



FCC RADIO TEST REPORT

FCC ID : TX2-RTL8822C
Equipment : Module
Brand Name : Realtek
Model Name : RTL8822C
Marketing Name : 11a/b/g/n/ac RTL8822C Combo module
Applicant : Realtek Semiconductor Corp.
No. 2, Innovation Road II, Hsinchu
Science Park, Hsinchu 300, Taiwan
Standard : FCC Part 15 Subpart C §15.247

The product was received on Sep. 01, 2022 and testing was performed from Sep. 19, 2022 to Oct. 26, 2022. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issue Date
FR290129C	01	Initial issue of report	Nov. 01, 2022



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	-
-	15.247(e)	Power Spectral Density	-	See Note
-	15.247(d)	Conducted Band Edges	-	See Note
		Conducted Spurious Emission	-	See Note
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	3.04 dB under the limit at 2483.500 MHz
3.3	15.207	AC Conducted Emission	Pass	10.83 dB under the limit at 0.177 MHz
3.4	15.203	Antenna Requirement	Pass	-

Note: The module (Model: RTL8822C) makes no difference after verifying output power, this report reuses test data from the module report.

Declaration of Conformity:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
- The measurement uncertainty please refer to report "Uncertainty of Evaluation".

Comments and Explanations:

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Keven Cheng

Report Producer: Clio Lo



1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Feature	
Installed into the Host	Equipment Name: Steam Deck Brand Name: Valve Model Name: 1010
Sample 1	Host with INPAQ Antenna
Sample 2	Host with AWAN Antenna
Sample 3	Host with HTK Antenna
Antenna Type	WLAN <Main>: PIFA Antenna <Aux.>: PIFA Antenna Bluetooth: PIFA Antenna

Antenna Information			
INPAQ Antenna	Antenna Type	PIFA Antenna	
	Part Number	DQ600015300 (WA-P-LE-02-153)	DQ600004300 (WA-P-LE-01-043)
	Peak gain (dBi)	Main Antenna WLAN (2.4GHz):1.38	Aux Antenna WLAN (2.4GHz): 1.44
AWAN Antenna	Antenna Type	PIFA Antenna	
	Part Number	DQ610001400 (AEP6Y-100014)	DQ610001500 (AEP6Y-100015)
	Peak gain (dBi)	Main Antenna WLAN (2.4GHz):1.19	Aux Antenna WLAN (2.4GHz):2.66
HTK Antenna	Antenna Type	PIFA Antenna	
	Part Number	DQ60ACQD0E5 (0ACQD022049N)	DQ60ACQD0E4 (0ACQD022050N)
	Peak gain (dBi)	Main Antenna WLAN (2.4GHz): -0.44	Aux Antenna WLAN (2.4GHz):2.76

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

1.1.1 Antenna Directional Gain

<For CDD Mode>

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

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

For power measurements on IEEE 802.11 devices,

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

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

For PSD measurements, the directional gain calculation.

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

where

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

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

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k/20}$ if the 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.

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

$$Directional\ gain = 10 \cdot \log \left[\frac{(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2}{N_{ANT}} \right] \text{ dBi}$$

Where G_1, G_2, \dots, G_N denote single antenna gain.

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

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Chain 1	Chain 0	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
2.4GHz	-0.44	2.76	2.76	4.32	0.00	0.00

Calculation example:

If a device has two antenna, $G_{ANT1} = -0.44\text{dBi}$; $G_{ANT2} = 2.76\text{dBi}$

Directional gain of power measurement = $\max(-0.44, 2.76) + 0 = 2.76 \text{ dBi}$

Directional gain of PSD derived from formula which is

$$10 \times \log \left\{ \frac{[10^{(-0.44 \text{ dBi} / 20)} + 10^{(2.76 \text{ dBi} / 20)}]^2}{2} \right\}$$

= 4.32 dBi

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



1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. CO05-HY, 03CH07-HY

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

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. TH05-HY (TAF Code: 3786)
Remark	The Conducted test item subcontracted to Sporton International Inc. Wensan Laboratory.

FCC designation No.: TW1190 and TW3786

1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 15.247 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 the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.



2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

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

2.2 Test Mode

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

MIMO Antenna

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

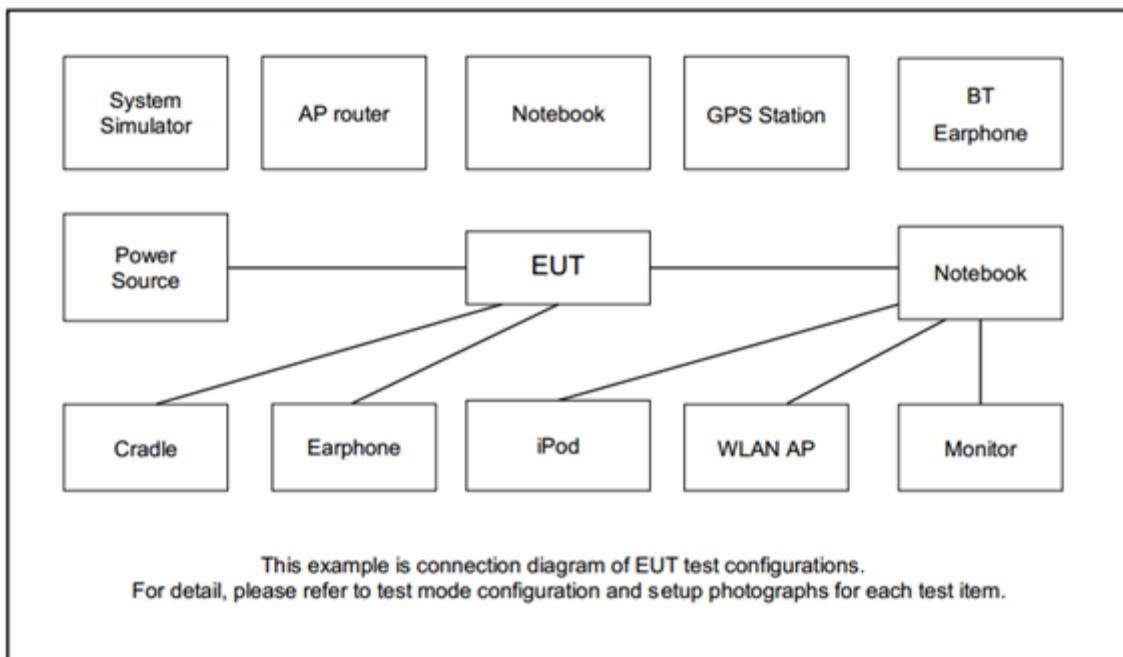
Remark: The conducted power level of each chain in MIMO mode is equal or higher than SISO mode.

Test Cases	
AC Conducted Emission	Mode 1 :Bluetooth Link + WLAN (2.4GHz) Link + Adapter for Sample 1
Remark: For Radiated Test Cases, the tests were performed with Sample 3.	

Ch. #	2400-2483.5 MHz			
	802.11b	802.11g	802.11ac VHT20	802.11ac VHT40
Low	01	01	01	03
Middle	06	06	06	06
High	13	11	11	11

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

2.3 Connection Diagram of Test System





2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY700A2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility "VTE version 0.60.3" was installed in Host which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

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

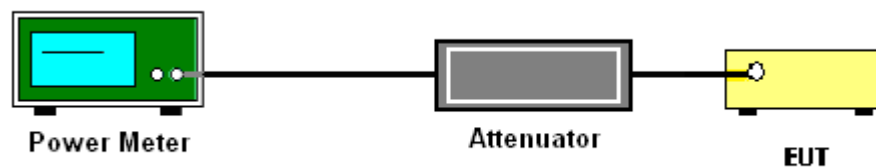
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of Average Output Power

Please refer to Appendix A.



3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

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

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

3.2.2 Measuring Instruments

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

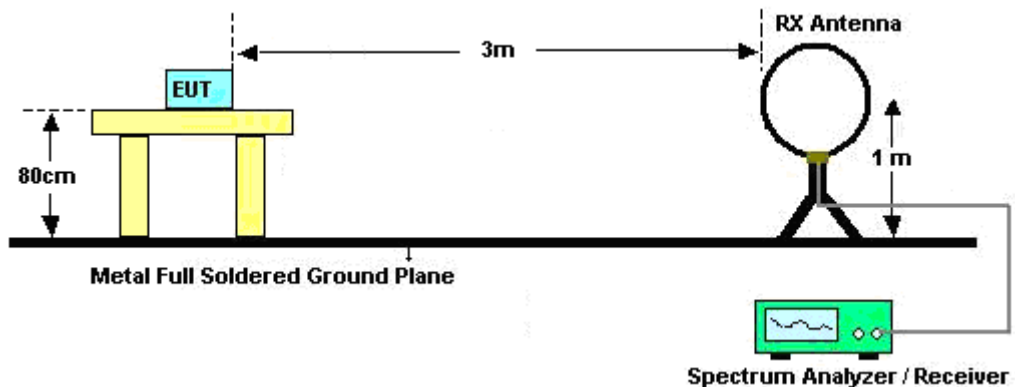
3.2.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
4. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
5. Corrected Reading: $\text{Antenna Factor} + \text{Cable Loss} + \text{Read Level} - \text{Preamp Factor} = \text{Level}$
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-“.

