



FCC RADIO TEST REPORT

FCC ID : CNFAMFR1
Equipment : Camera
Brand Name : GoPro
Model Name : AMFR1
Applicant : GoPro, Inc.
 3025 Clearview Way San Mateo, CA
 94402 United States of America
Manufacturer : GoPro, Inc.
 3025 Clearview Way San Mateo, CA
 94402 United States of America
Standard : FCC Part 15 Subpart C §15.247

The product was received on Jan. 11, 2024 and testing was performed from Jan. 15, 2024 to Mar. 06, 2024. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

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



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Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(a)(2)	6dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.247(b)	Power Output Measurement	Pass	-
3.3	15.247(e)	Power Spectral Density	Pass	-
3.4	15.247(d)	Conducted Band Edges	Pass	-
		Conducted Spurious Emission	Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	3.43 dB under the limit at 180.12 MHz
3.6	15.207	AC Conducted Emission	Pass	17.79 dB under the limit at 2.74 MHz
3.7	15.203	Antenna Requirement	Pass	-

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. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

Disclaimer:

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

Reviewed by: Lewis Ho

Report Producer: Wilda Wei



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
General Specs Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac	
Antenna Type WLAN: FPC Loop Antenna Bluetooth: FPC Loop Antenna	

Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	1.48

Remark: The EUT's information above is declared by manufacturer. Please refer to Disclaimer 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 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(TAF Code:1190)
Remark	The Conducted Emission test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

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, 03CH22-HY

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

FCC designation No.: TW1190 and TW3786

1.4 Applicable Standards

According to the specifications 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. The TAF code is not including all the FCC KDB listed without accreditation.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



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	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.

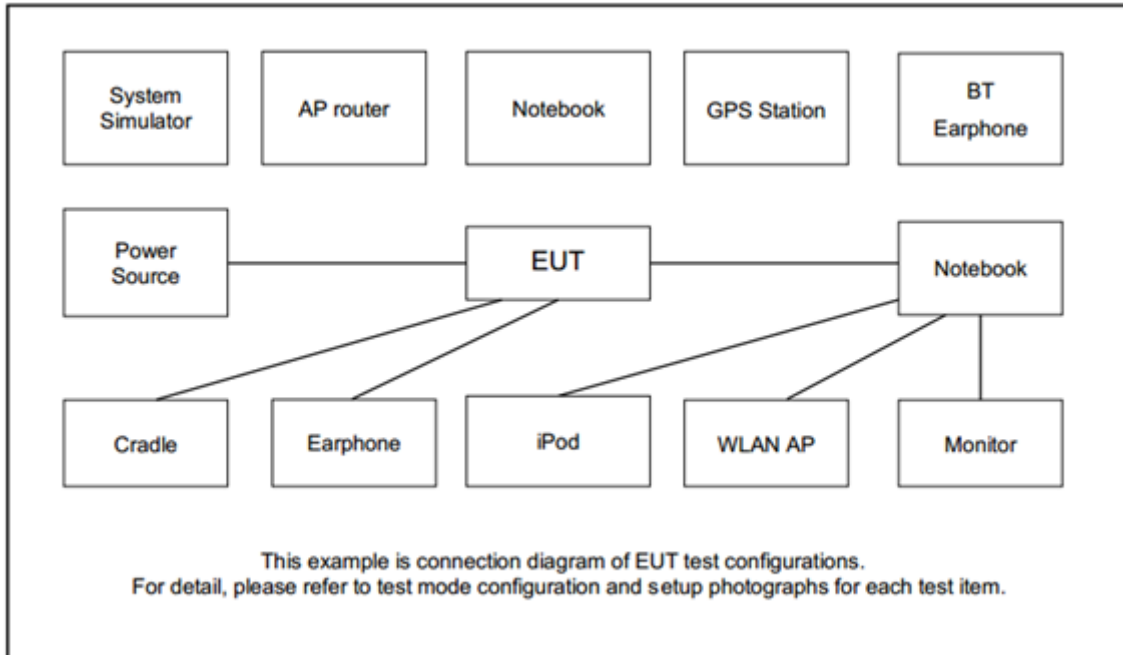
Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0

Test Cases	
AC Conducted Emission	Mode 1 :WLAN(2.4GHz) Tx + USB Cable (Type A to C) (Charging from Adapter)
Remark: For Radiated Test Cases, the tests were performed with USB Cable1 (Type A to C).	

Ch. #	2400-2483.5 MHz		
	802.11b	802.11g	802.11n HT20
Low	01	01	01
Middle	06	06	06
High	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.	Adapter	ASUS	A172-050200U-US	N/A	N/A	N/A
2.	Adapter	ASUS	PA-1100-01	N/A	N/A	N/A
3.	Notebook	Lenovo	MP2CWZYZ	PD9AX201NG	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m



2.5 EUT Operation Test Setup

The RF test items, utility “Version 4.95” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example:

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

Offset = RF cable loss + attenuator factor.

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

$$\begin{aligned} \text{Offset}(dB) &= \text{RF cable loss}(dB) + \text{attenuator factor}(dB). \\ &= 4.2 + 10 = 14.2 \text{ (dB)} \end{aligned}$$

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 11.8.1 (6dB BW).
2. The RF output of EUT is connected to the spectrum analyzer 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. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) $\geq 3 * RBW$.
6. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A.

3.2 Output Power Measurement

3.2.1 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.

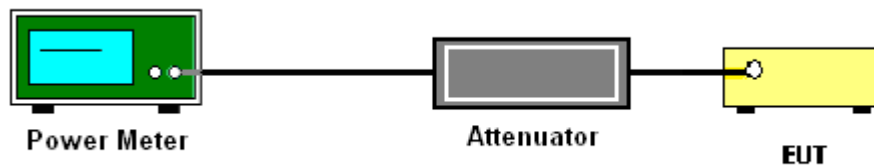
3.2.2 Measuring Instruments

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

3.2.3 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.

3.2.4 Test Setup



3.2.5 Test Result of Average Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

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

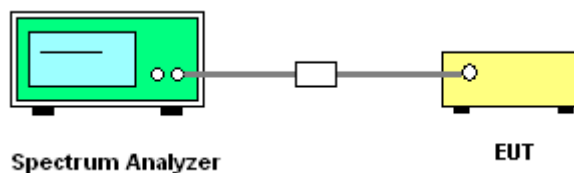
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. The RF output of EUT is connected to the spectrum analyzer 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. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement.

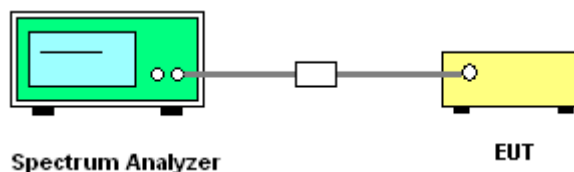
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.11.3 Emission level measurement.
2. The RF output of EUT is connected to the spectrum analyzer 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. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Please refer to Appendix A.



3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 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

3.5.2 Measuring Instruments

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

3.5.3 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 “-“.

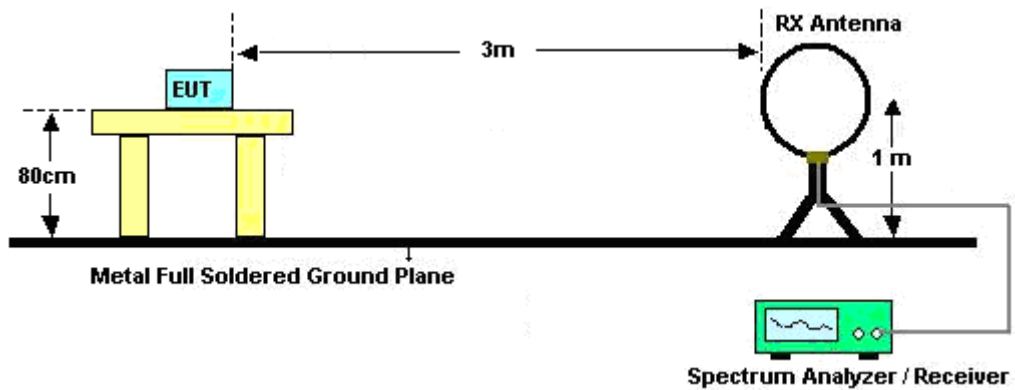
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with 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; $VBW \geq RBW$; 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:

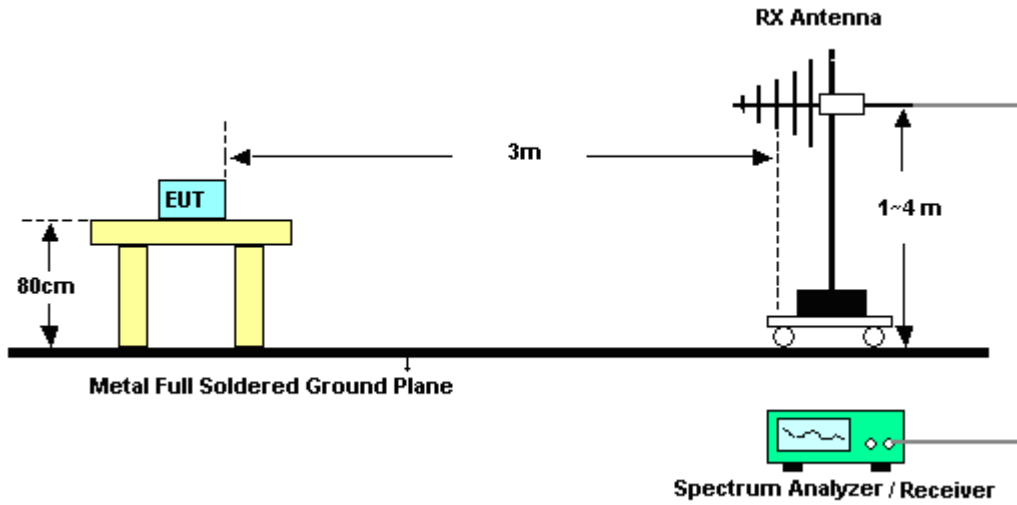
 - $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

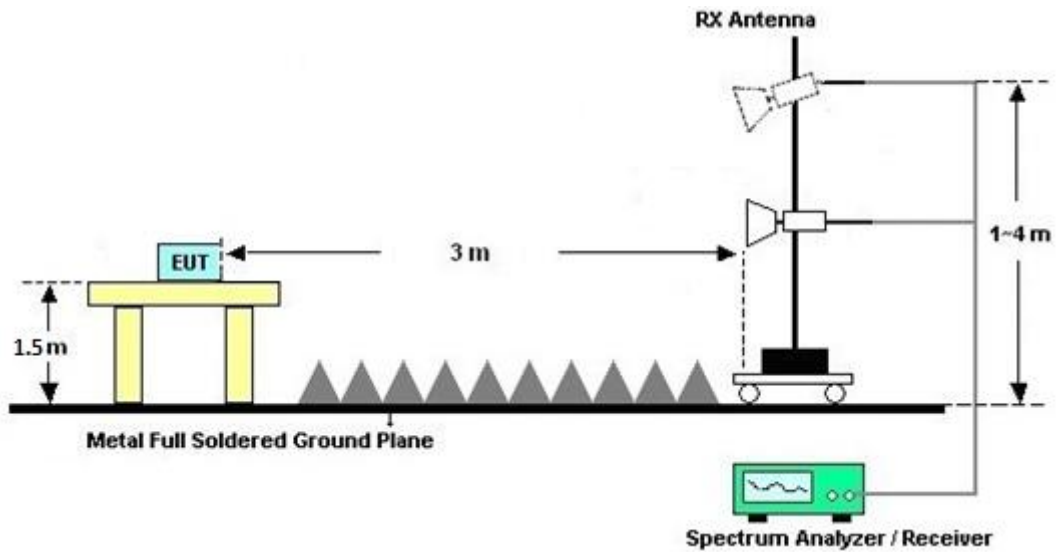
For radiated emissions below 30MHz



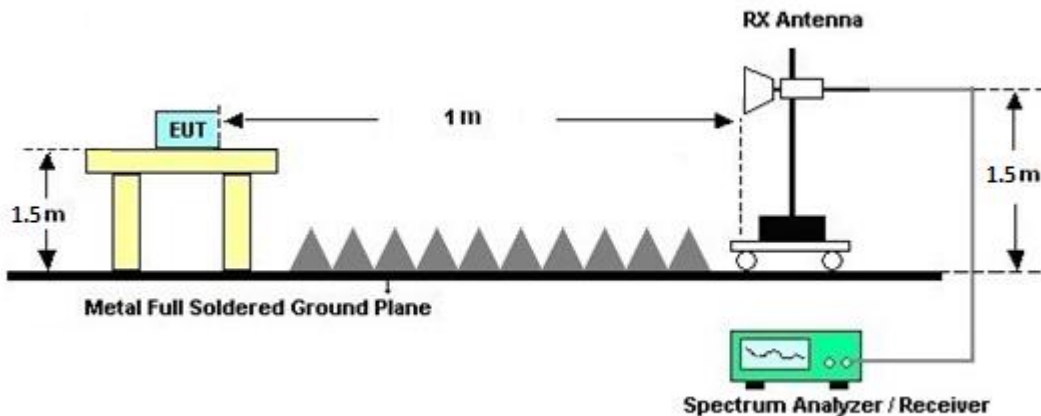
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.5.5 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.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.5.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.



3.6 AC Conducted Emission Measurement

3.6.1 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 (dBµV)	
	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.

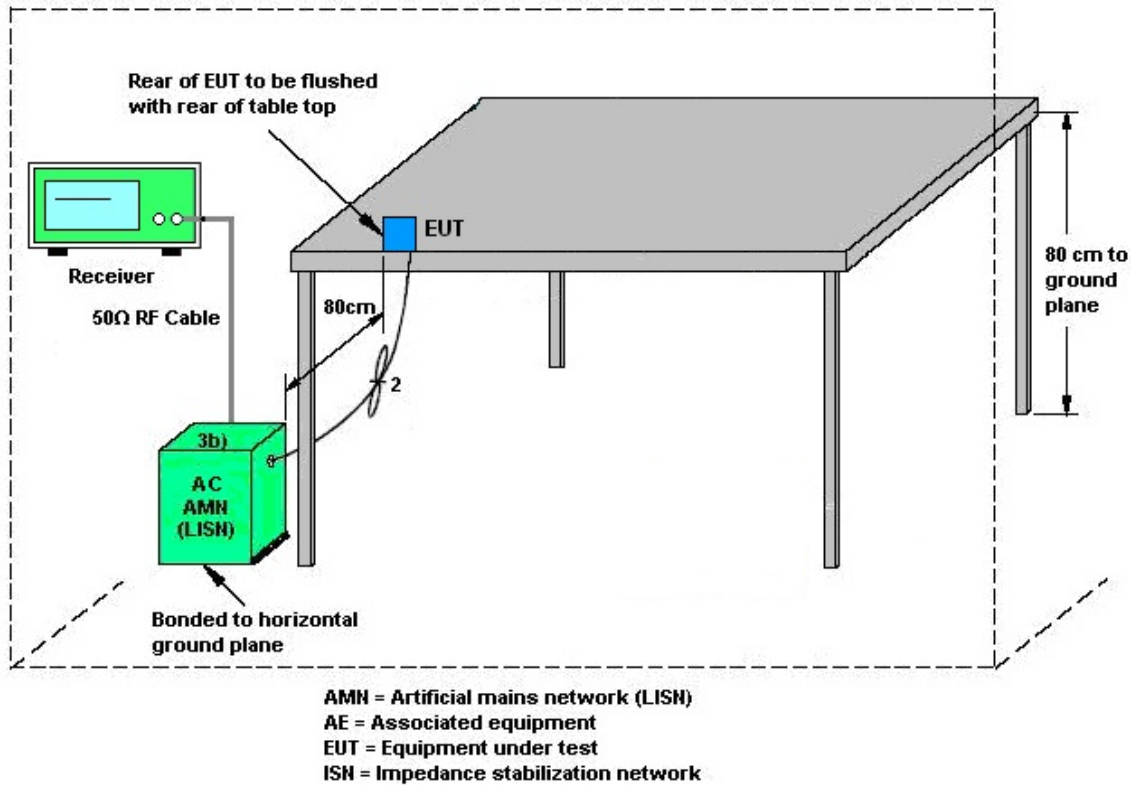
3.6.2 Measuring Instruments

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

3.6.3 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.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.7 Antenna Requirements

3.7.1 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.

