



FCC RADIO TEST REPORT

FCC ID : 2AUWW-HALOWA1B
Equipment : Halo Collar
Brand Name : Halo
Model Name : Halo Three
Applicant : Protect Animals with Satellites, LLC
 5465 Legacy Dr., Suite 650, Plano, Texas 75024,
 United States
Manufacturer : RoyalTek Company Ltd.,
 8F, No.40, Wenhua 2nd Rd., Guishan Dist.,
 Taoyuan City 333010, Taiwan(R.O.C.)
Standard : FCC Part 15 Subpart C §15.247

The product was received on Sep. 02, 2022 and testing was performed from Dec. 30, 2022 to Jan. 20, 2023. 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	3.73 dB under the limit at 4824.000 MHz
3.6	15.207	AC Conducted Emission	Pass	21.27 dB under the limit at 1.682 MHz
3.7	15.203	Antenna Requirement	Pass	-

Declaration of Conformity:

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

Comments and Explanations:

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

Reviewed by: Avis Chuang

Report Producer: Rachel Hsieh



1 General Description

1.1 Product Feature of Equipment Under Test

LTE M1, Bluetooth-LE, Wi-Fi 2.4GHz 802.11b/g/n, and GNSS.

Product Feature	
Antenna Type	WWAN: Loop Antenna WLAN: Chip Antenna Bluetooth-LE: Chip Antenna BDS / Galileo / GPS / Glonass: linear polarization Antenna

Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	0.5

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 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 AC 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, 03CH11-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.

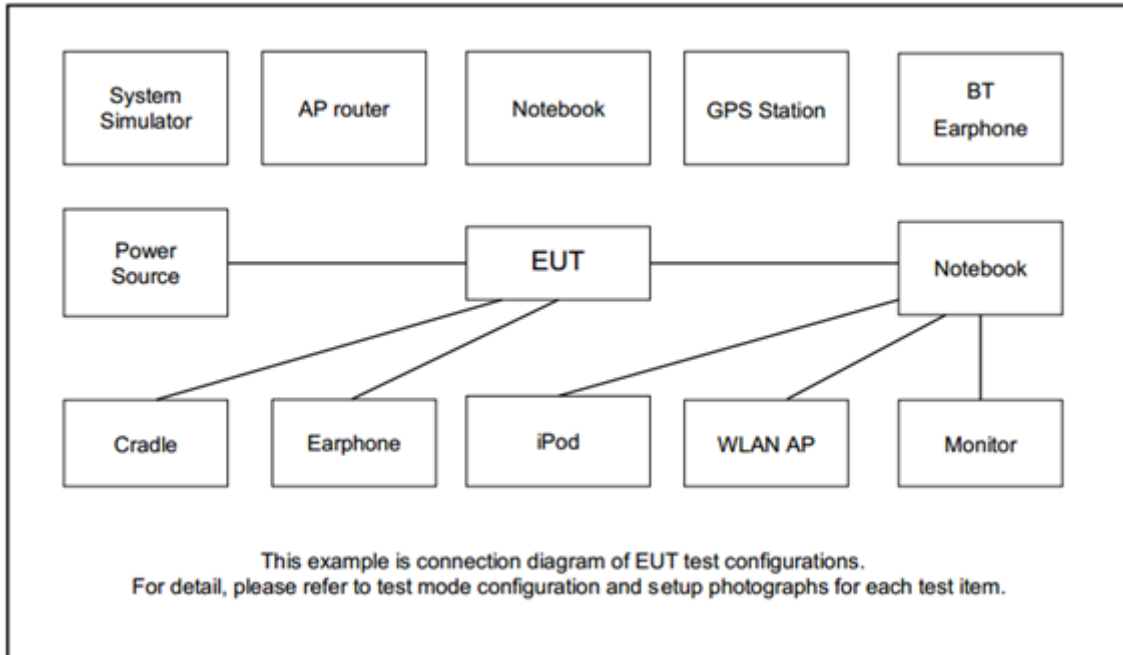
Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0

Test Cases	
AC Conducted Emission	Mode 1 :LTE Cat M1 Band 5 Idle + Bluetooth Link + WLAN (2.4GHz) Link + Speaker + USB cable (Charging from Adapter)

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.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude 3420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Notebook	Lenovo	IdeaPad Gaming	PD9AX201NG	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Mobile Phone	ASUS	ASUS_X00QD	N/A	N/A	N/A
6.	Adapter	Google	G9BR1	N/A	N/A	N/A
7.	Adapter	XIAOMI	MDY-03EB	N/A	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “SSCOM3.2” 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.

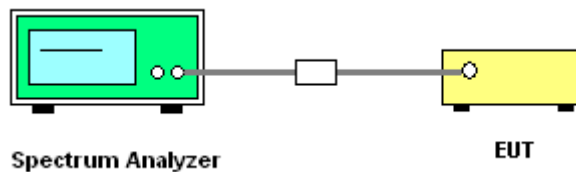
3.1.2 Measuring Instruments

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

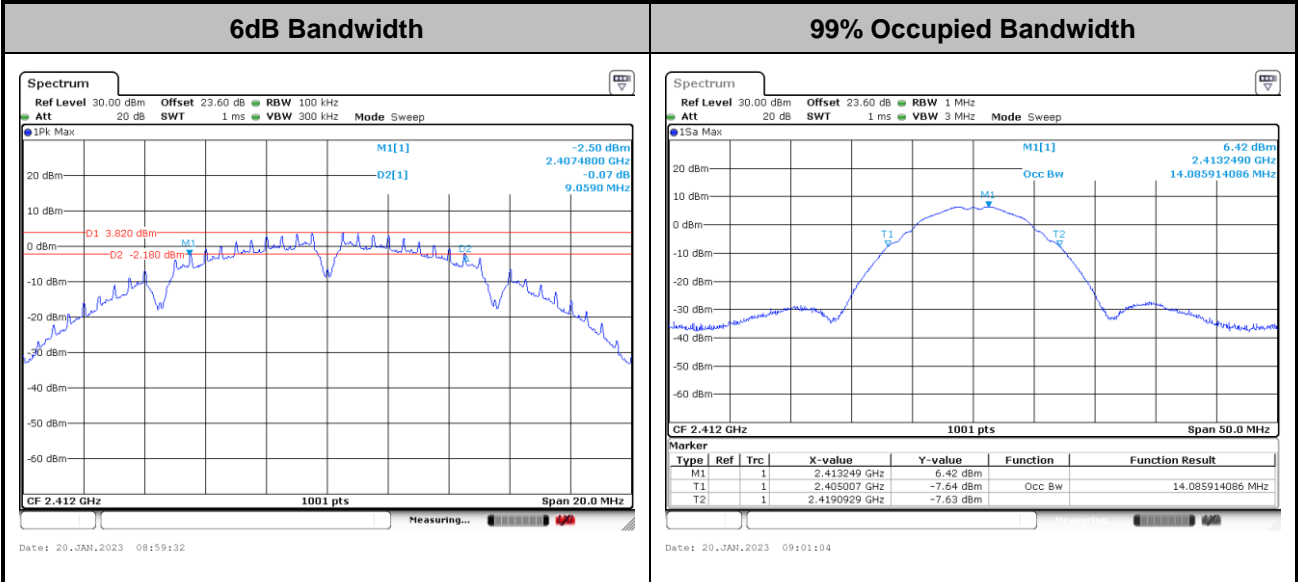




3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

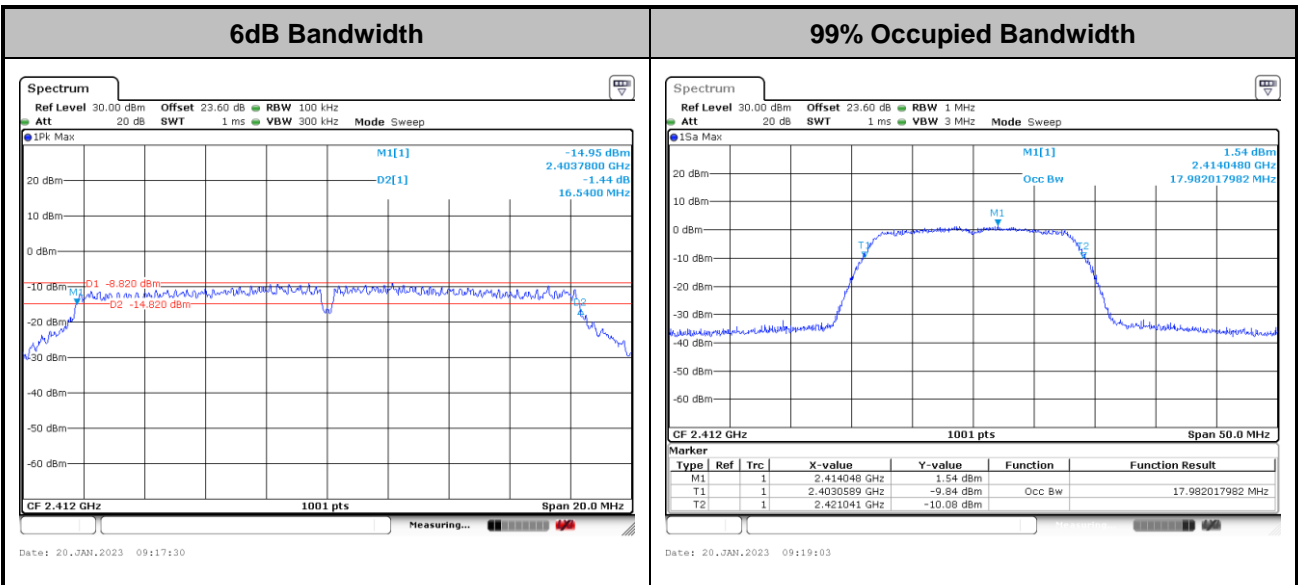
Please refer to Appendix A.

<802.11b>



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

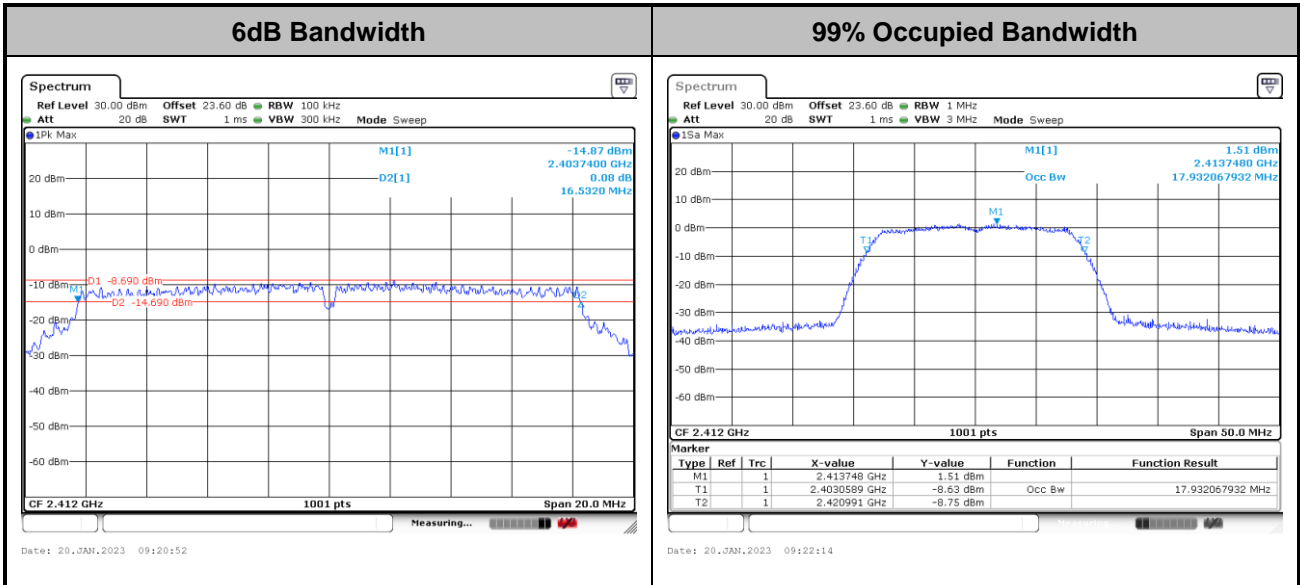
<802.11g>



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.

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.

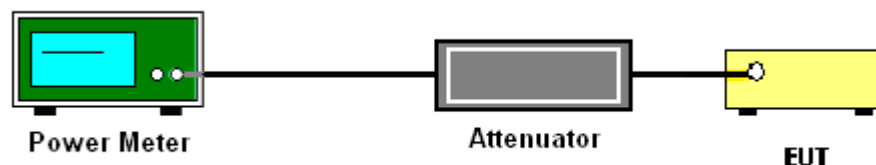
3.2.2 Measuring Instruments

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.

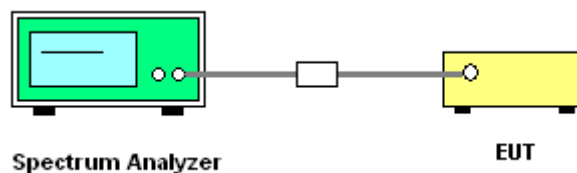
3.3.2 Measuring Instruments

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

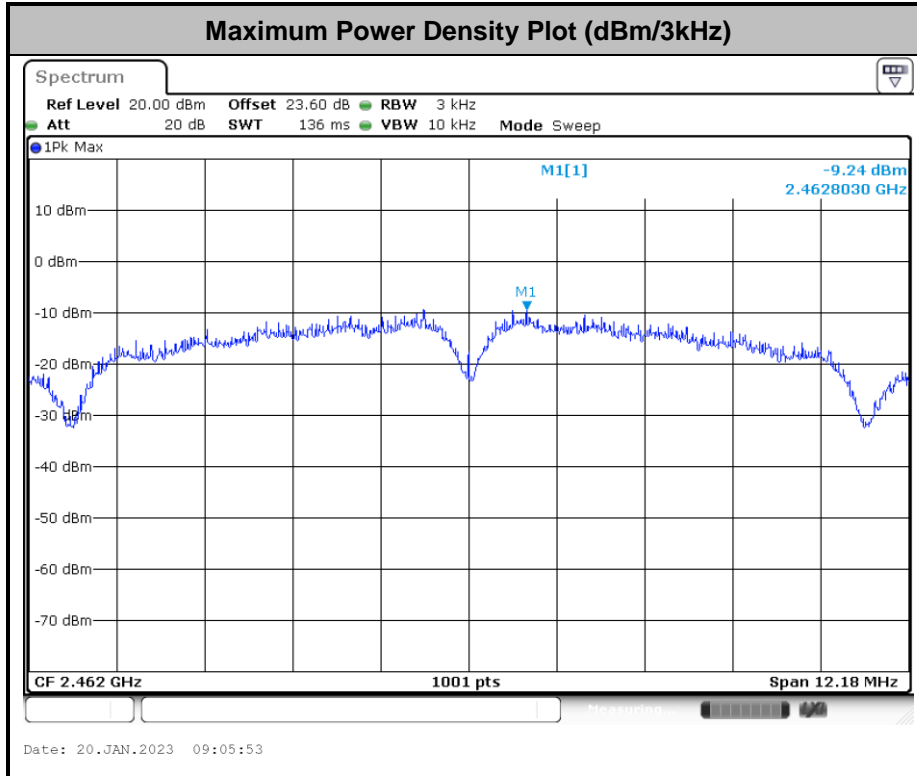




3.3.5 Test Result of Power Spectral Density

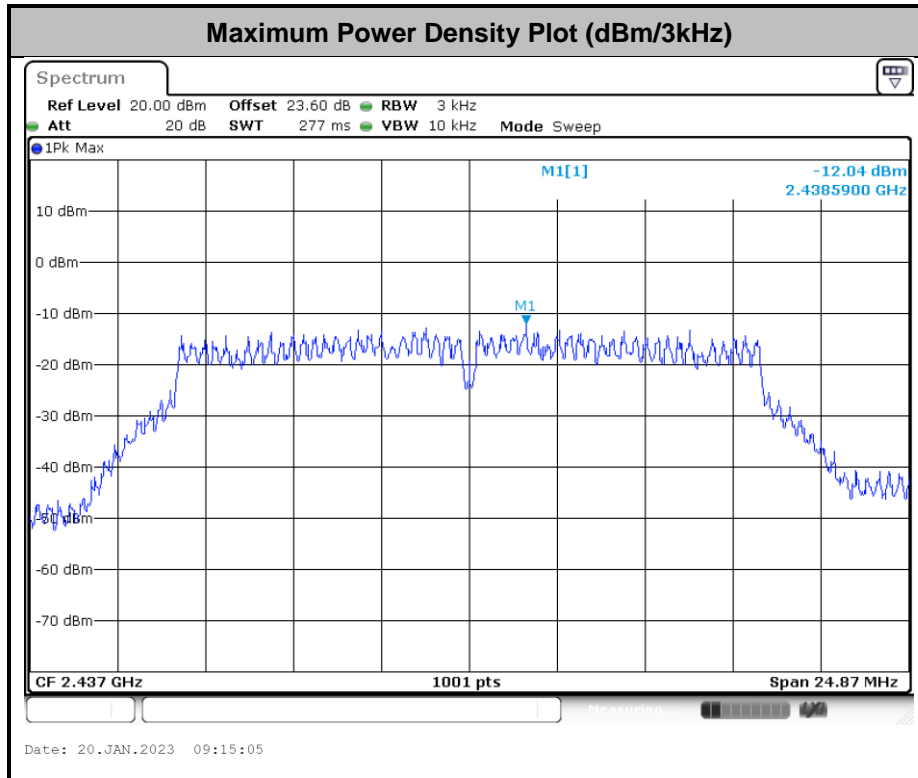
Please refer to Appendix A.