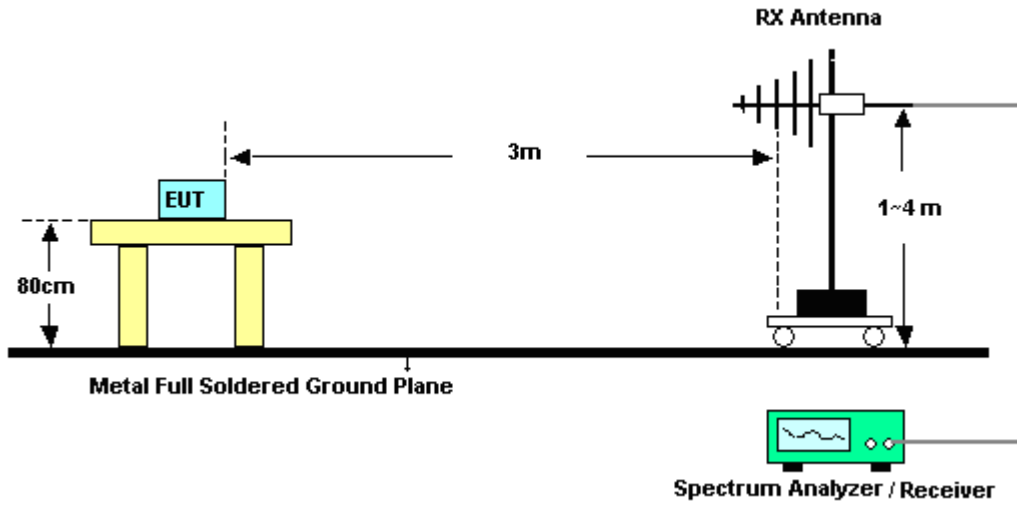
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with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

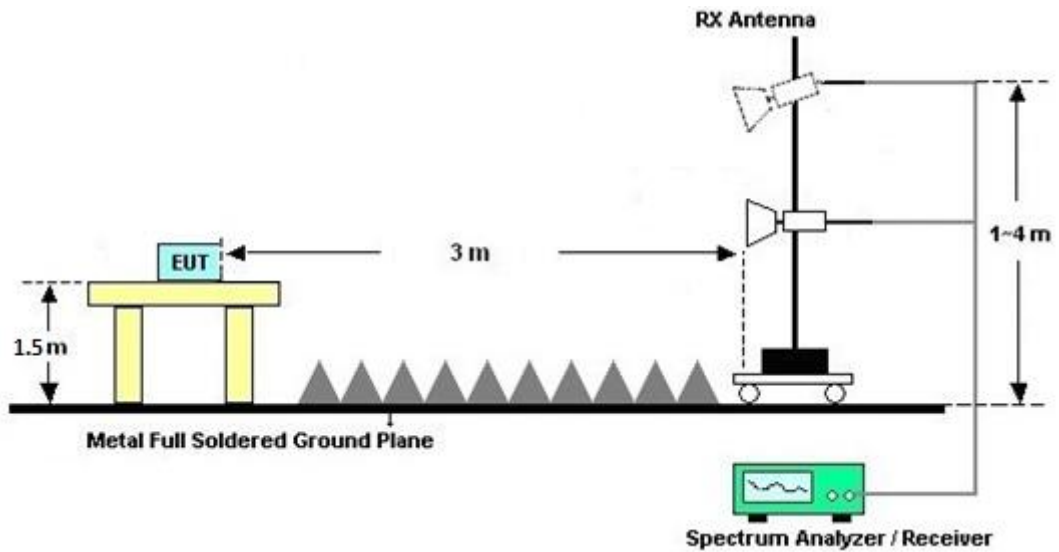
For radiated emissions below 30MHz



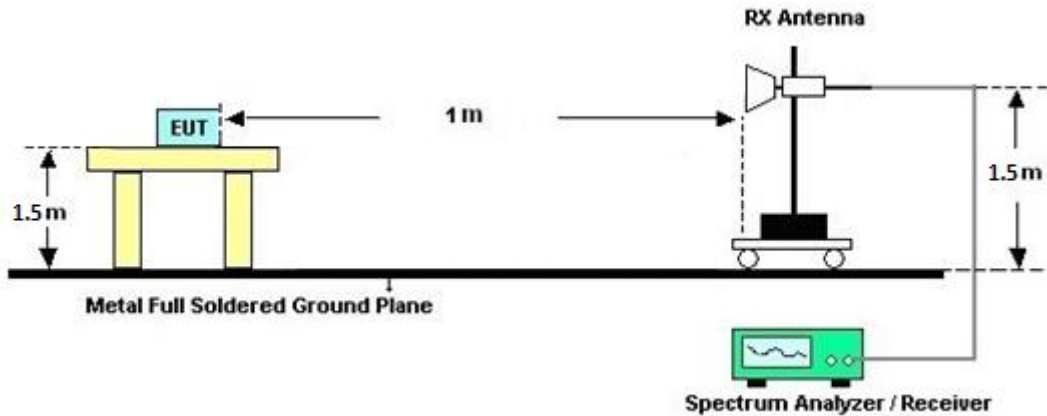
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



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

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

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result comes 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

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

3.3.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (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

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.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	35419 & 03	30MHz~1GHz	Apr. 24, 2022	Oct. 21, 2022~ Oct. 26, 2022	Apr. 23, 2023	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 03, 2021	Oct. 21, 2022~ Oct. 26, 2022	Dec. 02, 2022	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 07, 2022	Oct. 21, 2022~ Oct. 26, 2022	Jan. 06, 2023	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz~18GHz	Apr. 21, 2022	Oct. 21, 2022~ Oct. 26, 2022	Apr. 20, 2023	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	Oct. 03, 2022	Oct. 21, 2022~ Oct. 26, 2022	Oct. 02, 2023	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Oct. 03, 2022	Oct. 21, 2022~ Oct. 26, 2022	Oct. 02, 2023	Radiation (03CH07-HY)
Preamplifier	EMEC	EM18G40G	0600789	18-40GHz	Jul. 21, 2022	Oct. 21, 2022~ Oct. 26, 2022	Jul. 20, 2023	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Jul. 22, 2022	Oct. 21, 2022~ Oct. 26, 2022	Jul. 21, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY15682/4	30MHz to 18GHz	Feb. 23, 2022	Oct. 21, 2022~ Oct. 26, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4	9kHz to 18GHz	Feb. 23, 2022	Oct. 21, 2022~ Oct. 26, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4	9kHz to 18GHz	Feb. 23, 2022	Oct. 21, 2022~ Oct. 26, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126	532078/126E	30MHz~18GHz	Sep. 16, 2022	Oct. 21, 2022~ Oct. 26, 2022	Sep. 15, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2	18GHz~40GHz	Feb. 23, 2022	Oct. 21, 2022~ Oct. 26, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
Controller	EMEC	EM1000	N/A	Control Ant Mast	N/A	Oct. 21, 2022~ Oct. 26, 2022	N/A	Radiation (03CH07-HY)
Controller	MF	MF-7802	N/A	Control Turn table	N/A	Oct. 21, 2022~ Oct. 26, 2022	N/A	Radiation (03CH07-HY)
Antenna Mast	EMEC	AM-BS-4500E	N/A	Boresight mast 1M~4M	N/A	Oct. 21, 2022~ Oct. 26, 2022	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Oct. 21, 2022~ Oct. 26, 2022	N/A	Radiation (03CH07-HY)
Software	Audix	E3	N/A	N/A	N/A	Oct. 21, 2022~ Oct. 26, 2022	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2495	N/A	Mar. 07, 2022	Oct. 21, 2022~ Oct. 26, 2022	Mar. 06, 2023	Radiation (03CH07-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz~26.5GHz	May 27, 2022	Oct. 21, 2022~ Oct. 26, 2022	May 26, 2023	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917025 1	18GHz~40GHz	Nov. 30, 2021	Oct. 21, 2022~ Oct. 26, 2022	Nov. 29, 2022	Radiation (03CH07-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Sep. 26, 2022	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2021	Sep. 26, 2022	Nov. 30, 2022	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2021	Sep. 26, 2022	Nov. 16, 2022	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 03, 2021	Sep. 26, 2022	Dec. 02, 2022	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Sep. 26, 2022	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-FN	00691	N/A	Aug. 01, 2022	Sep. 26, 2022	Jul. 31, 2023	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 30, 2021	Sep. 26, 2022	Dec. 29, 2022	Conduction (CO05-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Sep. 19, 2022~ Oct. 19, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15I00041SNO 10 (NO:248)	10MHz~6GHz	Dec. 29, 2021	Sep. 19, 2022~ Oct. 19, 2022	Dec. 28, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz	Aug. 03, 2022	Sep. 19, 2022~ Oct. 19, 2022	Aug. 02, 2023	Conducted (TH05-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.10 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.50 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.50 dB
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Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.20 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.30 dB
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Willy Chang, Paul Lin and Ching Chen	Temperature:	21~25	°C
Test Date:	2022/09/19-2022/10/19	Relative Humidity:	51~54	%

Remark: For Conducted Test Items, Ant. 1 means Chain 1 and Ant. 2 means Chain 0.

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	2	1	2412	16.80	17.00	19.91	30.00		2.76		22.67		36.00	Pass	
11b	1Mbps	2	6	2437	16.60	16.70	19.66	30.00		2.76		22.42		36.00	Pass	
11b	1Mbps	2	11	2462	16.90	16.70	19.81	30.00		2.76		22.57		36.00	Pass	
11b	1Mbps	2	12	2467	15.00	14.80	17.91	30.00		2.76		20.67		36.00	Pass	
11b	1Mbps	2	13	2472	10.10	10.20	13.16	30.00		2.76		15.92		36.00	Pass	
11g	6Mbps	2	1	2412	14.80	14.40	17.61	30.00		2.76		20.37		36.00	Pass	
11g	6Mbps	2	6	2437	16.70	16.70	19.71	30.00		2.76		22.47		36.00	Pass	
11g	6Mbps	2	11	2462	14.50	14.40	17.46	30.00		2.76		20.22		36.00	Pass	
11g	6Mbps	2	12	2467	11.50	11.50	14.51	30.00		2.76		17.27		36.00	Pass	
11g	6Mbps	2	13	2472	8.60	8.50	11.56	30.00		2.76		14.32		36.00	Pass	
HT20	MCS0	2	1	2412	14.10	14.30	17.21	30.00		2.76		19.97		36.00	Pass	
HT20	MCS0	2	6	2437	16.40	16.90	19.67	30.00		2.76		22.43		36.00	Pass	
HT20	MCS0	2	11	2462	14.20	14.50	17.36	30.00		2.76		20.12		36.00	Pass	
HT20	MCS0	2	12	2467	11.30	11.50	14.41	30.00		2.76		17.17		36.00	Pass	
HT20	MCS0	2	13	2472	18.40	8.60	18.83	30.00		2.76		21.59		36.00	Pass	
HT40	MCS0	2	3	2422	13.40	13.30	16.36	30.00		2.76		19.12		36.00	Pass	
HT40	MCS0	2	6	2437	16.30	16.30	19.31	30.00		2.76		22.07		36.00	Pass	
HT40	MCS0	2	9	2452	14.60	14.40	17.51	30.00		2.76		20.27		36.00	Pass	
HT40	MCS0	2	10	2457	11.40	11.50	14.46	30.00		2.76		17.22		36.00	Pass	
HT40	MCS0	2	11	2462	6.30	6.30	9.31	30.00		2.76		12.07		36.00	Pass	
VHT20	MCS0	2	1	2412	14.30	14.50	17.41	30.00		2.76		20.17		36.00	Pass	
VHT20	MCS0	2	6	2437	16.50	17.00	19.77	30.00		2.76		22.53		36.00	Pass	
VHT20	MCS0	2	11	2462	14.40	14.50	17.46	30.00		2.76		20.22		36.00	Pass	
VHT20	MCS0	2	12	2467	11.50	11.60	14.56	30.00		2.76		17.32		36.00	Pass	
VHT20	MCS0	2	13	2472	8.50	8.70	11.61	30.00		2.76		14.37		36.00	Pass	
VHT40	MCS0	2	3	2422	13.50	13.50	16.51	30.00		2.76		19.27		36.00	Pass	
VHT40	MCS0	2	6	2437	16.40	16.50	19.46	30.00		2.76		22.22		36.00	Pass	
VHT40	MCS0	2	9	2452	14.70	14.50	17.61	30.00		2.76		20.37		36.00	Pass	
VHT40	MCS0	2	10	2457	11.60	11.60	14.61	30.00		2.76		17.37		36.00	Pass	
VHT40	MCS0	2	11	2462	6.50	6.40	9.46	30.00		2.76		12.22		36.00	Pass	

