27	40.14	-	-	A	V
		17475	52.4	-15.8	68.2	33.41	40.6	24.91	46.52	-	-	P	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 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	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)
		5624.3	50.35	-17.85	68.2	37.92	33.35	13.41	34.33	102	58	P	H
		5696.75	62.79	-40.01	102.8	49.97	33.69	13.52	34.39	102	58	P	H
		5717.225	71.89	-38.13	110.02	58.95	33.8	13.55	34.41	102	58	P	H
		5722.625	73.7	-43.09	116.79	60.72	33.84	13.55	34.41	102	58	P	H
	*	5745	107.59	-	-	94.46	33.97	13.59	34.43	102	58	P	H
	*	5745	99.55	-	-	86.42	33.97	13.59	34.43	102	58	A	H
802.11n													H
HT20													H
CH 149		5611.25	50.25	-17.95	68.2	37.91	33.27	13.39	34.32	399	272	P	V
5745MHz		5699.9	54.53	-50.6	105.13	41.7	33.7	13.52	34.39	399	272	P	V
		5716.775	66.43	-43.47	109.9	53.48	33.8	13.55	34.4	399	272	P	V
		5724.875	71.62	-50.3	121.92	58.62	33.85	13.56	34.41	399	272	P	V
	*	5745	105.89	-	-	92.76	33.97	13.59	34.43	399	272	P	V
	*	5745	97.69	-	-	84.56	33.97	13.59	34.43	399	272	A	V
													V
													V

WIFI Ant. 1	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	50.07	-18.13	68.2	37.6	33.39	13.42	34.34	111	108	P	H
		5691.75	49.85	-49.27	99.12	37.06	33.67	13.51	34.39	111	108	P	H
		5715.5	53.71	-55.83	109.54	40.78	33.79	13.54	34.4	111	108	P	H
		5724	55.66	-64.26	119.92	42.67	33.84	13.56	34.41	111	108	P	H
	*	5785	107.89	-	-	94.7	34	13.65	34.46	111	108	P	H
	*	5785	99.58	-	-	86.39	34	13.65	34.46	111	108	A	H
		5854	57.16	-55.92	113.08	44.05	33.91	13.71	34.51	111	108	P	H
		5856.25	59.5	-50.95	110.45	46.39	33.91	13.71	34.51	111	108	P	H
		5877	54	-49.71	103.71	40.86	33.95	13.72	34.53	111	108	P	H
		5946.75	50.63	-17.57	68.2	37.44	34	13.77	34.58	111	108	P	H
802.11n													H
HT20													H
CH 157		5641.25	49.45	-18.75	68.2	36.92	33.45	13.43	34.35	321	243	P	V
5785MHz		5699	52.74	-51.72	104.46	39.91	33.7	13.52	34.39	321	243	P	V
		5709.5	57.47	-50.39	107.86	44.58	33.76	13.53	34.4	321	243	P	V
		5721.25	56.86	-56.79	113.65	43.89	33.83	13.55	34.41	321	243	P	V
	*	5785	106.88	-	-	93.69	34	13.65	34.46	321	243	P	V
	*	5785	98.87	-	-	85.68	34	13.65	34.46	321	243	A	V
		5850	55.49	-66.71	122.2	42.4	33.9	13.7	34.51	321	243	P	V
		5860.5	56.71	-52.55	109.26	43.59	33.92	13.71	34.51	321	243	P	V
		5889.25	50.8	-43.82	94.62	37.63	33.98	13.73	34.54	321	243	P	V
		5946	50.58	-17.62	68.2	37.39	34	13.77	34.58	321	243	P	V
													V
													V

WIFI Ant. 1	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	109.26	-	-	96.11	33.95	13.69	34.49	119	109	P	H
	*	5825	101.41	-	-	88.26	33.95	13.69	34.49	119	109	A	H
		5851	74.26	-45.66	119.92	61.16	33.9	13.71	34.51	119	109	P	H
		5859.2	71.59	-38.03	109.62	58.47	33.92	13.71	34.51	119	109	P	H
		5875.8	63.94	-40.67	104.61	50.8	33.95	13.72	34.53	119	109	P	H
		5942.8	50.76	-17.44	68.2	37.57	34	13.77	34.58	119	109	P	H
802.11n													H
HT20													H
CH 165	*	5825	109.5	-	-	96.35	33.95	13.69	34.49	348	247	P	V
5825MHz	*	5825	101.44	-	-	88.29	33.95	13.69	34.49	348	247	A	V
		5852.6	74.95	-41.32	116.27	61.84	33.91	13.71	34.51	348	247	P	V
		5861.6	71.93	-37.02	108.95	58.81	33.92	13.71	34.51	348	247	P	V
		5882.2	65.35	-34.5	99.85	52.19	33.96	13.73	34.53	348	247	P	V
		5932.6	51.03	-17.17	68.2	37.84	34	13.76	34.57	348	247	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	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	50.71	-23.29	74	31.58	38.98	20.12	39.97	-	-	P	H
		11490	41.61	-12.39	54	22.48	38.98	20.12	39.97	-	-	A	H
		17235	51.48	-16.72	68.2	32.46	40.57	24.72	46.27	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
802.11n													H
HT20													H
CH 149		11490	51.83	-22.17	74	32.7	38.98	20.12	39.97	-	-	P	V
5745MHz		11490	41.88	-12.12	54	22.75	38.98	20.12	39.97	-	-	A	V
		17235	51.49	-16.71	68.2	32.47	40.57	24.72	46.27	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

WIFI Ant. 1	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	50.94	-23.06	74	31.74	39.06	20.19	40.05	-	-	P	H
		11570	41.02	-12.98	54	21.82	39.06	20.19	40.05	-	-	A	H
		17355	51.22	-16.98	68.2	32.3	40.5	24.82	46.4	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
802.11n													H
HT20													H
CH 157		11570	51.53	-22.47	74	32.33	39.06	20.19	40.05	-	-	P	V
5785MHz		11570	40.93	-13.07	54	21.73	39.06	20.19	40.05	-	-	A	V
		17355	52.27	-15.93	68.2	33.35	40.5	24.82	46.4	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

WIFI Ant. 1	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	51.39	-22.61	74	32.26	39	20.27	40.14	-	-	P	H
		11650	41.5	-12.5	54	22.37	39	20.27	40.14	-	-	A	H
		17475	51.29	-16.91	68.2	32.3	40.6	24.91	46.52	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
802.11n													H
HT20													H
CH 165		11650	51.3	-22.7	74	32.17	39	20.27	40.14	-	-	P	V
5825MHz		11650	42.54	-11.46	54	23.41	39	20.27	40.14	-	-	A	V
		17475	52.52	-15.68	68.2	33.53	40.6	24.91	46.52	-	-	P	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 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	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)
		5648.25	55.07	-13.13	68.2	42.49	33.49	13.44	34.35	130	51	P	H
		5700	66.49	-38.71	105.2	53.66	33.7	13.52	34.39	130	51	P	H
		5715.75	73.37	-36.24	109.61	60.44	33.79	13.54	34.4	130	51	P	H
		5721.75	74.8	-39.99	114.79	61.83	33.83	13.55	34.41	130	51	P	H
	*	5755	104.48	-	-	91.31	34	13.6	34.43	130	51	P	H
	*	5755	96.45	-	-	83.28	34	13.6	34.43	130	51	A	H
		5850.75	51.77	-68.72	120.49	38.67	33.9	13.71	34.51	130	51	P	H
		5874.75	50.97	-54.3	105.27	37.82	33.95	13.72	34.52	130	51	P	H
		5917.75	51.04	-22.51	73.55	37.85	34	13.75	34.56	130	51	P	H
		5934	50.89	-17.31	68.2	37.7	34	13.76	34.57	130	51	P	H
802.11n													H
HT40													H
CH 151		5650	51.25	-16.95	68.2	38.66	33.5	13.44	34.35	322	240	P	V
5755MHz		5699	63.57	-40.89	104.46	50.74	33.7	13.52	34.39	322	240	P	V
		5713.75	67.6	-41.45	109.05	54.68	33.78	13.54	34.4	322	240	P	V
		5722	68.51	-46.85	115.36	55.54	33.83	13.55	34.41	322	240	P	V
	*	5755	102.98	-	-	89.81	34	13.6	34.43	322	240	P	V
	*	5755	95.02	-	-	81.85	34	13.6	34.43	322	240	A	V
		5854.5	53.33	-58.61	111.94	40.22	33.91	13.71	34.51	322	240	P	V
		5860.75	52.52	-56.67	109.19	39.4	33.92	13.71	34.51	322	240	P	V
		5889.75	51.67	-42.58	94.25	38.5	33.98	13.73	34.54	322	240	P	V
		5928.25	50.6	-17.6	68.2	37.41	34	13.76	34.57	322	240	P	V
													V
													V