3.7.2 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
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9kHz~30MHz	Sep. 12, 2023	Jan. 19, 2024~ Mar. 05, 2024	Sep. 11, 2024	Radiation (03CH22-HY)
Bilog Antenna with 6dB	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	63304 & 002	30MHz~1GHz	Oct. 15, 2023	Jan. 19, 2024~ Mar. 05, 2024	Oct. 14, 2024	Radiation (03CH22-HY)
Amplifier	SONOMA	310N	421581	N/A	Jul. 15, 2023	Jan. 19, 2024~ Mar. 05, 2024	Jul. 14, 2024	Radiation (03CH22-HY)
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C04A18E N	1GHz~18GHz	Jul. 12, 2023	Jan. 19, 2024~ Mar. 05, 2024	Jul. 11, 2024	Radiation (03CH22-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	1223	18GHz~40GHz	Jul. 10, 2023	Jan. 19, 2024~ Mar. 05, 2024	Jul. 09, 2024	Radiation (03CH22-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	1224	18GHz~40GHz	Jul. 10, 2023	Jan. 19, 2024~ Mar. 05, 2024	Jul. 09, 2024	Radiation (03CH22-HY)
Amplifier	E MEC	EM01G18GA	060877	N/A	Sep. 28, 2023	Jan. 19, 2024~ Mar. 05, 2024	Sep. 27, 2024	Radiation (03CH22-HY)
Preamplifier	E MEC	EM18G40G	060801	18-40GHz	Jun. 27, 2023	Jan. 19, 2024~ Mar. 05, 2024	Jun. 26, 2024	Radiation (03CH22-HY)
Signal Analyzer	Keysight	N9010B	MY60241058	10Hz~44GHz	Jul. 06, 2023	Jan. 19, 2024~ Mar. 05, 2024	Jul. 05, 2024	Radiation (03CH22-HY)
Hygrometer	TECEP	DTM-303A	TP211469	N/A	Jan. 03, 2024	Jan. 19, 2024~ Mar. 05, 2024	Jan. 02, 2025	Radiation (03CH22-HY)
Controller	E MEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Jan. 19, 2024~ Mar. 05, 2024	N/A	Radiation (03CH22-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jan. 19, 2024~ Mar. 05, 2024	N/A	Radiation (03CH22-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jan. 19, 2024~ Mar. 05, 2024	N/A	Radiation (03CH22-HY)
Software	Audix	E3 6.09824_2019 122	RK-002347	N/A	N/A	Jan. 19, 2024~ Mar. 05, 2024	N/A	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804390/2,804 611/2,804615/ 2	N/A	Oct. 24, 2023	Jan. 19, 2024~ Mar. 05, 2024	Oct. 23, 2024	Radiation (03CH22-HY)
Filter	Wainwright	WLK4-1000-15 30-8000-40SS	SN29	1.53GHz Low Pass Filter	May 23, 2023	Jan. 19, 2024~ Mar. 05, 2024	May 22, 2024	Radiation (03CH22-HY)
Filter	Wainwright	WHKX8-5872. 5-6750-18000- 40ST	SN25	6.75GHz High Pass Filter	Nov. 13, 2023	Jan. 19, 2024~ Mar. 05, 2024	Nov. 12, 2024	Radiation (03CH22-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 0ST	SN7	N/A	Dec. 01, 2023	Jan. 19, 2024~ Mar. 05, 2024	Nov. 30, 2024	Radiation (03CH22-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	Mar. 06, 2024	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 06, 2023	Mar. 06, 2024	Dec. 05, 2024	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Oct. 26, 2023	Mar. 06, 2024	Oct. 25, 2024	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 22, 2023	Mar. 06, 2024	Nov. 21, 2024	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Mar. 06, 2024	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-FN	00691	N/A	Jul. 28, 2023	Mar. 06, 2024	Jul. 27, 2024	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 28, 2023	Mar. 06, 2024	Dec. 27, 2024	Conduction (CO05-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	Jan. 15, 2024~ Feb. 06, 2024	Nov. 06, 2024	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15I00041SNO 10 (NO:248)	10MHz~6GHz	Jun. 05, 2023	Jan. 15, 2024~ Feb. 06, 2024	Jun. 04, 2024	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 23, 2023	Jan. 15, 2024~ Feb. 06, 2024	Aug. 22, 2024	Conducted (TH05-HY)



5 Measurement Uncertainty

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.50 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% ($U = 2Uc(y)$)	4.50 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.40 dB
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Shiming Liu	Temperature:	21~25	°C
Test Date:	2024/01/15~2024/02/06	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band Single Antenna										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)		6dB BW (MHz)		6dB BW Limit (MHz)	Pass/Fail
					Ant1	Ant2	Ant1	Ant2		
11b	1Mbps	1	1	2412	11.89	-	8.53	-	0.50	Pass
11b	1Mbps	1	6	2437	11.89	-	8.07	-	0.50	Pass
11b	1Mbps	1	11	2462	11.99	-	8.54	-	0.50	Pass
11g	6Mbps	1	1	2412	16.73	-	15.46	-	0.50	Pass
11g	6Mbps	1	6	2437	16.98	-	16.30	-	0.50	Pass
11g	6Mbps	1	11	2462	16.83	-	16.02	-	0.50	Pass
HT20	MCS0	1	1	2412	17.93	-	16.88	-	0.50	Pass
HT20	MCS0	1	6	2437	17.88	-	15.17	-	0.50	Pass
HT20	MCS0	1	11	2462	17.98	-	17.00	-	0.50	Pass

TEST RESULTS DATA
Average Output Power

2.4GHz Band Single Antenna																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	1	1	2412	16.40	-		30.00	-	1.48	-	17.88	-	36.00	-	Pass
11b	1Mbps	1	6	2437	16.50	-		30.00	-	1.48	-	17.98	-	36.00	-	Pass
11b	1Mbps	1	11	2462	16.20	-		30.00	-	1.48	-	17.68	-	36.00	-	Pass
11g	6Mbps	1	1	2412	17.00	-		30.00	-	1.48	-	18.48	-	36.00	-	Pass
11g	6Mbps	1	6	2437	17.60	-		30.00	-	1.48	-	19.08	-	36.00	-	Pass
11g	6Mbps	1	11	2462	16.40	-		30.00	-	1.48	-	17.88	-	36.00	-	Pass
HT20	MCS0	1	1	2412	16.10	-		30.00	-	1.48	-	17.58	-	36.00	-	Pass
HT20	MCS0	1	6	2437	17.60	-		30.00	-	1.48	-	19.08	-	36.00	-	Pass
HT20	MCS0	1	11	2462	16.60	-		30.00	-	1.48	-	18.08	-	36.00	-	Pass

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

TEST RESULTS DATA
Peak Power Spectral Density

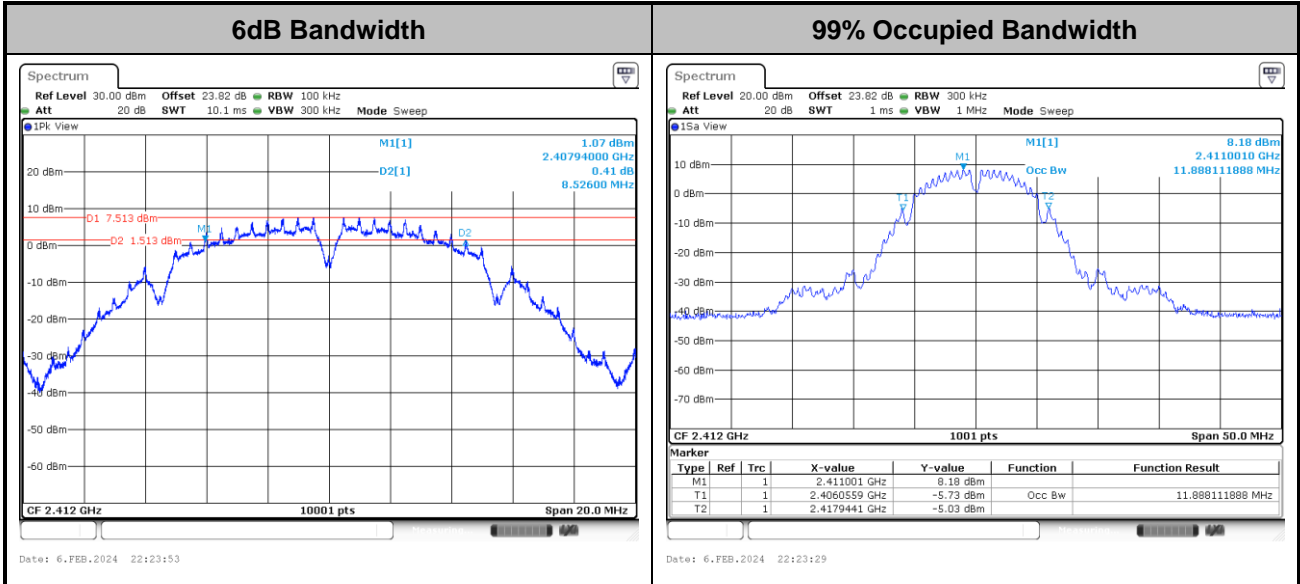
2.4GHz Band Single Antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)			DG (dBi)		Peak PSD Limit (dBm/3kHz)		Pass/Fail
					Ant1	Ant2	Worse + 3.01	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	1	1	2412	-6.63	-		1.48	-	8.00	-	Pass
11b	1Mbps	1	6	2437	-6.36	-		1.48	-	8.00	-	Pass
11b	1Mbps	1	11	2462	-6.47	-		1.48	-	8.00	-	Pass
11g	6Mbps	1	1	2412	-7.30	-		1.48	-	8.00	-	Pass
11g	6Mbps	1	6	2437	-6.72	-		1.48	-	8.00	-	Pass
11g	6Mbps	1	11	2462	-7.48	-		1.48	-	8.00	-	Pass
HT20	MCS0	1	1	2412	-8.02	-		1.48	-	8.00	-	Pass
HT20	MCS0	1	6	2437	-6.68	-		1.48	-	8.00	-	Pass
HT20	MCS0	1	11	2462	-7.58	-		1.48	-	8.00	-	Pass

