



FCC RADIO TEST REPORT

FCC ID : S9GR850
Equipment : Wireless Access Point
Brand Name : RUCKUS
Model Name : R850
Marketing Name : Ruckus Access Point
Applicant : Ruckus Wireless Inc.
350 W. Java Dr., Sunnyvale CA 94089 USA
Manufacturer : Ruckus Wireless Inc.
350 W. Java Dr., Sunnyvale CA 94089 USA
Standard : FCC Part 15 Subpart C §15.247

The product was received on Jan. 13, 2020 and testing was started from Jan. 29, 2020 and completed on Feb. 25, 2020. We, Sporton International (USA) Inc., 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 report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of government.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval of Sporton International (USA) Inc., the test report shall not be reproduced except in full.

Approved by: Ken Chen

Sporton International (USA) Inc.
1175 Montague Expressway, Milpitas, CA 95035



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History of this test report

Report No.	Version	Description	Issued Date
FR200130001C	01	Initial issue of report	Mar. 30, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.247(a)(2)	6dB Bandwidth	-	See Note
-	2.1049	99% Occupied Bandwidth	-	See Note
3.1	15.247(b)	Power Output Measurement	Pass	-
3.2	15.247(e)	Power Spectral Density	Pass	-
-	15.247(d)	Conducted Band Edges	-	See Note
		Conducted Spurious Emission	-	
3.3	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	Under limit 0.52 dB at 2487.200 MHz
-	15.207	AC Conducted Emission	-	See Note
3.4	15.203 & 15.247(b)	Antenna Requirement	Pass	-

Note: This is a spot check data report and data performed in appendix of this report are chosen from the worst case of the original FCC ID (S9GR730) report.

Declaration of Conformity:

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

Comments and Explanations:

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



1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Antenna Type	WLAN: <Ant. 1>: Internal Omni PCB Antenna <Ant. 2>: Internal Omni PCB Antenna <Ant. 3>: Internal Omni PCB Antenna <Ant. 4>: Internal Omni PCB Antenna <Ant. 5>: Internal Omni PCB Antenna <Ant. 6>: Internal Omni PCB Antenna <Ant. 7>: Internal Omni PCB Antenna <Ant. 8>: Internal Omni PCB Antenna Bluetooth: Internal Omni PCB Antenna Zigbee: Internal Omni PCB Antenna

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	Sporton International (USA) Inc.	
Test Site Location	1175 Montague Expressway, Milpitas, CA 95035 TEL : 408 9043300	
Test Site No.	Sporton Site No.	
	TH01-CA	03CH01-CA

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

1.4 Applicable Standards

According to the specifications of 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 414788 D01 Radiated Test Site v01r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

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: radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X Plane for 4x4 Partial RU Band-edge Unmodulated; Y Plane for 4x4 Full RU and Z Plane for 4x4 Partial RU Middle Unmodulated) were recorded in this report.

2.1 Carrier Frequency and Channel

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

2.2 Test Mode

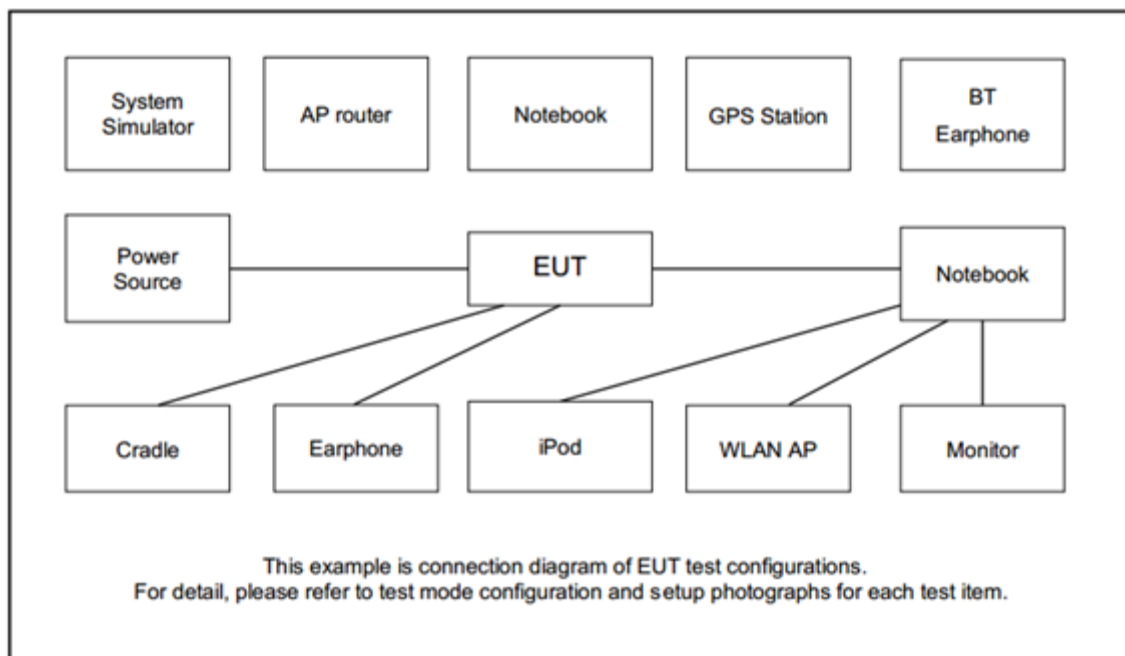
Final test modes are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11ax HE20	MCS0
802.11ax HE40	MCS0

Ch. #	2400-2483.5 MHz	
	802.11ax HE20	802.11ax HE40
Low	01	03
Middle	06	06
High	11	09

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

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	DELL	E6430	NA	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “QSPR Version 5.0-00188” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

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

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for average output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the average 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 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

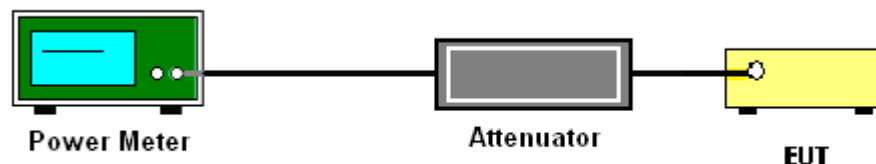
3.1.2 Measuring Instruments

See list of measuring equipment of 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 was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT 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 Power Spectral Density Measurement

3.2.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

3.2.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

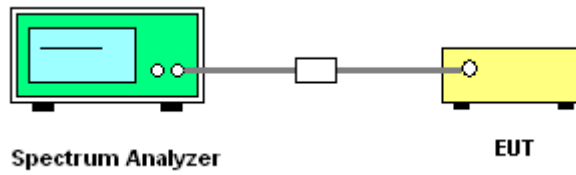
If measurements performed using method (2) plus $10 \log(N)$ exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

Method (1): Measure and sum the spectra across the outputs.

The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

Method (2): Measure and add $10 \log(N)$ dB, where N is the number of outputs. (N=2)

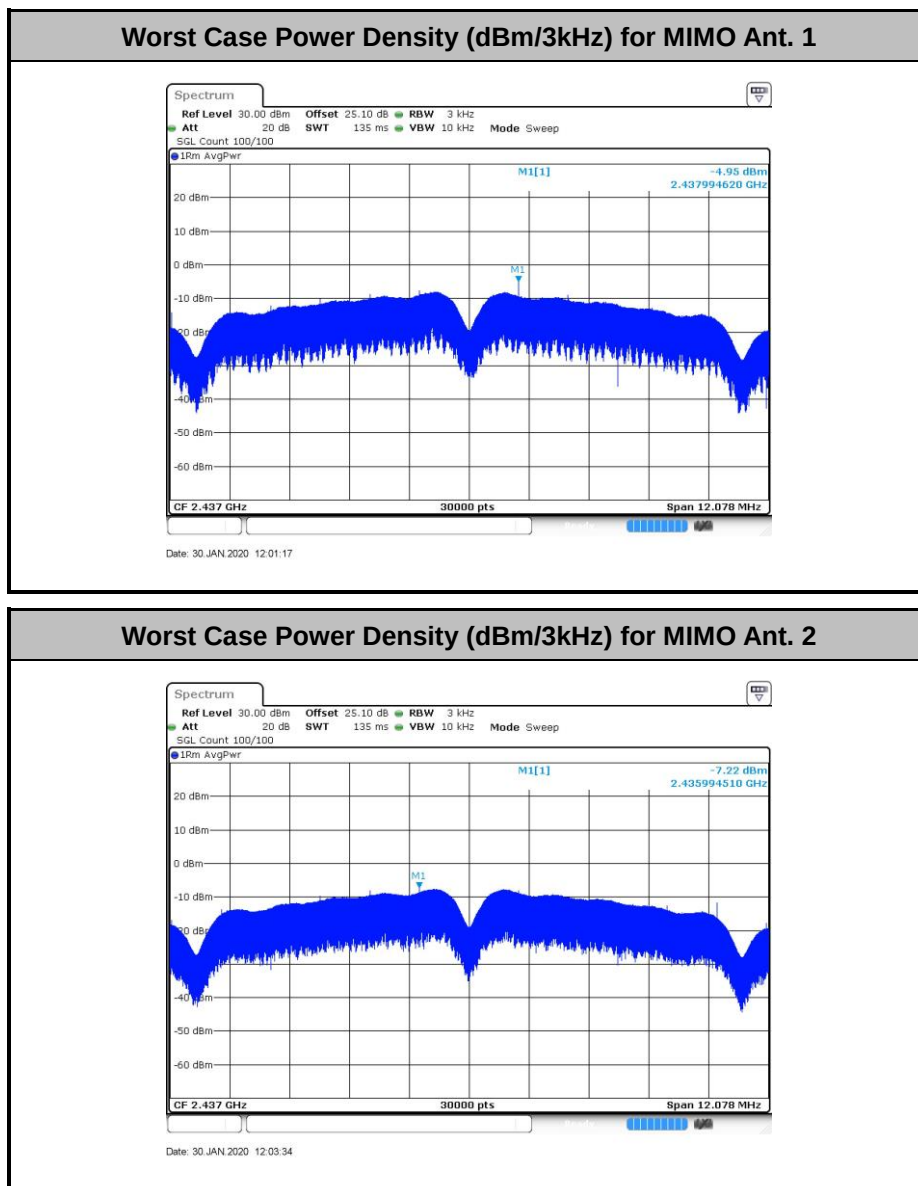
3.2.4 Test Setup

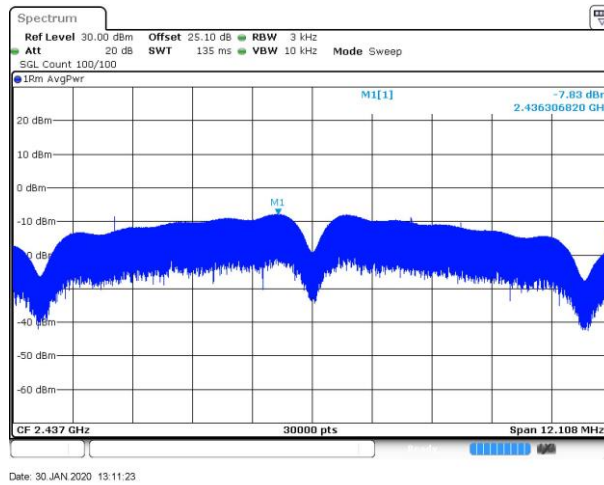
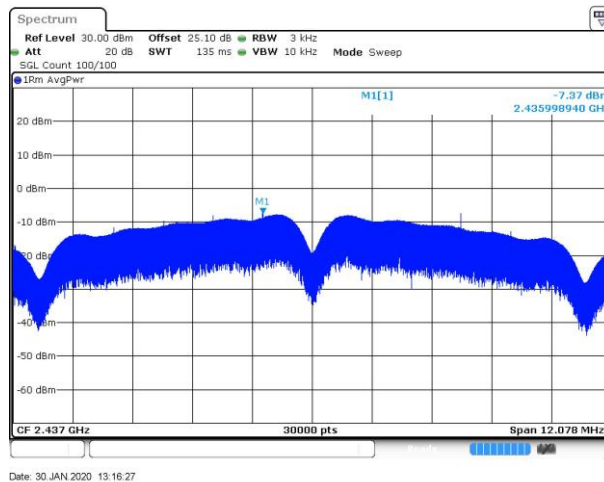


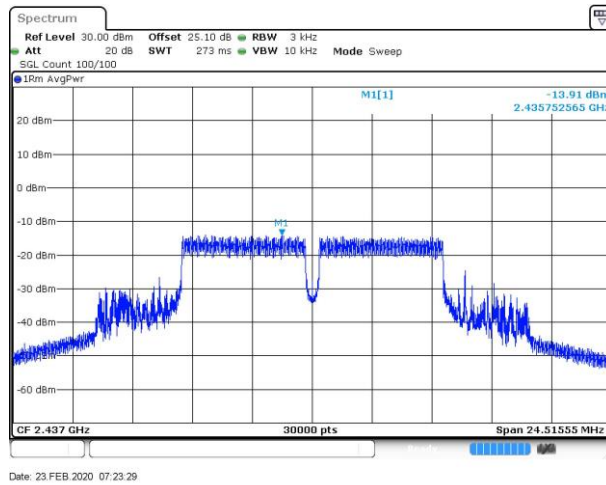
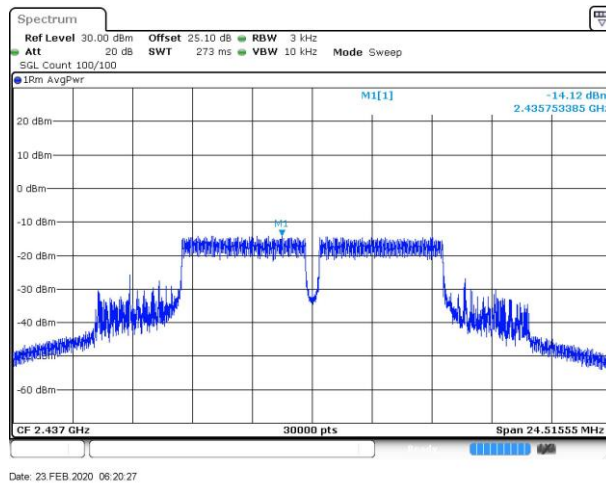
3.2.5 Test Result of Power Spectral Density

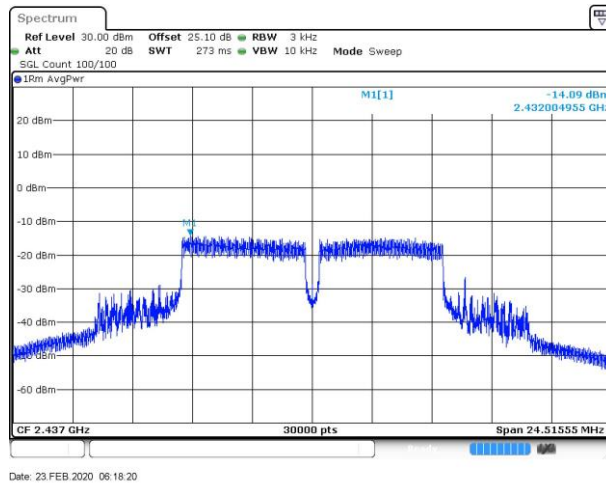
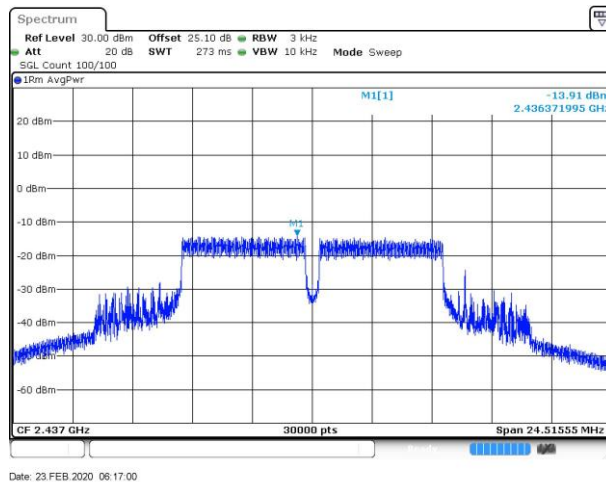
Please refer to Appendix A.