WIFI Ant. 1	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)
		5649	49.28	-18.92	68.2	36.7	33.49	13.44	34.35	115	108	P	H
		5700	55.48	-49.72	105.2	42.65	33.7	13.52	34.39	115	108	P	H
		5719	61.04	-49.48	110.52	48.09	33.81	13.55	34.41	115	108	P	H
		5722.75	61.7	-55.37	117.07	48.72	33.84	13.55	34.41	115	108	P	H
	*	5795	104.93	-	-	91.73	34	13.66	34.46	115	108	P	H
	*	5795	96.92	-	-	83.72	34	13.66	34.46	115	108	A	H
		5854	67.83	-45.25	113.08	54.72	33.91	13.71	34.51	115	108	P	H
		5857.25	68.01	-42.16	110.17	54.9	33.91	13.71	34.51	115	108	P	H
		5877.75	61.4	-41.76	103.16	48.25	33.96	13.72	34.53	115	108	P	H
		5941	52.31	-15.89	68.2	39.12	34	13.77	34.58	115	108	P	H
802.11n													H
HT40													H
CH 159		5627.75	50.05	-18.15	68.2	37.61	33.37	13.41	34.34	317	242	P	V
5795MHz		5689.5	55.83	-41.63	97.46	43.05	33.66	13.5	34.38	317	242	P	V
		5718.25	62.17	-48.14	110.31	49.22	33.81	13.55	34.41	317	242	P	V
		5723.25	61.48	-56.73	118.21	48.5	33.84	13.55	34.41	317	242	P	V
	*	5795	104.34	-	-	91.14	34	13.66	34.46	317	242	P	V
	*	5795	96.13	-	-	82.93	34	13.66	34.46	317	242	A	V
		5852.25	68.41	-48.66	117.07	55.31	33.9	13.71	34.51	317	242	P	V
		5856.25	64.61	-45.84	110.45	51.5	33.91	13.71	34.51	317	242	P	V
		5875.5	60.8	-44.03	104.83	47.66	33.95	13.72	34.53	317	242	P	V
		5931	50.82	-17.38	68.2	37.63	34	13.76	34.57	317	242	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	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	50.47	-23.53	74	31.31	39.02	20.13	39.99	-	-	P	H
		11510	40.93	-13.07	54	21.77	39.02	20.13	39.99	-	-	A	H
		17265	50.58	-17.62	68.2	31.54	40.6	24.74	46.3	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
802.11n													H
HT40													H
CH 151		11510	50.75	-23.25	74	31.59	39.02	20.13	39.99	-	-	P	V
5755MHz		11510	41.09	-12.91	54	21.93	39.02	20.13	39.99	-	-	A	V
		17265	50.8	-17.4	68.2	31.76	40.6	24.74	46.3	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

WIFI Ant. 1	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	51.67	-22.33	74	32.51	39.02	20.22	40.08	-	-	P	H
		11590	41.02	-12.98	54	21.86	39.02	20.22	40.08	-	-	A	H
		17385	50.89	-17.31	68.2	31.98	40.5	24.84	46.43	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
802.11n													H
HT40													H
CH 159		11590	51.57	-22.43	74	32.41	39.02	20.22	40.08	-	-	P	V
5795MHz		11590	41.19	-12.81	54	22.03	39.02	20.22	40.08	-	-	A	V
		17385	51.19	-17.01	68.2	32.28	40.5	24.84	46.43	-	-	P	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 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1	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)
		5631	61.67	-6.53	68.2	49.2	33.39	13.42	34.34	121	53	P	H
		5686	74.97	-19.9	94.87	62.21	33.64	13.5	34.38	121	53	P	H
		5716.25	76.02	-33.73	109.75	63.08	33.8	13.54	34.4	121	53	P	H
		5723.25	75.93	-42.28	118.21	62.95	33.84	13.55	34.41	121	53	P	H
	*	5775	102.32	-	-	89.14	34	13.63	34.45	121	53	P	H
	*	5775	93.17	-	-	79.99	34	13.63	34.45	121	53	A	H
		5851.5	65.99	-52.79	118.78	52.89	33.9	13.71	34.51	121	53	P	H
		5855.25	65.95	-44.78	110.73	52.84	33.91	13.71	34.51	121	53	P	H
		5882.75	61.89	-37.55	99.44	48.72	33.97	13.73	34.53	121	53	P	H
		5945	50.54	-17.66	68.2	37.35	34	13.77	34.58	121	53	P	H
802.11ac													H
VHT80													H
CH 155		5646	58.53	-9.67	68.2	45.96	33.48	13.44	34.35	100	148	P	V
5775MHz		5690.25	72.67	-25.34	98.01	59.88	33.66	13.51	34.38	100	148	P	V
		5720	69.37	-41.43	110.8	56.41	33.82	13.55	34.41	100	148	P	V
		5723.25	70.79	-47.42	118.21	57.81	33.84	13.55	34.41	100	148	P	V
	*	5775	97.7	-	-	84.52	34	13.63	34.45	100	148	P	V
	*	5775	89.52	-	-	76.34	34	13.63	34.45	100	148	A	V
		5851	64.47	-55.45	119.92	51.37	33.9	13.71	34.51	100	148	P	V
		5861	64.01	-45.11	109.12	50.89	33.92	13.71	34.51	100	148	P	V
		5875	59.58	-45.62	105.2	46.44	33.95	13.72	34.53	100	148	P	V
		5948.5	50.68	-17.52	68.2	37.49	34	13.77	34.58	100	148	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	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	50.23	-23.77	74	30.99	39.1	20.17	40.03	-	-	P	H
		11550	41.2	-12.8	54	21.96	39.1	20.17	40.03	-	-	A	H
		17325	51.81	-16.39	68.2	32.83	40.55	24.79	46.36	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
802.11ac VHT80 CH 155 5775MHz													H
													H
		11550	50.62	-23.38	74	31.38	39.1	20.17	40.03	-	-	P	V
		11550	41.15	-12.85	54	21.91	39.1	20.17	40.03	-	-	A	V
		17325	51.63	-16.57	68.2	32.65	40.55	24.79	46.36	-	-	P	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_Full (Band Edge @ 3m)

WIFI Ant. 1	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)
		5633.25	63.39	-4.81	68.2	50.91	33.4	13.42	34.34	113	53	P	H
		5683.5	75.38	-17.65	93.03	62.63	33.63	13.5	34.38	113	53	P	H
		5717.75	76.74	-33.43	110.17	63.79	33.81	13.55	34.41	113	53	P	H
		5722.5	76.75	-39.75	116.5	63.78	33.83	13.55	34.41	113	53	P	H
	*	5775	101.32	33.12	-	-	34	13.63	34.45	113	53	P	H
	*	5775	92.58	38.58	-	-	34	13.63	34.45	113	53	A	H
		5851.5	68.57	-50.21	118.78	55.47	33.9	13.71	34.51	113	53	P	H
		5856	68.01	-42.51	110.52	54.9	33.91	13.71	34.51	113	53	P	H
		5878.5	65.36	-37.24	102.6	52.21	33.96	13.72	34.53	113	53	P	H
		5949	51.39	-16.81	68.2	38.2	34	13.77	34.58	113	53	P	H
802.11ax													H
HE80 Full													H
CH 155		5644.25	61.64	-6.56	68.2	49.08	33.47	13.44	34.35	100	150	P	V
5775MHz		5695.5	71.89	-29.99	101.88	59.09	33.68	13.51	34.39	100	150	P	V
		5717.75	74.12	-36.05	110.17	61.17	33.81	13.55	34.41	100	150	P	V
		5724.75	74.73	-46.9	121.63	61.73	33.85	13.56	34.41	100	150	P	V
	*	5775	98.53	30.33	-	-	34	13.63	34.45	100	150	P	V
	*	5775	90.77	36.77	-	-	34	13.63	34.45	100	150	A	V
		5851.25	66.65	-52.7	119.35	53.55	33.9	13.71	34.51	100	150	P	V
		5859	65.63	-44.05	109.68	52.51	33.92	13.71	34.51	100	150	P	V
		5878.5	59.94	-42.66	102.6	46.79	33.96	13.72	34.53	100	150	P	V
		5944.25	50.52	-17.68	68.2	37.33	34	13.77	34.58	100	150	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. 1	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	50.37	-23.63	74	31.13	39.1	20.17	40.03	-	-	P	H
		11550	42.01	-11.99	54	22.77	39.1	20.17	40.03	-	-	A	H
		17325	52.89	-15.31	68.2	33.91	40.55	24.79	46.36	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
802.11ax													H
HE80 Full													H
CH 155		11550	50.93	-23.07	74	31.69	39.1	20.17	40.03	-	-	P	V
5775MHz		11550	42.35	-11.65	54	23.11	39.1	20.17	40.03	-	-	A	V
		17325	53.34	-14.86	68.2	34.36	40.55	24.79	46.36	-	-	P	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.