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



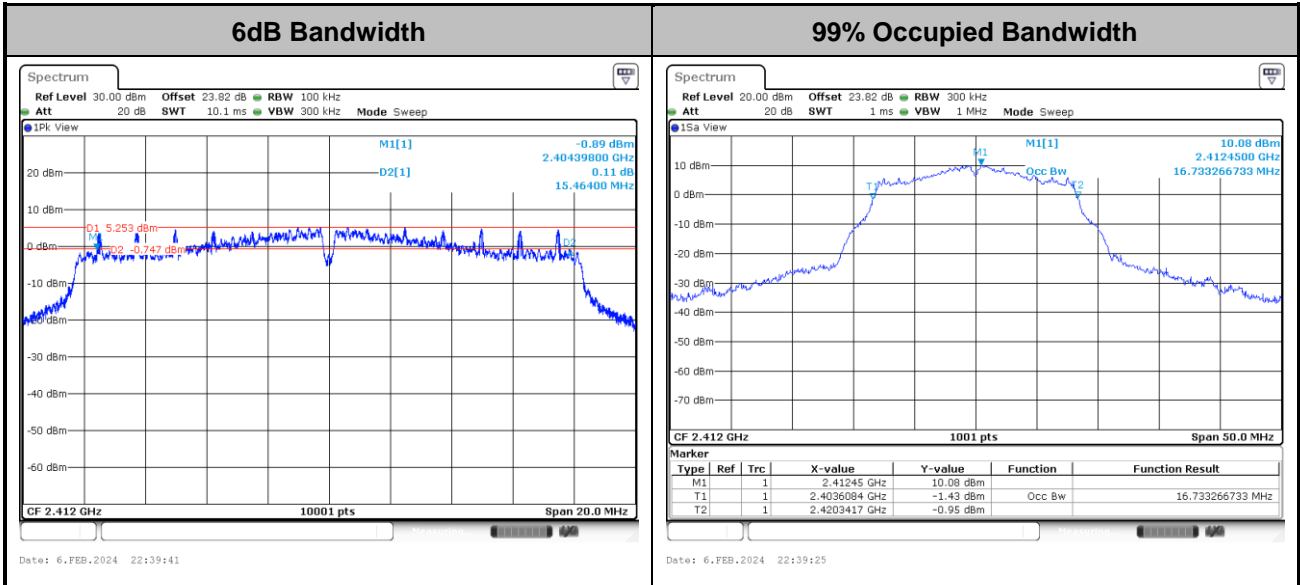
6dB and 99% Occupied Bandwidth

<802.11b>



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

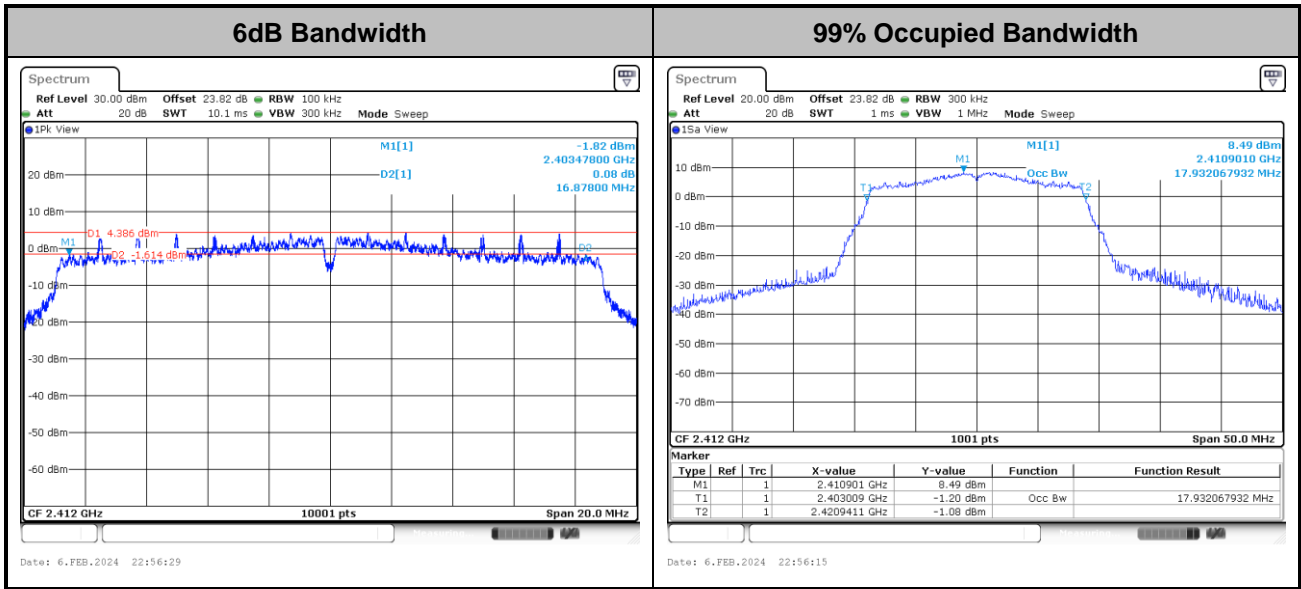
<802.11g>



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



<802.11n HT20>

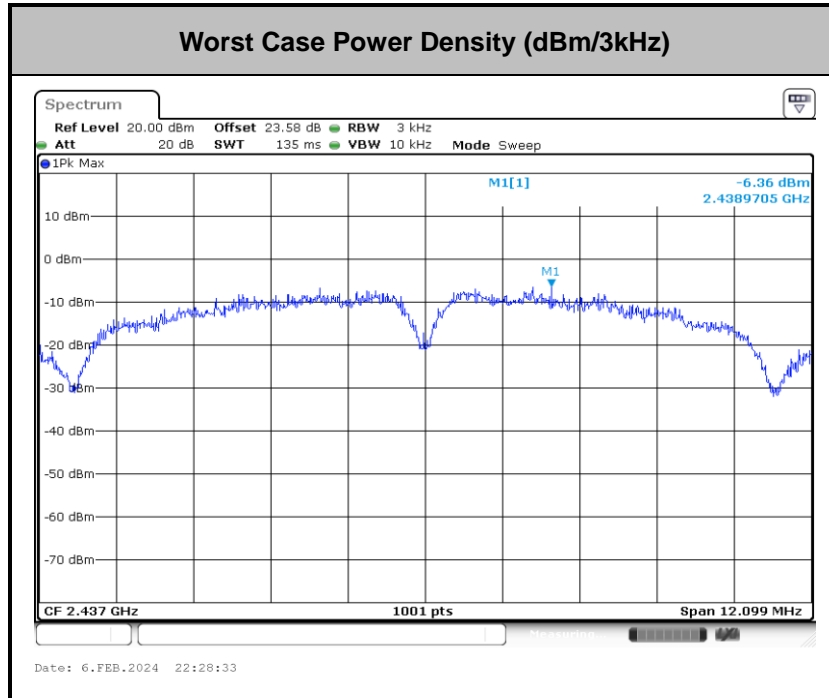


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



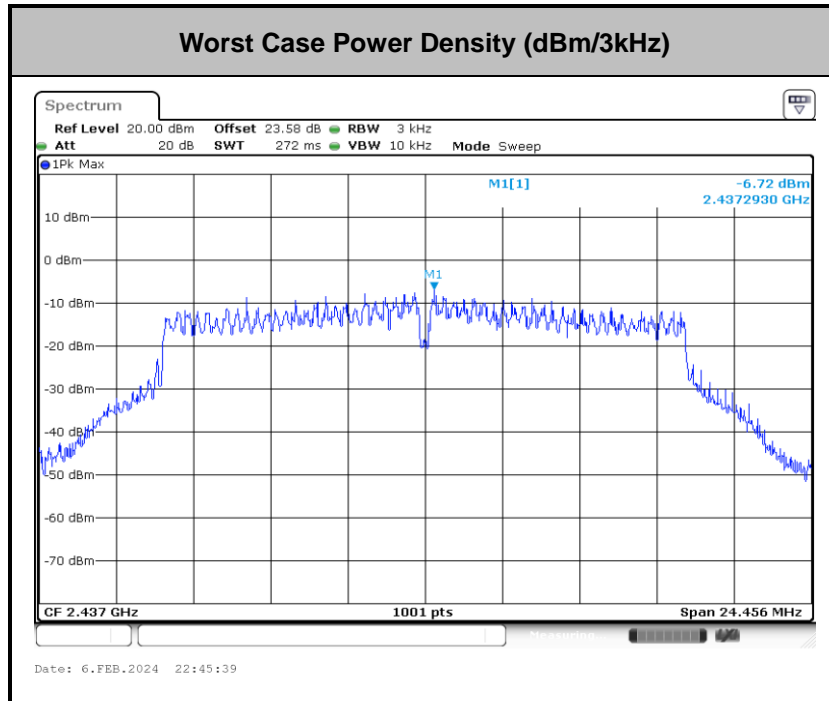
Power Spectral Density(dBm/3kHz)

<802.11b>



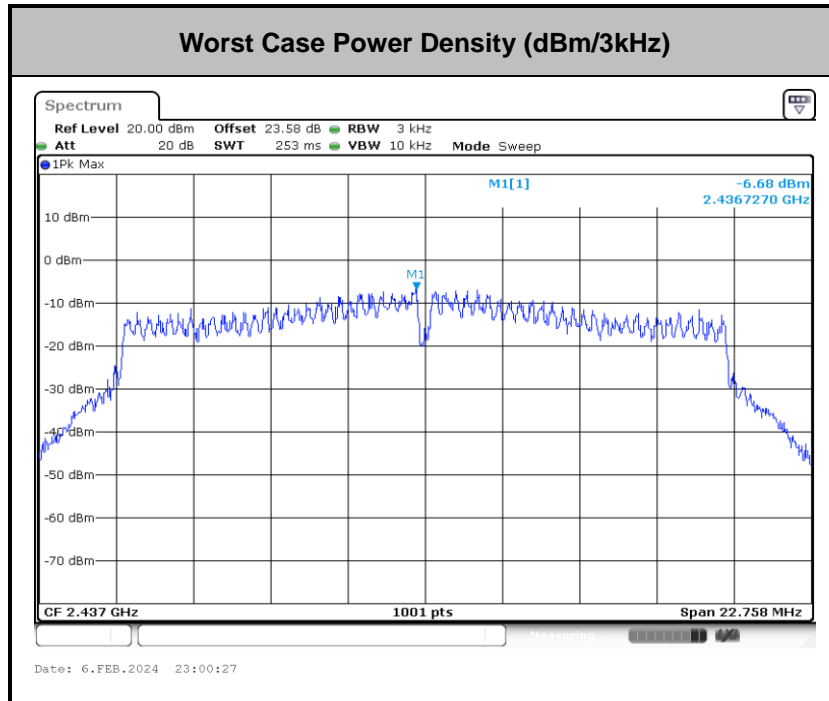


<802.11g>





<802.11n HT20>

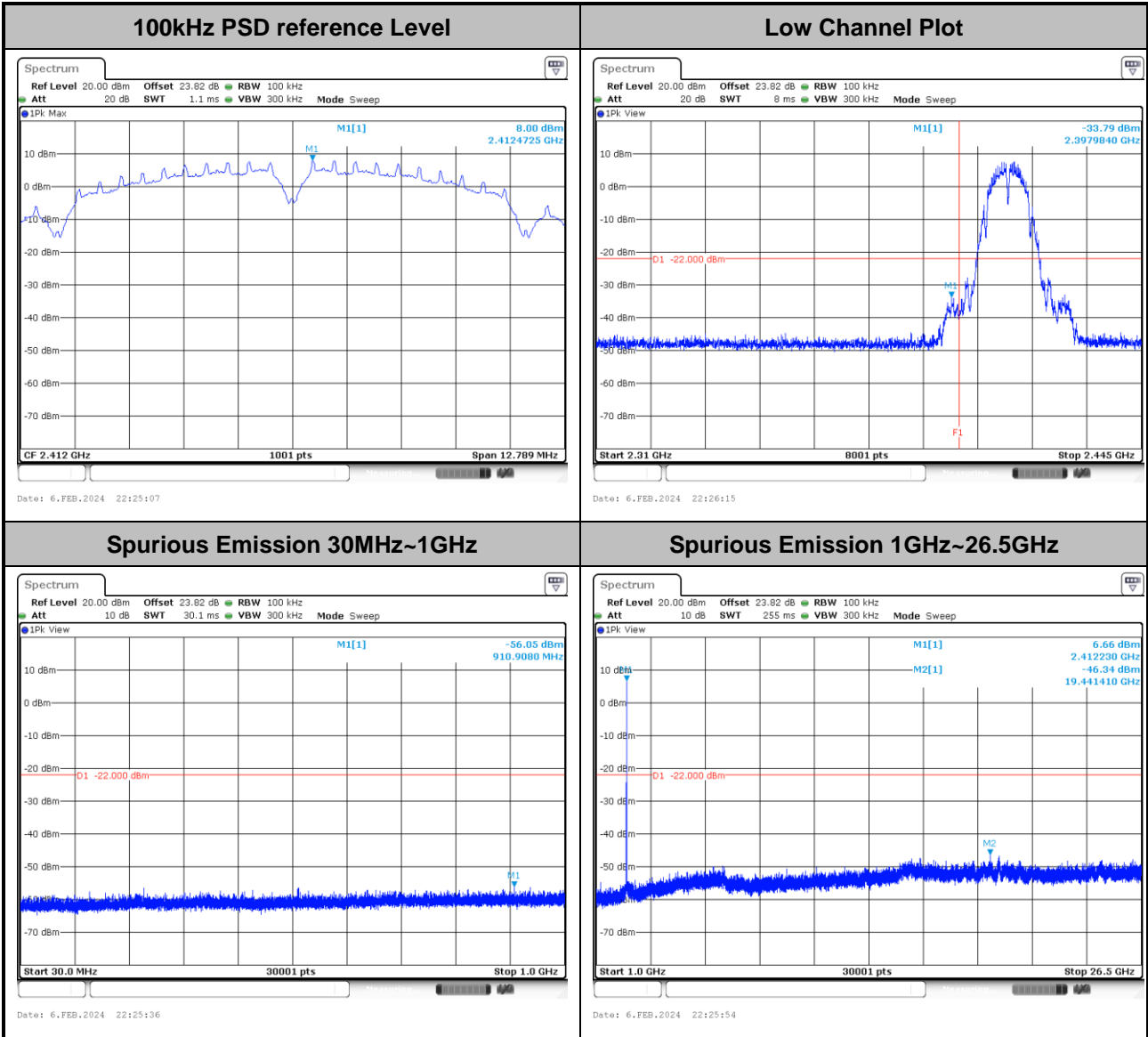




Band Edges and Spurious Emission

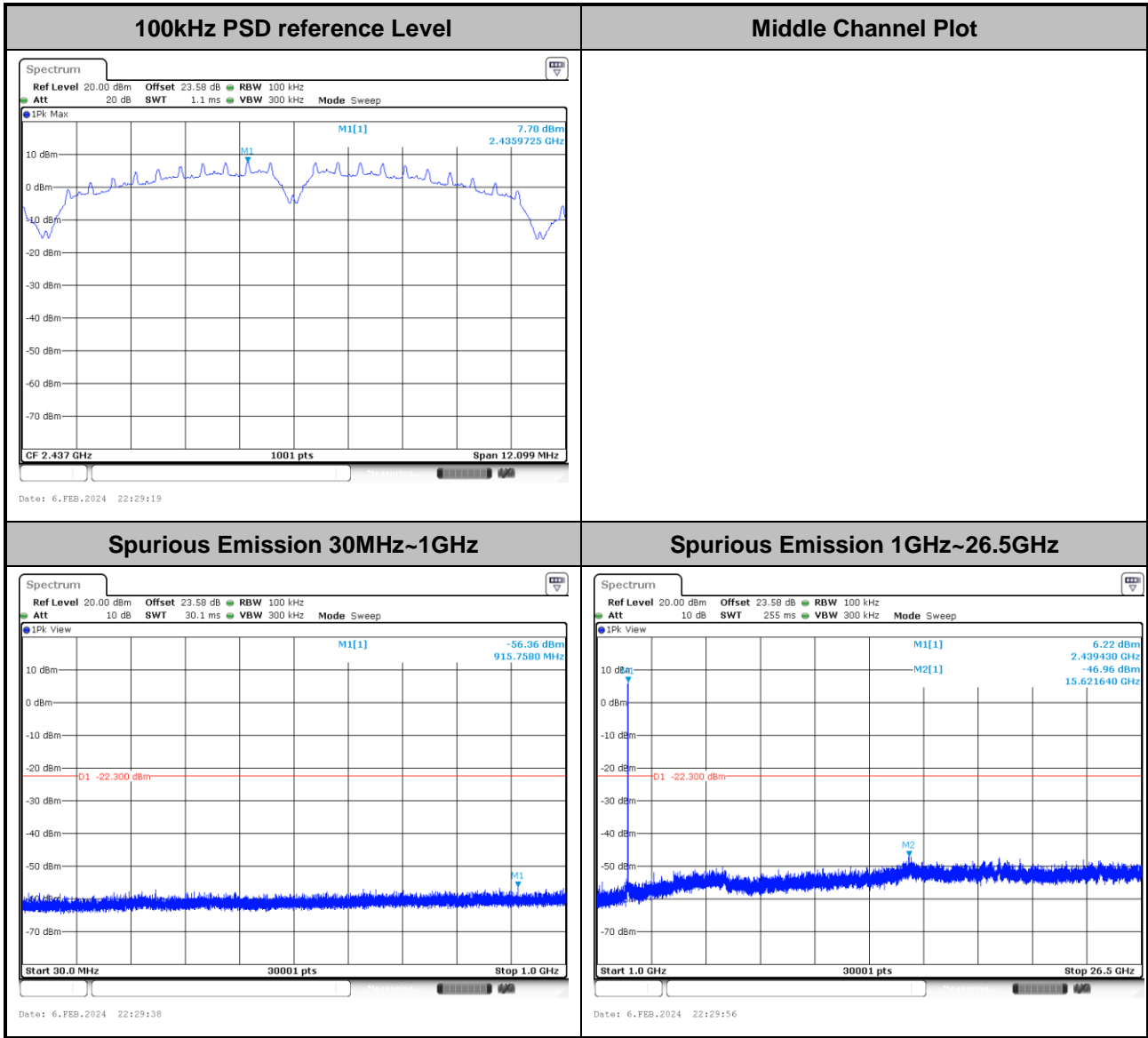
Number of TX = 1, Ant. 1 (Measured)