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



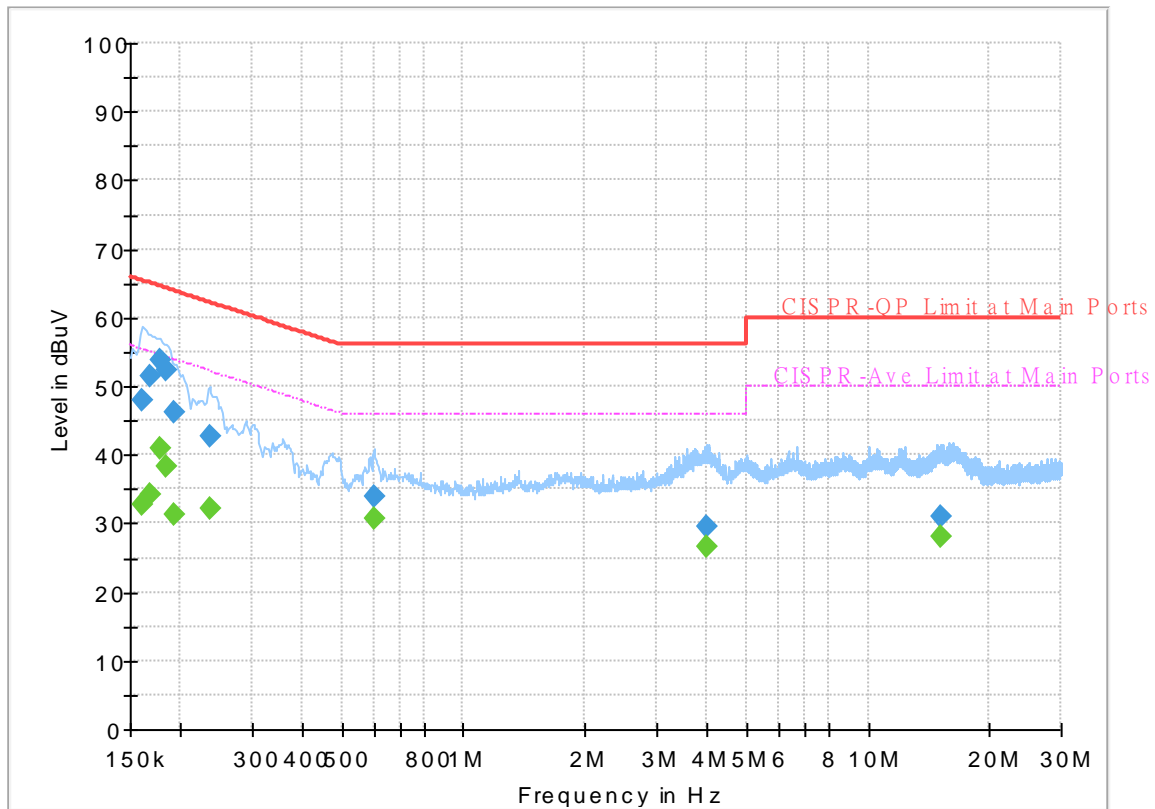
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Calvin Wang	Temperature :	23~26°C
		Relative Humidity :	45~55%

EUT Information

Report NO : 290129
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

Full Spectrum



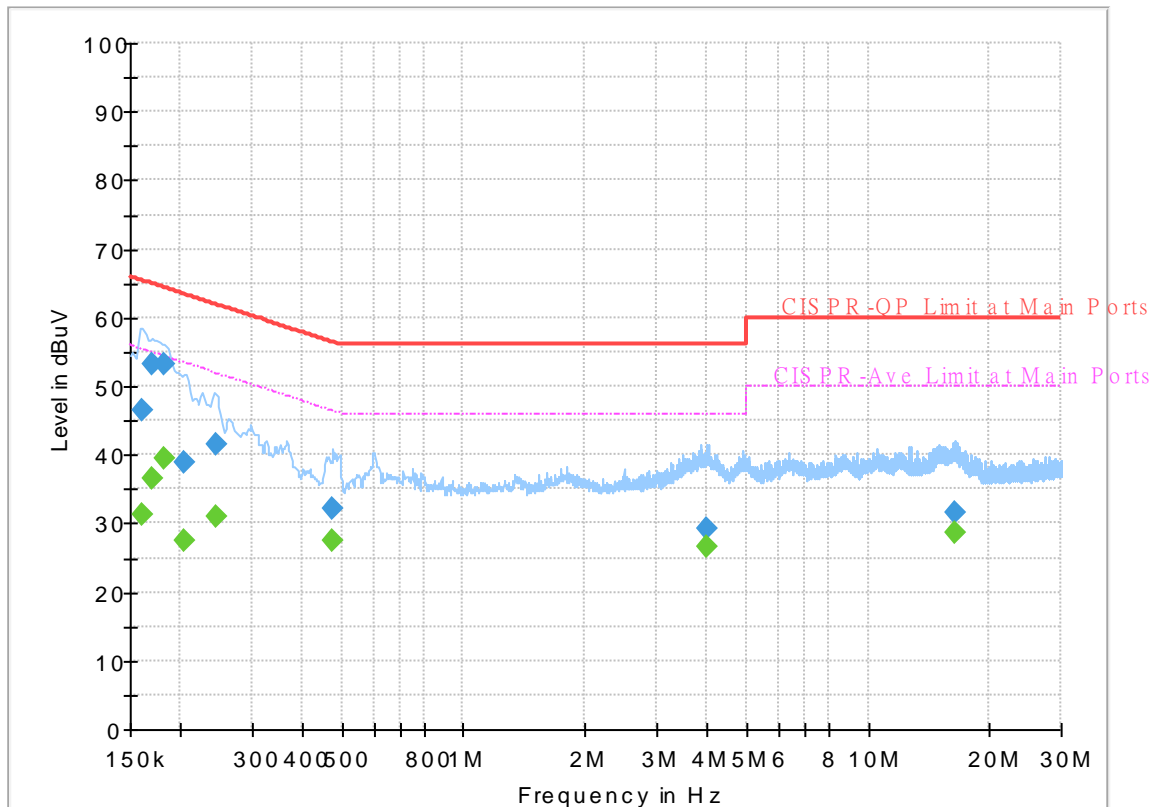
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.161250	---	32.64	55.40	22.76	L1	OFF	19.8
0.161250	47.85	---	65.40	17.55	L1	OFF	19.8
0.168000	---	34.08	55.06	20.98	L1	OFF	19.8
0.168000	51.46	---	65.06	13.60	L1	OFF	19.8
0.177000	---	41.00	54.63	13.63	L1	OFF	19.8
0.177000	53.80	---	64.63	10.83	L1	OFF	19.8
0.183750	---	38.27	54.31	16.04	L1	OFF	19.8
0.183750	52.40	---	64.31	11.91	L1	OFF	19.8
0.192750	---	31.18	53.92	22.74	L1	OFF	19.8
0.192750	46.18	---	63.92	17.74	L1	OFF	19.8
0.235500	---	32.23	52.25	20.02	L1	OFF	19.8
0.235500	42.79	---	62.25	19.46	L1	OFF	19.8
0.600000	---	30.57	46.00	15.43	L1	OFF	19.8
0.600000	34.03	---	56.00	21.97	L1	OFF	19.8
4.004250	---	26.62	46.00	19.38	L1	OFF	20.0
4.004250	29.64	---	56.00	26.36	L1	OFF	20.0
15.060750	---	27.94	50.00	22.06	L1	OFF	20.4
15.060750	31.05	---	60.00	28.95	L1	OFF	20.4

EUT Information

Report NO : 290129
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Neutral

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.161250	---	31.37	55.40	24.03	N	OFF	19.8
0.161250	46.39	---	65.40	19.01	N	OFF	19.8
0.170250	---	36.46	54.95	18.49	N	OFF	19.8
0.170250	53.15	---	64.95	11.80	N	OFF	19.8
0.181500	---	39.52	54.42	14.90	N	OFF	19.8
0.181500	53.20	---	64.42	11.22	N	OFF	19.8
0.204000	---	27.56	53.45	25.89	N	OFF	19.8
0.204000	38.87	---	63.45	24.58	N	OFF	19.8
0.244500	---	31.11	51.94	20.83	N	OFF	19.8
0.244500	41.50	---	61.94	20.44	N	OFF	19.8
0.476250	---	27.36	46.40	19.04	N	OFF	19.8
0.476250	32.24	---	56.40	24.16	N	OFF	19.8
3.988500	---	26.47	46.00	19.53	N	OFF	20.0
3.988500	29.11	---	56.00	26.89	N	OFF	20.0
16.311750	---	28.59	50.00	21.41	N	OFF	20.5
16.311750	31.70	---	60.00	28.30	N	OFF	20.5



Appendix C. Radiated Spurious Emission

Test Engineer :	Jesse Wang, Stan Hsieh, Ken Wu and Howard Huang	Temperature :	22.6~24.5°C
		Relative Humidity :	58.6~61.3%

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

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
802.11b CH 01 2412MHz		2341.185	55.11	-18.89	74	40.68	31.44	18.3	35.31	100	230	P	H	
		2387.07	44.3	-9.7	54	29.76	31.4	18.44	35.3	100	230	A	H	
	*	2412	106.71	-	-	92.03	31.5	18.5	35.32	100	230	P	H	
	*	2412	103.28	-	-	88.6	31.5	18.5	35.32	100	230	A	H	
													H	
			2389.485	54.16	-19.84	74	39.61	31.4	18.45	35.3	400	279	P	V
			2387.07	44.08	-9.92	54	29.54	31.4	18.44	35.3	400	279	A	V
	*		2412	104.53	-	-	89.85	31.5	18.5	35.32	400	279	P	V
	*		2412	101.59	-	-	86.91	31.5	18.5	35.32	400	279	A	V
														V
802.11b CH 13 2472MHz	*	2472	101.35	-	-	86.17	31.98	18.59	35.39	115	233	P	H	
	*	2472	98.34	-	-	83.16	31.98	18.59	35.39	115	233	A	H	
			2485.04	63.97	-10.03	74	48.69	32.08	18.61	35.41	115	233	P	H
			2483.52	46.46	-7.54	54	31.2	32.07	18.6	35.41	115	233	A	H
														H
	*		2472	99.31	-	-	84.13	31.98	18.59	35.39	399	294	P	V
	*		2472	96.21	-	-	81.03	31.98	18.59	35.39	399	294	A	V
			2483.92	63.09	-10.91	74	47.83	32.07	18.6	35.41	399	294	P	V
			2483.52	45.36	-8.64	54	30.1	32.07	18.6	35.41	399	294	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 802.11b (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 06 2437MHz		4874	41.41	-32.59	74	53.43	34.05	12.8	58.87	-	-	P	H
		7311	41.84	-32.16	74	48.63	35.64	15.07	57.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			4874	40.8	-33.2	74	52.82	34.05	12.8	58.87	-	-	P
		7311	42.01	-31.99	74	48.8	35.64	15.07	57.5	-	-	P	V
													V
													V
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Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. 												