Emission above 18GHz

5GHz WIFI 802.11ac VHT80 (SHF @ 1m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		39286	51.63	-22.37	74	42.25	45.43	27.68	63.73	-	-	P	H
		39286	39.02	-14.98	54	29.64	45.43	27.68	63.73	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
5GHz													H
802.11ac													H
VHT80		39412	51.34	-22.66	74	41.69	45.72	27.76	63.83	-	-	P	V
SHF		39412	39.18	-14.82	54	29.53	45.72	27.76	63.83	-	-	A	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

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

Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (LF @ 3m)

WIFI Ant. 1	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)
		97.23	27.46	-16.04	43.5	42.68	15.74	1.77	32.73	-	-	P	H
		132.6	25.16	-18.34	43.5	38.18	17.66	2.03	32.71	-	-	P	H
		186.33	32.42	-11.08	43.5	47.83	14.78	2.48	32.67	-	-	P	H
		330.1	30.19	-15.81	46	40	19.71	3.22	32.74	-	-	P	H
		605.2	34.13	-11.87	46	36.72	25.81	4.41	32.81	-	-	P	H
		856.5	33.3	-12.7	46	30.94	29.24	5.27	32.15	-	-	P	H
													H
													H
													H
													H
5GHz													H
802.11ac													H
VHT80		97.5	27.38	-16.12	43.5	42.56	15.77	1.77	32.72	-	-	P	V
LF		146.91	30.57	-12.93	43.5	43.89	17.25	2.14	32.71	-	-	P	V
		176.34	28.39	-15.11	43.5	43.41	15.24	2.42	32.68	-	-	P	V
		309.1	27.43	-18.57	46	37.72	19.33	3.11	32.73	-	-	P	V
		605.2	32.73	-13.27	46	35.32	25.81	4.41	32.81	-	-	P	V
		881.7	32.85	-13.15	46	30.39	29.1	5.34	31.98	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as "-" means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.

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 **Margin** 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 Ant. 1	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)
802.11ac VHT80 CH 155 5775MHz		5945	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		5945	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

3. Margin (dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 5945MHz:

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) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 5945MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Margin (dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

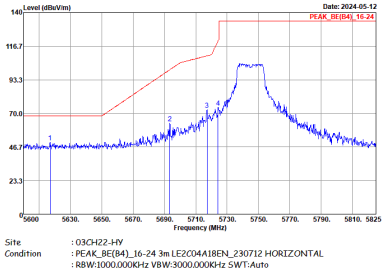
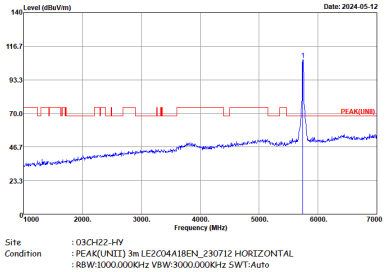
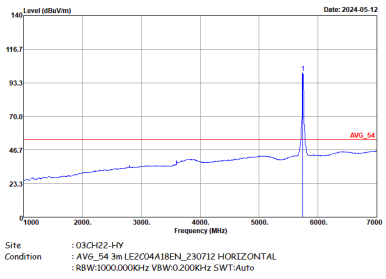
Both peak and average measured complies with the limit line, so test result is “PASS”.

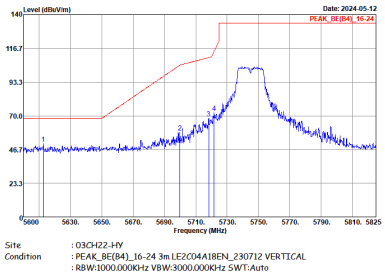
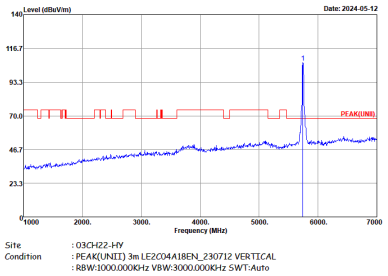
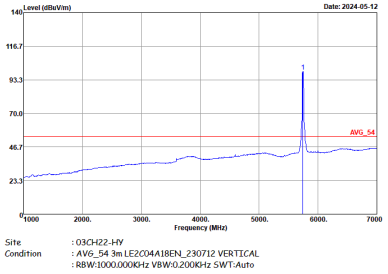
Appendix D. Radiated Spurious Emission Plots

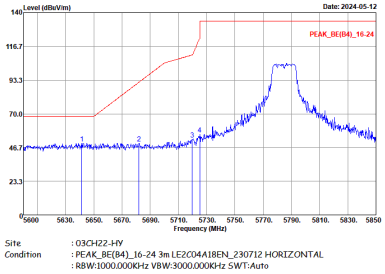
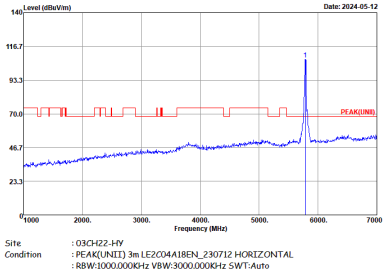
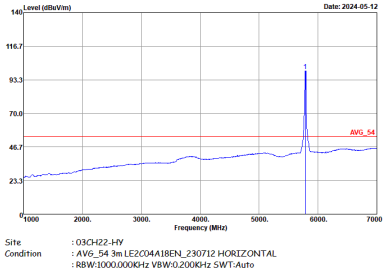
Test Engineer :	Bank Lin, Ken Kuo, and Karl Hou	**Temperature :**	21.3~23.5°C
		Relative Humidity :	51~58%

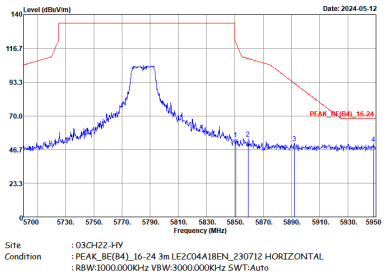
Band 4 - 5725~5850MHz

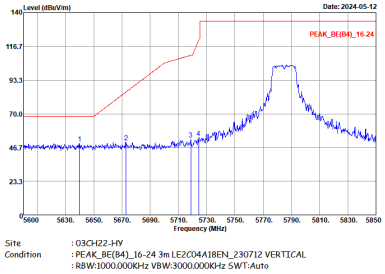
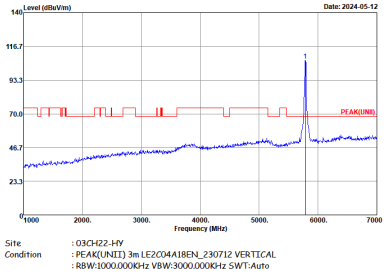
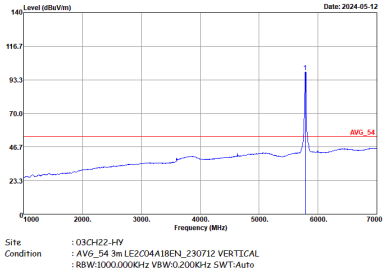
WIFI 802.11a (Band Edge @ 3m)

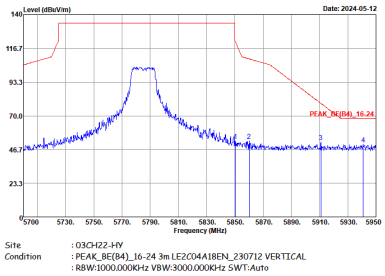
WIFI	**Band 4 5725~5850MHz Band Edge @ 3m**	
ANT	**802.11a CH149 5745MHz**	
1	**Horizontal**	**Fundamental**
Peak		
Avg.	Left blank	