Test Mode :	802.11b	Test Channel :	01
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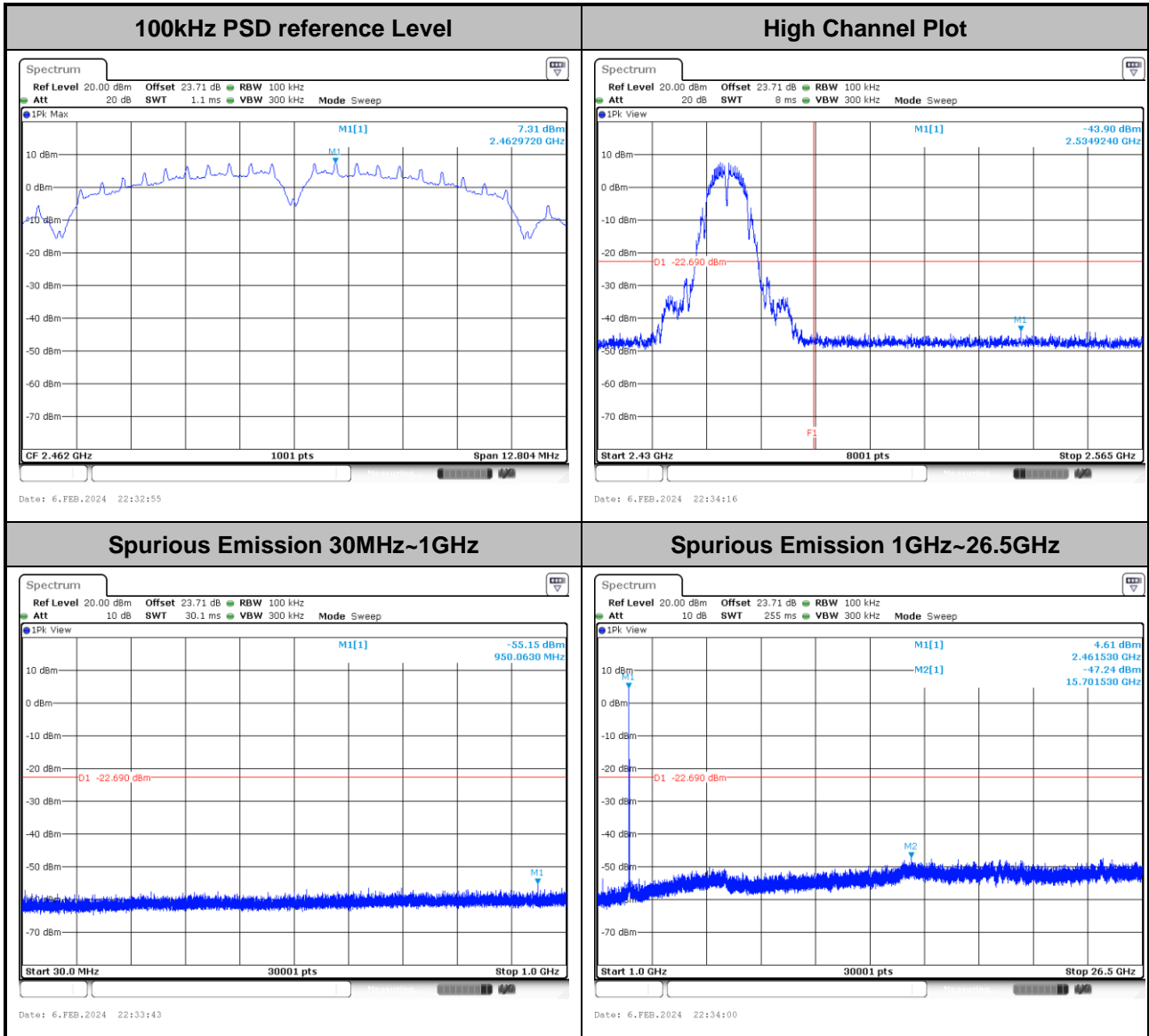


Test Mode :	802.11b	Test Channel :	06
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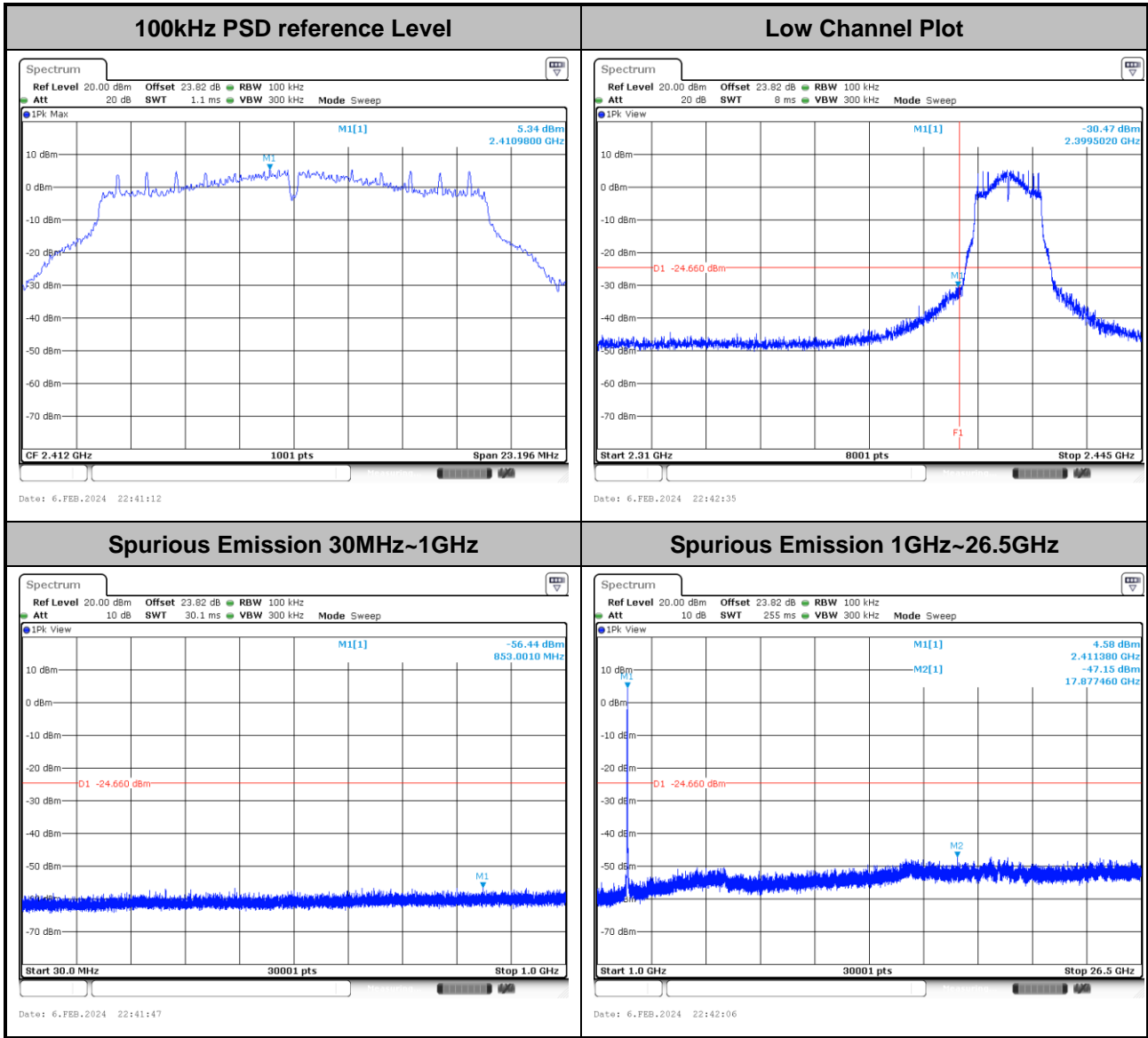


Test Mode :	802.11b	Test Channel :	11
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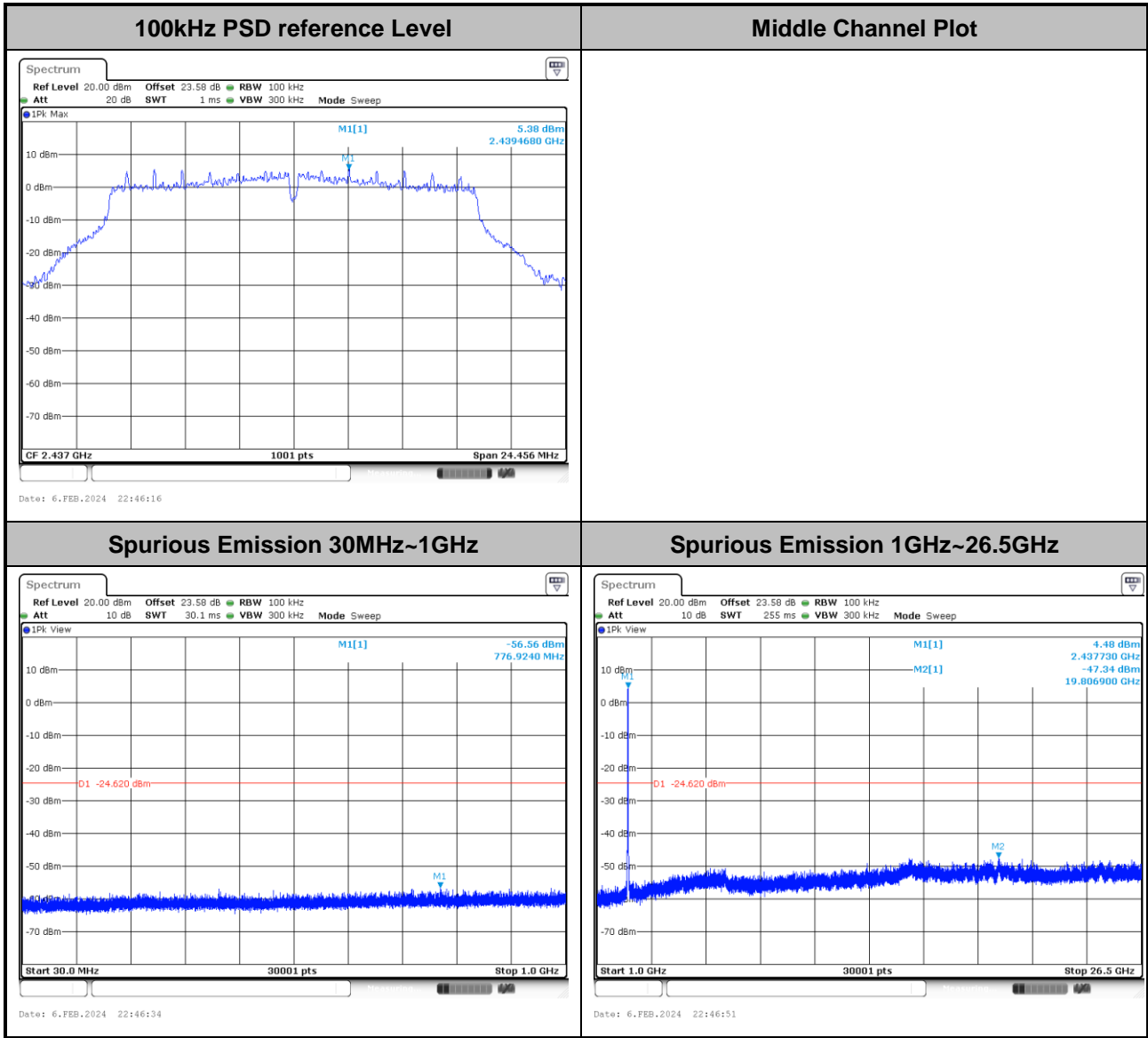


Test Mode :	802.11g	Test Channel :	01
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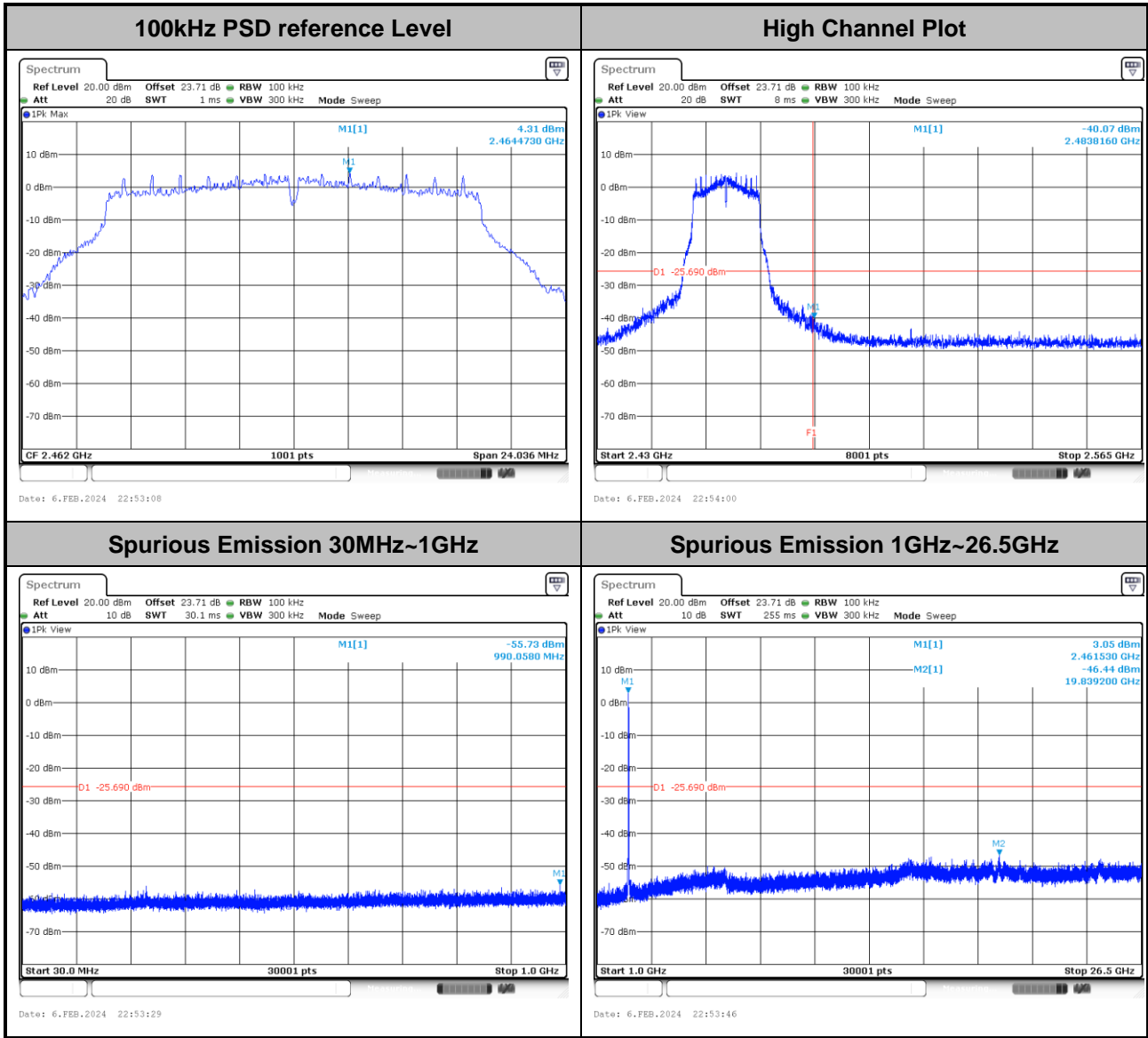


