FCC RADIO TEST REPORT

FCC ID	:	**2AEIM-WL18DBMOD**
Equipment	:	**WiFi Module**
Brand Name	:	**Tesla, Inc.**
Model Name	:	**TSLA-WL18DBMOD**
Applicant	:	**Tesla, Inc.** **3500 DEER CREEK ROAD PALO ALTO, CA 94304**
Manufacturer	:	**Texas Instruments Incorporated** **12500 TI Boulevard, M/S 8751, Dallas, TX 75243, USA**
Standard	:	**FCC Part 15 Subpart C §15.247**

The product was received on Nov. 30, 2022 and testing was performed from Dec. 02, 2022 to Dec. 27, 2022. We, Sporton International (USA) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Lance Tang

Approved by: Neil Kao

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

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History of this test report

Report No.	Version	Description	Issue Date
FR221118001A	01	Initial issue of report	Jan. 09, 2023
FR221118001A	02	Revise Conducted Test Results	Feb. 21, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(b)	Power Output Measurement	Pass	-
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	0.65 dB under the limit at 2389.360 MHz
3.3	15.203	Antenna Requirement	Pass	-

Note:

1. The report contains power measurement and radiated spurious emission test results to validate if the conditions of Class II Permissive Change are complied with, the rest of the test items not covered in this test report are conditionally leveraged from the existing modular approval (FCC ID: 2AEIM-WL18DBMOD).
2. Bluetooth function has been disabled by software configuration, the change will also be reflected in the Permissive Change Request Letter.
3. The original module supports 2x2 MIMO but in this application for Permissive Change, it has been configured to 1Tx from only the Main Port through software configuration.

Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account. 2. Please refer to the section ” Uncertainty of Evaluation ” for measurement uncertainty.
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.

1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Feature	
Antenna Type	WLAN: PCB Antenna

Antenna information		
2412 MHz ~ 2462 MHz	Peak Gain (dBi)	4.19

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

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International (USA) Inc.
Test Site Location	1175 Montague Expressway, Milpitas, CA 95035 TEL : 408 9043300
Test Site No.	**Sporton Site No.**
	TH01-CA, 03CH02-CA

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

FCC Designation No.: US1250

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.
- 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 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, 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.

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

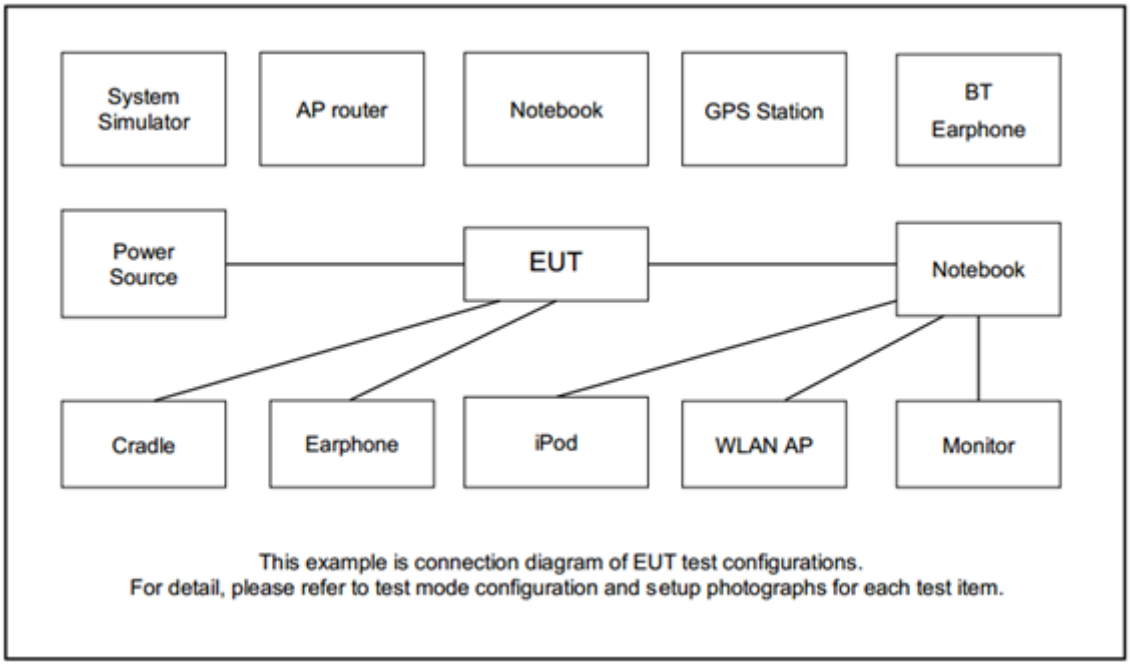
The final test modes include the worst data rates for each modulation shown in the table below.

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

Ch. #	2400-2483.5 MHz			
	802.11b	802.11g	802.11n HT20	802.11n HT40
Low	01	01	01	03
Middle	06	06	06	06
High	11	11	11	09

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.	Notebook	Acer	Altos PS548-G1	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Battery	YUASA	YTX9-BS	N/A	N/A	12V 8Ah

2.5 EUT Operation Test Setup

The RF test items, utility “Teraterm v4.106” 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.

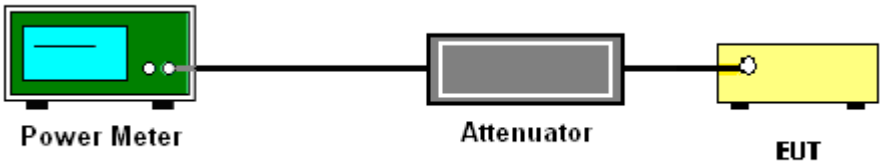
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. For 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 is connected to the power meter by RF cable and attenuator. The path loss is 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.

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

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

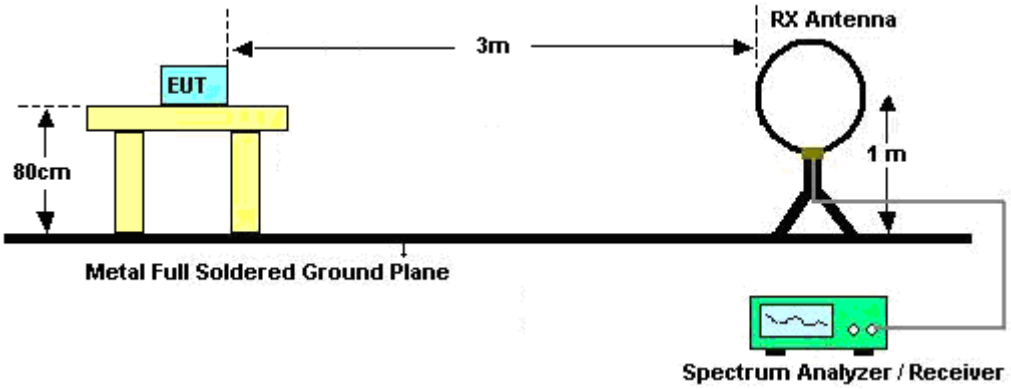
Please refer to the measuring equipment list in this test report.

3.2.3 Test Procedures

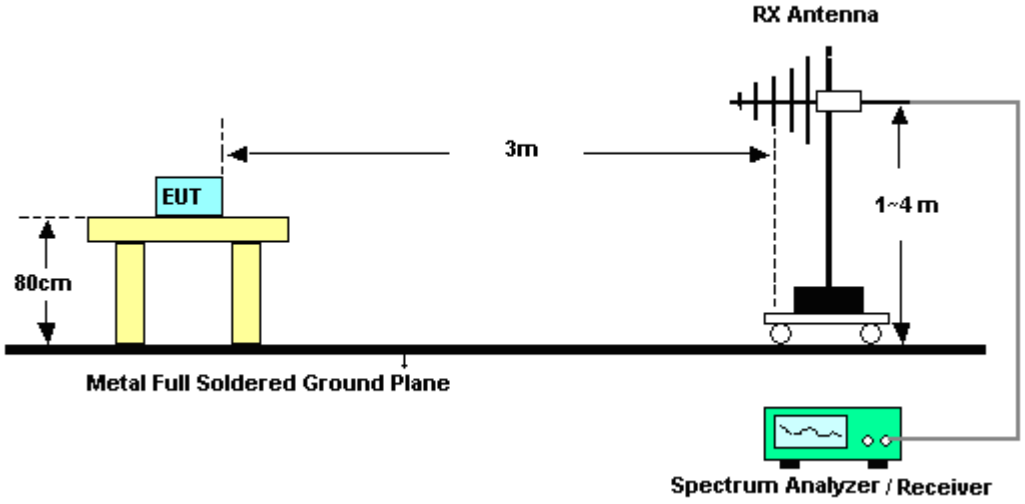
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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: Antenna Factor + Cable Loss + Read Level - Preamp Factor = 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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3 MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.2.4 Test Setup

