FCC RADIO TEST REPORT

FCC ID	:	**J9C-QCNFA765**
Equipment	:	**Wi-Fi 6E BT 5.2 M.2 2230 Module**
Brand Name	:	**Qualcomm**
Model Name	:	**QCNFA765**
Applicant	:	**Qualcomm Technologies, Inc. 5775 Morehouse Drive, San Diego, CA 92121-1714**
Manufacturer	:	**Qualcomm Technologies, Inc. 5775 Morehouse Drive, San Diego, CA 92121-1714**
Standard	:	**FCC Part 15 Subpart C §15.247**

The product was received on Oct. 13, 2021 and testing was performed from Oct. 22, 2021 to Nov. 25, 2021. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

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

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History of this test report

Report No.	Version	Description	Issue Date
FR1O1343A	01	Initial issue of report	Nov. 30, 2021

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(b)	Power Output Measurement	Pass	-
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	0.51 dB under the limit at 2483.520 MHz and 2486.360 MHz
3.3	15.203 & 15.247(b)	Antenna Requirement	Pass	-

Note: The test plan for power and Radiated Spurious Emission measurement are designated by manufacturer as worst case for Test Lab. measurement. Then, all test cases are performed, based on the worst power measured by Test Lab, and reported accordingly.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sheng Kuo

Report Producer: Lucy Wu

1 General Description

1.1 Product Feature of Equipment Under Test

Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax, Wi-Fi 5GHz 802.11a/n/ac/ax, and Wi-Fi 6GHz 802.11a/ax.

Product Feature	
Sample 1	EUT with Host 1
Sample 2	EUT with Host 2
Antenna Type	**WLAN** <Main>: PIFA Antenna <Aux.> : PIFA Antenna **Bluetooth:** PIFA Antenna

The product was installed into Portable Computer (Brand Name: DELL, Model Name: P117F) during test, and the host information was recorded in the following table.

Host Information	
Host 1	Host with Hong Bo Co., Ltd. Antenna
Host 2	Host with SPEED Antenna

Antenna Information			
Antenna 1	**Manufacturer**	Hong Bo Co., Ltd.	
	Antenna Type	PIFA Antenna	PIFA Antenna
	Part number	025.901XP.0001	025.901XQ.0001
	Peak gain (dBi)	Main Antenna :	Aux. Antenna :
		WLAN (2.4G): 1.00	WLAN (2.4G): 1.09
Antenna 2	**Manufacturer**	SPEED	
	Antenna Type	PIFA Antenna	PIFA Antenna
	Part number	025.901XP.0011	025.901XQ.0011
	Peak gain (dBi)	Main Antenna :	Aux. Antenna :
		WLAN (2.4G): 1.00	WLAN (2.4G): 1.09

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.
2. All the tests were performed with “Hong Bo Co., Ltd. Antenna” as representative.

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	TH02-HY, 03CH07-HY

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

FCC designation No.: TW1190

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 C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

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: radiation emission (1 GHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	8	2447
	2	2417	9	2452
	3	2422	10	2457
	4	2427	11	2462
	5	2432	12	2467
	6	2437	13	2472
	7	2442		

2.2 Test Mode

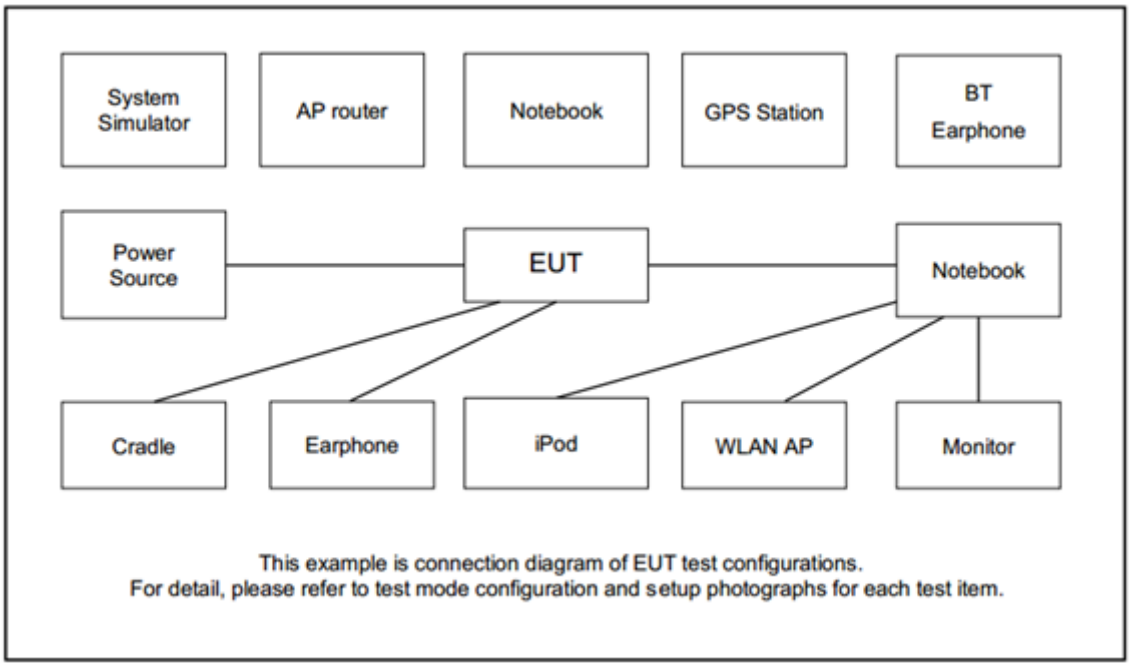
The final test modes consider the modulation and the worst data rates as shown in the table below.

Modulation	Data Rate
802.11b	**1 Mbps**
802.11g	**6 Mbps**
802.11n HT20 (Covered by HE20)	**MCS0**
802.11n HT40 (Covered by HE40)	**MCS0**
802.11ac VHT20 (Covered by HE20)	**MCS0**
802.11ac VHT40 (Covered by HE40)	**MCS0**
802.11ax HE20	**MCS0**
802.11ax HE40	**MCS0**

Ch. #	2400-2483.5 MHz			
	802.11b	802.11g	802.11ax HE20	802.11ax HE40
Low	-	01	01	03
Middle	06	-	06	-
High	-	11	11	09
	-	12	12	10
	-	13	13	11

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.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “QRCT v4.0.00194.0” was installed in Host 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.

3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5 MHz, the limit for output power is 30 dBm. If transmitting antenna with directional gain greater than 6 dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

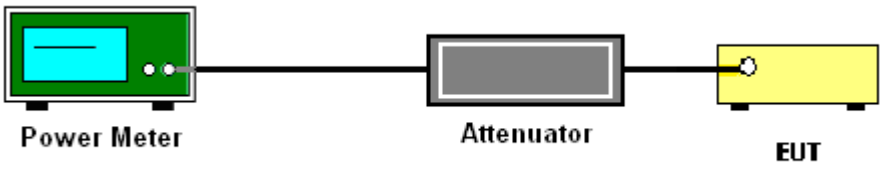
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
2. The RF output of EUT is connected to the power meter by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Measure the conducted output power and record the results in the test report.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.1.4 Test Setup



3.1.5 Test Result of Average Output Power

Please refer to Appendix A.

3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device is measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

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

3.2.2 Measuring Instruments

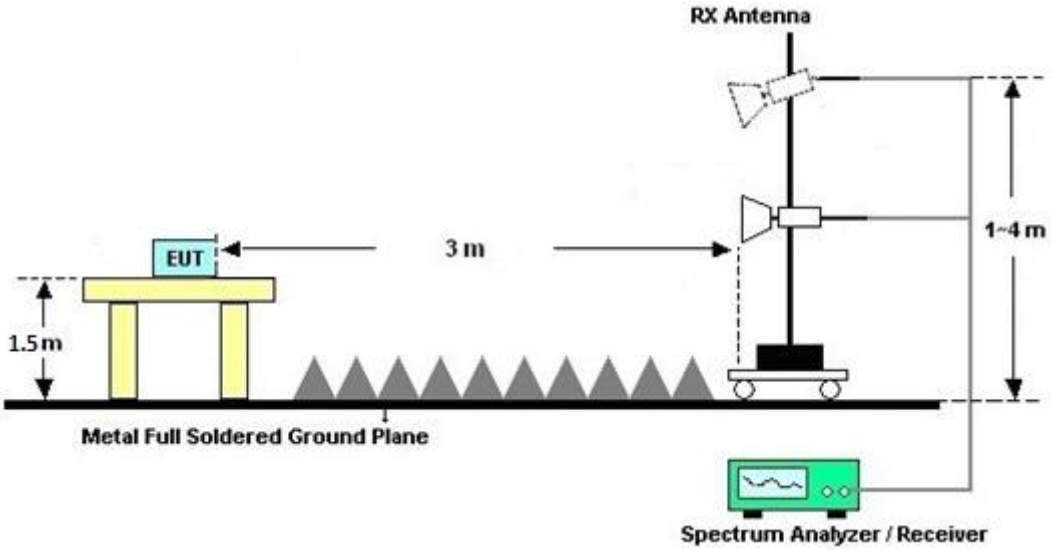
Please refer to the measuring equipment list in this test report.

3.2.3 Test Procedures

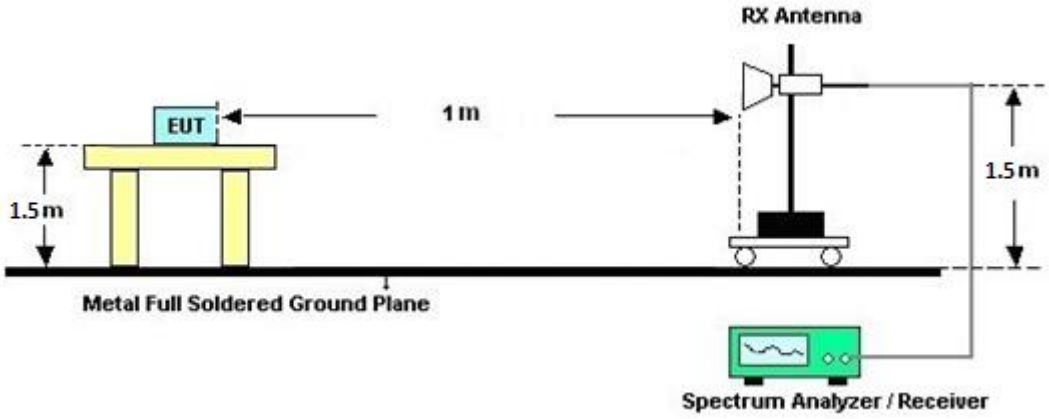
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT is placed on a turntable with 1.5 meter for frequency above 1 GHz respectively above ground.
4. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. 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 "-".
7. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW = 1 MHz, VBW= 3 MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - 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.

3.2.4 Test Setup

For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.2.5 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.2.6 Duty Cycle

Please refer to Appendix D.

3.2.7 Test Result of Radiated Spurious Emission

Please refer to Appendix B and C.

3.3 Antenna Requirements

3.3.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. 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.

