



FCC RADIO TEST REPORT

FCC ID : TVE-3417T0695A

Equipment : Network Security Gateway

Brand Name : FORTINET **FORTINET®**

Model Name : FortiWiFi 80F-2R-POExxxxxx,
FORTIWIFI-80F-2R-POExxxxxx, FWF-80F-2R-POExxxxxx,
FortiWiFi 81F-2R-POExxxxxx,
FORTIWIFI-81F-2R-POExxxxxx, FWF-81F-2R-POExxxxxx,
FortiWiFi 80F-2R-3G4G-POExxxxxx,
FORTIWIFI-80F-2R-3G4G-POExxxxxx,
FWF-80F-2R-3G4G-POExxxxxx,
FortiWiFi 81F-2R-3G4G-POExxxxxx,
FORTIWIFI-81F-2R-3G4G-POExxxxxx,
FWF-81F-2R-3G4G-POExxxxxx
(where “x” can be used “A-Z”, or “0-9”, or “-“, or blank for software purposes or marketing purposes only)

Marketing Name : FortiWiFi 80F-2R-POE, FortiWiFi 81F-2R-POE, FortiWiFi 80F-2R-3G4G-POE, FortiWiFi 81F-2R-3G4G-POE

Applicant : Fortinet Inc.
899 KIFER RD
SUNNYVALE CA 94086
UNITED STATES

Manufacturer : Fortinet Inc.
899 KIFER RD
SUNNYVALE CA 94086
UNITED STATES

Standard : FCC Part 15 Subpart C §15.247



The product was received on Feb. 10, 2021 and testing was started from Mar. 12, 2021 and completed on Mar. 30, 2021. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

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



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History of this test report

Report No.	Version	Description	Issued Date
FR121023A	01	Initial issue of report	Apr. 09, 2021
FR121023A	02	Update FCC Designation Number	Apr. 26, 2021

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.247(a)(2)	6dB Bandwidth	Not Required	-
-	2.1049	99% Occupied Bandwidth	Not Required	-
3.1	15.247(b)	Power Output Measurement	Pass	-
-	15.247(e)	Power Spectral Density	Not Required	-
-	15.247(d)	Conducted Band Edges	Not Required	-
		Conducted Spurious Emission	Not Required	-
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	Under limit 0.77 dB at 2483.550 MHz
3.3	15.207	AC Conducted Emission	Pass	Under limit 16.72 dB at 12.751 MHz
3.4	15.203 & 15.247(b)	Antenna Requirement	Pass	-

Note:

1. Not required means after assessing, test items are not necessary to carry out.
2. This is a variant report by adding SKU (Model Name: FWF-81F-2R-3G4G-POE). All the test cases were performed on original report which can be referred to Sporton Report Number FR111826B. Based on the original report, the test cases were verified.

Declaration of Conformity:

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

Comments and Explanations:

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

Reviewed by: Wii Chang

Report Producer: Vivian Hsu

1 General Description

1.1 Product Feature of Equipment Under Test

WCDMA/LTE, Bluetooth - LE, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax, Wi-Fi 5GHz 802.11a/n/ac/ax and GNSS.

Product Specification subjective to this standard		
Antenna Type	WWAN: Dipole Antenna WLAN: <Ant. 1> Dipole Antenna <Ant. 2> Dipole Antenna <Ant. 3> Dipole Antenna Bluetooth - LE: <Ant. 4> PIFA Antenna GPS/Glonass/BDS/Galileo : Dipole Antenna	
Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	Ant. 1: 3.24
		Ant. 2: 3.24
		Ant. 3: 3.24

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

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. TH05-HY (TAF Code: 1190)
Remark	The Conducted test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. CO07-HY, 03CH16-HY

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

FCC designation No.: TW1190 and TW3786

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:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

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

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
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.

Single Mode

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

MIMO Mode

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ax HE20	MCS0
802.11ax HE40	MCS0

Remark: The device have support beamforming function in 802.11 ac/ax mode, the manufacturer defines worst case were Non Beamforming, other test items only test worst case and documented.

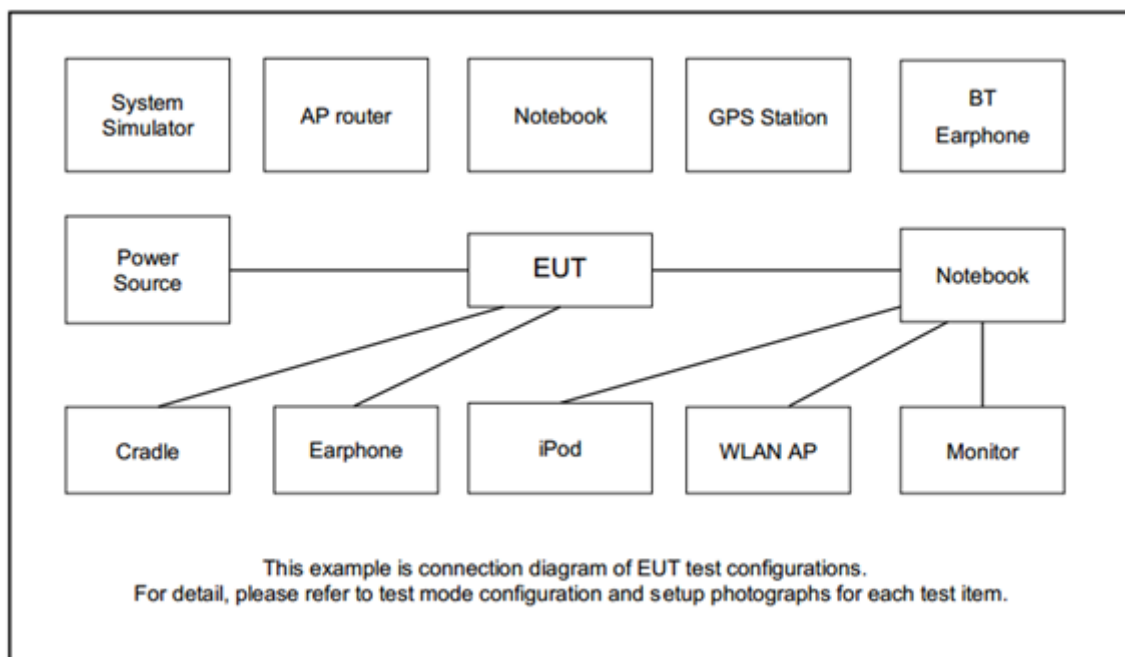
Test Cases	
AC Conducted Emission	Mode 1 : LTE Band 41 Link + Bluetooth Link + WLAN (2.4GHz) Link + Adapter *2 Mode 2 : LTE Band 41 Idle + Bluetooth Idle + WLAN (2.4GHz) Idle + Adapter *2
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.	

Ch. #	2400-2483.5 MHz		
	802.11b	802.11n HT20	802.11n HT40
Low	-	-	-
Middle	06	06	-
High	-	-	09

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

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	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude 5310	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Smart Phone	ACER	T02	FCC Doc	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “QSPR Version5.0-00196” 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.

3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

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

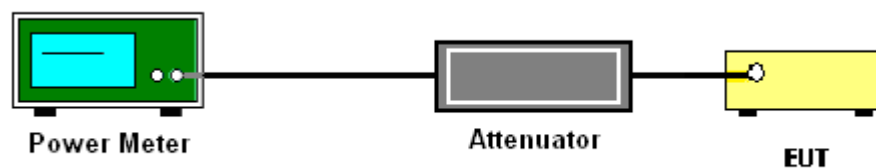
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. For Peak Power, the testing follows ANSI C63.10 Section 11.9.1.3 PKPM1
2. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
3. 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.
4. Set the maximum power setting and enable the EUT to transmit continuously.
5. Measure the conducted output power and record the results in the test report.
6. 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 Peak Output Power

Please refer to Appendix A.

3.1.6 Test Result of Average Output Power (Reporting Only)

Please refer to Appendix A.



3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device 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

3.2.2 Measuring Instruments

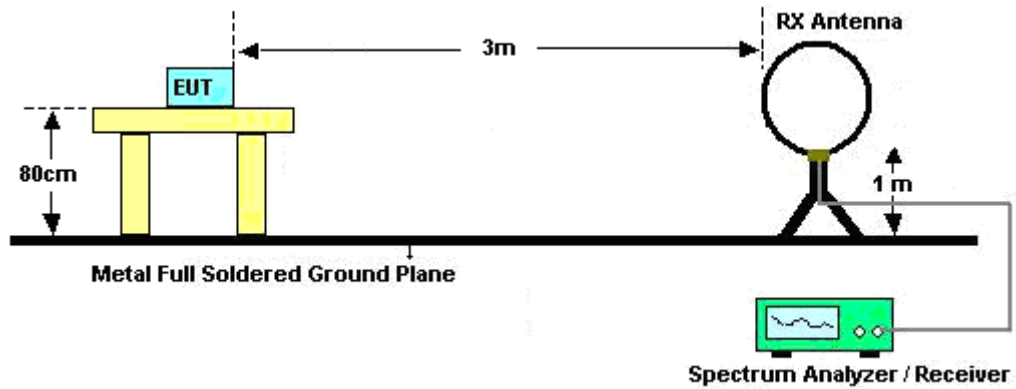
See list of measuring equipment of this test report.

3.2.3 Test Procedures

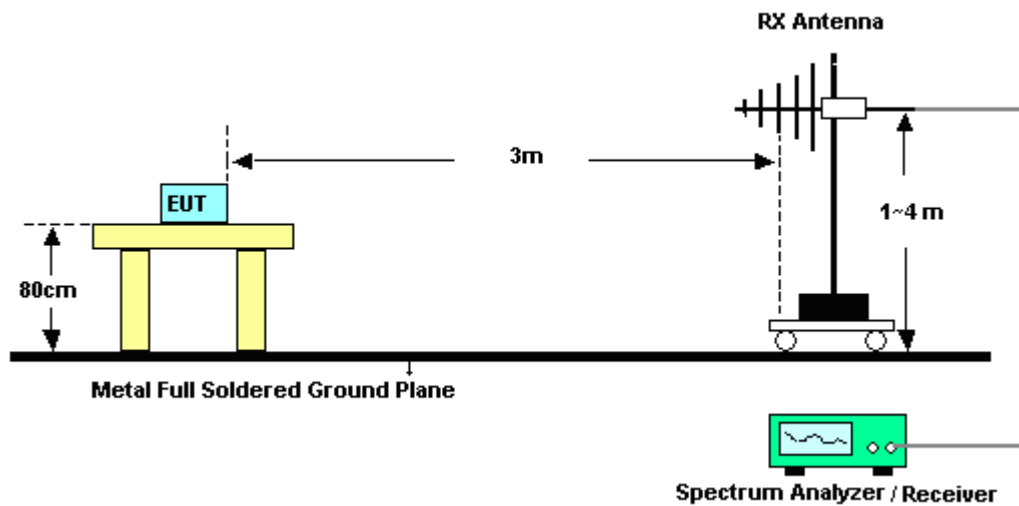
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz 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 1 GHz, 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 1 GHz, the emission level of the EUT in peak mode was 20 dB 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= 3 MHz 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.