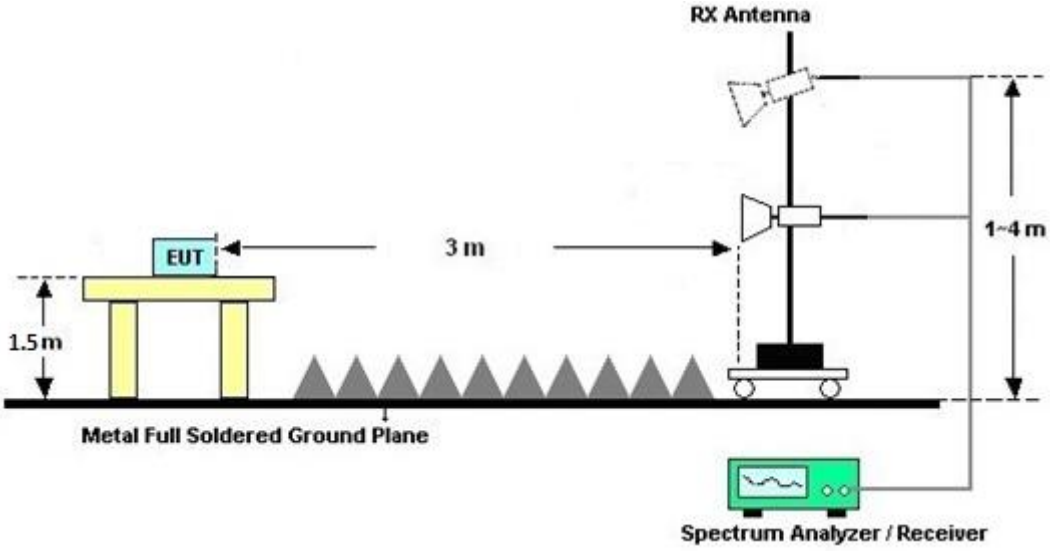
For radiated emissions below 30MHz



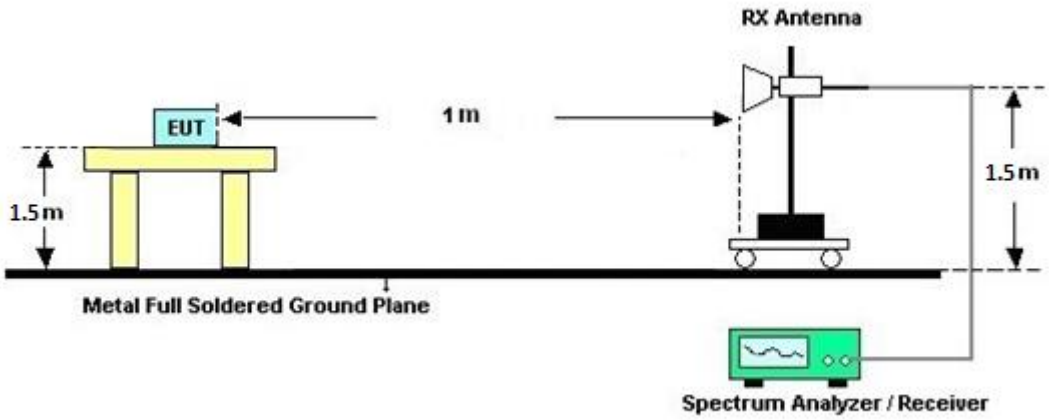
For radiated emissions from 30MHz to 1GHz



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 B and C.

3.2.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

3.3 Antenna Requirements

3.3.1 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.

3.3.2 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
Horn Antenna	SCHWARZBECK	BBHA 9120D	02113	1GHz~18GHz	Jun. 22, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Jun. 21, 2023	Radiation (03CH02-CA)
Horn Antenna	SCHWARZBECK	BBHA 9170D	00842	18GHz~40GHz	Aug. 16, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Aug. 15, 2023	Radiation (03CH02-CA)
Preamplifier	Keysight	83017A	MY53270323	1GHz~26.5GHz	May 11, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	May 10, 2023	Radiation (03CH02-CA)
Preamplifier	E-instrument	ERA-100M-18G-56-01-A70	EC1900251	1GHz~18GHz	May 10, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	May 09, 2023	Radiation (03CH02-CA)
Preamplifier	EMEC	EMC18G40G	060726	18GHz-40GHz	Feb. 10, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Feb. 09, 2023	Radiation (03CH02-CA)
Spectrum Analyzer	Keysight	N9010A	MY57420221	10Hz~44GHz	Aug. 30, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Aug. 29, 2023	Radiation (03CH02-CA)
RF Cable	HUBER+SUHNER	SUCOFLEX 102	8024032/2, 802406/2, 802875/2	N/A	Jun. 22, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Jun. 21, 2023	Radiation (03CH02-CA)
Filter	WOKEN	WFIL-H6750-18000F	WFIL-H6750-18000F	6.75Hz High Pass Filter	Sep. 01, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Aug. 31, 2023	Radiation (03CH02-CA)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN10	3GHz High Pass Filter	Jul. 22, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Jul. 21, 2023	Radiation (03CH02-CA)
Hygrometer	TESEO	608-H1	45142602	N/A	Sep. 12, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Sep. 11, 2023	Radiation (03CH02-CA)
Controller	ChainTek	EM-1000	060876	NA	N/A	Dec. 02, 2022 ~ Dec. 27, 2022	N/A	Radiation (03CH02-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Dec. 02, 2022 ~ Dec. 27, 2022	N/A	Radiation (03CH02-CA)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Dec. 02, 2022 ~ Dec. 27, 2022	N/A	Radiation (03CH02-CA)
Software	Audix	E3	N/A	N/A	N/A	Dec. 02, 2022 ~ Dec. 27, 2022	N/A	Radiation (03CH02-CA)
Bilog Antenna	TESEQ	6111D	50392	30MHz~1GHz	Jul. 11, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Jul. 10, 2023	Radiation (03CH01-CA)
Loop Antenna	R&S	HFH2-Z2E	100840	9kHz~30MHz	Jul. 05, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Jul. 04, 2023	Radiation (03CH01-CA)
Preamplifier	SONOMA	310N	372241	9kHz~1GHz	May 09, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	May 08, 2023	Radiation (03CH01-CA)
EMI Test Receiver	R&S	ESU26	100049	20Hz~26.5GHz	Jun. 01, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	May 31, 2023	Radiation (03CH01-CA)
RF Cable	HUBER+SUHNER	SUCOFLEX 102	8015932/2, 8015762/2, 6015772/2	N/A	Aug. 08, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Aug. 07, 2023	Radiation (03CH01-CA)
Hygrometer	TESTO	608-H1	45141354	N/A	Jul. 27, 2022	Dec. 02, 2022 ~ Dec. 27, 2022	Jul. 26, 2023	Radiation (03CH01-CA)
Controller	Chaintek	EM-1000	060881	Control Turn Table & Antenna Mast	N/A	Dec. 02, 2022 ~ Dec. 27, 2022	N/A	Radiation (03CH01-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Dec. 02, 2022 ~ Dec. 27, 2022	N/A	Radiation (03CH01-CA)
Test Software	Audix E3	E6.2009-8-24d	PK-002093	N/A	N/A	Dec. 02, 2022 ~ Dec. 27, 2022	N/A	Radiation (03CH01-CA)
Hygrometer	Testo	608-H1	45141354	N/A	Jul. 27, 2022	Dec. 02, 2022~ Dec. 08, 2022	Jul. 26, 2023	Conducted (TH01-CA)
Power Meter	Anritsu	ML2495A	1804004	N/A	May 10, 2022	Dec. 02, 2022~ Dec. 08, 2022	May 09, 2023	Conducted (TH01-CA)
Power sensor	Anritsu	MA2411B	1726149	300MHz ~40GHz	May 10, 2022	Dec. 02, 2022~ Dec. 08, 2022	May 09, 2023	Conducted (TH01-CA)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101545	10Hz-40GHz	May 31, 2022	Dec. 02, 2022~ Dec. 08, 2022	May 30, 2023	Conducted (TH01-CA)

5 Uncertainty of Evaluation

<03CH01-CA>

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.6 dB**

<03CH02-CA>

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.9 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.2 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Venkata Kondepudi	Temperature:	17.7 ~ 20.6	°C
Test Date:	2022/12/02~2022/12/08	Relative Humidity:	36.8 ~ 50.9	%

TEST RESULTS DATA
Average Output Power

2.4GHz Band Single Antenna																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power with duty factor (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	1	1	2412	15.25	-		30.00	-	4.19	-	19.44	-	36.00	-	Pass
11b	1Mbps	1	6	2437	15.47	-		30.00	-	4.19	-	19.66	-	36.00	-	Pass
11b	1Mbps	1	11	2462	15.75	-		30.00	-	4.19	-	19.94	-	36.00	-	Pass
11g	6Mbps	1	1	2412	11.15	-		30.00	-	4.19	-	15.34	-	36.00	-	Pass
11g	6Mbps	1	6	2437	15.65	-		30.00	-	4.19	-	19.84	-	36.00	-	Pass
11g	6Mbps	1	11	2462	11.07	-		30.00	-	4.19	-	15.26	-	36.00	-	Pass
HT20	MCS0	1	1	2412	11.19	-		30.00	-	4.19	-	15.38	-	36.00	-	Pass
HT20	MCS0	1	6	2437	15.22	-		30.00	-	4.19	-	19.41	-	36.00	-	Pass
HT20	MCS0	1	11	2462	10.84	-		30.00	-	4.19	-	15.03	-	36.00	-	Pass
HT40	MCS0	1	3	2422	10.15	-		30.00	-	4.19	-	14.34	-	36.00	-	Pass
HT40	MCS0	1	6	2437	12.98	-		30.00	-	4.19	-	17.17	-	36.00	-	Pass
HT40	MCS0	1	9	2452	10.50	-		30.00	-	4.19	-	14.69	-	36.00	-	Pass

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
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	1	1	2412	17.18	-		30.00	-	4.19	-	21.37	-	36.00	-	Pass
11b	1Mbps	1	6	2437	17.30	-		30.00	-	4.19	-	21.49	-	36.00	-	Pass
11b	1Mbps	1	11	2462	17.52	-		30.00	-	4.19	-	21.71	-	36.00	-	Pass
11g	6Mbps	1	1	2412	19.49	-		30.00	-	4.19	-	23.68	-	36.00	-	Pass
11g	6Mbps	1	6	2437	20.38	-		30.00	-	4.19	-	24.57	-	36.00	-	Pass
11g	6Mbps	1	11	2462	19.74	-		30.00	-	4.19	-	23.93	-	36.00	-	Pass
HT20	MCS0	1	1	2412	19.72	-		30.00	-	4.19	-	23.91	-	36.00	-	Pass
HT20	MCS0	1	6	2437	20.33	-		30.00	-	4.19	-	24.52	-	36.00	-	Pass
HT20	MCS0	1	11	2462	19.72	-		30.00	-	4.19	-	23.91	-	36.00	-	Pass
HT40	MCS0	1	3	2422	11.81	-		30.00	-	4.19	-	16.00	-	36.00	-	Pass
HT40	MCS0	1	6	2437	14.38	-		30.00	-	4.19	-	18.57	-	36.00	-	Pass
HT40	MCS0	1	9	2452	12.12	-		30.00	-	4.19	-	16.31	-	36.00	-	Pass

Appendix B. Radiated Spurious Emission

Test Engineer :	Daniel Lee and Leo Liu	Temperature :	20~24°C
		Relative Humidity :	42~47%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2381.61	56.77	-17.23	74	43.08	27.26	17.95	31.52	100	71	P	H
		2386.755	48.62	-5.38	54	34.89	27.28	17.96	31.51	100	71	A	H
	*	2412	108.88	-	-	94.93	27.44	18	31.49	100	71	P	H
	*	2412	106.24	-	-	92.29	27.44	18	31.49	100	71	A	H
													H
													H
		2385.915	55.09	-18.91	74	41.37	27.27	17.96	31.51	351	296	P	V
		2386.86	45.07	-8.93	54	31.34	27.28	17.96	31.51	351	296	A	V
	*	2412	100.07	-	-	86.12	27.44	18	31.49	351	296	P	V
	*	2412	97.38	-	-	83.43	27.44	18	31.49	351	296	A	V
													V
													V