3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.3.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 01, 2020	Nov. 12, 2021~ Nov. 25, 2021	Nov. 30, 2021	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz~18GHz	Apr. 22, 2021	Nov. 12, 2021~ Nov. 25, 2021	Apr. 21, 2022	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Oct. 04, 2021	Nov. 12, 2021~ Nov. 25, 2021	Oct. 03, 2022	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Jul. 22, 2021	Nov. 12, 2021~ Nov. 25, 2021	Jul. 21, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY15682-4	30MHz to 18GHz	Feb. 24, 2021	Nov. 12, 2021~ Nov. 25, 2021	Feb. 23, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971-4	9kHz to 18GHz	Feb. 24, 2021	Nov. 12, 2021~ Nov. 25, 2021	Feb. 23, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655-4	9kHz to 18GHz	Feb. 24, 2021	Nov. 12, 2021~ Nov. 25, 2021	Feb. 23, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2,80 1606/2	18GHz~40GHz	Feb. 24, 2021	Nov. 12, 2021~ Nov. 25, 2021	Feb. 23, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126	532078/126E	30MHz~18GHz	Sep. 17, 2021	Nov. 12, 2021~ Nov. 25, 2021	Sep. 16, 2022	Radiation (03CH07-HY)
Controller	EMEC	EM1000	N/A	Control Ant Mast	N/A	Nov. 12, 2021~ Nov. 25, 2021	N/A	Radiation (03CH07-HY)
Controller	MF	MF-7802	N/A	Control Turn table	N/A	Nov. 12, 2021~ Nov. 25, 2021	N/A	Radiation (03CH07-HY)
Antenna Mast	EMEC	AM-BS-4500E	N/A	Boresight mast 1M~4M	N/A	Nov. 12, 2021~ Nov. 25, 2021	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Nov. 12, 2021~ Nov. 25, 2021	N/A	Radiation (03CH07-HY)
Software	Audix	E3 6.2009-8-24	N/A	N/A	N/A	Nov. 12, 2021~ Nov. 25, 2021	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2495	N/A	Mar. 09, 2021	Nov. 12, 2021~ Nov. 25, 2021	Mar. 08, 2022	Radiation (03CH07-HY)
Hygrometer	Testo	608-H1	34893241	N/A	Mar. 01, 2021	Oct. 22, 2021~ Nov. 05, 2021	Feb. 28, 2022	Conducted (TH02-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 12	10MHz~6GHz	Dec. 16, 2020	Oct. 22, 2021~ Nov. 05, 2021	Dec. 15, 2021	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jan. 21, 2021	Oct. 22, 2021~ Nov. 05, 2021	Jan. 20, 2022	Conducted (TH02-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2021	Oct. 22, 2021~ Nov. 05, 2021	Mar. 16, 2022	Conducted (TH02-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.8 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.0 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Richard Qiu/Ching Chen	Temperature:	21~25	°C
Test Date:	2021/10/22-2021/11/5	Relative Humidity:	51~54	%

Remark: For Conducted Test Items, Ant. 1 means Chain 0 (Aux.) and Ant. 2 means Chain 1 (Main).

Report Number : FR1O1343A

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	2	1	2412	16.30	15.90	19.11	30.00		1.09		20.20		36.00		Pass
11b	1Mbps	2	6	2437	16.10	15.60	18.87	30.00		1.09		19.96		36.00		Pass
11b	1Mbps	2	11	2462	15.70	15.70	18.71	30.00		1.09		19.80		36.00		Pass
11b	1Mbps	2	12	2467	15.80	15.70	18.76	30.00		1.09		19.85		36.00		Pass
11b	1Mbps	2	13	2472	14.60	14.80	17.71	30.00		1.09		18.80		36.00		Pass
11g	6Mbps	2	1	2412	16.10	15.70	18.91	30.00		1.09		20.00		36.00		Pass
11g	6Mbps	2	6	2437	15.90	15.60	18.76	30.00		1.09		19.85		36.00		Pass
11g	6Mbps	2	11	2462	15.60	15.60	18.61	30.00		1.09		19.70		36.00		Pass
11g	6Mbps	2	12	2467	14.00	14.20	17.11	30.00		1.09		18.20		36.00		Pass
11g	6Mbps	2	13	2472	3.10	2.60	5.87	30.00		1.09		6.96		36.00		Pass
HT20	MCS0	2	1	2412	15.80	15.40	18.61	30.00		1.09		19.70		36.00		Pass
HT20	MCS0	2	6	2437	15.80	15.60	18.71	30.00		1.09		19.80		36.00		Pass
HT20	MCS0	2	11	2462	14.60	14.80	17.71	30.00		1.09		18.80		36.00		Pass
HT20	MCS0	2	12	2467	13.60	13.90	16.76	30.00		1.09		17.85		36.00		Pass
HT20	MCS0	2	13	2472	2.80	2.20	5.52	30.00		1.09		6.61		36.00		Pass
HT40	MCS0	2	3	2422	14.20	13.90	17.06	30.00		1.09		18.15		36.00		Pass
HT40	MCS0	2	6	2437	15.30	14.70	18.02	30.00		1.09		19.11		36.00		Pass
HT40	MCS0	2	9	2452	13.80	13.70	16.76	30.00		1.09		17.85		36.00		Pass
HT40	MCS0	2	10	2457	12.60	12.60	15.61	30.00		1.09		16.70		36.00		Pass
HT40	MCS0	2	11	2462	4.30	4.10	7.21	30.00		1.09		8.30		36.00		Pass
VHT20	MCS0	2	1	2412	15.80	15.40	18.61	30.00		1.09		19.70		36.00		Pass
VHT20	MCS0	2	6	2437	15.80	15.60	18.71	30.00		1.09		19.80		36.00		Pass
VHT20	MCS0	2	11	2462	14.60	14.80	17.71	30.00		1.09		18.80		36.00		Pass
VHT20	MCS0	2	12	2467	13.60	13.90	16.76	30.00		1.09		17.85		36.00		Pass
VHT20	MCS0	2	13	2472	2.80	2.20	5.52	30.00		1.09		6.61		36.00		Pass
VHT40	MCS0	2	3	2422	14.20	14.10	17.16	30.00		1.09		18.25		36.00		Pass
VHT40	MCS0	2	6	2437	15.30	14.70	18.02	30.00		1.09		19.11		36.00		Pass
VHT40	MCS0	2	9	2452	13.80	13.70	16.76	30.00		1.09		17.85		36.00		Pass
VHT40	MCS0	2	10	2457	12.60	12.60	15.61	30.00		1.09		16.70		36.00		Pass
VHT40	MCS0	2	11	2462	4.30	4.10	7.21	30.00		1.09		8.30		36.00		Pass

Note: Measured power (dBm) has offset with cable loss.

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
						Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
HE20	MCS0	2	1	2412	Full	16.00	15.70	18.86	30.00		1.09		19.95		36.00		Pass
HE20	MCS0	2	1	2412	26/0	15.30	15.10	18.21	30.00		1.09		19.30		36.00		Pass
HE20	MCS0	2	1	2412	242/61	14.30	14.10	17.21	30.00		1.09		18.30		36.00		Pass
HE20	MCS0	2	6	2437	Full	15.90	15.70	18.81	30.00		1.09		19.90		36.00		Pass
HE20	MCS0	2	6	2437	26/4	15.60	15.60	18.61	30.00		1.09		19.70		36.00		Pass
HE20	MCS0	2	11	2462	Full	15.00	15.00	18.01	30.00		1.09		19.10		36.00		Pass
HE20	MCS0	2	11	2462	26/8	14.30	14.70	17.51	30.00		1.09		18.60		36.00		Pass
HE20	MCS0	2	11	2462	242/61	12.20	12.20	15.21	30.00		1.09		16.30		36.00		Pass
HE20	MCS0	2	12	2467	Full	13.80	14.10	16.96	30.00		1.09		18.05		36.00		Pass
HE20	MCS0	2	12	2467	26/8	11.10	11.10	14.11	30.00		1.09		15.20		36.00		Pass
HE20	MCS0	2	12	2467	242/61	10.20	10.30	13.26	30.00		1.09		14.35		36.00		Pass
HE20	MCS0	2	13	2472	Full	2.90	2.30	5.62	30.00		1.09		6.71		36.00		Pass
HE20	MCS0	2	13	2472	26/8	-9.70	-9.90	-6.79	30.00		1.09		-5.70		36.00		Pass
HE20	MCS0	2	13	2472	242/61	-6.40	-6.40	-3.39	30.00		1.09		-2.30		36.00		Pass
HE40	MCS0	2	3	2422	Full	14.40	14.20	17.31	30.00		1.09		18.40		36.00		Pass
HE40	MCS0	2	3	2422	484/65	10.30	9.80	13.07	30.00		1.09		14.16		36.00		Pass
HE40	MCS0	2	6	2437	Full	15.40	14.80	18.12	30.00		1.09		19.21		36.00		Pass
HE40	MCS0	2	9	2452	Full	13.90	13.80	16.86	30.00		1.09		17.95		36.00		Pass
HE40	MCS0	2	9	2452	484/65	11.90	11.40	14.67	30.00		1.09		15.76		36.00		Pass
HE40	MCS0	2	10	2457	Full	12.70	12.70	15.71	30.00		1.09		16.80		36.00		Pass
HE40	MCS0	2	10	2457	484/65	10.40	10.30	13.36	30.00		1.09		14.45		36.00		Pass
HE40	MCS0	2	11	2462	Full	4.50	4.20	7.36	30.00		1.09		8.45		36.00		Pass
HE40	MCS0	2	11	2462	484/65	-4.70	-4.90	-1.79	30.00		1.09		-0.70		36.00		Pass

Note: Measured power (dBm) has offset with cable loss.

Appendix B. Radiated Spurious Emission

Test Engineer :	Jesse Wang, Stan Hsieh and Ken Wu	Temperature :	17.9~22.2°C
		Relative Humidity :	53.1~69%

Remark: For Radiated Spurious Emission Test Items, Ant. 1 means Chain 0 (Aux.) and Ant. 2 means Chain 1 (Main).