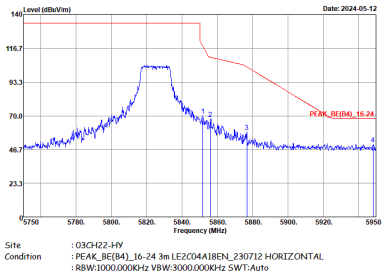
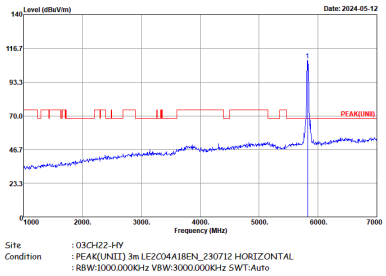
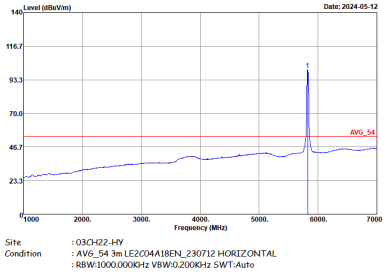
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Vertical	Fundamental
Peak		
Avg.	Left blank	

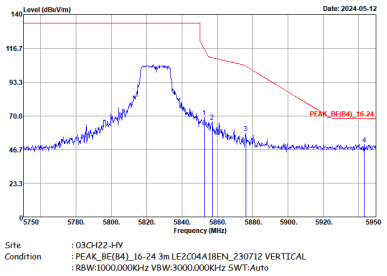
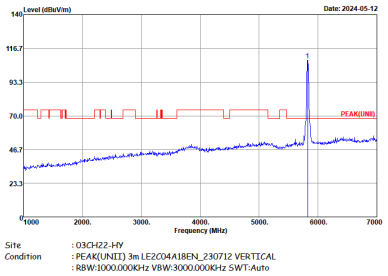
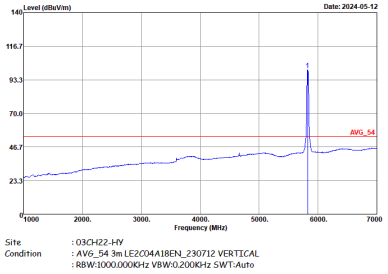
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Fundamental
Peak		
Avg.	Left blank	

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

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

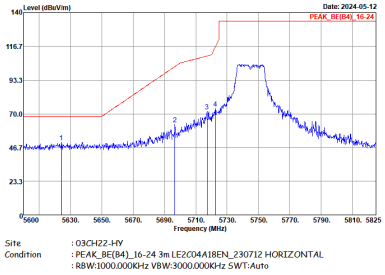
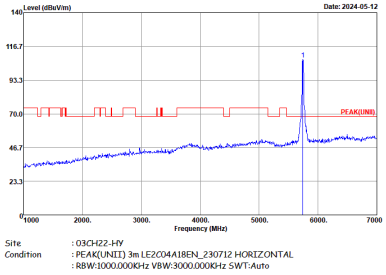
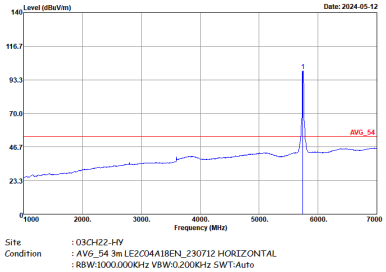
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Vertical	Fundamental
Peak		Left blank

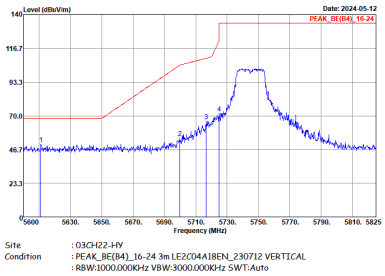
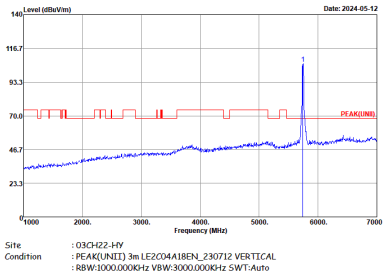
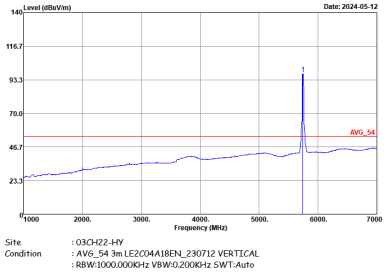
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Fundamental
Peak		
Avg.	Left blank	

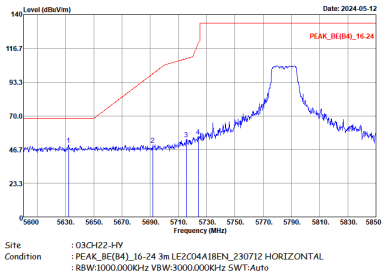
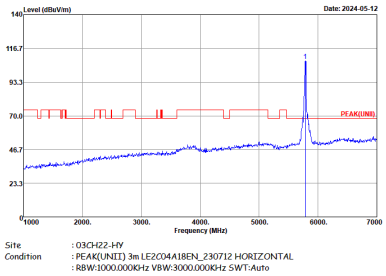
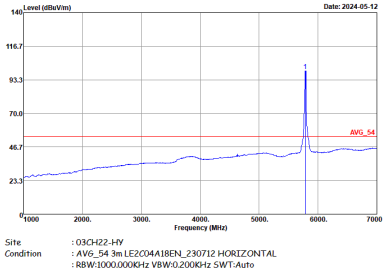
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Vertical	Fundamental
Peak		
Avg.	Left blank	

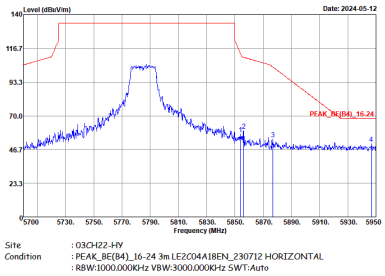
Band 4 5725~5850MHz

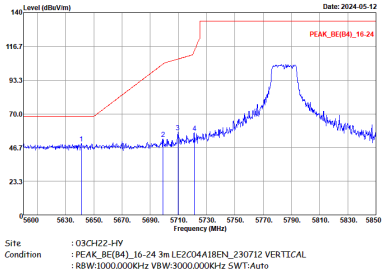
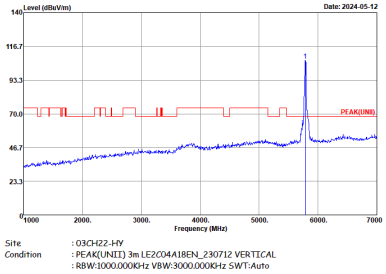
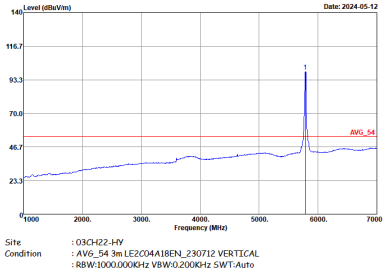
WIFI 802.11n HT20 (Band Edge @ 3m)

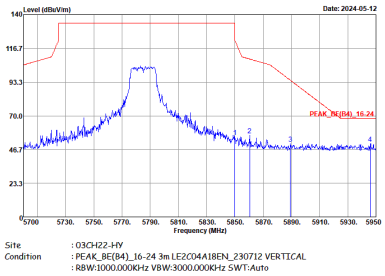
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Fundamental
Peak		
Avg.	Left blank	

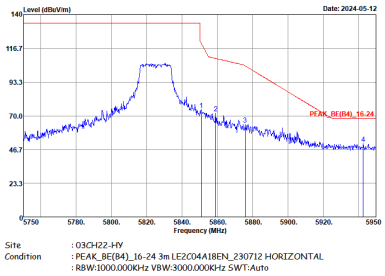
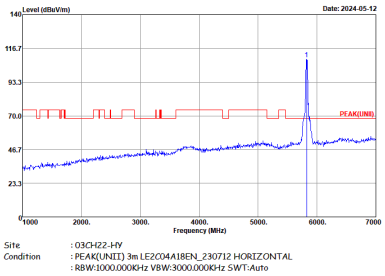
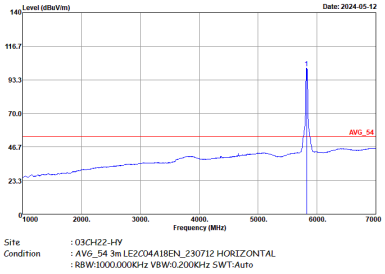
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Vertical	Fundamental
Peak		
Avg.	Left blank	