<802.11b>

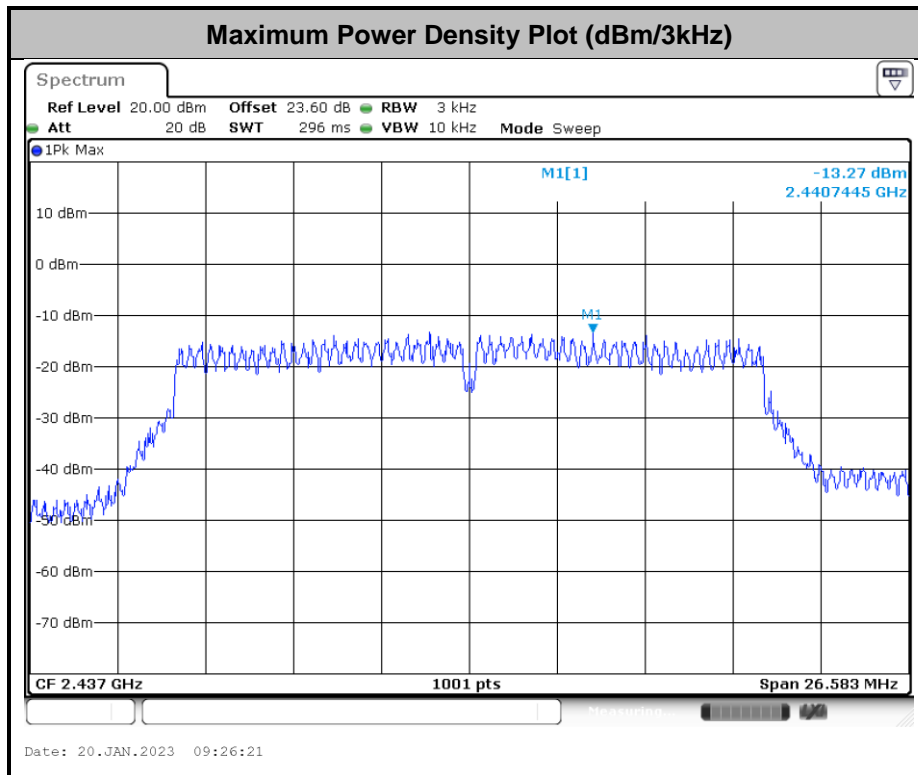




<802.11g>



<802.11n HT20>



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.

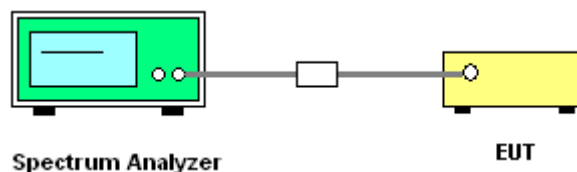
3.4.2 Measuring Instruments

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

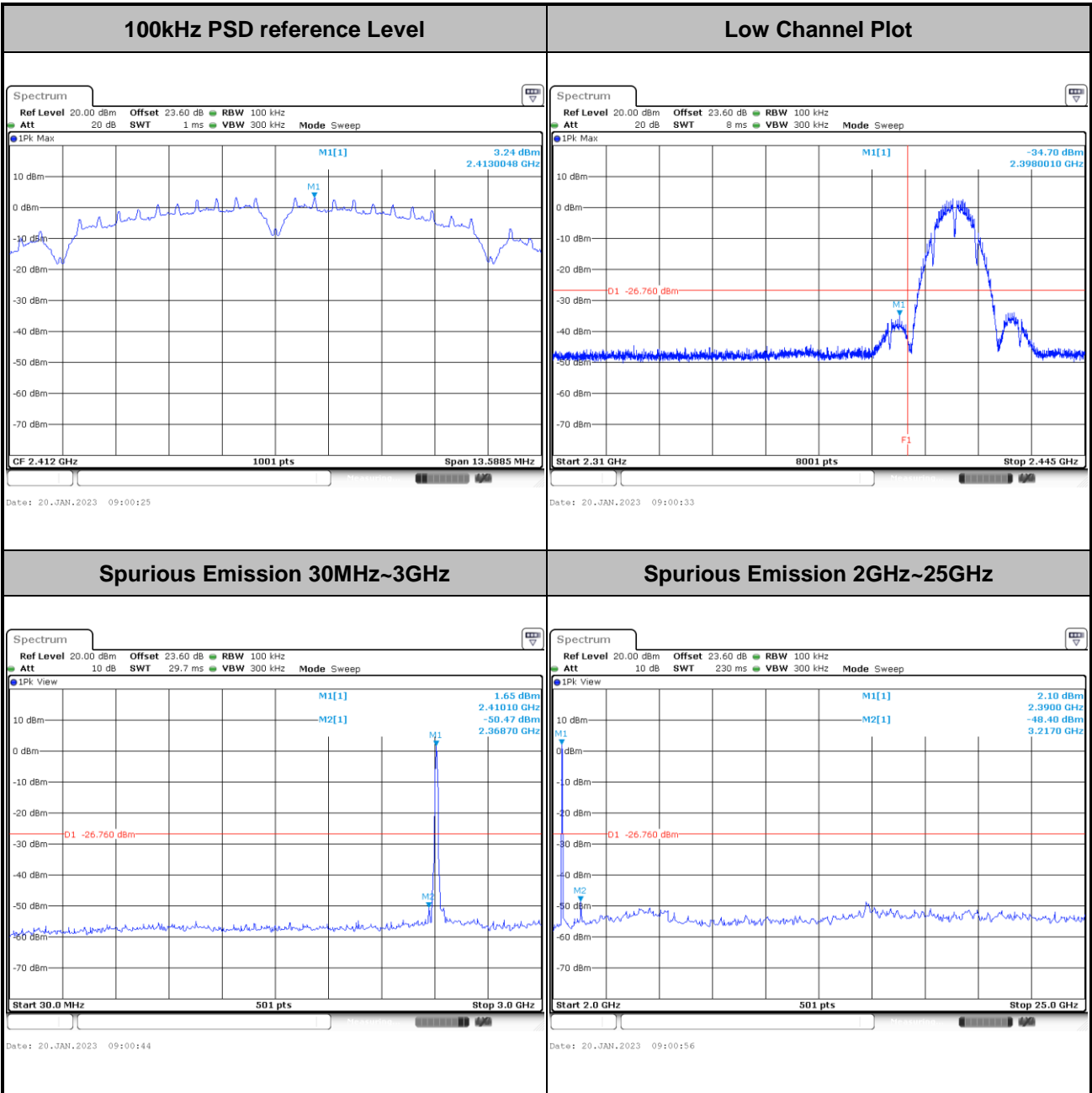




3.4.5 Test Result of Conducted Band Edges and Spurious Emission

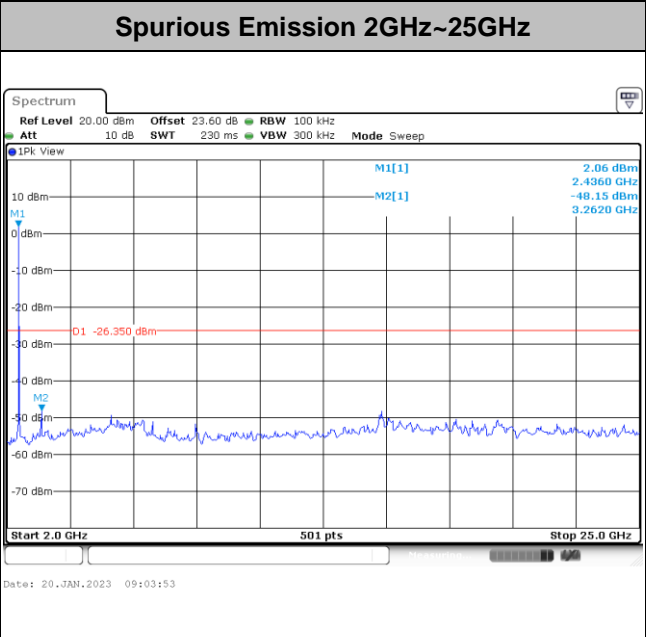
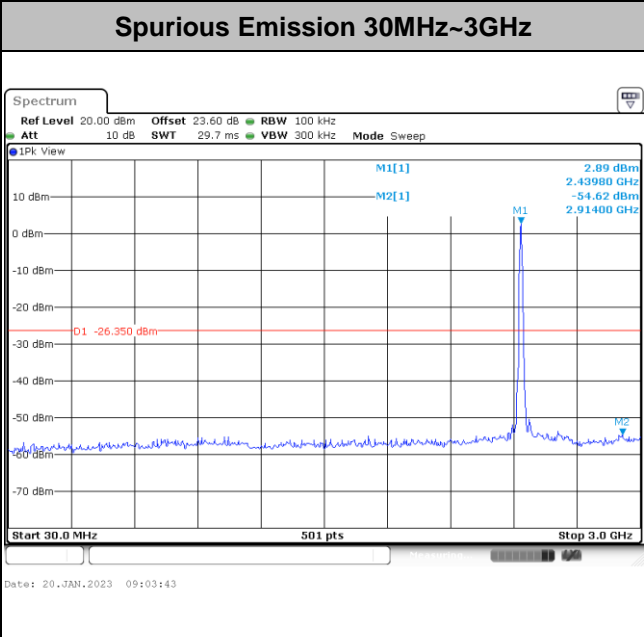
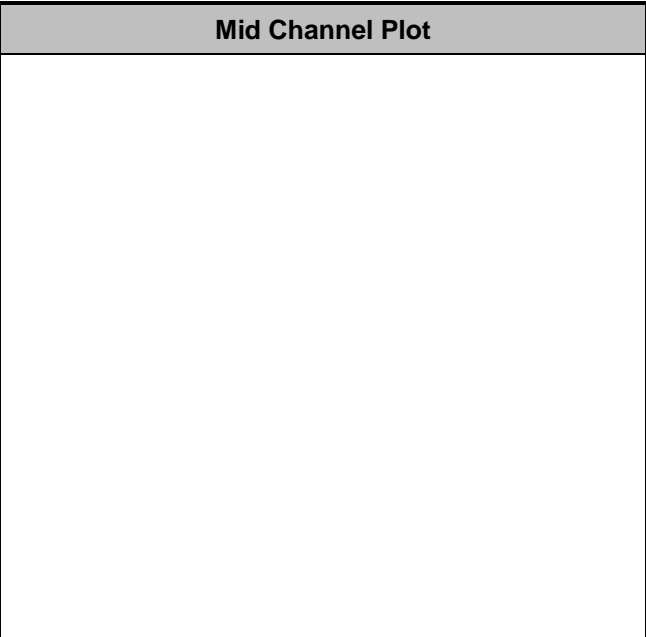
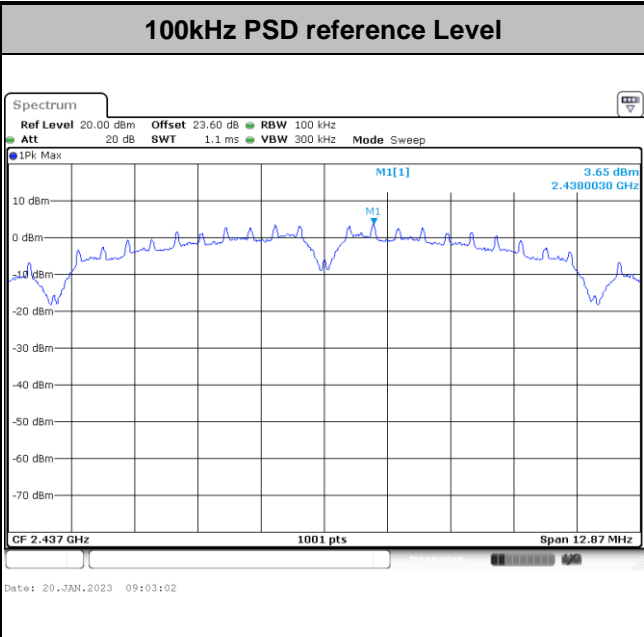
Number of TX = 1, Ant. 1 (Measured)