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 06 2437MHz		3165	49.17	-24.83	74	65.47	32.97	10.39	59.66	-	-	P	H
		3165	41.01	-12.99	54	57.31	32.97	10.39	59.66	-	-	A	H
		4874	42.74	-31.26	74	53.69	34.1	12.86	57.91	-	-	P	H
		4990	53.24	-20.76	74	64.02	34.2	12.79	57.77	242	59	P	H
		4990	44.32	-9.68	54	55.1	34.2	12.79	57.77	242	59	A	H
		7311	42.72	-31.28	74	50.11	35.6	14.92	57.91	-	-	P	H
		17490	51.65	-22.35	74	41.76	41.68	24.5	56.29	-	-	P	H
		17490	41.28	-12.72	54	31.39	41.68	24.5	56.29	-	-	A	H
													H
		3150	48.99	-25.01	74	65.22	33	10.41	59.64	-	-	P	V
		3150	41.88	-12.12	54	58.11	33	10.41	59.64	-	-	A	V
		4874	42.17	-31.83	74	53.12	34.1	12.86	57.91	-	-	P	V
		4990	53.35	-20.65	74	64.13	34.2	12.79	57.77	328	293	P	V
		4990	44.41	-9.59	54	55.19	34.2	12.79	57.77	328	293	A	V
		7311	43.49	-30.51	74	50.88	35.6	14.92	57.91	-	-	P	V
		17370	51.53	-22.47	74	41.93	41.57	24.42	56.39	-	-	P	V
		17370	41.05	-12.95	54	31.45	41.57	24.42	56.39	-	-	A	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.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz													H
													H
													H
													H
													H
													H
		2389.485	56.17	-17.83	74	41.54	31.9	18.14	35.41	100	214	P	V
		2390	47	-7	54	32.41	31.9	18.11	35.42	100	214	A	V
	*	2412	108.98	-	-	94.2	32	18.2	35.42	100	76	P	V
	*	2412	101.89	-	-	87.15	32	18.16	35.42	100	76	A	V
													V
													V
802.11g CH 11 2462MHz													H
													H
													H
													H
													H
													H
	*	2462	110.37	-	-	95.25	32.33	18.23	35.44	106	339	P	V
	*	2462	102.91	-	-	87.79	32.33	18.23	35.44	106	339	A	V
		2483.72	63.1	-10.9	74	47.83	32.47	18.25	35.45	106	339	P	V
		2483.52	53.31	-0.69	54	38.04	32.47	18.25	35.45	106	339	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 12 2467MHz													H
													H
													H
													H
													H
													H
	*	2467	110.16	-	-	95.05	32.33	18.23	35.45	193	223	P	V
	*	2467	102.67	-	-	87.56	32.33	18.23	35.45	193	223	A	V
		2483.68	64.51	-9.49	74	49.24	32.47	18.25	35.45	230	223	P	V
		2483.52	52.68	-1.32	54	37.41	32.47	18.25	35.45	230	223	A	V
													V
													V
802.11g CH 13 2472MHz													H
													H
													H
													H
													H
													H
	*	2472	98.2	-	-	82.94	32.47	18.24	35.45	221	224	P	V
	*	2472	90.6	-	-	75.34	32.47	18.24	35.45	221	224	A	V
		2483.52	62.22	-11.78	74	46.95	32.47	18.25	35.45	221	224	P	V
		2483.52	51.62	-2.38	54	36.35	32.47	18.25	35.45	221	224	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE20 Full (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
													H
													H
													H
													H
802.11ax													H
HE20 Full													H
CH 01		2389.17	61.27	-12.73	74	46.64	31.9	18.14	35.41	100	213	P	V
2412MHz		2390	50.07	-3.93	54	35.45	31.9	18.14	35.42	100	213	A	V
	*	2412	106.58	-	-	91.8	32	18.2	35.42	100	213	P	V
	*	2412	98.41	-	-	83.63	32	18.2	35.42	100	213	A	V
													V
													V
													H
													H
													H
													H
802.11ax													H
HE20 Full													H
CH 11	*	2462	111.51	-	-	96.39	32.33	18.23	35.44	100	222	P	V
2462MHz	*	2462	101.93	-	-	86.81	32.33	18.23	35.44	100	222	A	V
		2483.88	64.55	-9.45	74	49.28	32.47	18.25	35.45	100	222	P	V
		2483.52	53.33	-0.67	54	38.06	32.47	18.25	35.45	100	222	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
													H
													H
													H
													H
802.11ax													H
HE20 Full													H
CH 12	*	2467	111.74	-	-	96.63	32.33	18.23	35.45	100	219	P	V
2467MHz	*	2467	101.55	-	-	86.44	32.33	18.23	35.45	100	219	A	V
		2488.04	64.1	-9.9	74	48.71	32.6	18.24	35.45	100	219	P	V
		2486.36	53.49	-0.51	54	38.22	32.47	18.25	35.45	100	219	A	V
													V
													V
													H
													H
													H
													H
802.11ax													H
HE20 Full													H
CH 13	*	2472	98.72	-	-	83.46	32.47	18.24	35.45	226	222	P	V
2472MHz	*	2472	89.94	-	-	74.68	32.47	18.24	35.45	226	222	A	V
		2483.56	65.31	-8.69	74	50.04	32.47	18.25	35.45	226	222	P	V
		2483.52	53.49	-0.51	54	38.22	32.47	18.25	35.45	226	222	A	V
													V
													V

Remark

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

2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE20 Partial 26 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Partial 26/0 CH 01 2412MHz													H
													H
													H
													H
													H
													H
		2388.12	59.99	-14.01	74	45.37	31.9	18.13	35.41	100	5	P	V
		2390	44.6	-9.4	54	29.98	31.9	18.14	35.42	100	5	A	V
	*	2412	117.05	-	-	102.27	32	18.2	35.42	100	5	P	V
	*	2412	109.31	-	-	94.53	32	18.2	35.42	100	5	A	V
													V
													V
802.11ax HE20 Partial 26/8 CH 11 2462MHz													H
													H
													H
													H
													H
													H
	*	2462	117.78	-	-	102.66	32.33	18.23	35.44	100	345	P	V
	*	2462	109.37	-	-	94.25	32.33	18.23	35.44	100	345	A	V
		2483.8	63.2	-10.8	74	47.93	32.47	18.25	35.45	100	345	P	V
		2483.52	46.01	-7.99	54	30.74	32.47	18.25	35.45	100	345	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Partial 26/8 CH 12 2467MHz													H
													H
													H
													H
													H
													H
	*	2467	114.23	-	-	99.12	32.33	18.23	35.45	141	345	P	V
	*	2467	106.58	-	-	91.47	32.33	18.23	35.45	141	345	A	V
		2483.52	65.35	-8.65	74	50.08	32.47	18.25	35.45	141	345	P	V
		2483.52	48.57	-5.43	54	33.3	32.47	18.25	35.45	141	345	A	V
													V
													V
802.11ax HE20 Partial 26/8 CH 13 2472MHz													H
													H
													H
													H
													H
													H
	*	2472	95.73	-	-	80.47	32.47	18.24	35.45	107	347	P	V
	*	2472	86.99	-	-	71.73	32.47	18.24	35.45	107	347	A	V
		2483.52	69.97	-4.03	74	54.7	32.47	18.25	35.45	107	347	P	V
		2483.52	50.98	-3.02	54	35.71	32.47	18.25	35.45	107	347	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE20 Partial 26 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		3135	49.08	-24.92	74	65.24	33	10.45	59.61	-	-	P	H
		3135	40.98	-13.02	54	57.14	33	10.45	59.61	-	-	A	H
		4874	41.21	-32.79	74	52.16	34.1	12.86	57.91	-	-	P	H
		4990	52.7	-21.3	74	63.48	34.2	12.79	57.77	241	58	P	H
		4990	43.99	-10.01	54	54.77	34.2	12.79	57.77	241	58	A	H
		7311	41.94	-32.06	74	49.33	35.6	14.92	57.91	-	-	P	H
		17835	51.33	-22.67	74	40.78	41.9	24.73	56.08	-	-	P	H
		17835	41.2	-12.8	54	30.65	41.9	24.73	56.08	-	-	A	H
													H
													H
802.11ax HE20 Partial 26/4 CH 06 2437MHz													H
													H
		3165	50.2	-23.8	74	66.5	32.97	10.39	59.66	-	-	P	V
		3165	41.66	-12.34	54	57.96	32.97	10.39	59.66	-	-	A	V
		4874	42.28	-31.72	74	53.23	34.1	12.86	57.91	-	-	P	V
		4990	53.11	-20.89	74	63.89	34.2	12.79	57.77	349	294	P	V
		4990	44.28	-9.72	54	55.06	34.2	12.79	57.77	349	294	A	V
		7311	41.85	-32.15	74	49.24	35.6	14.92	57.91	-	-	P	V
		17850	50.95	-23.05	74	40.38	41.9	24.74	56.07	-	-	P	V
		17850	40.74	-13.26	54	30.17	41.9	24.74	56.07	-	-	A	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.
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.