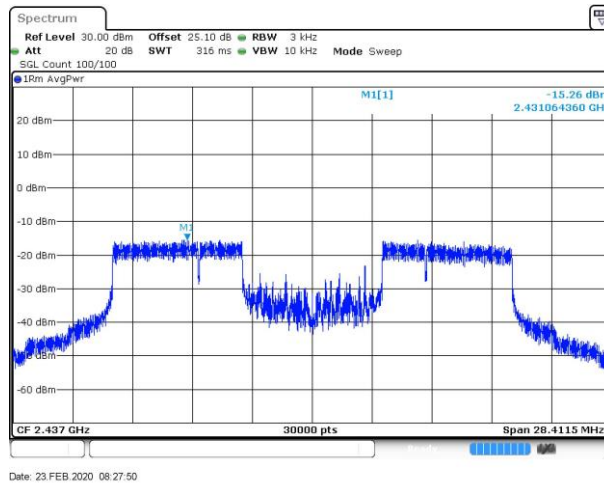
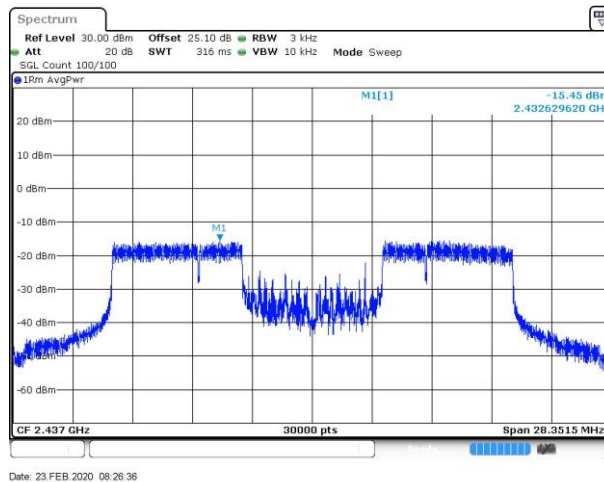
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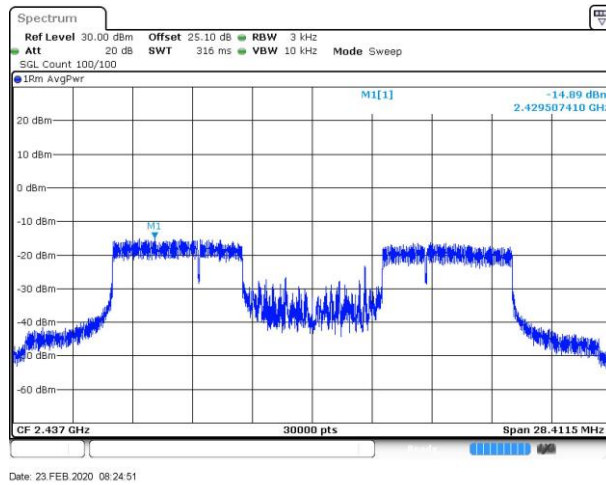
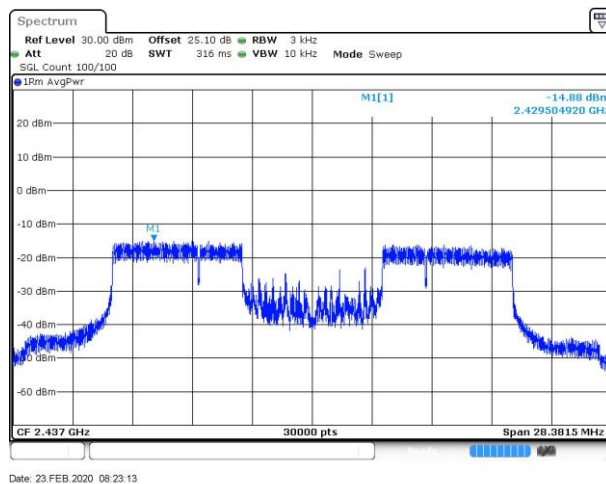


Worst Case Power Density (dBm/3kHz) for MIMO Ant. 3

Worst Case Power Density (dBm/3kHz) for MIMO Ant. 4


<Partial RU Band-edge Unmodulated>
Worst Case Power Density (dBm/3kHz) for MIMO Ant. 1

Worst Case Power Density (dBm/3kHz) for MIMO Ant. 2


Worst Case Power Density (dBm/3kHz) for MIMO Ant. 3

Worst Case Power Density (dBm/3kHz) for MIMO Ant. 4


<Partial RU Middle Unmodulated>
Worst Case Power Density (dBm/3kHz) for MIMO Ant. 1

Worst Case Power Density (dBm/3kHz) for MIMO Ant. 2


Worst Case Power Density (dBm/3kHz) for MIMO Ant. 3

Worst Case Power Density (dBm/3kHz) for MIMO Ant. 4


3.3 Radiated Band Edges and Spurious Emission Measurement

3.3.1 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 was 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

3.3.2 Measuring Instruments

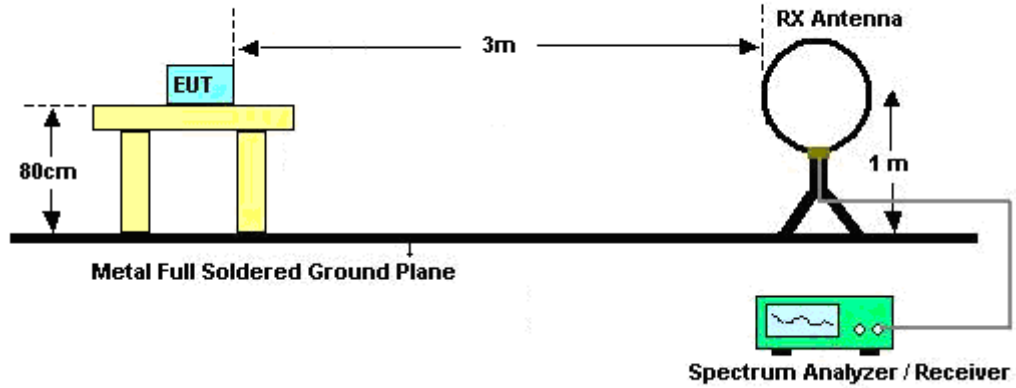
See list of measuring equipment of this test report.

3.3.3 Test Procedures

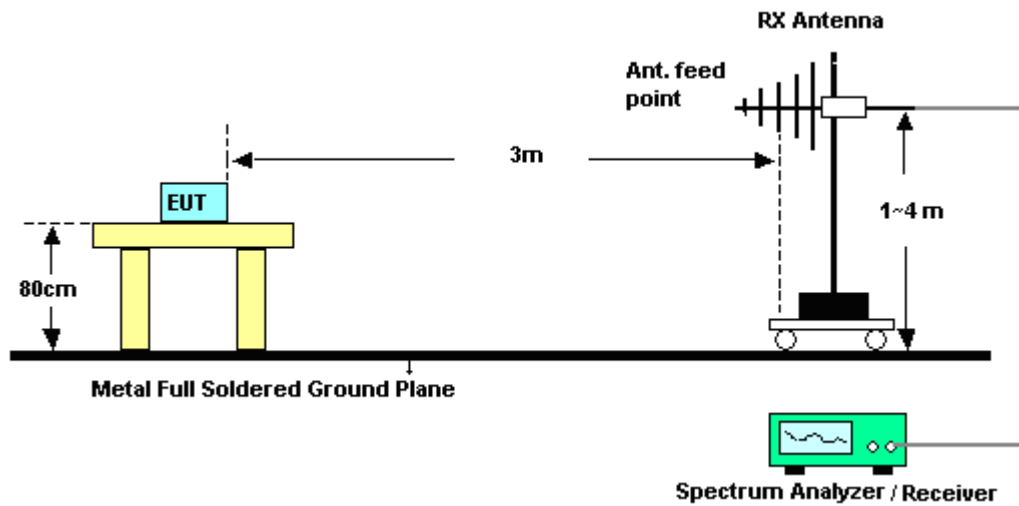
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.
For average measurement:
 - $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.3.4 Test Setup

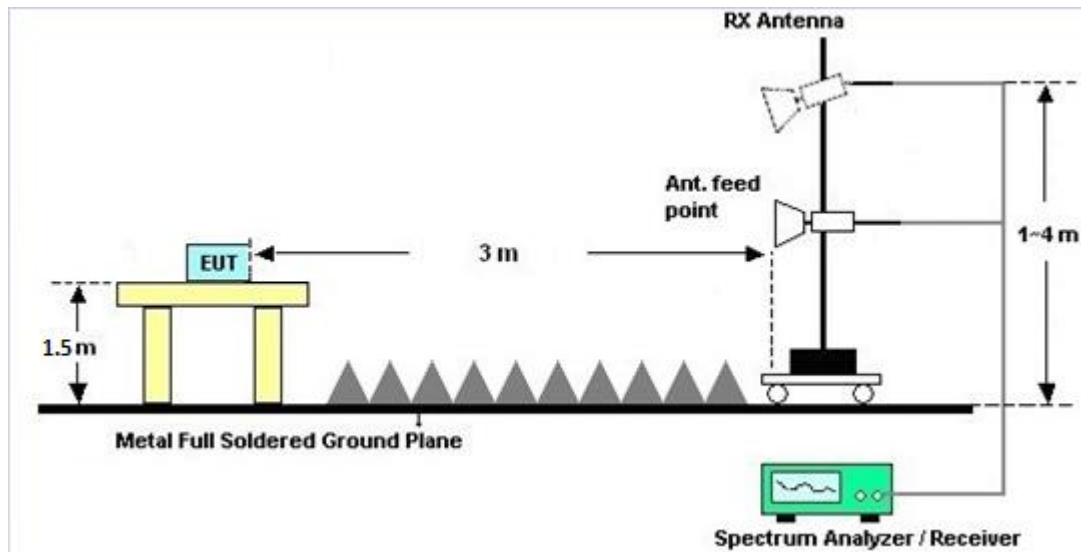
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.3.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.3.7 Duty Cycle

Please refer to Appendix D.

3.3.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

3.4 Antenna Requirements

3.4.1 Standard Applicable

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

3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.4.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

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

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;
 G_k is the gain in dBi of the k th antenna.

The EUT supports beamforming for 802.11ac modes.

The directional gain calculation is following F)2)e)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

Antenna polarization	Horizontal			DG	DG	Power	PSD
				for	for	Limit	Limit
	Ant. 3			Power	PSD	Reduction	Reduction
	(dBi)			(dBi)	(dBi)	(dB)	(dB)
2.4 GHz	-1.00			-1.00	-1.00	0.00	0.00

Antenna polarization	Vertical			DG	DG	Power	PSD
				for	for	Limit	Limit
	Ant. 1	Ant. 2	Ant. 4	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
2.4 GHz	0.00	0.00	0.00	4.77	4.77	0.00	0.00

Note: Ant. 3 and Ant. 1 & 2 & 4 are cross-polarization antenna.

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	608-H1	45142595	N/A	Aug. 07, 2019	Jan. 29, 2020~ Feb. 25, 2020	Aug. 06, 2020	Conducted (TH01-CA)
Power Sensor	DARE	RPR3006W	RPR6W-1 901027	50MHz~18GHz	Jun. 27, 2019	Jan. 29, 2020~ Feb. 25, 2020	Jun. 26, 2020	Conducted (TH01-CA))
Spectrum Analyzer	Rohde & Schwarz	FSV 40	100895	10Hz~40GHz	Aug. 29, 2019	Jan. 29, 2020~ Feb. 25, 2020	Aug. 28, 2020	Conducted (TH01-CA)
Switch Box & RF Cable	EM	EMSW18	SW107090 2	N/A	N/A	Jan. 29, 2020~ Feb. 25, 2020	N/A	Conducted (TH01-CA)
Preamplifier	Keysight	83017A	MY532703 21	1GHz~26.5GHz	Sep. 18, 2019	Feb. 20, 2020~ Feb. 21, 2020	Sep. 17, 2020	Radiation (03CH01-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120D	01894	1GHz~18GHz	Jul. 22, 2019	Feb. 20, 2020~ Feb. 21, 2020	Jul. 21, 2020	Radiation (03CH01-CA)
EMI Test Receiver	Rohde & Schwarz	ESU26	100049	20Hz~26.5GHz	Jul. 31, 2019	Feb. 20, 2020~ Feb. 21, 2020	Jul. 30, 2020	Radiation (03CH01-CA))
Hygrometer	TESTO	608-H1	45142559	N/A	Aug. 06, 2019	Feb. 20, 2020~ Feb. 21, 2020	Aug. 05, 2020	Radiation (03CH01-CA)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Feb. 20, 2020~ Feb. 21, 2020	N/A	Radiation (03CH01-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Feb. 20, 2020~ Feb. 21, 2020	N/A	Radiation (03CH01-CA)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Feb. 20, 2020~ Feb. 21, 2020	N/A	Radiation (03CH01-CA)
Software	Audix	E3	N/A	N/A	N/A	Feb. 20, 2020~ Feb. 21, 2020	N/A	Radiation (03CH01-CA)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.4
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.5
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.3
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Appendix A. Conducted Test Results

Test Engineer:	Howard Lin	Temperature:	21~25	°C
Test Date:	2020/1/29~2020/2/23	Relative Humidity:	51~54	%

TEST RESULTS DATA
Average Output Power

2.4GHz Band												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power using gated RF power meter (dBm)					Directional Gain (dBi)	Conducted Power Limit (dBm)	Pass /Fail
					Ant 1	Ant 2	Ant 3	Ant 4	SUM			
11b	1Mbps	4	1	2412	20.78	21.11	21.28	21.39	27.17	4.77	30.00	Pass
11b	1Mbps	4	6	2437	21.33	21.86	21.33	21.31	27.48	4.77	30.00	Pass
11b	1Mbps	4	11	2462	21.87	22.13	22.10	22.18	28.09	4.77	30.00	Pass
11g	6Mbps	4	1	2412	16.49	16.60	16.84	17.15	22.80	4.77	30.00	Pass
11g	6Mbps	4	6	2437	20.87	21.10	20.90	21.10	27.01	4.77	30.00	Pass
11g	6Mbps	4	11	2462	18.60	18.31	18.72	18.89	24.66	4.77	30.00	Pass
HE20	MCS0	4	1	2412	18.12	18.00	18.36	18.72	24.33	4.77	30.00	Pass
HE20	MCS0	4	6	2437	21.80	21.88	21.79	21.94	27.87	4.77	30.00	Pass
HE20	MCS0	4	11	2462	19.78	19.54	19.83	20.21	25.87	4.77	30.00	Pass
HE40	MCS0	4	3	2422	15.80	15.63	16.28	16.35	22.05	4.77	30.00	Pass
HE40	MCS0	4	6	2437	16.54	16.45	16.70	16.87	22.66	4.77	30.00	Pass
HE40	MCS0	4	9	2452	20.13	20.10	20.15	20.55	26.26	4.77	30.00	Pass

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

TEST RESULTS DATA
Average Power Spectral Density

2.4GHz Band												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average PSD (dBm/3kHz)					DG (dBi)	Average PSD Limit (dBm/3kHz)	Pass/Fail
					Ant 1	Ant 2	Ant 3	Ant 4	Worse + 3.77			
11b	1Mbps	4	1	2412	-5.31	-7.61	-8.35	-7.78	-1.54	4.77	8.00	Pass
11b	1Mbps	4	6	2437	-4.95	-7.22	-7.83	-7.37	-1.18	4.77	8.00	Pass
11b	1Mbps	4	11	2462	-6.13	-6.82	-4.96	-6.18	-1.19	4.77	8.00	Pass
11g	6Mbps	4	1	2412	-16.52	-16.47	-16.68	-16.18	-12.41	4.77	8.00	Pass
11g	6Mbps	4	6	2437	-11.67	-11.72	-11.80	-11.71	-7.9	4.77	8.00	Pass
11g	6Mbps	4	11	2462	-14.19	-14.87	-14.48	-14.63	-10.42	4.77	8.00	Pass
HE20	MCS0	4	1	2412	-18.42	-17.92	-17.96	-17.58	-13.81	4.77	8.00	Pass
HE20	MCS0	4	6	2437	-14.03	-13.47	-14.40	-14.34	-9.7	4.77	8.00	Pass
HE20	MCS0	4	11	2462	-17.44	-17.59	-17.22	-16.74	-12.97	4.77	8.00	Pass
HE40	MCS0	4	3	2422	-23.91	-23.62	-22.49	-22.73	-18.72	4.77	8.00	Pass
HE40	MCS0	4	6	2437	-22.66	-21.80	-22.37	-21.81	-18.03	4.77	8.00	Pass
HE40	MCS0	4	9	2452	-18.58	-18.83	-18.85	-18.73	-14.81	4.77	8.00	Pass

Measured power density (dBm) has offset with cable loss.