3.2.4 Test Setup

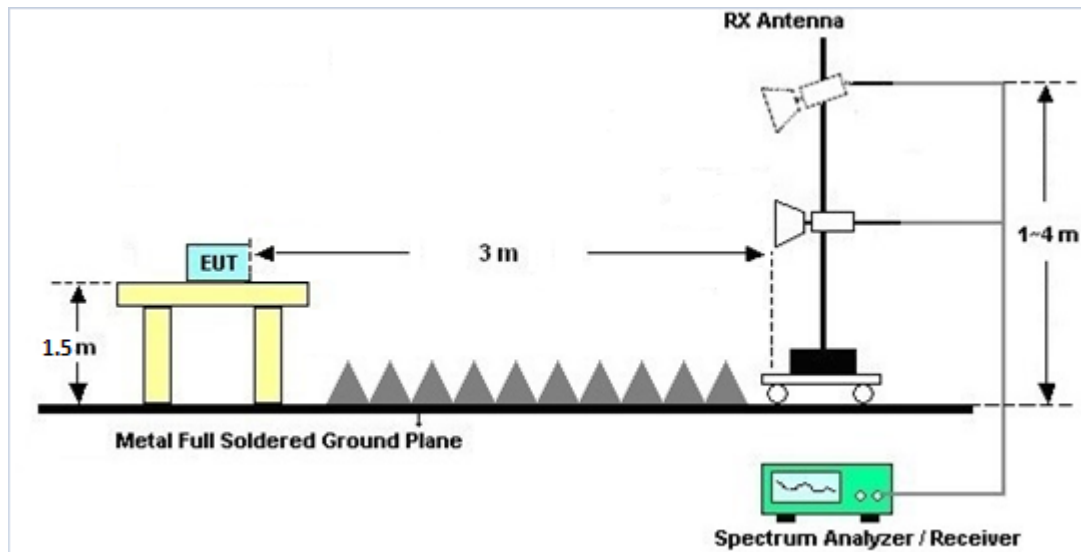
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated test above 1GHz



3.2.5 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.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.2.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.3 AC Conducted Emission Measurement

3.3.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

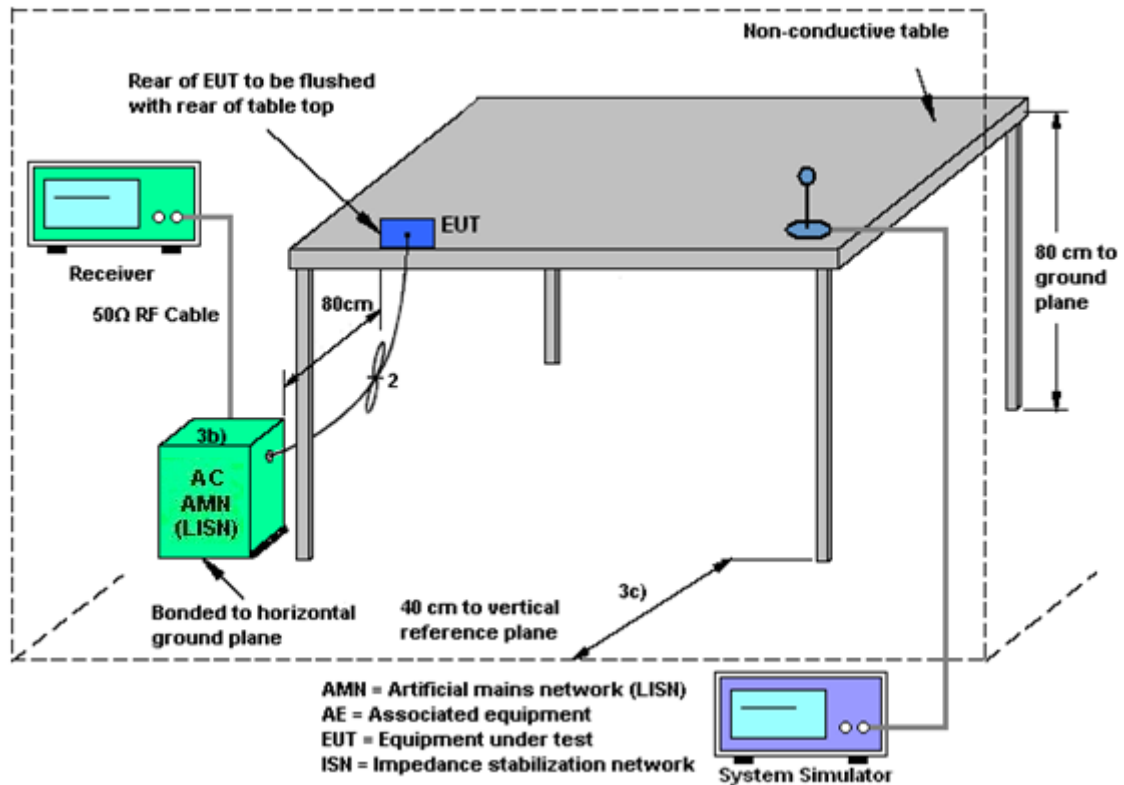
3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

3.3.4 Test Setup



3.3.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.4 Antenna Requirements

3.4.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.4.3 Antenna Gain

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



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jul. 14, 2020	Mar. 12, 2021~ Mar. 29, 2021	Jul. 13, 2021	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00802N1D01 N-06	47020 & 06	30MHz to 1GHz	Oct. 11, 2020	Mar. 12, 2021~ Mar. 29, 2021	Oct. 10, 2021	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1G	Sep. 30, 2020	Mar. 12, 2021~ Mar. 29, 2021	Sep. 29, 2021	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-152 2	1G~18GHz	Sep. 29, 2020	Mar. 12, 2021~ Mar. 29, 2021	Sep. 28, 2021	Radiation (03CH16-HY)
Amplifier	EMCI	EMC051845S E	980729	1-18GHz	Jul. 10, 2020	Mar. 12, 2021~ Mar. 29, 2021	Jul. 09, 2021	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 576	18GHz ~40GHz	May 22, 2020	Mar. 12, 2021~ Mar. 29, 2021	May 21, 2021	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY532702 64	1GHz~26.5GHz	Dec. 10, 2020	Mar. 12, 2021~ Mar. 29, 2021	Dec. 09, 2021	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A	MY590530 12	3Hz~26.5GHz	Nov. 18, 2020	Mar. 12, 2021~ Mar. 29, 2021	Nov. 17, 2021	Radiation (03CH16-HY)
Spectrum Analyzer	Agilent	N9010A	MY534701 18	10Hz~44GHz	Jan. 15, 2021	Mar. 12, 2021~ Mar. 29, 2021	Jan. 14, 2022	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11680/ 4PE	NA	Aug. 29, 2020	Mar. 12, 2021~ Mar. 29, 2021	Aug. 28, 2021	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11688/ 4PE	NA	Aug. 29, 2020	Mar. 12, 2021~ Mar. 29, 2021	Aug. 28, 2021	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	EC-A5-300 -5757	NA	Aug. 29, 2020	Mar. 12, 2021~ Mar. 29, 2021	Aug. 28, 2021	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Mar. 12, 2021~ Mar. 29, 2021	N/A	Radiation (03CH16-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Mar. 12, 2021~ Mar. 29, 2021	N/A	Radiation (03CH16-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Mar. 12, 2021~ Mar. 29, 2021	N/A	Radiation (03CH16-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Mar. 12, 2021~ Mar. 29, 2021	N/A	Radiation (03CH16-HY)
Hygrometer	Testo	608-H1	34913904	N/A	Jul. 27, 2020	Mar. 12, 2021	Jul. 26, 2021	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054S NO10	10MHz~6GHz	Dec. 09, 2020	Mar. 12, 2021	Dec. 08, 2021	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz ~ 40GHz	Jul. 22, 2020	Mar. 12, 2021	Jul. 21, 2021	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2020	Mar. 12, 2021	Mar. 16, 2021	Conducted (TH05-HY)
Power Meter	Anritsu	ML2495A	1036004	N/A	Aug. 12, 2020	Mar. 12, 2021	Aug. 11, 2021	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GH z	Aug. 12, 2020	Mar. 12, 2021	Aug. 11, 2021	Conducted (TH05-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Mar. 30, 2021	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Mar. 30, 2021	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-FN	9561-FN00373	9kHz-200MHz	Nov. 02, 2020	Mar. 30, 2021	Nov. 01, 2021	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	N/A	Mar. 30, 2021	N/A	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Feb. 01, 2021	Mar. 30, 2021	Jan. 31, 2022	Conduction (CO07-HY)
Four-Line V-Network	TESEQ	NNB 52	36122	N/A	Feb. 01, 2021	Mar. 30, 2021	Jan. 31, 2022	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 11, 2020	Mar. 30, 2021	Sep. 10, 2021	Conduction (CO07-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.2
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

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

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

Test Engineer:	Hank Hsu	Temperature:	21~25	°C
Test Date:	2021/3/12	Relative Humidity:	51~54	%

TEST RESULTS DATA
Average Output Power

2.4GHz Band Single Antenna																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant2	Ant1	SUM	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	
11b	1Mbps	1	1	2412	20.80	-		30.00	-	3.24	-	24.04	-	36.00	-	Pass
11b	1Mbps	1	6	2437	20.50	-		30.00	-	3.24	-	23.74	-	36.00	-	Pass
11b	1Mbps	1	11	2462	20.40	-		30.00	-	3.24	-	23.64	-	36.00	-	Pass
11g	6Mbps	1	1	2412	18.60	-		30.00	-	3.24	-	21.84	-	36.00	-	Pass
11g	6Mbps	1	6	2437	16.00	-		30.00	-	3.24	-	19.24	-	36.00	-	Pass
11g	6Mbps	1	11	2462	16.20	-		30.00	-	3.24	-	19.44	-	36.00	-	Pass
HT20	MCS0	1	1	2412	16.20	-		30.00	-	3.24	-	19.44	-	36.00	-	Pass
HT20	MCS0	1	6	2437	15.90	-		30.00	-	3.24	-	19.14	-	36.00	-	Pass
HT20	MCS0	1	11	2462	16.10	-		30.00	-	3.24	-	19.34	-	36.00	-	Pass
HT40	MCS0	1	3	2422	17.30	-		30.00	-	3.24	-	20.54	-	36.00	-	Pass
HT40	MCS0	1	6	2437	15.50	-		30.00	-	3.24	-	18.74	-	36.00	-	Pass
HT40	MCS0	1	8	2447	13.60	-		30.00	-	3.24	-	16.84	-	36.00	-	Pass
HT40	MCS0	1	9	2452	8.80	-		30.00	-	3.24	-	12.04	-	36.00	-	Pass

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

TEST RESULTS DATA
Peak Output Power

2.4GHz Band Single Antenna																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant2	Ant1	SUM	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	
11b	1Mbps	1	1	2412	22.92	-		30.00	-	3.24	-	26.16	-	36.00	-	Pass
11b	1Mbps	1	6	2437	22.75	-		30.00	-	3.24	-	25.99	-	36.00	-	Pass
11b	1Mbps	1	11	2462	22.81	-		30.00	-	3.24	-	26.05	-	36.00	-	Pass
11g	6Mbps	1	1	2412	22.49	-		30.00	-	3.24	-	25.73	-	36.00	-	Pass
11g	6Mbps	1	6	2437	20.28	-		30.00	-	3.24	-	23.52	-	36.00	-	Pass
11g	6Mbps	1	11	2462	20.52	-		30.00	-	3.24	-	23.76	-	36.00	-	Pass
HT20	MCS0	1	1	2412	20.63	-		30.00	-	3.24	-	23.87	-	36.00	-	Pass
HT20	MCS0	1	6	2437	20.31	-		30.00	-	3.24	-	23.55	-	36.00	-	Pass
HT20	MCS0	1	11	2462	20.41	-		30.00	-	3.24	-	23.65	-	36.00	-	Pass
HT40	MCS0	1	3	2422	21.62	-		30.00	-	3.24	-	24.86	-	36.00	-	Pass
HT40	MCS0	1	6	2437	20.16	-		30.00	-	3.24	-	23.40	-	36.00	-	Pass
HT40	MCS0	1	8	2447	18.18	-		30.00	-	3.24	-	21.42	-	36.00	-	Pass
HT40	MCS0	1	9	2452	13.49	-		30.00	-	3.24	-	16.73	-	36.00	-	Pass