2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE20 Partial 242 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
													H
													H
													H
802.11ax													H
HE20													H
Partial													H
242/61		2389.8	66.76	-7.24	74	52.14	31.9	18.14	35.42	100	217	P	V
CH 01		2390	49.34	-4.66	54	34.72	31.9	18.14	35.42	100	217	A	V
2412MHz	*	2412	107.86	-	-	93.08	32	18.2	35.42	100	79	P	V
	*	2412	99.69	-	-	84.91	32	18.2	35.42	100	79	A	V
													V
													V
													H
													H
													H
802.11ax													H
HE20													H
Partial													H
242/61	*	2462	107.2	-	-	92.08	32.33	18.23	35.44	106	342	P	V
CH 11	*	2462	99.51	-	-	84.39	32.33	18.23	35.44	106	342	A	V
2462MHz		2483.56	66.13	-7.87	74	50.86	32.47	18.25	35.45	106	342	P	V
		2483.52	52.05	-1.95	54	36.78	32.47	18.25	35.45	106	342	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
													H
													H
													H
802.11ax													H
HE20													H
Partial													H
242/61	*	2467	104.73	-	-	89.62	32.33	18.23	35.45	100	5	P	V
CH 12	*	2467	96.1	-	-	80.99	32.33	18.23	35.45	100	5	A	V
2467MHz		2487.48	58.68	-15.32	74	43.42	32.47	18.24	35.45	100	5	P	V
		2487.2	46.72	-7.28	54	31.46	32.47	18.24	35.45	100	5	A	V
													V
													V
													H
													H
													H
802.11ax													H
HE20													H
Partial													H
242/61	*	2472	91.19	-	-	75.93	32.47	18.24	35.45	100	344	P	V
CH 13	*	2472	82.96	-	-	67.7	32.47	18.24	35.45	100	344	A	V
2472MHz		2483.6	63.07	-10.93	74	47.8	32.47	18.25	35.45	100	252	P	V
		2483.52	46.41	-7.59	54	31.14	32.47	18.25	35.45	100	252	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE40 Full (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		2386.16	57.11	-16.89	74	42.49	31.9	18.13	35.41	394	148	P	H
		2387.98	46.72	-7.28	54	32.1	31.9	18.13	35.41	394	148	A	H
	*	2422	99.16	-	-	84.29	32.1	18.2	35.43	400	207	P	H
	*	2422	90.27	-	-	75.4	32.1	18.2	35.43	400	207	A	H
802.11ax		2489.78	54.54	-19.46	74	39.14	32.6	18.25	35.45	394	148	P	H
HE40 Full		2491.6	44.07	-9.93	54	28.67	32.6	18.25	35.45	394	148	A	H
CH 03		2389.8	60.48	-13.52	74	45.86	31.9	18.14	35.42	100	212	P	V
2422MHz		2389.52	50.78	-3.22	54	36.15	31.9	18.14	35.41	100	212	A	V
	*	2422	105.11	-	-	90.24	32.1	18.2	35.43	100	74	P	V
	*	2422	97.2	-	-	82.33	32.1	18.2	35.43	100	74	A	V
		2499.09	55	-19	74	39.6	32.6	18.26	35.46	100	212	P	V
		2486.21	44.41	-9.59	54	29.14	32.47	18.25	35.45	100	212	A	V
													H
													H
													H
													H
802.11ax													H
HE40 Full													H
CH 09		2336.04	54.21	-19.79	74	39.9	31.8	17.9	35.39	100	343	P	V
2452MHz		2389.94	43.65	-10.35	54	29.03	31.9	18.14	35.42	100	343	A	V
	*	2452	105.67	-	-	90.69	32.2	18.22	35.44	100	343	P	V
	*	2452	96.74	-	-	81.76	32.2	18.22	35.44	100	343	A	V
		2484.11	62.36	-11.64	74	47.09	32.47	18.25	35.45	100	343	P	V
		2483.5	52.47	-1.53	54	37.2	32.47	18.25	35.45	100	343	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
													H
													H
													H
													H
802.11ax													H
HE40 Full													H
CH 10		2373.98	55.05	-18.95	74	40.52	31.87	18.07	35.41	100	218	P	V
2457MHz		2387.84	43.54	-10.46	54	28.92	31.9	18.13	35.41	100	218	A	V
	*	2457	102.45	-	-	87.33	32.33	18.23	35.44	100	218	P	V
	*	2457	94.6	-	-	79.48	32.33	18.23	35.44	100	218	A	V
		2491.53	60.47	-13.53	74	45.07	32.6	18.25	35.45	100	218	P	V
		2487.61	50.22	-3.78	54	34.83	32.6	18.24	35.45	100	218	A	V
													H
													H
													H
													H
802.11ax													H
HE40 Full													H
CH 11		2358.16	53.77	-20.23	74	39.35	31.83	17.99	35.4	100	220	P	V
2462MHz		2389.94	43.17	-10.83	54	28.55	31.9	18.14	35.42	100	220	A	V
	*	2462	97.21	-	-	82.09	32.33	18.23	35.44	100	220	P	V
	*	2462	89.27	-	-	74.15	32.33	18.23	35.44	100	220	A	V
		2483.69	61.28	-12.72	74	46.01	32.47	18.25	35.45	100	220	P	V
		2483.5	51.66	-2.34	54	36.39	32.47	18.25	35.45	100	220	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE40 Partial 484 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		2387.7	54.18	-19.82	74	39.56	31.9	18.13	35.41	398	210	P	H
		2389.94	44	-10	54	29.38	31.9	18.14	35.42	398	210	A	H
	*	2422	96.67	-	-	81.8	32.1	18.2	35.43	398	210	P	H
802.11ax	*	2422	88.51	-	-	73.64	32.1	18.2	35.43	398	210	A	H
HE40		2492.3	54.65	-19.35	74	39.26	32.6	18.25	35.46	398	210	P	H
Partial		2493.63	44.12	-9.88	54	28.73	32.6	18.25	35.46	398	210	A	H
484/65		2387	55.43	-18.57	74	40.81	31.9	18.13	35.41	100	4	P	V
CH 03		2389.94	45.25	-8.75	54	30.63	31.9	18.14	35.42	100	4	A	V
2422MHz	*	2422	100.81	-	-	85.94	32.1	18.2	35.43	100	4	P	V
	*	2422	92.41	-	-	77.54	32.1	18.2	35.43	100	4	A	V
		2489.5	54.39	-19.61	74	38.99	32.6	18.25	35.45	100	4	P	V
		2492.72	44.21	-9.79	54	28.82	32.6	18.25	35.46	100	4	A	V
													H
													H
													H
802.11ax													H
HE40													H
Partial													H
484/65		2384.62	54.48	-19.52	74	39.9	31.87	18.12	35.41	105	343	P	V
CH 09		2389.94	43.69	-10.31	54	29.07	31.9	18.14	35.42	105	343	A	V
2452MHz	*	2452	103.88	-	-	88.9	32.2	18.22	35.44	105	343	P	V
	*	2452	95.05	-	-	80.07	32.2	18.22	35.44	105	343	A	V
		2484.18	62.56	-11.44	74	47.29	32.47	18.25	35.45	105	343	P	V
		2483.5	52.42	-1.58	54	37.15	32.47	18.25	35.45	105	343	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
													H
													H
													H
802.11ax													H
HE40													H
Partial													H
484/65		2368.38	54.77	-19.23	74	40.3	31.83	18.05	35.41	105	5	P	V
CH 10		2336.32	43.79	-10.21	54	29.48	31.8	17.9	35.39	105	5	A	V
2457MHz	*	2457	104.51	-	-	89.39	32.33	18.23	35.44	102	169	P	V
	*	2457	94.75	-	-	79.63	32.33	18.23	35.44	102	169	A	V
		2483.62	61.35	-12.65	74	46.08	32.47	18.25	35.45	105	5	P	V
		2488.73	47.86	-6.14	54	32.47	32.6	18.24	35.45	105	5	A	V
													H
													H
													H
802.11ax													H
HE40													H
Partial													H
484/65		2389.8	52.85	-21.15	74	38.23	31.9	18.14	35.42	100	352	P	V
CH 11		2389.24	42.36	-11.64	54	27.73	31.9	18.14	35.41	100	352	A	V
2462MHz	*	2462	86.87	-	-	71.75	32.33	18.23	35.44	100	352	P	V
	*	2462	78.49	-	-	63.37	32.33	18.23	35.44	100	352	A	V
		2483.56	62.56	-11.44	74	47.29	32.47	18.25	35.45	100	352	P	V
		2483.52	46.06	-7.94	54	30.79	32.47	18.25	35.45	100	352	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Note symbol

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

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

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

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

Appendix C. Radiated Spurious Emission Plots

Test Engineer :	Jesse Wang, Stan Hsieh and Ken Wu	**Temperature :**	17.9~22.2°C
		Relative Humidity :	53.1~69%

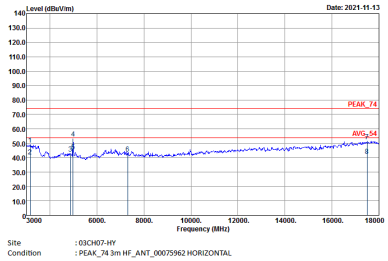
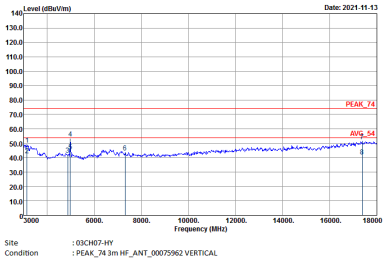
Remark: For Radiated Spurious Emission Test Items, Ant. 1 means Chain 0 (Aux.) and Ant. 2 means Chain 1 (Main).

Note symbol

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

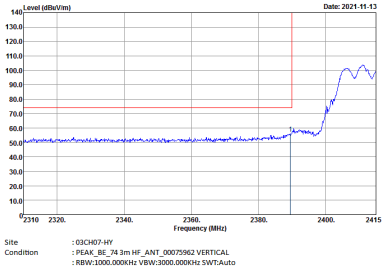
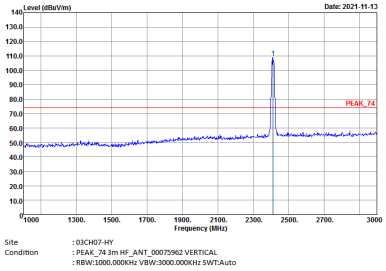
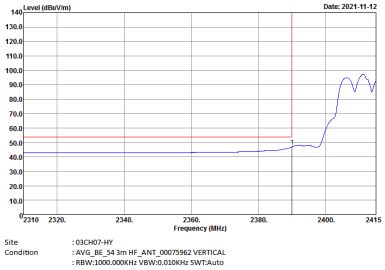
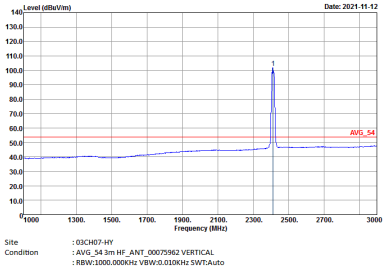
2.4GHz 2400~2483.5MHz

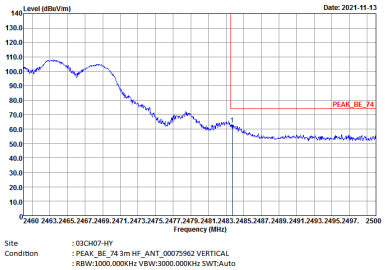
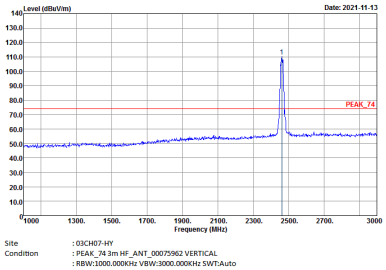
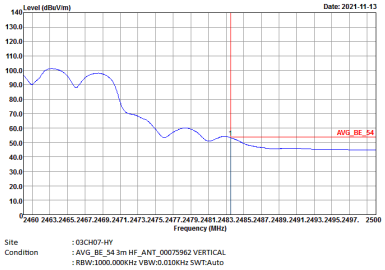
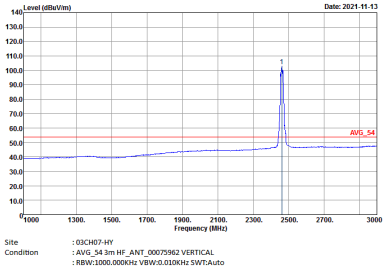
WIFI 802.11b (Harmonic @ 3m)

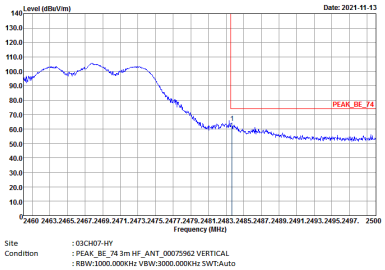
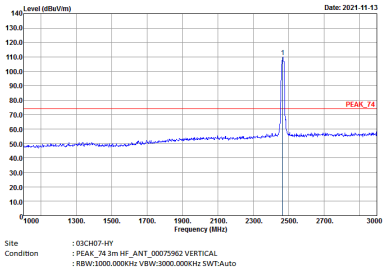
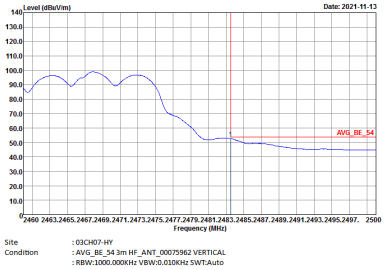
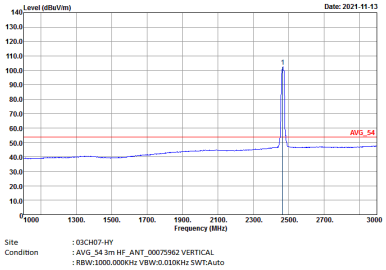
WIFI	**2.4GHz 2400~2483.5MHz Harmonic @ 3m**	
ANT	**802.11b CH06 2437MHz**	
1+2	**Horizontal**	**Vertical**
Peak **Avg.**		