802.11b CH 11 2462MHz	*	2462	107.75	-	-	93.55	27.57	18.1	31.47	110	59	P	H
	*	2462	105.16	-	-	90.96	27.57	18.1	31.47	110	59	A	H
		2488.84	59.18	-14.82	74	44.78	27.72	18.14	31.46	110	59	P	H
		2487.68	50.66	-3.34	54	36.26	27.72	18.14	31.46	110	59	A	H
													H
													H
	*	2462	97.12	-	-	82.92	27.57	18.1	31.47	361	301	P	V
	*	2462	94.43	-	-	80.23	27.57	18.1	31.47	361	301	A	V
		2488.84	55.38	-18.62	74	40.98	27.72	18.14	31.46	361	301	P	V
		2487.64	45.64	-8.36	54	31.24	27.72	18.14	31.46	361	301	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 802.11b (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	51.15	-22.85	74	74.41	32.53	12.09	67.88	100	137	P	H
		4824	49.69	-4.31	54	72.95	32.53	12.09	67.88	100	137	A	H
													H
													H
													H
													H
		4824	47.62	-26.38	74	70.88	32.53	12.09	67.88	-	-	P	V
													V
													V
													V
													V
													V
802.11b CH 06 2437MHz		4874	53.6	-20.4	74	76.56	32.72	12.23	67.91	100	137	P	H
		4874	49.82	-4.18	54	72.78	32.72	12.23	67.91	100	137	A	H
		7311	43.34	-30.66	74	58.58	36.86	14.89	66.99	-	-	P	H
													H
													H
													H
		4874	47.41	-26.59	74	70.37	32.72	12.23	67.91	-	-	P	V
		7311	44.54	-29.46	74	59.78	36.86	14.89	66.99	-	-	P	V
													V
													V
													V
													V

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 11 2462MHz		4924	51.84	-22.16	74	74.57	32.91	12.35	67.99	100	139	P	H
		4924	49.45	-4.55	54	72.18	32.91	12.35	67.99	100	139	A	H
		7386	43.42	-30.58	74	59.34	36.5	14.96	67.38	-	-	P	H
													H
													H
													H
		4924	46.59	-27.41	74	69.32	32.91	12.35	67.99	-	-	P	V
		7386	44.37	-29.63	74	60.29	36.5	14.96	67.38	-	-	P	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 802.11g (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2390	66.5	-7.5	74	52.75	27.29	17.96	31.5	100	82	P	H
		2390	49.25	-4.75	54	35.5	27.29	17.96	31.5	100	82	A	H
	*	2412	107.76	-	-	93.81	27.44	18	31.49	100	82	P	H
	*	2412	100.18	-	-	86.23	27.44	18	31.49	100	82	A	H
													H
													H
		2389.905	61.49	-12.51	74	47.74	27.29	17.96	31.5	317	297	P	V
		2390	45.46	-8.54	54	31.71	27.29	17.96	31.5	317	297	A	V
	*	2412	100.43	-	-	86.48	27.44	18	31.49	317	297	P	V
	*	2412	92.62	-	-	78.67	27.44	18	31.49	317	297	A	V
													V
													V
802.11g CH 11 2462MHz	*	2462	108.7	-	-	94.5	27.57	18.1	31.47	111	60	P	H
	*	2462	99.61	-	-	85.41	27.57	18.1	31.47	111	60	A	H
		2483.76	69.37	-4.63	74	55	27.7	18.13	31.46	111	60	P	H
		2483.52	50.24	-3.76	54	35.87	27.7	18.13	31.46	111	60	A	H
													H
													H
	*	2462	98.39	-	-	84.19	27.57	18.1	31.47	289	285	P	V
	*	2462	90.45	-	-	76.25	27.57	18.1	31.47	289	285	A	V
		2483.72	59.92	-14.08	74	45.55	27.7	18.13	31.46	289	285	P	V
		2483.56	45.5	-8.5	54	31.13	27.7	18.13	31.46	289	285	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 Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	54.38	-19.62	74	77.64	32.53	12.09	67.88	100	133	P	H
		4824	50.91	-3.09	54	74.17	32.53	12.09	67.88	100	133	A	H
													H
													H
													H
													H
		4824	47.06	-26.94	74	70.32	32.53	12.09	67.88	-	-	P	V
													V
													V
													V
													V
													V
802.11g CH 06 2437MHz		4874	52.28	-21.72	74	75.24	32.72	12.23	67.91	100	136	P	H
		4874	50.45	-3.55	54	73.41	32.72	12.23	67.91	100	136	A	H
		7311	43.12	-30.88	74	58.36	36.86	14.89	66.99	-	-	P	H
													H
													H
													H
		4874	45.58	-28.42	74	68.54	32.72	12.23	67.91	-	-	P	V
		7311	44.75	-29.25	74	59.99	36.86	14.89	66.99	-	-	P	V
													V
													V
													V
													V

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 11 2462MHz		4924	52.99	-21.01	74	75.72	32.91	12.35	67.99	100	129	P	H
		4924	49.63	-4.37	54	72.36	32.91	12.35	67.99	100	129	A	H
		7386	44.69	-29.31	74	60.61	36.5	14.96	67.38	-	-	P	H
													H
													H
													H
		4924	45.46	-28.54	74	68.19	32.91	12.35	67.99	-	-	P	V
		7386	43.22	-30.78	74	59.14	36.5	14.96	67.38	-	-	P	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 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		2389.905	68.29	-5.71	74	54.54	27.29	17.96	31.5	100	71	P	H
		2389.8	52.14	-1.86	54	38.39	27.29	17.96	31.5	100	71	A	H
	*	2412	109.21	-	-	95.26	27.44	18	31.49	100	71	P	H
	*	2412	100.68	-	-	86.73	27.44	18	31.49	100	71	A	H
802.11n													H
HT20													H
CH 01		2390	61.45	-12.55	74	47.7	27.29	17.96	31.5	393	31	P	V
2412MHz		2390	46.06	-7.94	54	32.31	27.29	17.96	31.5	393	31	A	V
	*	2412	100.95	-	-	87	27.44	18	31.49	393	31	P	V
	*	2412	92.71	-	-	78.76	27.44	18	31.49	393	31	A	V
													V
													V
	*	2462	108.01	-	-	93.81	27.57	18.1	31.47	136	65	P	H
	*	2462	99.57	-	-	85.37	27.57	18.1	31.47	136	65	A	H
		2483.64	70.16	-3.84	74	55.79	27.7	18.13	31.46	136	65	P	H
		2483.56	52.04	-1.96	54	37.67	27.7	18.13	31.46	136	65	A	H
802.11n													H
HT20													H
CH 11	*	2462	100.12	-	-	85.92	27.57	18.1	31.47	287	301	P	V
2462MHz	*	2462	90.82	-	-	76.62	27.57	18.1	31.47	287	301	A	V
		2484.28	62.48	-11.52	74	48.11	27.7	18.13	31.46	287	301	P	V
		2483.56	46.69	-7.31	54	32.32	27.7	18.13	31.46	287	301	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 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4824	53.64	-20.36	74	76.9	32.53	12.09	67.88	100	138	P	H
		4824	50.51	-3.49	54	73.77	32.53	12.09	67.88	100	138	A	H
													H
													H
802.11n													H
HT20													H
CH 01		4824	47.94	-26.06	74	71.2	32.53	12.09	67.88	-	-	P	V
2412MHz													V
													V
													V
													V
													V
		4874	53.38	-20.62	74	76.34	32.72	12.23	67.91	100	132	P	H
		4874	50.62	-3.38	54	73.58	32.72	12.23	67.91	100	132	A	H
		7311	44.6	-29.4	74	59.84	36.86	14.89	66.99	-	-	P	H
													H
802.11n													H
HT20													H
CH 06		4874	45.84	-28.16	74	68.8	32.72	12.23	67.91	-	-	P	V
2437MHz		7311	45.23	-28.77	74	60.47	36.86	14.89	66.99	-	-	P	V
													V
													V
													V
													V

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4924	53.22	-20.78	74	75.95	32.91	12.35	67.99	100	138	P	H
		4924	49.77	-4.23	54	72.5	32.91	12.35	67.99	100	138	A	H
		7386	43.29	-30.71	74	59.21	36.5	14.96	67.38	-	-	P	H
													H
802.11n													H
HT20													H
CH 11		4924	45.37	-28.63	74	68.1	32.91	12.35	67.99	-	-	P	V
2462MHz		7386	43.23	-30.77	74	59.15	36.5	14.96	67.38	-	-	P	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 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		2384.08	68.25	-5.75	74	54.54	27.27	17.95	31.51	100	61	P	H
		2389.36	53.35	-0.65	54	39.6	27.29	17.96	31.5	100	61	A	H
	*	2422	103.25	-	-	89.27	27.45	18.02	31.49	100	61	P	H
	*	2422	95.16	-	-	81.18	27.45	18.02	31.49	100	61	A	H
		2495.68	55.25	-18.75	74	40.77	27.78	18.15	31.45	100	61	P	H
		2485.84	45.55	-8.45	54	31.16	27.71	18.14	31.46	100	61	A	H
		2389.2	63.12	-10.88	74	49.37	27.29	17.96	31.5	307	299	P	V
		2388.88	47.91	-6.09	54	34.16	27.29	17.96	31.5	307	299	A	V
	*	2422	96.43	-	-	82.45	27.45	18.02	31.49	307	299	P	V
	*	2422	87.66	-	-	73.68	27.45	18.02	31.49	307	299	A	V
		2493.52	55.27	-18.73	74	40.82	27.76	18.15	31.46	307	299	P	V
		2499.28	45.16	-8.84	54	30.64	27.81	18.16	31.45	307	299	A	V
802.11n HT40 CH 09 2452MHz		2372.56	55.45	-18.55	74	41.83	27.21	17.93	31.52	100	59	P	H
		2389.36	44.94	-9.06	54	31.19	27.29	17.96	31.5	100	59	A	H
	*	2452	103.47	-	-	89.34	27.52	18.08	31.47	100	59	P	H
	*	2452	95.23	-	-	81.1	27.52	18.08	31.47	100	59	A	H
		2485.68	68.05	-5.95	74	53.66	27.71	18.14	31.46	100	59	P	H
		2484.24	51.94	-2.06	54	37.57	27.7	18.13	31.46	100	59	A	H
		2352.08	54.64	-19.36	74	41.15	27.12	17.89	31.52	302	289	P	V
		2354.64	44.41	-9.59	54	30.91	27.13	17.89	31.52	302	289	A	V
	*	2452	93.73	-	-	79.6	27.52	18.08	31.47	302	289	P	V
	*	2452	85.27	-	-	71.14	27.52	18.08	31.47	302	289	A	V
		2485.28	60.63	-13.37	74	46.25	27.71	18.13	31.46	302	289	P	V
		2483.68	46.31	-7.69	54	31.94	27.7	18.13	31.46	302	289	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. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4844	53.9	-20.1	74	77.01	32.62	12.15	67.88	100	134	P	H
		4844	51.48	-2.52	54	74.59	32.62	12.15	67.88	100	134	A	H
		7266	44.19	-29.81	74	58.85	37.03	14.84	66.53	-	-	P	H
													H
802.11n													H
HT40													H
CH 03		4844	50.39	-23.61	74	73.5	32.62	12.15	67.88	400	317	P	V
2422MHz		4844	47.71	-6.29	54	70.82	32.62	12.15	67.88	400	317	A	V
		7266	44.55	-29.45	74	59.21	37.03	14.84	66.53	-	-	P	V
													V
													V
													V
		4874	54.16	-19.84	74	77.12	32.72	12.23	67.91	103	139	P	H
		4874	51.52	-2.48	54	74.48	32.72	12.23	67.91	103	139	A	H
		7311	45	-29	74	60.24	36.86	14.89	66.99	-	-	P	H
													H
802.11n													H
HT40													H
CH 06		4874	49.53	-24.47	74	72.49	32.72	12.23	67.91	397	229	P	V
2437MHz		4874	46.92	-7.08	54	69.88	32.72	12.23	67.91	397	229	A	V
		7311	44.63	-29.37	74	59.87	36.86	14.89	66.99	-	-	P	V
													V
													V
													V