**2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
802.11g CH 01 2412MHz		2387.91	59.78	-14.22	74	45.24	31.4	18.44	35.3	115	235	P	H	
		2389.8	45.86	-8.14	54	31.31	31.4	18.45	35.3	115	235	A	H	
	*	2412	106.86	-	-	92.18	31.5	18.5	35.32	115	235	P	H	
	*	2412	99.85	-	-	85.17	31.5	18.5	35.32	115	235	A	H	
													H	
													H	
			2389.905	58.82	-15.18	74	44.27	31.4	18.45	35.3	300	292	P	V
			2389.485	45.53	-8.47	54	30.98	31.4	18.45	35.3	300	292	A	V
	*		2412	106.65	-	-	91.97	31.5	18.5	35.32	300	292	P	V
	*		2412	99.55	-	-	84.87	31.5	18.5	35.32	300	292	A	V
													V	
													V	
802.11g CH 11 2462MHz	*	2462	108.34	-	-	93.25	31.9	18.57	35.38	117	236	P	H	
	*	2462	101.48	-	-	86.39	31.9	18.57	35.38	117	236	A	H	
			2486.52	62.28	-11.72	74	46.99	32.09	18.61	35.41	117	236	P	H
			2483.52	46.88	-7.12	54	31.62	32.07	18.6	35.41	117	236	A	H
													H	
													H	
	*		2462	107.44	-	-	92.35	31.9	18.57	35.38	357	299	P	V
	*		2462	100.26	-	-	85.17	31.9	18.57	35.38	357	299	A	V
			2484.44	59.27	-14.73	74	43.99	32.08	18.61	35.41	357	299	P	V
			2484	46.11	-7.89	54	30.85	32.07	18.6	35.41	357	299	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 802.11g (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 06 2437MHz		4874	40.79	-33.21	74	52.81	34.05	12.8	58.87	-	-	P	H
		7311	42.48	-31.52	74	49.27	35.64	15.07	57.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			4874	40.41	-33.59	74	52.43	34.05	12.8	58.87	-	-	P
		7311	41.85	-32.15	74	48.64	35.64	15.07	57.5	-	-	P	V
													V
													V
													V
													V
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Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. 												



**2.4GHz 2400~2483.5MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
802.11ac VHT20 CH 01 2412MHz		2389.065	63.43	-10.57	74	48.89	31.4	18.44	35.3	115	235	P	H	
		2389.905	50.34	-3.66	54	35.79	31.4	18.45	35.3	115	235	A	H	
	*	2412	108.82	-	-	94.14	31.5	18.5	35.32	115	235	P	H	
	*	2412	101.29	-	-	86.61	31.5	18.5	35.32	115	235	A	H	
													H	
													H	
			2389.8	64	-10	74	49.45	31.4	18.45	35.3	300	292	P	V
			2390	49.76	-4.24	54	35.21	31.4	18.45	35.3	300	292	A	V
		*	2412	108.51	-	-	93.83	31.5	18.5	35.32	300	292	P	V
		*	2412	101.09	-	-	86.41	31.5	18.5	35.32	300	292	A	V
802.11ac VHT20 CH 11 2462MHz													V	
													V	
		*	2462	107.91	-	-	92.82	31.9	18.57	35.38	100	232	P	H
		*	2462	100.82	-	-	85.73	31.9	18.57	35.38	100	232	A	H
			2484.56	60.92	-13.08	74	45.64	32.08	18.61	35.41	100	232	P	H
			2483.68	46.97	-7.03	54	31.71	32.07	18.6	35.41	100	232	A	H
														H
														H
		*	2462	103.8	-	-	88.71	31.9	18.57	35.38	388	296	P	V
		*	2462	96.31	-	-	81.22	31.9	18.57	35.38	388	296	A	V
		2483.68	59.17	-14.83	74	43.91	32.07	18.6	35.41	388	296	P	V	
		2483.72	46.07	-7.93	54	30.81	32.07	18.6	35.41	388	296	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 802.11ac VHT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT20 CH 06 2437MHz		4874	40.53	-33.47	74	52.55	34.05	12.8	58.87	-	-	P	H
		7311	41.83	-32.17	74	48.62	35.64	15.07	57.5	-	-	P	H
													H
													H
													H
													H
													H
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													H
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													H
	802.11ac VHT20 CH 06 2437MHz		4874	41.21	-32.79	74	53.23	34.05	12.8	58.87	-	-	P
		7311	42.77	-31.23	74	49.56	35.64	15.07	57.5	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												



**2.4GHz 2400~2483.5MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT40 CH 03 2422MHz		2389.66	59.7	-14.3	74	45.15	31.4	18.45	35.3	306	240	P	H
		2389.94	48.05	-5.95	54	33.5	31.4	18.45	35.3	306	240	A	H
	*	2422	102.52	-	-	87.76	31.58	18.51	35.33	306	240	P	H
	*	2422	94.87	-	-	80.11	31.58	18.51	35.33	306	240	A	H
		2491.25	55.73	-18.27	74	40.41	32.13	18.61	35.42	306	240	P	H
		2496.57	44.89	-9.11	54	29.53	32.17	18.62	35.43	306	240	A	H
		2389.52	60.02	-13.98	74	45.47	31.4	18.45	35.3	340	295	P	V
		2389.8	48.17	-5.83	54	33.62	31.4	18.45	35.3	340	295	A	V
	*	2422	102.72	-	-	87.96	31.58	18.51	35.33	340	295	P	V
	*	2422	94.87	-	-	80.11	31.58	18.51	35.33	340	295	A	V
		2496.57	56.27	-17.73	74	40.91	32.17	18.62	35.43	340	295	P	V
		2496.78	44.48	-9.52	54	29.12	32.17	18.62	35.43	340	295	A	V
802.11ac VHT40 CH 06 2437MHz		2389.8	60.45	-13.55	74	45.9	31.4	18.45	35.3	127	234	P	H
		2389.66	48.65	-5.35	54	34.1	31.4	18.45	35.3	127	234	A	H
	*	2437	107.29	-	-	92.41	31.7	18.53	35.35	127	234	P	H
	*	2437	99.82	-	-	84.94	31.7	18.53	35.35	127	234	A	H
		2485.02	63.06	-10.94	74	47.78	32.08	18.61	35.41	127	234	P	H
		2483.69	48.48	-5.52	54	33.22	32.07	18.6	35.41	127	234	A	H
		2389.8	58.77	-15.23	74	44.22	31.4	18.45	35.3	375	286	P	V
		2389.8	47.75	-6.25	54	33.2	31.4	18.45	35.3	375	286	A	V
	*	2437	106.82	-	-	91.94	31.7	18.53	35.35	375	286	P	V
	*	2437	99.07	-	-	84.19	31.7	18.53	35.35	375	286	A	V
		2484.74	62.43	-11.57	74	47.15	32.08	18.61	35.41	375	286	P	V
		2484.32	47.17	-6.83	54	31.9	32.07	18.61	35.41	375	286	A	V



WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT40 CH 11 2462MHz		2387.7	53.68	-20.32	74	39.14	31.4	18.44	35.3	130	234	P	H
		2381.82	43.18	-10.82	54	28.65	31.4	18.43	35.3	130	234	A	H
	*	2462	96.09	-	-	81	31.9	18.57	35.38	130	234	P	H
	*	2462	88.68	-	-	73.59	31.9	18.57	35.38	130	234	A	H
		2483.5	65.35	-8.65	74	50.09	32.07	18.6	35.41	130	234	P	H
		2483.5	50.96	-3.04	54	35.7	32.07	18.6	35.41	130	234	A	H
		2386.58	53.39	-20.61	74	38.85	31.4	18.44	35.3	361	297	P	V
		2386.58	43.15	-10.85	54	28.61	31.4	18.44	35.3	361	297	A	V
	*	2462	96.71	-	-	81.62	31.9	18.57	35.38	361	297	P	V
	*	2462	89.02	-	-	73.93	31.9	18.57	35.38	361	297	A	V
		2483.55	66.57	-7.43	74	51.31	32.07	18.6	35.41	361	297	P	V
		2483.5	50.55	-3.45	54	35.29	32.07	18.6	35.41	361	297	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 802.11ac VHT40 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT40 CH 06 2437MHz		4874	41.04	-32.96	74	53.06	34.05	12.8	58.87	-	-	P	H
		7311	41.67	-32.33	74	48.46	35.64	15.07	57.5	-	-	P	H
													H
													H
													H
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	802.11ac VHT40 CH 06 2437MHz		4874	41.13	-32.87	74	53.15	34.05	12.8	58.87	-	-	P
		7311	41.76	-32.24	74	48.55	35.64	15.07	57.5	-	-	P	V
													V
													V
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													V
													V