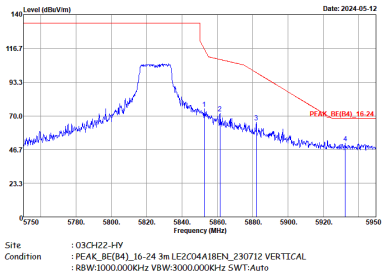
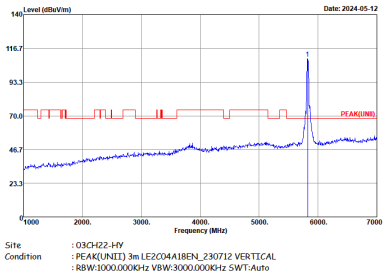
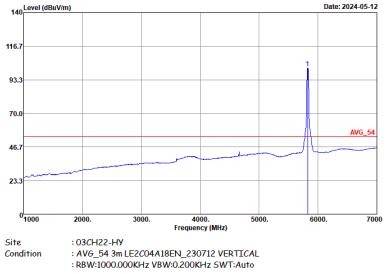
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Fundamental
Peak		
Avg.	Left blank	

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Fundamental
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Vertical	Fundamental
Peak		
Avg.	Left blank	

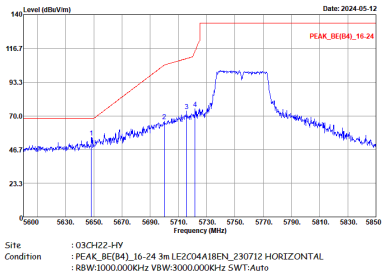
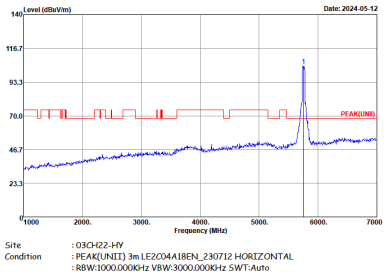
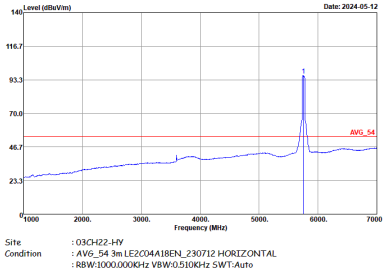
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Vertical	Fundamental
Peak		Left blank

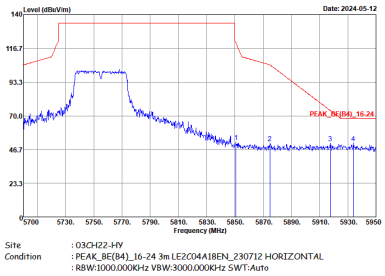
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Fundamental
Peak		
Avg.	Left blank	

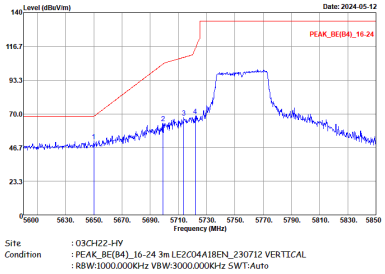
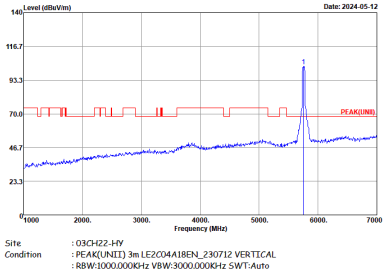
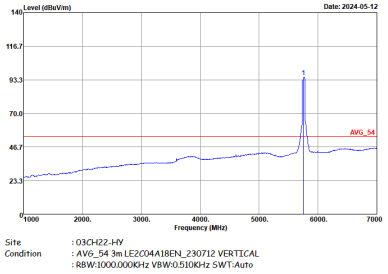
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Vertical	Fundamental
Peak		
Avg	Left blank	

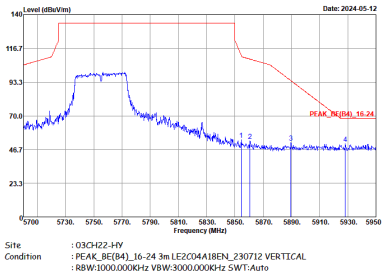
Band 4 5725~5850MHz

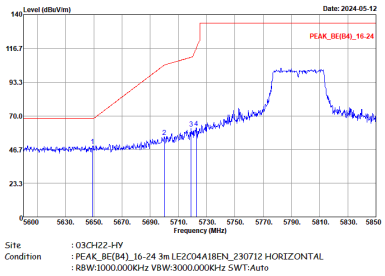
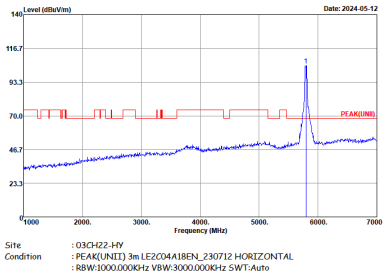
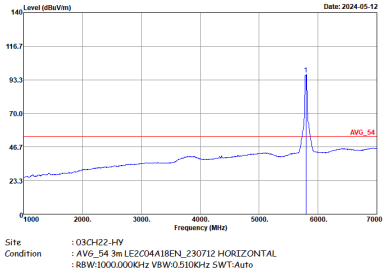
WIFI 802.11n HT40 (Band Edge @ 3m)

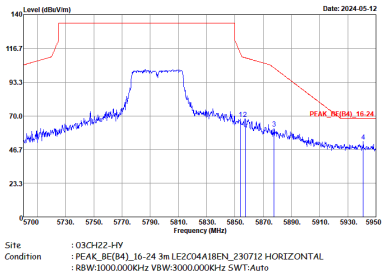
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Horizontal	Fundamental
Peak		
Avg.	Left blank	

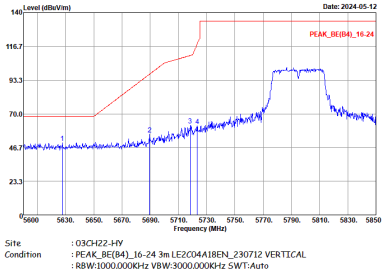
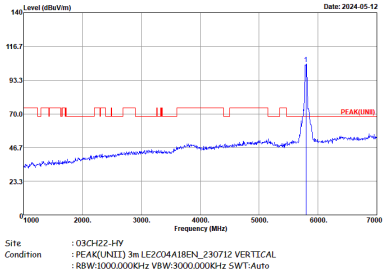
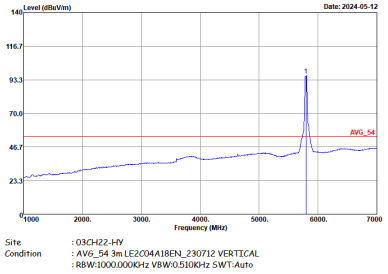
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Horizontal	Fundamental
Peak		Left blank

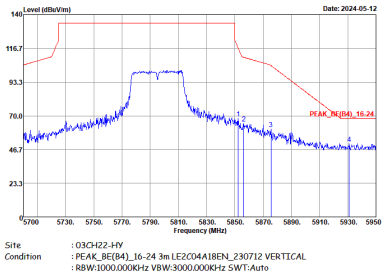
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Vertical	Fundamental
Peak		
Avg.	Left blank	

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Vertical	Fundamental
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Horizontal	Fundamental
Peak		
Avg.	Left blank	

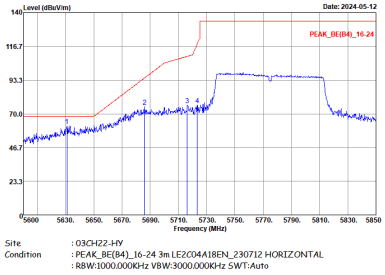
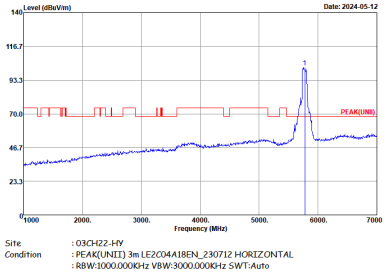
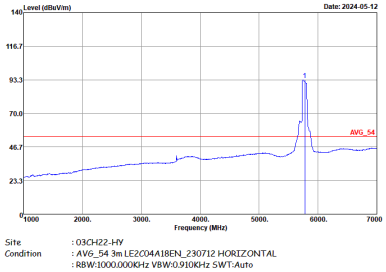
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Horizontal	Fundamental
Peak		Left blank

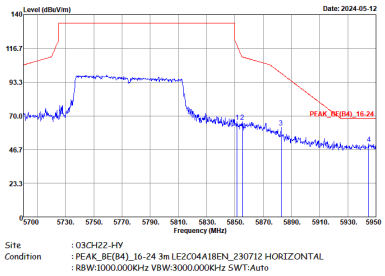
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Vertical	Fundamental
Peak		
Avg.	Left blank	