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4904	54.89	-19.11	74	77.74	32.81	12.3	67.96	100	135	P	H
		4904	52.16	-1.84	54	75.01	32.81	12.3	67.96	100	135	A	H
		7356	45.49	-28.51	74	61.25	36.65	14.93	67.34	-	-	P	H
													H
802.11n													H
HT40													H
CH 09		4904	45.63	-28.37	74	68.48	32.81	12.3	67.96	-	-	P	V
2452MHz		7356	45.25	-28.75	74	61.01	36.65	14.93	67.34	-	-	P	V
													V
													V
													V
													V

Remark

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

Emission above 18GHz

2.4GHz WIFI 802.11n HT40 (SHF)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		23075	39.42	-34.58	74	36.39	38.62	16.65	52.24	-	-	P	H
		24286	40.17	-33.83	74	36.7	38.57	17.36	52.46	-	-	P	H
													H
													H
													H
													H
													H
													H
2.4GHz													H
802.11n													H
HT40		22060	39.3	-34.7	74	37.42	38.07	16.13	52.32	-	-	P	V
SHF		24125	40.35	-33.65	74	37	38.54	17.23	52.42	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

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

Emission below 1GHz

2.4GHz WIFI 802.11n HT40 (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		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		350.1	43.24	-2.76	46	52.5	20.4	2.86	32.52	101	48	QP	H
		450.01	41.77	-4.23	46	48.2	22.9	3.34	32.67	100	308	QP	H
		500.45	40.16	-5.84	46	45.6	23.8	3.51	32.75	194	0	QP	H
		549.92	39.3	-6.7	46	43.06	25.39	3.66	32.81	-	-	P	H
		700.27	39.9	-6.1	46	42.03	26.5	4.19	32.82	-	-	P	H
		900.09	39.7	-6.3	46	37.71	29.2	4.72	31.93	-	-	P	H
													H
													H
													H
													H
2.4GHz													H
802.11n													H
HT40		50.37	36.48	-3.52	40	53.61	14.11	1.13	32.37	101	359	QP	V
LF		84.32	31.78	-8.22	40	48.64	13.93	1.57	32.36	-	-	P	V
		134.76	30.84	-12.66	43.5	43.82	17.6	1.78	32.36	-	-	P	V
		350.1	33.98	-12.02	46	43.24	20.4	2.86	32.52	-	-	P	V
		450.01	37.1	-8.9	46	43.53	22.9	3.34	32.67	-	-	P	V
		949.56	33.22	-12.78	46	28.97	30.79	4.95	31.49	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as “-” means no suspected emission found or emission level has at least 6dB margin against limit or 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	**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	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

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

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

3. Margin (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. Margin (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. Margin (dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

Appendix C. Radiated Spurious Emission Plots

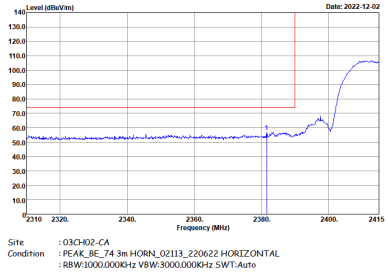
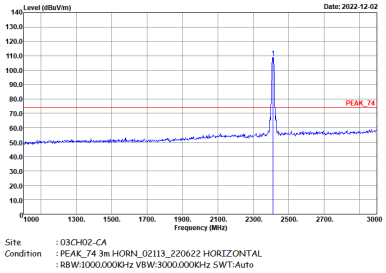
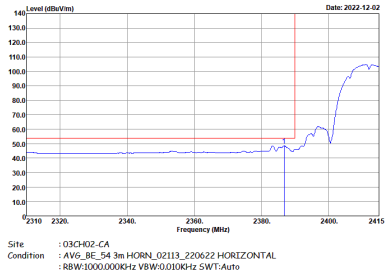
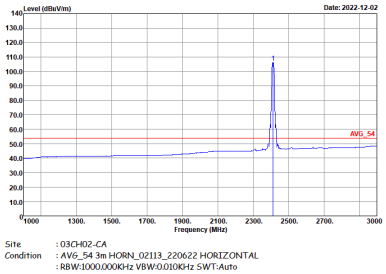
Test Engineer :	Daniel Lee and Leo Liu	**Temperature :**	20~24°C
		Relative Humidity :	42~47%

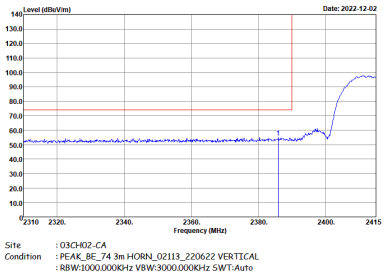
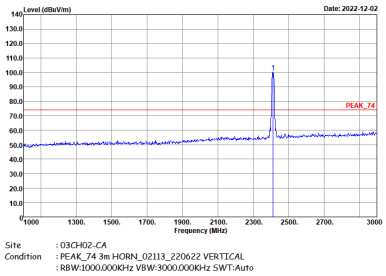
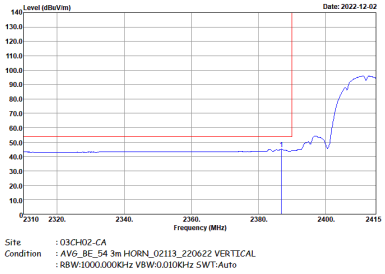
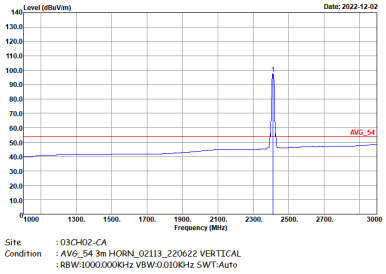
Note symbol

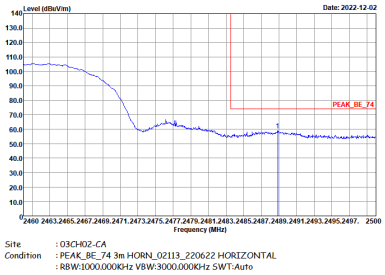
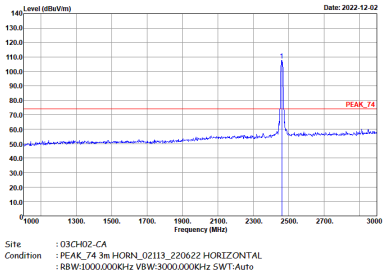
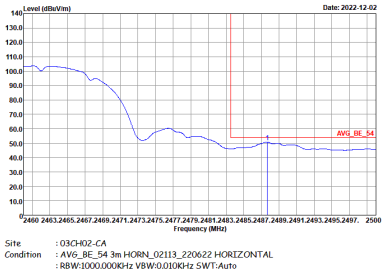
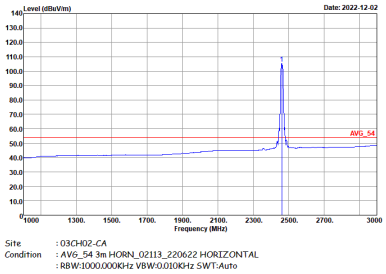
-L	**Low channel location**
-R	**High channel location**

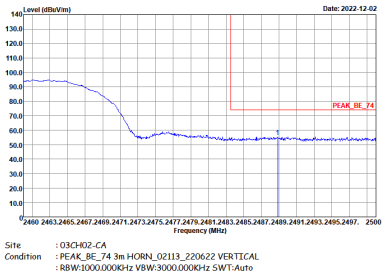
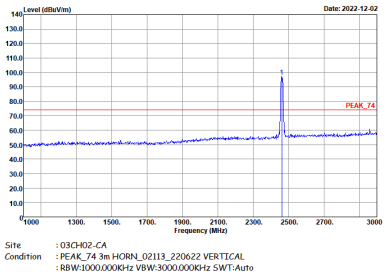
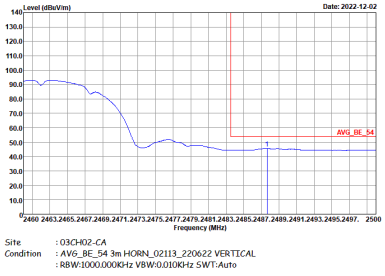
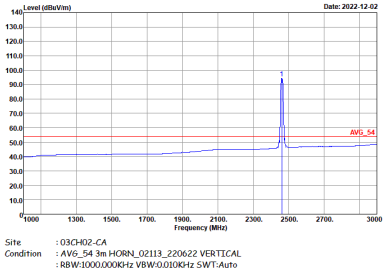
2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

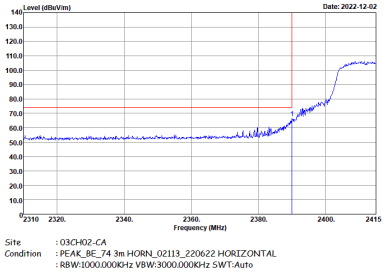
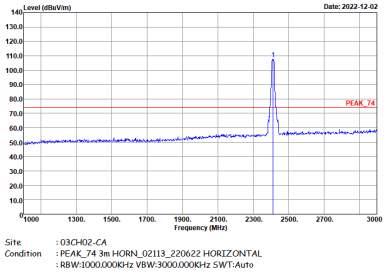
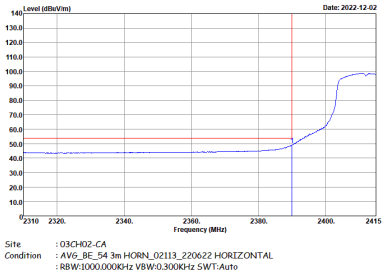
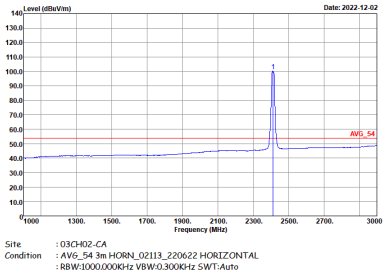
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak		
Avg.		