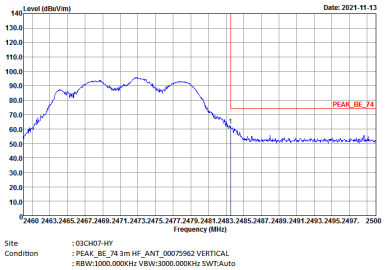
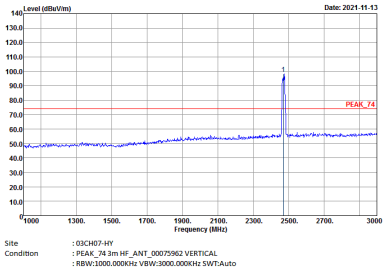
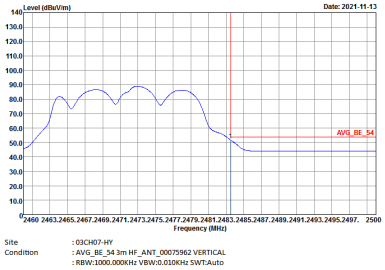
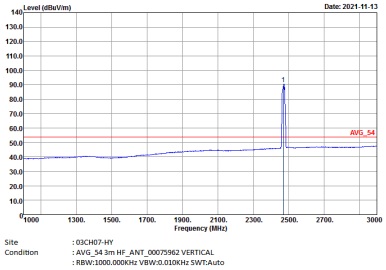
2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

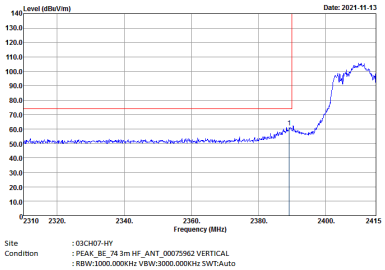
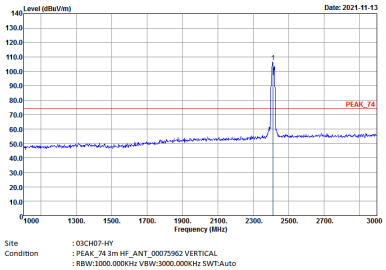
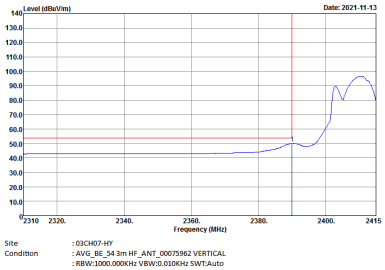
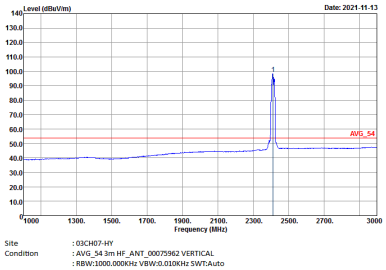
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

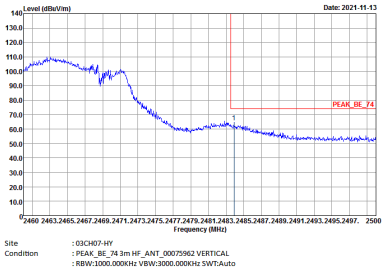
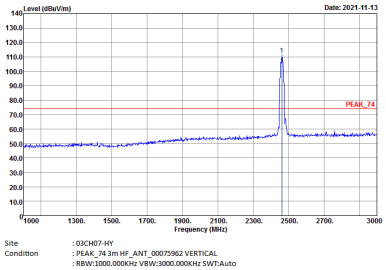
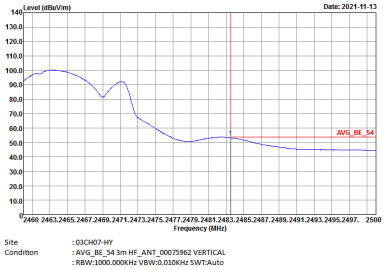
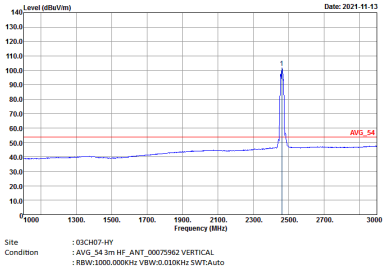
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH12 2467MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

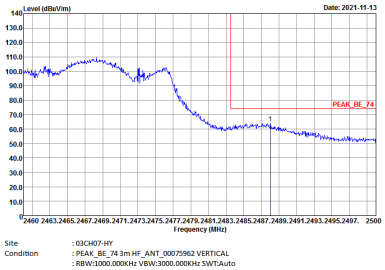
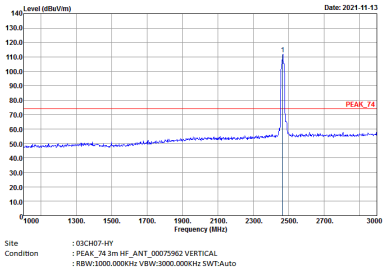
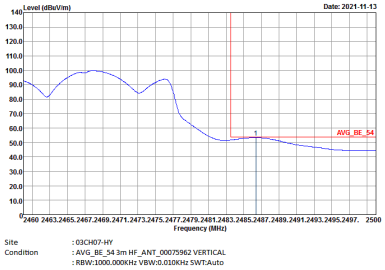
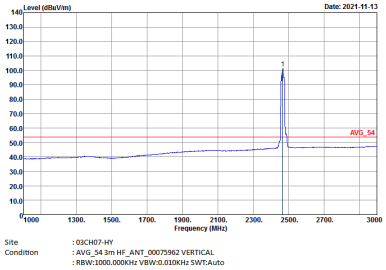
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH13 2472MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

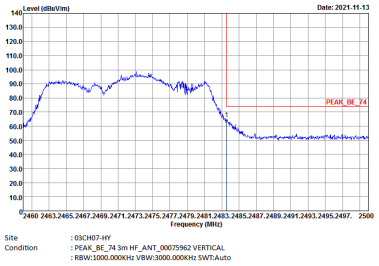
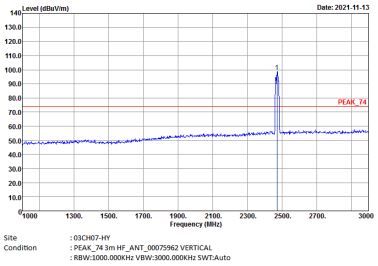
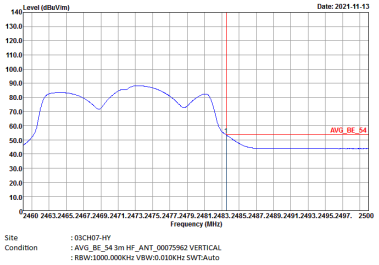
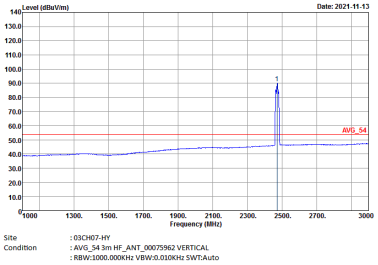
2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE20 Full (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH01 2412MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

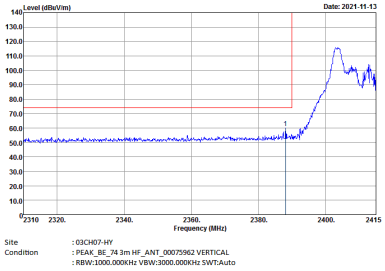
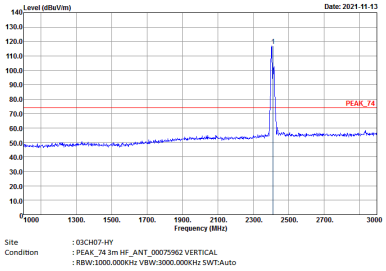
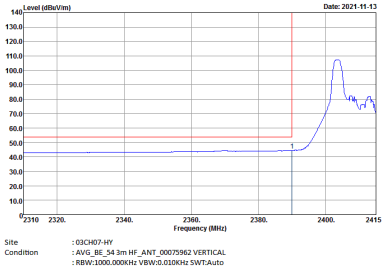
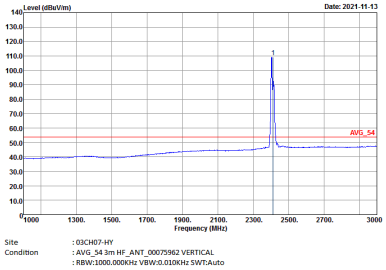
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH11 2462MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

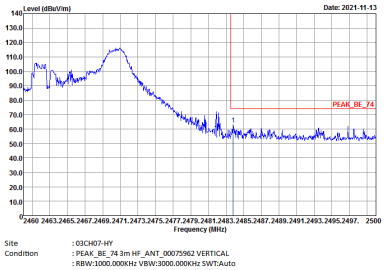
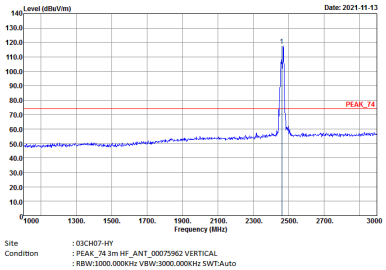
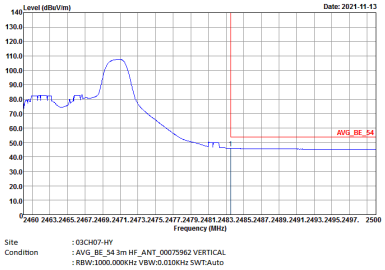
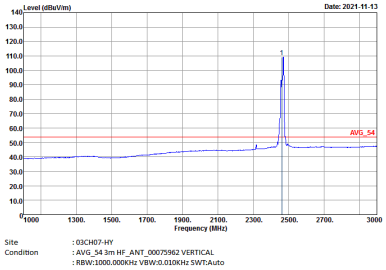
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH12 2467MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

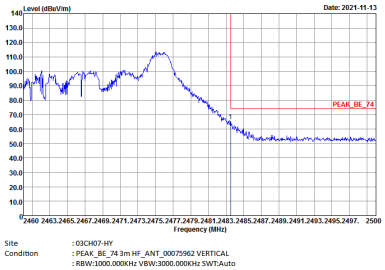
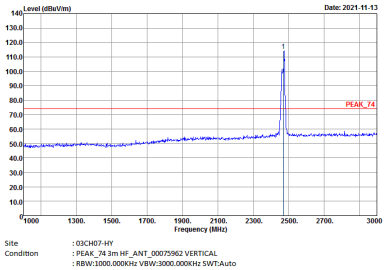
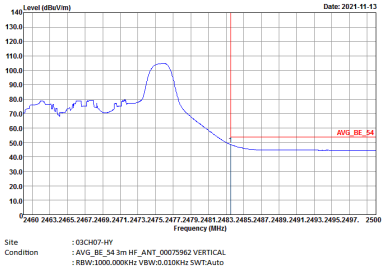
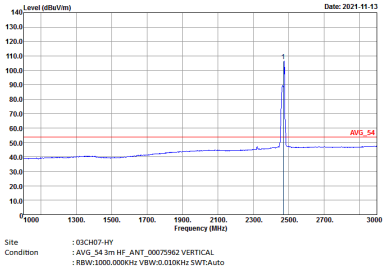
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH13 2472MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