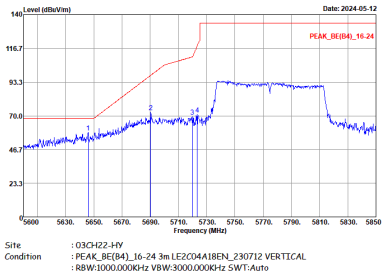
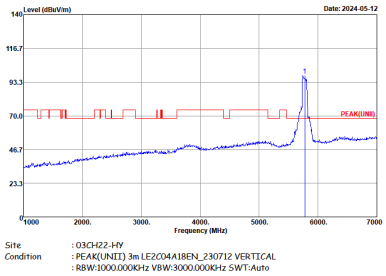
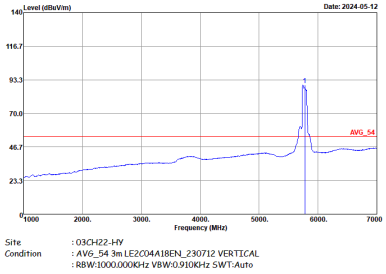
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Vertical	Fundamental
Peak		Left blank

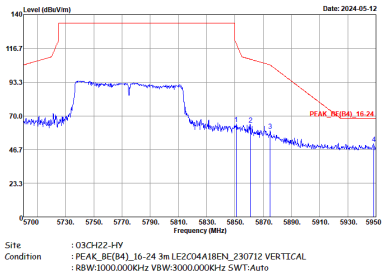
Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Fundamental
Peak		
Avg.	Left blank	

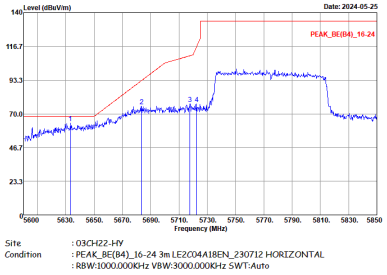
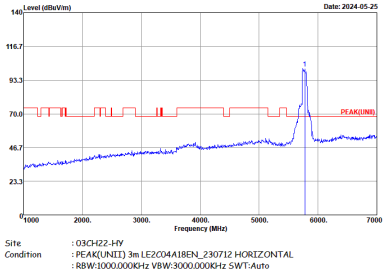
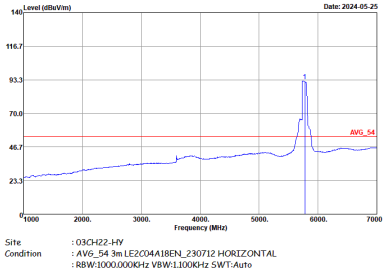
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Fundamental
Peak		Left blank

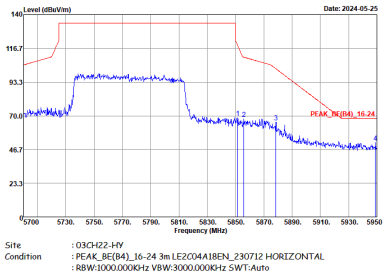
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Vertical	Fundamental
Peak		
Avg.	Left blank	

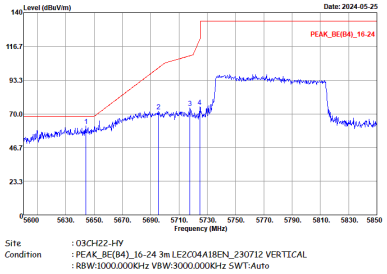
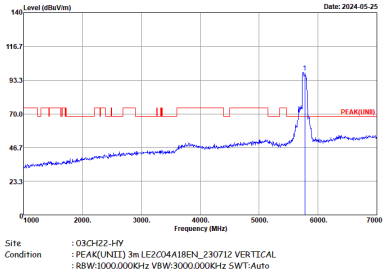
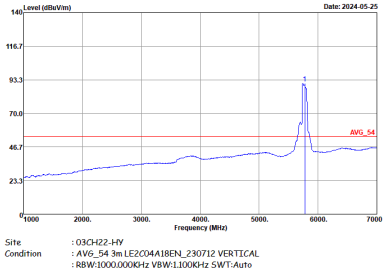
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Vertical	Fundamental
Peak		Left blank

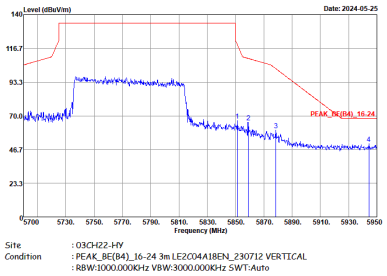
Band 4 5725~5850MHz

WIFI 802.11ax HE80 Full (Band Edge @ 3m)

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

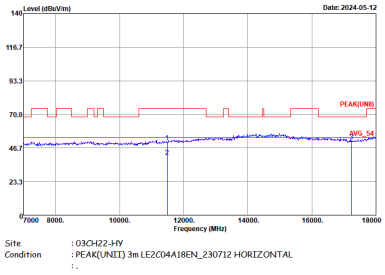
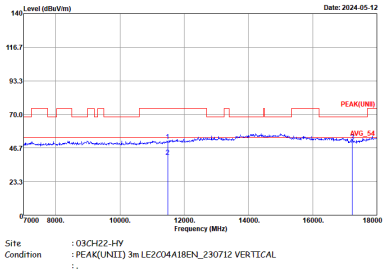
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1	Horizontal	Fundamental
Peak		Left blank

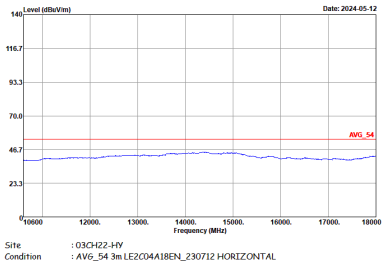
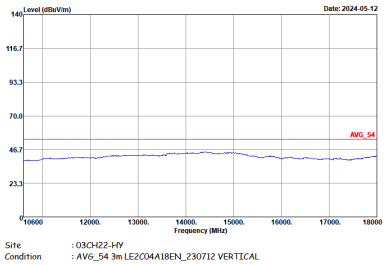
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1	Vertical	Fundamental
Peak		
Avg.	Left blank	

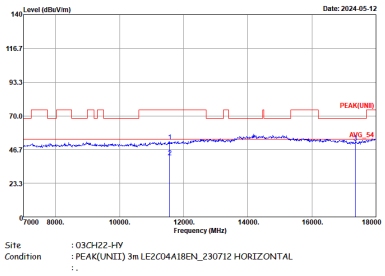
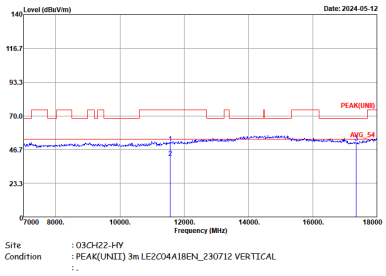
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1	Vertical	Fundamental
Peak		Left blank

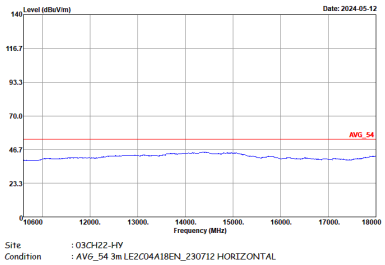
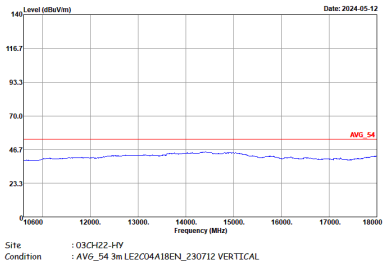
Band 4 - 5725~5850MHz

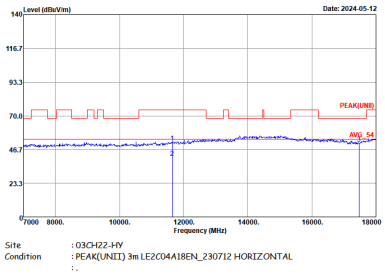
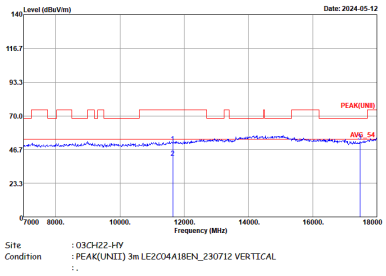
WIFI 802.11a (Harmonic @ 3m)

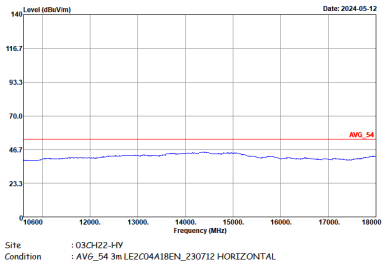
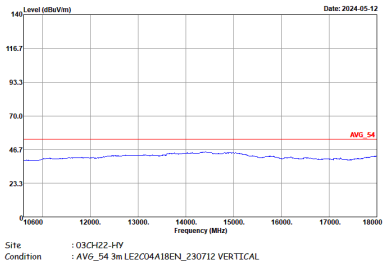
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Vertical
10.8G ~18G Avg.		