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

<CDD Mode>

TEST RESULTS DATA
Peak Output Power

2.4GHz Band MIMO																
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant3	SUM	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	
11b	1Mbps	2	1	2412	26.83	27.01	29.93	30.00		3.24		33.17		36.00		Pass
11b	1Mbps	2	6	2437	26.80	26.64	29.73	30.00		3.24		32.97		36.00		Pass
11b	1Mbps	2	11	2462	25.19	25.04	28.13	30.00		3.24		31.37		36.00		Pass
11g	6Mbps	2	1	2412	26.47	26.21	29.35	30.00		3.24		32.59		36.00		Pass
11g	6Mbps	2	6	2437	26.76	26.63	29.71	30.00		3.24		32.95		36.00		Pass
11g	6Mbps	2	10	2457	27.00	26.85	29.94	30.00		3.24		33.18		36.00		Pass
11g	6Mbps	2	11	2462	23.48	23.30	26.40	30.00		3.24		29.64		36.00		Pass
HT20	MCS0	2	1	2412	23.68	23.36	26.53	30.00		3.24		29.77		36.00		Pass
HT20	MCS0	2	2	2417	26.81	26.81	29.82	30.00		3.24		33.06		36.00		Pass
HT20	MCS0	2	6	2437	26.42	26.02	29.23	30.00		3.24		32.47		36.00		Pass
HT20	MCS0	2	9	2452	26.74	26.56	29.66	30.00		3.24		32.90		36.00		Pass
HT20	MCS0	2	10	2457	25.91	25.85	28.89	30.00		3.24		32.13		36.00		Pass
HT20	MCS0	2	11	2462	24.72	24.61	27.68	30.00		3.24		30.92		36.00		Pass
HT40	MCS0	2	3	2422	24.09	23.58	26.85	30.00		3.24		30.09		36.00		Pass
HT40	MCS0	2	6	2437	21.95	21.69	24.83	30.00		3.24		28.07		36.00		Pass
HT40	MCS0	2	9	2452	21.71	21.56	24.65	30.00		3.24		27.89		36.00		Pass
VHT20	MCS0	2	1	2412	23.78	23.46	26.63	30.00		3.24		29.87		36.00		Pass
VHT20	MCS0	2	2	2417	26.71	26.71	29.72	30.00		3.24		32.96		36.00		Pass
VHT20	MCS0	2	6	2437	25.82	25.42	28.63	30.00		3.24		31.87		36.00		Pass
VHT20	MCS0	2	9	2452	25.85	25.66	28.77	30.00		3.24		32.01		36.00		Pass
VHT20	MCS0	2	10	2457	25.31	25.25	28.29	30.00		3.24		31.53		36.00		Pass
VHT20	MCS0	2	11	2462	24.62	24.51	27.58	30.00		3.24		30.82		36.00		Pass
VHT40	MCS0	2	3	2422	23.99	23.48	26.75	30.00		3.24		29.99		36.00		Pass
VHT40	MCS0	2	6	2437	21.85	21.59	24.73	30.00		3.24		27.97		36.00		Pass
VHT40	MCS0	2	9	2452	21.61	21.46	24.55	30.00		3.24		27.79		36.00		Pass

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

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO																
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant3	SUM	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	
11b	1Mbps	2	1	2412	25.20	25.00	28.11	30.00		3.24		31.35		36.00		Pass
11b	1Mbps	2	6	2437	25.40	25.40	28.41	30.00		3.24		31.65		36.00		Pass
11b	1Mbps	2	11	2462	23.50	23.30	26.41	30.00		3.24		29.65		36.00		Pass
11g	6Mbps	2	1	2412	21.50	21.30	24.41	30.00		3.24		27.65		36.00		Pass
11g	6Mbps	2	6	2437	22.80	22.70	25.76	30.00		3.24		29.00		36.00		Pass
11g	6Mbps	2	10	2457	22.40	22.30	25.36	30.00		3.24		28.60		36.00		Pass
11g	6Mbps	2	11	2462	18.00	17.80	20.91	30.00		3.24		24.15		36.00		Pass
HT20	MCS0	2	1	2412	17.90	17.80	20.86	30.00		3.24		24.10		36.00		Pass
HT20	MCS0	2	2	2417	22.30	22.30	25.31	30.00		3.24		28.55		36.00		Pass
HT20	MCS0	2	6	2437	22.30	22.20	25.26	30.00		3.24		28.50		36.00		Pass
HT20	MCS0	2	9	2452	22.20	22.00	25.11	30.00		3.24		28.35		36.00		Pass
HT20	MCS0	2	10	2457	19.40	19.20	22.31	30.00		3.24		25.55		36.00		Pass
HT20	MCS0	2	11	2462	18.90	18.50	21.71	30.00		3.24		24.95		36.00		Pass
HT40	MCS0	2	3	2422	17.10	16.90	20.01	30.00		3.24		23.25		36.00		Pass
HT40	MCS0	2	6	2437	15.60	15.50	18.56	30.00		3.24		21.80		36.00		Pass
HT40	MCS0	2	9	2452	14.90	14.80	17.86	30.00		3.24		21.10		36.00		Pass
VHT20	MCS0	2	1	2412	17.80	17.70	20.76	30.00		3.24		24.00		36.00		Pass
VHT20	MCS0	2	2	2417	22.20	22.20	25.21	30.00		3.24		28.45		36.00		Pass
VHT20	MCS0	2	6	2437	22.20	22.10	25.16	30.00		3.24		28.40		36.00		Pass
VHT20	MCS0	2	9	2452	22.10	21.90	25.01	30.00		3.24		28.25		36.00		Pass
VHT20	MCS0	2	10	2457	19.30	19.10	22.21	30.00		3.24		25.45		36.00		Pass
VHT20	MCS0	2	11	2462	18.80	18.40	21.61	30.00		3.24		24.85		36.00		Pass
VHT40	MCS0	2	3	2422	17.00	16.80	19.91	30.00		3.24		23.15		36.00		Pass
VHT40	MCS0	2	6	2437	15.50	15.40	18.46	30.00		3.24		21.70		36.00		Pass
VHT40	MCS0	2	9	2452	14.80	14.70	17.76	30.00		3.24		21.00		36.00		Pass

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

TEST RESULTS DATA
Peak Output Power

2.4GHz Band MIMO																	
Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	RU Config	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
						Ant1	Ant3	SUM	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	
HE20	MCS0	2	1	2412	Full	24.18	23.86	27.03	30.00		3.24		30.27		36.00		Pass
HE20	MCS0	2	2	2417	Full	26.91	26.91	29.92	30.00		3.24		33.16		36.00		Pass
HE20	MCS0	2	6	2437	Full	26.92	26.52	29.73	30.00		3.24		32.97		36.00		Pass
HE20	MCS0	2	9	2452	Full	26.65	26.46	29.57	30.00		3.24		32.81		36.00		Pass
HE20	MCS0	2	10	2457	Full	25.51	25.45	28.49	30.00		3.24		31.73		36.00		Pass
HE20	MCS0	2	11	2462	Full	24.82	24.71	27.78	30.00		3.24		31.02		36.00		Pass
HE40	MCS0	2	3	2422	Full	24.19	23.68	26.95	30.00		3.24		30.19		36.00		Pass
HE40	MCS0	2	6	2437	Full	22.05	21.79	24.93	30.00		3.24		28.17		36.00		Pass
HE40	MCS0	2	9	2452	Full	21.81	21.66	24.75	30.00		3.24		27.99		36.00		Pass

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

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO																	
Mod.	Data Rate	N _{Tx}	CH.	Freq. (MHz)	RU Config	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
						Ant1	Ant3	SUM	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	
HE20	MCS0	2	1	2412	Full	18.00	17.90	20.96	30.00		3.24		24.20		36.00		Pass
HE20	MCS0	2	2	2417	Full	22.40	22.40	25.41	30.00		3.24		28.65		36.00		Pass
HE20	MCS0	2	6	2437	Full	22.40	22.30	25.36	30.00		3.24		28.60		36.00		Pass
HE20	MCS0	2	9	2452	Full	22.20	22.10	25.16	30.00		3.24		28.40		36.00		Pass
HE20	MCS0	2	10	2457	Full	19.50	19.30	22.41	30.00		3.24		25.65		36.00		Pass
HE20	MCS0	2	11	2462	Full	19.00	18.60	21.81	30.00		3.24		25.05		36.00		Pass
HE40	MCS0	2	3	2422	Full	17.20	17.00	20.11	30.00		3.24		23.35		36.00		Pass
HE40	MCS0	2	6	2437	Full	15.70	15.60	18.66	30.00		3.24		21.90		36.00		Pass
HE40	MCS0	2	9	2452	Full	15.00	14.90	17.96	30.00		3.24		21.20		36.00		Pass

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

<TXBF Mode>

TEST RESULTS DATA
Peak Output Power

2.4GHz Band MIMO																
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant3	SUM	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	
VHT20	MCS0	2	1	2412	23.88	23.56	26.73	29.75		6.25		32.98		36.00		Pass
VHT20	MCS0	2	2	2417	26.51	26.51	29.52	29.75		6.25		35.77		36.00		Pass
VHT20	MCS0	2	6	2437	26.32	25.92	29.13	29.75		6.25		35.39		36.00		Pass
VHT20	MCS0	2	9	2452	26.45	26.26	29.37	29.75		6.25		35.62		36.00		Pass
VHT20	MCS0	2	10	2457	25.21	25.15	28.19	29.75		6.25		34.44		36.00		Pass
VHT20	MCS0	2	11	2462	24.52	24.41	27.48	29.75		6.25		33.73		36.00		Pass
VHT40	MCS0	2	3	2422	23.89	23.38	26.65	29.75		6.25		32.90		36.00		Pass
VHT40	MCS0	2	6	2437	21.75	21.49	24.63	29.75		6.25		30.88		36.00		Pass
VHT40	MCS0	2	9	2452	21.51	21.36	24.45	29.75		6.25		30.70		36.00		Pass

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

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant3	SUM	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	
VHT20	MCS0	2	1	2412	17.70	17.60	20.66	29.75		6.25		26.91		36.00		Pass
VHT20	MCS0	2	2	2417	22.10	22.10	25.11	29.75		6.25		31.36		36.00		Pass
VHT20	MCS0	2	6	2437	22.10	22.00	25.06	29.75		6.25		31.31		36.00		Pass
VHT20	MCS0	2	9	2452	22.00	21.80	24.91	29.75		6.25		31.16		36.00		Pass
VHT20	MCS0	2	10	2457	19.20	19.00	22.11	29.75		6.25		28.36		36.00		Pass
VHT20	MCS0	2	11	2462	18.70	18.30	21.51	29.75		6.25		27.77		36.00		Pass
VHT40	MCS0	2	3	2422	16.90	16.70	19.81	29.75		6.25		26.06		36.00		Pass
VHT40	MCS0	2	6	2437	15.40	15.30	18.36	29.75		6.25		24.61		36.00		Pass
VHT40	MCS0	2	9	2452	14.70	14.60	17.66	29.75		6.25		23.91		36.00		Pass

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

TEST RESULTS DATA
Peak Output Power

2.4GHz Band MIMO																	
Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	RU Config	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
						Ant1	Ant3	SUM	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	
HE20	MCS0	2	1	2412	Full	24.08	23.76	26.93	29.75		6.25		33.18		36.00		Pass
HE20	MCS0	2	2	2417	Full	26.41	26.41	29.42	29.75		6.25		35.67		36.00		Pass
HE20	MCS0	2	6	2437	Full	26.63	26.22	29.44	29.75		6.25		35.69		36.00		Pass
HE20	MCS0	2	9	2452	Full	26.75	26.52	29.65	29.75		6.25		35.90		36.00		Pass
HE20	MCS0	2	10	2457	Full	25.41	25.35	28.39	29.75		6.25		34.64		36.00		Pass
HE20	MCS0	2	11	2462	Full	24.72	24.61	27.68	29.75		6.25		33.93		36.00		Pass
HE40	MCS0	2	3	2422	Full	24.09	23.58	26.85	29.75		6.25		33.10		36.00		Pass
HE40	MCS0	2	6	2437	Full	21.95	21.69	24.83	29.75		6.25		31.08		36.00		Pass
HE40	MCS0	2	9	2452	Full	21.71	21.56	24.65	29.75		6.25		30.90		36.00		Pass

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

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO																	
Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	RU Config	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
						Ant1	Ant3	SUM	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	Ant1	Ant3	
HE20	MCS0	2	1	2412	Full	17.90	17.80	20.86	29.75		6.25		27.11		36.00		Pass
HE20	MCS0	2	2	2417	Full	22.30	22.30	25.31	29.75		6.25		31.56		36.00		Pass
HE20	MCS0	2	6	2437	Full	22.30	22.20	25.26	29.75		6.25		31.51		36.00		Pass
HE20	MCS0	2	9	2452	Full	22.10	22.00	25.06	29.75		6.25		31.31		36.00		Pass
HE20	MCS0	2	10	2457	Full	19.40	19.20	22.31	29.75		6.25		28.56		36.00		Pass
HE20	MCS0	2	11	2462	Full	18.90	18.50	21.71	29.75		6.25		27.97		36.00		Pass
HE40	MCS0	2	3	2422	Full	17.10	16.90	20.01	29.75		6.25		26.26		36.00		Pass
HE40	MCS0	2	6	2437	Full	15.60	15.50	18.56	29.75		6.25		24.81		36.00		Pass
HE40	MCS0	2	9	2452	Full	14.90	14.80	17.86	29.75		6.25		24.11		36.00		Pass