Test Mode :	802.11g	Test Channel :	06
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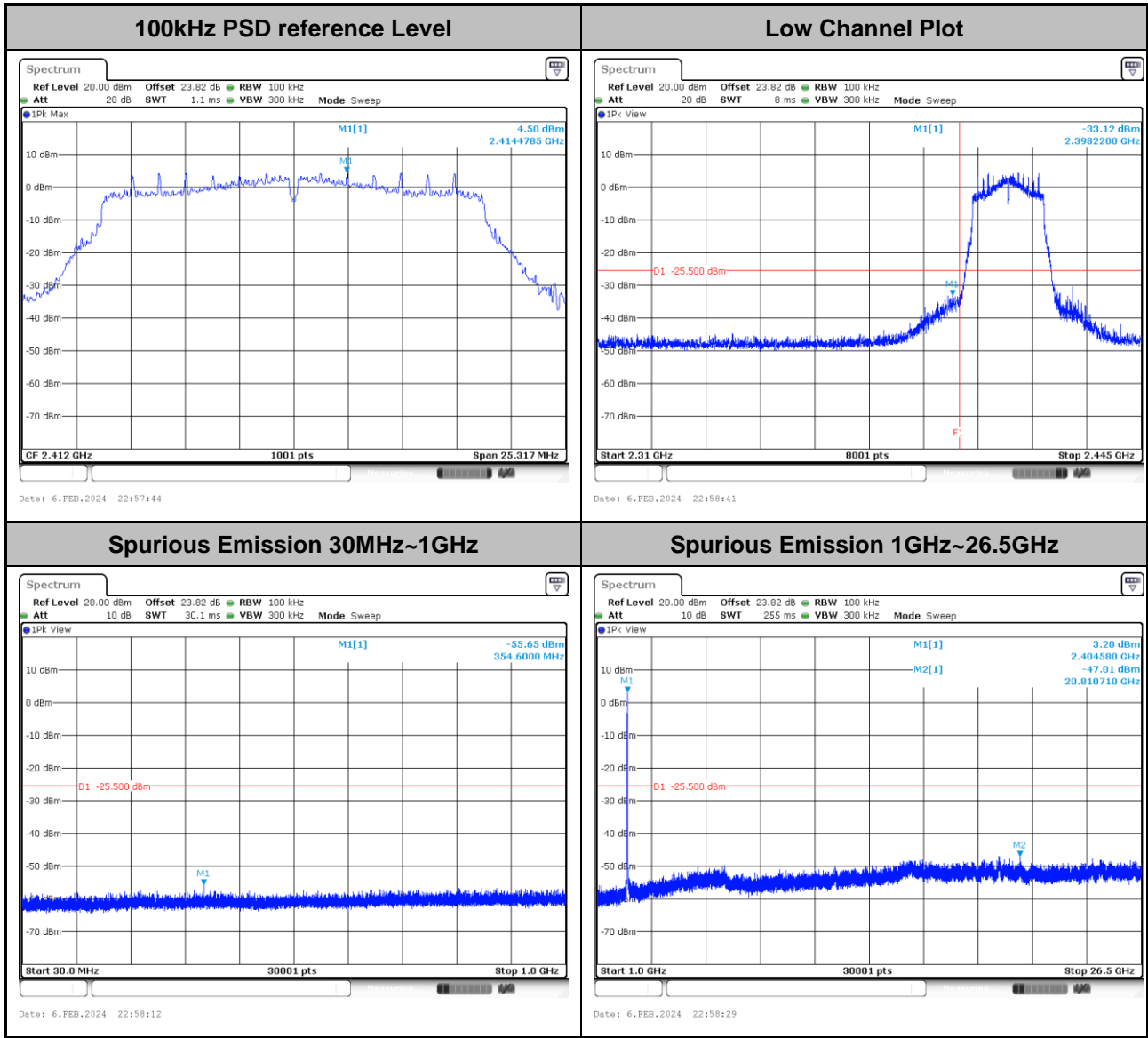


Test Mode :	802.11g	Test Channel :	11
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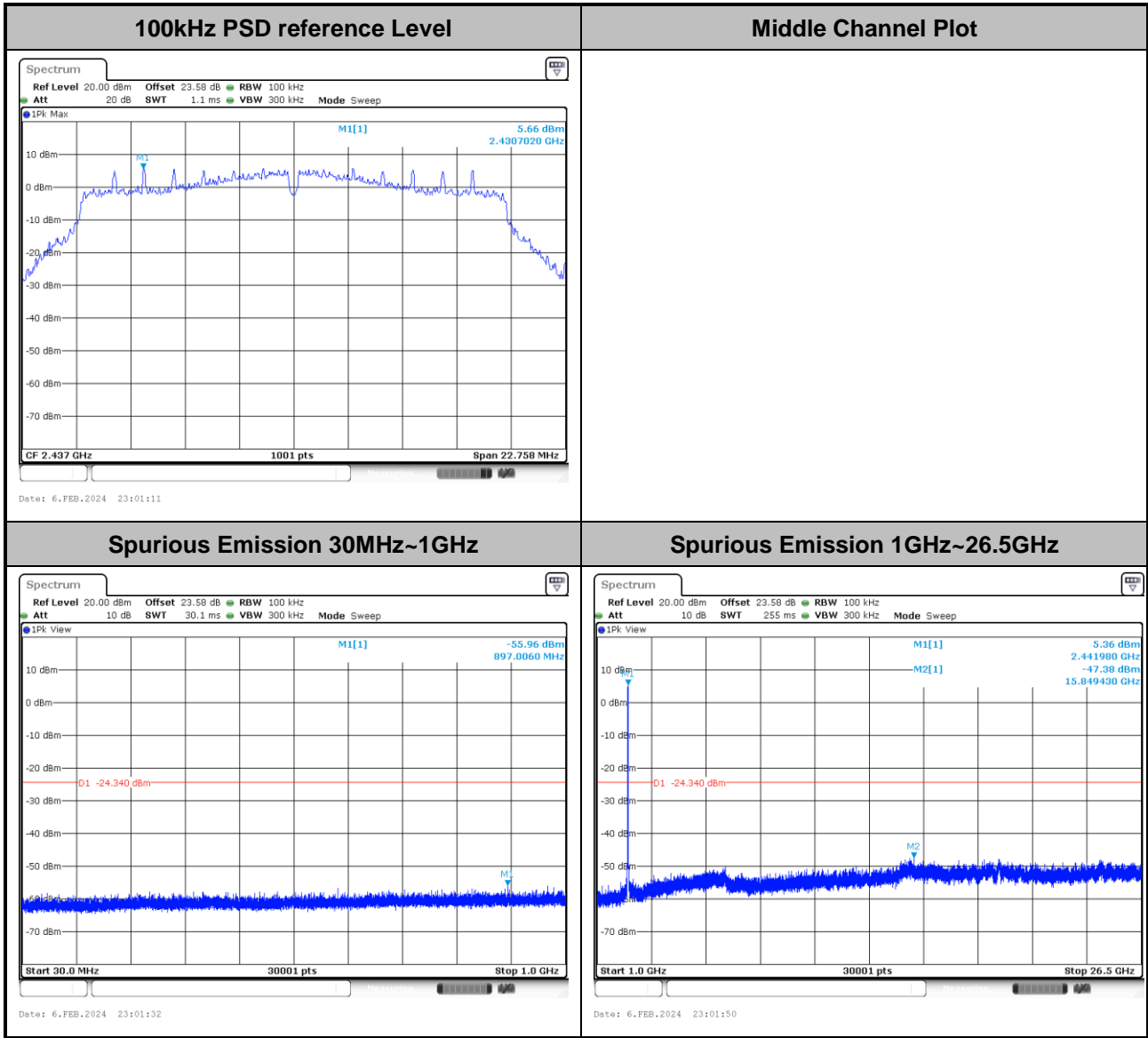


Test Mode :	802.11n HT20	Test Channel :	01
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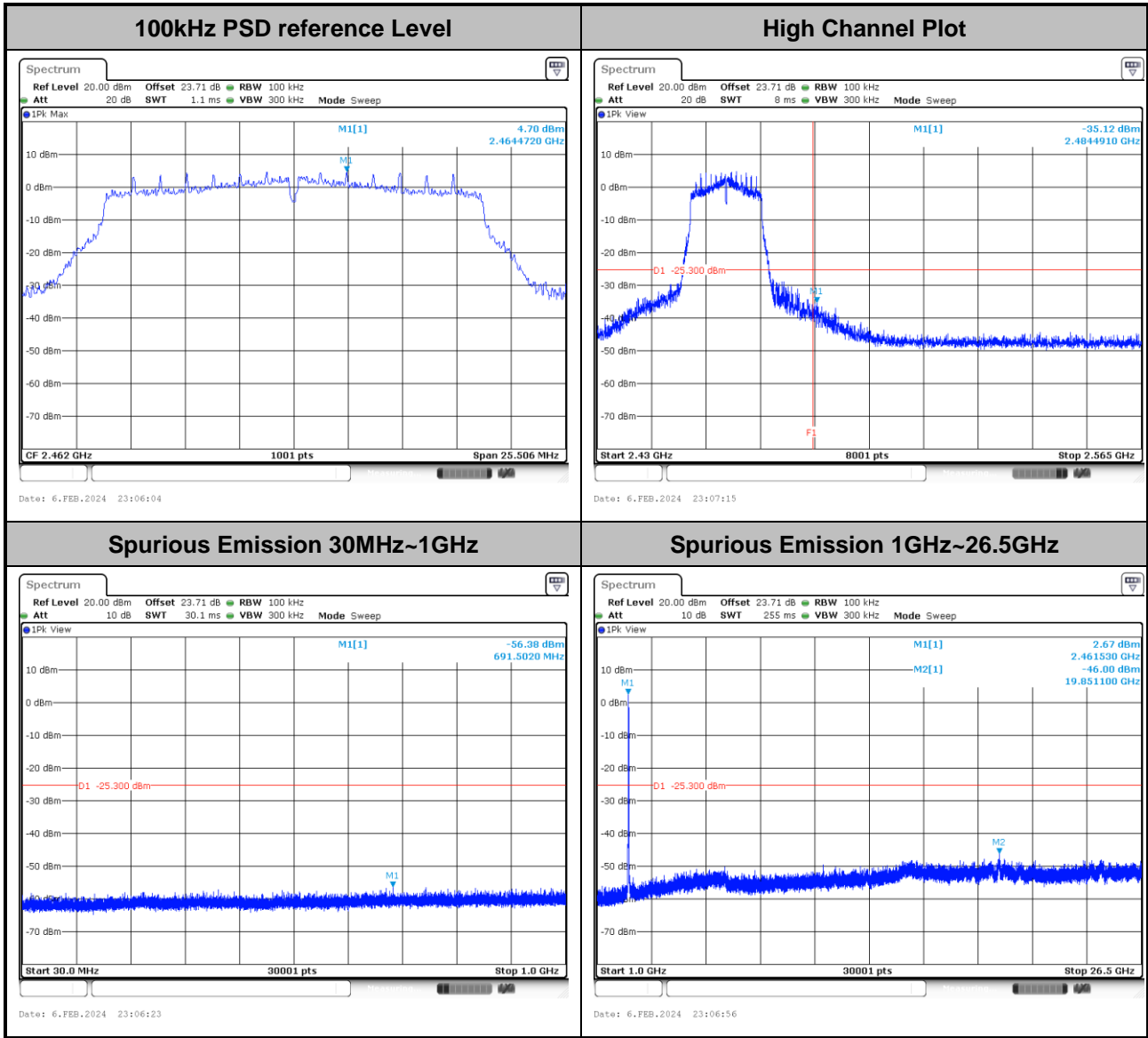


Test Mode :	802.11n HT20	Test Channel :	06
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Test Mode :	802.11n HT20	Test Channel :	11
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Appendix B. AC Conducted Emission Test Results

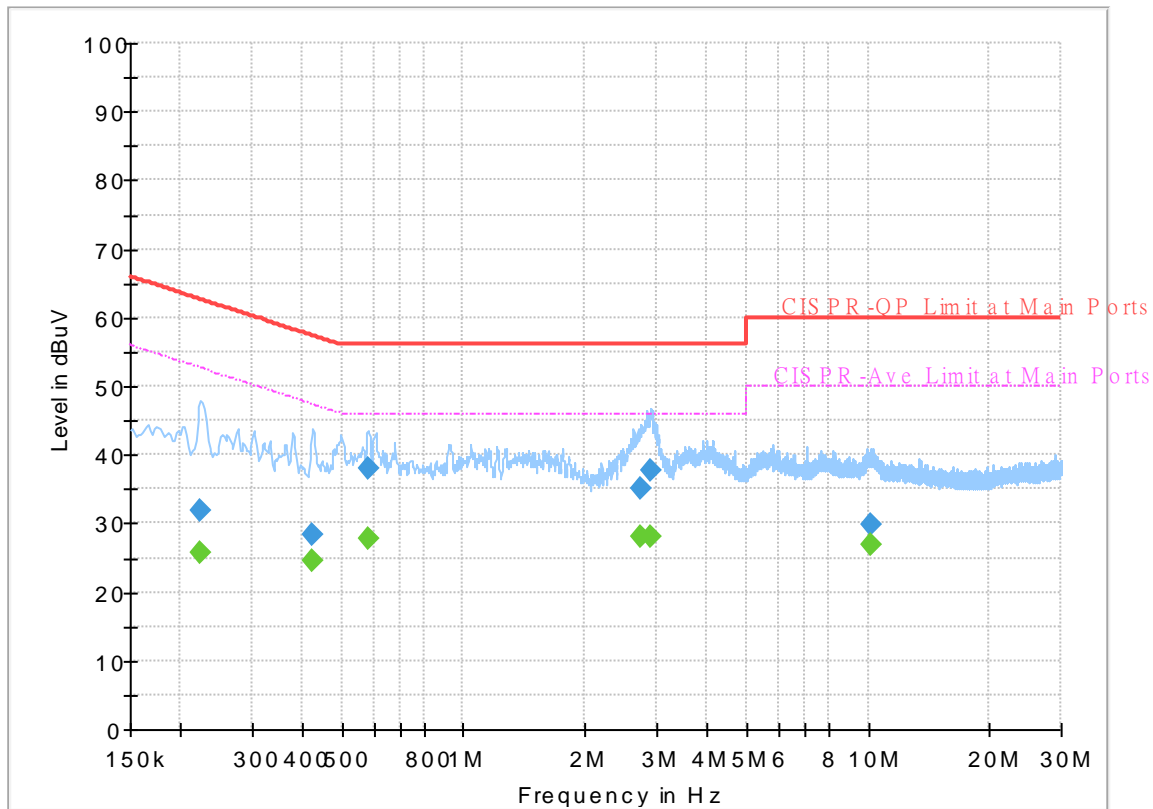
Test Engineer :	Calvin Wang	Temperature :	23~26°C
		Relative Humidity :	45~55%