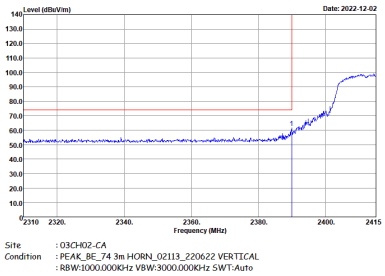
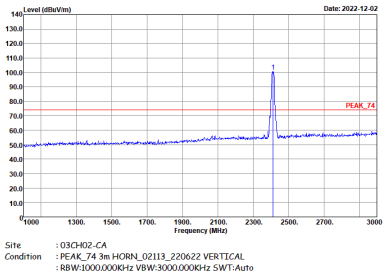
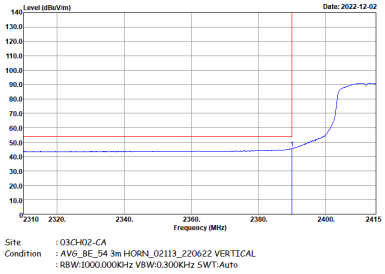
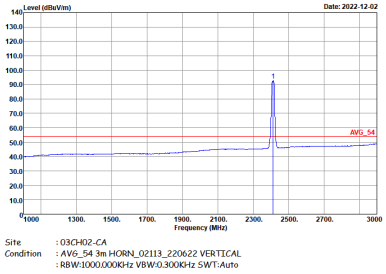
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

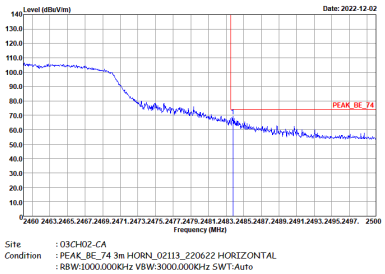
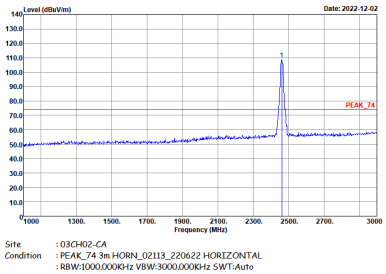
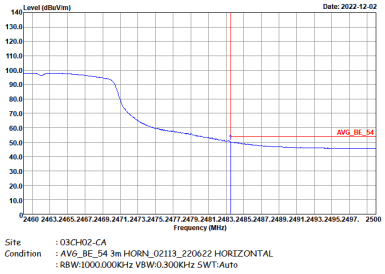
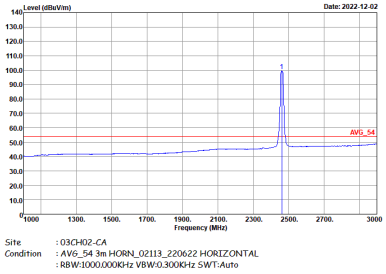
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

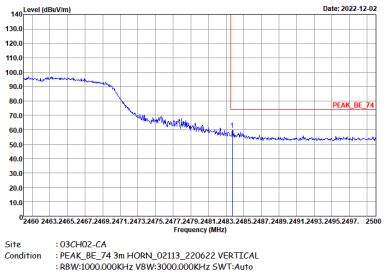
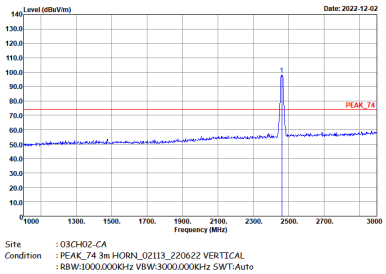
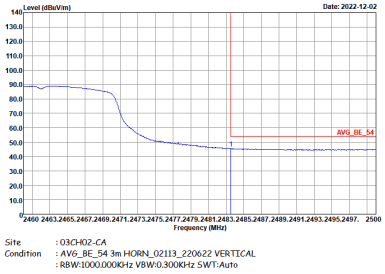
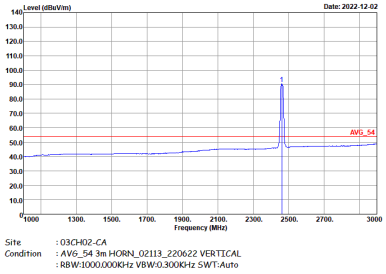
2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

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

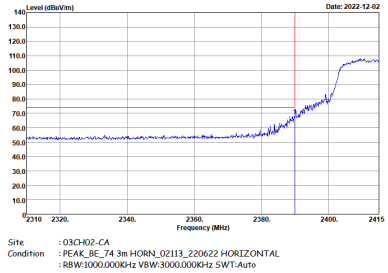
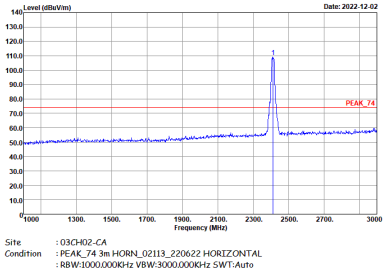
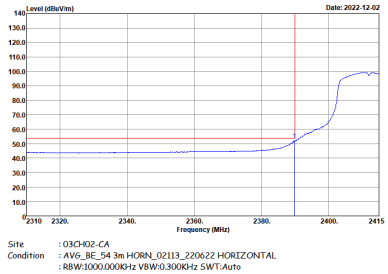
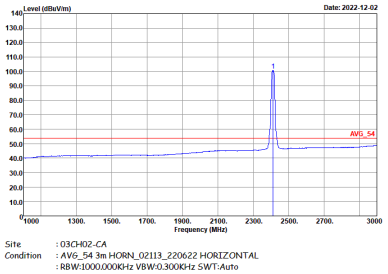
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Vertical	Fundamental
Peak		
Avg.		

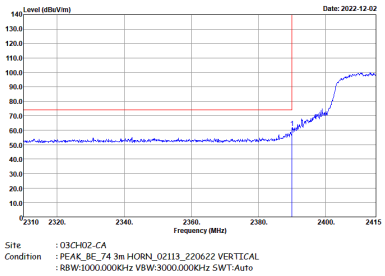
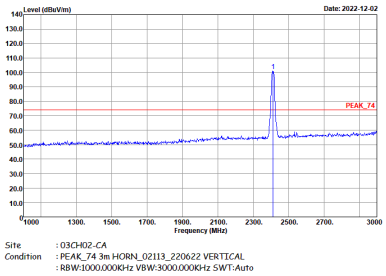
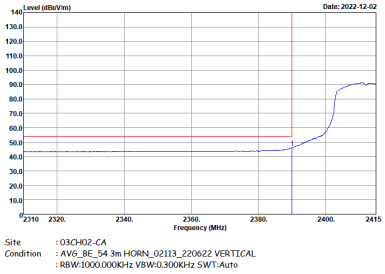
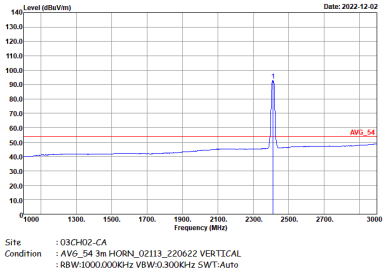
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:0.300KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:0.300KHz SWT:Auto

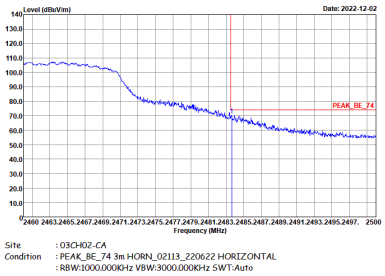
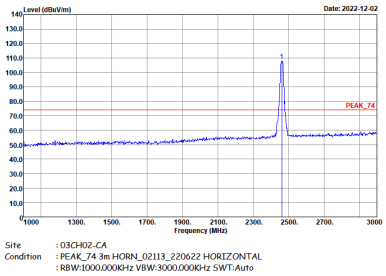
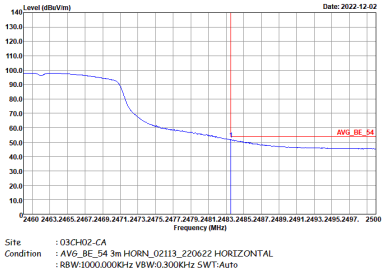
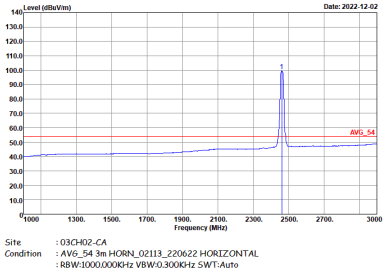
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:0.300KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:0.300KHz SWT:Auto

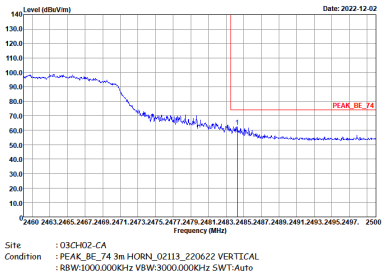
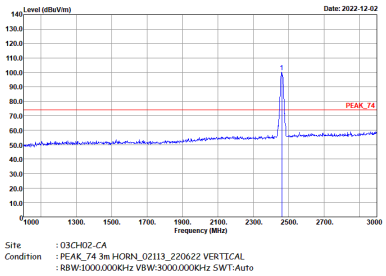
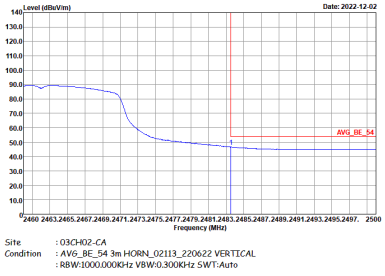
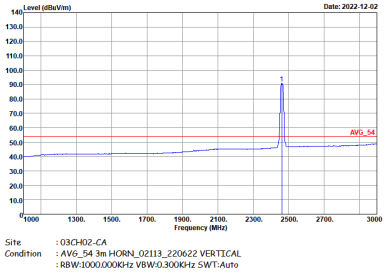
2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