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



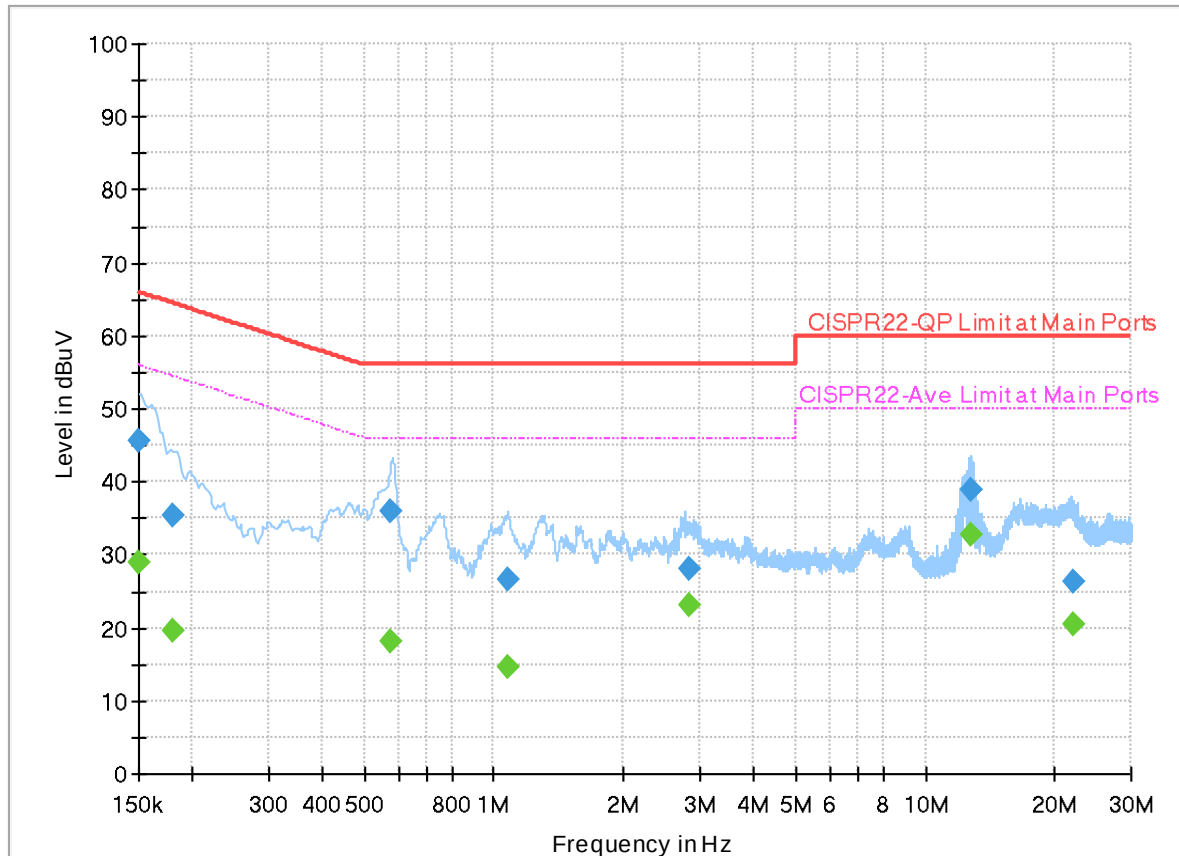
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Eric Jeng	Temperature :	23~25℃
		Relative Humidity :	58~62%

EUT Information

Report NO : 121023
Test Mode : Mode 2
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



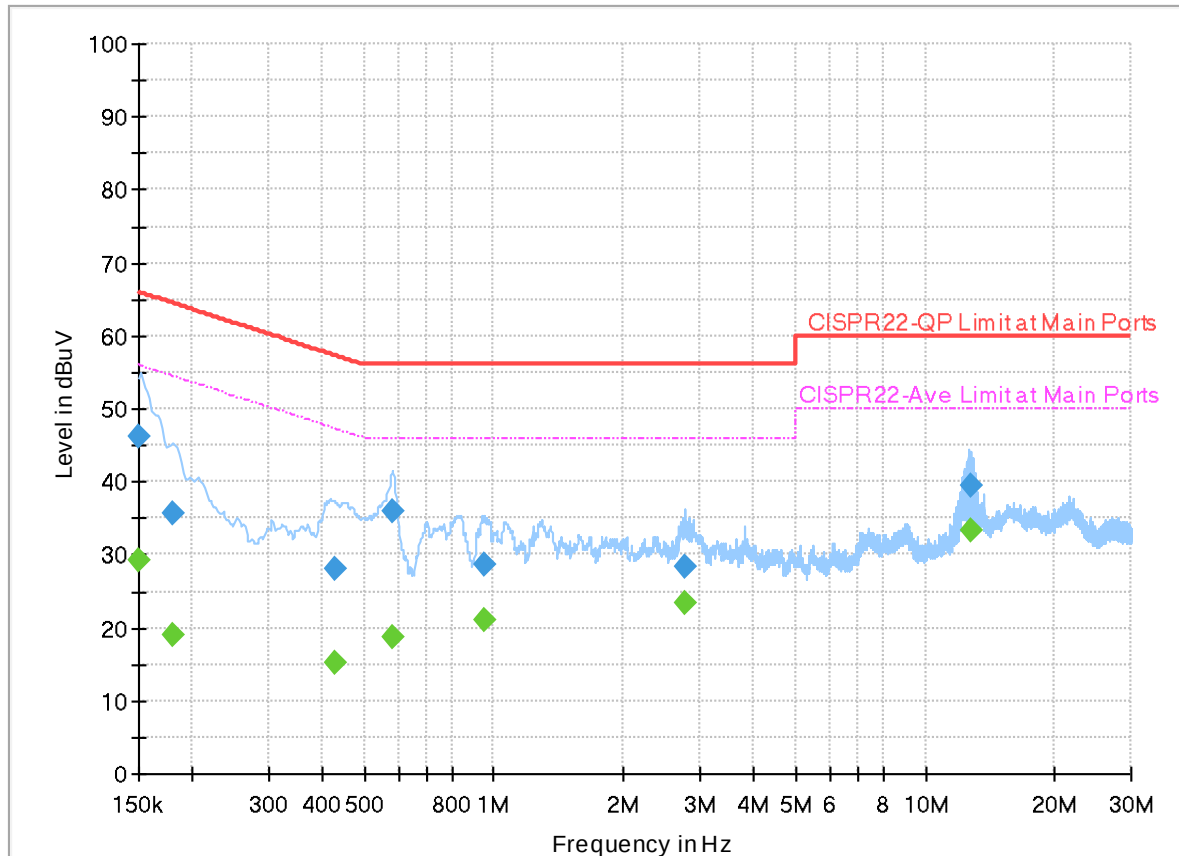
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	29.09	56.00	26.91	L1	OFF	20.0
0.150000	45.55	---	66.00	20.45	L1	OFF	20.0
0.179970	---	19.64	54.49	34.85	L1	OFF	20.0
0.179970	35.51	---	64.49	28.98	L1	OFF	20.0
0.577500	---	18.06	46.00	27.94	L1	OFF	20.0
0.577500	36.10	---	56.00	19.90	L1	OFF	20.0
1.080330	---	14.75	46.00	31.25	L1	OFF	20.0
1.080330	26.68	---	56.00	29.32	L1	OFF	20.0
2.840370	---	22.98	46.00	23.02	L1	OFF	20.1
2.840370	28.12	---	56.00	27.88	L1	OFF	20.1
12.757920	---	32.64	50.00	17.36	L1	OFF	20.2
12.757920	39.02	---	60.00	20.98	L1	OFF	20.2
21.961500	---	20.52	50.00	29.48	L1	OFF	20.2
21.961500	26.38	---	60.00	33.62	L1	OFF	20.2

EUT Information

Report NO : 121023
Test Mode : Mode 2
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	29.33	56.00	26.67	N	OFF	20.0
0.150000	46.27	---	66.00	19.73	N	OFF	20.0
0.179250	---	19.05	54.52	35.47	N	OFF	20.0
0.179250	35.74	---	64.52	28.78	N	OFF	20.0
0.425580	---	15.14	47.34	32.20	N	OFF	20.0
0.425580	28.20	---	57.34	29.14	N	OFF	20.0
0.585330	---	18.77	46.00	27.23	N	OFF	20.0
0.585330	35.84	---	56.00	20.16	N	OFF	20.0
0.946500	---	21.05	46.00	24.95	N	OFF	20.0
0.946500	28.60	---	56.00	27.40	N	OFF	20.0
2.778180	---	23.25	46.00	22.75	N	OFF	20.1
2.778180	28.25	---	56.00	27.75	N	OFF	20.1
12.750810	---	33.28	50.00	16.72	N	OFF	20.2
12.750810	39.39	---	60.00	20.61	N	OFF	20.2



Appendix C. Radiated Spurious Emission

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

2.4GHz 2400~2483.5MHz

WIFI 802.11b (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.
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 06 2437MHz		2329.6	56.58	-17.42	74	40.67	27.84	18.37	30.3	300	8	P	H
		2352.98	44.45	-9.55	54	28.55	27.78	18.41	30.29	300	8	A	H
	*	2437	108.65	-	-	92.92	27.43	18.57	30.27	300	8	P	H
	*	2437	105.44	-	-	89.71	27.43	18.57	30.27	300	8	A	H
		2487.05	57.21	-16.79	74	41.39	27.4	18.67	30.25	300	8	P	H
		2484.95	46.63	-7.37	54	30.81	27.4	18.67	30.25	300	8	A	H
		2310.14	56.62	-17.38	74	40.71	27.88	18.33	30.3	100	118	P	V
		2389.94	44.89	-9.11	54	29.13	27.56	18.48	30.28	100	118	A	V
	*	2437	115.43	-	-	99.7	27.43	18.57	30.27	100	118	P	V
	*	2437	112.24	-	-	96.51	27.43	18.57	30.27	100	118	A	V
		2489.57	60.63	-13.37	74	44.81	27.4	18.67	30.25	100	118	P	V
		2484.88	53	-1	54	37.18	27.4	18.67	30.25	100	118	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 802.11b (Harmonic @ 3m)**