<Band-edge Unmodulated>

TEST RESULTS DATA
Average Output Power

2.4GHz Band												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power using gated RF power meter (dBm)					Directional Gain (dBi)	Conducted Power Limit (dBm)	Pass /Fail
					Ant 1	Ant 2	Ant 3	Ant 4	SUM			
HE20	MCS0	4	1	2412	14.23	14.03	13.89	14.48	20.18	4.77	30.00	Pass
HE20	MCS0	4	6	2437	18.42	18.50	17.88	18.22	24.28	4.77	30.00	Pass
HE20	MCS0	4	11	2462	14.97	14.55	14.76	14.99	20.84	4.77	30.00	Pass
HE40	MCS0	4	3	2422	11.96	11.50	12.21	12.30	18.02	4.77	30.00	Pass
HE40	MCS0	4	6	2437	12.86	12.87	12.98	12.88	18.92	4.77	30.00	Pass
HE40	MCS0	4	9	2452	11.85	11.48	11.40	11.79	17.65	4.77	30.00	Pass

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

TEST RESULTS DATA
Average Power Spectral Density

2.4GHz Band												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average PSD (dBm/3kHz)					DG (dBi)	Average PSD Limit (dBm/3kHz)	Pass/Fail
					Ant 1	Ant 2	Ant 3	Ant 4	Worse + 3.77			
HE20	MCS0	4	1	2412	-17.77	-17.90	-18.09	-17.88	-14.00	4.77	8.00	Pass
HE20	MCS0	4	6	2437	-14.12	-13.91	-14.09	-13.91	-10.14	4.77	8.00	Pass
HE20	MCS0	4	11	2462	-17.53	-17.64	-17.29	-17.86	-13.52	4.77	8.00	Pass
HE40	MCS0	4	3	2422	-23.45	-23.88	-23.06	-22.69	-18.92	4.77	8.00	Pass
HE40	MCS0	4	6	2437	-22.55	-22.59	-22.10	-22.26	-18.33	4.77	8.00	Pass
HE40	MCS0	4	9	2452	-22.98	-22.77	-23.36	-23.27	-19.00	4.77	8.00	Pass

Measured power density (dBm) has offset with cable loss.

<Middle Unmodulated>

TEST RESULTS DATA
Average Output Power

2.4GHz Band												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power using gated RF power meter (dBm)					Directional Gain (dBi)	Conducted Power Limit (dBm)	Pass /Fail
					Ant 1	Ant 2	Ant 3	Ant 4	SUM			
HE20	MCS0	4	1	2412	13.97	13.76	14.08	14.28	20.05	4.77	30.00	Pass
HE20	MCS0	4	6	2437	17.94	17.88	17.84	17.96	23.93	4.77	30.00	Pass
HE20	MCS0	4	11	2462	9.22	9.06	9.04	9.09	15.12	4.77	30.00	Pass
HE40	MCS0	4	3	2422	11.01	10.88	11.23	11.22	17.11	4.77	30.00	Pass
HE40	MCS0	4	6	2437	11.99	11.77	11.95	11.98	17.94	4.77	30.00	Pass
HE40	MCS0	4	9	2452	13.42	13.43	13.17	13.46	19.39	4.77	30.00	Pass

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

TEST RESULTS DATA
Average Power Spectral Density

2.4GHz Band												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average PSD (dBm/3kHz)					DG (dBi)	Average PSD Limit (dBm/3kHz)	Pass/Fail
					Ant 1	Ant 2	Ant 3	Ant 4	Worse + 3.77			
HE20	MCS0	4	1	2412	-19.08	-18.96	-18.99	-19.17	-15.19	4.77	8.00	Pass
HE20	MCS0	4	6	2437	-15.26	-15.45	-14.89	-14.88	-11.11	4.77	8.00	Pass
HE20	MCS0	4	11	2462	-23.52	-24.00	-23.20	-24.39	-19.43	4.77	8.00	Pass
HE40	MCS0	4	3	2422	-24.38	-23.92	-23.19	-24.08	-19.42	4.77	8.00	Pass
HE40	MCS0	4	6	2437	-22.24	-22.94	-22.59	-22.72	-18.47	4.77	8.00	Pass
HE40	MCS0	4	9	2452	-21.07	-21.20	-21.75	-20.99	-17.22	4.77	8.00	Pass

Measured power density (dBm) has offset with cable loss.



Appendix B. Radiated Spurious Emission

Test Engineer :	JC Liang , Leo Luo and Jacky Hong	Temperature :	18~21°C
		Relative Humidity :	38~42%

2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE40 (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preampl Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
4*4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE40 CH 03 2422MHz		2389.8	56.7	-17.3	74	43.36	27.72	16.93	31.31	356	93	P	H
		2389.94	44.96	-9.04	54	31.62	27.72	16.93	31.31	356	93	A	H
	*	2422	116.32	-	-	103	27.63	16.99	31.3	356	93	P	H
	*	2422	103.22	-	-	89.9	27.63	16.99	31.3	356	93	A	H
		2483.92	56.47	-17.53	74	43.05	27.61	17.09	31.28	356	93	P	H
		2486.48	44.45	-9.55	54	31.03	27.61	17.09	31.28	356	93	A	H
		2387.56	61.43	-12.57	74	47.94	27.87	16.93	31.31	349	41	P	V
		2389.8	48.28	-5.72	54	34.8	27.86	16.93	31.31	349	41	A	V
	*	2422	118.84	-	-	105.47	27.68	16.99	31.3	349	41	P	V
	*	2422	106.96	-	-	93.59	27.68	16.99	31.3	349	41	A	V
		2485.04	58.05	-15.95	74	44.63	27.61	17.09	31.28	349	41	P	V
		2483.52	45.96	-8.04	54	32.54	27.61	17.09	31.28	349	41	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 (Harmonic @ 3m)**

WIFI Ant. 4*4	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 HE40 CH 03 2422MHz		4844	39.14	-34.86	74	53.45	31.4	10.77	56.48	100	0	P	H
		7266	43.27	-30.73	74	51	36.25	12.73	56.71	100	0	P	H
													H
													H
		4844	40.36	-33.64	74	54.55	31.52	10.77	56.48	100	0	P	V
		7266	44.41	-29.59	74	52.11	36.28	12.73	56.71	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz WIFI 802.11ax HE40 (LF)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
4*4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11ax HE40 LF		31.94	21.5	-18.5	40	28.57	24.11	1.25	32.43	-	-	P	H
		105.66	20.73	-22.77	43.5	34.75	16.57	1.8	32.39	-	-	P	H
		500.45	27.6	-18.4	46	32.93	23.9	3.5	32.73	-	-	P	H
		599.39	29.36	-16.64	46	32.5	25.71	4.01	32.86	-	-	P	H
		624.61	29.47	-16.53	46	32.35	25.88	4.09	32.85	-	-	P	H
		874.87	39.3	-6.7	46	37.28	29.3	4.89	32.17	100	0	P	H
													H
													H
													H
													H
													H
													H
													H
		36.79	23.23	-16.77	40	33.04	21.28	1.33	32.42	-	-	P	V
		105.66	18.16	-25.34	43.5	32.18	16.57	1.8	32.39	-	-	P	V
		159.98	21.65	-21.85	43.5	35.35	16.6	2.09	32.39	-	-	P	V
		600.36	39.58	-6.42	46	42.73	25.7	4.01	32.86	100	0	P	V
		874.87	35.63	-10.37	46	33.61	29.3	4.89	32.17	-	-	P	V
		941.8	32.66	-13.34	46	28.69	30.51	5.05	31.59	-	-	P	V
													V
												V	
												V	
												V	
												V	
												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



<Band-edge Unmodulated>

2.4GHz 2400~2483.5MHz

WIFI 802.11ax HE20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
4*4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE20 CH 01 2412MHz		2389.905	67.05	-6.95	74	53.71	27.72	16.93	31.31	246	129	P	H
		2390	46.38	-7.62	54	33.04	27.72	16.93	31.31	246	129	A	H
	*	2412	125.04	-	-	111.72	27.65	16.97	31.3	246	129	P	H
	*	2412	112.49	-	-	99.17	27.65	16.97	31.3	246	129	A	H
													H
													H
		2389.8	56.91	-17.09	74	43.43	27.86	16.93	31.31	108	145	P	V
		2389.905	44.36	-9.64	54	30.89	27.85	16.93	31.31	108	145	A	V
	*	2412	121.97	-	-	108.57	27.73	16.97	31.3	108	145	P	V
	*	2412	109.52	-	-	96.12	27.73	16.97	31.3	108	145	A	V
													V
													V
802.11ax HE20 CH 06 2437MHz		2388.68	58.61	-15.39	74	45.26	27.73	16.93	31.31	243	127	P	H
		2389.52	44.65	-9.35	54	31.3	27.73	16.93	31.31	243	127	A	H
	*	2437	125.56	-	-	112.23	27.61	17.01	31.29	243	127	P	H
	*	2437	115.69	-	-	102.36	27.61	17.01	31.29	243	127	A	H
		2486.8	66.75	-7.25	74	53.33	27.61	17.09	31.28	243	127	P	H
		2483.52	48.05	-5.95	54	34.63	27.61	17.09	31.28	243	127	A	H
		2384.06	56.82	-17.18	74	43.32	27.89	16.92	31.31	122	142	P	V
		2361.52	44.09	-9.91	54	30.52	28.01	16.89	31.33	122	142	A	V
	*	2437	124.64	-	-	111.33	27.59	17.01	31.29	122	142	P	V
	*	2437	113.21	-	-	99.9	27.59	17.01	31.29	122	142	A	V
		2483.6	64.34	-9.66	74	50.92	27.61	17.09	31.28	122	142	P	V
		2486.32	45.74	-8.26	54	32.32	27.61	17.09	31.28	122	142	A	V



WIFI Ant. 4*4	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 CH 11 2462MHz	*	2462	122.82	-	-	109.46	27.6	17.05	31.29	239	128	P	H
	*	2462	111.47	-	-	98.11	27.6	17.05	31.29	239	128	A	H
		2486.44	71.74	-2.26	74	58.32	27.61	17.09	31.28	239	128	P	H
		2484.12	51.52	-2.48	54	38.1	27.61	17.09	31.28	239	128	A	H
													H
													H
	*	2462	119.73	-	-	106.42	27.55	17.05	31.29	115	142	P	V
	*	2462	107.47	-	-	94.16	27.55	17.05	31.29	115	142	A	V
		2483.76	68.85	-5.15	74	55.43	27.61	17.09	31.28	115	142	P	V
		2484.28	50.34	-3.66	54	36.92	27.61	17.09	31.28	115	142	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 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
4*4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE40 CH 03 2422MHz		2389.94	66.1	-7.9	74	52.76	27.72	16.93	31.31	240	131	P	H
		2389.66	44.81	-9.19	54	31.46	27.73	16.93	31.31	240	131	A	H
	*	2422	119.18	-	-	105.86	27.63	16.99	31.3	240	131	P	H
	*	2422	107.03	-	-	93.71	27.63	16.99	31.3	240	131	A	H
		2486	64.41	-9.59	74	50.99	27.61	17.09	31.28	240	131	P	H
		2487.68	45.67	-8.33	54	32.24	27.61	17.09	31.27	240	131	A	H
		2389.94	62.97	-11.03	74	49.5	27.85	16.93	31.31	116	142	P	V
		2387.84	44.19	-9.81	54	30.7	27.87	16.93	31.31	116	142	A	V
	*	2422	114.99	-	-	101.62	27.68	16.99	31.3	116	142	P	V
	*	2422	104.09	-	-	90.72	27.68	16.99	31.3	116	142	A	V
		2486.48	59.51	-14.49	74	46.09	27.61	17.09	31.28	116	142	P	V
		2487.04	44.79	-9.21	54	31.36	27.62	17.09	31.28	116	142	A	V
802.11ax HE40 CH 06 2437MHz		2389.8	59.56	-14.44	74	46.22	27.72	16.93	31.31	118	127	P	H
		2389.52	44	-10	54	30.65	27.73	16.93	31.31	118	127	A	H
	*	2437	118.75	-	-	105.42	27.61	17.01	31.29	118	127	P	H
	*	2437	107.68	-	-	94.35	27.61	17.01	31.29	118	127	A	H
		2487.2	73.48	-0.52	74	60.06	27.61	17.09	31.28	118	127	P	H
		2486.24	46.22	-7.78	54	32.8	27.61	17.09	31.28	118	127	A	H
		2330.86	57.1	-16.9	74	43.56	28.05	16.84	31.35	123	138	P	V
		2387.84	44.08	-9.92	54	30.59	27.87	16.93	31.31	123	138	A	V
	*	2437	114.85	-	-	101.54	27.59	17.01	31.29	123	138	P	V
	*	2437	103.58	-	-	90.27	27.59	17.01	31.29	123	138	A	V
		2483.6	66.36	-7.64	74	52.94	27.61	17.09	31.28	123	138	P	V
		2484.64	44.78	-9.22	54	31.36	27.61	17.09	31.28	123	138	A	V



WIFI Ant. 4*4	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 HE40 CH 09 2452MHz		2389.52	58.1	-15.9	74	44.75	27.73	16.93	31.31	204	127	P	H
		2389.1	43.92	-10.08	54	30.57	27.73	16.93	31.31	204	127	A	H
	*	2452	115.58	-	-	102.24	27.59	17.04	31.29	204	127	P	H
	*	2452	102.14	-	-	88.8	27.59	17.04	31.29	204	127	A	H
		2483.92	71.23	-2.77	74	57.81	27.61	17.09	31.28	204	127	P	H
		2483.76	46.87	-7.13	54	33.45	27.61	17.09	31.28	204	127	A	H
		2354.66	57.31	-16.69	74	43.73	28.04	16.88	31.34	118	140	P	V
		2374.12	44.07	-9.93	54	30.54	27.94	16.91	31.32	118	140	A	V
	*	2452	112.44	-	-	99.16	27.53	17.04	31.29	118	140	P	V
	*	2452	99.89	-	-	86.61	27.53	17.04	31.29	118	140	A	V
		2484.08	63.41	-10.59	74	49.99	27.61	17.09	31.28	118	140	P	V
		2484.16	44.75	-9.25	54	31.33	27.61	17.09	31.28	118	140	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



<Middle Unmodulated>

2.4GHz 2400~2483.5MHz
WIFI 802.11ax HE20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
4*4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE20 CH 01 2412MHz		2389.695	72.18	-1.82	74	58.83	27.73	16.93	31.31	108	115	P	H
		2390	52.04	-1.96	54	38.7	27.72	16.93	31.31	108	115	A	H
	*	2412	119.37	-	-	106.05	27.65	16.97	31.3	108	115	P	H
	*	2412	108.5	-	-	95.18	27.65	16.97	31.3	108	115	A	H
													H
													H
		2389.905	68.67	-5.33	74	55.2	27.85	16.93	31.31	375	199	P	V
		2390	49.67	-4.33	54	36.2	27.85	16.93	31.31	375	199	A	V
	*	2412	115.58	-	-	102.18	27.73	16.97	31.3	375	199	P	V
	*	2412	104.51	-	-	91.11	27.73	16.97	31.3	375	199	A	V
													V
													V
802.11ax HE20 CH 06 2437MHz		2389.68	61.33	-12.67	74	47.98	27.73	16.93	31.31	100	121	P	H
		2389.68	46.78	-7.22	54	33.43	27.73	16.93	31.31	100	121	A	H
	*	2437	121.55	-	-	108.22	27.61	17.01	31.29	100	121	P	H
	*	2437	111.12	-	-	97.79	27.61	17.01	31.29	100	121	A	H
		2483.52	70.32	-3.68	74	56.9	27.61	17.09	31.28	100	121	P	H
		2483.84	52.95	-1.05	54	39.53	27.61	17.09	31.28	100	121	A	H
		2367.28	57.27	-16.73	74	43.72	27.98	16.9	31.33	400	200	P	V
		2390	45.7	-8.3	54	32.23	27.85	16.93	31.31	400	200	A	V
	*	2437	120.05	-	-	106.74	27.59	17.01	31.29	400	200	P	V
	*	2437	109.75	-	-	96.44	27.59	17.01	31.29	400	200	A	V
		2483.92	68.3	-5.7	74	54.88	27.61	17.09	31.28	400	200	P	V
		2483.84	50.75	-3.25	54	37.33	27.61	17.09	31.28	400	200	A	V