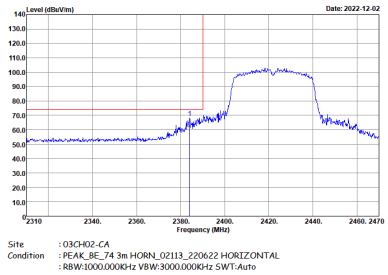
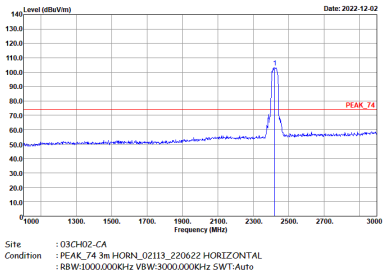
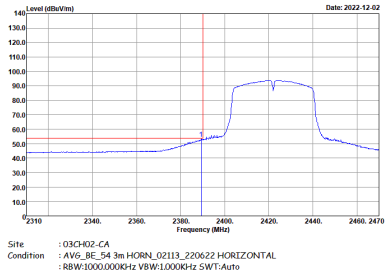
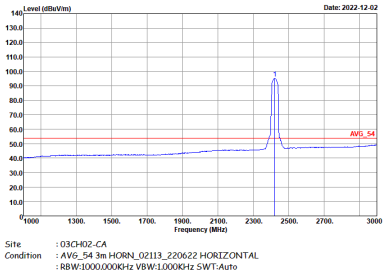
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Vertical	Fundamental
Peak		
Avg.		

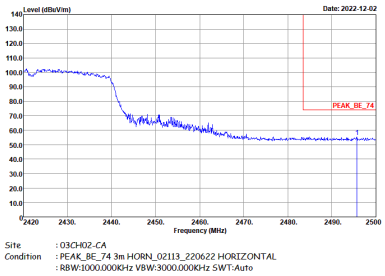
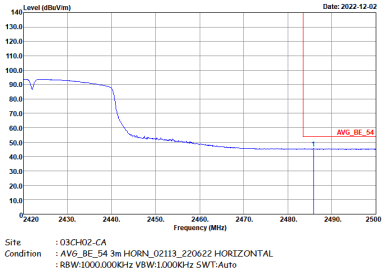
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:0.300KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL : RBW:1000.000KHz VBW:0.300KHz SWT:Auto

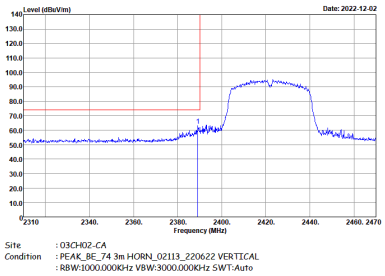
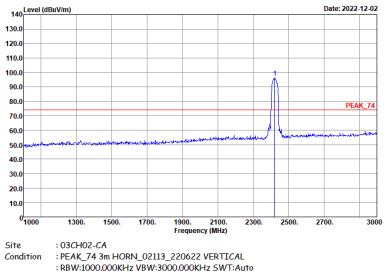
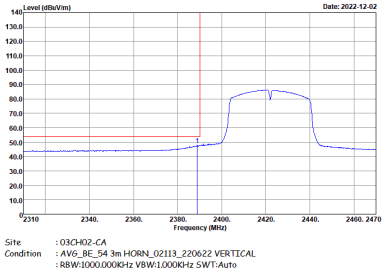
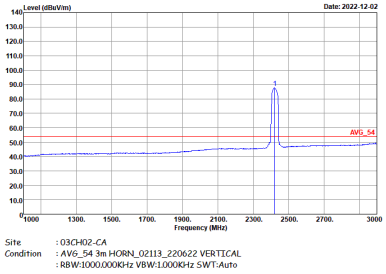
WIFI	2.4GHz 2400~2483.5MHz Fundamental @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:0.300KHz SWT:Auto	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL : RBW:1000.000KHz VBW:0.300KHz SWT:Auto

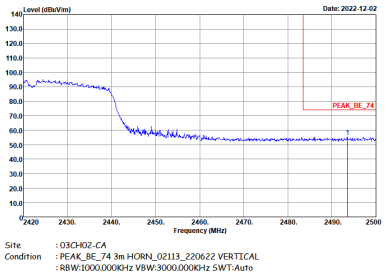
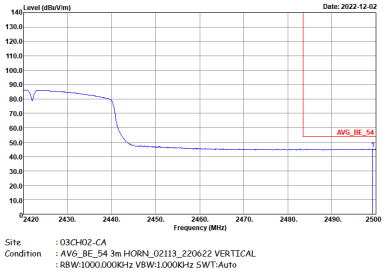
2.4GHz 2400~2483.5MHz

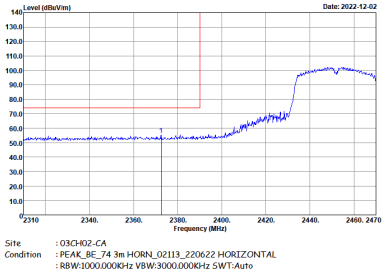
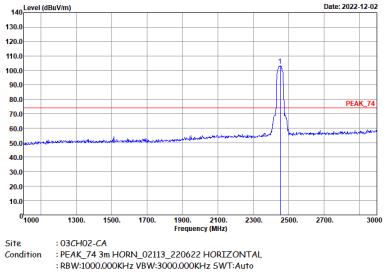
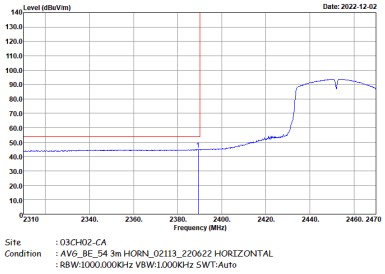
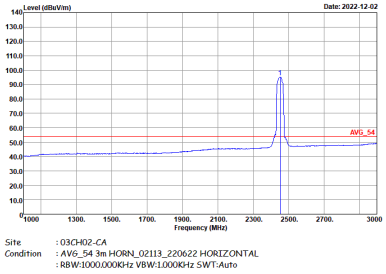
WIFI 802.11n HT40 (Band Edge @ 3m)

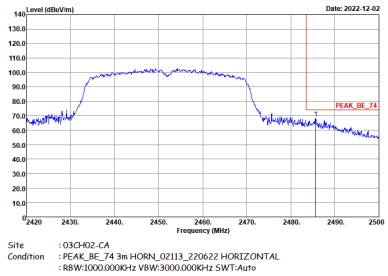
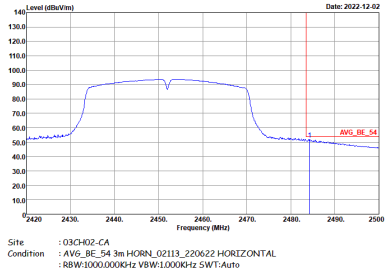
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

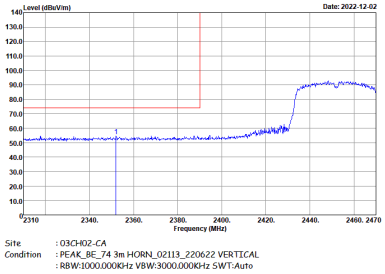
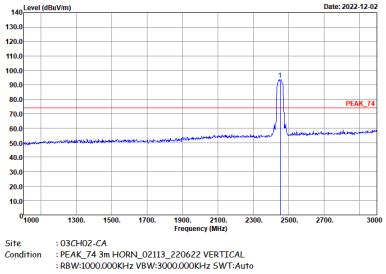
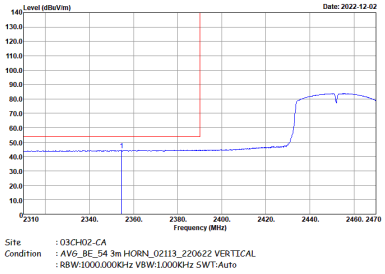
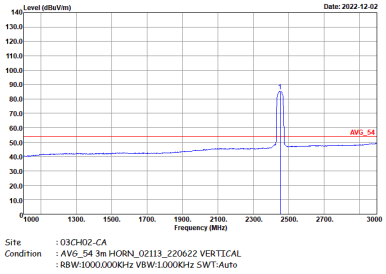
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
1	Horizontal	Fundamental
Peak		Left Blank
Avg.		Left Blank

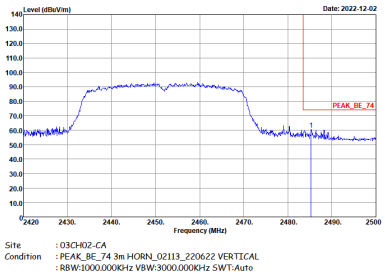
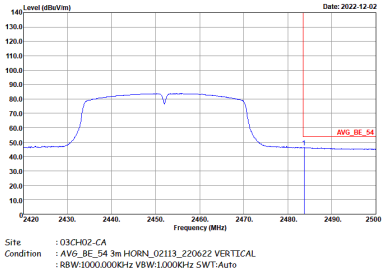
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
1	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

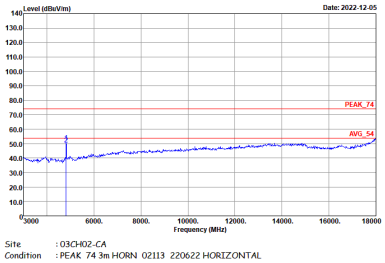
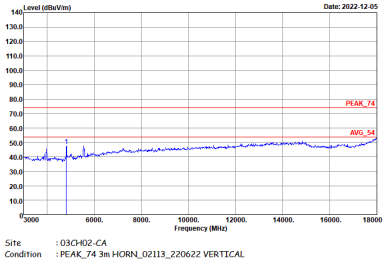
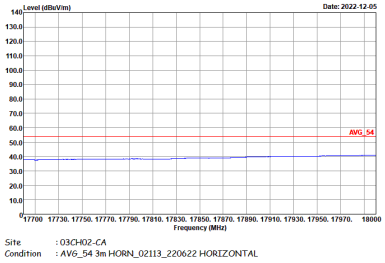
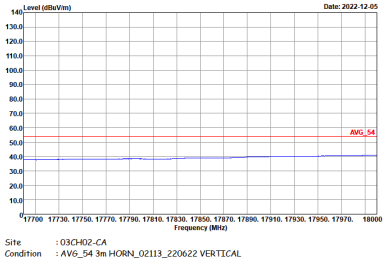
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

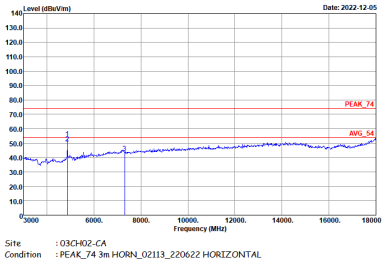
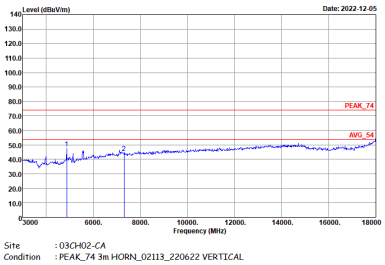
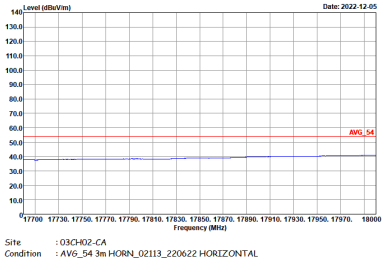
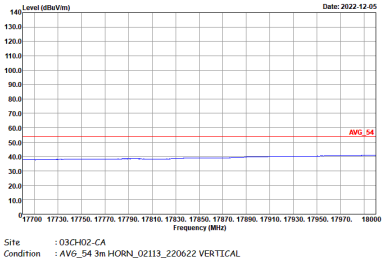
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
1	Vertical	Fundamental
Peak		
Avg.		