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 06 2437MHz		4874	39.15	-34.85	74	50.01	31.15	13.36	55.37	100	0	P	H
		7311	47.05	-26.95	74	50.73	36.42	16.16	56.26	100	0	P	H
		12185	52.19	-21.81	74	47.84	38.83	20.58	55.06	201	128	P	H
		12185	45.92	-8.08	54	41.57	38.83	20.58	55.06	201	128	A	H
		4874	40.72	-33.28	74	51.58	31.15	13.36	55.37	100	0	P	V
		7311	49.72	-24.28	74	53.4	36.42	16.16	56.26	100	0	P	V
		12185	52.82	-21.18	74	48.47	38.83	20.58	55.06	305	225	P	V
		12185	47.37	-6.63	54	43.02	38.83	20.58	55.06	305	225	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 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 06 2437MHz		2354.8	57.14	-16.86	74	41.24	27.77	18.42	30.29	304	7	P	H
		2356.62	45.65	-8.35	54	29.76	27.76	18.42	30.29	304	7	A	H
	*	2437	105.55	-	-	89.82	27.43	18.57	30.27	304	7	P	H
	*	2437	97.41	-	-	81.68	27.43	18.57	30.27	304	7	A	H
		2487.47	57.67	-16.33	74	41.85	27.4	18.67	30.25	304	7	P	H
		2484.53	48	-6	54	32.19	27.4	18.66	30.25	304	7	A	H
		2319.1	56.32	-17.68	74	40.41	27.86	18.35	30.3	100	127	P	V
		2388.82	45.83	-8.17	54	30.06	27.57	18.48	30.28	100	127	A	V
	*	2437	110.79	-	-	95.06	27.43	18.57	30.27	100	127	P	V
	*	2437	102.7	-	-	86.97	27.43	18.57	30.27	100	127	A	V
		2486.14	61.81	-12.19	74	45.99	27.4	18.67	30.25	100	127	P	V
		2483.62	53.2	-0.8	54	37.39	27.4	18.66	30.25	100	127	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 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 06 2437MHz		4874	39.75	-34.25	74	50.61	31.15	13.36	55.37	100	0	P	H
		7311	45.43	-28.57	74	49.11	36.42	16.16	56.26	100	0	P	H
													H
													H
		4874	39.07	-34.93	74	49.93	31.15	13.36	55.37	100	0	P	V
		7311	45.8	-28.2	74	49.48	36.42	16.16	56.26	100	0	P	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 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 09 2452MHz		2353.96	57.13	-16.87	74	41.23	27.78	18.41	30.29	294	7	P	H
		2356.48	46.56	-7.44	54	30.67	27.76	18.42	30.29	294	7	A	H
	*	2452	95.69	-	-	79.95	27.4	18.6	30.26	294	7	P	H
	*	2452	87.6	-	-	71.86	27.4	18.6	30.26	294	7	A	H
		2483.62	59.19	-14.81	74	43.38	27.4	18.66	30.25	294	7	P	H
		2483.5	48.97	-5.03	54	33.16	27.4	18.66	30.25	294	7	A	H
		2337.44	56.46	-17.54	74	40.55	27.83	18.38	30.3	100	114	P	V
		2344.58	46.71	-7.29	54	30.79	27.81	18.4	30.29	100	114	A	V
	*	2452	101.04	-	-	85.3	27.4	18.6	30.26	100	114	P	V
	*	2452	93.1	-	-	77.36	27.4	18.6	30.26	100	114	A	V
		2484.53	61.81	-12.19	74	46	27.4	18.66	30.25	100	114	P	V
		2483.55	53.23	-0.77	54	37.42	27.4	18.66	30.25	100	114	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 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 09 2452MHz		4904	38.72	-35.28	74	49.62	31.12	13.36	55.38	100	0	P	H
		7356	45.12	-28.88	74	48.62	36.49	16.28	56.27	100	0	P	H
													H
													H
		4904	38.56	-35.44	74	49.46	31.12	13.36	55.38	100	0	P	V
		7356	45.35	-28.65	74	48.85	36.49	16.28	56.27	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 802.11n HT40 (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT40 LF		92.08	30.04	-13.46	43.5	46.23	14.98	1.47	32.64	-	-	P	H
		222.06	25.13	-20.87	46	39.85	15.63	2.48	32.83	-	-	P	H
		333.61	35.33	-10.67	46	44.74	20.01	3.07	32.49	-	-	P	H
		457.77	41.44	-4.56	46	46.94	23.42	3.62	32.54	222	306	Q	H
		662.44	31.66	-14.34	46	33.3	26.43	4.43	32.5	-	-	P	H
		874.87	32.07	-13.93	46	30.31	29.11	5.18	32.53	-	-	P	H
													H
													H
													H
													H
													H
													H
		59.1	30.06	-9.94	40	49.82	11.93	1.11	32.8	100	51	Q	V
		183.26	32	-11.5	43.5	47.58	15.05	2.23	32.86	-	-	P	V
		460.68	36.52	-9.48	46	41.98	23.46	3.63	32.55	104	329	Q	V
		614.91	34.73	-11.27	46	37.16	25.93	4.27	32.63	-	-	P	V
		770.11	37.45	-8.55	46	37.26	28.12	4.79	32.72	-	-	P	V
		898.15	31.84	-14.16	46	29.83	29.15	5.29	32.43	-	-	P	V
													V
													V
												V	
												V	
												V	
												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant. 1+3	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 06 2437MHz		2386.16	56.88	-17.12	74	41.11	27.58	8.55	30.28	100	336	P	H
		2345.98	47.15	-6.85	54	31.23	27.81	8.48	30.29	100	336	A	H
	*	2437	115.63	-	-	99.9	27.43	8.65	30.27	100	336	P	H
	*	2437	112.57	-	-	96.84	27.43	8.65	30.27	100	336	A	H
		2493.77	56.48	-17.52	74	40.65	27.4	8.76	30.25	100	336	P	H
		2483.62	46.88	-7.12	54	31.07	27.4	8.74	30.25	100	336	A	H
		2359.28	58.34	-15.66	74	42.47	27.74	8.5	30.29	100	63	P	V
		2389.38	47.64	-6.36	54	31.88	27.56	8.56	30.28	100	63	A	V
	*	2437	122.43	-	-	106.7	27.43	8.65	30.27	100	63	P	V
	*	2437	119.46	-	-	103.73	27.43	8.65	30.27	100	63	A	V
		2484.95	58.18	-15.82	74	42.36	27.4	8.75	30.25	100	63	P	V
		2483.76	50.18	-3.82	54	34.37	27.4	8.74	30.25	100	63	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 802.11b (Harmonic @ 3m)**

WIFI Ant. 1+3	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 06 2437MHz		4874	40.2	-33.8	74	51.06	31.15	13.36	55.37	100	0	P	H
		7311	56.85	-17.15	74	60.53	36.42	16.16	56.26	100	78	P	H
		7311	52.71	-1.29	54	56.39	36.42	16.16	56.26	100	78	A	H
													H
		4874	39.97	-34.03	74	50.83	31.15	13.36	55.37	100	0	P	V
		7311	56.82	-17.18	74	60.5	36.42	16.16	56.26	100	292	P	V
		7311	52.94	-1.06	54	56.62	36.42	16.16	56.26	100	292	A	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 802.11 ax HE20 Full (Band Edge @ 3m)

WIFI Ant. 1+3	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)
8802.11ax HE20 Full CH 11 2462MHz	*	2462	109.06	-	-	93.3	27.4	18.62	30.26	149	336	P	H
	*	2462	101.26	-	-	85.5	27.4	18.62	30.26	149	336	A	H
		2484	62.04	-11.96	74	46.23	27.4	18.66	30.25	149	336	P	H
		2483.52	50.21	-3.79	54	34.4	27.4	18.66	30.25	149	336	A	H
													H
													H
	*	2462	120.18	-	-	104.42	27.4	18.62	30.26	100	73	P	V
	*	2462	110.01	-	-	94.25	27.4	18.62	30.26	100	73	A	V
		2483.56	61.36	-12.64	74	45.55	27.4	18.66	30.25	100	73	P	V
		2483.52	52	-2	54	36.19	27.4	18.66	30.25	100	73	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 802.11 ax HE20 Full (Harmonic @ 3m)**

WIFI Ant. 1+3	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 Full CH 11 2462MHz		4924	38.71	-35.29	74	49.53	31.2	13.36	55.38	100	0	P	H
		7386	44.48	-29.52	74	47.97	36.43	16.36	56.28	100	0	P	H
													H
													H
		4924	39.85	-34.15	74	50.67	31.2	13.36	55.38	100	0	P	V
		7386	44.75	-29.25	74	48.24	36.43	16.36	56.28	100	0	P	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 802.11 ax HE40 Full (Band Edge @ 3m)

WIFI Ant. 1+3	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 Full CH 06 2437MHz		2345.14	56.43	-17.57	74	40.51	27.81	18.4	30.29	146	80	P	H
		2343.74	44.99	-9.01	54	29.07	27.81	18.4	30.29	146	80	A	H
	*	2437	102.18	-	-	86.45	27.43	18.57	30.27	146	80	P	H
	*	2437	94.61	-	-	78.88	27.43	18.57	30.27	146	80	A	H
		2499.72	57.04	-16.96	74	41.2	27.4	18.69	30.25	146	80	P	H
		2487.33	45.11	-8.89	54	29.29	27.4	18.67	30.25	146	80	A	H
		2370.9	56.38	-17.62	74	40.55	27.67	18.45	30.29	100	72	P	V
		2341.36	45.08	-8.92	54	29.16	27.82	18.39	30.29	100	72	A	V
	*	2437	113.59	-	-	97.86	27.43	18.57	30.27	100	72	P	V
	*	2437	103.67	-	-	87.94	27.43	18.57	30.27	100	72	A	V
		2484.67	59.08	-14.92	74	43.26	27.4	18.67	30.25	100	72	P	V
		2483.97	48.91	-5.09	54	33.1	27.4	18.66	30.25	100	72	A	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

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

WIFI Ant. 1+3	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 Full CH 06 2437MHz		4874	39.04	-34.96	74	49.9	31.15	13.36	55.37	100	0	P	H
		7311	44.77	-29.23	74	48.45	36.42	16.16	56.26	100	0	P	H
													H
													H
		4874	39.08	-34.92	74	49.94	31.15	13.36	55.37	100	0	P	V
		7311	44.93	-29.07	74	48.61	36.42	16.16	56.26	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 802.11b (LF)

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+3		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11b LF		127	26.85	-16.65	43.5	40.15	17.6	1.78	32.68	-	-	P	H
		333.61	35.05	-10.95	46	44.46	20.01	3.07	32.49	-	-	P	H
		462.62	38.02	-7.98	46	43.42	23.51	3.64	32.55	201	299	Q	H
		618.79	29.49	-16.51	46	31.88	25.95	4.28	32.62	-	-	P	H
		714.82	38.57	-7.43	46	39.47	26.95	4.62	32.47	-	-	P	H
		858.38	32.01	-13.99	46	30.24	29.25	5.12	32.6	-	-	P	H
													H
													H
													H
													H
													H
													H
		97.9	33.1	-10.4	43.5	48.31	15.88	1.52	32.61	-	-	P	V
		183.26	30.8	-12.7	43.5	46.38	15.05	2.23	32.86	-	-	P	V
		459.71	39.41	-6.59	46	44.88	23.45	3.62	32.54	100	0	P	V
		624.61	29.79	-16.21	46	31.9	26.19	4.3	32.6	-	-	P	V
		756.53	32.65	-13.35	46	32.43	28.15	4.73	32.66	-	-	P	V
		917.55	32.47	-13.53	46	29.65	29.62	5.35	32.15	-	-	P	V
													V
													V
												V	
												V	
												V	
												V	
												V	
Remark	3. No other spurious found. 4. All results are PASS against limit line.												



Note symbol

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

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+3		(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 D. Radiated Spurious Emission Plots

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

Note symbol

-L	Low channel location
-R	High channel location

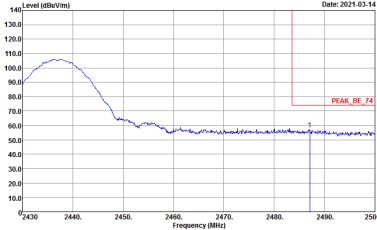
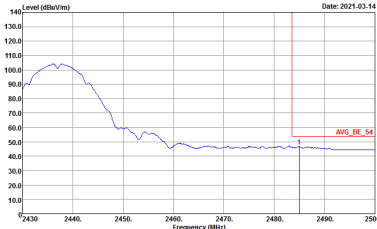


2.4GHz 2400~2483.5MHz

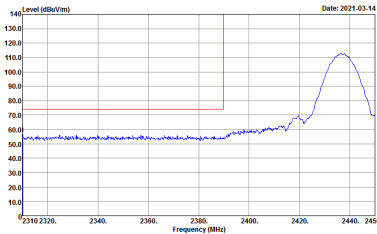
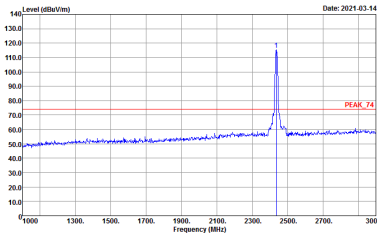
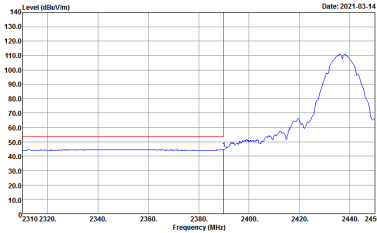
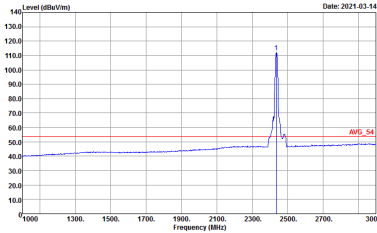
WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
2	Horizontal	Fundamental
Peak	Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023
Avg.	Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 121023	Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 121023

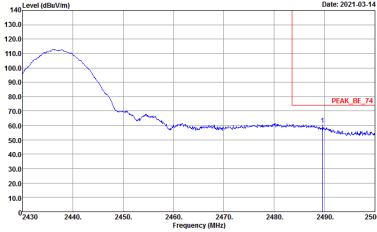
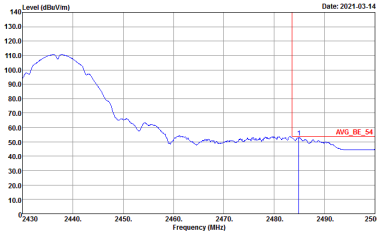


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : Peak Project : 121023
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 VERTICAL Detector : Peak Project : 121023

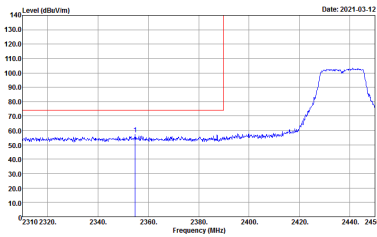
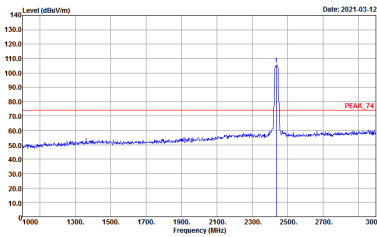
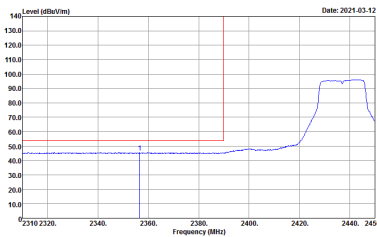
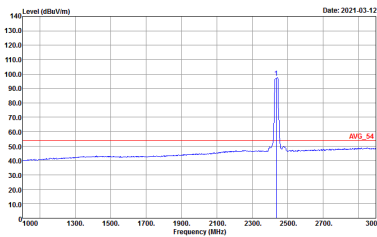