WIFI Ant. 4*4	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 CH 11 2462MHz	*	2462	115.77	-	-	102.41	27.6	17.05	31.29	108	128	P	H
	*	2462	104.66	-	-	91.3	27.6	17.05	31.29	108	128	A	H
		2486.2	72.43	-1.57	74	59.01	27.61	17.09	31.28	108	128	P	H
		2483.52	53.08	-0.92	54	39.66	27.61	17.09	31.28	108	128	A	H
													H
													H
	*	2462	113.27	-	-	99.96	27.55	17.05	31.29	400	202	P	V
	*	2462	101.78	-	-	88.47	27.55	17.05	31.29	400	202	A	V
		2483.68	65.2	-8.8	74	51.78	27.61	17.09	31.28	400	202	P	V
		2484.08	48.99	-5.01	54	35.57	27.61	17.09	31.28	400	202	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 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
4*4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE40 CH 03 2422MHz		2389.66	70.53	-3.47	74	57.18	27.73	16.93	31.31	106	118	P	H
		2376.64	50.4	-3.6	54	37.01	27.8	16.91	31.32	106	118	A	H
	*	2422	119.51	-	-	106.19	27.63	16.99	31.3	106	118	P	H
	*	2422	107.67	-	-	94.35	27.63	16.99	31.3	106	118	A	H
		2485.68	62.07	-11.93	74	48.65	27.61	17.09	31.28	106	118	P	H
		2487.76	47.7	-6.3	54	34.27	27.61	17.09	31.27	106	118	A	H
		2388.96	64.9	-9.1	74	51.42	27.86	16.93	31.31	360	203	P	V
		2377.06	48.72	-5.28	54	35.21	27.92	16.91	31.32	360	203	A	V
	*	2422	118.67	-	-	105.3	27.68	16.99	31.3	360	203	P	V
	*	2422	105.92	-	-	92.55	27.68	16.99	31.3	360	203	A	V
		2486.64	58.9	-15.1	74	45.47	27.62	17.09	31.28	360	203	P	V
		2487.92	46.2	-7.8	54	32.75	27.62	17.1	31.27	360	203	A	V
802.11ax HE40 CH 06 2437MHz		2389.84	62.97	-11.03	74	49.63	27.72	16.93	31.31	107	118	P	H
		2390	47.4	-6.6	54	34.06	27.72	16.93	31.31	107	118	A	H
	*	2437	118.38	-	-	105.05	27.61	17.01	31.29	107	118	P	H
	*	2437	106.68	-	-	93.35	27.61	17.01	31.29	107	118	A	H
		2484.08	72.42	-1.58	74	59	27.61	17.09	31.28	107	118	P	H
		2483.92	50.04	-3.96	54	36.62	27.61	17.09	31.28	107	118	A	H
		2388.72	58.22	-15.78	74	44.74	27.86	16.93	31.31	360	203	P	V
		2388.88	46.2	-7.8	54	32.72	27.86	16.93	31.31	360	203	A	V
	*	2437	114.88	-	-	101.57	27.59	17.01	31.29	360	203	P	V
	*	2437	103.31	-	-	90	27.59	17.01	31.29	360	203	A	V
		2484.96	66.1	-7.9	74	52.68	27.61	17.09	31.28	360	203	P	V
		2483.76	49.23	-4.77	54	35.81	27.61	17.09	31.28	360	203	A	V



WIFI Ant. 4*4	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 HE40 CH 09 2452MHz		2350.64	57.13	-16.87	74	43.65	27.95	16.87	31.34	100	116	P	H
		2333.52	45.4	-8.6	54	31.89	28.02	16.84	31.35	100	116	A	H
	*	2452	117.4	-	-	104.06	27.59	17.04	31.29	100	116	P	H
	*	2452	105.86	-	-	92.52	27.59	17.04	31.29	100	116	A	H
		2487.52	71.27	-2.73	74	57.84	27.61	17.09	31.27	100	116	P	H
		2486.48	52.39	-1.61	54	38.97	27.61	17.09	31.28	100	116	A	H
		2347.44	57.29	-16.71	74	43.7	28.07	16.86	31.34	366	180	P	V
		2335.6	45.41	-8.59	54	31.86	28.06	16.84	31.35	366	180	A	V
	*	2452	116.39	-	-	103.11	27.53	17.04	31.29	366	180	P	V
	*	2452	103.55	-	-	90.27	27.53	17.04	31.29	366	180	A	V
		2484	64.19	-9.81	74	50.77	27.61	17.09	31.28	366	180	P	V
		2499.44	48.21	-5.79	54	34.72	27.65	17.11	31.27	366	180	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	Peak or Average
H/V	Horizontal or Vertical

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

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

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

For Peak Limit @ 2390MHz:

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

For Average Limit @ 2390MHz:

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

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



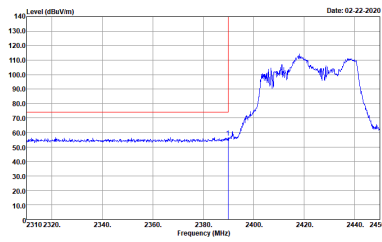
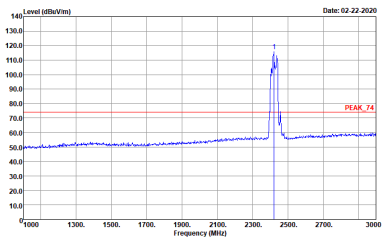
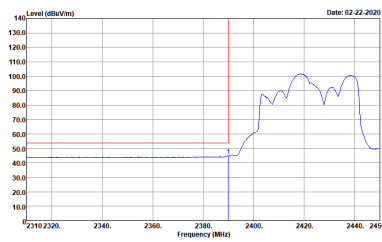
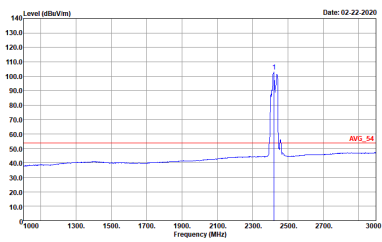
Appendix C. Radiated Spurious Emission Plots

Test Engineer :	JC Liang , Leo Luo and Jacky Hong	Temperature :	18~21°C
		Relative Humidity :	38~42%

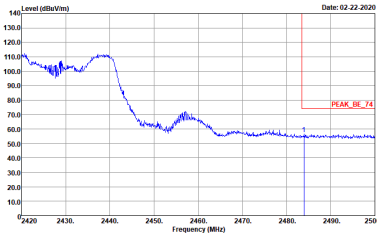
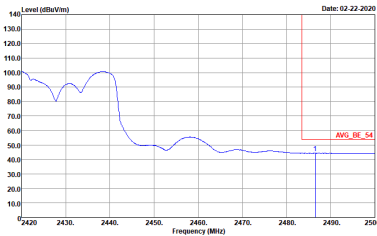
Note symbol

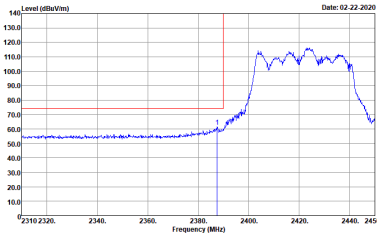
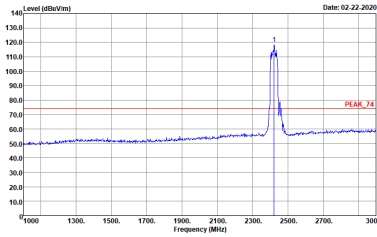
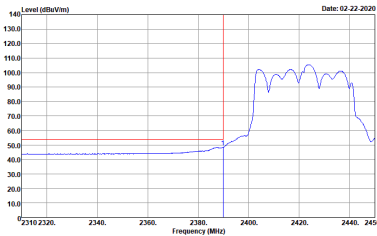
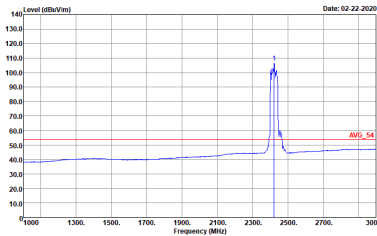
-L	Low channel location
-R	High channel location

2.4GHz 2400~2483.5MHz
WIFI 802.11ax HE40 (Band Edge @ 3m)

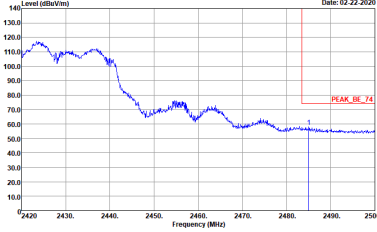
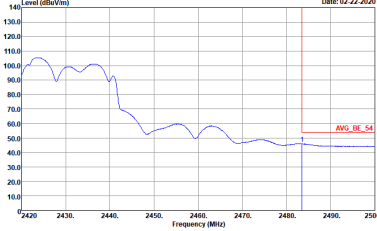
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ANT	802.11ax HE40 CH03 2422MHz - L	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak
Avg.		



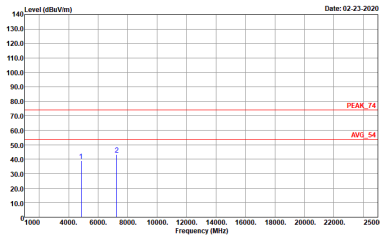
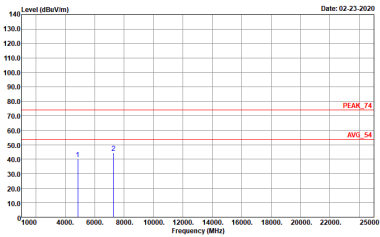
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - R	
4*4	Horizontal	Fundamental
Peak	 Site: :03CH01-CA Condition: : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector: : Peak	Left blank
Avg.	 Site: :03CH01-CA Condition: : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector: : Peak	Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - L	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.		

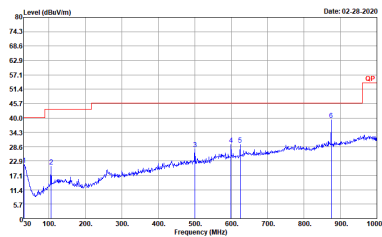
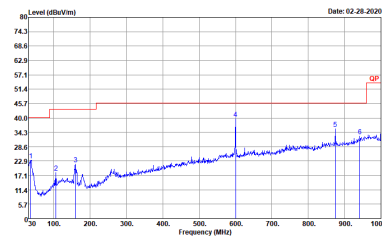


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - R	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Left blank

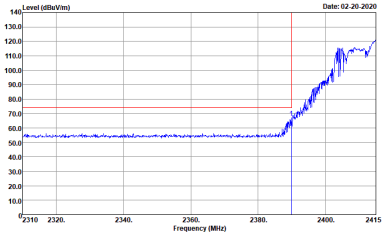
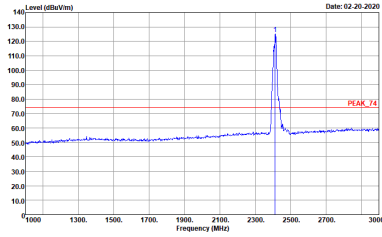
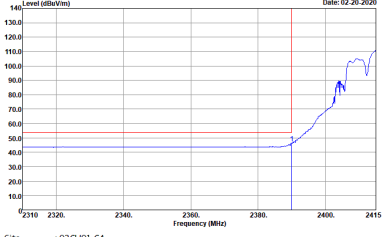
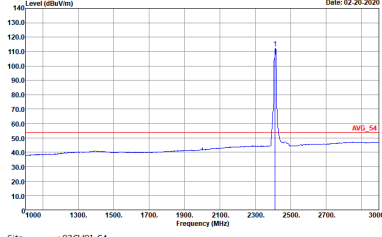
2.4GHz 2400~2483.5MHz
WIFI 802.11ax HE40 (Harmonic @ 3m)

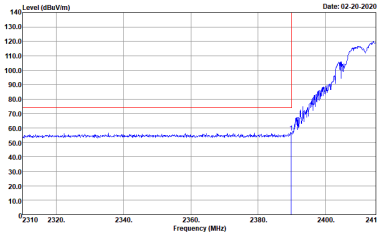
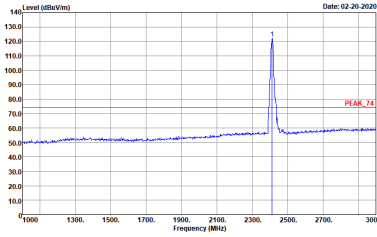
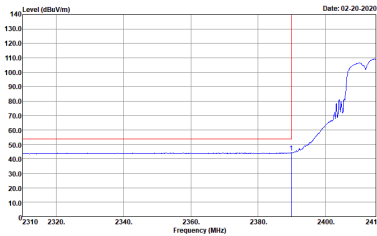
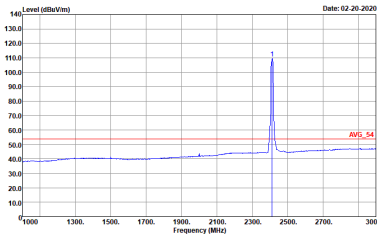
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11ax HE40 CH03 2422MHz	
4*4	Horizontal	Vertical
Peak Avg.	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak

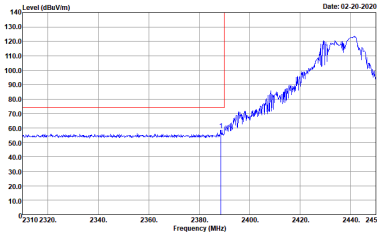
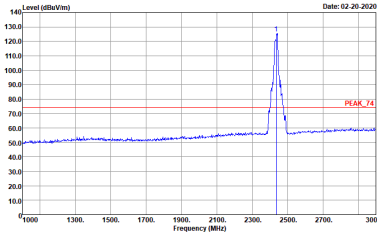
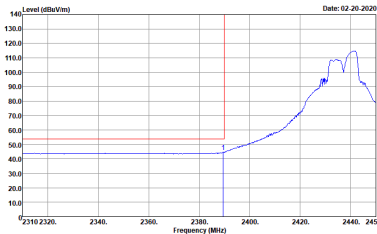
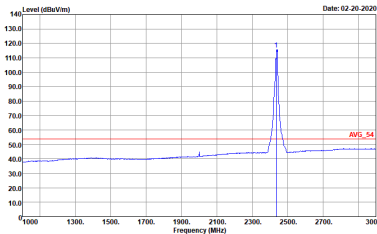
Emission below 1GHz
2.4GHz WIFI 802.11ax HE40 (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11ax HE40 LF	
4*4	Horizontal	Vertical
QP / Peak	 Site : 03CH01-CA Condition : QP 3m BIL06 6111D-LF_50391 HORIZONTAL Detector : Peak	 Site : 03CH01-CA Condition : QP 3m BIL06 6111D-LF_50391 VERTICAL Detector : Peak

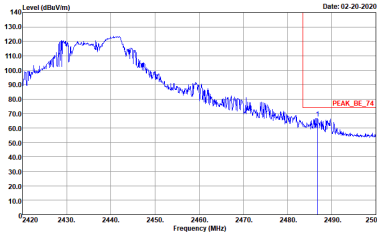
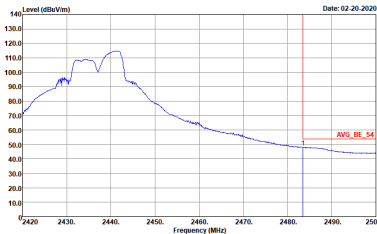
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2.4GHz 2400~2483.5MHz
WIFI 802.11ax HE20 (Band Edge @ 3m)

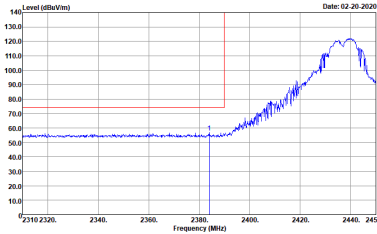
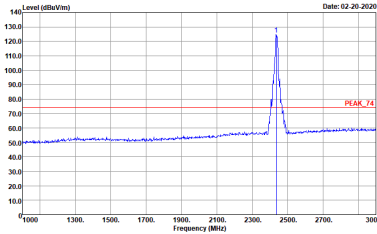
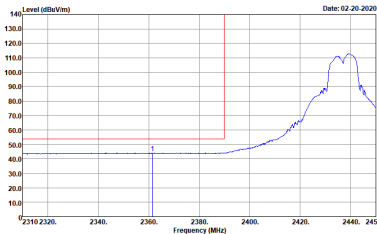
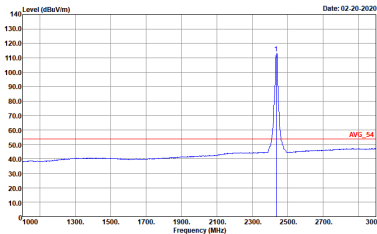
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH01 2412MHz	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH01 2412MHz	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak

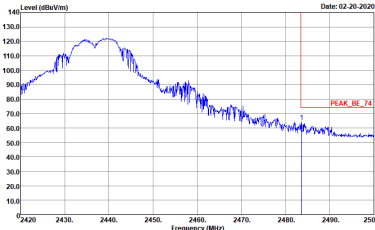
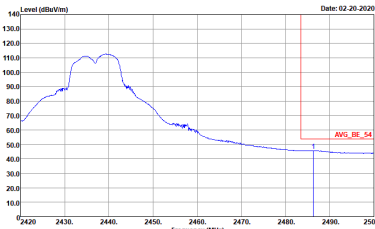
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH06 2437MHz - L	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak
Avg.		