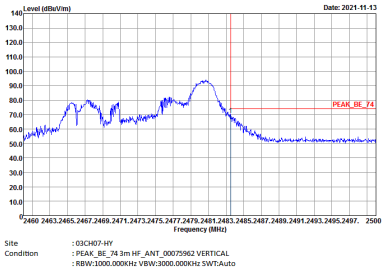
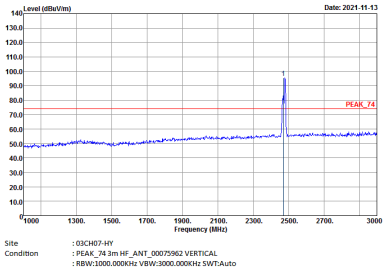
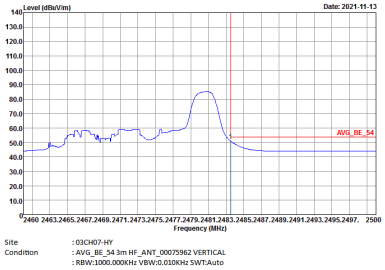
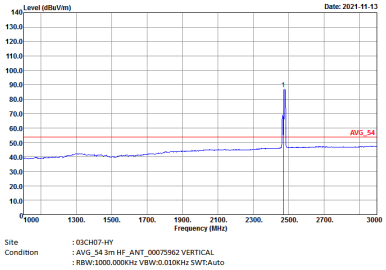
2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE20 Partial 26 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 26/0 CH01 2412MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

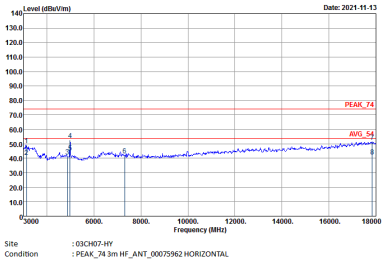
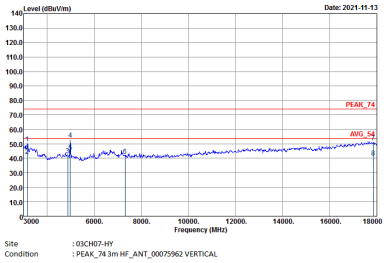
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 26/8 CH11 2462MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 26/8 CH12 2467MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 26/8 CH13 2472MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

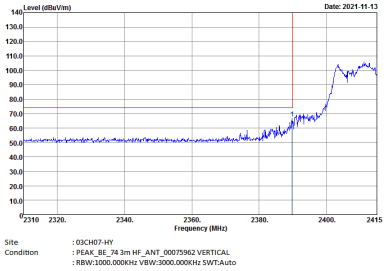
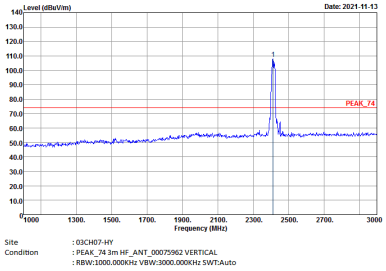
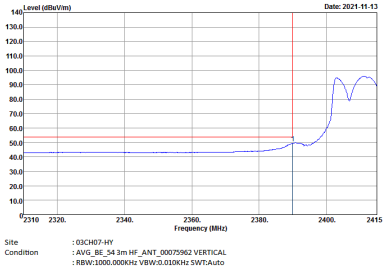
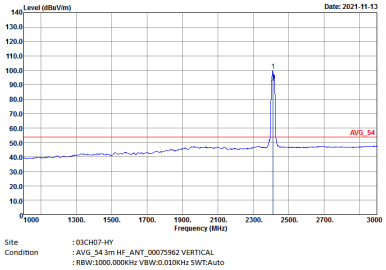
2.4GHz 2400~2483.5MHz

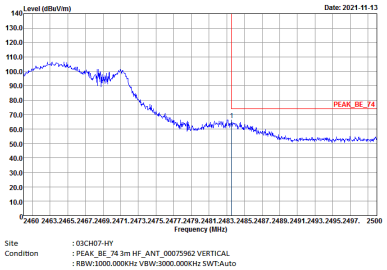
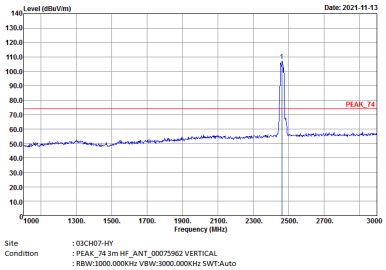
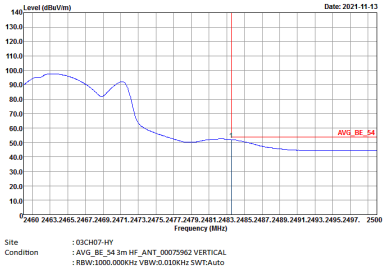
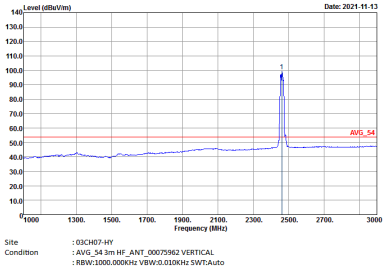
WIFI 802.11ax HE20 Partial 26 (Harmonic @ 3m)

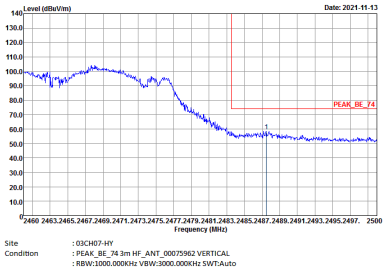
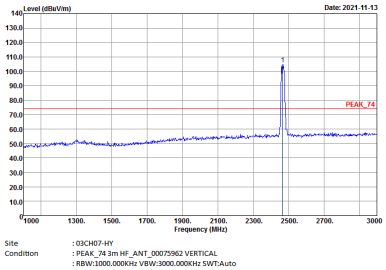
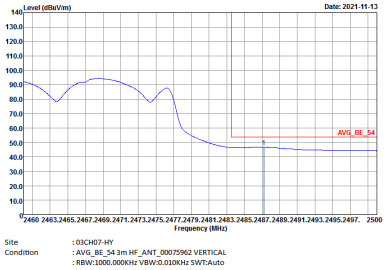
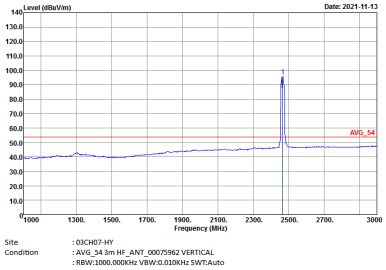
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11ax HE20 Partial 26/4 CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.		

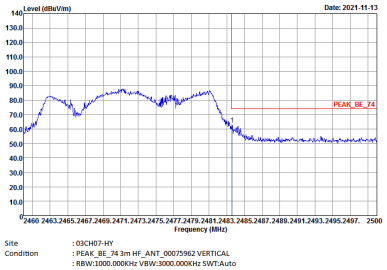
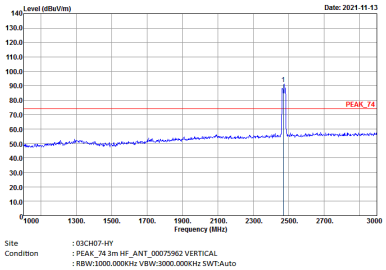
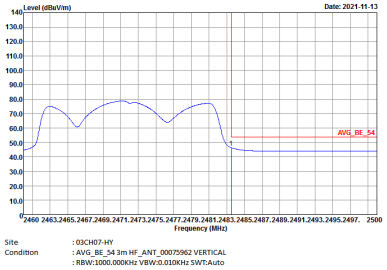
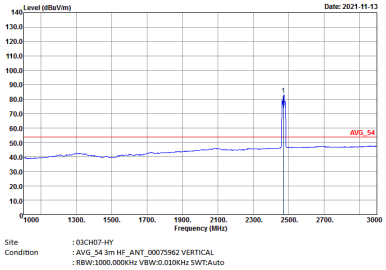
2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE20 Partial 242 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 242/61 CH01 2412MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

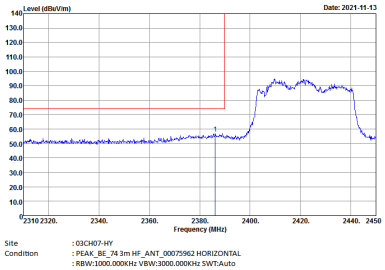
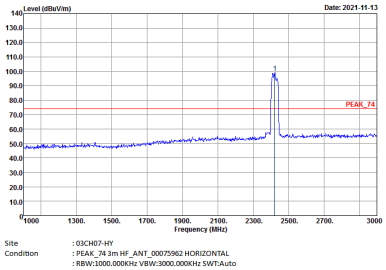
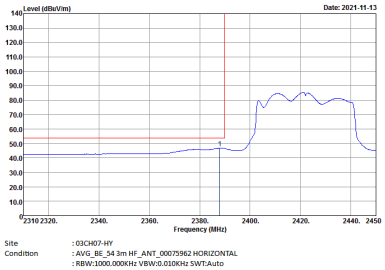
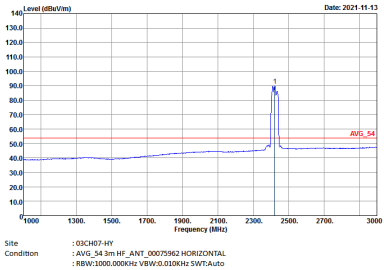
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 242/61 CH11 2462MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

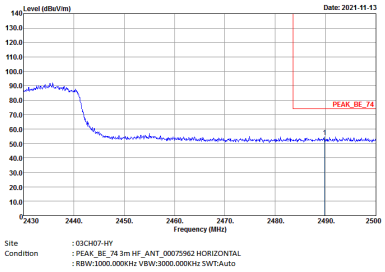
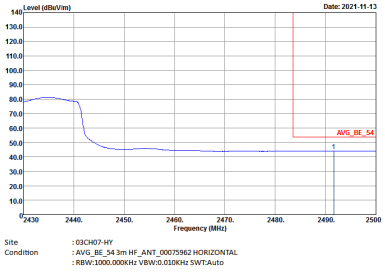
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 242/61 CH12 2467MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

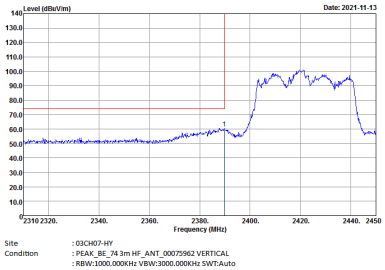
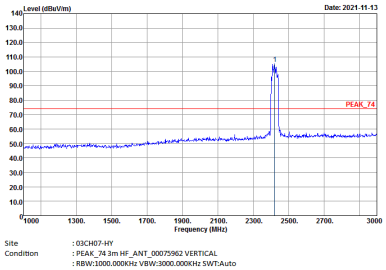
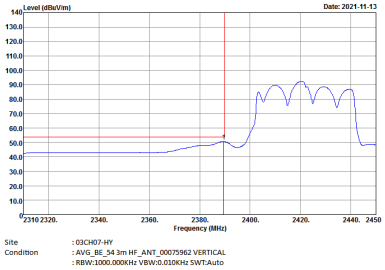
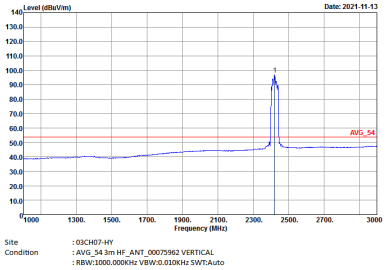
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 242/61 CH13 2472MHz	
1+2	Vertical	Fundamental
Peak		
Avg.		