Test Mode :	802.11b	Test Channel :	01
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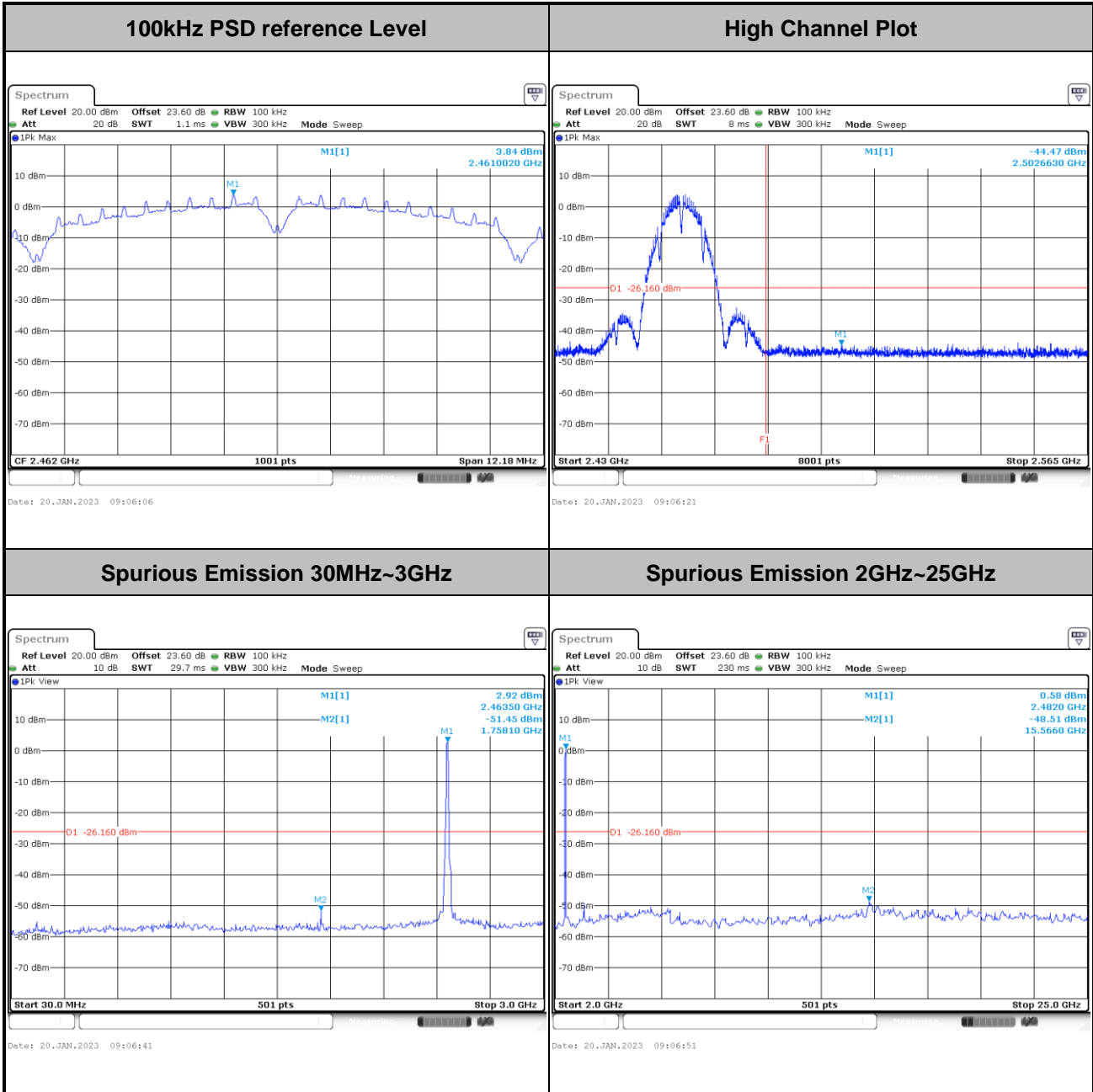


Test Mode :	802.11b	Test Channel :	06
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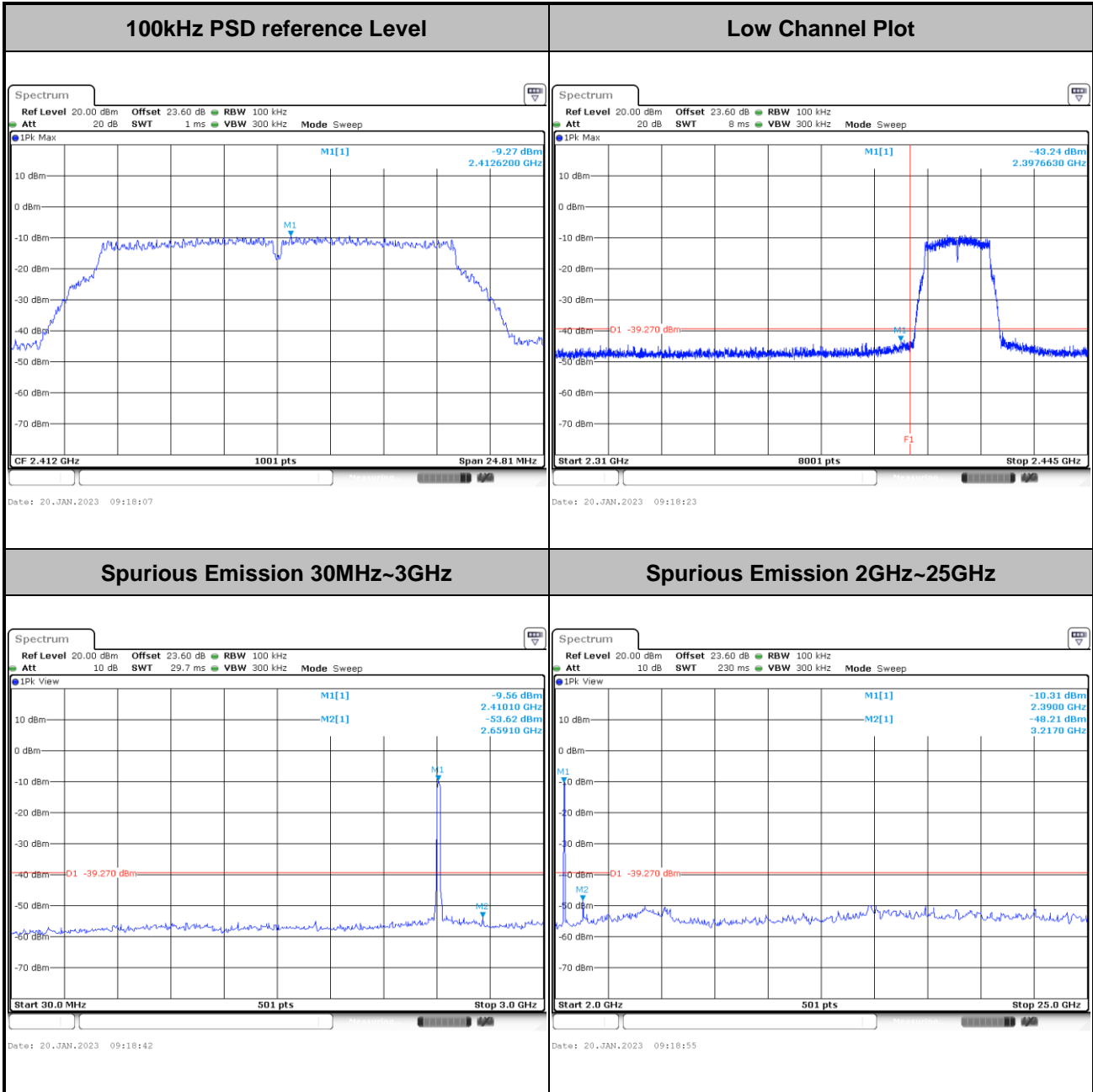


Test Mode :	802.11b	Test Channel :	11
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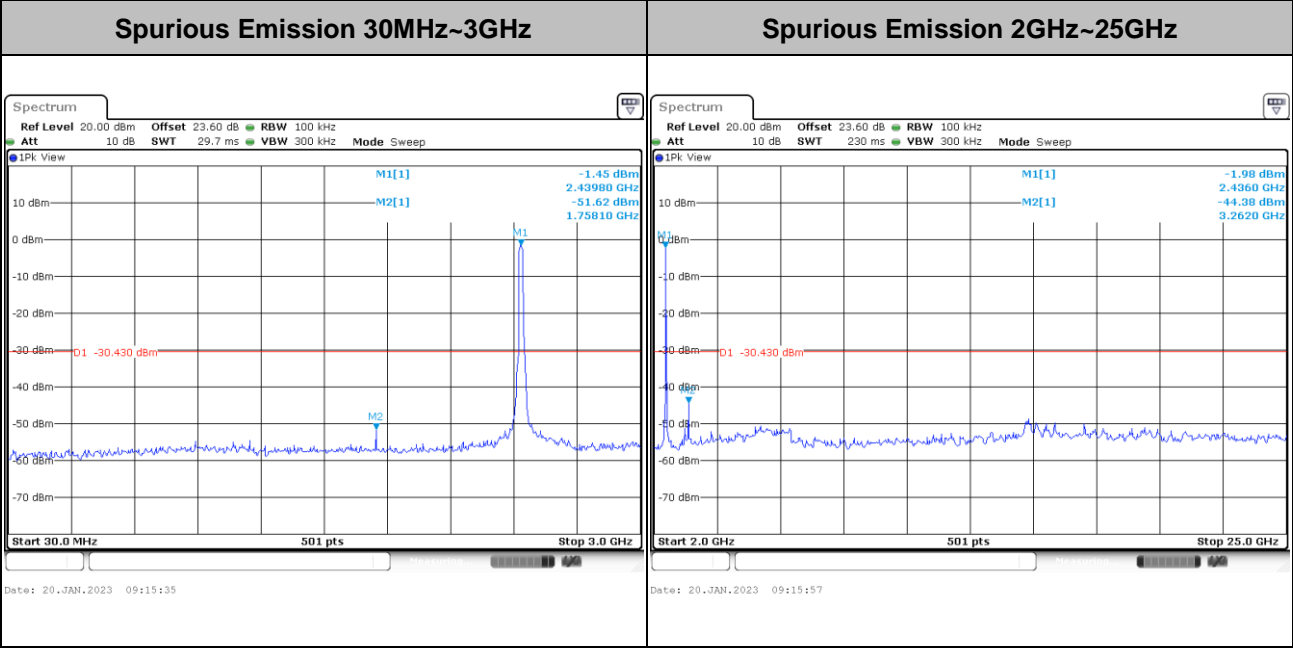
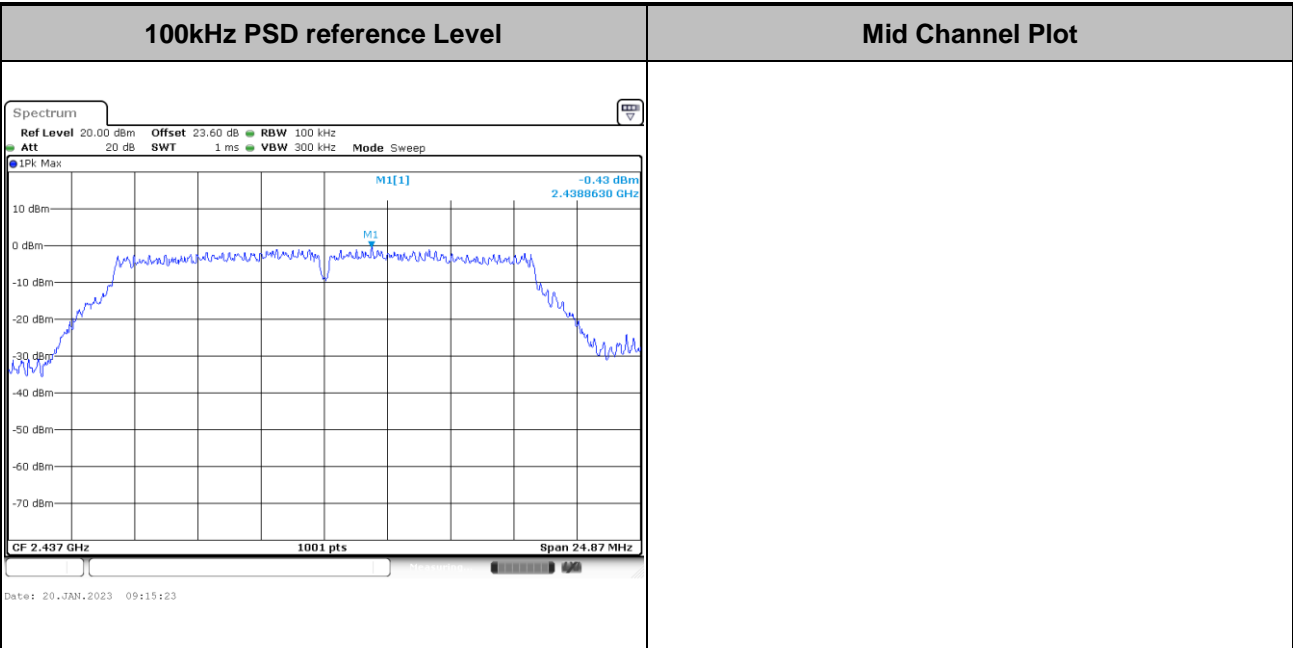


Test Mode :	802.11g	Test Channel :	01
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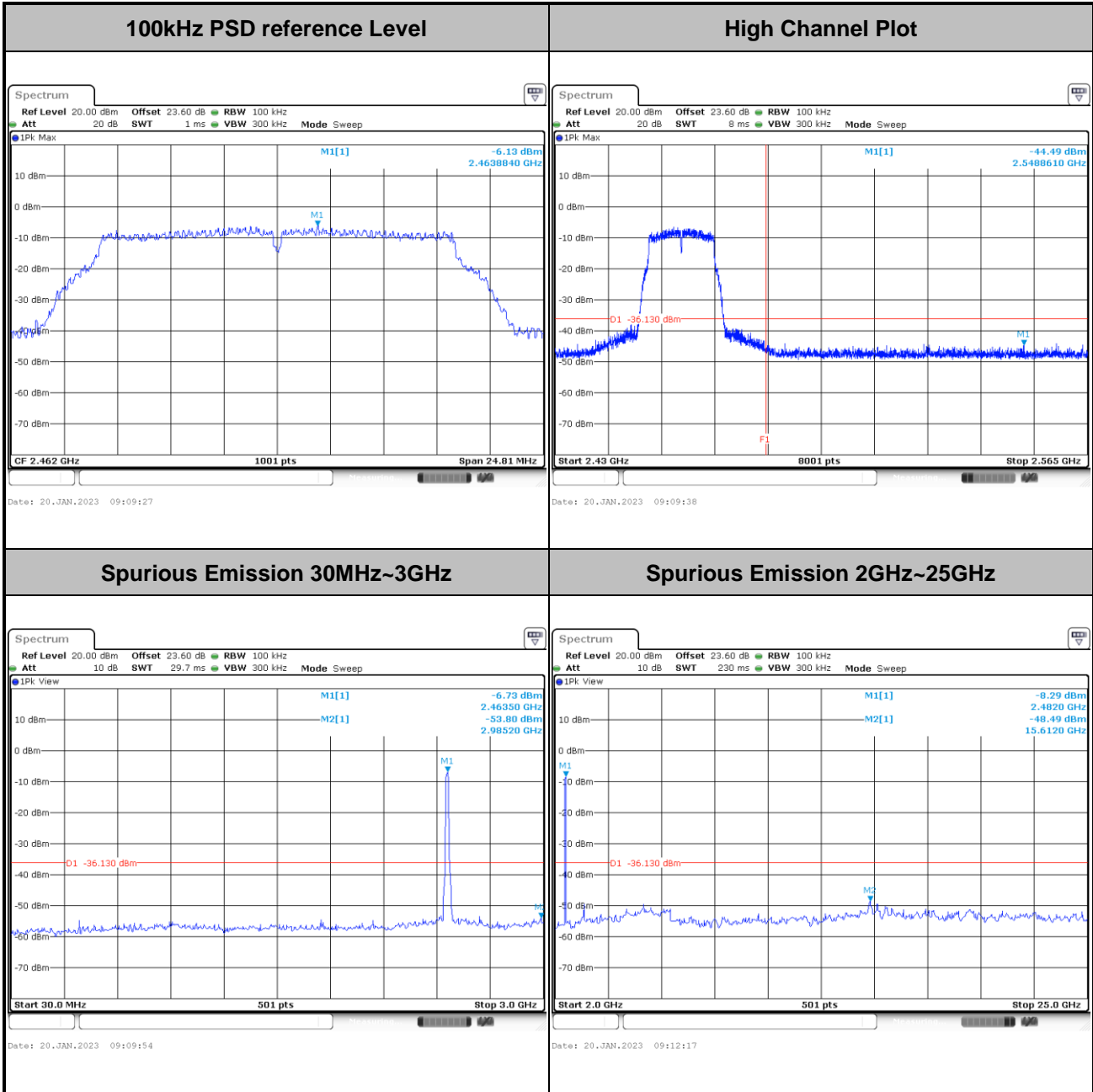