Remark

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



Emission below 1GHz

2.4GHz WIFI 802.11ac VHT40 (LF)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
2.4GHz 802.11ac VHT40 LF		30.27	21.3	-18.7	40	25.98	24.39	1.01	30.08	-	-	P	H	
		139.08	30.02	-13.48	43.5	40.67	17.29	2.02	29.96	-	-	P	H	
		290.55	25.72	-20.28	46	33.65	19.08	2.93	29.94	-	-	P	H	
		305.6	35.43	-10.57	46	43.08	19.27	3.02	29.94	-	-	P	H	
		819.4	37.8	-8.2	46	34.58	27.62	5.06	29.46	-	-	P	H	
		914.6	38.15	-7.85	46	32.86	28.76	5.49	28.96	-	-	P	H	
														H
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			30	30.57	-9.43	40	35.13	24.51	1.01	30.08	-	-	P	V
		137.19	27.33	-16.17	43.5	37.92	17.36	2.01	29.96	-	-	P	V	
		292.44	31.73	-14.27	46	39.6	19.13	2.94	29.94	-	-	P	V	
		617.8	31.69	-14.31	46	32.01	25.4	4.27	29.99	-	-	P	V	
		854.4	33.81	-12.19	46	29.06	28.87	5.15	29.27	-	-	P	V	
		958.7	34.14	-11.86	46	26.69	30.66	5.58	28.79	-	-	P	V	
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													V	

Remark

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



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is 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	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		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. Margin(dB) = Level(dBμV/m) – LimitLine(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
2. Margin(dB)
= Level(dBμV/m) – LimitLine(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. Margin (dB)
= Level(dBμV/m) – LimitLine(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 :	Jesse Wang, Stan Hsieh, Ken Wu and Howard Huang	Temperature :	22.6~24.5°C
		Relative Humidity :	58.6~61.3%

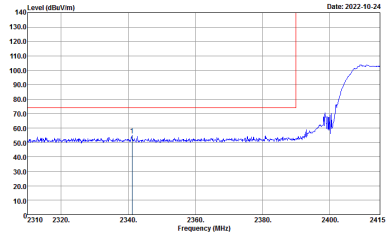
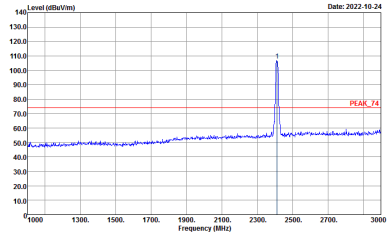
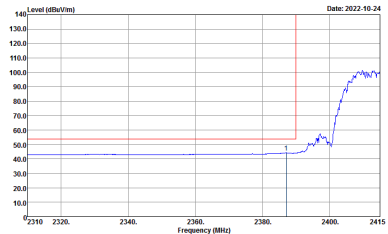
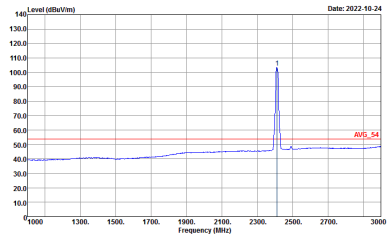
Remark: For Radiated Spurious Emission Test Data, Ant. 1 means Chain 1 and Ant. 2 means Chain 0.

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 CH01 2412MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal polarization. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 2310 to 2415 MHz. A red horizontal line is drawn at approximately 75 dBuV/m. A blue trace shows a signal that rises sharply starting around 2390 MHz, reaching a peak of about 105 dBuV/m at 2412 MHz. A red vertical line marks the peak at 2412 MHz.</p> <p>Site : 03CH07-HY Condition : PEAK_BE_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Fundamental polarization. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 1000 to 3000 MHz. A red horizontal line is drawn at approximately 75 dBuV/m. A blue trace shows a sharp peak at 2412 MHz, reaching a level of about 105 dBuV/m. A red vertical line marks the peak at 2412 MHz, labeled 'PEAK_F1'.</p> <p>Site : 03CH07-HY Condition : PEAK_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Horizontal polarization. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 2310 to 2415 MHz. A red horizontal line is drawn at approximately 55 dBuV/m. A blue trace shows a signal that rises sharply starting around 2390 MHz, reaching a peak of about 105 dBuV/m at 2412 MHz. A red vertical line marks the peak at 2412 MHz.</p> <p>Site : 03CH07-HY Condition : AVG_BE_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:9.010kHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Fundamental polarization. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 1000 to 3000 MHz. A red horizontal line is drawn at approximately 55 dBuV/m. A blue trace shows a sharp peak at 2412 MHz, reaching a level of about 105 dBuV/m. A red vertical line marks the peak at 2412 MHz, labeled 'AVG_F1'.</p> <p>Site : 03CH07-HY Condition : AVG_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:9.010kHz SWT:Auto</p>

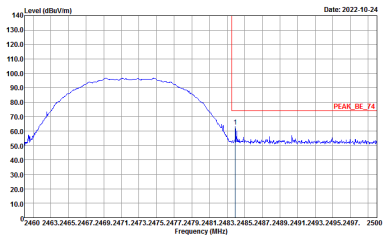
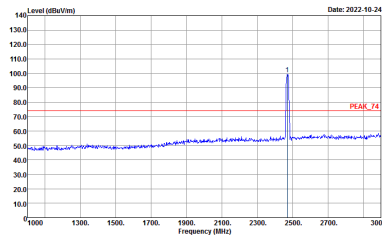
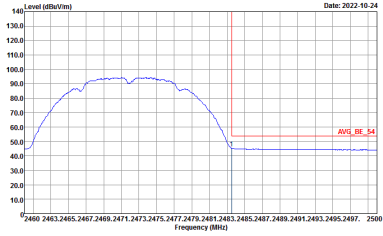
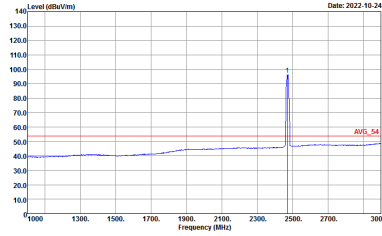


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1+2	Vertical	Fundamental
Peak	<p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : :PEAK_BE_74.3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : :PEAK_74.3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	<p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : :AVG_BE_54.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	<p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : :AVG_54.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



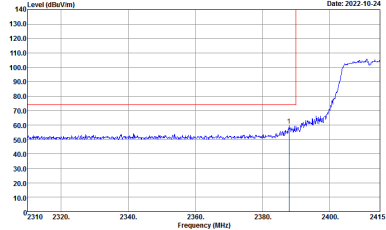
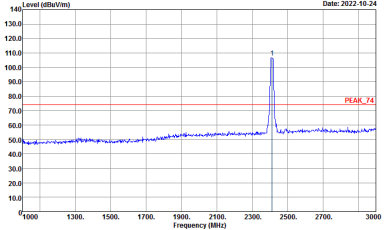
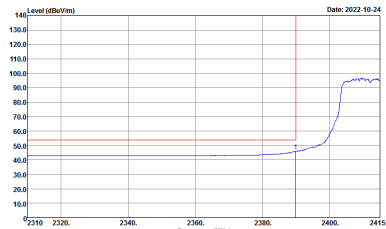
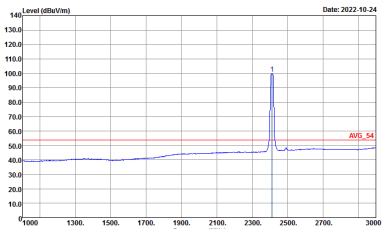
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH13 2472MHz	
1+2	Horizontal	Fundamental
Peak	<p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : PEAK_F0 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	<p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	<p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : AVG_F0 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



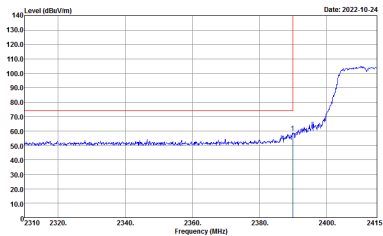
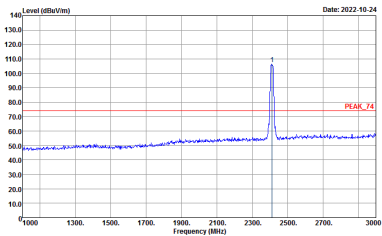
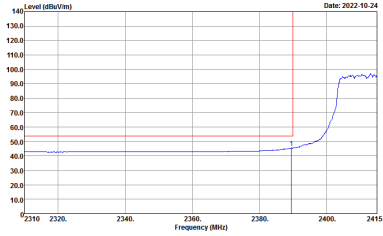
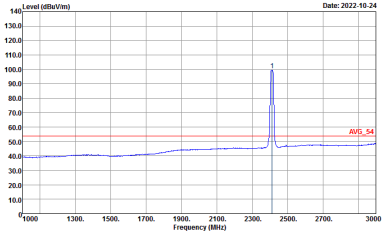
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH13 2472MHz	
1+2	Vertical	Fundamental
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing a peak at 2472 MHz. The peak level is approximately 100 dBuV/m. The plot includes a red line indicating the peak level and a blue line showing the spectrum. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10.0 to 140.0 dBuV/m.</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing a peak at 2472 MHz. The peak level is approximately 100 dBuV/m. The plot includes a red line indicating the peak level and a blue line showing the spectrum. The x-axis ranges from 2460 to 3000 MHz, and the y-axis ranges from 10.0 to 140.0 dBuV/m.</p> <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing the average spectrum. The average level is approximately 50 dBuV/m. The plot includes a red line indicating the average level and a blue line showing the spectrum. The x-axis ranges from 2460 to 2500 MHz, and the y-axis ranges from 10.0 to 140.0 dBuV/m.</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:0.0100kHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing the average spectrum. The average level is approximately 50 dBuV/m. The plot includes a red line indicating the average level and a blue line showing the spectrum. The x-axis ranges from 2460 to 3000 MHz, and the y-axis ranges from 10.0 to 140.0 dBuV/m.</p> <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:0.0100kHz SWT:Auto</p>



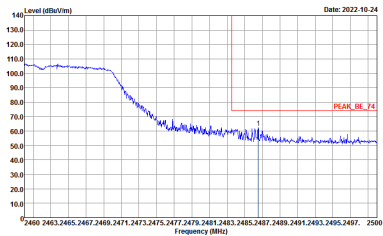
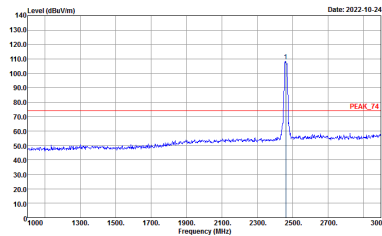
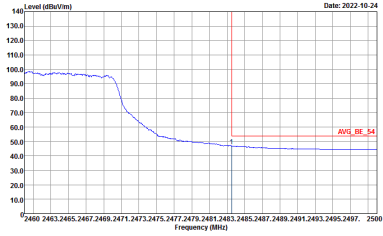
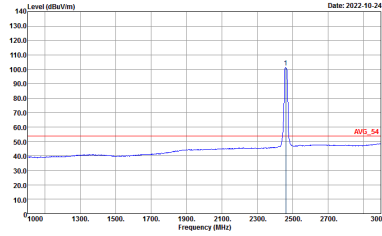
2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : PEAK_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:30.000kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : AVG_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:30.000kHz SWT:Auto</p>