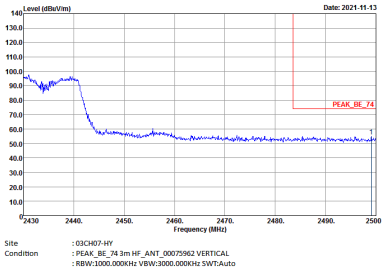
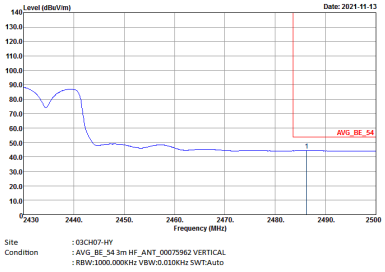
2.4GHz 2400~2483.5MHz

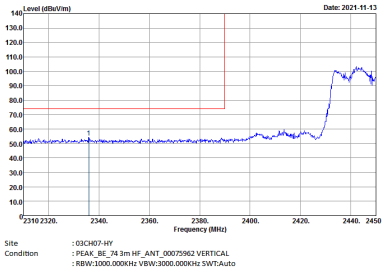
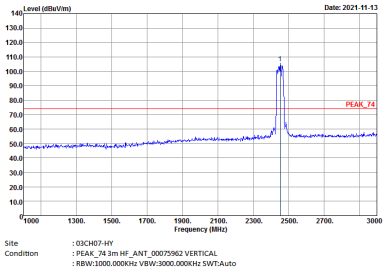
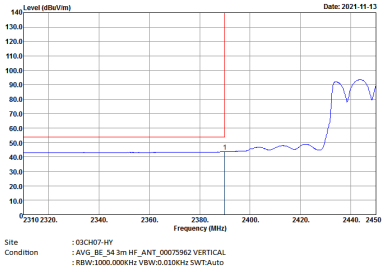
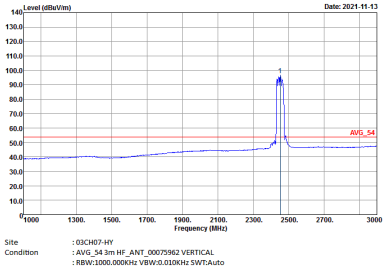
WIFI 802.11ax HE40 Full (Band Edge @ 3m)

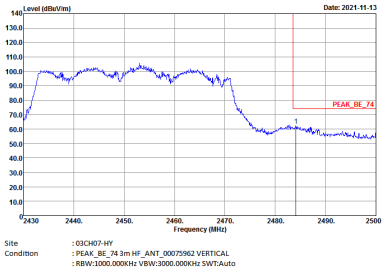
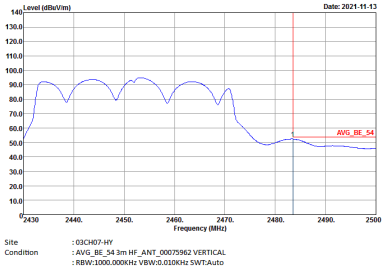
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH03 2422MHz - L	
1+2	Horizontal	Fundamental
Peak		
Avg.		

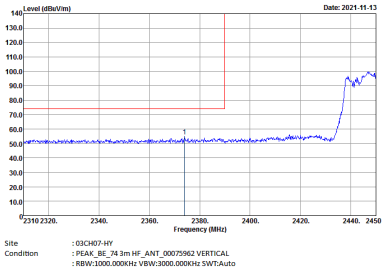
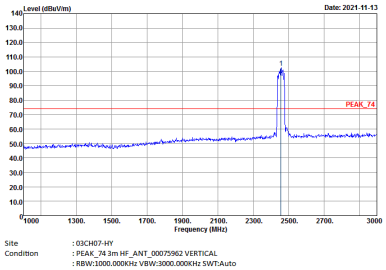
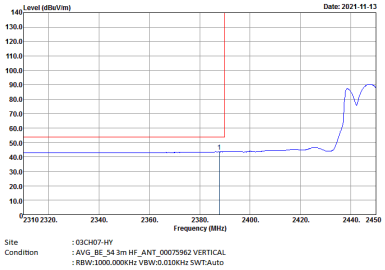
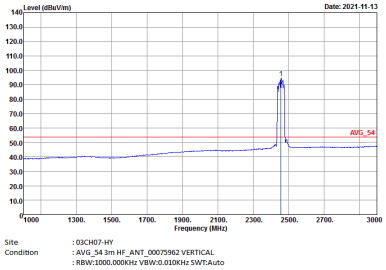
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH03 2422MHz - R	
1+2	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

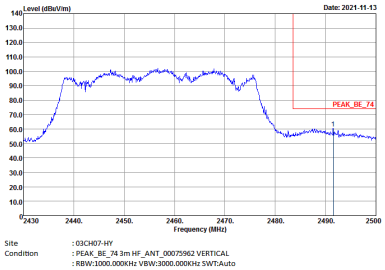
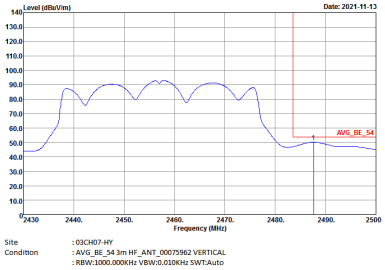
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH03 2422MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		

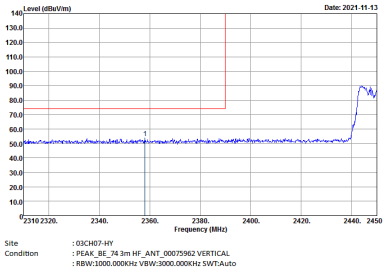
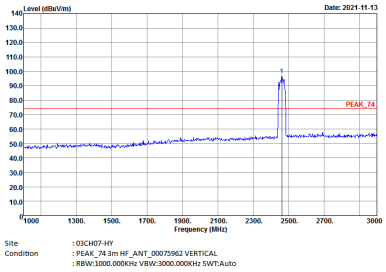
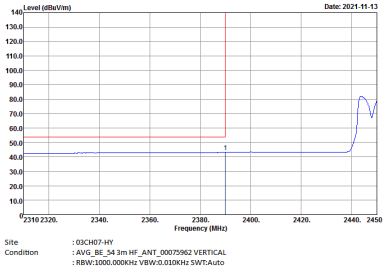
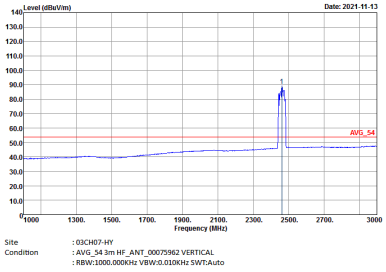
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH03 2422MHz - R	
1+2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

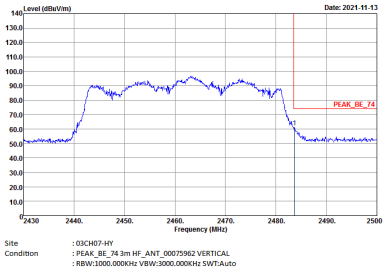
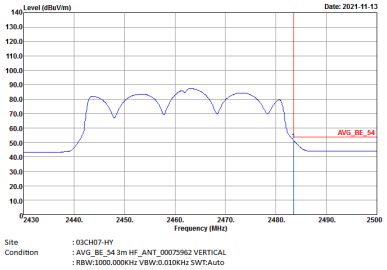
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH09 2452MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH09 2452MHz - R	
1+2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH10 2457MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		

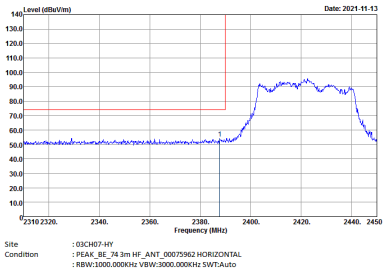
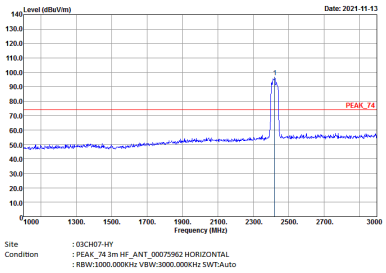
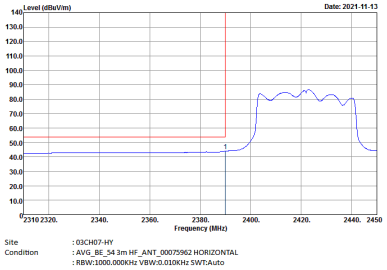
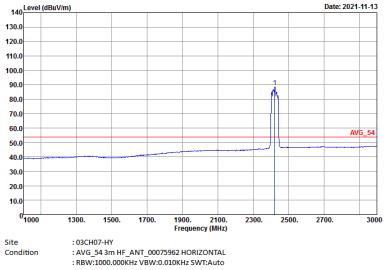
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH10 2457MHz - R	
1+2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

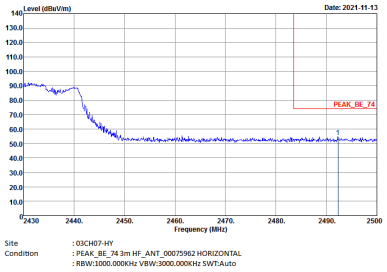
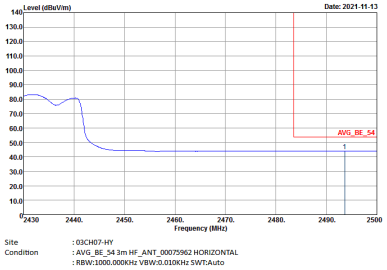
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH11 2462MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		

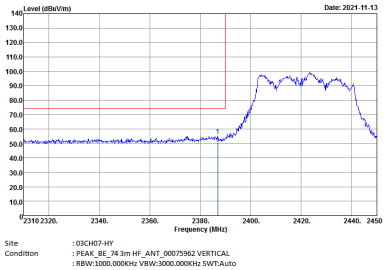
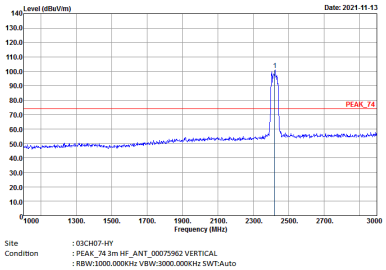
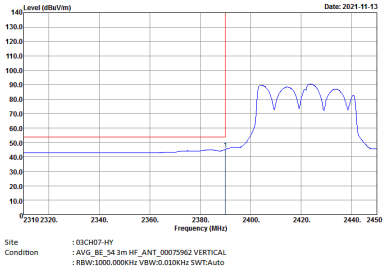
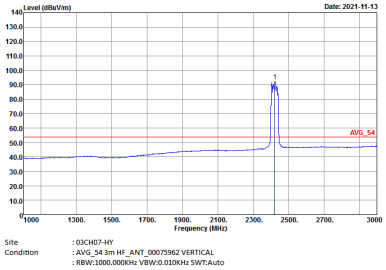
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH11 2462MHz - R	
1+2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