Test Mode :	802.11g	Test Channel :	06
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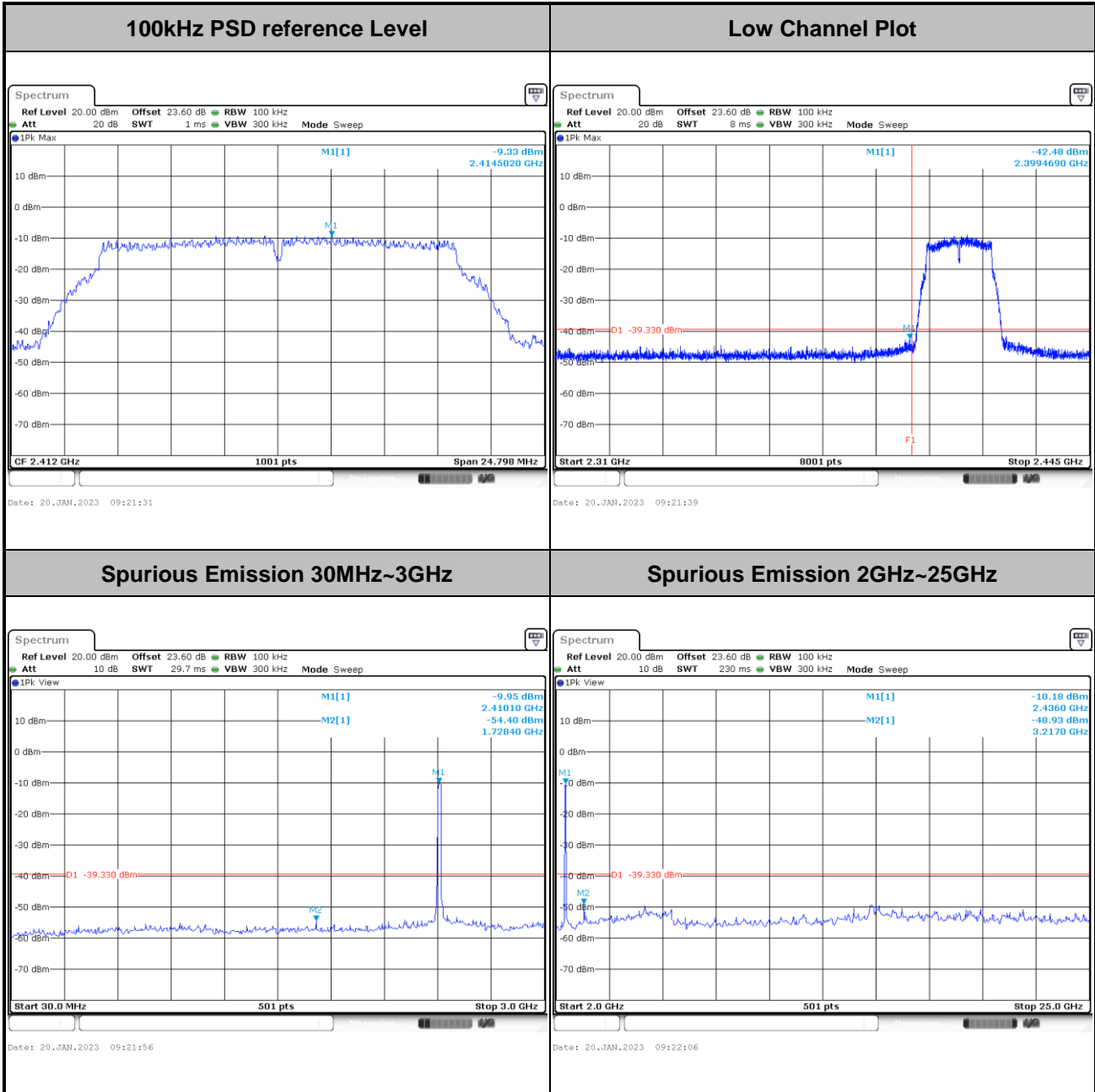


Test Mode :	802.11g	Test Channel :	11
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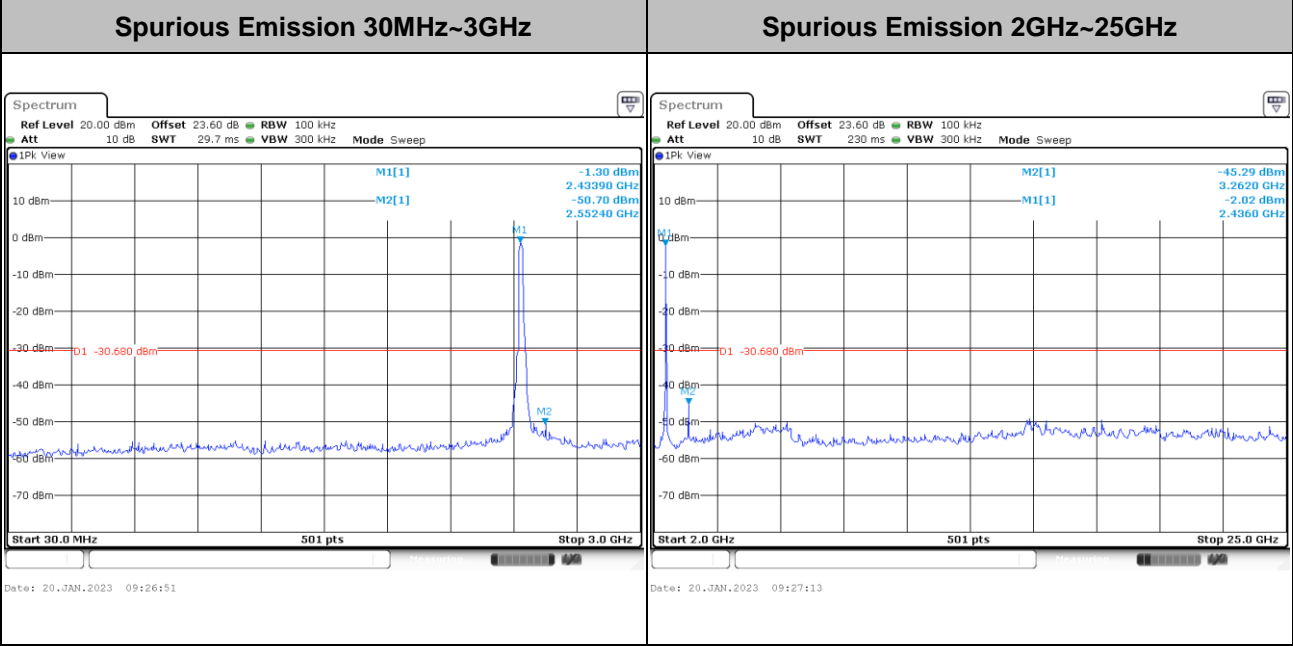
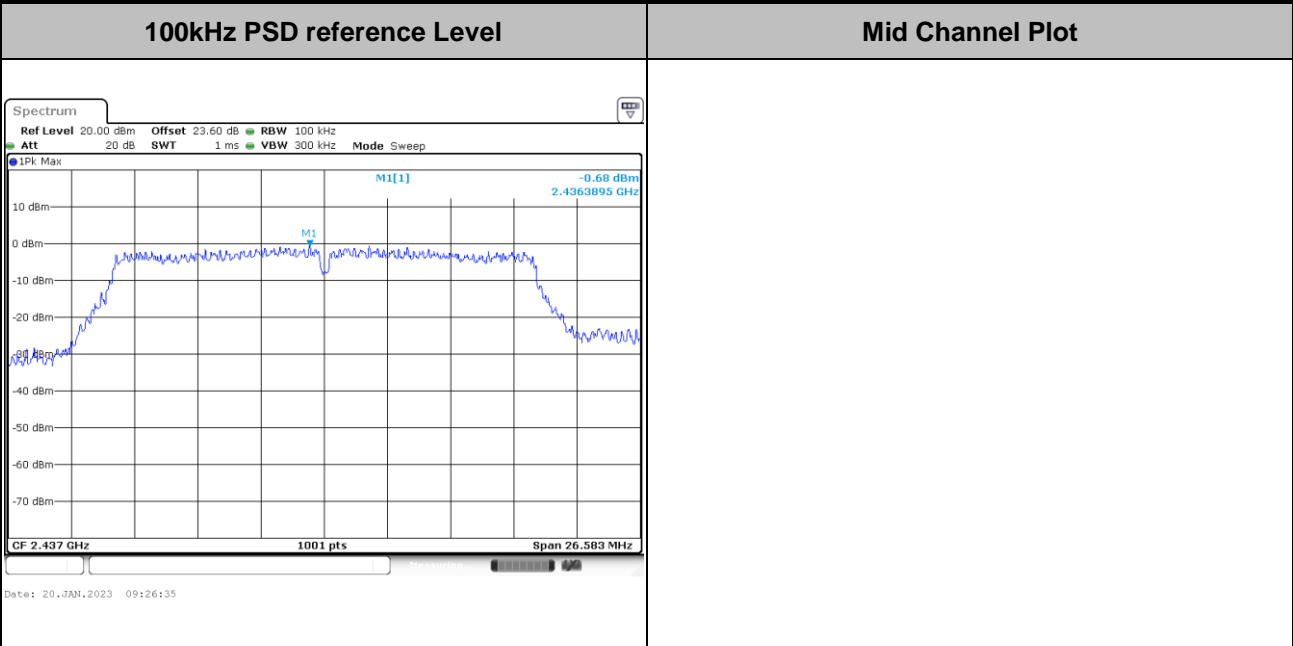


Test Mode :	802.11n HT20	Test Channel :	01
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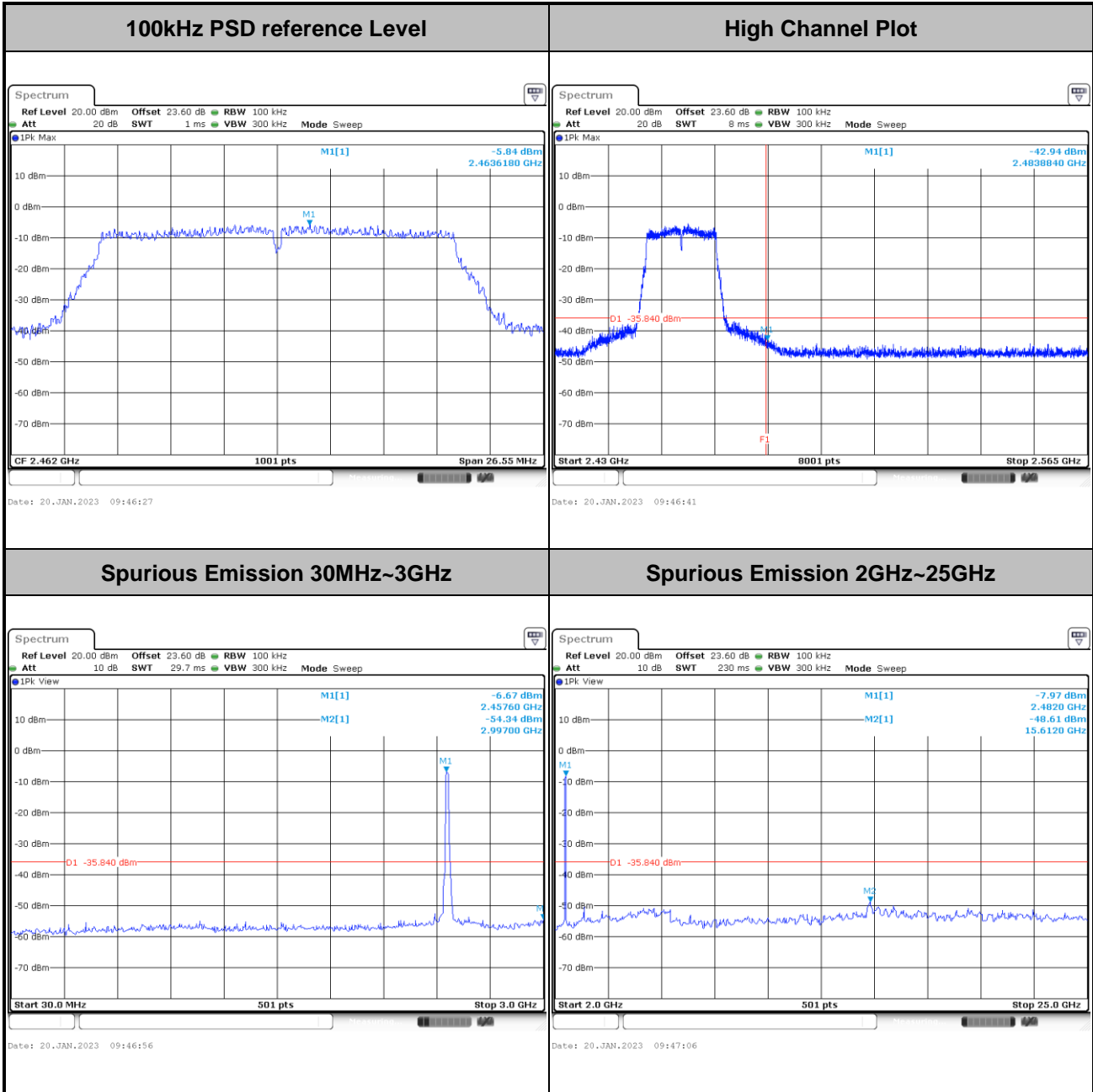


Test Mode :	802.11n HT20	Test Channel :	06
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Test Mode :	802.11n HT20	Test Channel :	11
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3.5 Radiated Band Edges and Spurious Emission Measurement

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.

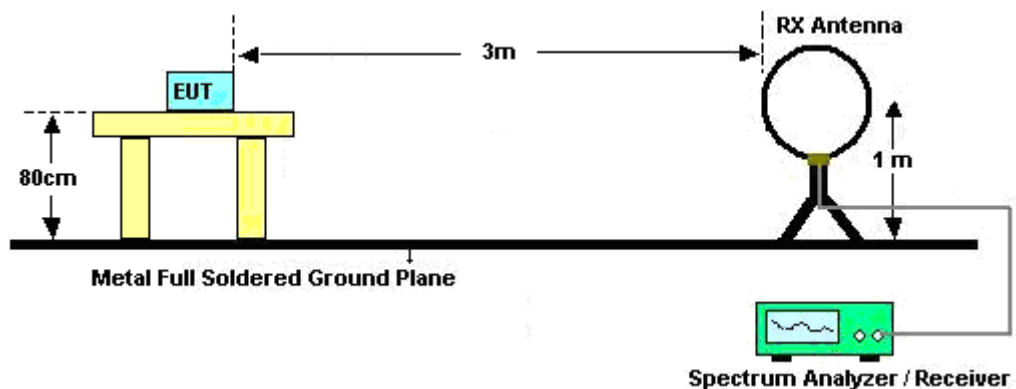
3.5.3 Test Procedures

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 “-“.