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_152Z VERTICAL Detector : Peak Project : 121023	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_152Z VERTICAL Detector : Peak Project : 121023	Left blank

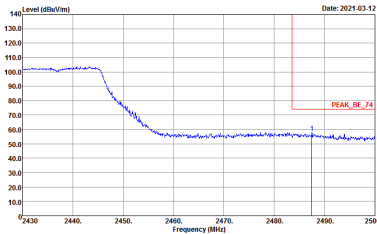
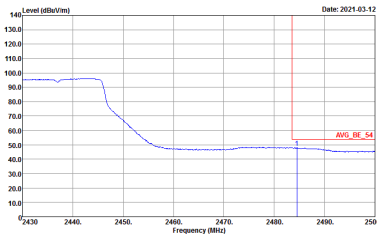


2.4GHz 2400~2483.5MHz

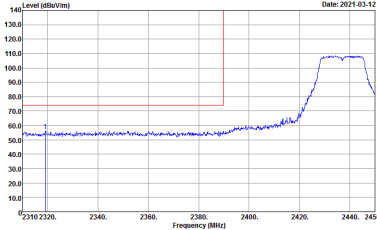
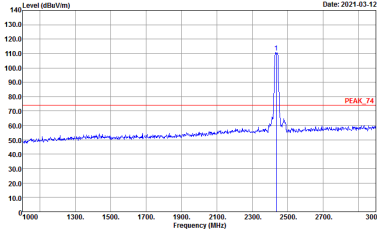
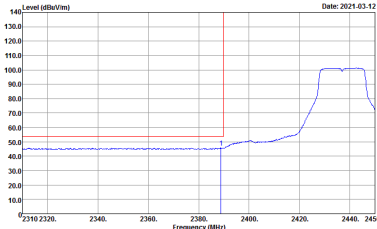
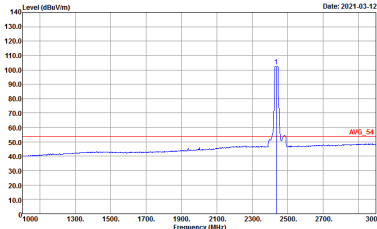
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak Project : 121023

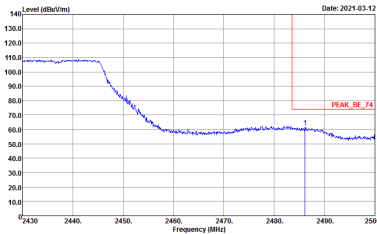
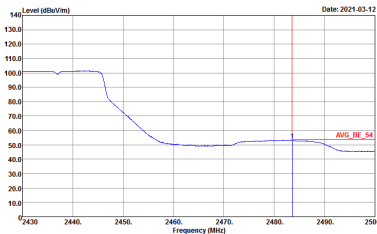


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : 121023
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:1000KHz SWT:Auto Project : Avg. : 121023	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:1000KHz SWT:Auto Project : Avg. : 121023

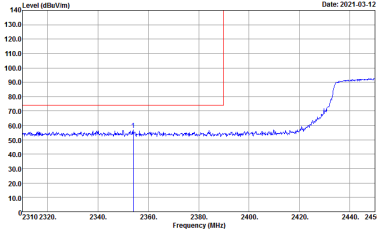
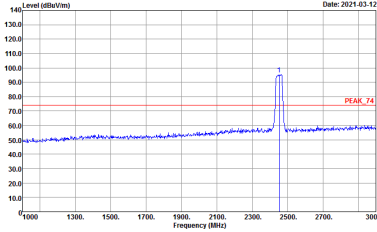
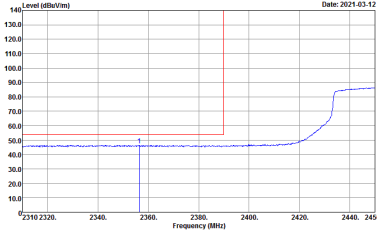
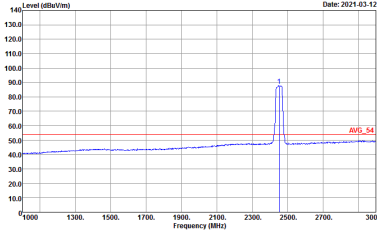


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : Peak Project : 121023	Left Blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : Peak Project : 121023	Left Blank

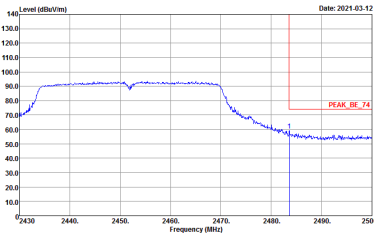
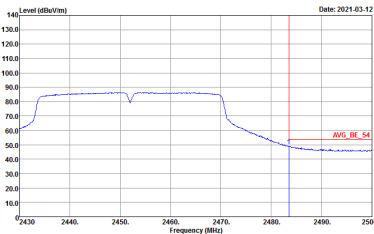


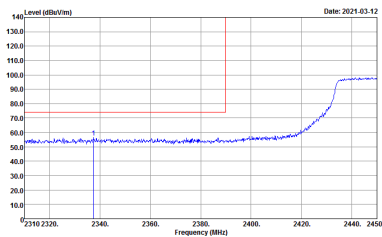
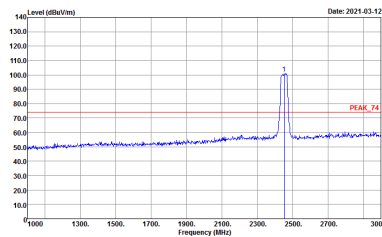
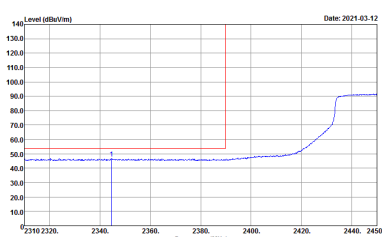
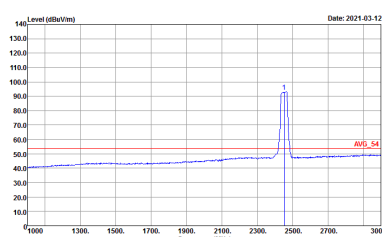
2.4GHz 2400~2483.5MHz

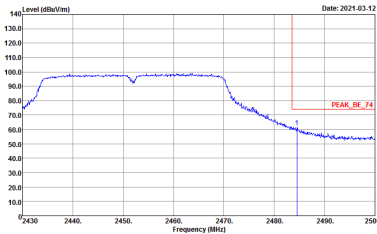
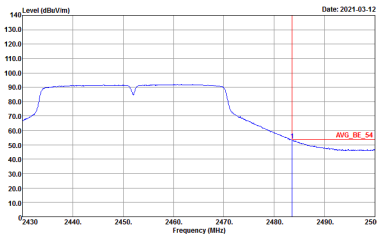
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 121023
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000kHz VBW:3.000kHz SWT:Auto Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 HORIZONTAL RBW:1000.000kHz VBW:3.000kHz SWT:Auto Detector : Peak Project : 121023



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
2	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank

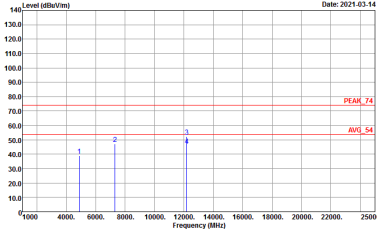
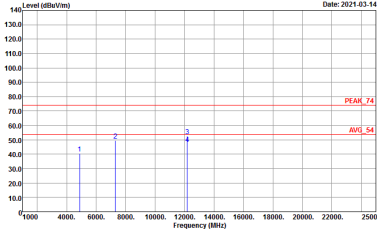
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 121023
	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : 121023	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : 121023

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
2	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank

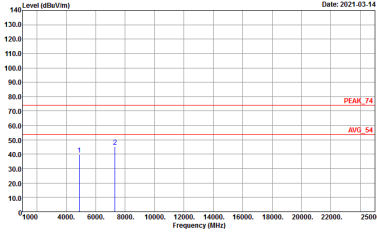
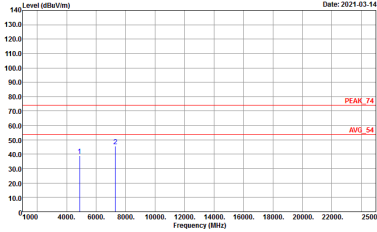


2.4GHz 2400~2483.5MHz

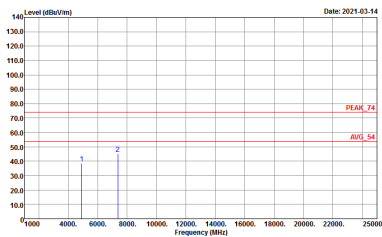
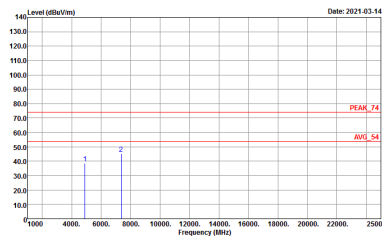
WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : Peak Project : 121023

**2.4GHz 2400~2483.5MHz****WIFI 802.11n HT20 (Harmonic @ 3m)**

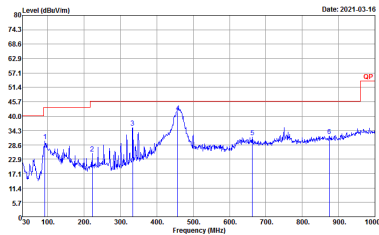
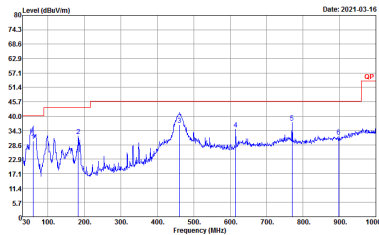
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : Peak Project : 121023

**2.4GHz 2400~2483.5MHz****WIFI 802.11n HT40 (Harmonic @ 3m)**

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH09 2452MHz	
2	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : Peak Project : 121023



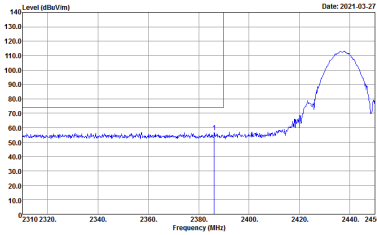
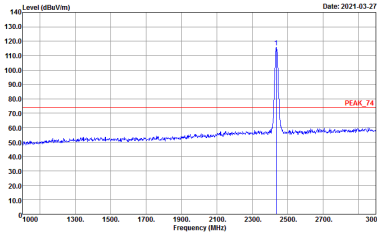
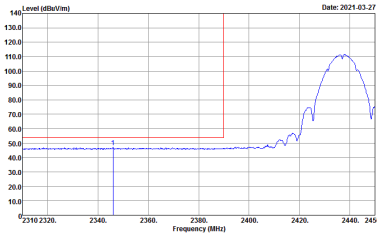
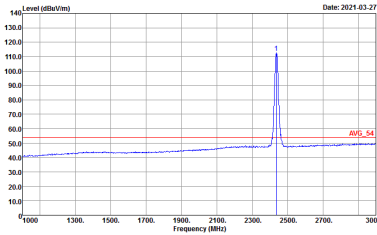
Emission below 1GHz
2.4GHz WIFI 802.11n HT40 (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT40 LF	
2	Horizontal	Vertical
QP / Peak	 Site : 03CH16-HY Condition : QP 3m B1LO6_47020606 HORIZONTAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : QP 3m B1LO6_47020606 VERTICAL Detector : Peak Project : 121023

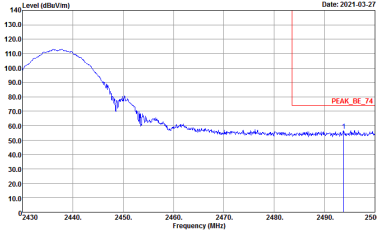
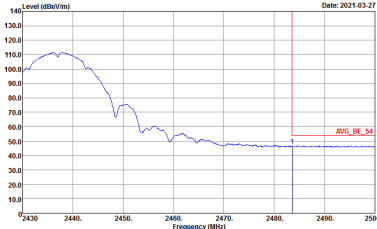