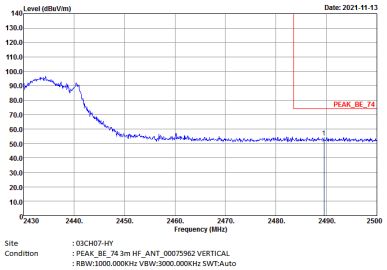
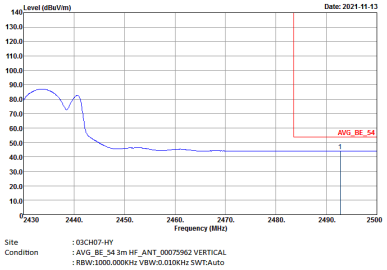
2.4GHz 2400~2483.5MHz

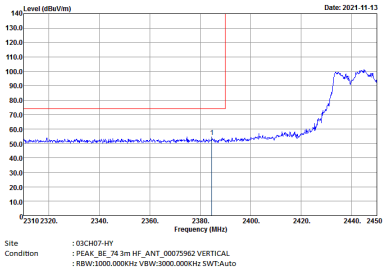
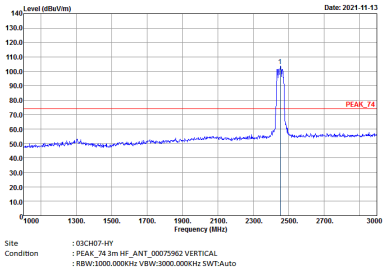
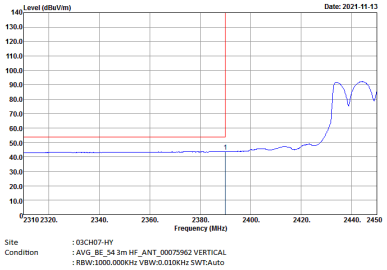
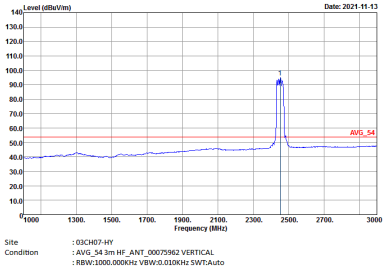
WIFI 802.11ax HE40 Partial 484(Band Edge @ 3m)

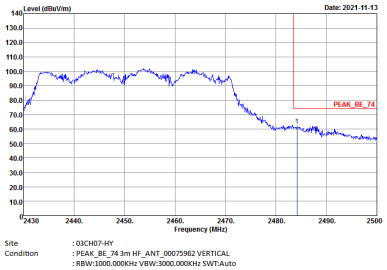
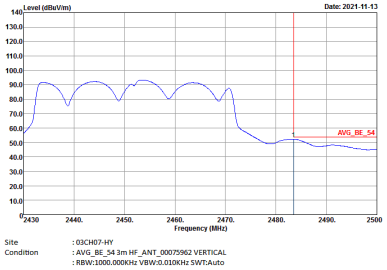
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH03 2422MHz - L	
1+2	Horizontal	Fundamental
Peak		
Avg.		

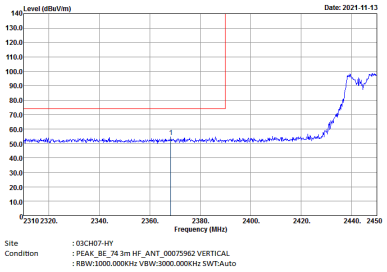
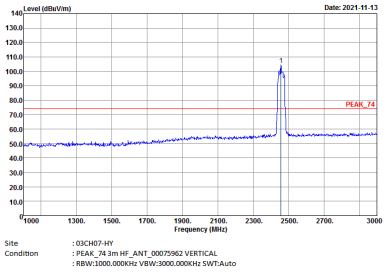
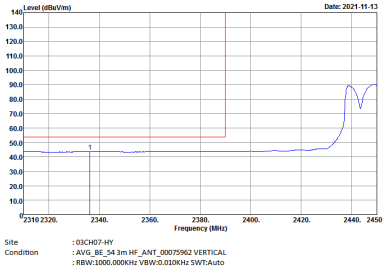
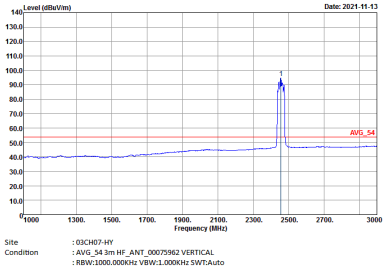
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH03 2422MHz - R	
1+2	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

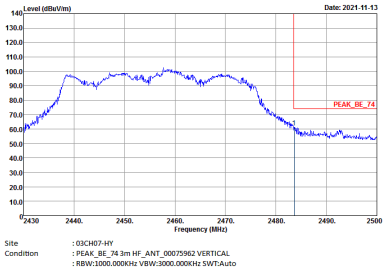
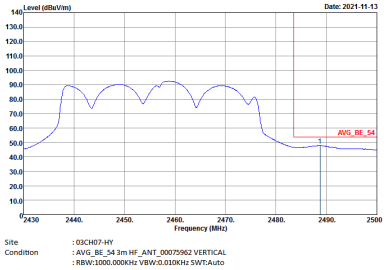
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH03 2422MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		

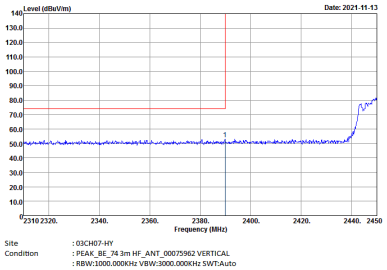
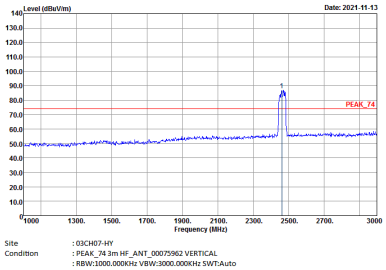
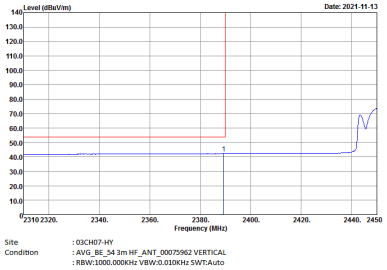
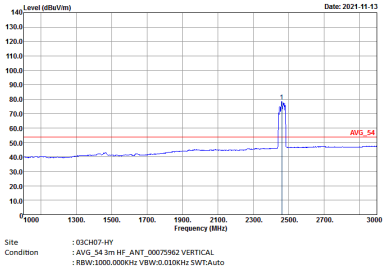
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH03 2422MHz - R	
1+2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

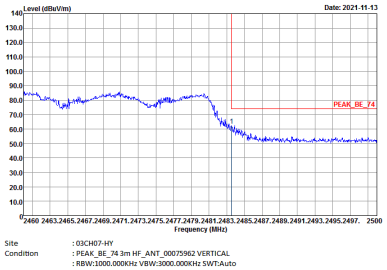
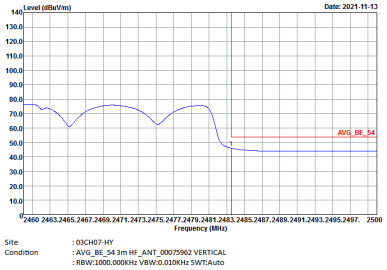
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH09 2452MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH09 2452MHz - R	
1+2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH10 2457MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH10 2457MHz - R	
1+2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH11 2462MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 484/65 CH11 2462MHz - R	
1+2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

Appendix D. Duty Cycle Plots

Chain	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
0+1	802.11b	98.94	-	-	10Hz
0+1	802.11g	98.62	-	-	10Hz
0+1	2.4GHz 802.11ax HE20 Full RU	99.61	-	-	10Hz
0+1	2.4GHz 802.11ax HE20 26 RU	99.61	-	-	10Hz
0+1	2.4GHz 802.11ax HE20 242 RU	99.57	-	-	10Hz
0+1	2.4GHz 802.11ax HE40 Full RU	98.47	-	-	10Hz
0+1	2.4GHz 802.11ax HE40 484 RU	99.40	-	-	10Hz

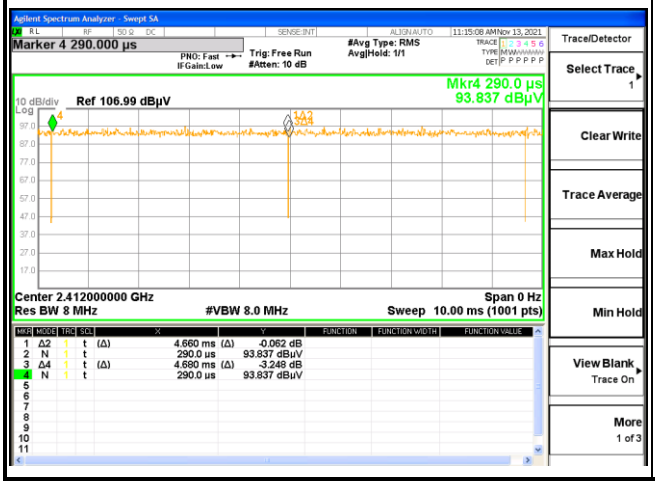
MIMO <Chain 0+1>

802.11b	802.11g
	

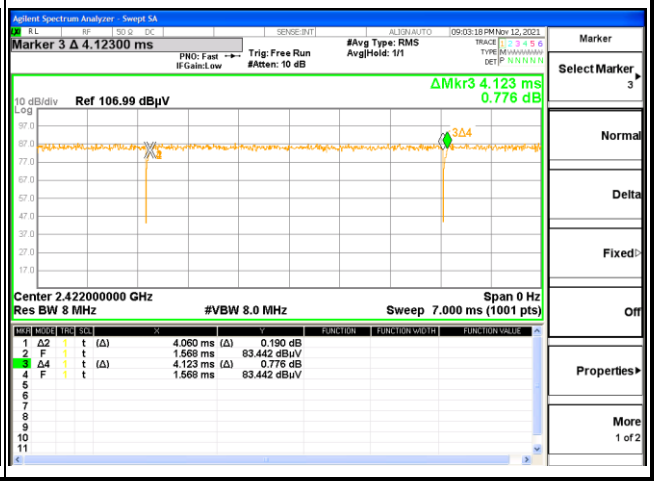
2.4GHz 802.11ax HE20 Full RU

2.4GHz 802.11ax HE20 26 RU

2.4GHz 802.11ax HE20 242 RU



2.4GHz 802.11ax HE40 Full RU



2.4GHz 802.11ax HE40 484 RU