EUT Information

Report NO : 3D2932

Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



Final Result

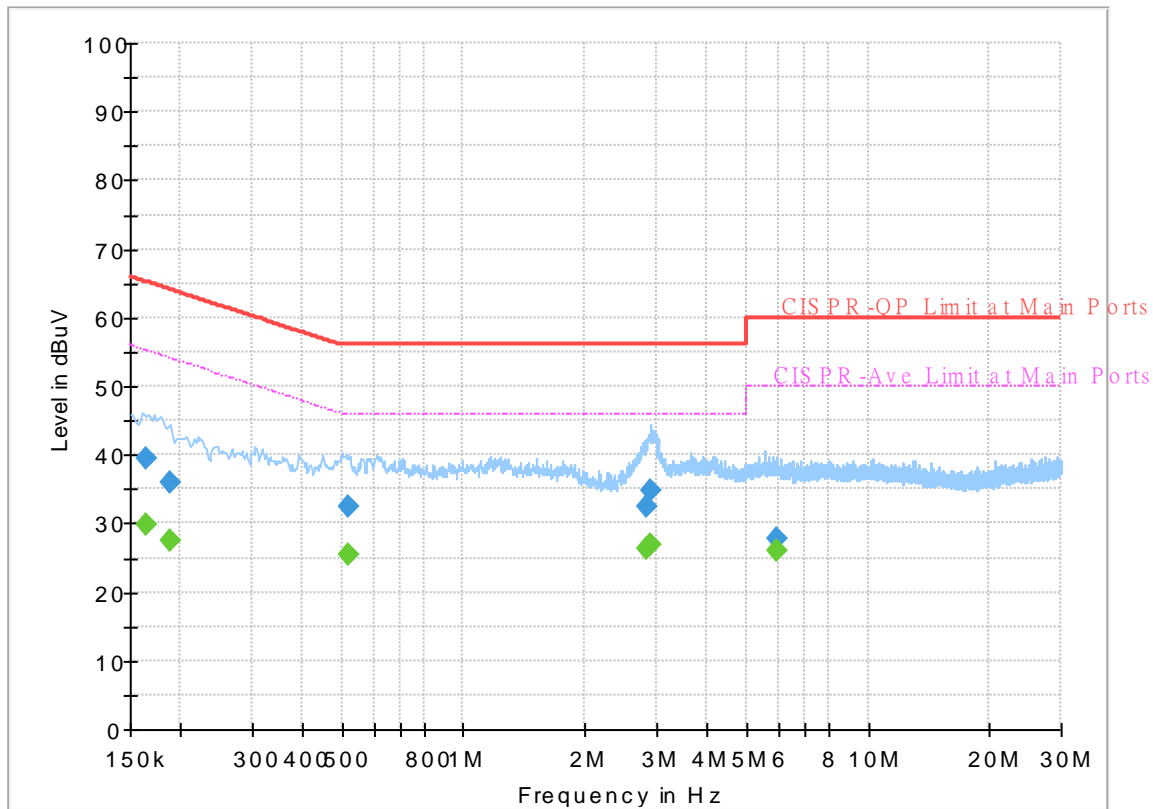
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.224250	---	25.68	52.66	26.98	L1	OFF	19.8
0.224250	31.82	---	62.66	30.84	L1	OFF	19.8
0.424500	---	24.63	47.36	22.73	L1	OFF	19.8
0.424500	28.38	---	57.36	28.98	L1	OFF	19.8
0.582000	---	27.91	46.00	18.09	L1	OFF	19.8
0.582000	38.06	---	56.00	17.94	L1	OFF	19.8
2.739750	---	28.21	46.00	17.79	L1	OFF	19.9
2.739750	35.05	---	56.00	20.95	L1	OFF	19.9
2.917500	---	27.97	46.00	18.03	L1	OFF	19.9
2.917500	37.65	---	56.00	18.35	L1	OFF	19.9
10.131000	---	26.80	50.00	23.20	L1	OFF	20.2
10.131000	29.90	---	60.00	30.10	L1	OFF	20.2

EUT Information

Report NO : 3D2932

Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.163500	---	29.72	55.28	25.56	N	OFF	19.8
0.163500	39.56	---	65.28	25.72	N	OFF	19.8
0.188250	---	27.39	54.11	26.72	N	OFF	19.8
0.188250	35.92	---	64.11	28.19	N	OFF	19.8
0.519000	---	25.47	46.00	20.53	N	OFF	19.8
0.519000	32.47	---	56.00	23.53	N	OFF	19.8
2.823000	---	26.45	46.00	19.55	N	OFF	19.9
2.823000	32.35	---	56.00	23.65	N	OFF	19.9
2.901750	---	27.03	46.00	18.97	N	OFF	19.9
2.901750	34.67	---	56.00	21.33	N	OFF	19.9
5.934750	---	26.02	50.00	23.98	N	OFF	20.0
5.934750	27.66	---	60.00	32.34	N	OFF	20.0



Appendix C. Radiated Spurious Emission

Test Engineer :	BANK Lin, Ken Kuo and Lucifer Jiang	Temperature :	20~23°C
		Relative Humidity :	42~55%

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
802.11b CH 01 2412MHz		2361.45	51.66	-22.34	74	38.69	27	18.31	32.34	100	336	P	H	
		2389.275	40.95	-13.05	54	28.03	26.91	18.36	32.35	100	336	A	H	
	*	2412	105.79	-	-	92.78	26.98	18.4	32.37	100	336	P	H	
	*	2412	102.74	-	-	89.73	26.98	18.4	32.37	100	336	A	H	
													H	
														H
			2388.645	52.18	-21.82	74	39.26	26.91	18.36	32.35	313	295	P	V
			2390	40.99	-13.01	54	28.08	26.9	18.36	32.35	313	295	A	V
	*		2412	104.75	-	-	91.74	26.98	18.4	32.37	313	295	P	V
	*		2412	101.64	-	-	88.63	26.98	18.4	32.37	313	295	A	V
														V
														V
802.11b CH 06 2437MHz		2360.72	51.99	-22.01	74	39.02	27	18.31	32.34	115	6	P	H	
		2361.2	40.11	-13.89	54	27.14	27	18.31	32.34	115	6	A	H	
	*	2437	105.6	-	-	92.73	26.8	18.45	32.38	115	6	P	H	
	*	2437	102.58	-	-	89.71	26.8	18.45	32.38	115	6	A	H	
			2495.84	51.48	-22.52	74	38.39	26.96	18.55	32.42	115	6	P	H
			2498.08	39.85	-14.15	54	26.73	26.98	18.56	32.42	115	6	A	H
			2362	51.45	-22.55	74	38.48	27	18.31	32.34	217	119	P	V
			2364.08	40.06	-13.94	54	27.09	27	18.31	32.34	217	119	A	V
	*		2437	106.3	-	-	93.43	26.8	18.45	32.38	217	119	P	V
	*		2437	103.17	-	-	90.3	26.8	18.45	32.38	217	119	A	V
			2489.68	51.05	-22.95	74	38.02	26.9	18.54	32.41	217	119	P	V
			2483.76	39.97	-14.03	54	26.95	26.9	18.53	32.41	217	119	A	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	*	2462	104.86	-	-	91.97	26.8	18.49	32.4	254	334	P	H
	*	2462	101.61	-	-	88.72	26.8	18.49	32.4	254	334	A	H
		2488.92	52.94	-21.06	74	39.91	26.9	18.54	32.41	254	334	P	H
		2483.52	43.4	-10.6	54	30.38	26.9	18.53	32.41	254	334	A	H
													H
													H
	*	2462	104.63	-	-	91.74	26.8	18.49	32.4	200	99	P	V
	*	2462	101.52	-	-	88.63	26.8	18.49	32.4	200	99	A	V
		2485	52.32	-21.68	74	39.3	26.9	18.53	32.41	200	99	P	V
		2483.52	41.91	-12.09	54	28.89	26.9	18.53	32.41	200	99	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	46.04	-27.96	74	34.09	32.4	13.05	33.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			4824	45.17	-28.83	74	33.22	32.4	13.05	33.5	-	-	P
													V
													V
													V
													V
													V
													V
													V
													V
													V
													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 06 2437MHz		4874	45.84	-28.16	74	33.71	32.55	13.07	33.49	-	-	P	H	
		7311	50.22	-23.78	74	32.56	37.5	16	35.84	-	-	P	H	
		7311	42.39	-11.61	54	24.73	37.5	16	35.84	-	-	A	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			4874	45.43	-28.57	74	33.3	32.55	13.07	33.49	-	-	P	V
			7311	50.48	-23.52	74	32.82	37.5	16	35.84	-	-	P	V
			7311	40.9	-13.1	54	23.24	37.5	16	35.84	-	-	A	V
														V
														V
														V
														V
														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	45.38	-28.62	74	33.11	32.65	13.1	33.48	-	-	P	H	
		7386	48.83	-25.17	74	31.2	37.43	16.09	35.89	-	-	P	H	
		7386	39.91	-14.09	54	22.28	37.43	16.09	35.89	-	-	A	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			4924	45.1	-28.9	74	32.83	32.65	13.1	33.48	-	-	P	V
			7386	49.66	-24.34	74	32.03	37.43	16.09	35.89	-	-	P	V
			7386	39.88	-14.12	54	22.25	37.43	16.09	35.89	-	-	A	V
														V
														V
														V
														V
														V
														V
													V	
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 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	63.9	-10.1	74	50.99	26.9	18.36	32.35	107	0	P	H	
		2390	50.36	-3.64	54	37.45	26.9	18.36	32.35	107	0	A	H	
	*	2412	108.36	-	-	95.35	26.98	18.4	32.37	107	0	P	H	
	*	2412	100.4	-	-	87.39	26.98	18.4	32.37	107	0	A	H	
													H	
														H
			2389.905	63.18	-10.82	74	50.27	26.9	18.36	32.35	400	291	P	V
			2390	49.43	-4.57	54	36.52	26.9	18.36	32.35	400	291	A	V
	*		2412	106.99	-	-	93.98	26.98	18.4	32.37	400	291	P	V
	*		2412	99.45	-	-	86.44	26.98	18.4	32.37	400	291	A	V
														V
														V
802.11g CH 06 2437MHz		2389.84	56.68	-17.32	74	43.77	26.9	18.36	32.35	132	0	P	H	
		2389.84	42.46	-11.54	54	29.55	26.9	18.36	32.35	132	0	A	H	
	*	2437	108.96	-	-	96.09	26.8	18.45	32.38	132	0	P	H	
	*	2437	101.42	-	-	88.55	26.8	18.45	32.38	132	0	A	H	
			2484.56	54.47	-19.53	74	41.45	26.9	18.53	32.41	132	0	P	H
			2483.52	42.72	-11.28	54	29.7	26.9	18.53	32.41	132	0	A	H
			2390	53.98	-20.02	74	41.07	26.9	18.36	32.35	175	138	P	V
			2390	41.53	-12.47	54	28.62	26.9	18.36	32.35	175	138	A	V
	*		2437	108.71	-	-	95.84	26.8	18.45	32.38	175	138	P	V
	*		2437	100.37	-	-	87.5	26.8	18.45	32.38	175	138	A	V
			2484.48	53.96	-20.04	74	40.94	26.9	18.53	32.41	175	138	P	V
			2483.6	42.59	-11.41	54	29.57	26.9	18.53	32.41	175	138	A	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	*	2462	108.07	-	-	95.18	26.8	18.49	32.4	304	338	P	H	
	*	2462	99.8	-	-	86.91	26.8	18.49	32.4	304	338	A	H	
		2483.56	66.66	-7.34	74	53.64	26.9	18.53	32.41	304	338	P	H	
		2483.52	50	-4	54	36.98	26.9	18.53	32.41	304	338	A	H	
													H	
													H	
	*	2462	108.12	-	-	95.23	26.8	18.49	32.4	152	116	P	V	
	*	2462	99.98	-	-	87.09	26.8	18.49	32.4	152	116	A	V	
		2483.56	67.65	-6.35	74	54.63	26.9	18.53	32.41	152	116	P	V	
		2483.56	49.93	-4.07	54	36.91	26.9	18.53	32.41	152	116	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	46.09	-27.91	74	34.14	32.4	13.05	33.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			4824	45.5	-28.5	74	33.55	32.4	13.05	33.5	-	-	P
													V
													V
													V
													V
													V
													V
													V
													V
													V
													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 06 2437MHz		4874	45.2	-28.8	74	33.07	32.55	13.07	33.49	-	-	P	H	
		7311	49.81	-24.19	74	32.15	37.5	16	35.84	-	-	P	H	
		7311	42.28	-11.72	54	24.62	37.5	16	35.84	-	-	A	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			4874	44.92	-29.08	74	32.79	32.55	13.07	33.49	-	-	P	V
			7311	50.07	-23.93	74	32.41	37.5	16	35.84	-	-	P	V
			7311	40.91	-13.09	54	23.25	37.5	16	35.84	-	-	A	V
														V
														V
														V
														V
														V
														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	46.41	-27.59	74	34.14	32.65	13.1	33.48	-	-	P	H	
		7386	49.69	-24.31	74	32.06	37.43	16.09	35.89	-	-	P	H	
		7386	39.87	-14.13	54	22.24	37.43	16.09	35.89	-	-	A	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			4924	44.84	-29.16	74	32.57	32.65	13.1	33.48	-	-	P	V
			7386	48.5	-25.5	74	30.87	37.43	16.09	35.89	-	-	P	V
			7386	39.73	-14.27	54	22.1	37.43	16.09	35.89	-	-	A	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 802.11n 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)	
802.11n HT20 CH 01 2412MHz		2389.17	65.31	-8.69	74	52.39	26.91	18.36	32.35	112	7	P	H	
		2390	48.65	-5.35	54	35.74	26.9	18.36	32.35	112	7	A	H	
	*	2412	109.27	-	-	96.26	26.98	18.4	32.37	112	7	P	H	
	*	2412	101.82	-	-	88.81	26.98	18.4	32.37	112	7	A	H	
													H	
													H	
			2386.44	59.58	-14.42	74	46.64	26.94	18.35	32.35	292	115	P	V
			2390	46.42	-7.58	54	33.51	26.9	18.36	32.35	292	115	A	V
		*	2412	105.69	-	-	92.68	26.98	18.4	32.37	292	115	P	V
		*	2412	98.35	-	-	85.34	26.98	18.4	32.37	292	115	A	V
													V	
													V	
802.11n HT20 CH 06 2437MHz		2386.64	52.37	-21.63	74	39.43	26.93	18.36	32.35	123	0	P	H	
		2389.52	41.71	-12.29	54	28.8	26.9	18.36	32.35	123	0	A	H	
	*	2437	108.16	-	-	95.29	26.8	18.45	32.38	123	0	P	H	
	*	2437	100.62	-	-	87.75	26.8	18.45	32.38	123	0	A	H	
			2485.76	51.92	-22.08	74	38.9	26.9	18.53	32.41	123	0	P	H
			2484.8	42.07	-11.93	54	29.05	26.9	18.53	32.41	123	0	A	H
			2386.8	50.94	-23.06	74	38	26.93	18.36	32.35	151	116	P	V
			2389.84	41.38	-12.62	54	28.47	26.9	18.36	32.35	151	116	A	V
		*	2437	108.16	-	-	95.29	26.8	18.45	32.38	151	116	P	V
		*	2437	100.83	-	-	87.96	26.8	18.45	32.38	151	116	A	V
		2484.32	51.86	-22.14	74	38.84	26.9	18.53	32.41	151	116	P	V	
		2484.16	42.32	-11.68	54	29.3	26.9	18.53	32.41	151	116	A	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)
802.11n HT20 CH 11 2462MHz	*	2462	106.84	-	-	93.95	26.8	18.49	32.4	302	331	P	H
	*	2462	99.26	-	-	86.37	26.8	18.49	32.4	302	331	A	H
		2485.04	66.52	-7.48	74	53.5	26.9	18.53	32.41	302	331	P	H
		2483.64	49.49	-4.51	54	36.47	26.9	18.53	32.41	302	331	A	H
													H
													H
	*	2462	105.84	-	-	92.95	26.8	18.49	32.4	168	133	P	V
	*	2462	98.23	-	-	85.34	26.8	18.49	32.4	168	133	A	V
		2483.92	67.1	-6.9	74	54.08	26.9	18.53	32.41	168	133	P	V
		2483.56	49.12	-4.88	54	36.1	26.9	18.53	32.41	168	133	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)	
802.11n HT20 CH 01 2412MHz		4824	45.16	-28.84	74	33.21	32.4	13.05	33.5	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
			4824	44.83	-29.17	74	32.88	32.4	13.05	33.5	-	-	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)	
802.11n HT20 CH 06 2437MHz		4874	45.15	-28.85	74	33.02	32.55	13.07	33.49	-	-	P	H	
		7311	49.43	-24.57	74	31.77	37.5	16	35.84	-	-	P	H	
		7311	42.43	-11.57	54	24.77	37.5	16	35.84	-	-	A	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			4874	45.64	-28.36	74	33.51	32.55	13.07	33.49	-	-	P	V
			7311	51.29	-22.71	74	33.63	37.5	16	35.84	-	-	P	V
			7311	40.89	-13.11	54	23.23	37.5	16	35.84	-	-	A	V
														V
														V
														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)	
802.11n HT20 CH 11 2462MHz		4924	44.72	-29.28	74	32.45	32.65	13.1	33.48	-	-	P	H	
		7386	49.23	-24.77	74	31.6	37.43	16.09	35.89	-	-	P	H	
		7386	39.75	-14.25	54	22.12	37.43	16.09	35.89	-	-	A	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			4924	44.98	-29.02	74	32.71	32.65	13.1	33.48	-	-	P	V
			7386	49.53	-24.47	74	31.9	37.43	16.09	35.89	-	-	P	V
			7386	39.94	-14.06	54	22.31	37.43	16.09	35.89	-	-	A	V
														V
														V
														V
														V
														V
													V	
													V	
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. 													