2.4GHz 2400~2483.5MHz

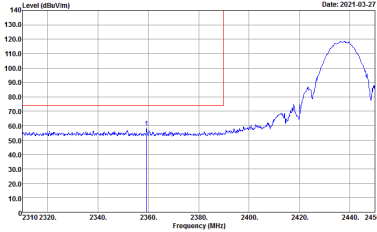
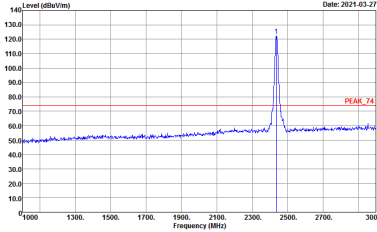
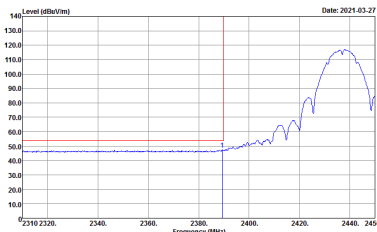
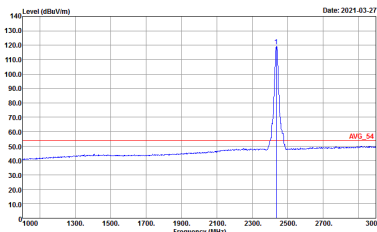
WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1+3	Horizontal	Fundamental
Peak	 Site : 03CH16-1HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023 Setting : 25.5	 Site : 03CH16-1HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023 Setting : 25.5
Avg.	 Site : 03CH16-1HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023 Setting : 25.5	 Site : 03CH16-1HY Condition : AVG_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023 Setting : 25.5

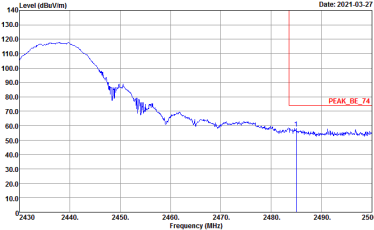
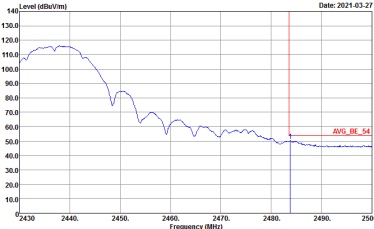


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1+3	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023 Setting : 25.5	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 121023 Setting : 25.5	Left blank

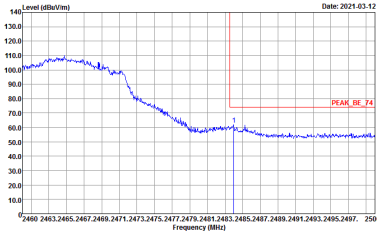
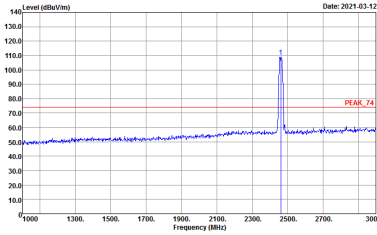
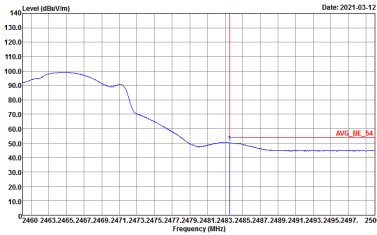
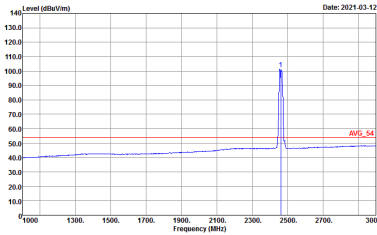


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1+3	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 121023 Setting : 25.5	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 121023 Setting : 25.5
	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 121023 Setting : 25.5	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 121023 Setting : 25.5

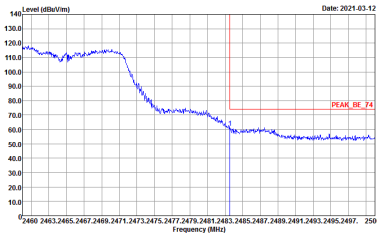
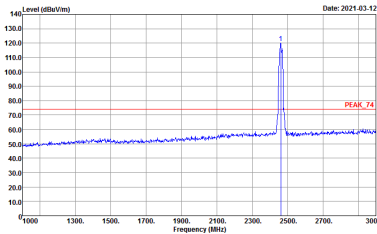
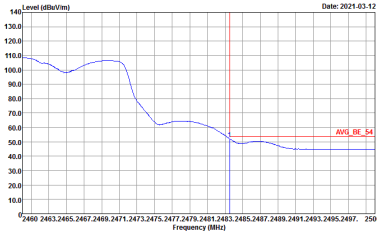
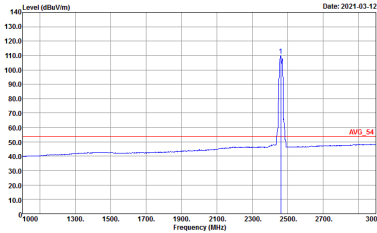


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1+3	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : Peak Project : 121023 Setting : 25.5	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : Peak Project : 121023 Setting : 25.5	Left blank

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

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH11 2462MHz	
1+3	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023
	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 121023

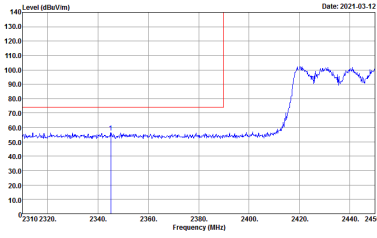
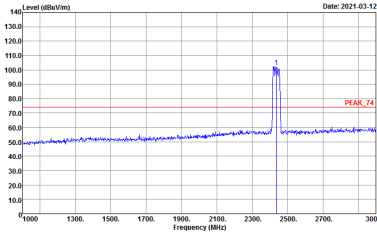
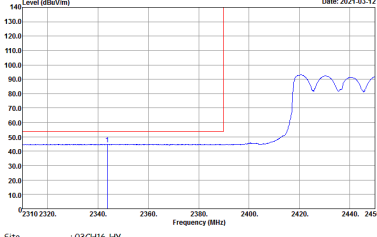
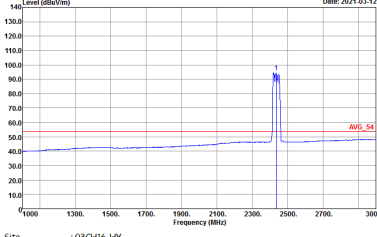


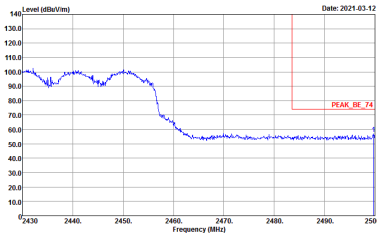
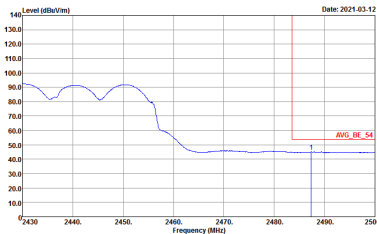
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH11 2462MHz	
1+3	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 121023



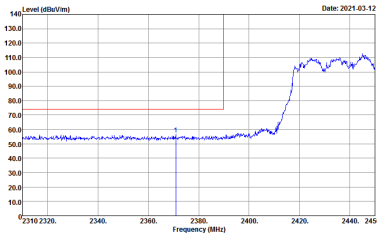
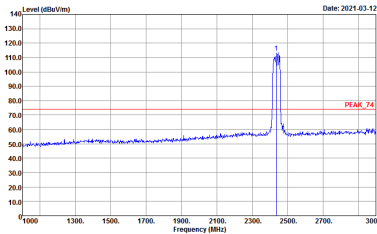
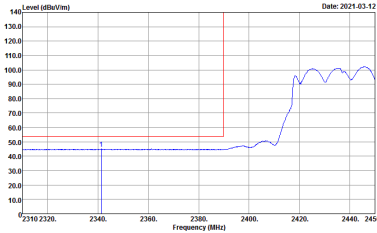
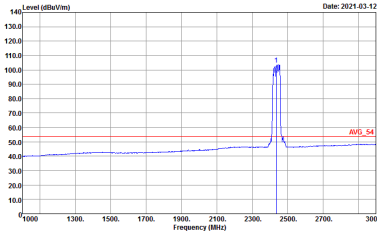
2.4GHz 2400~2483.5MHz

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

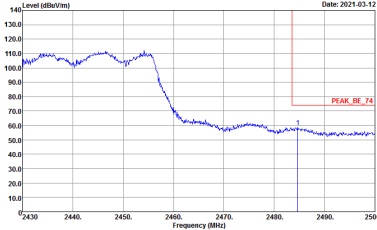
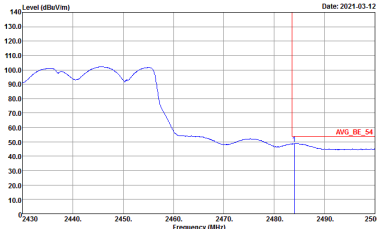
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH06 2437MHz - L	
1+3	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 121023
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 HORIZONTAL Detector : Peak Project : 121023

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH06 2437MHz - R	
1+3	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH06 2437MHz - L	
1+3	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 121023
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 121023	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 121023

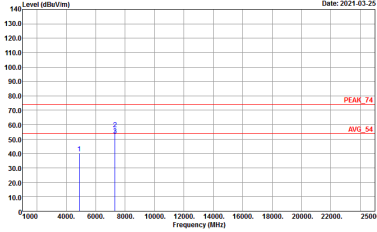
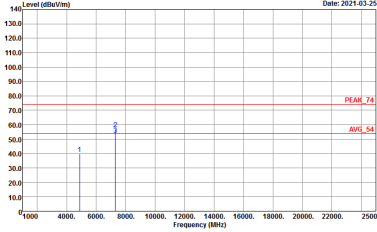


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH06 2437MHz - R	
1+3	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 121023	Left blank

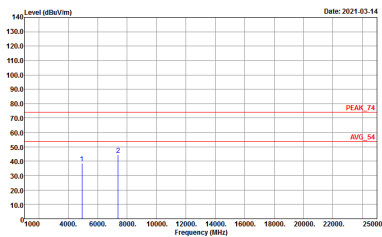
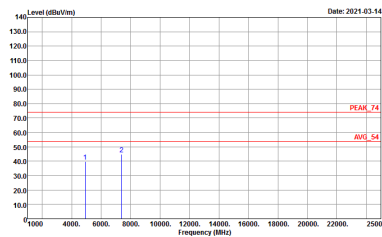


2.4GHz 2400~2483.5MHz

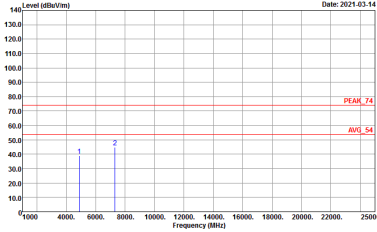
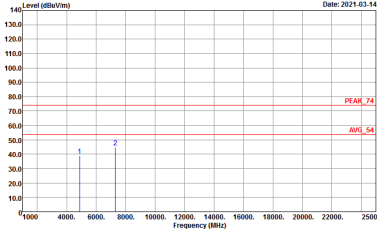
WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1+3	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK_74 3m 9120d_1522 HORIZONTAL Detector : Peak Project : 121023 Setting : 25.5	 Site : 03CH16-HY Condition : PEAK_74 3m 9120d_1522 VERTICAL Detector : Peak Project : 121023 Setting : 25.5

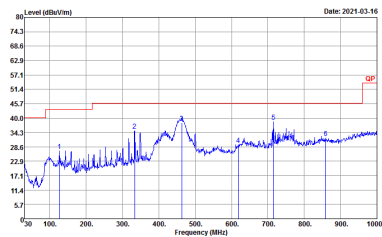
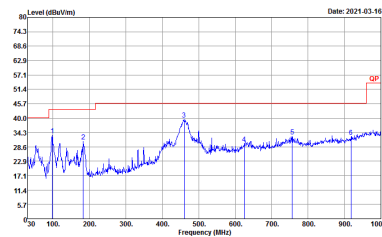
**2.4GHz 2400~2483.5MHz****WIFI 802.11 ax HE20 Full (Harmonic @ 3m)**