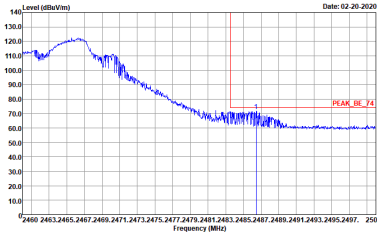
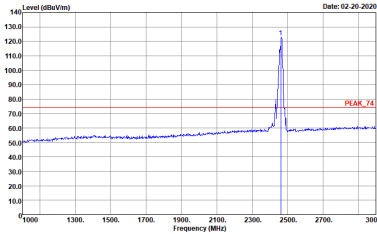
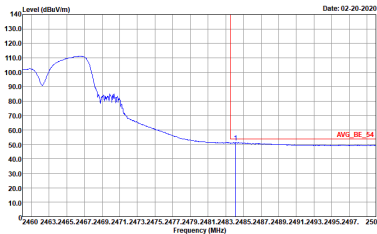
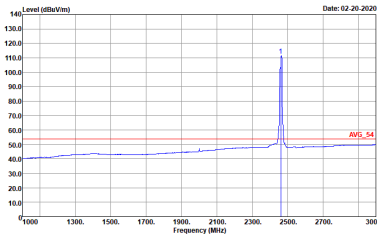


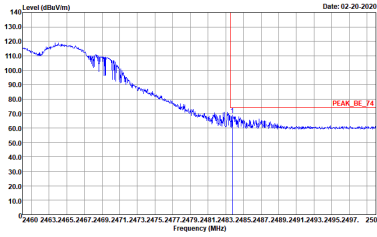
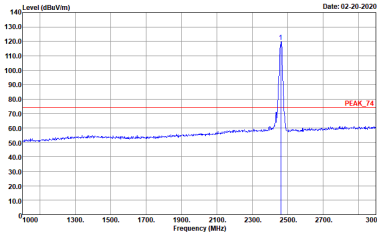
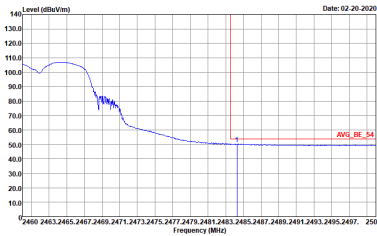
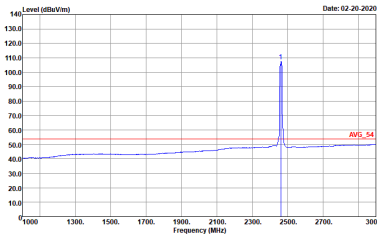
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH06 2437MHz - R	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH06 2437MHz - L	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.		

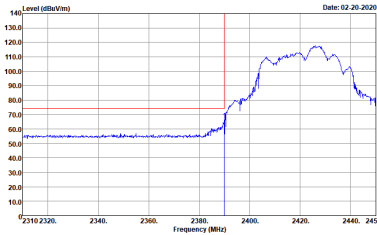
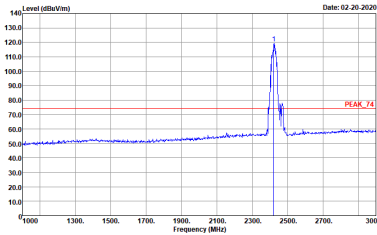
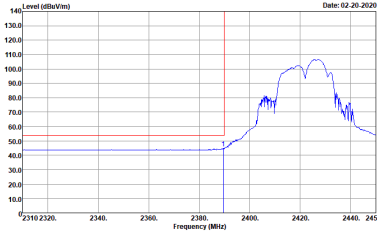
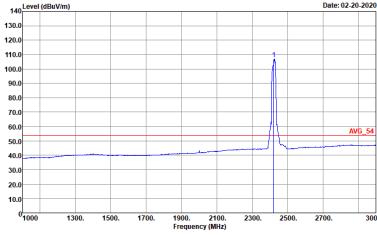


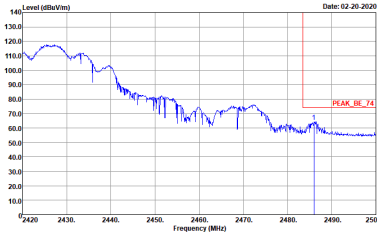
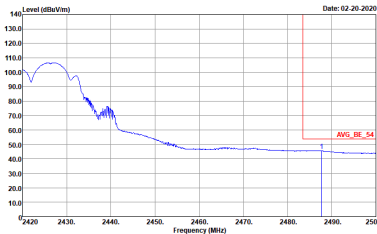
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH06 2437MHz - R	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank

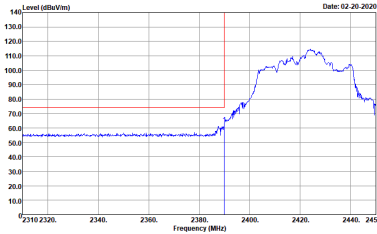
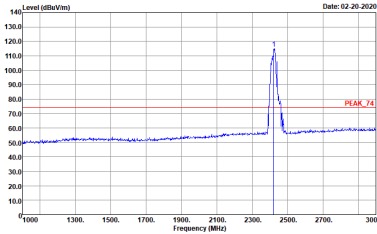
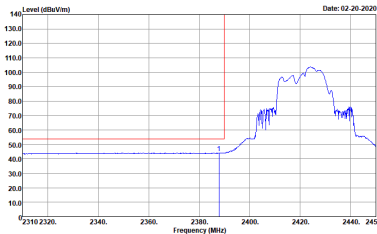
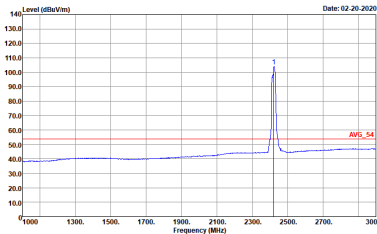
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH11 2462MHz	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH11 2462MHz	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.		

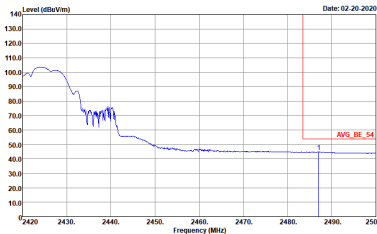
2.4GHz 2400~2483.5MHz
WIFI 802.11ax HE40 (Band Edge @ 3m)

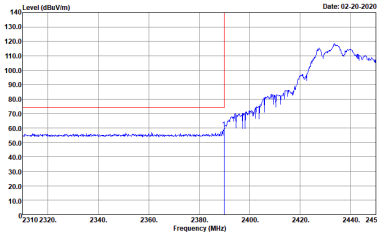
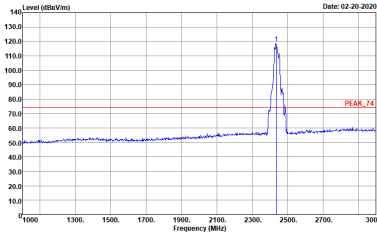
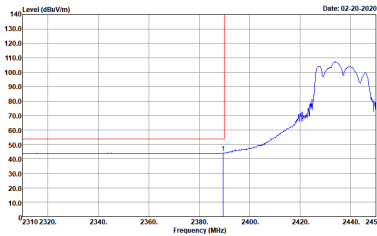
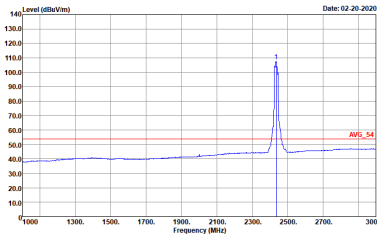
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - L	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - R	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL : RBW:3000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL : RBW:3000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank

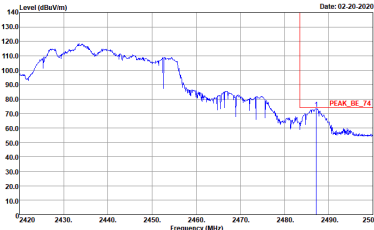
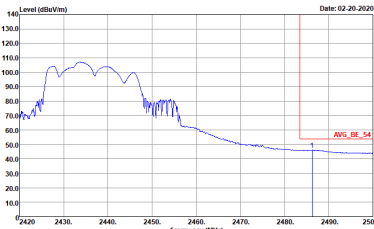
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - L	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.		

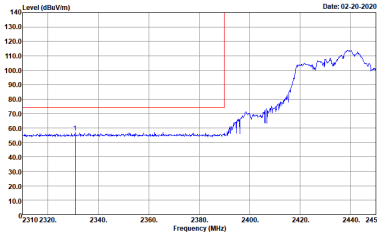
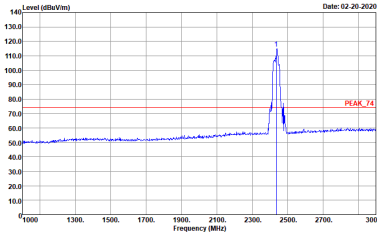
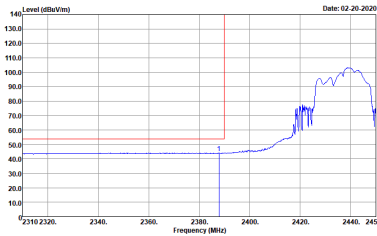
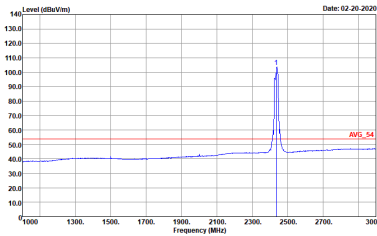


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - R	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank

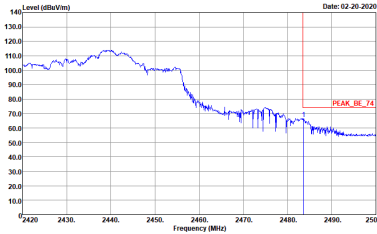
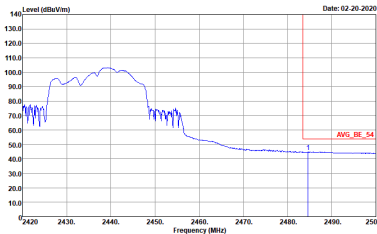
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH06 2437MHz - L	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.		

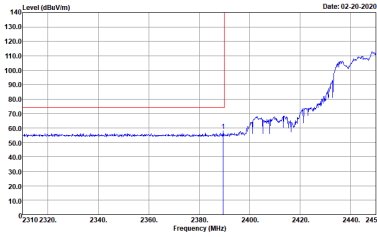
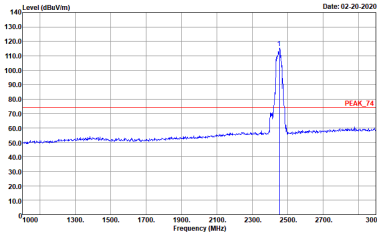
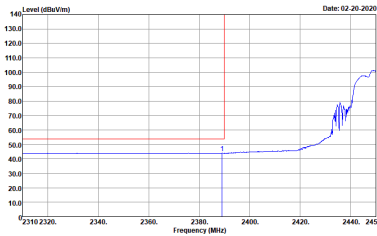
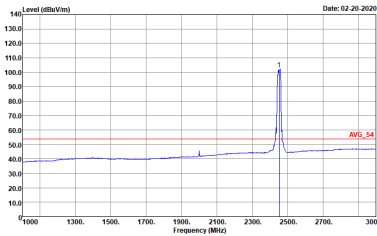


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH06 2437MHz - R	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank

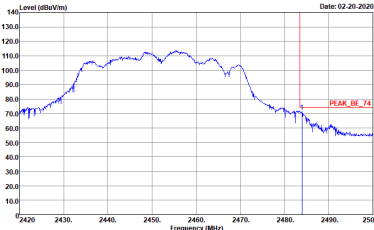
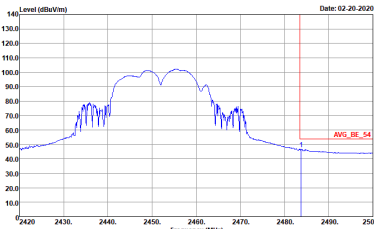
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH06 2437MHz - L	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
Avg.		

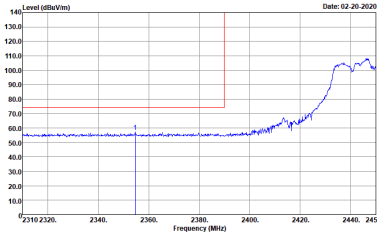
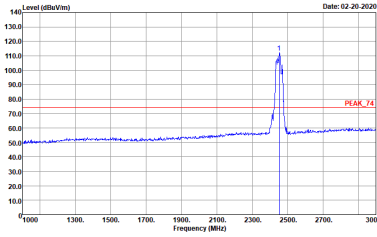
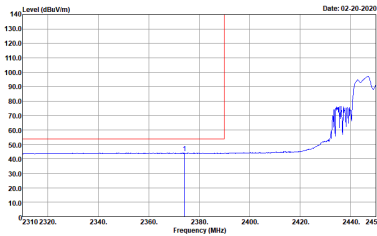
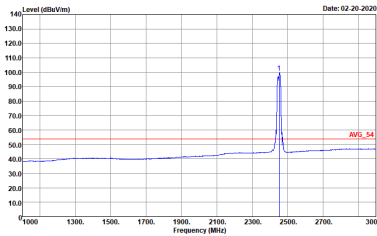


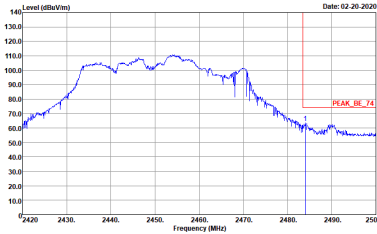
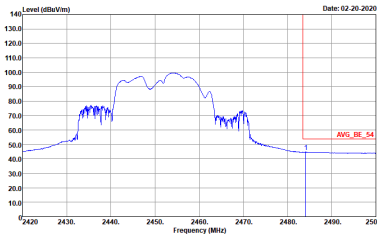
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH06 2437MHz - R	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH09 2452MHz - L	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak
	 Site : 03CH01-CA Condition : AV6_BE_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	 Site : 03CH01-CA Condition : AV6_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH09 2452MHz - R	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank

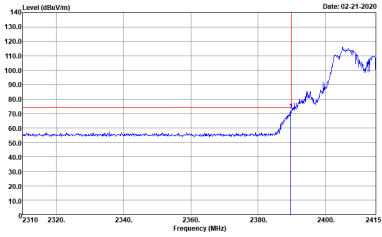
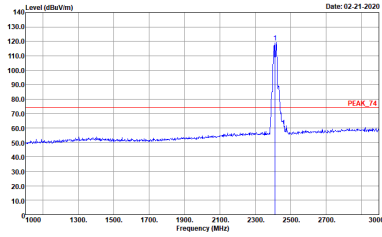
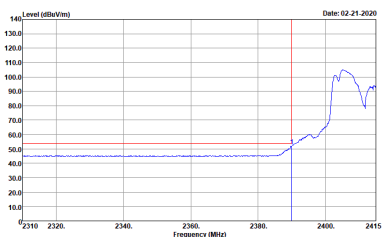
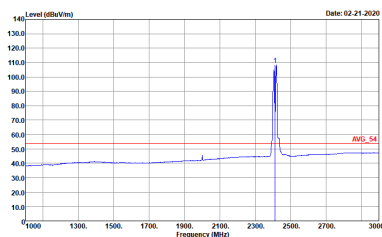
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH09 2452MHz - L	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak

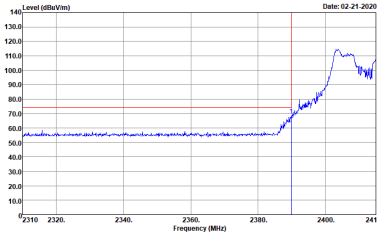
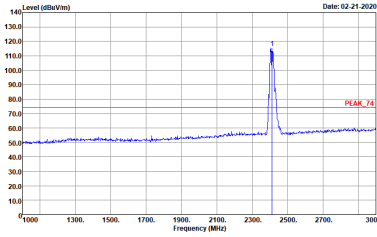
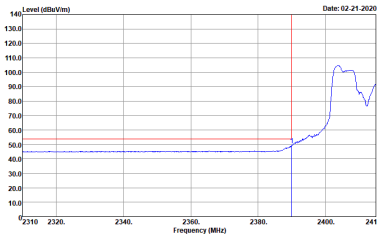
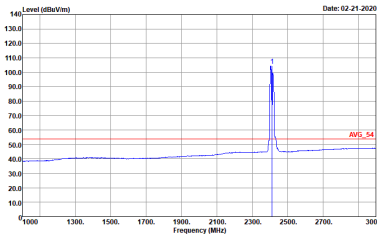
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH09 2452MHz - R	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak	Left blank

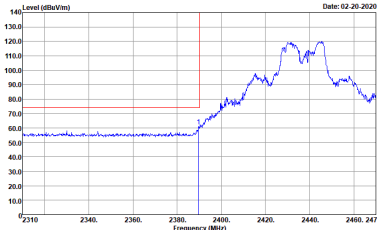
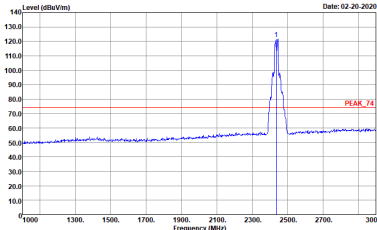
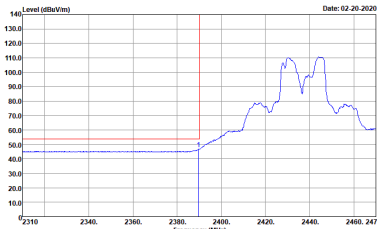
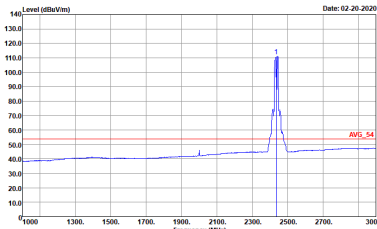
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2.4GHz 2400~2483.5MHz

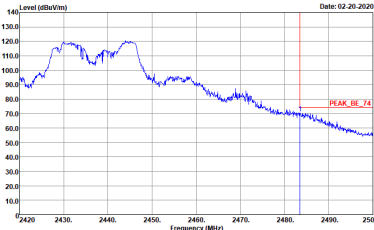
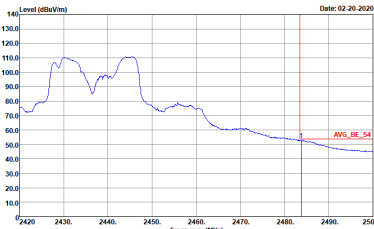
WIFI 802.11ax HE20 (Band Edge @ 3m)

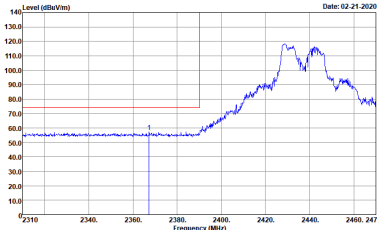
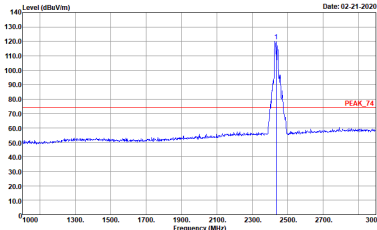
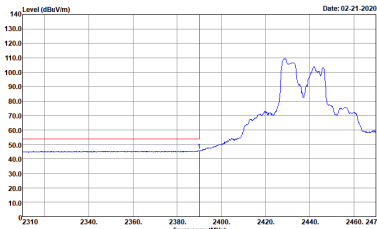
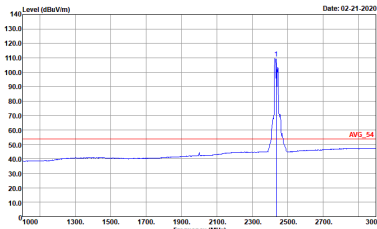
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH01 2412MHz	
4*4	Horizontal	Fundamental
Peak	 Level (dBuV/m) Date: 02-21-2020 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Level (dBuV/m) Date: 02-21-2020 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Level (dBuV/m) Date: 02-21-2020 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	 Level (dBuV/m) Date: 02-21-2020 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH01 2412MHz	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak
Avg.		

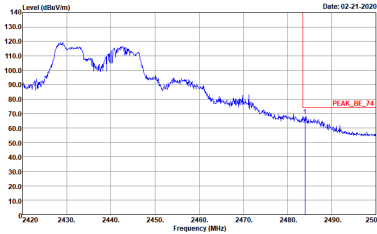
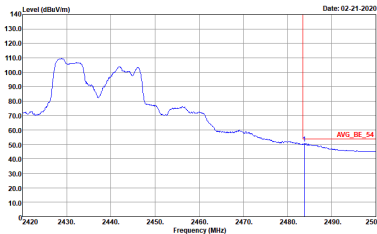
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH06 2437MHz - L	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak

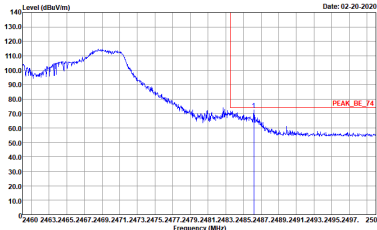
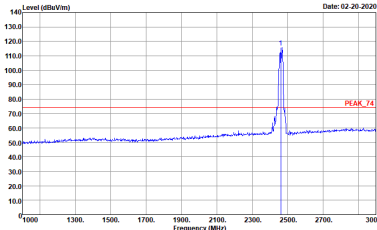
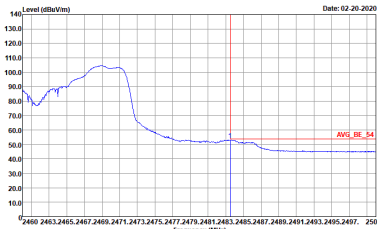
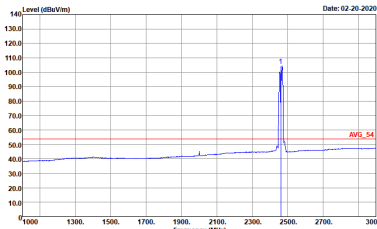


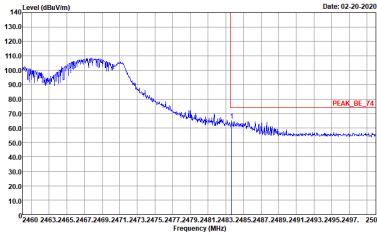
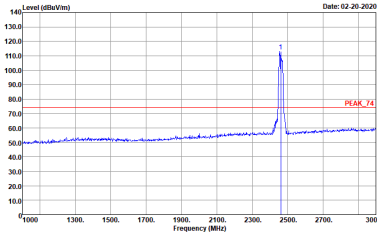
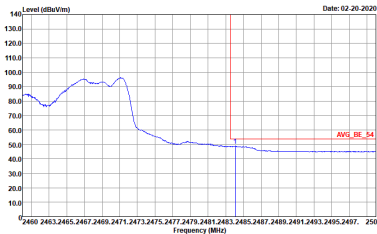
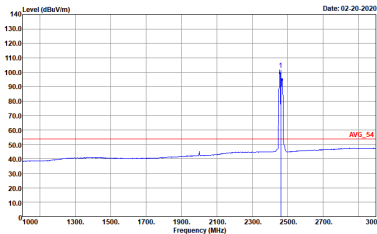
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH06 2437MHz - R	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH06 2437MHz - L	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak
Avg.		

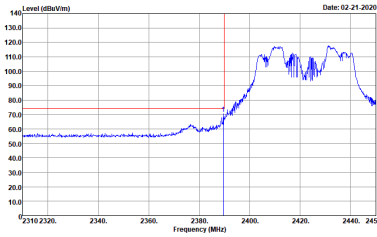
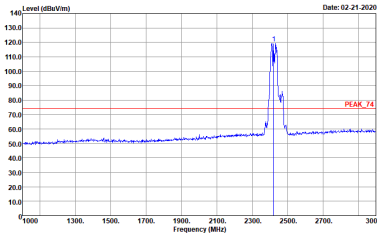
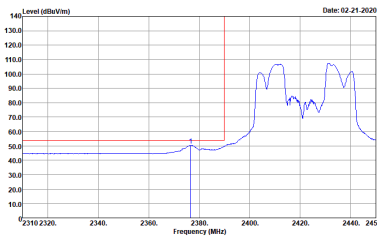
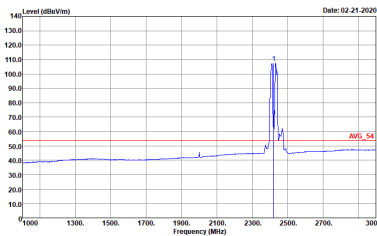


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH06 2437MHz - R	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	Left blank

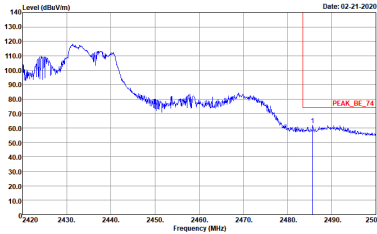
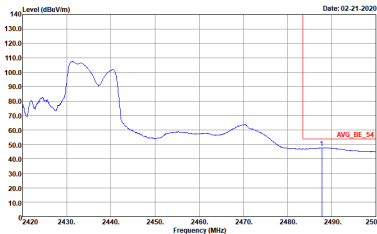
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH11 2462MHz	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak

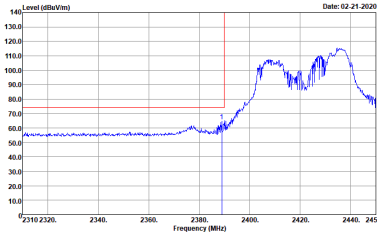
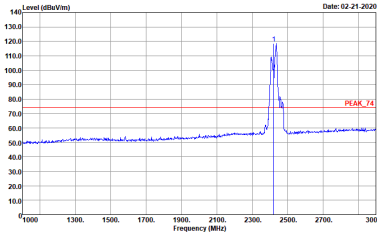
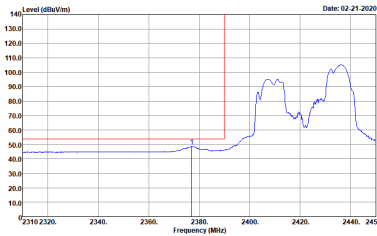
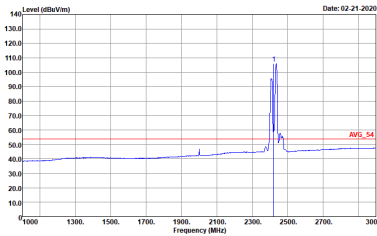
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 CH11 2462MHz	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak
Avg.		

2.4GHz 2400~2483.5MHz
WIFI 802.11ax HE40 (Band Edge @ 3m)

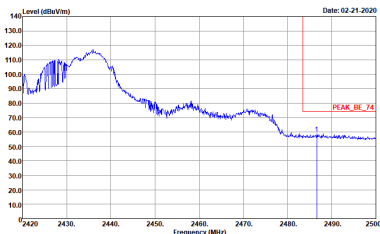
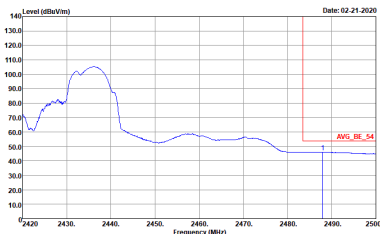
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - L	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak
Avg.		

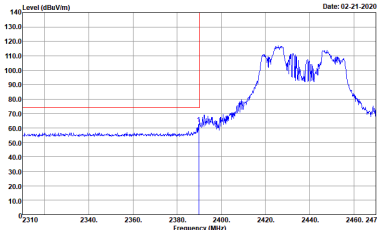
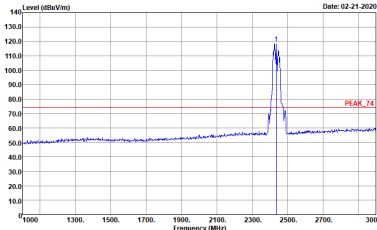
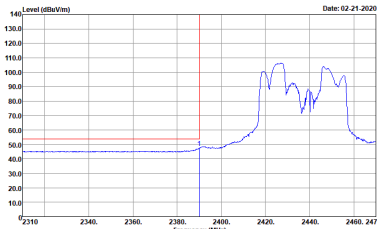
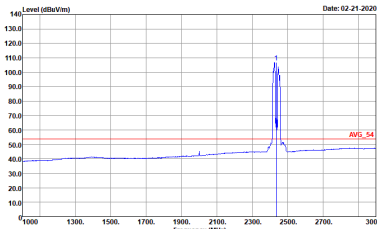


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - R	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak	Left blank

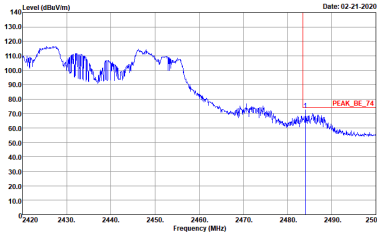
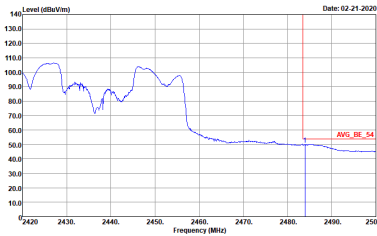
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - L	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak
Avg.		

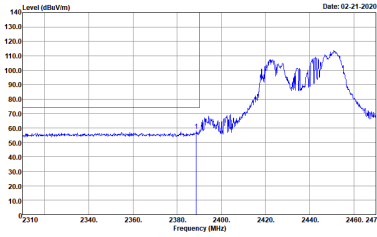
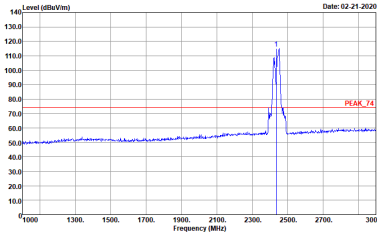
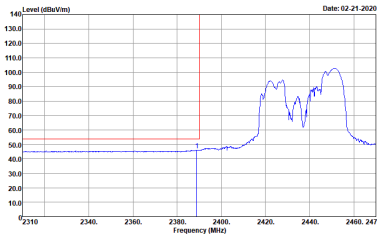
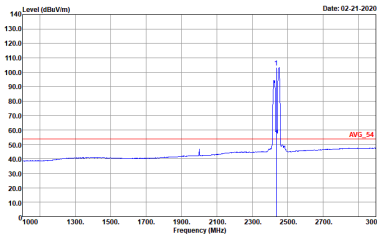


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH03 2422MHz - R	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	Left blank

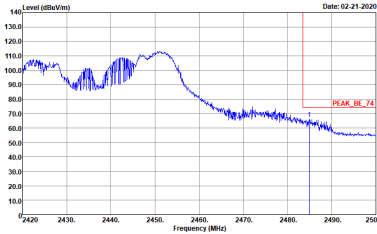
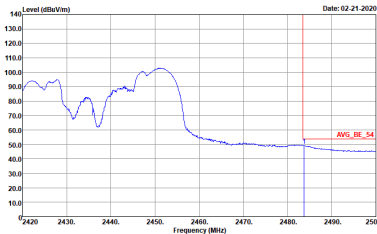
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH06 2437MHz - L	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AV6_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AV6_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak
Avg.		