Emission above 18GHz
2.4GHz WIFI 802.11g (SHF)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11g SHF	1	23817	42.95	-31.05	74	45.08	38.67	19.17	59.97	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			24692	42.81	-31.19	74	43.73	39.57	19.63	60.12	-	-	P
													V
													V
													V
													V
													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 802.11g (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)	
2.4GHz 802.11g LF		74.55	26.72	-13.28	40	557.92	-500	1.53	32.73	-	-	P	H	
		180.12	40.07	-3.43	43.5	570.28	-500	2.46	32.67	118	0	Q	H	
		240.06	39.38	-6.62	46	569.28	-500	2.76	32.66	-	-	P	H	
		659.8	37.1	-8.9	46	38.98	26.35	4.58	32.81	-	-	P	H	
		839.7	38.4	-7.6	46	36.49	28.95	5.22	32.26	-	-	P	H	
		899.9	38.94	-7.06	46	36.33	29.06	5.4	31.85	-	-	P	H	
														H
														H
														H
														H
														H
														H
			45.66	35.76	-4.24	40	567.32	-500	1.16	32.72	100	304	Q	V
			180.12	33.82	-9.68	43.5	564.03	-500	2.46	32.67	-	-	P	V
			240.06	33.67	-12.33	46	563.57	-500	2.76	32.66	-	-	P	V
			659.8	35.46	-10.54	46	37.34	26.35	4.58	32.81	-	-	P	V
			899.9	38.71	-7.29	46	36.1	29.06	5.4	31.85	-	-	P	V
			983.9	38.22	-15.78	54	32.88	30.69	5.69	31.04	-	-	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 and 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 Margin 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		(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		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H
2412MHz													

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 D. Radiated Spurious Emission Plots

Test Engineer :	BANK Lin, Ken Kuo and Lucifer Jiang	Temperature :	20~23°C
		Relative Humidity :	42~55%

Note symbol

-L	Low channel location
-R	High channel location

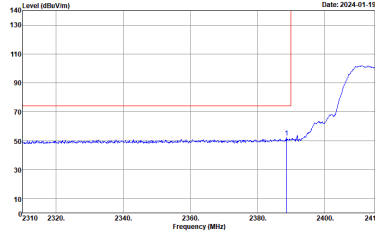
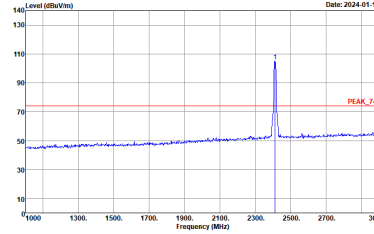
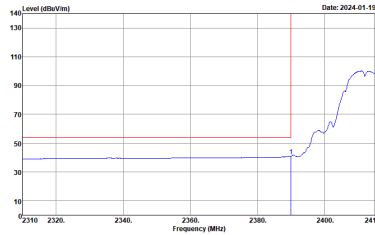
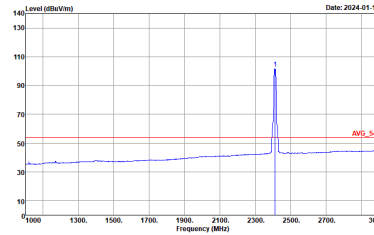


2.4GHz 2400~2483.5MHz

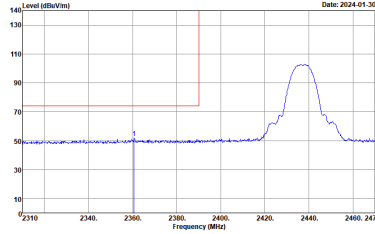
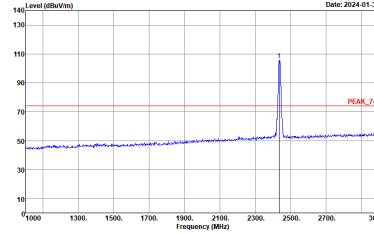
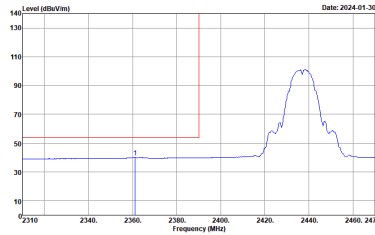
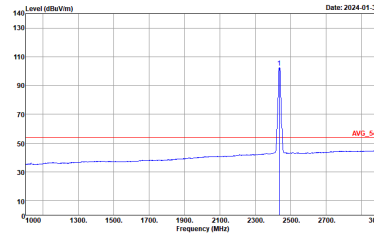
WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH22-HY Condition : PEAK_74 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH22-HY Condition : AVG_BE_54 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	<p>Site : 03CH22-HY Condition : AVG_54 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

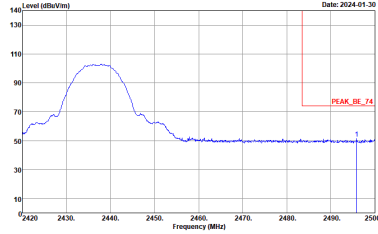
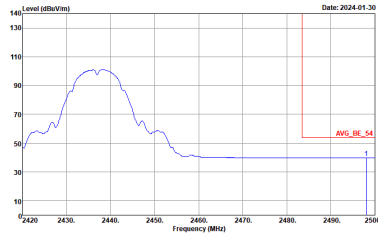


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

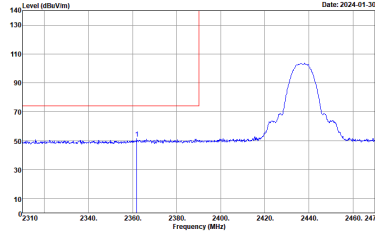
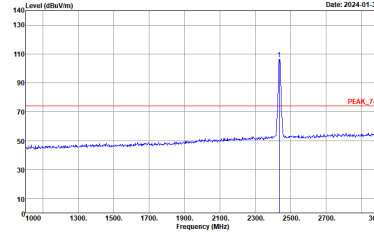
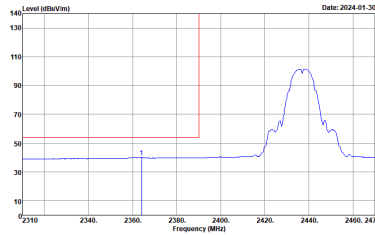
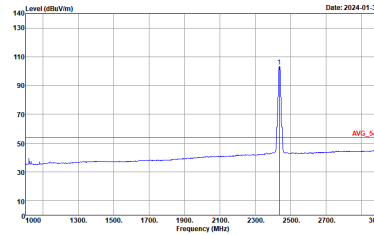


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

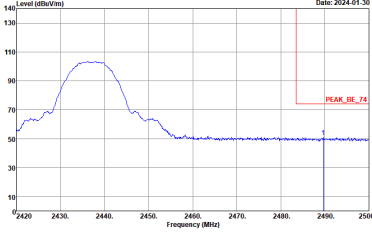
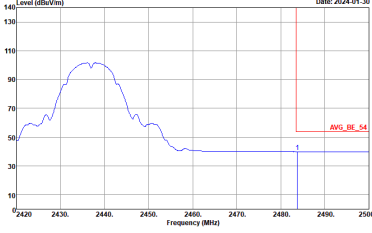


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	Left blank
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	Left blank

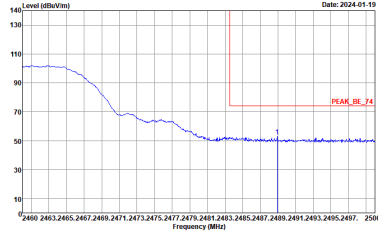
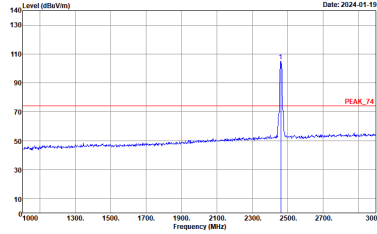
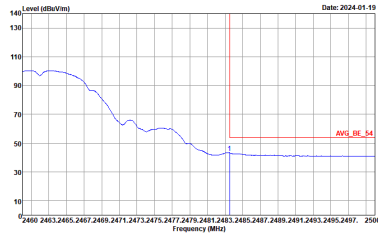
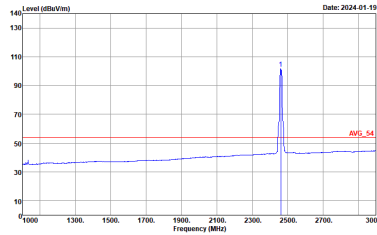


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

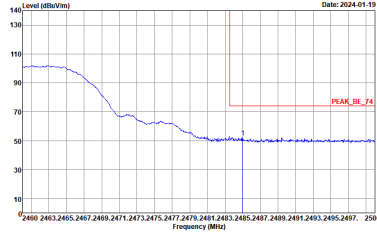
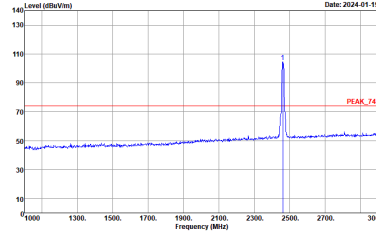
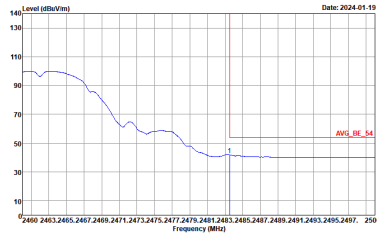
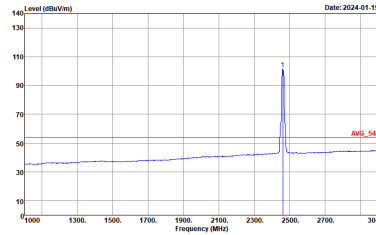


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

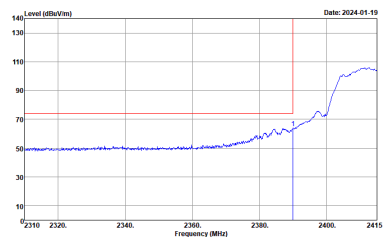
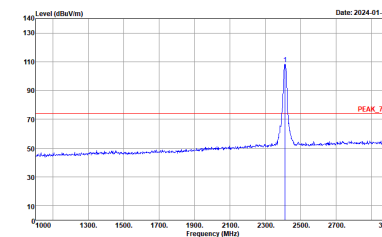
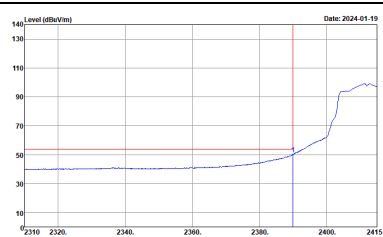
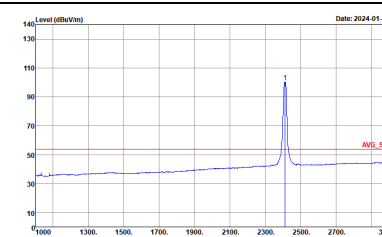


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

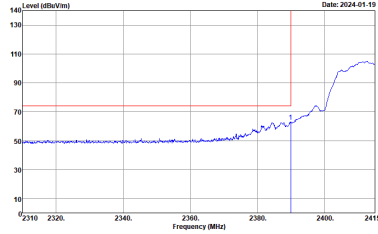
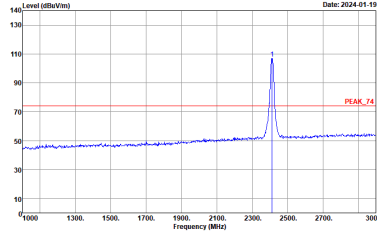
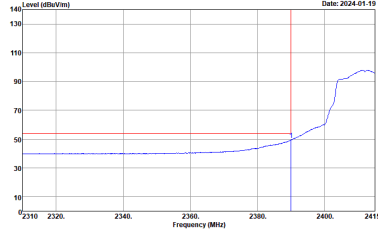
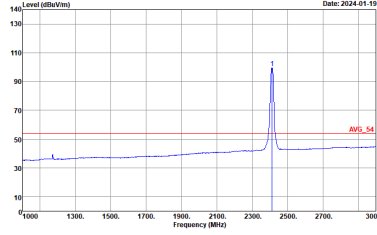


2.4GHz 2400~2483.5MHz

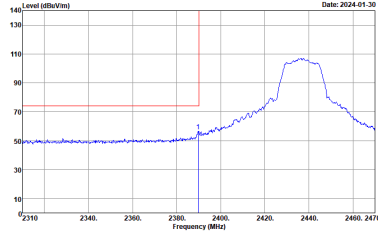
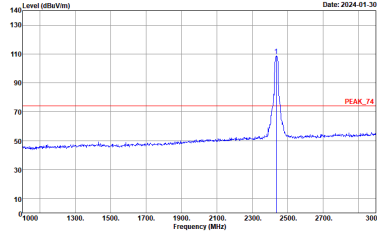
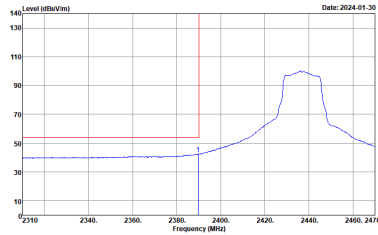
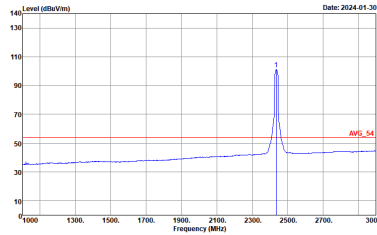
WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AV6_BE_54 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AV6_54 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>