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

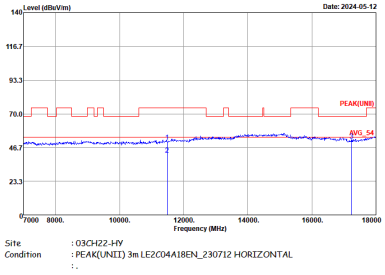
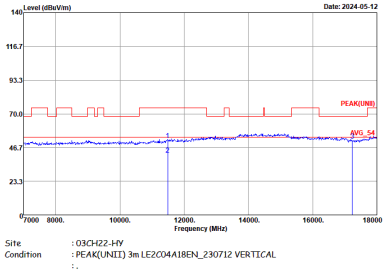
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Vertical
10.8G ~18G Avg.		

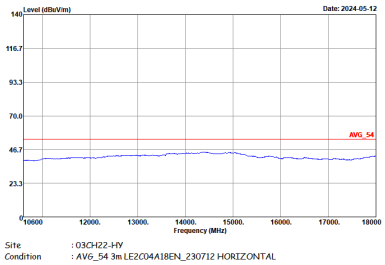
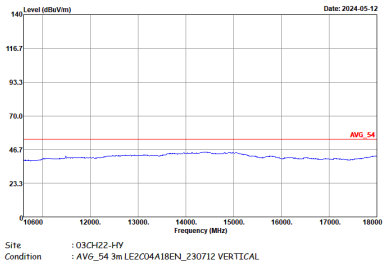
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.		

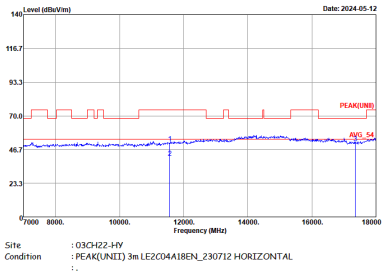
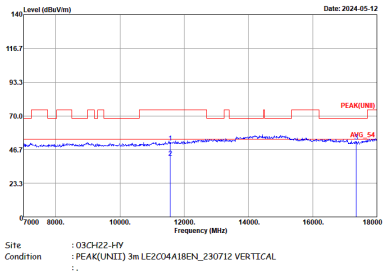
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Vertical
10.8G ~18G Avg.		

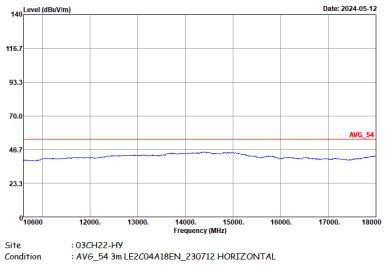
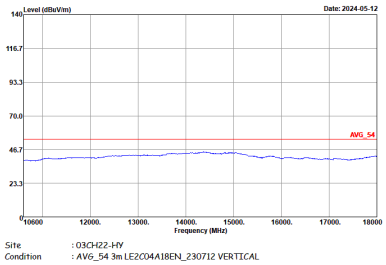
Band 4 5725~5850MHz

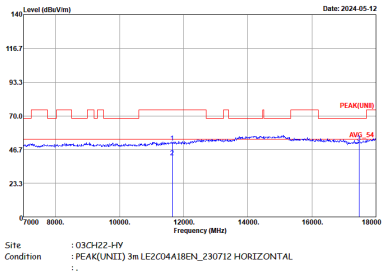
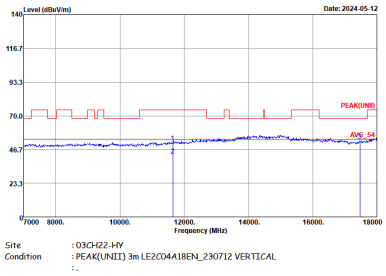
WIFI 802.11n HT20 (Harmonic @ 3m)

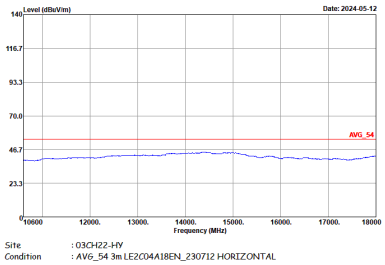
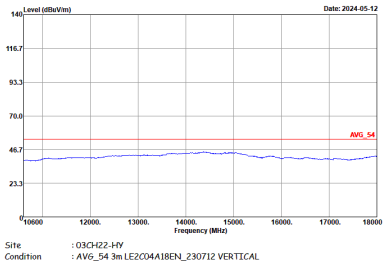
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Vertical
10.8G ~18G Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.		

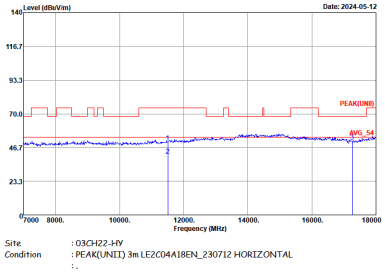
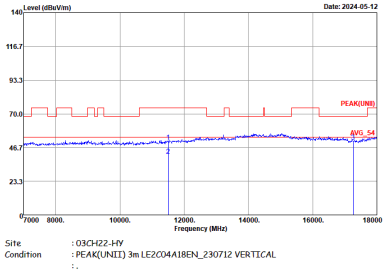
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Vertical
10.8G ~18G Avg.		

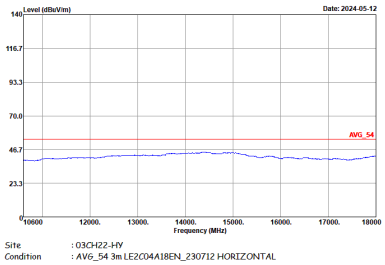
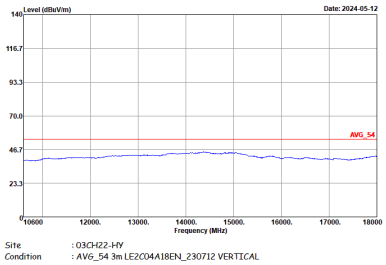
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.		

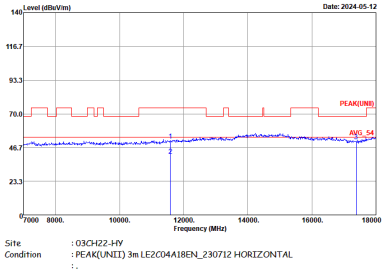
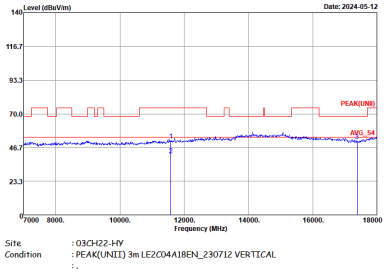
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Vertical
10.8G ~18G Avg.		

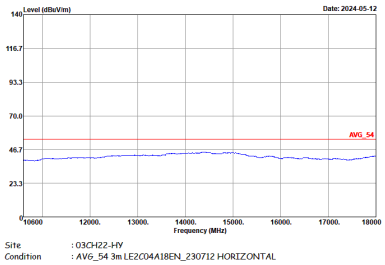
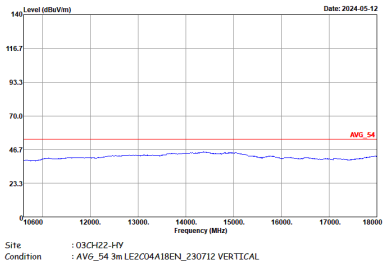
Band 4 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Horizontal	Vertical
Peak Avg.		

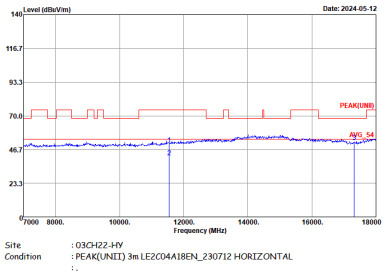
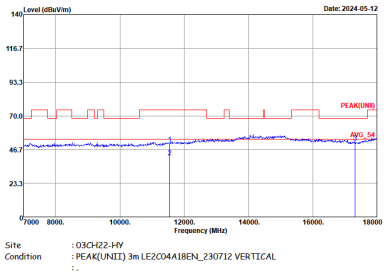
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Horizontal	Vertical
10.8G ~18G Avg.		