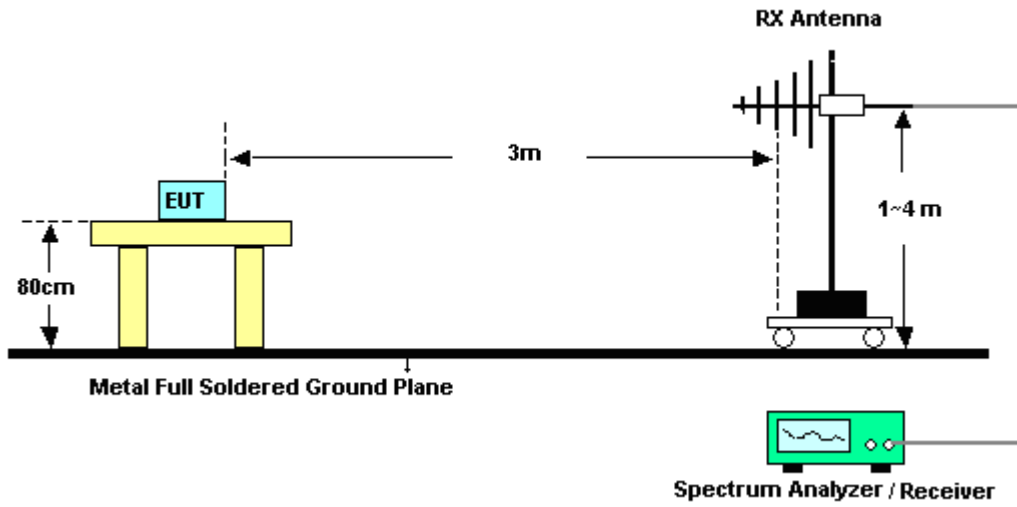
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with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

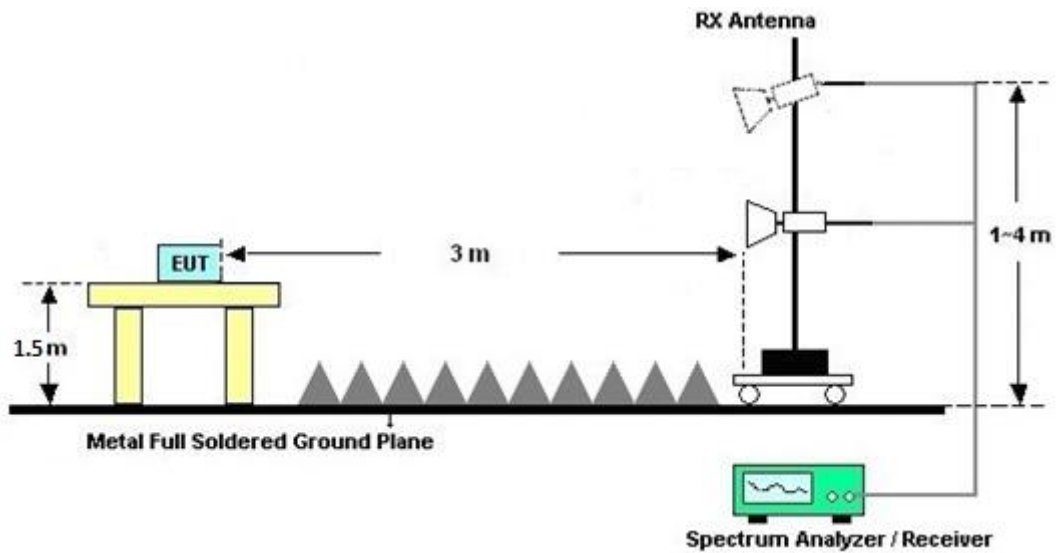
For radiated emissions below 30MHz



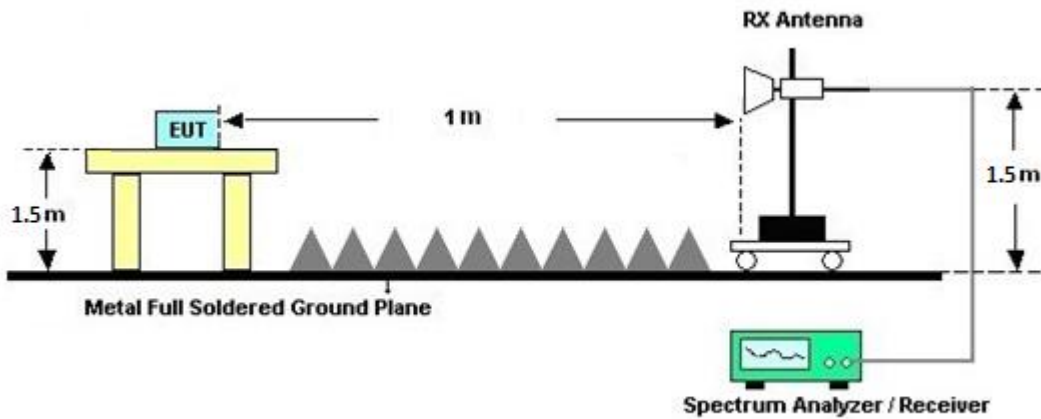
For radiated emissions from 30MHz to 1GHz



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.

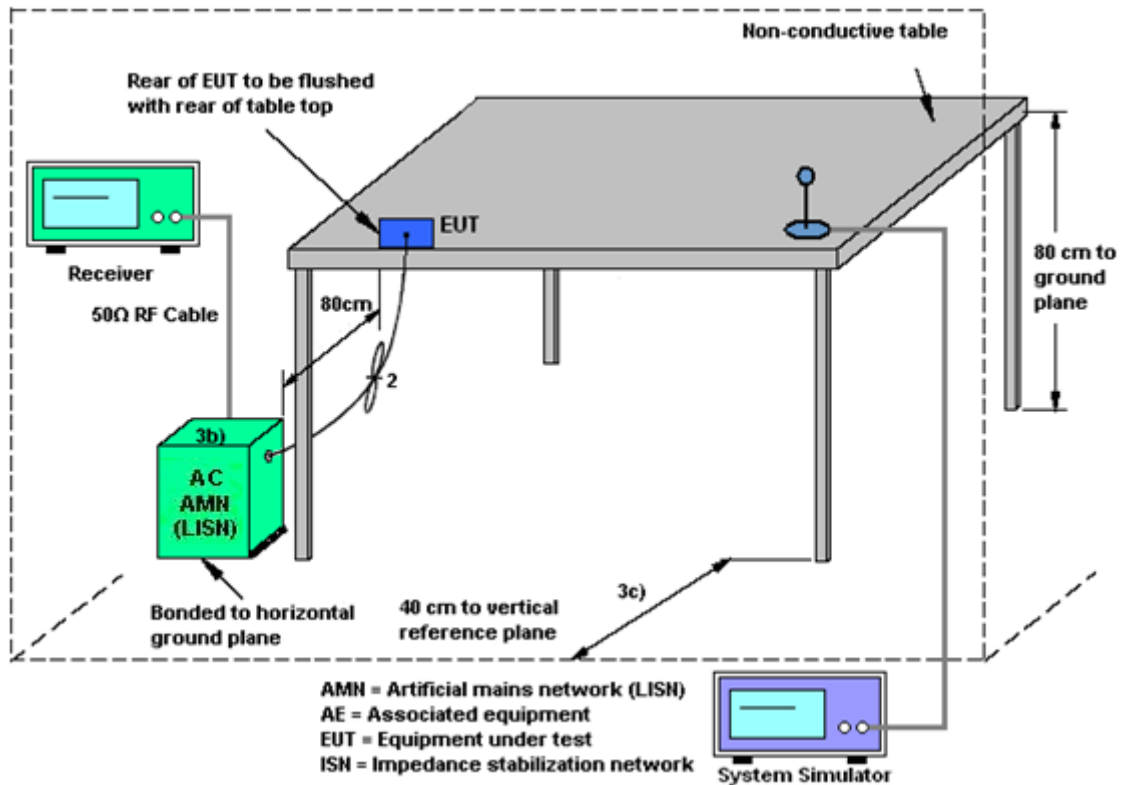
3.6.2 Measuring Instruments

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	100488	9 kHz~30 MHz	Sep. 20, 2022	Jan. 11, 2023~ Jan. 13, 2023	Sep. 19, 2023	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 08, 2022	Jan. 11, 2023~ Jan. 13, 2023	Oct. 07, 2023	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1212	1GHz ~ 18GHz	Mar. 10, 2022	Jan. 11, 2023~ Jan. 13, 2023	Mar. 09, 2023	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA9170	BBHA917058 4	18GHz~40GHz	Dec. 14, 2022	Jan. 11, 2023~ Jan. 13, 2023	Dec. 13, 2023	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 09, 2022	Jan. 11, 2023~ Jan. 13, 2023	Dec. 08, 2023	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 09, 2022	Jan. 11, 2023~ Jan. 13, 2023	Nov. 08, 2023	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-30 3	17100018000 55007	1GHz~18GHz	Jun. 15, 2022	Jan. 11, 2023~ Jan. 13, 2023	Jun. 14, 2023	Radiation (03CH11-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 28, 2022	Jan. 11, 2023~ Jan. 13, 2023	Jun. 27, 2023	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 07, 2022	Jan. 11, 2023~ Jan. 13, 2023	Oct. 06, 2023	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Oct. 18, 2022	Jan. 11, 2023~ Jan. 13, 2023	Oct. 17, 2023	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Jan. 11, 2023~ Jan. 13, 2023	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jan. 11, 2023~ Jan. 13, 2023	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jan. 11, 2023~ Jan. 13, 2023	N/A	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Jan. 11, 2023~ Jan. 13, 2023	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz-40GHz	Mar. 10, 2022	Jan. 11, 2023~ Jan. 13, 2023	Mar. 09, 2023	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz-30MHz	Mar. 10, 2022	Jan. 11, 2023~ Jan. 13, 2023	Mar. 09, 2023	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	30MHz-18GHz	Mar. 10, 2022	Jan. 11, 2023~ Jan. 13, 2023	Mar. 09, 2023	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	811852/4	30MHz-18GHz	Mar. 10, 2022	Jan. 11, 2023~ Jan. 13, 2023	Mar. 09, 2023	Radiation (03CH11-HY)
Filter	Wainwright	WLK4-1000-15 30-8000-40SS	SN11	1.53G Low Pass	Sep. 12, 2022	Jan. 11, 2023~ Jan. 13, 2023	Sep. 11, 2023	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 0SS	SN3	3GHz High Pass Filter	Sep. 12, 2022	Jan. 11, 2023~ Jan. 13, 2023	Sep. 11, 2023	Radiation (03CH11-HY)
Hygrometer	TECEPEL	DTM-303B	TP140325	N/A	Nov. 07, 2022	Jan. 11, 2023~ Jan. 13, 2023	Nov. 06, 2023	Radiation (03CH11-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECEPEL	DTM-303A	TP201996	N/A	Nov. 17, 2022	Dec. 30, 2022~ Jan. 20, 2023	Nov. 16, 2023	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 12 (NO:113)	10MHz~6GHz	Dec. 13, 2022	Dec. 30, 2022~ Jan. 20, 2023	Dec. 12, 2023	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz	Aug. 03, 2022	Dec. 30, 2022~ Jan. 20, 2023	Aug. 02, 2023	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jan. 11, 2023	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2022	Jan. 11, 2023	Nov. 30, 2023	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2022	Jan. 11, 2023	Nov. 16, 2023	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 17, 2022	Jan. 11, 2023	Nov. 16, 2023	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Jan. 11, 2023	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Aug. 01, 2022	Jan. 11, 2023	Jul. 31, 2023	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 29, 2022	Jan. 11, 2023	Dec. 28, 2023	Conduction (CO05-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.5 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.3 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.4 dB
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Uncertainty of Radiated Emission Measurement (6000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8 dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.3 dB
---	--------

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Benny Ku	Temperature:	21~25	°C
Test Date:	2022/12/30~2023/01/20	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	14.09	-	9.06	-	0.50	Pass
11b	1Mbps	1	6	2437	14.04	-	8.58	-	0.50	Pass
11b	1Mbps	1	11	2462	14.09	-	8.12	-	0.50	Pass
11g	6Mbps	1	1	2412	17.98	-	16.54	-	0.50	Pass
11g	6Mbps	1	6	2437	18.13	-	16.58	-	0.50	Pass
11g	6Mbps	1	11	2462	17.98	-	16.54	-	0.50	Pass
HT20	MCS0	1	1	2412	17.93	-	16.53	-	0.50	Pass
HT20	MCS0	1	6	2437	19.08	-	17.72	-	0.50	Pass
HT20	MCS0	1	11	2462	18.63	-	17.70	-	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	12.00	-		30.00	-	0.50	-	12.50	-	36.00	-	Pass
11b	1Mbps	1	6	2437	12.70	-		30.00	-	0.50	-	13.20	-	36.00	-	Pass
11b	1Mbps	1	11	2462	12.90	-		30.00	-	0.50	-	13.40	-	36.00	-	Pass
11g	6Mbps	1	1	2412	4.00	-		30.00	-	0.50	-	4.50	-	36.00	-	Pass
11g	6Mbps	1	6	2437	12.90	-		30.00	-	0.50	-	13.40	-	36.00	-	Pass
11g	6Mbps	1	11	2462	6.60	-		30.00	-	0.50	-	7.10	-	36.00	-	Pass
HT20	MCS0	1	1	2412	4.30	-		30.00	-	0.50	-	4.80	-	36.00	-	Pass
HT20	MCS0	1	6	2437	13.10	-		30.00	-	0.50	-	13.60	-	36.00	-	Pass
HT20	MCS0	1	11	2462	6.90	-		30.00	-	0.50	-	7.40	-	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	-10.07	-		0.50	-	8.00	-	Pass
11b	1Mbps	1	6	2437	-10.39	-		0.50	-	8.00	-	Pass
11b	1Mbps	1	11	2462	-9.24	-		0.50	-	8.00	-	Pass
11g	6Mbps	1	1	2412	-20.75	-		0.50	-	8.00	-	Pass
11g	6Mbps	1	6	2437	-12.04	-		0.50	-	8.00	-	Pass
11g	6Mbps	1	11	2462	-18.95	-		0.50	-	8.00	-	Pass
HT20	MCS0	1	1	2412	-20.68	-		0.50	-	8.00	-	Pass
HT20	MCS0	1	6	2437	-13.27	-		0.50	-	8.00	-	Pass
HT20	MCS0	1	11	2462	-17.52	-		0.50	-	8.00	-	Pass

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



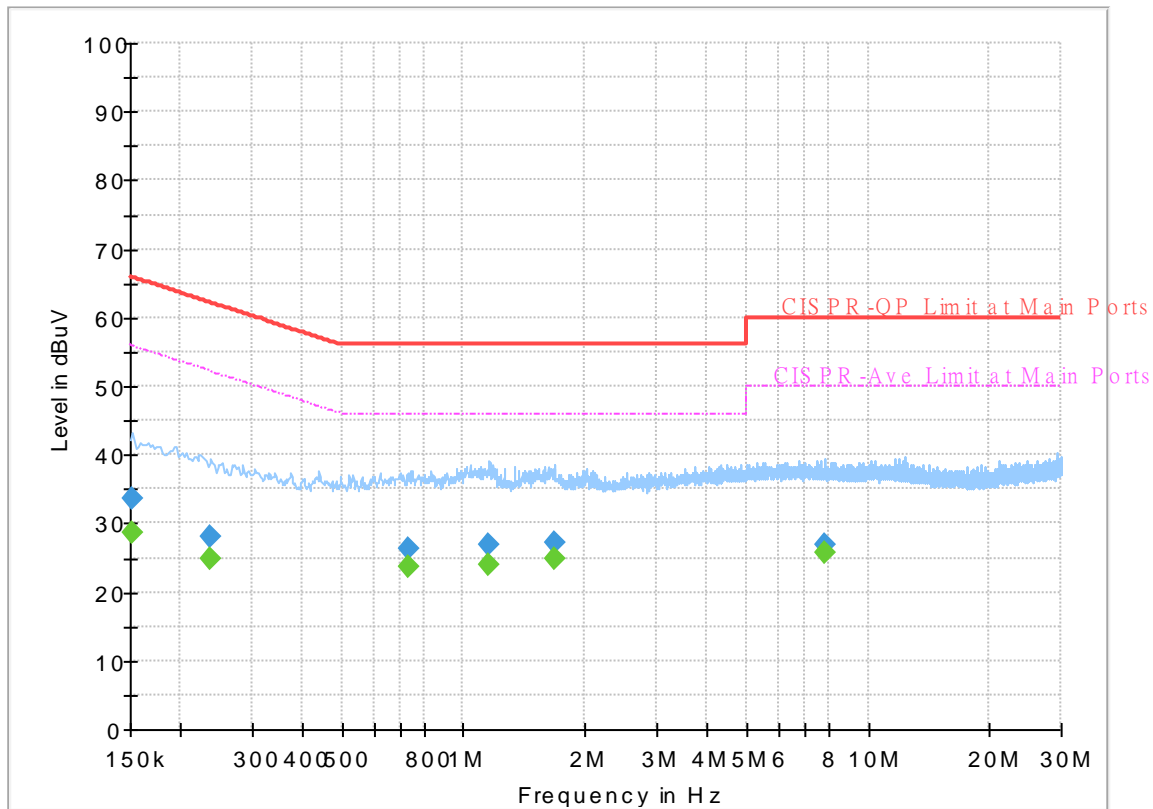
Appendix B. AC Conducted Emission Test Results