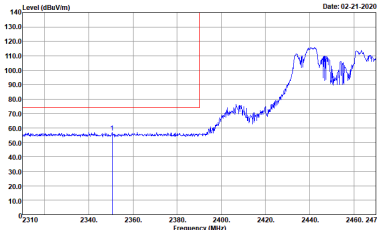
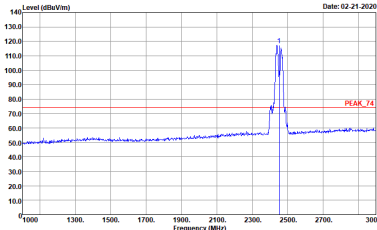
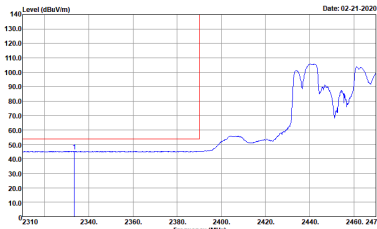
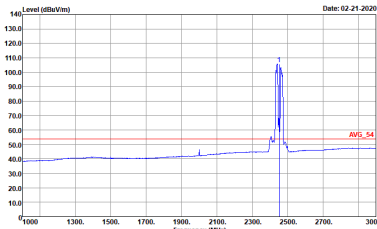


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH06 2437MHz - R	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	Left blank

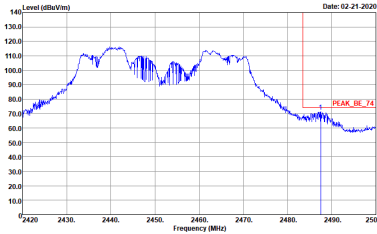
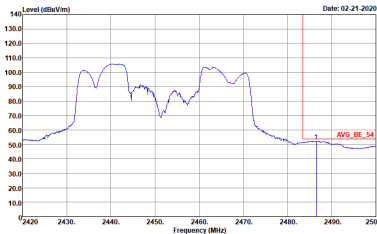
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH06 2437MHz - L	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak
Avg.		

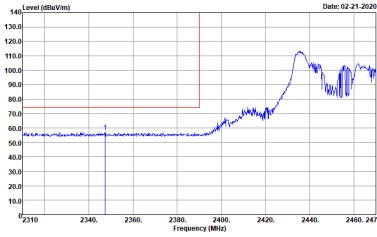
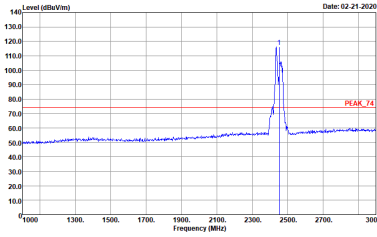
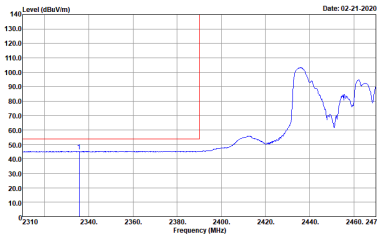
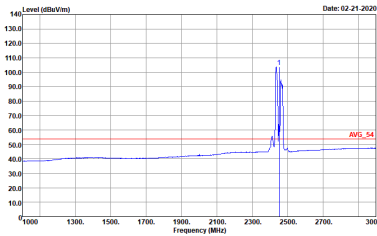


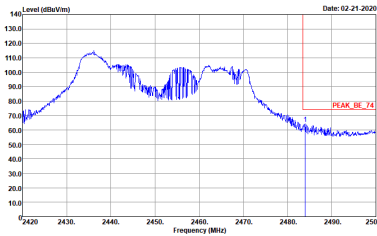
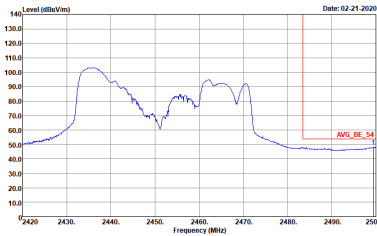
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH06 2437MHz - R	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH09 2452MHz - L	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak
	 Site : 03CH01-CA Condition : AV6_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	 Site : 03CH01-CA Condition : AV6_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH09 2452MHz - R	
4*4	Horizontal	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH09 2452MHz - L	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak
	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak	 Site : 03CH01-CA Condition : AVG_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 CH09 2452MHz - R	
4*4	Vertical	Fundamental
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak	Left blank
Avg.	 Site : 03CH01-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak	Left blank

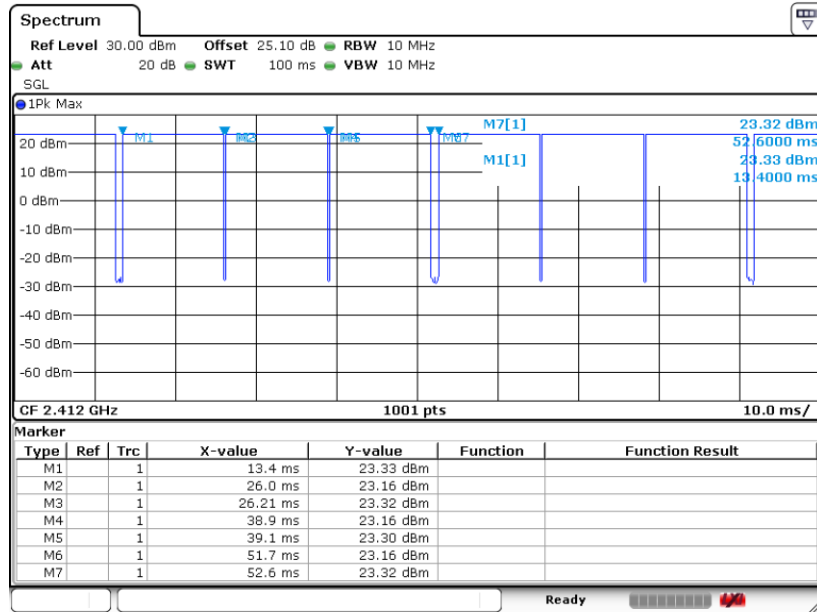
Appendix D. Duty Cycle Plots

Mode	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
4*4	802.11b for Ant. 1	96.66	12600	0.08	100Hz	0.15
4*4	802.11b for Ant. 2	96.91	12700	0.08	100Hz	0.14
4*4	802.11b for Ant. 3	96.74	12700	0.08	100Hz	0.14
4*4	802.11b for Ant. 4	96.48	12600	0.08	100Hz	0.16
4*4	802.11g for Ant. 1	94.20	1983	0.50	1kHz	0.26
4*4	802.11g for Ant. 2	94.05	1975	0.51	1kHz	0.27
4*4	802.11g for Ant. 3	93.47	1975	0.51	1kHz	0.29
4*4	802.11g for Ant. 4	93.82	1975	0.51	1kHz	0.28
4*4	2.4GHz 802.11ax HE20 for Ant. 1	96.20	5450	0.18	300Hz	0.17
4*4	2.4GHz 802.11ax HE20 for Ant. 2	96.02	5435	0.18	300Hz	0.18
4*4	2.4GHz 802.11ax HE20 for Ant. 3	95.70	5455	0.18	300Hz	0.19
4*4	2.4GHz 802.11ax HE20 for Ant. 4	96.19	5435	0.18	300Hz	0.17
4*4	2.4GHz 802.11ax HE40 for Ant. 1	95.84	5420	0.18	300Hz	0.18
4*4	2.4GHz 802.11ax HE40 for Ant. 2	95.84	5420	0.18	300Hz	0.18
4*4	2.4GHz 802.11ax HE40 for Ant. 3	92.74	5425	0.18	300Hz	0.33
4*4	2.4GHz 802.11ax HE40 for Ant. 4	95.07	5405	0.19	300Hz	0.22



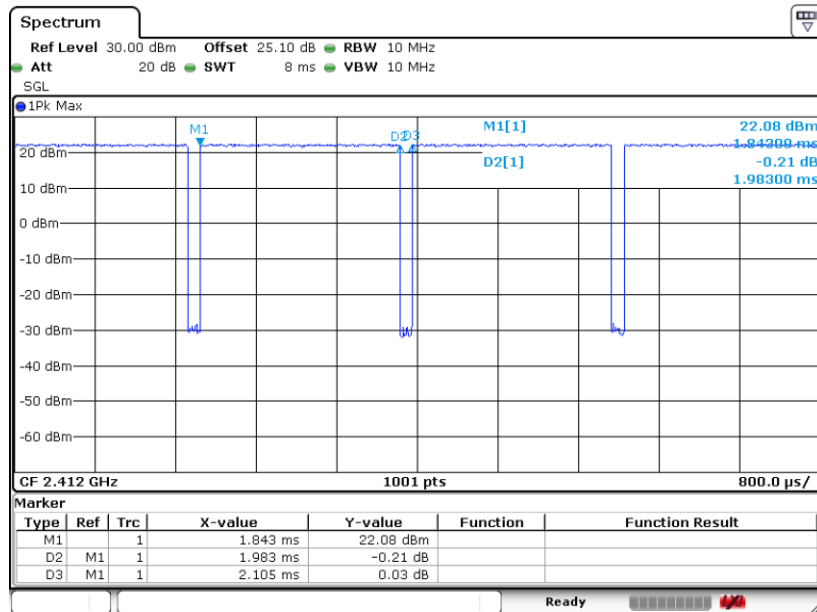
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802.11b



Date: 27.JAN.2020 15:49:24

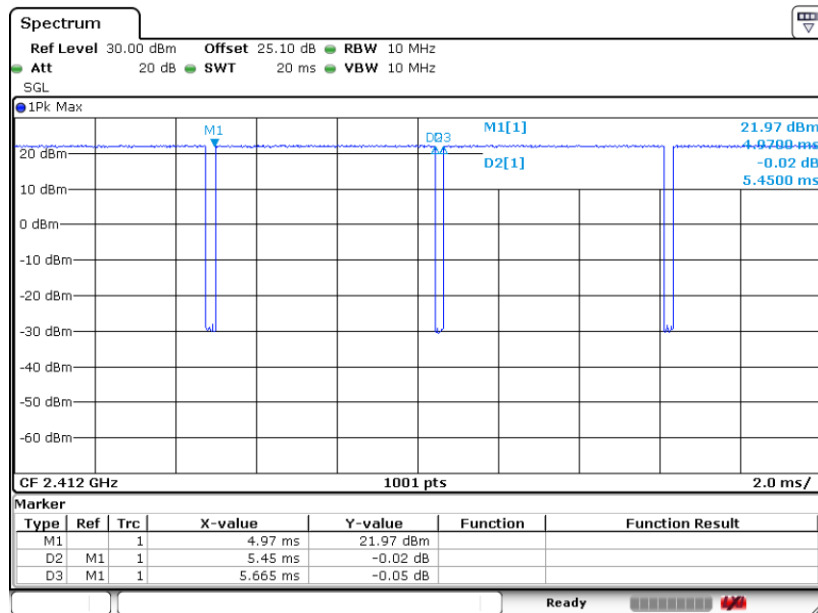
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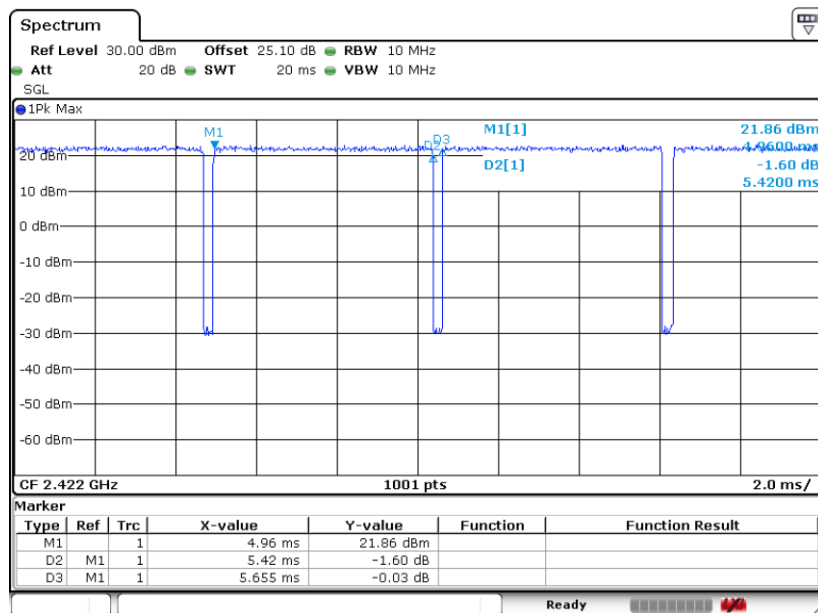


802.11ax HE20



Date: 29 JAN 2020 16:19:30

802.11ax HE40

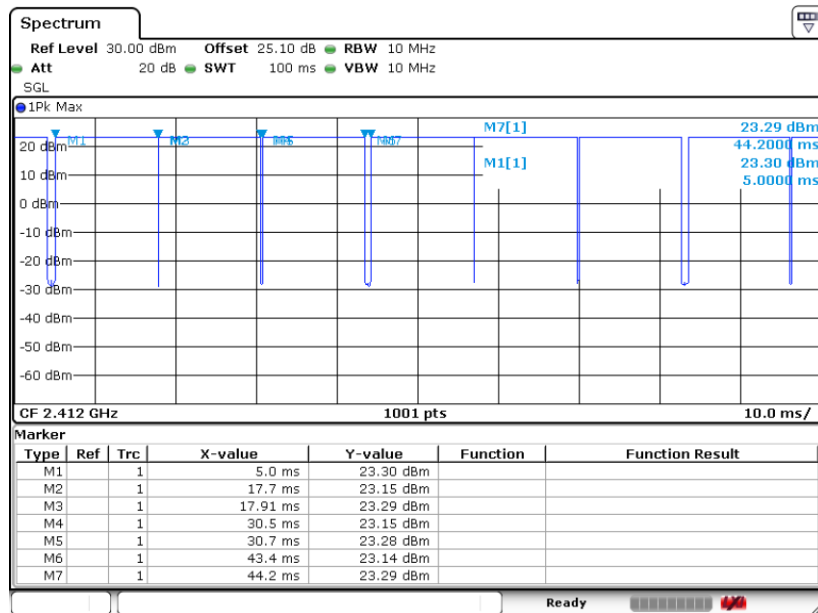


Date: 29 JAN 2020 16:23:30



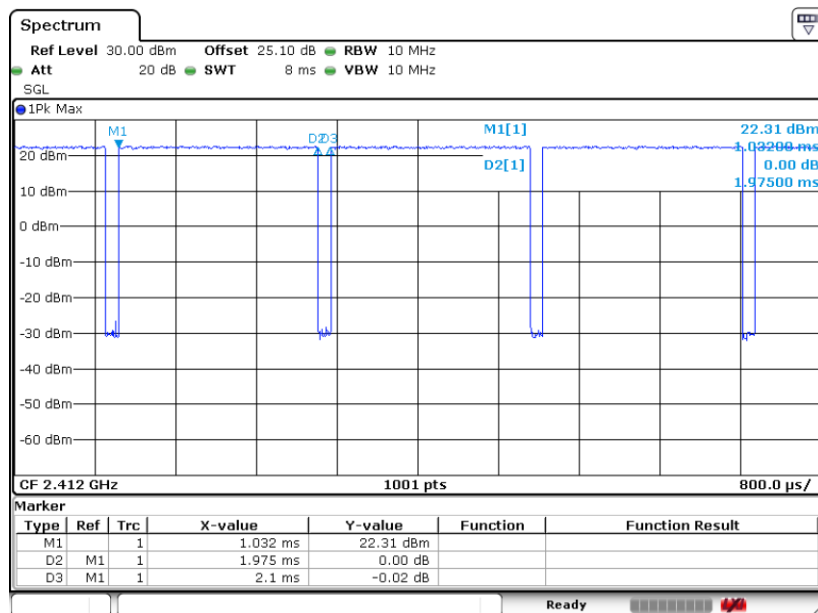
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802.11b