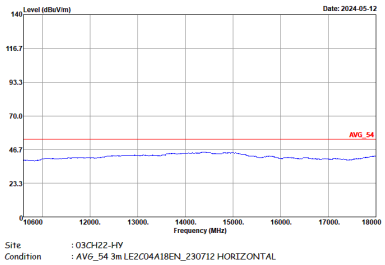
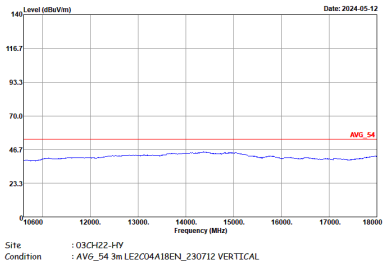
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Horizontal	Vertical
10.8G ~18G Avg.		

Band 4 5725~5850MHz

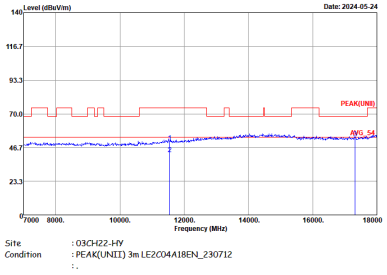
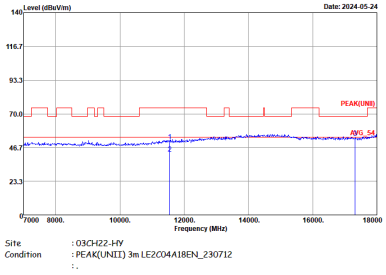
WIFI 802.11ac VHT80 (Harmonic @ 3m)

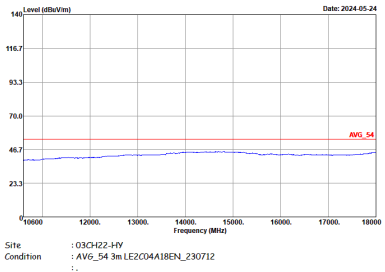
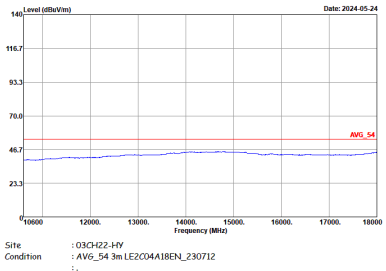
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Vertical
10.8G ~18G Avg.		

Band 4 5725~5850MHz

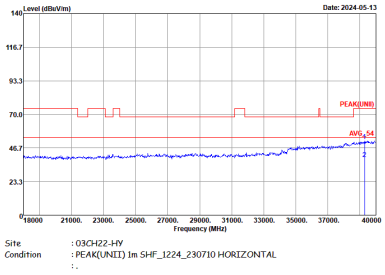
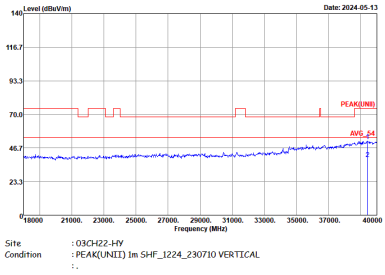
WIFI 802.11ax HE80 Full (Harmonic @ 3m)

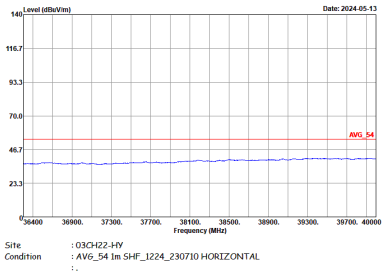
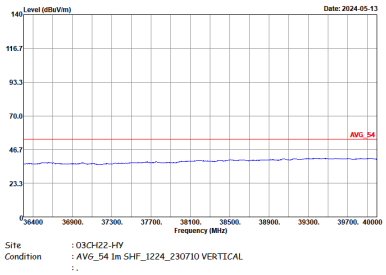
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1	Horizontal	Vertical
10.6G ~18G Avg.		

Emission above 18GHz

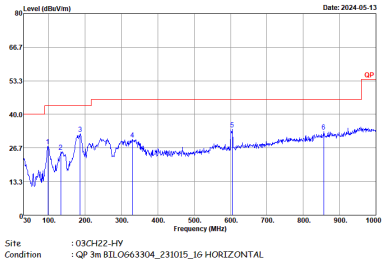
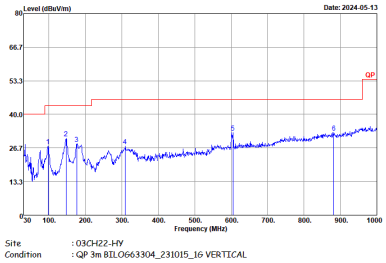
5GHz WIFI 802.11ac VHT80 (SHF @ 1m)

WIFI	5GHz WIFI	
ANT	802.11ac VHT80 SHF	
1	Horizontal	Vertical
Peak Avg.		

WIFI	5GHz WIFI	
ANT	802.11ac VHT80 SHF	
1	Horizontal	Vertical
36.4G ~40G Avg.		

Emission below 1GHz

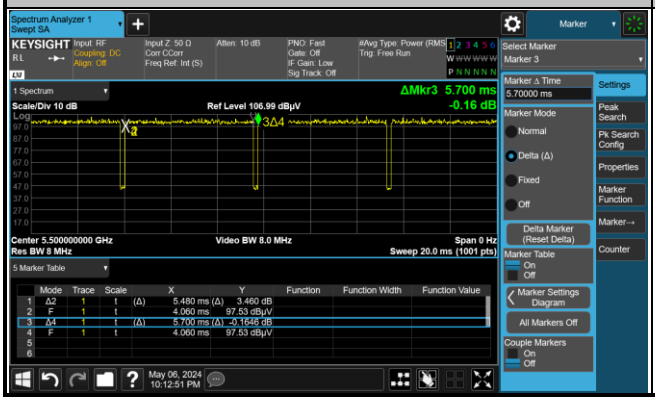
5GHz WIFI 802.11ac VHT80 (LF @ 3m)

WIFI	5GHz WIFI	
ANT	802.11ac VHT80 LF	
1	Horizontal	Vertical
QP / Peak		

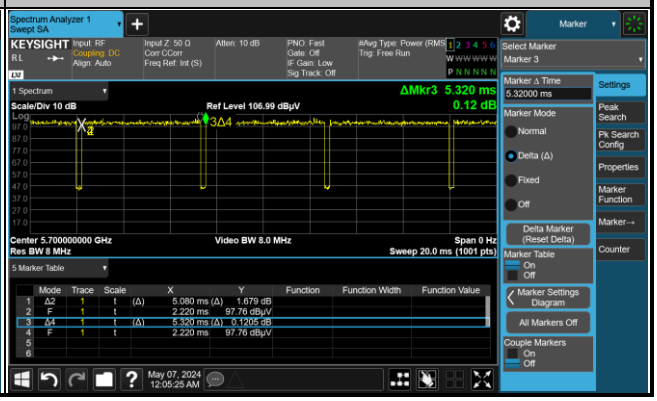
Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
802.11a	96.14	5480	0.18	200Hz
5GHz 802.11n HT20	95.49	5080	0.18	200Hz
5GHz 802.11n HT40	86.76	2464	0.41	510Hz
5GHz 802.11ac VHT80	89.93	1161	0.86	910Hz

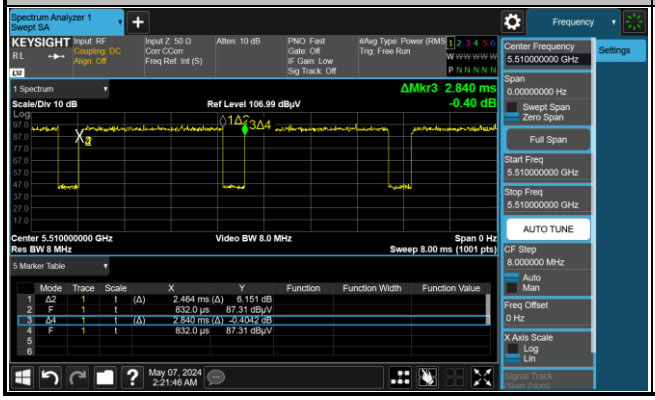
802.11a



5GHz 802.11n HT20



5GHz 802.11n HT40



5GHz 802.11ac VHT80