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

EUT Information

Report NO : 901415-05
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

Full Spectrum



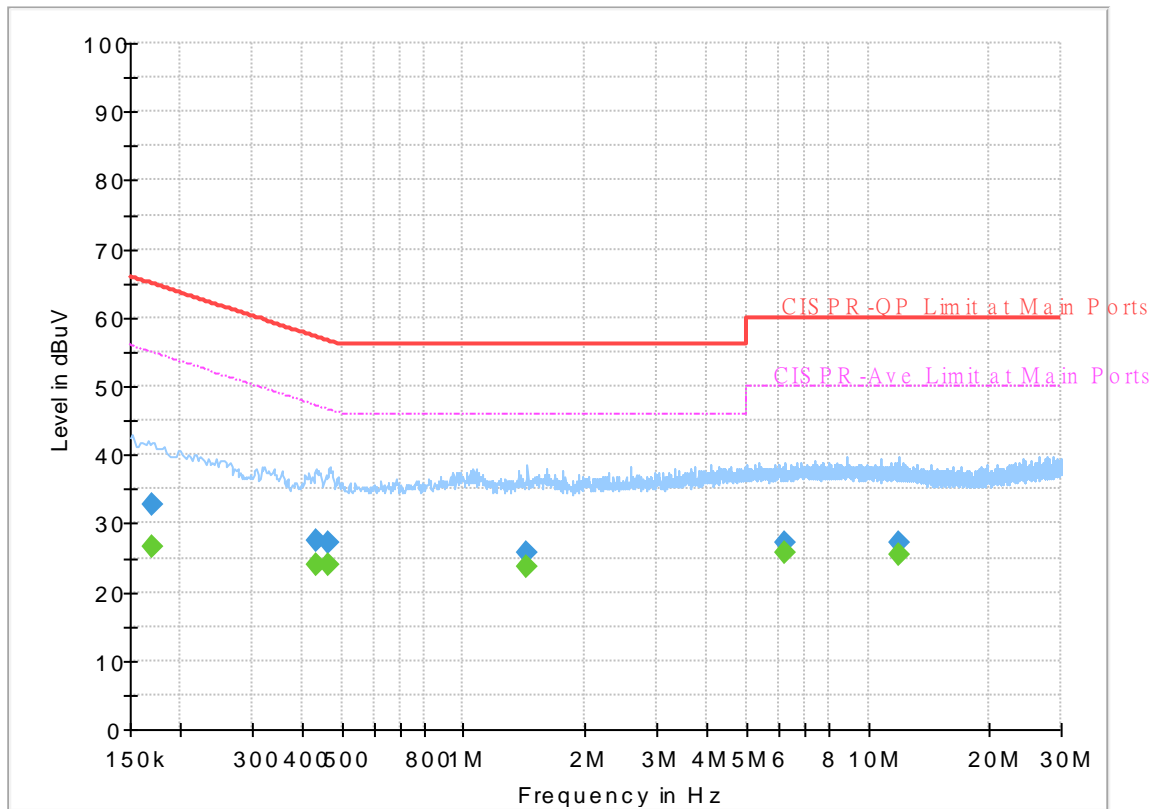
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	28.55	55.88	27.33	L1	OFF	19.9
0.152250	33.63	---	65.88	32.25	L1	OFF	19.9
0.235500	---	24.75	52.25	27.50	L1	OFF	19.9
0.235500	28.15	---	62.25	34.10	L1	OFF	19.9
0.728250	---	23.79	46.00	22.21	L1	OFF	19.9
0.728250	26.43	---	56.00	29.57	L1	OFF	19.9
1.158000	---	23.91	46.00	22.09	L1	OFF	19.9
1.158000	26.96	---	56.00	29.04	L1	OFF	19.9
1.682250	---	24.73	46.00	21.27	L1	OFF	19.9
1.682250	27.27	---	56.00	28.73	L1	OFF	19.9
7.849500	---	25.66	50.00	24.34	L1	OFF	20.1
7.849500	27.00	---	60.00	33.00	L1	OFF	20.1

EUT Information

Report NO : 9O1415-05
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Neutral

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.170250	---	26.72	54.95	28.23	N	OFF	19.9
0.170250	32.63	---	64.95	32.32	N	OFF	19.9
0.431250	---	24.03	47.23	23.20	N	OFF	19.9
0.431250	27.34	---	57.23	29.89	N	OFF	19.9
0.465000	---	24.11	46.60	22.49	N	OFF	19.9
0.465000	27.22	---	56.60	29.38	N	OFF	19.9
1.437000	---	23.73	46.00	22.27	N	OFF	19.9
1.437000	25.61	---	56.00	30.39	N	OFF	19.9
6.211500	---	25.71	50.00	24.29	N	OFF	20.1
6.211500	27.18	---	60.00	32.82	N	OFF	20.1
11.865750	---	25.57	50.00	24.43	N	OFF	20.3
11.865750	27.19	---	60.00	32.81	N	OFF	20.3



Appendix C. Radiated Spurious Emission

Test Engineer :	Yuan Lee, Bank Lin and Troye Hsieh	Temperature :	21.8~23.7°C
		Relative Humidity :	53.5~66.9%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant.	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		2327.64	51.91	-22.09	74	41.63	27.3	17.21	34.23	296	326	P	H	
		2387.28	40.89	-13.11	54	30.36	27.45	17.28	34.2	296	326	A	H	
	*	2412	98.07	-	-	87.39	27.55	17.32	34.19	296	326	P	H	
	*	2412	95.07	-	-	84.39	27.55	17.32	34.19	296	326	A	H	
													H	
			2385.6	51.57	-22.43	74	41.05	27.44	17.28	34.2	296	315	P	V
			2387.28	40.72	-13.28	54	30.19	27.45	17.28	34.2	296	315	A	V
	*		2412	95.04	-	-	84.36	27.55	17.32	34.19	296	315	P	V
	*		2412	91.94	-	-	81.26	27.55	17.32	34.19	296	315	A	V
														V
802.11b CH 06 2437MHz		2367.44	51.72	-22.28	74	41.3	27.37	17.26	34.21	328	323	P	H	
		2389.68	40.64	-13.36	54	30.09	27.46	17.29	34.2	328	323	A	H	
	*	2437	98.61	-	-	87.78	27.65	17.36	34.18	328	323	P	H	
	*	2437	95.44	-	-	84.61	27.65	17.36	34.18	328	323	A	H	
			2485.92	52.32	-21.68	74	41.29	27.77	17.43	34.17	328	323	P	H
			2483.84	41.56	-12.44	54	30.53	27.77	17.43	34.17	328	323	A	H
			2382.16	51.74	-22.26	74	41.23	27.43	17.28	34.2	319	300	P	V
			2387.44	40.59	-13.41	54	30.06	27.45	17.28	34.2	319	300	A	V
	*		2437	97.27	-	-	86.44	27.65	17.36	34.18	319	300	P	V
	*		2437	94.17	-	-	83.34	27.65	17.36	34.18	319	300	A	V
			2488.96	52.13	-21.87	74	41.08	27.78	17.43	34.16	319	300	P	V
			2484.64	41.44	-12.56	54	30.41	27.77	17.43	34.17	319	300	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	101.08	-	-	90.14	27.72	17.39	34.17	320	325	P	H	
	*	2462	97.83	-	-	86.89	27.72	17.39	34.17	320	325	A	H	
		2496.12	53.37	-20.63	74	42.3	27.79	17.44	34.16	320	325	P	H	
		2500	42.69	-11.31	54	31.6	27.8	17.45	34.16	320	325	A	H	
													H	
														H
	*	2462	98.44	-	-	87.5	27.72	17.39	34.17	311	302	P	V	
	*	2462	95.07	-	-	84.13	27.72	17.39	34.17	311	302	A	V	
		2499.28	52.96	-21.04	74	41.87	27.8	17.45	34.16	311	302	P	V	
		2500	42.07	-11.93	54	30.98	27.8	17.45	34.16	311	302	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	52.84	-21.16	74	67	32.34	11.46	57.96	234	336	P	H	
		4824	50.27	-3.73	54	64.43	32.34	11.46	57.96	234	336	A	H	
													H	
													H	
													H	
													H	
			4824	51.83	-22.17	74	65.99	32.34	11.46	57.96	237	60	P	V
			4824	49.11	-4.89	54	63.27	32.34	11.46	57.96	237	60	A	V
														V
														V
														V
	802.11b CH 06 2437MHz		4874	50.89	-23.11	74	64.65	32.6	11.63	57.99	247	336	P	H
		4874	48.1	-5.9	54	61.86	32.6	11.63	57.99	247	336	A	H	
		7311	53.89	-20.11	74	62.24	37.06	13.32	58.73	195	55	P	H	
		7311	48.96	-5.04	54	57.31	37.06	13.32	58.73	195	55	A	H	
													H	
													H	
			4874	51.76	-22.24	74	65.52	32.6	11.63	57.99	235	61	P	V
			4874	48.54	-5.46	54	62.3	32.6	11.63	57.99	235	61	A	V
			7311	50.49	-23.51	74	58.84	37.06	13.32	58.73	382	357	P	V
			7311	44.76	-9.24	54	53.11	37.06	13.32	58.73	382	357	A	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	48.16	-25.84	74	61.55	32.84	11.8	58.03	226	335	P	H	
		4924	43.98	-10.02	54	57.37	32.84	11.8	58.03	226	335	A	H	
		7386	53.16	-20.84	74	61.59	36.68	13.61	58.72	208	56	P	H	
		7386	48.21	-5.79	54	56.64	36.68	13.61	58.72	208	56	A	H	
													H	
														H
			4924	48.91	-25.09	74	62.3	32.84	11.8	58.03	230	62	P	V
			4924	45.3	-8.7	54	58.69	32.84	11.8	58.03	230	62	A	V
			7386	49.94	-24.06	74	58.37	36.68	13.61	58.72	375	356	P	V
			7386	43.94	-10.06	54	52.37	36.68	13.61	58.72	375	356	A	V
														V
														V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 													



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		2329.32	51.69	-22.31	74	41.4	27.3	17.21	34.22	300	326	P	H	
		2390	41.27	-12.73	54	30.72	27.46	17.29	34.2	300	326	A	H	
	*	2412	94.01	-	-	83.33	27.55	17.32	34.19	300	326	P	H	
	*	2412	85.57	-	-	74.89	27.55	17.32	34.19	300	326	A	H	
													H	
														H
			2387.175	52.38	-21.62	74	41.85	27.45	17.28	34.2	300	315	P	V
			2390	40.86	-13.14	54	30.31	27.46	17.29	34.2	300	315	A	V
	*		2412	90.99	-	-	80.31	27.55	17.32	34.19	300	315	P	V
	*		2412	82.71	-	-	72.03	27.55	17.32	34.19	300	315	A	V
														V
														V
802.11g CH 06 2437MHz		2380.4	52.34	-21.66	74	41.86	27.42	17.27	34.21	256	322	P	H	
		2389.36	41.04	-12.96	54	30.49	27.46	17.29	34.2	256	322	A	H	
	*	2440	103.33	-	-	92.49	27.66	17.36	34.18	256	322	P	H	
	*	2440	95.03	-	-	84.19	27.66	17.36	34.18	256	322	A	H	
			2484.96	53.74	-20.26	74	42.71	27.77	17.43	34.17	256	322	P	H
			2484.32	43.52	-10.48	54	32.49	27.77	17.43	34.17	256	322	A	H
			2381.36	51.66	-22.34	74	41.16	27.43	17.28	34.21	318	302	P	V
			2389.52	40.74	-13.26	54	30.19	27.46	17.29	34.2	318	302	A	V
	*		2440	99.78	-	-	88.94	27.66	17.36	34.18	318	302	P	V
	*		2440	92.12	-	-	81.28	27.66	17.36	34.18	318	302	A	V
			2494.8	53.28	-20.72	74	42.21	27.79	17.44	34.16	318	302	P	V
			2484.72	42.52	-11.48	54	31.49	27.77	17.43	34.17	318	302	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	98.54	-	-	87.6	27.72	17.39	34.17	250	323	P	H
	*	2462	90.54	-	-	79.6	27.72	17.39	34.17	250	323	A	H
		2483.6	58.38	-15.62	74	47.35	27.77	17.43	34.17	250	323	P	H
		2483.52	45.69	-8.31	54	34.66	27.77	17.43	34.17	250	323	A	H
													H
													H
	*	2462	94.97	-	-	84.03	27.72	17.39	34.17	350	301	P	V
	*	2462	87.32	-	-	76.38	27.72	17.39	34.17	350	301	A	V
		2483.8	56.6	-17.4	74	45.57	27.77	17.43	34.17	350	301	P	V
		2483.52	43.9	-10.1	54	32.87	27.77	17.43	34.17	350	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 802.11g (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	48.16	-25.84	74	62.32	32.34	11.46	57.96	239	335	P	H	
		4824	36.27	-17.73	54	50.43	32.34	11.46	57.96	239	335	A	H	
													H	
													H	
													H	
													H	
			4824	46.36	-27.64	74	60.52	32.34	11.46	57.96	400	172	P	V
			4824	33.94	-20.06	54	48.1	32.34	11.46	57.96	400	172	A	V
														V
														V
														V
	802.11g CH 06 2437MHz		4874	49.36	-24.64	74	63.12	32.6	11.63	57.99	246	333	P	H
		4874	38.17	-15.83	54	51.93	32.6	11.63	57.99	246	333	A	H	
		7311	56.05	-17.95	74	64.4	37.06	13.32	58.73	201	65	P	H	
		7311	43.41	-10.59	54	51.76	37.06	13.32	58.73	201	65	A	H	
													H	
													H	
			4874	50.21	-23.79	74	63.97	32.6	11.63	57.99	203	66	P	V
			4874	38.01	-15.99	54	51.77	32.6	11.63	57.99	203	66	A	V
			7311	51.79	-22.21	74	60.14	37.06	13.32	58.73	383	358	P	V
			7311	39.37	-14.63	54	47.72	37.06	13.32	58.73	383	358	A	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	43.51	-30.49	74	56.9	32.84	11.8	58.03	257	332	P	H	
		7386	44.52	-29.48	74	52.95	36.68	13.61	58.72	196	57	P	H	
													H	
													H	
													H	
													H	
			4924	41.04	-32.96	74	54.43	32.84	11.8	58.03	-	-	P	V
			7386	41.26	-32.74	74	49.69	36.68	13.61	58.72	-	-	P	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 802.11n 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		2384.13	51.74	-22.26	74	41.22	27.44	17.28	34.2	296	326	P	H	
		2390	41.72	-12.28	54	31.17	27.46	17.29	34.2	296	326	A	H	
	*	2412	94.57	-	-	83.89	27.55	17.32	34.19	296	326	P	H	
	*	2412	85.93	-	-	75.25	27.55	17.32	34.19	296	326	A	H	
													H	
													H	
			2348.43	51.89	-22.11	74	41.58	27.3	17.23	34.22	295	315	P	V
			2390	41.2	-12.8	54	30.65	27.46	17.29	34.2	295	315	A	V
		*	2412	91.14	-	-	80.46	27.55	17.32	34.19	295	315	P	V
		*	2412	82.82	-	-	72.14	27.55	17.32	34.19	295	315	A	V
													V	
													V	
802.11n HT20 CH 06 2437MHz		2381.04	52.2	-21.8	74	41.71	27.42	17.28	34.21	331	325	P	H	
		2389.52	41.2	-12.8	54	30.65	27.46	17.29	34.2	331	325	A	H	
	*	2437	101.87	-	-	91.04	27.65	17.36	34.18	331	325	P	H	
	*	2437	93.83	-	-	83	27.65	17.36	34.18	331	325	A	H	
			2499.28	54.03	-19.97	74	42.94	27.8	17.45	34.16	331	325	P	H
			2484.8	43.29	-10.71	54	32.26	27.77	17.43	34.17	331	325	A	H
			2355.44	51.55	-22.45	74	41.2	27.32	17.24	34.21	317	303	P	V
			2389.52	40.78	-13.22	54	30.23	27.46	17.29	34.2	317	303	A	V
		*	2437	99.68	-	-	88.85	27.65	17.36	34.18	317	303	P	V
		*	2437	91.64	-	-	80.81	27.65	17.36	34.18	317	303	A	V
		2486.72	53.47	-20.53	74	42.44	27.77	17.43	34.17	317	303	P	V	
		2484.96	42.77	-11.23	54	31.74	27.77	17.43	34.17	317	303	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	98.11	-	-	87.17	27.72	17.39	34.17	320	326	P	H	
	*	2462	89.97	-	-	79.03	27.72	17.39	34.17	320	326	A	H	
		2483.56	59.35	-14.65	74	48.32	27.77	17.43	34.17	320	326	P	H	
		2483.52	46.39	-7.61	54	35.36	27.77	17.43	34.17	320	326	A	H	
													H	
														H
	*	2462	91.41	-	-	80.47	27.72	17.39	34.17	322	326	P	V	
	*	2462	83.54	-	-	72.6	27.72	17.39	34.17	322	326	A	V	
		2485.88	53.57	-20.43	74	42.54	27.77	17.43	34.17	322	326	P	V	
		2483.52	42.8	-11.2	54	31.77	27.77	17.43	34.17	322	326	A	V	
													V	
													V	
Remark	<ol style="list-style-type: none"> No other spurious found. 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	48.69	-25.31	74	62.85	32.34	11.46	57.96	235	336	P	H	
		4824	36.17	-17.83	54	50.33	32.34	11.46	57.96	235	336	A	H	
													H	
													H	
													H	
													H	
														H
														H
														H
														H
802.11n HT20 CH 06 2437MHz		4874	49.45	-24.55	74	63.21	32.6	11.63	57.99	251	338	P	H	
		4874	37.71	-16.29	54	51.47	32.6	11.63	57.99	251	338	A	H	
		7311	55.5	-18.5	74	63.85	37.06	13.32	58.73	200	65	P	H	
		7311	43.43	-10.57	54	51.78	37.06	13.32	58.73	200	65	A	H	
													H	
													H	
														H
														H
														H
														H