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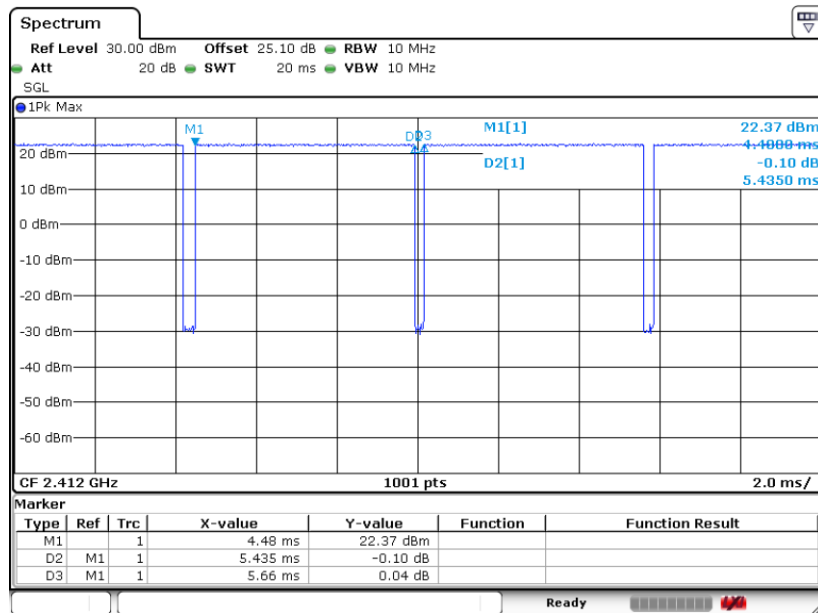
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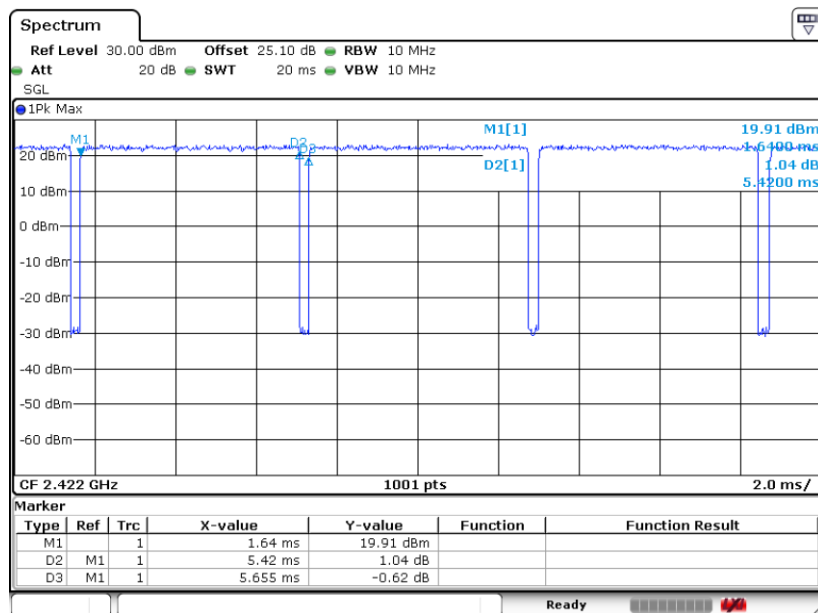


802.11ax HE20



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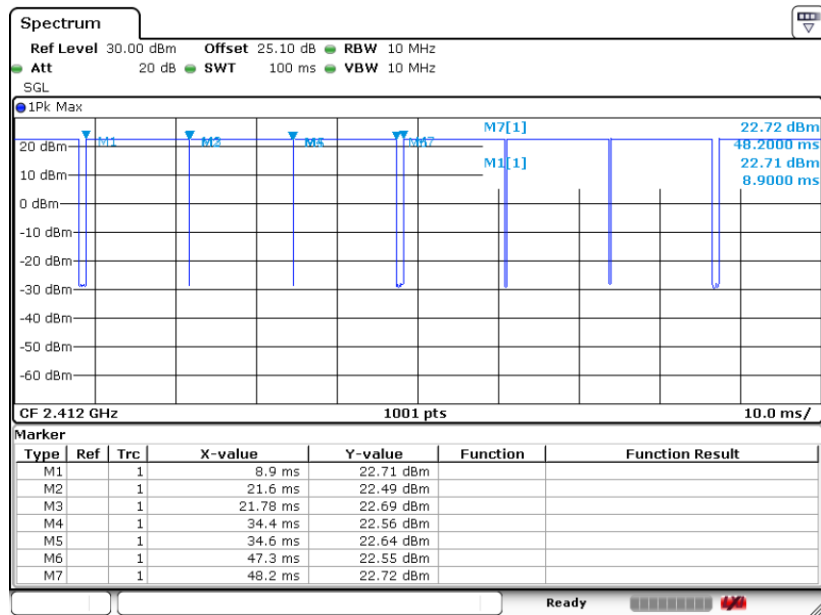


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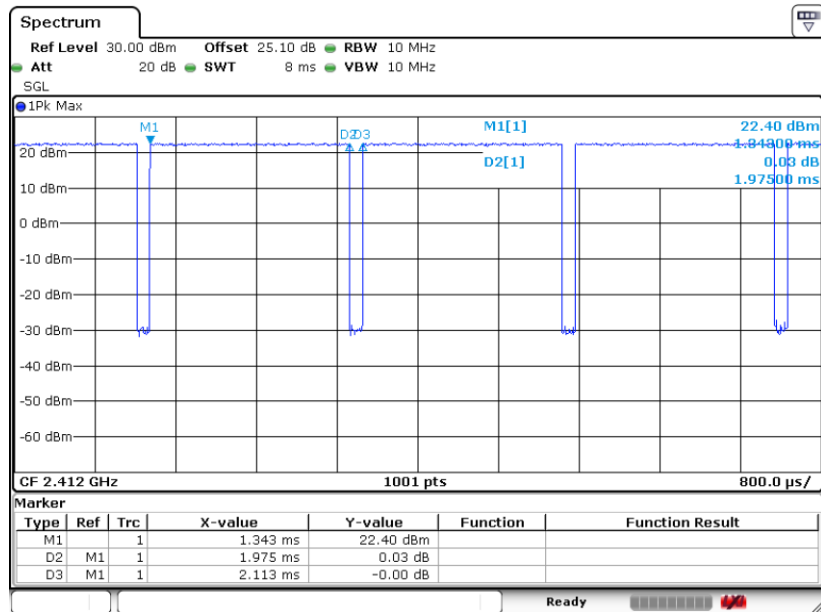
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802.11b



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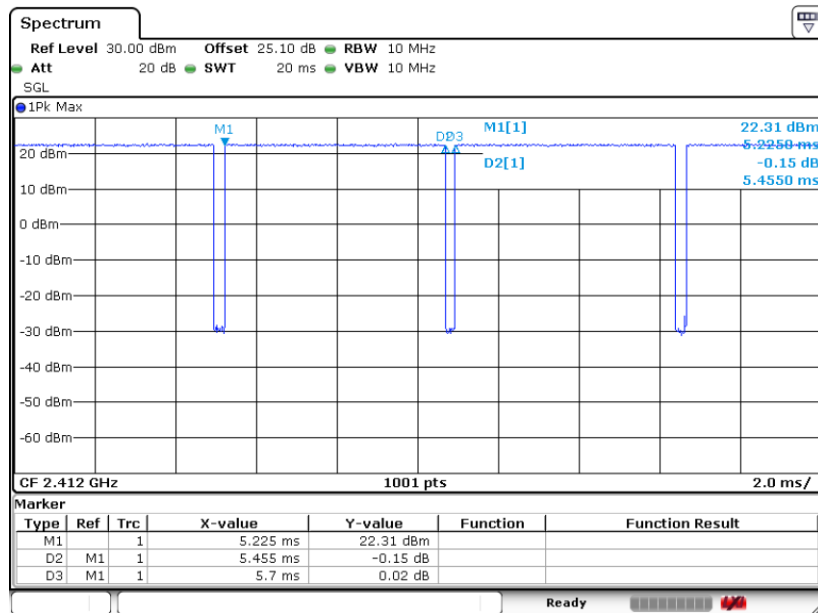
802.11g



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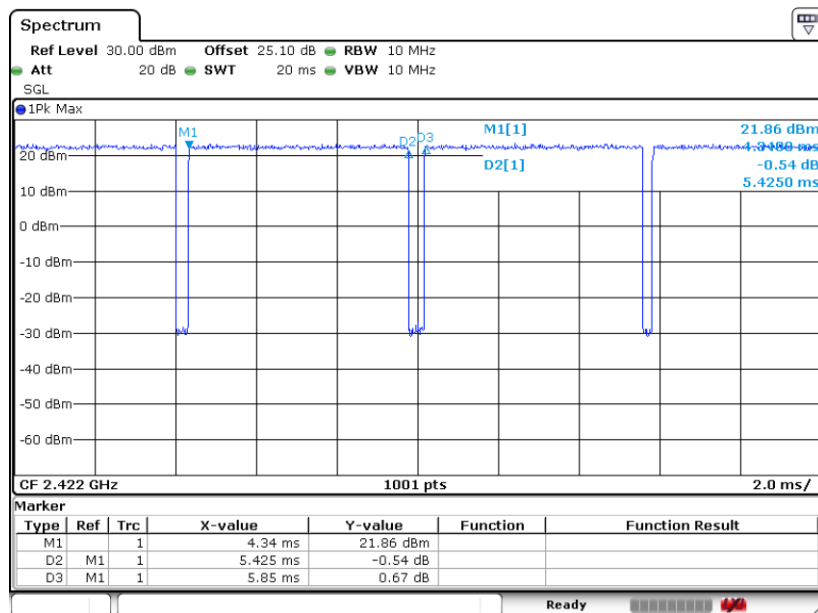


802.11ax HE20



Date: 29.JAN.2020 16:21:28

802.11ax HE40

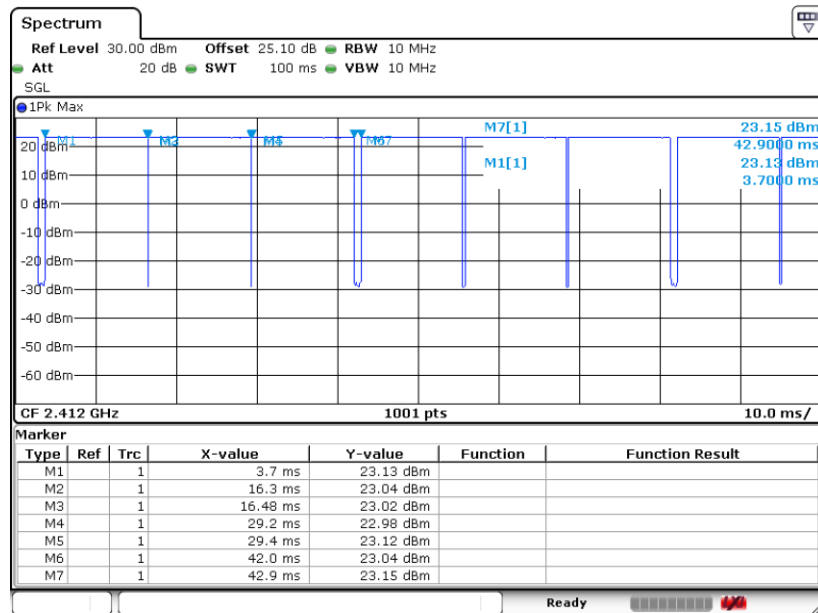


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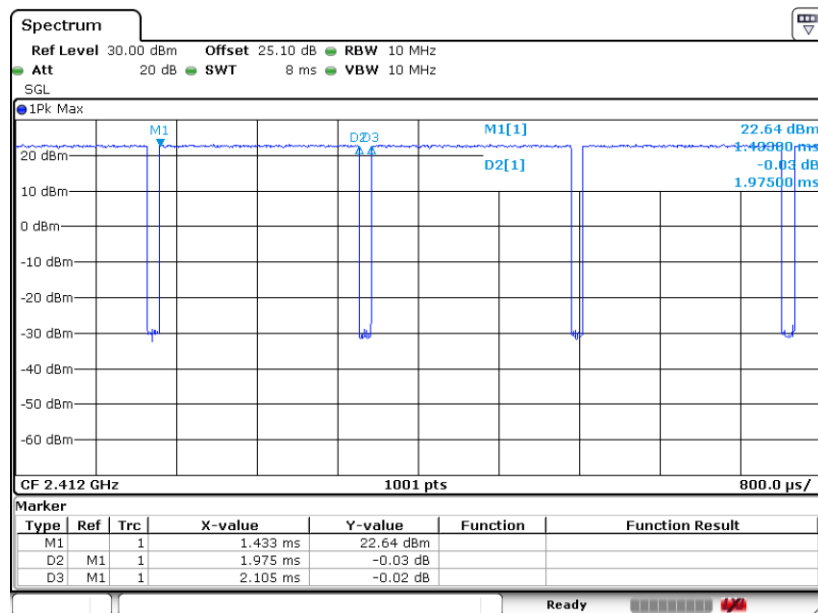
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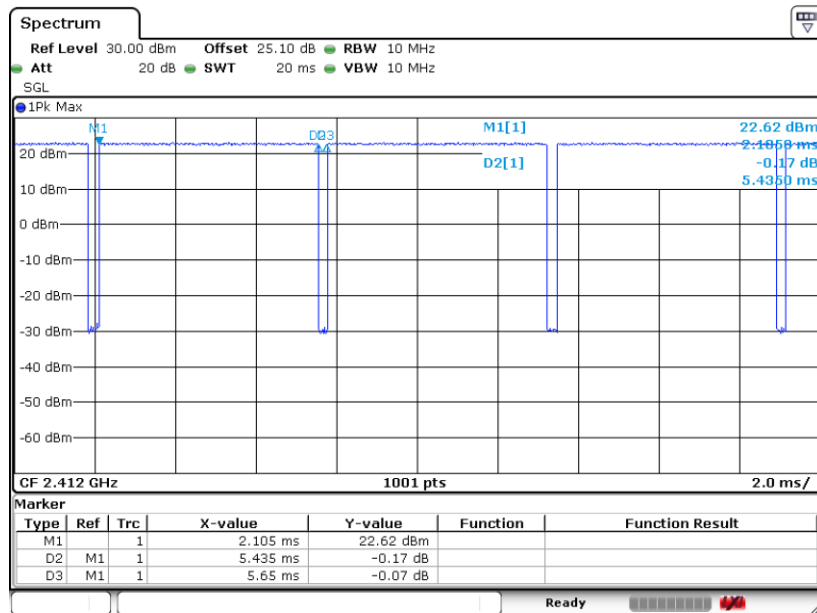
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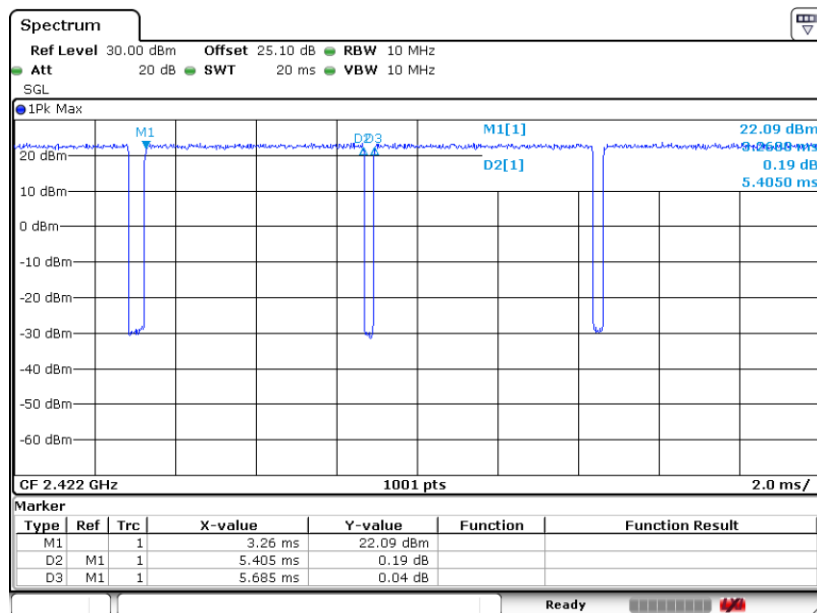


802.11ax HE20



Date: 29.JAN.2020 16:22:06

802.11ax HE40



Date: 29.JAN.2020 16:27:18