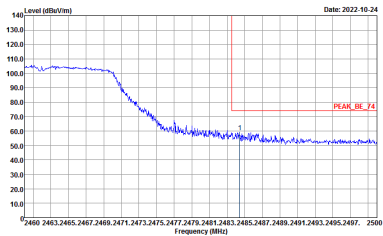
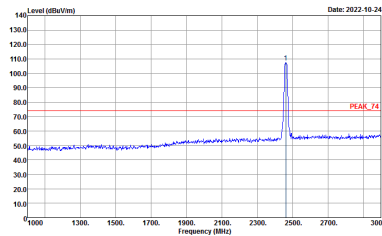
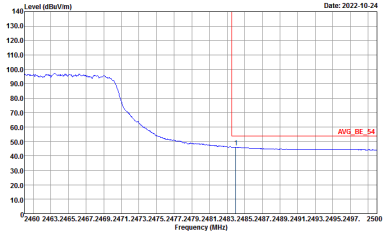
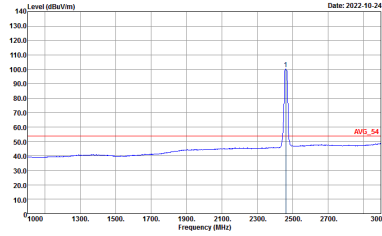


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1+2	Vertical	Fundamental
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical Peak. The plot shows a signal level that rises sharply starting around 2380 MHz and levels off at approximately 105 dBuV/m by 2415 MHz. A red vertical line marks the peak at 2412 MHz.</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Fundamental Peak. The plot shows a sharp peak at 2412 MHz with a level of approximately 105 dBuV/m. A red horizontal line labeled 'PEAK_74' is drawn across the plot at this level.</p> <p>Site : 03CH07-HY Condition : PEAK_74.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical Average. The plot shows a signal level that rises sharply starting around 2380 MHz and levels off at approximately 105 dBuV/m by 2415 MHz. A red vertical line marks the peak at 2412 MHz.</p> <p>Site : 03CH07-HY Condition : AVG_BE_54.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Fundamental Average. The plot shows a sharp peak at 2412 MHz with a level of approximately 105 dBuV/m. A red horizontal line labeled 'AVG_54' is drawn across the plot at this level.</p> <p>Site : 03CH07-HY Condition : AVG_54.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



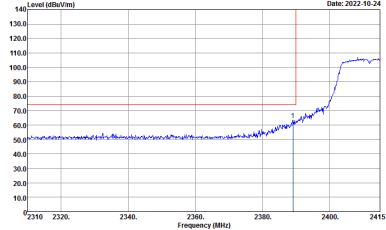
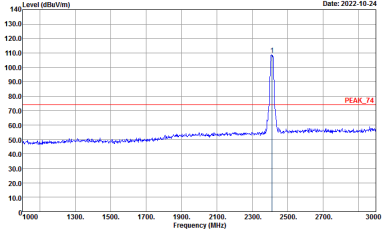
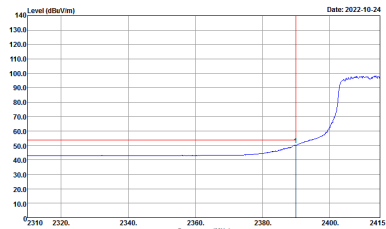
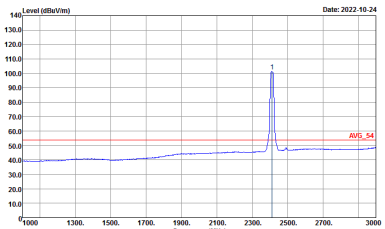
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Level (dBµV/m) vs Frequency (MHz) plot showing a peak at 2462 MHz. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 2460 to 2500 MHz. A red horizontal line indicates the peak level at approximately 75 dBµV/m.</p> <p>Site : 03CH07-HY Condition : : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Level (dBµV/m) vs Frequency (MHz) plot showing a sharp peak at 2462 MHz. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 2460 to 3000 MHz. A red horizontal line indicates the peak level at approximately 75 dBµV/m.</p> <p>Site : 03CH07-HY Condition : : PEAK_F0 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Level (dBµV/m) vs Frequency (MHz) plot showing the average level. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 2460 to 2500 MHz. A red horizontal line indicates the average level at approximately 50 dBµV/m.</p> <p>Site : 03CH07-HY Condition : : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Level (dBµV/m) vs Frequency (MHz) plot showing the average level. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 2460 to 3000 MHz. A red horizontal line indicates the average level at approximately 50 dBµV/m.</p> <p>Site : 03CH07-HY Condition : : AVG_F0 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



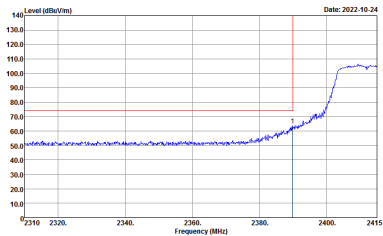
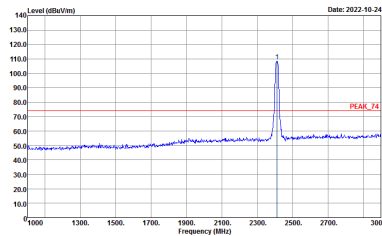
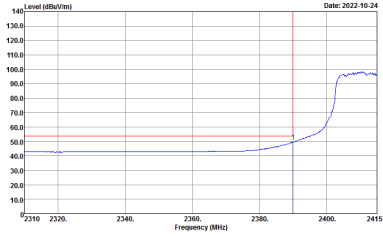
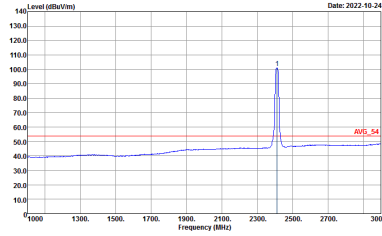
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1+2	Vertical	Fundamental
Peak	 <p>Level (dBV/m) vs Frequency (MHz) plot showing a peak at 2462 MHz. The y-axis ranges from 10.0 to 140.0 dBV/m, and the x-axis ranges from 2460 to 2500 MHz. A red line indicates the peak level at approximately 110 dBV/m.</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Level (dBV/m) vs Frequency (MHz) plot showing a sharp peak at 2462 MHz. The y-axis ranges from 10.0 to 140.0 dBV/m, and the x-axis ranges from 2450 to 3000 MHz. A red line indicates the peak level at approximately 110 dBV/m.</p> <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Level (dBV/m) vs Frequency (MHz) plot showing the average level. The y-axis ranges from 10.0 to 140.0 dBV/m, and the x-axis ranges from 2460 to 2500 MHz. A red line indicates the average level at approximately 50 dBV/m.</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:0.0100kHz SWT:Auto</p>	 <p>Level (dBV/m) vs Frequency (MHz) plot showing the average level. The y-axis ranges from 10.0 to 140.0 dBV/m, and the x-axis ranges from 2450 to 3000 MHz. A red line indicates the average level at approximately 50 dBV/m.</p> <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:0.0100kHz SWT:Auto</p>



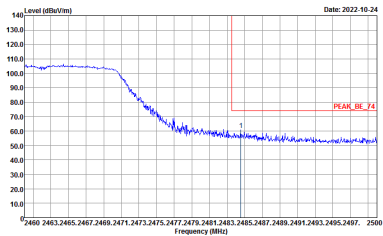
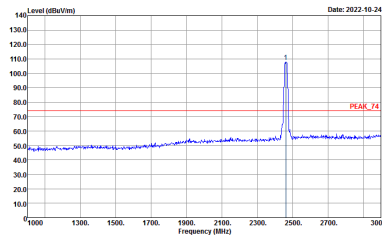
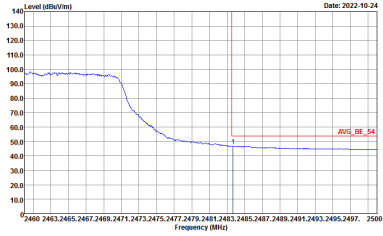
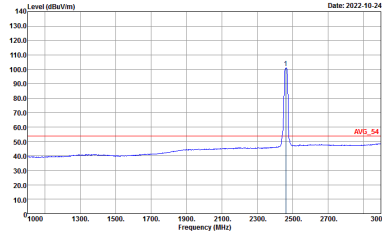
2.4GHz 2400~2483.5MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH01 2412MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : PEAK_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : AVG_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>

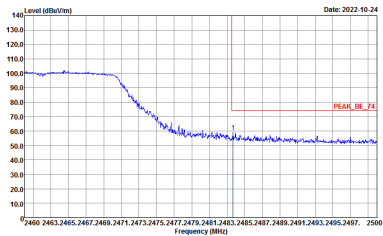
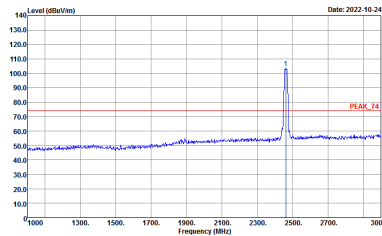
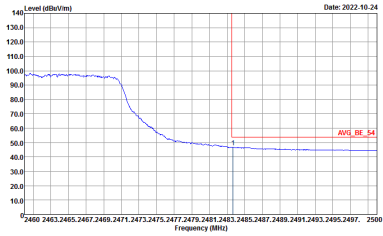
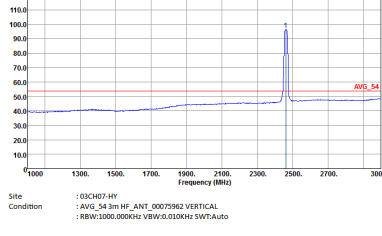


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH01 2412MHz	
1+2	Vertical	Fundamental
Peak	 <p>Date: 2022-10-24</p> <p>Site Condition : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Date: 2022-10-24</p> <p>Site Condition : 03CH07-HY : PEAK_74 3m HF_ANT_00075963 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Date: 2022-10-24</p> <p>Site Condition : 03CH07-HY : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Date: 2022-10-24</p> <p>Site Condition : 03CH07-HY : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