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		4920	41.43	-32.57	74	54.86	32.82	11.78	58.03	-	-	P	H	
		7386	40.97	-33.03	74	49.4	36.68	13.61	58.72	-	-	P	H	
													H	
													H	
													H	
													H	
														H
														H
			4920	41.59	-32.41	74	55.02	32.82	11.78	58.03	-	-	P	V
			7386	41.63	-32.37	74	50.06	36.68	13.61	58.72	-	-	P	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 802.11b (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)	
2.4GHz 802.11b SHF		22400	39.02	-34.98	74	96.92	38.1	-3.28	54.62	-	-	P	H	
													H	
													H	
													H	
			20772	38.27	-35.73	74	96.54	38.33	-3.42	54.85	-	-	P	V
														V
														V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against limit line. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. 													



Emission below 1GHz

2.4GHz WIFI 802.11b (LF)

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)
2.4GHz 802.11b LF		30.27	29.78	-10.22	40	37.17	23.8	0.96	32.15	-	-	P	H
		53.22	27.64	-12.36	40	46.15	12.65	1.09	32.25	-	-	P	H
		59.16	30.16	-9.84	40	49.73	11.53	1.14	32.24	-	-	P	H
		881.7	32.23	-13.77	46	30.53	28.51	4.56	31.37	-	-	P	H
		940.5	33.05	-12.95	46	29.53	29.64	4.76	30.88	-	-	P	H
		976.9	33.38	-20.62	54	28.63	30.44	4.84	30.53	-	-	P	H
		30.27	30.35	-9.65	40	37.74	23.8	0.96	32.15	-	-	P	V
		50.52	29.49	-10.51	40	46.78	13.9	1.06	32.25	-	-	P	V
		54.03	30.84	-9.16	40	49.56	12.43	1.1	32.25	-	-	P	V
		873.3	32.48	-13.52	46	30.74	28.63	4.54	31.43	-	-	P	V
		948.2	33.55	-12.45	46	29.49	30.08	4.8	30.82	-	-	P	V
		991.6	33.96	-20.04	54	29.42	30.05	4.87	30.38	-	-	P	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against limit line. The emission position marked as "-" means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only. 												



Note symbol

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



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

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

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

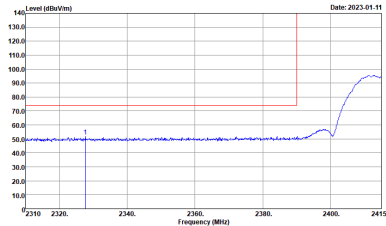
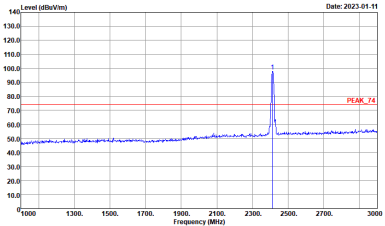
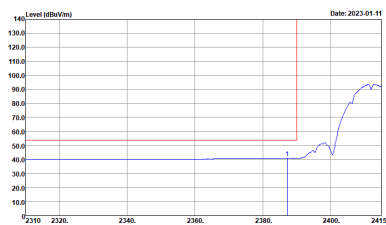
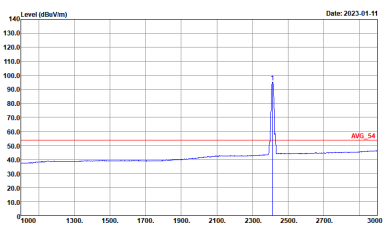
Test Engineer :	Yuan Lee, Bank Lin and Troye Hsieh	Temperature :	21.8~23.7°C
		Relative Humidity :	53.5~66.9%

Note symbol

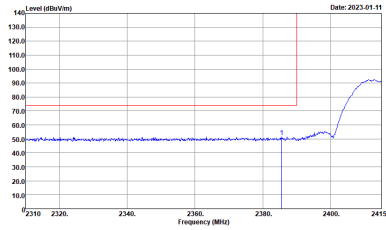
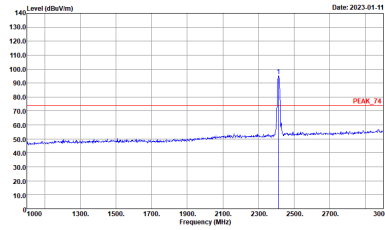
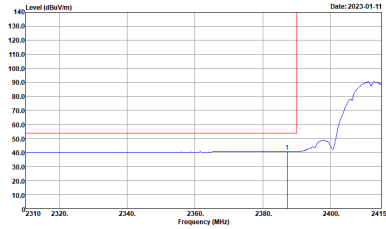
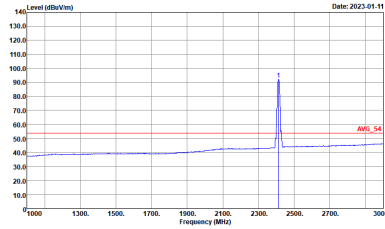
-L	Low channel location
-R	High channel location



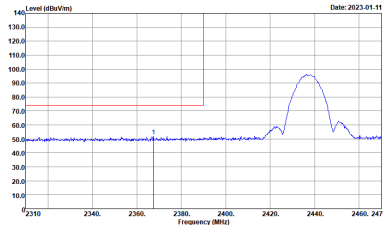
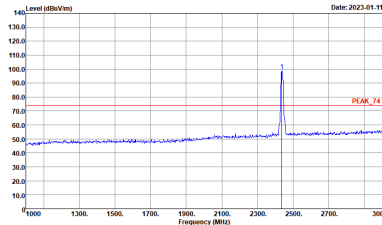
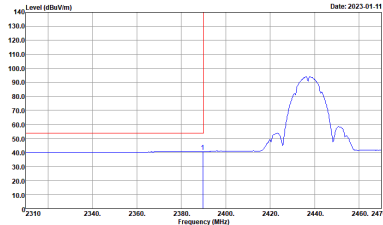
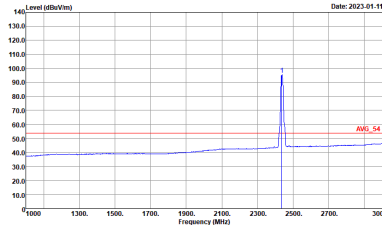
2.4GHz 2400~2483.5MHz
WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.0000kHz VBW:0.0100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.0000kHz VBW:0.0100kHz SWT:Auto</p>

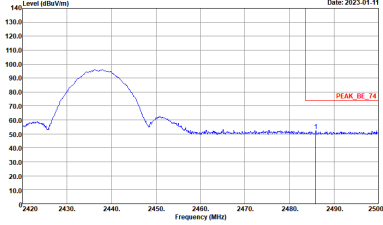
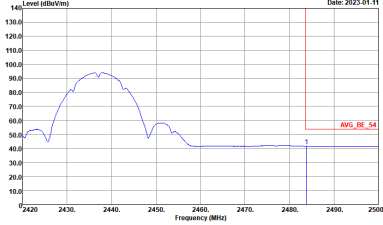


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>

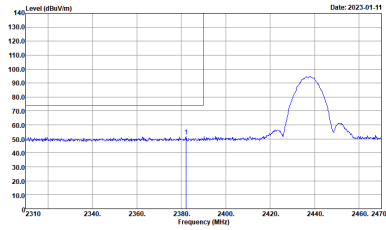
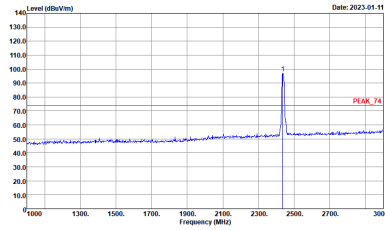
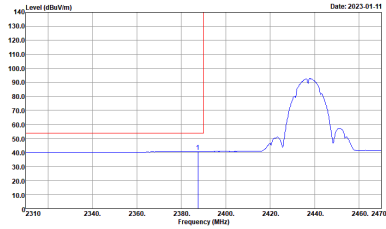
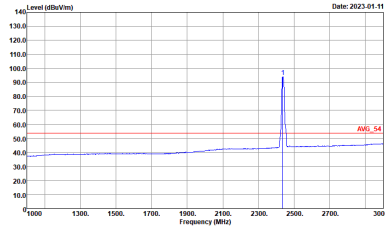


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>

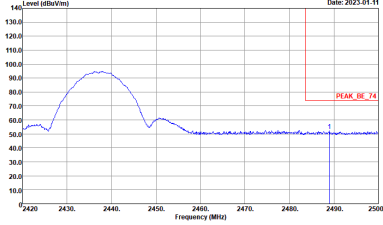
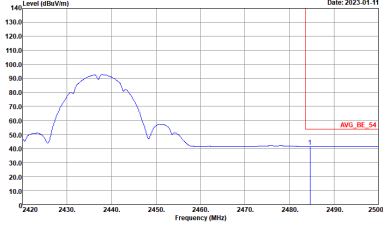


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Horizontal	Fundamental
<p>Peak</p>	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Left blank</p>
<p>Avg.</p>	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Left blank</p>

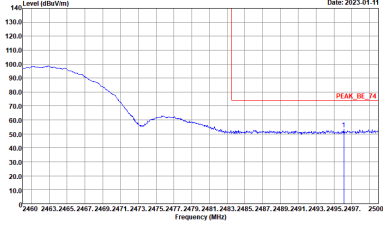
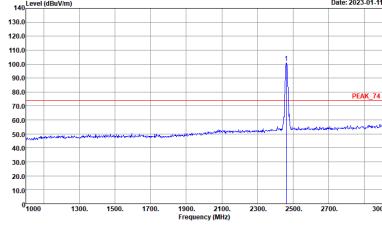
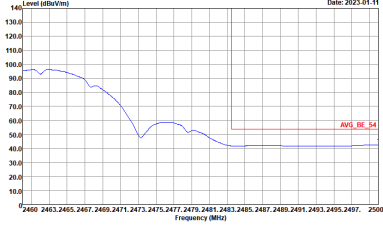
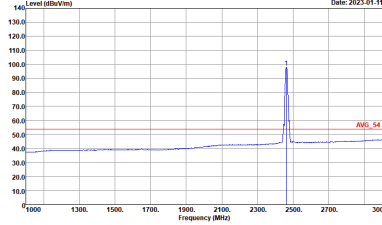


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10.000kHz SWT:Auto</p>

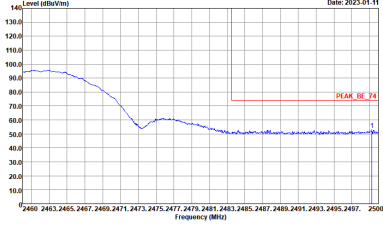
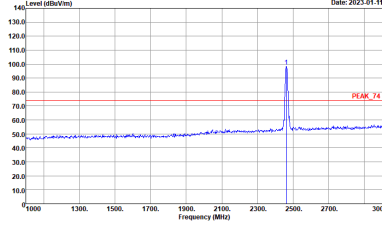
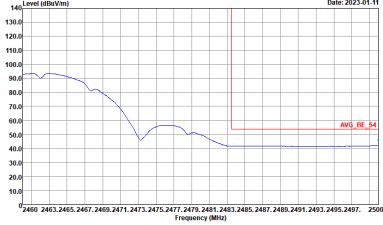
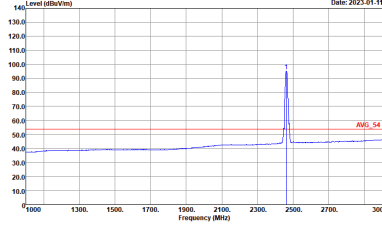


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site Condition : 03CH11-FY : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site Condition : 03CH11-FY : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