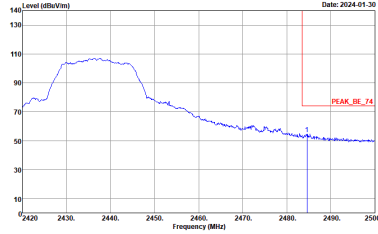
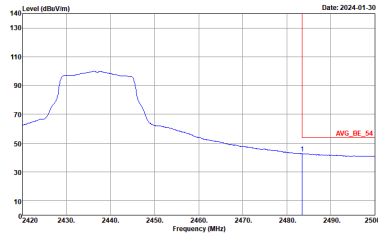


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>

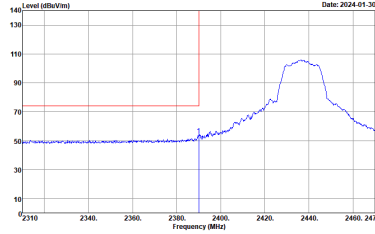
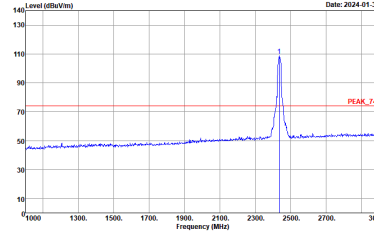
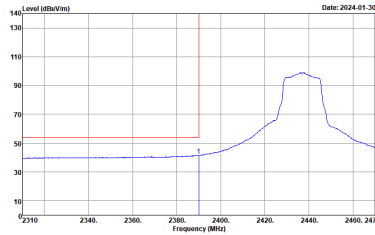
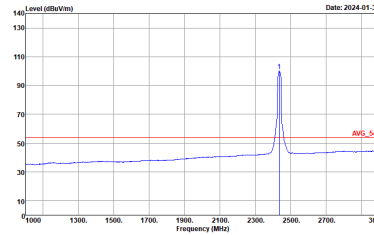


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>

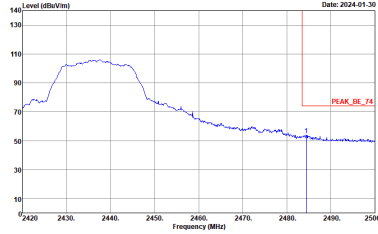
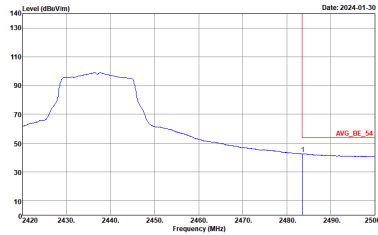


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	Left blank
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.750KHz SWF:Auto</p>	Left blank

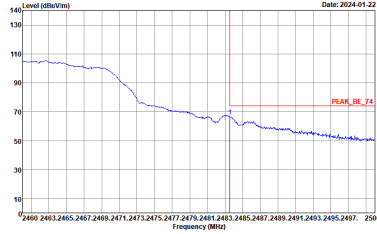
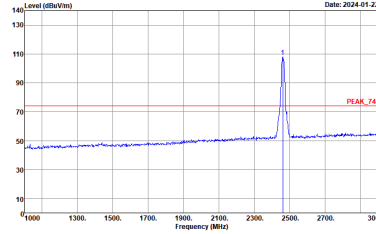
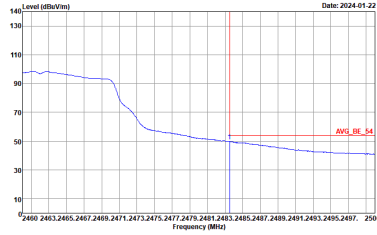
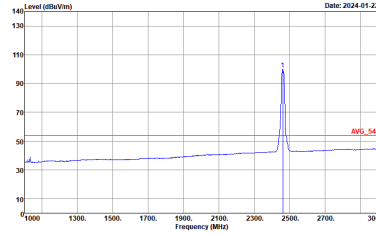


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>

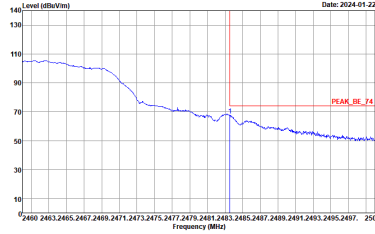
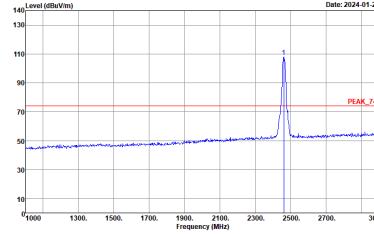
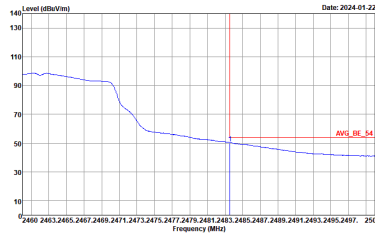
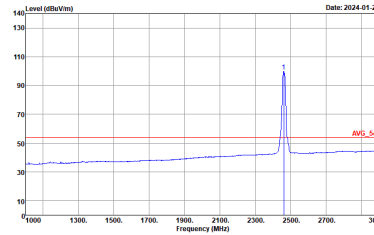


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	Left Blank
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.750KHz SWF:Auto</p>	Left Blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.750KHz SWT:Auto</p>

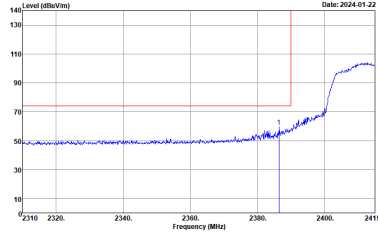
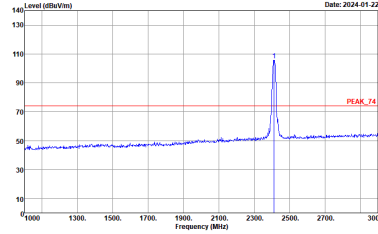
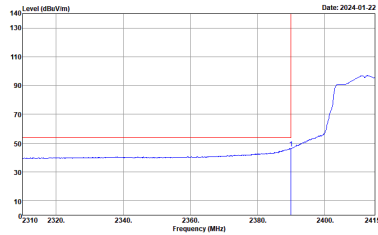
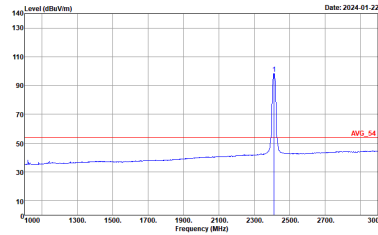


2.4GHz 2400~2483.5MHz

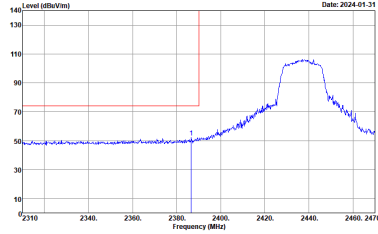
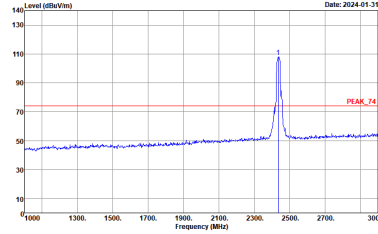
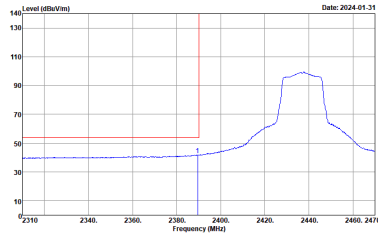
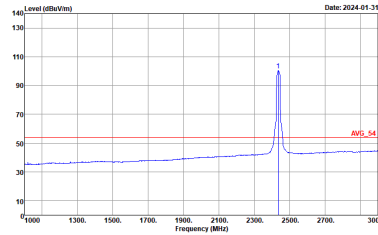
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH22-HY Condition : PEAK_74 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH22-HY Condition : AV6_BE_54 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>	<p>Site : 03CH22-HY Condition : AV6_54 3m LEZ004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>

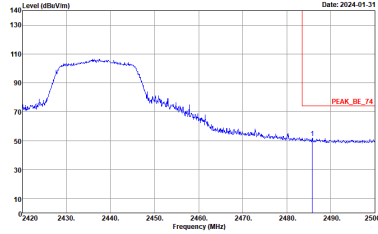
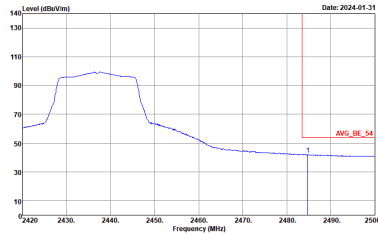


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>

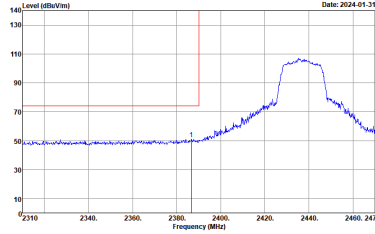
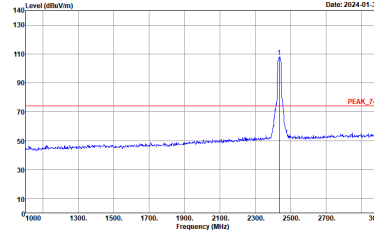
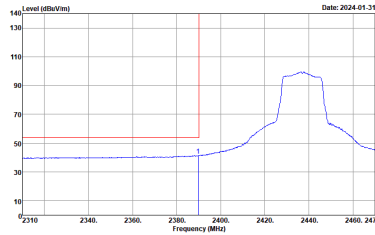
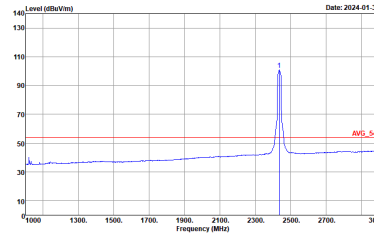


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	Left blank
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.820KHz SWF:Auto</p>	Left blank

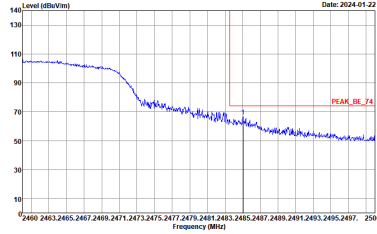
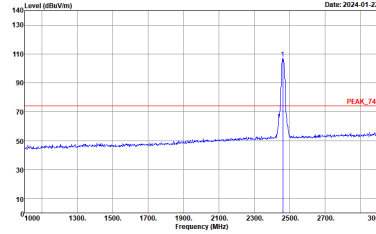
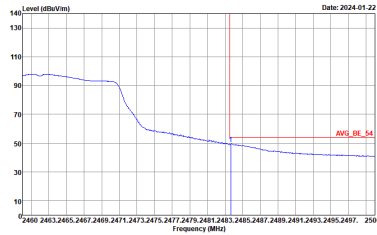
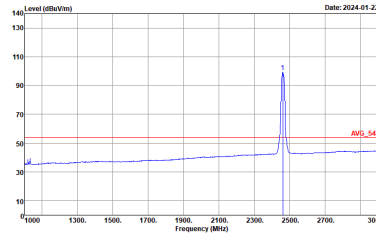


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>

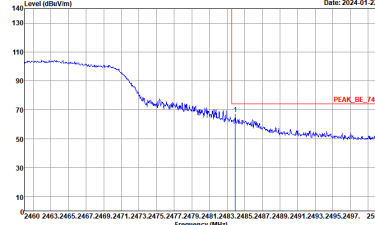
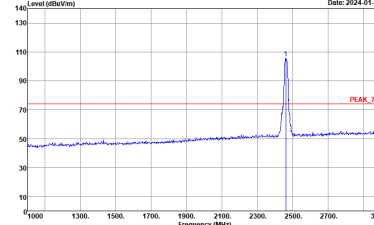
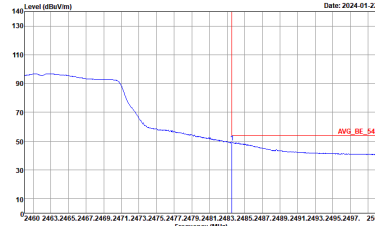
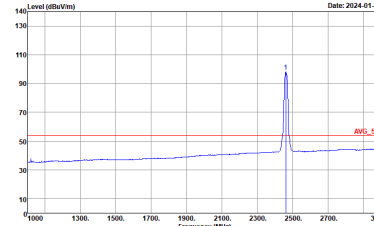


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	<p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	Left Blank
Avg.	<p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWF:Auto</p>	Left Blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2C04A18EN_230712 HORIZONTAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Fundamental @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH22-HY Condition : PEAK_BE_74 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : PEAK_74 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH22-HY Condition : AVG_BE_54 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>	 <p>Site : 03CH22-HY Condition : AVG_54 3m LE2C04A18EN_230712 VERTICAL : RBW:1000.000KHz VBW:0.820KHz SWT:Auto</p>



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.	<p>Site : 03CH22-HV Condition : PEAK_74 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-HV Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
10.6G ~18G Avg.	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH22-1#Y Condition : PEAK_74 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-1#Y Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
10.6G ~18G Avg.	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH22-1#Y Condition : PEAK_74 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-1#Y Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
10.6G ~18G Avg.	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2C04A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2C04A18EN_230712 VERTICAL</p>



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.	<p>Site : 03CH22-HV Condition : PEAK_74 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-HV Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
10.6G ~18G Avg.	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH22-1#Y Condition : PEAK_74 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-1#Y Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
10.6G ~18G Avg.	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH22-1#Y Condition : PEAK_74 3m LE2004A18EN_230712 HORIZONTAL :</p>	<p>Site : 03CH22-1#Y Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL :</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
10.6G ~18G Avg.	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL</p>



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

Table with 2 columns: Horizontal and Vertical. Each column contains a graph of Level (dBuV/m) vs Frequency (MHz) with Peak and Avg. values indicated. Includes site and condition details for both orientations.



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
10.6G ~18G Avg.	<p>Site : 03CH22-1#Y Condition : AVG_54 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-1#Y Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH22-1#Y Condition : PEAK_74 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-1#Y Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
10.6G ~18G Avg.	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH-022-34Y Condition : PEAK_74 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH-022-34Y Condition : PEAK_74 3m LE2004A18EN_230712 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
10.6G ~18G Avg.	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 HORIZONTAL</p>	<p>Site : 03CH22-4# Condition : AVG_54 3m LE2004A18EN_230712 VERTICAL</p>



Emission above 18GHz
2.4GHz WIFI 802.11g (SHF @ 1m)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g SHF	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH22-HV Condition : PEAK_74 1m SHF_1224_230710 HORIZONTAL</p>	<p>Site : 03CH22-HV Condition : PEAK_74 1m SHF_1224_230710 VERTICAL</p>



Emission below 1GHz
2.4GHz WIFI 802.11g (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g LF	
1	Horizontal	Vertical
QP / Peak	<p>Site : 03CH22-HV Condition : QP-3m 8IL0663304_231015_16 HORIZONTAL</p>	<p>Site : 03CH22-HV Condition : QP-3m 8IL0663304_231015_16 VERTICAL</p>



Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
802.11b	98.84	-	-	10Hz
802.11g	93.21	1428	0.70	750Hz
2.4GHz 802.11n HT20	92.71	1335	0.75	