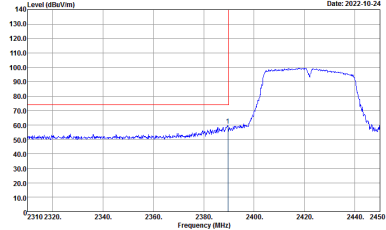
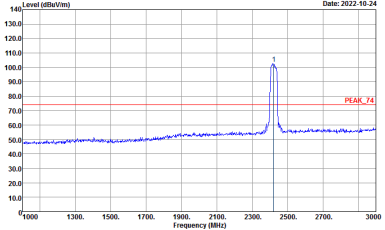
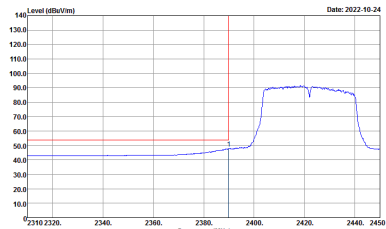
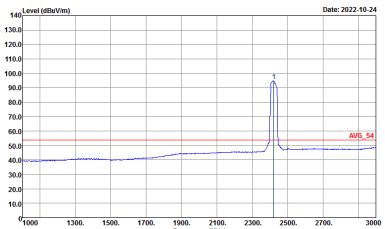
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH20 CH11 2462MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : PEAK_F0 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : AVG_F0 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH20 CH11 2462MHz	
1+2	Vertical	Fundamental
Peak	 <p>Date: 2022-10-24</p> <p>Level (dBuV/m) vs Frequency (MHz)</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	 <p>Date: 2022-10-24</p> <p>Level (dBuV/m) vs Frequency (MHz)</p> <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>
Avg.	 <p>Date: 2022-10-24</p> <p>Level (dBuV/m) vs Frequency (MHz)</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWF:Auto</p>	 <p>Date: 2022-10-24</p> <p>Level (dBuV/m) vs Frequency (MHz)</p> <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWF:Auto</p>



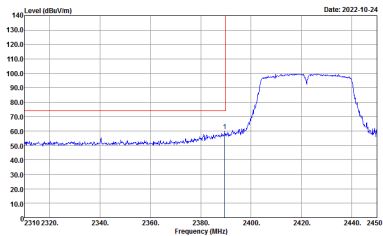
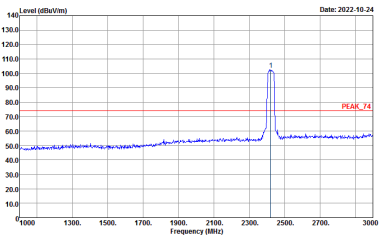
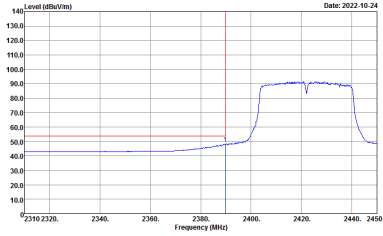
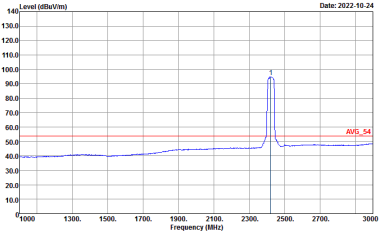
2.4GHz 2400~2483.5MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH03 2422MHz - L	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : :PEAK_BE_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : :PEAK_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH07-HY Condition : :AVG_BE_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:30.000kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : :AVG_3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:30.000kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH03 2422MHz - R	
1+2	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	Left blank

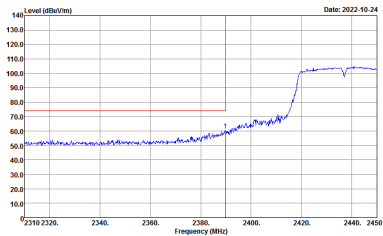
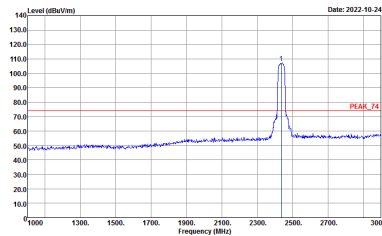
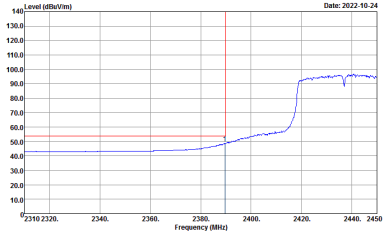
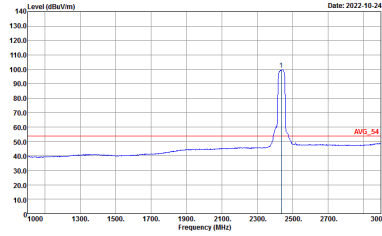


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH03 2422MHz - L	
1+2	Vertical	Fundamental
Peak	 <p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : PEAK_74.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : AVG_BE_54.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Date: 2022-10-24</p> <p>Site : 03CH07-HY Condition : AVG_54.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH03 2422MHz - R	
1+2	Vertical	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:50.000kHz SWF:Auto</p>	Left blank

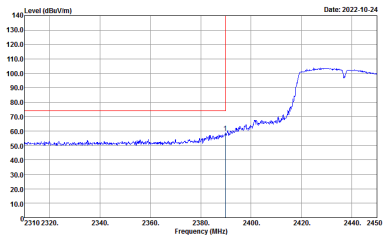
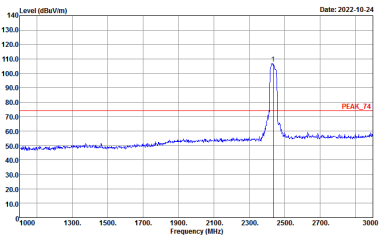
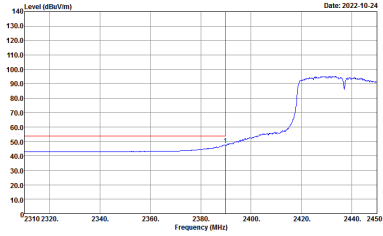
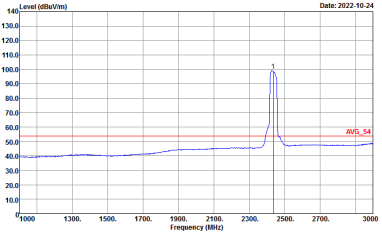


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH06 2437MHz - L	
1+2	Horizontal	Fundamental
Peak	 <p>Level (dBµV/m) vs Frequency (MHz) plot showing a peak at approximately 2437 MHz. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 2310 to 2450 MHz. A red vertical line marks the peak frequency.</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74.3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Level (dBµV/m) vs Frequency (MHz) plot showing a peak at approximately 2437 MHz. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 1000 to 3000 MHz. A red horizontal line indicates the peak level, labeled 'PEAK_74'.</p> <p>Site : 03CH07-HY Condition : PEAK_74.3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Level (dBµV/m) vs Frequency (MHz) plot showing the average spectrum. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 2310 to 2450 MHz. A red vertical line marks the peak frequency.</p> <p>Site : 03CH07-HY Condition : AVG_BE_54.3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Level (dBµV/m) vs Frequency (MHz) plot showing the average spectrum. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 1000 to 3000 MHz. A red horizontal line indicates the average level, labeled 'AVG_54'.</p> <p>Site : 03CH07-HY Condition : AVG_54.3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH06 2437MHz - R	
1+2	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:30.000kHz SWF:Auto</p>	Left blank

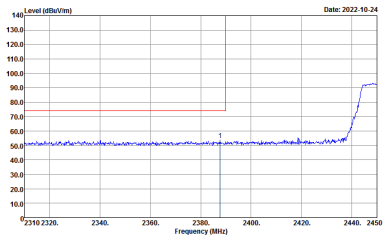
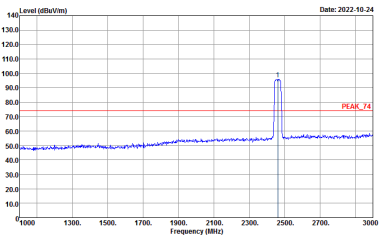
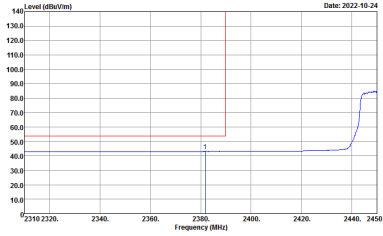
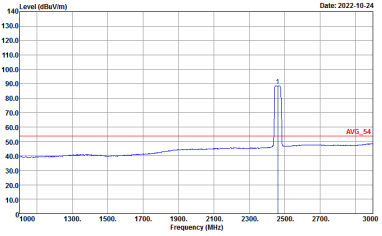


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH06 2437MHz - L	
1+2	Vertical	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : PEAK_74.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : AVG_54.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH06 2437MHz - R	
1+2	Vertical	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:5.000kHz SWF:Auto</p>	Left blank

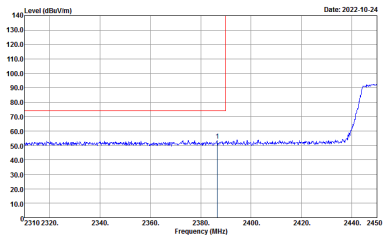
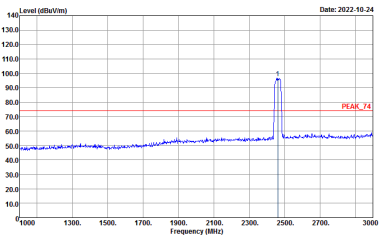
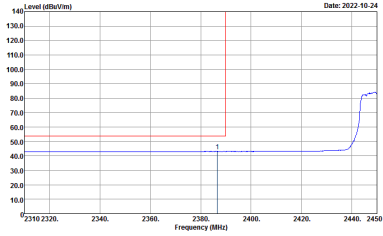
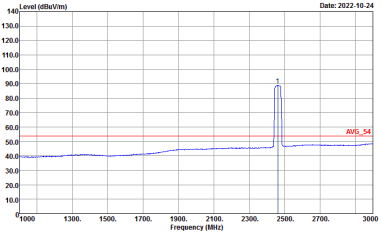