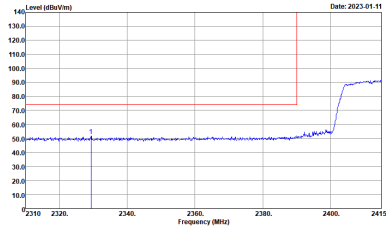
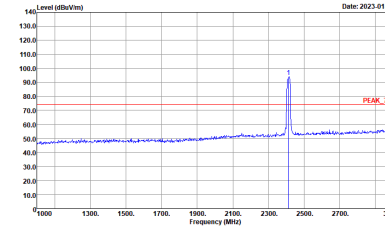
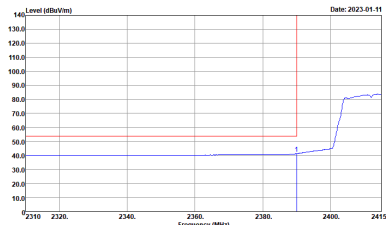
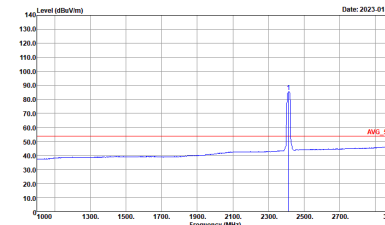
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz 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 : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SW1:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SW1:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.0000kHz VBW:0.0100kHz SW1:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.0000kHz VBW:0.0100kHz SW1:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Vertical	Fundamental
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	<p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:100.000kHz SWT:Auto</p>	<p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:100.000kHz SWT:Auto</p>

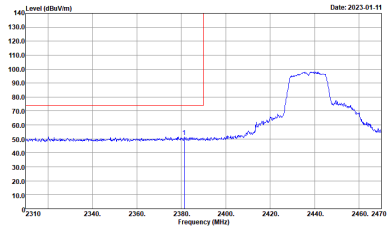
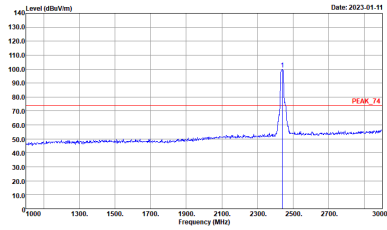
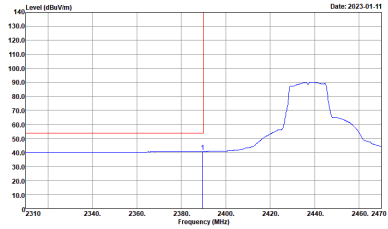
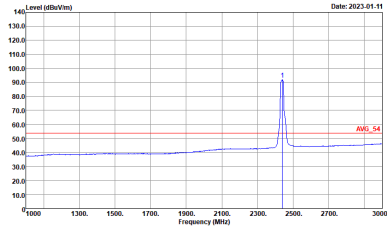


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	<p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	<p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>

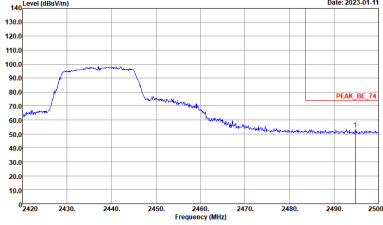
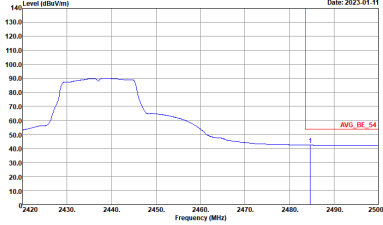


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	<p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto</p>	Left blank

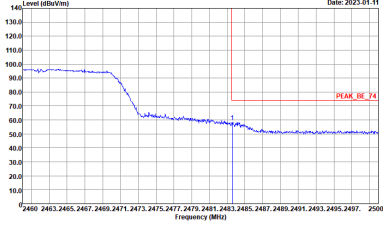
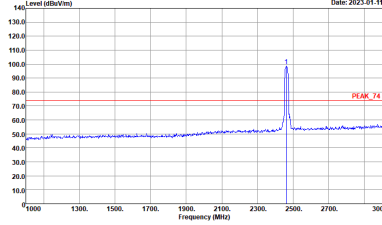
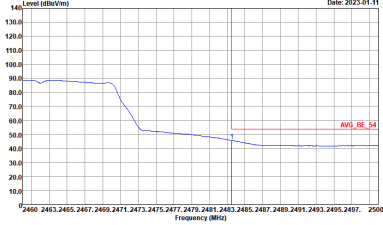
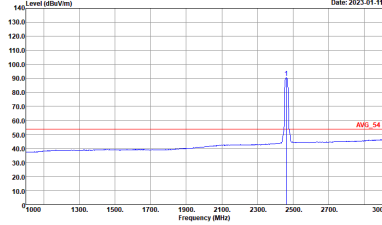


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>

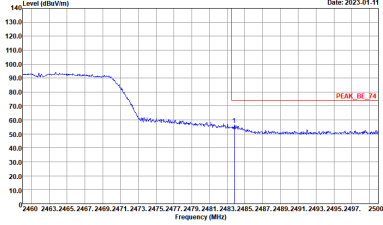
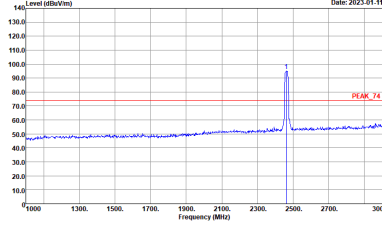
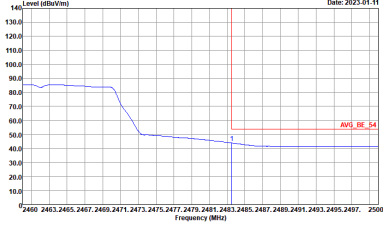
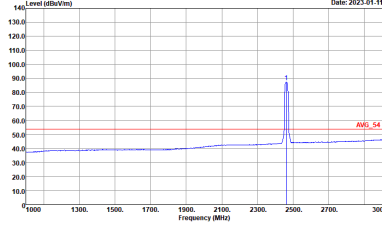


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left Blank
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left Blank



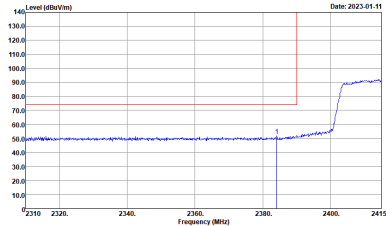
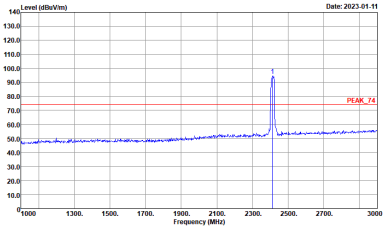
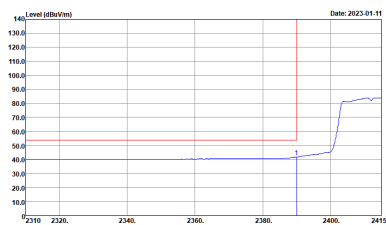
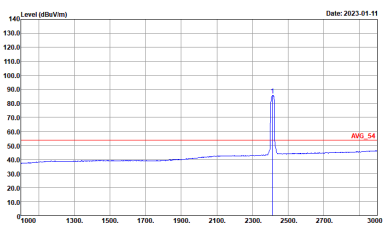
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>



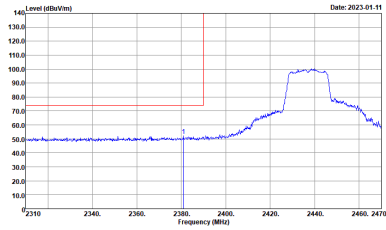
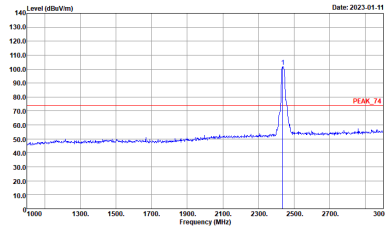
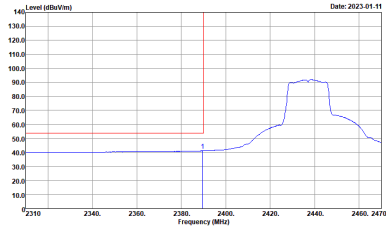
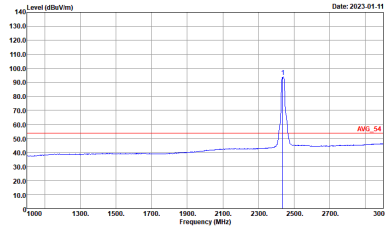
2.4GHz 2400~2483.5MHz
 WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Vertical	Fundamental
Peak	<p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	<p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	<p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>

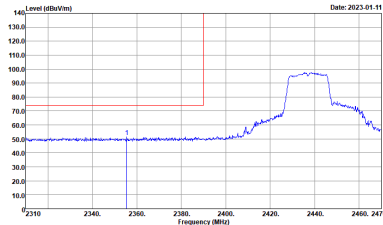
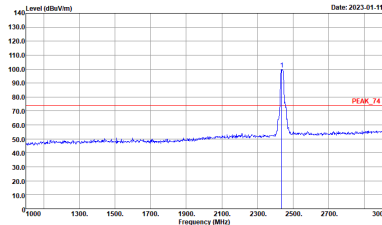
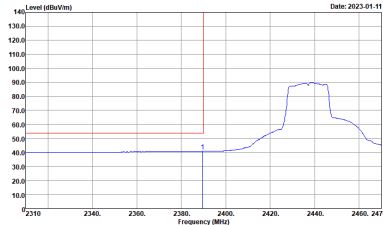
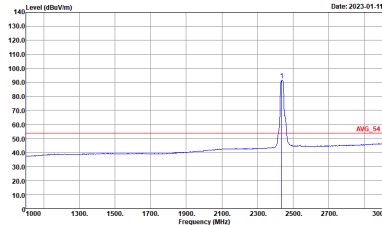


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Horizontal	Fundamental
<p>Peak</p>	<p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Left blank</p>
<p>Avg.</p>	<p>Site : 03CH11-HY Condition : AVG_BE_64 3m 91200_1212_220310 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Left blank</p>

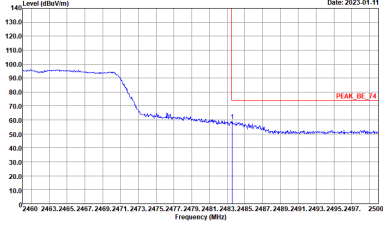
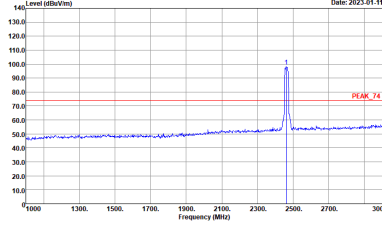
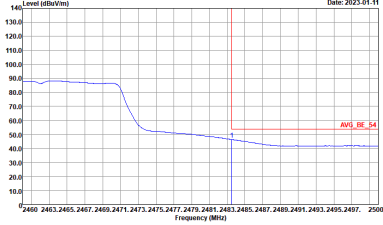
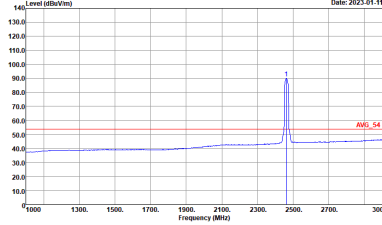


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>

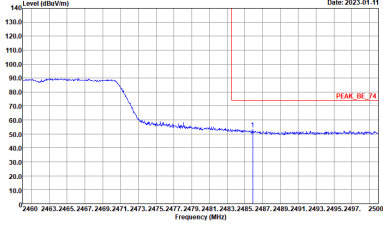
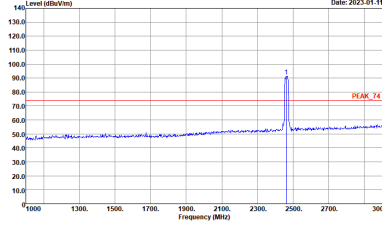
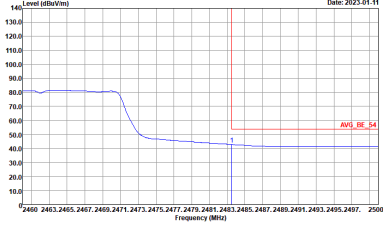
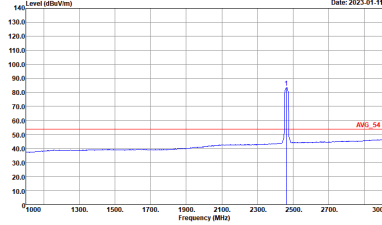


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	<p>Site : 03CH11-FY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left Blank
Avg.	<p>Site : 03CH11-FY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT: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 : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 HORIZONTAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Fundamental @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH11-HY Condition : AVG_BE_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz SWT:Auto</p>	 <p>Site : 03CH11-HY Condition : AVG_54 3m 91200_1212_220310 VERTICAL : RBW:1000.000kHz VBW:10100kHz 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 : 03CH11-4Y Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL</p>	<p>Site : 03CH11-4Y Condition : PEAK_74 3m 91200_1212_220310 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH11-1F Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL :</p>	<p>Site : 03CH11-1F Condition : PEAK_74 3m 91200_1212_220310 VERTICAL :</p>



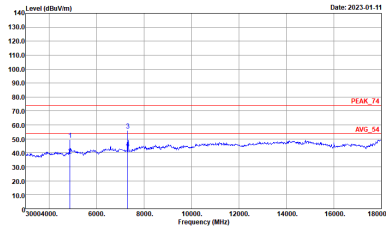
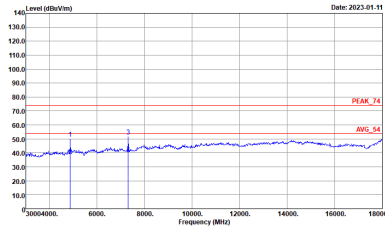
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH11-FY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL :</p>	<p>Site : 03CH11-FY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL :</p>



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

Table with 2 columns: WIFI (2.4GHz 2400~2483.5MHz Harmonic @ 3m), ANT (802.11g CH01 2412MHz). Row 1: 1, Horizontal, Vertical. Includes two spectral plots showing Level (dBm/Vm) vs Frequency (MHz) for Peak and Avg measurements.



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH11-1F Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL</p>	 <p>Site : 03CH11-1F Condition : PEAK_74 3m 91200_1212_220310 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH11-FY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL :</p>	<p>Site : 03CH11-FY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL :</p>



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.	<p>Site : 03CH11-4Y Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL</p>	<p>Site : 03CH11-4Y Condition : PEAK_74 3m 91200_1212_220310 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH11-1F Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL</p>	<p>Site : 03CH11-1F Condition : PEAK_74 3m 91200_1212_220310 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH11-FY Condition : PEAK_74 3m 91200_1212_220310 HORIZONTAL</p>	<p>Site : 03CH11-FY Condition : PEAK_74 3m 91200_1212_220310 VERTICAL</p>



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

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b SHF	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03SCH11-4Y Condition : PEAK_74 In SHF ANT_9170_00993 HORIZONTAL</p>	<p>Site : 03SCH11-4Y Condition : PEAK_74 In SHF ANT_9170_00993 VERTICAL</p>



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

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b LF	
1	Horizontal	Vertical
QP / Peak	<p>Site : 03CH11-HY Condition : QP 3m 2_BLOG_35414_221008 HORIZONTAL</p>	<p>Site : 03CH11-HY Condition : QP 3m 2_BLOG_35414_221008 VERTICAL</p>



Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
802.11b	100.00	-	-	0.01kHz
802.11g	100.00	-	-	0.01kHz
2.4GHz 802.11n HT20	100.00	-	-	0.01kHz