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11 ax HE20 Full CH11 2462MHz	
1+3	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : Peak Project : 121023

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

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11 ax HE40 Full CH06 2437MHz	
1+3	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : Peak Project : 121023

Emission below 1GHz
2.4GHz WIFI 802.11b Full (LF)

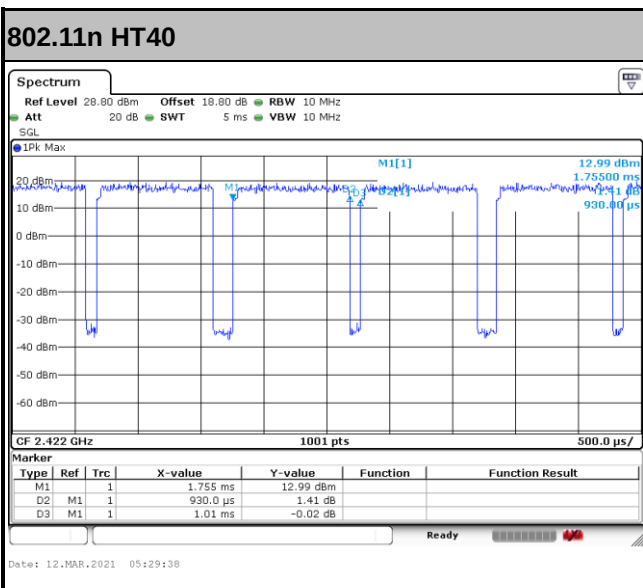
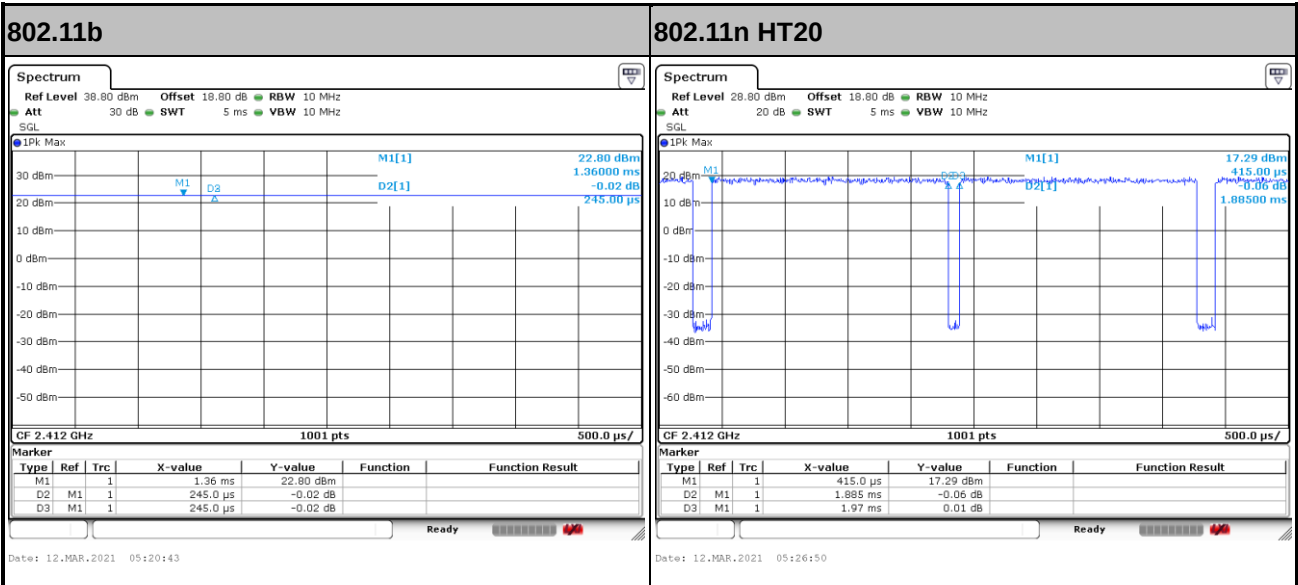
WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b Full LF	
1+3	Horizontal	Vertical
QP / Peak	 Site : 03CH16-HY Condition : QP 3m B1LO6_47020606 HORIZONTAL Detector : Peak Project : 121023	 Site : 03CH16-HY Condition : QP 3m B1LO6_47020606 VERTICAL Detector : Peak Project : 121023

Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
2	802.11b	100.00	-	-	10Hz	0.00
2	2.4GHz 802.11n HT20	95.69	1885	0.53	1kHz	0.19
2	2.4GHz 802.11n HT40	92.08	930	1.08	3kHz	0.36
1+3	802.11b for Ant. 1	75.27	685	1.46	3kHz	1.23
1+3	802.11b for Ant. 3	76.11	685	1.46	3kHz	1.19
1+3	2.4GHz 802.11ax HE20 Full RU for Ant. 1	95.86	5440	0.18	300Hz	0.18
1+3	2.4GHz 802.11ax HE20 Full RU for Ant. 3	95.86	5440	0.18	300Hz	0.18
1+3	2.4GHz 802.11ax HE40 Full RU for Ant. 1	93.14	5435	0.18	300Hz	0.31
1+3	2.4GHz 802.11ax HE40 Full RU for Ant. 3	94.87	5455	0.18	300Hz	0.23

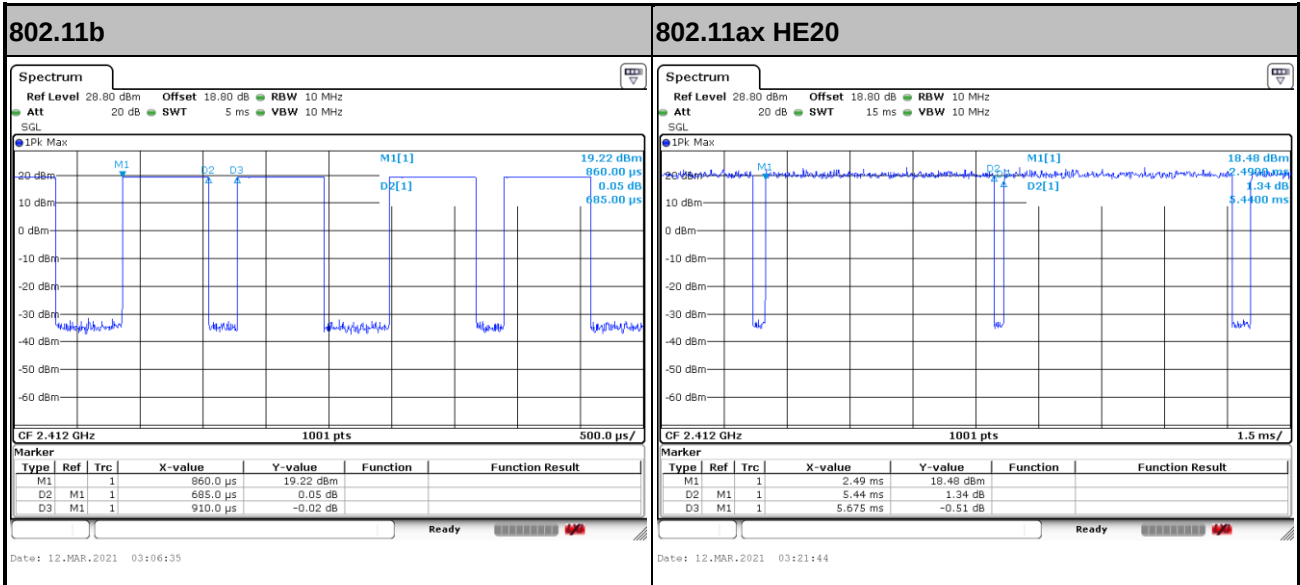


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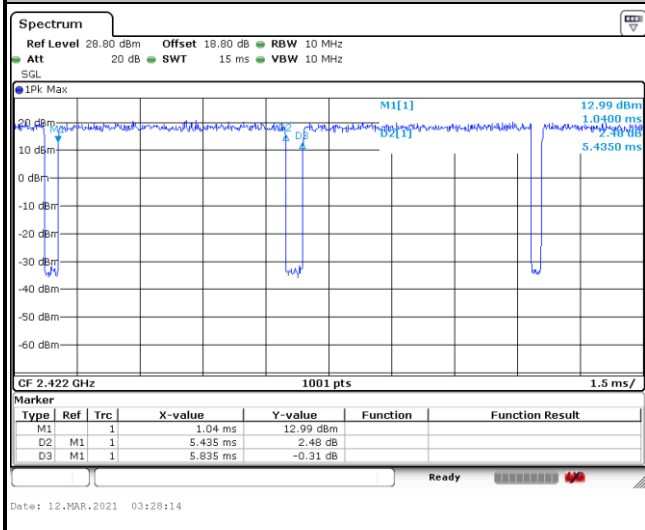




MIMO <Ant. 1>

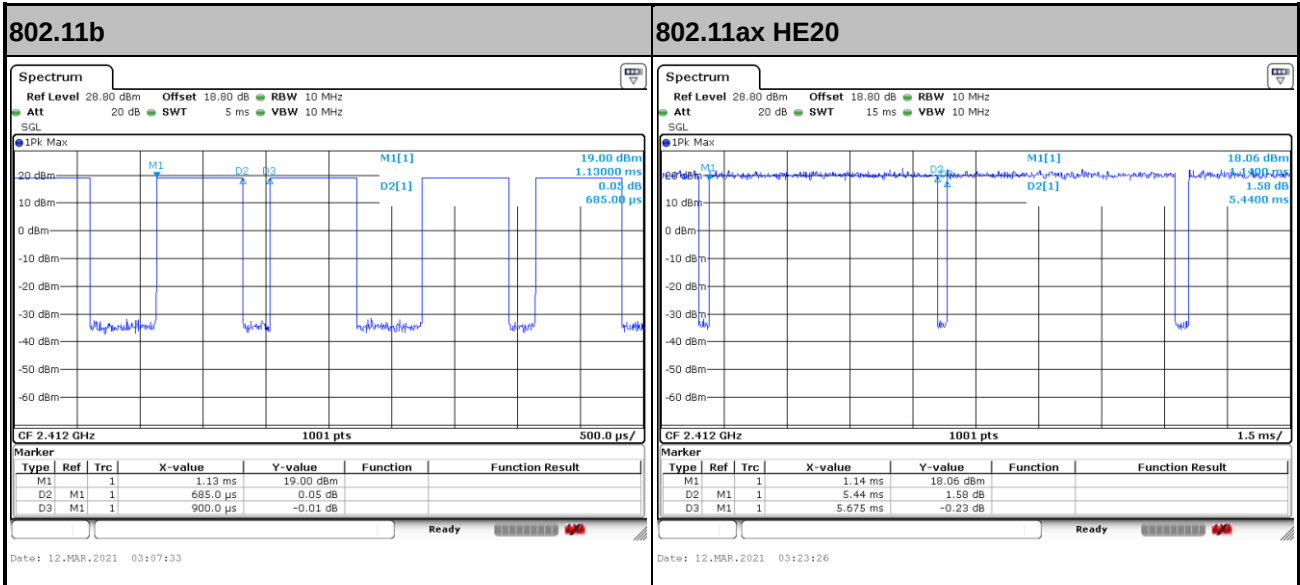


802.11ax HE40

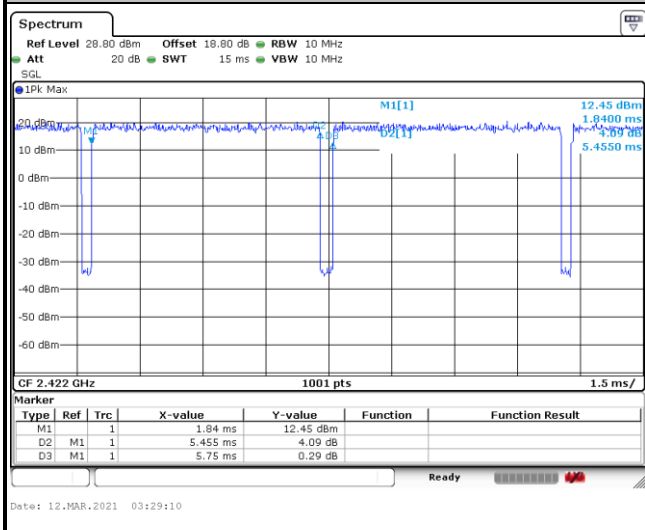




MIMO <Ant. 3>



802.11ax HE40



—THE END—