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH11 2462MHz - L	
1+2	Horizontal	Fundamental
Peak	 <p>Level (dBµV/m) vs Frequency (MHz) plot for Horizontal Peak. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 2310 to 2450 MHz. A sharp peak is visible at approximately 2462 MHz, reaching a level of about 130 dBµV/m. A red horizontal line is drawn at approximately 75 dBµV/m.</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74.3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Level (dBµV/m) vs Frequency (MHz) plot for Fundamental Peak. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 1000 to 3000 MHz. A sharp peak is visible at approximately 2462 MHz, reaching a level of about 130 dBµV/m. A red horizontal line is drawn at approximately 75 dBµV/m.</p> <p>Site : 03CH07-HY Condition : PEAK_74.3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Level (dBµV/m) vs Frequency (MHz) plot for Horizontal Avg. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 2310 to 2450 MHz. The spectrum shows a relatively flat baseline around 40-50 dBµV/m with a slight rise at the band edge. A red horizontal line is drawn at approximately 75 dBµV/m.</p> <p>Site : 03CH07-HY Condition : AVG_BE_54.3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Level (dBµV/m) vs Frequency (MHz) plot for Fundamental Avg. The y-axis ranges from 10.0 to 140.0 dBµV/m, and the x-axis ranges from 1000 to 3000 MHz. The spectrum shows a relatively flat baseline around 40-50 dBµV/m with a slight rise at the band edge. A red horizontal line is drawn at approximately 75 dBµV/m.</p> <p>Site : 03CH07-HY Condition : AVG_54.3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>

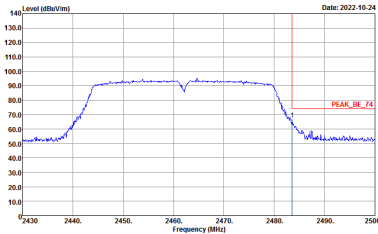
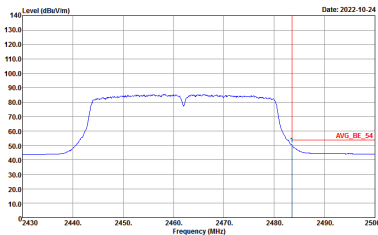


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH11 2462MHz - R	
1+2	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	Left blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH11 2462MHz - L	
1+2	Vertical	Fundamental
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing a peak at approximately 2462 MHz. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 2310 to 2450 MHz. A red line indicates the peak level at approximately 135 dBuV/m.</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing a peak at approximately 2462 MHz. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 1000 to 3000 MHz. A red line indicates the peak level at approximately 75 dBuV/m.</p> <p>Site : 03CH07-HY Condition : PEAK_74.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing an average level at approximately 2462 MHz. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 2310 to 2450 MHz. A red line indicates the average level at approximately 55 dBuV/m.</p> <p>Site : 03CH07-HY Condition : AVG_BE_54.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing an average level at approximately 2462 MHz. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 1000 to 3000 MHz. A red line indicates the average level at approximately 55 dBuV/m.</p> <p>Site : 03CH07-HY Condition : AVG_54.3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>

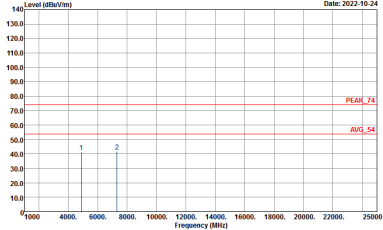
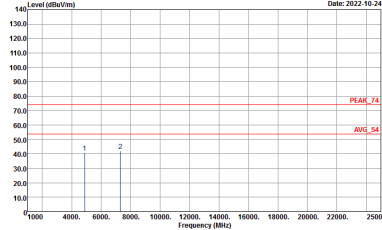


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH11 2462MHz - R	
1+2	Vertical	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	Left blank
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	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+2	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL</p>



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

Table with 2 columns: Horizontal and Vertical. Rows include WIF, ANT, 1+2, and Peak Avg. Each graph shows Level (dBuV/m) vs Frequency (MHz) with peak and average markers.



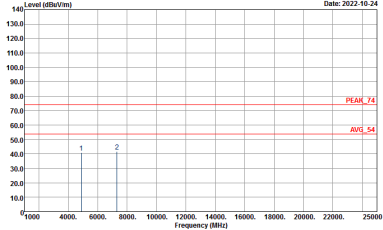
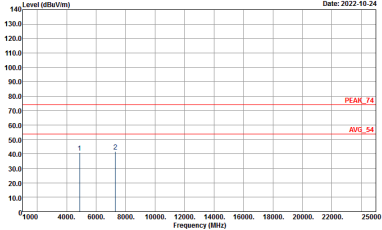
2.4GHz 2400~2483.5MHz
WIFI 802.11ac VHT20 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL</p>



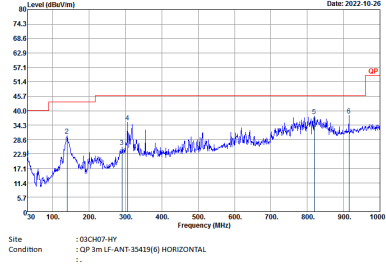
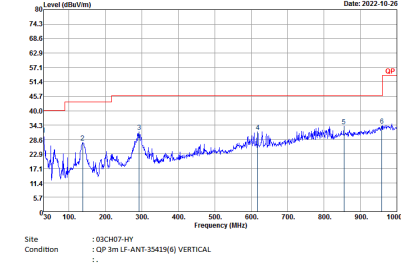
2.4GHz 2400~2483.5MHz

WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL</p>



Emission below 1GHz
2.4GHz WIFI 802.11ac VHT40 (LF)

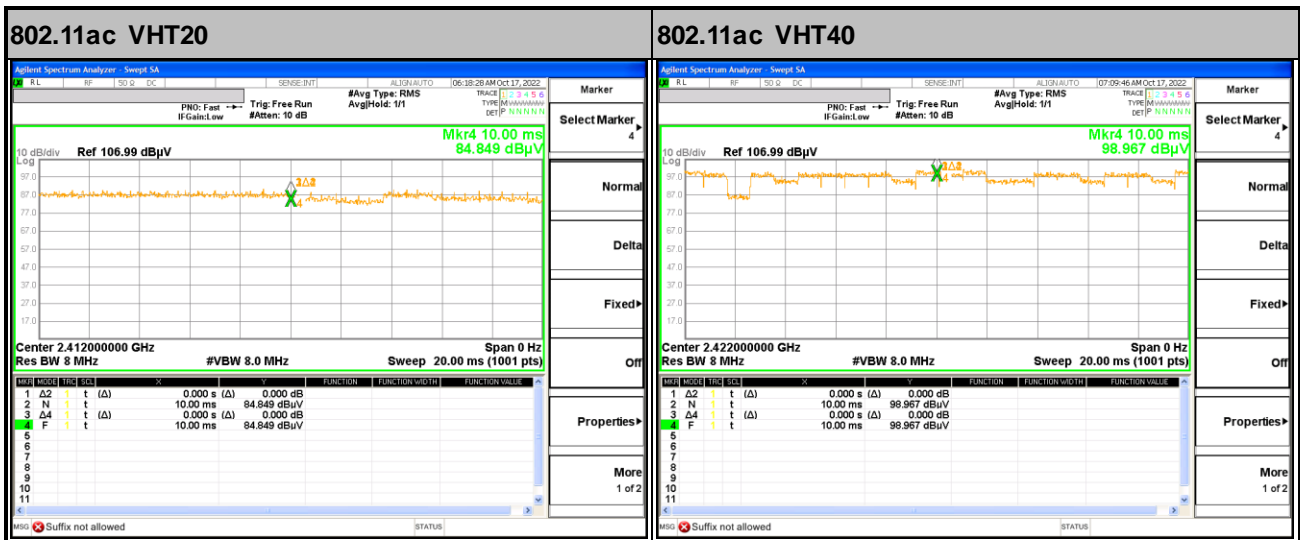
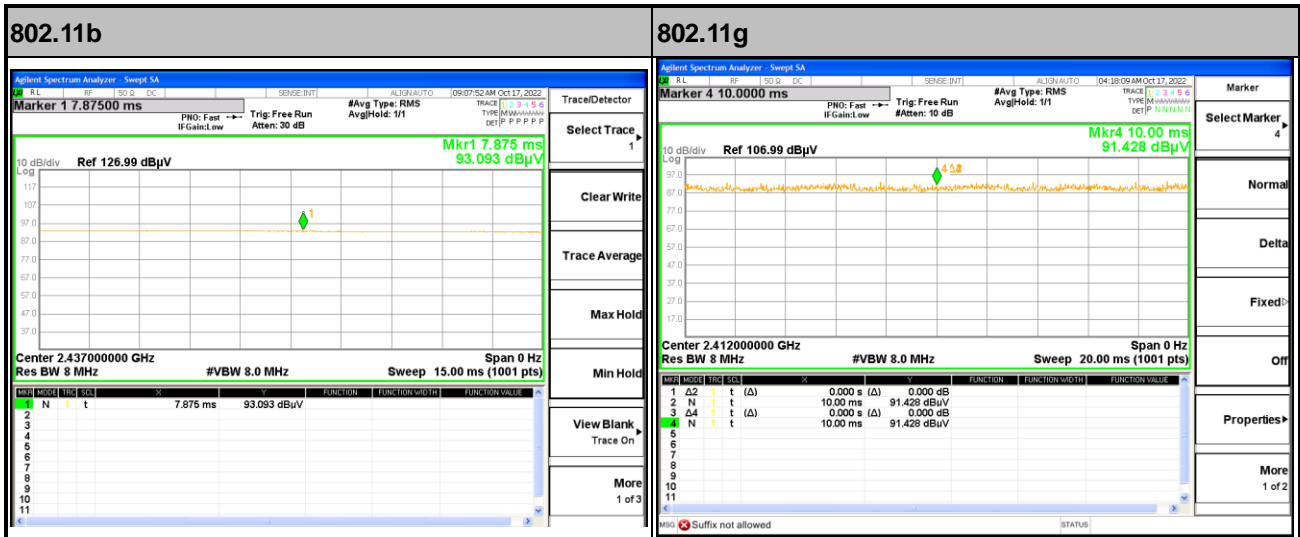
WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11ac VHT40 LF	
1+2	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH07-HY Condition : QP 3m LF-ANT-35412(6) HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : QP 3m LF-ANT-35412(6) VERTICAL</p>



Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1+2	2.4GHz 802.11b	100	-	-	10Hz
1+2	2.4GHz 802.11g	100	-	-	10Hz
1+2	2.4GHz 802.11ac VHT20	100	-	-	10Hz
1+2	2.4GHz 802.11ac VHT40	100	-	-	10Hz

MIMO <Ant. 1+2>



Remark: Ant. 1 means Chain 1 and Ant. 2 means Chain 0.