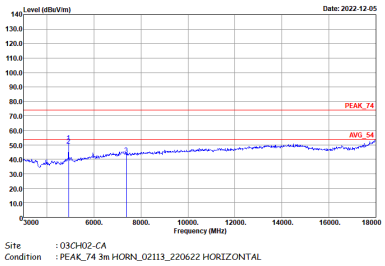
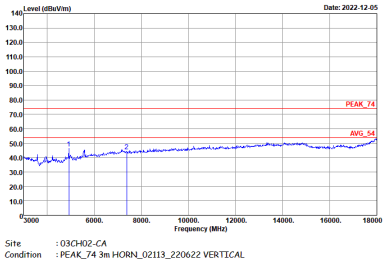
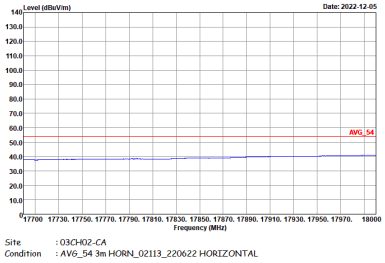
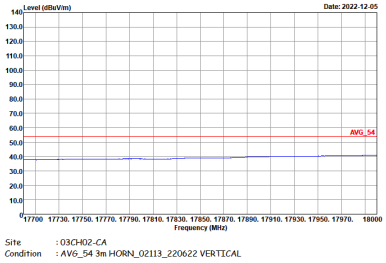
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

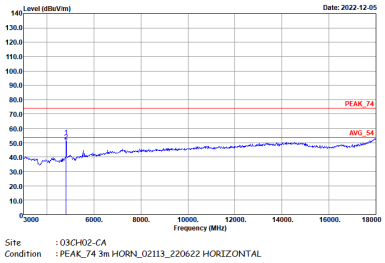
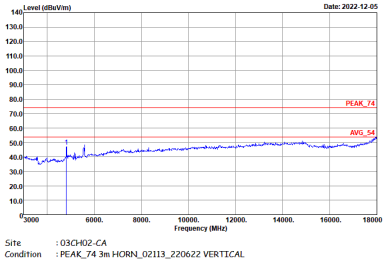
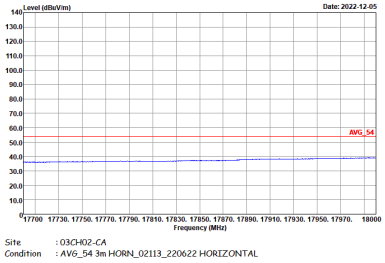
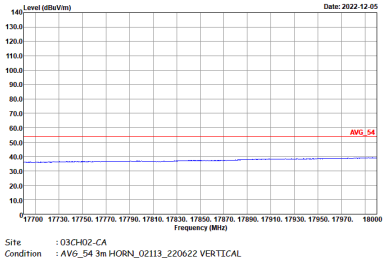
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		
Avg.		

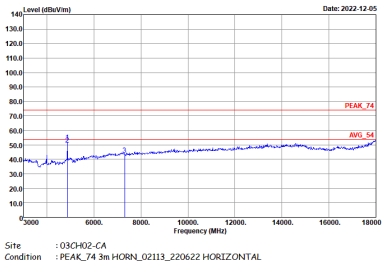
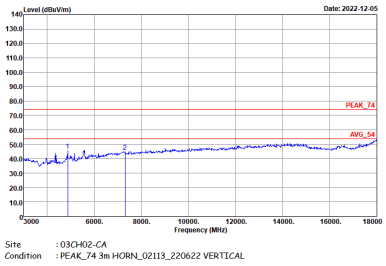
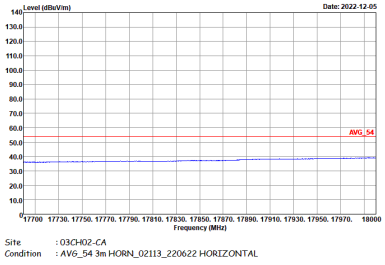
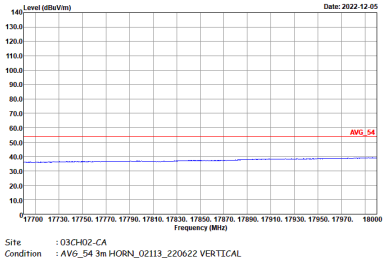
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL
Avg.	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL

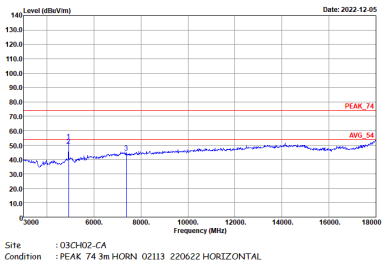
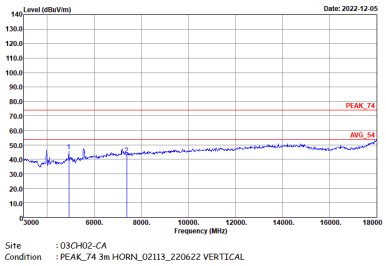
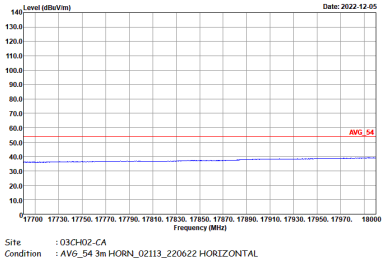
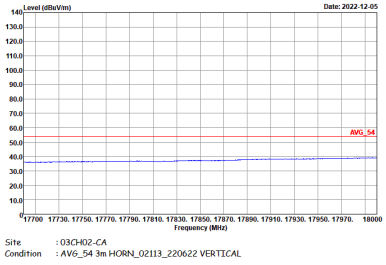
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL
Avg.	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

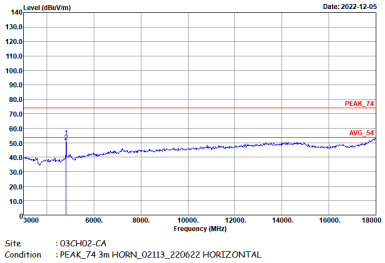
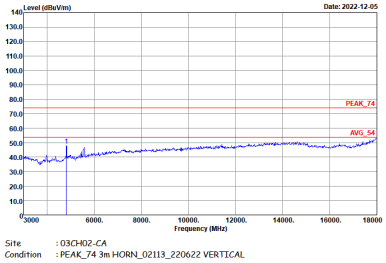
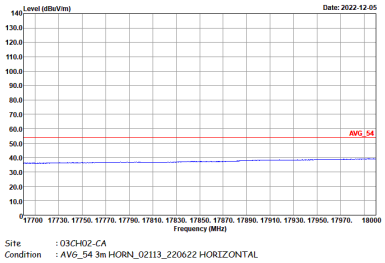
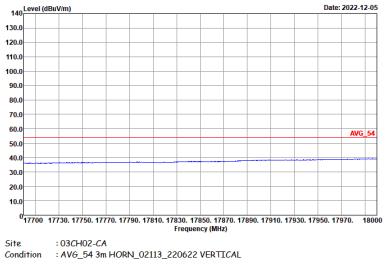
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		
Avg.		

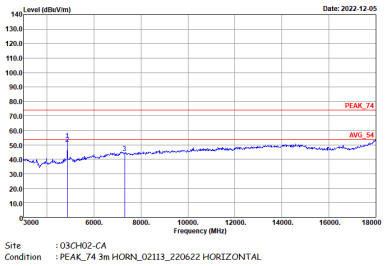
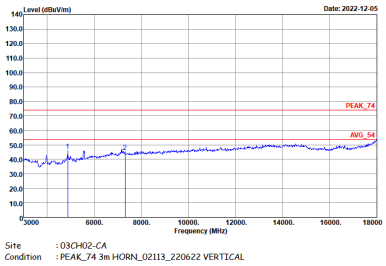
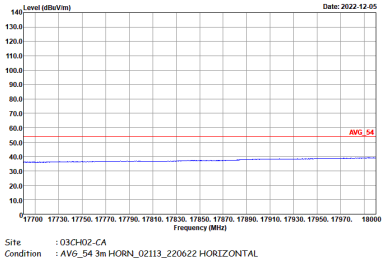
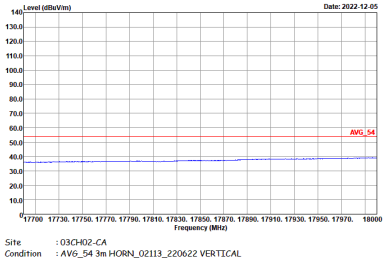
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL
Avg.	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL

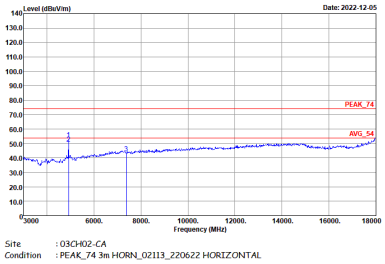
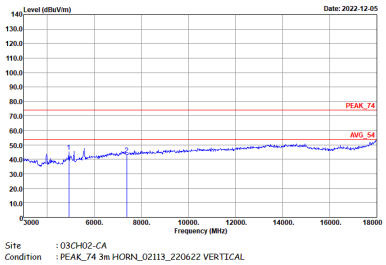
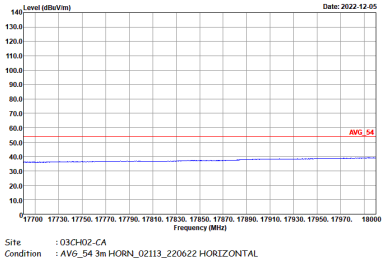
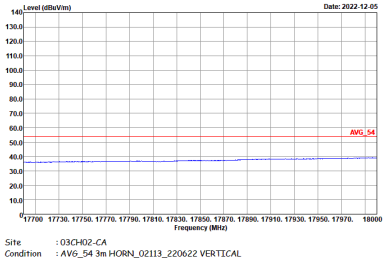
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL
Avg.	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

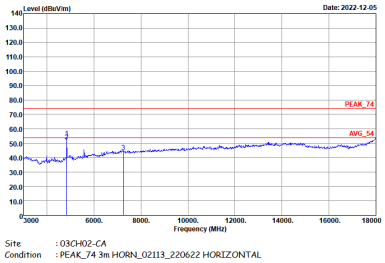
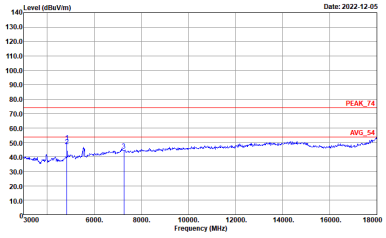
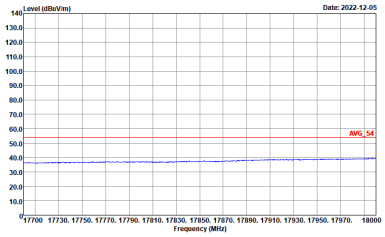
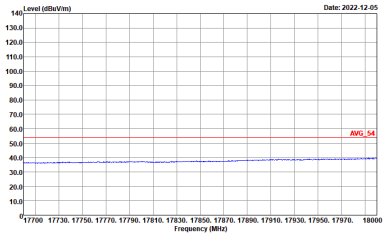
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL
Avg.	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL

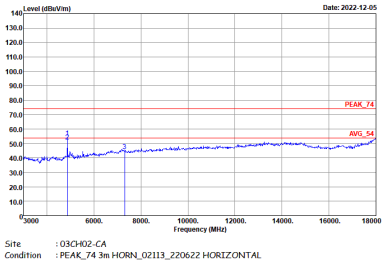
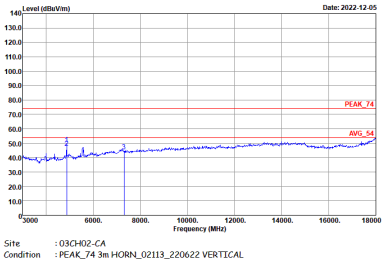
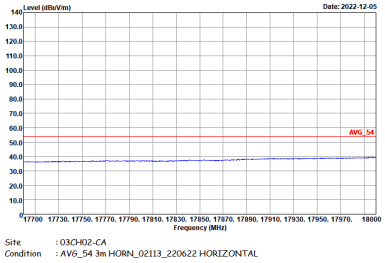
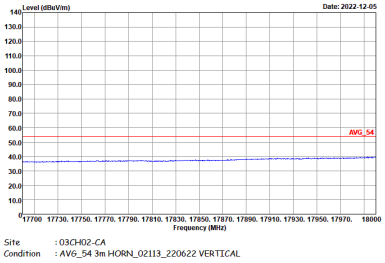
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL
Avg.	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL

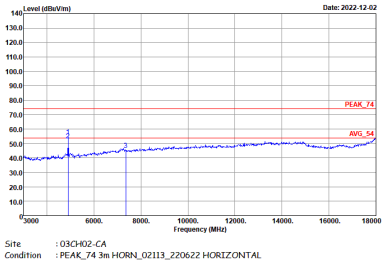
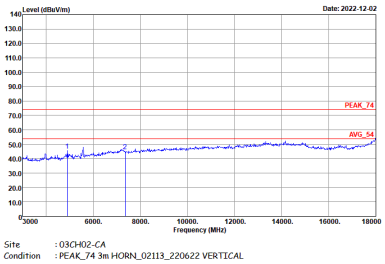
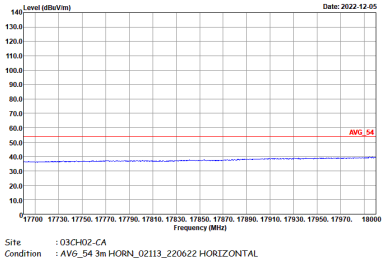
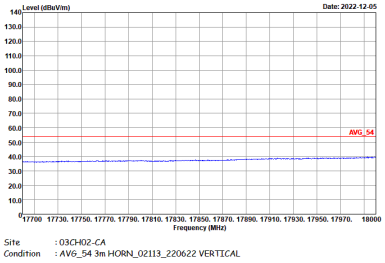
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL
Avg.	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

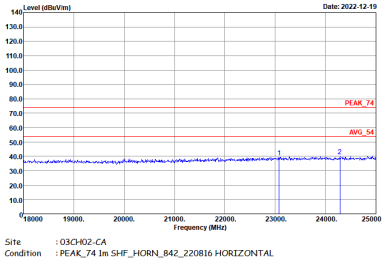
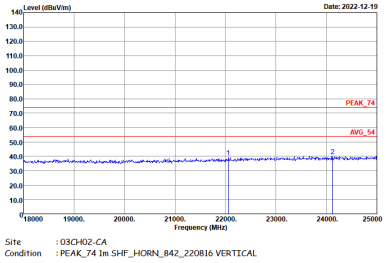
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH03 2422MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL
Avg.	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL
Avg.	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH09 2452MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK_74 3m HORN_02113_220622 VERTICAL
Avg.	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 HORIZONTAL	 Site : 03CH02-CA Condition : AVG_54 3m HORN_02113_220622 VERTICAL

Emission above 18GHz

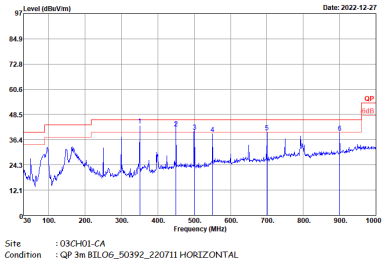
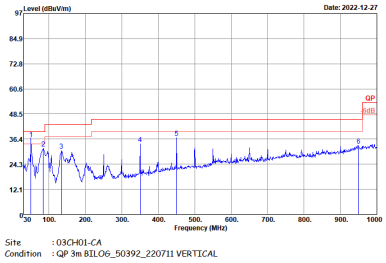
2.4GHz WIFI 802.11n HT40 (SHF @ 1m)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT40 SHF	
1	Horizontal	Vertical
Peak Avg.		

2.4GHz 2400~2483.5MHz

Emission below 1GHz

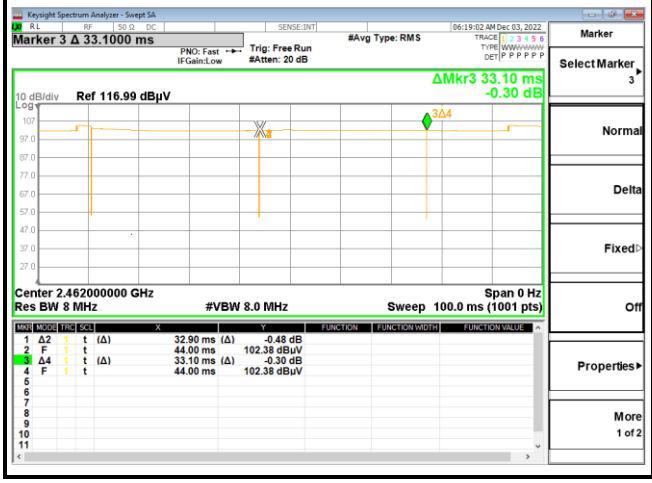
2.4GHz WIFI 802.11n HT40 (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT40 LF	
1	Horizontal	Vertical
QP / Peak		

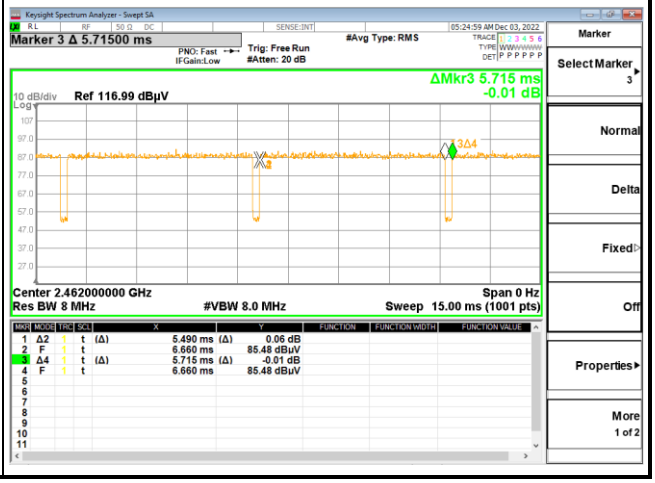
Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
802.11b	99.40	-	-	10Hz
802.11g	96.06	5490	0.18	300Hz
2.4GHz 802.11n HT20	95.30	4560	0.22	300Hz
2.4GHz 802.11n HT40	89.87	2200	0.45	1kHz

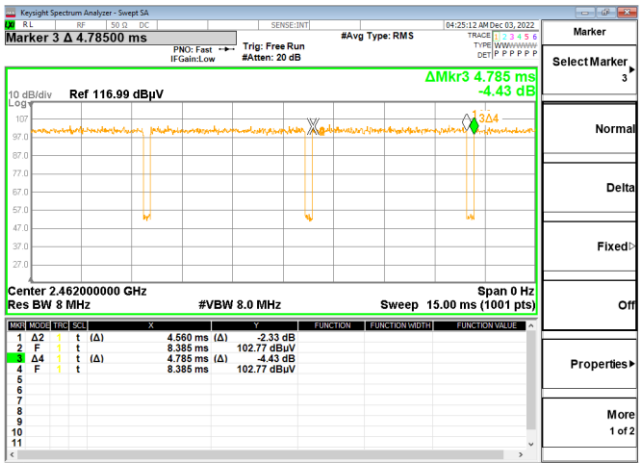
802.11b



802.11g



802.11n HT20



802.11n HT40