



# FCC RADIO TEST REPORT

**FCC ID** : 2AKBCG3M200R1  
**Equipment** : Mighty Audio Device  
**Brand Name** : Mighty  
**Model Name** : M200  
**Marketing Name** : Mighty Audio Device  
**Applicant** : Mighty Audio, Inc.  
2995 Silverado Trail Napa CA 94558 USA  
**Manufacturer** : Dongguan Houjie Hua-Bao Electronics Technical  
Limited Company  
No. 7 Fumin Road, Xitou West Village, Houjie Town,  
Dongguan City. Zip code : 523952  
**Standard** : FCC Part 15 Subpart C §15.247

The product was received on Sep. 05, 2022 and testing was performed from Mar. 30, 2023 to May 03, 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.

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	0.94 dB under the limit at 2390.00 MHz
3.6	15.207	AC Conducted Emission	Pass	20.80 dB under the limit at 4.34 MHz
3.7	15.203	Antenna Requirement	Pass	-

**Conformity Assessment Condition:**

- 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.
- 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: Avis Chuang**  
**Report Producer: Clio Lo**



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

Product Feature	
<b>General Specs</b> Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n.	
<b>Antenna Type</b> WLAN: PCB Antenna Bluetooth: PCB Antenna	

Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	-2.30

**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

<b>Test Site</b>	Sporton International Inc. EMC & Wireless Communications Laboratory
<b>Test Site Location</b>	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
<b>Test Site No.</b>	<b>Sporton Site No.</b> CO05-HY (TAF Code: 1190)
<b>Remark</b>	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.

<b>Test Site</b>	Sporton International Inc. Wensan Laboratory
<b>Test Site Location</b>	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
<b>Test Site No.</b>	<b>Sporton Site No.</b> TH05-HY, 03CH15-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.

### Single Antenna

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

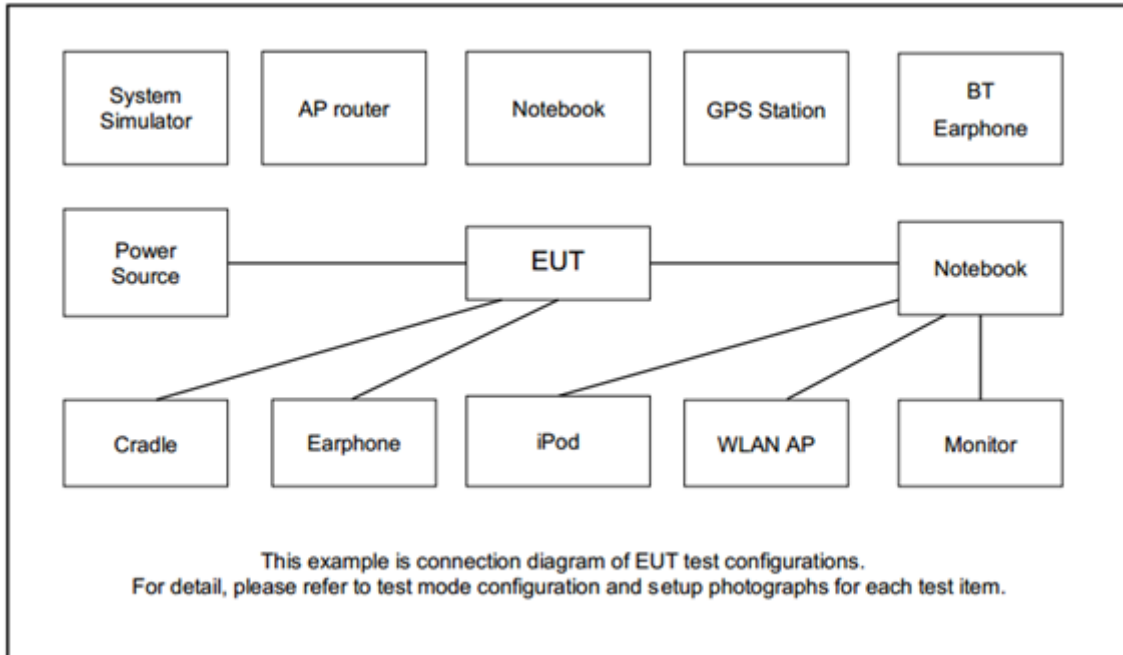
Test Cases	
AC Conducted Emission	Mode 1 :Bluetooth Link with Phone + WLAN (2.4GHz) Link + Music list transfer to EUT + 3.5mm audio jack to USB Cable (Charging from AC adapter)

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.	Notebook	DELL	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Notebook	DELL	Latitude 3420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0m	N/A
4.	Iphone 6	Apple	A1586	N/A	N/A	N/A
5.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,1.8m
6.	Mobile Phone	SAMSUNG	SM-A730F/DS	A3LSMA730F	N/A	N/A
7.	Adapter	DVE	DSA-5PFM-05 FUS	FCC DoC	N/A	N/A



## 2.5 EUT Operation Test Setup

The RF test items, utility “PPR1.180610.011.A730FXXS8CUC1” 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.

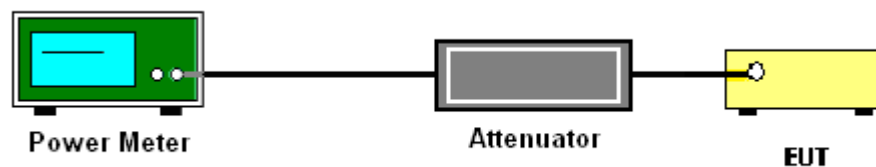
### 3.2.2 Measuring Instruments

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.

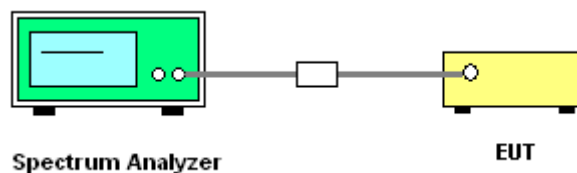
#### 3.3.2 Measuring Instruments

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.

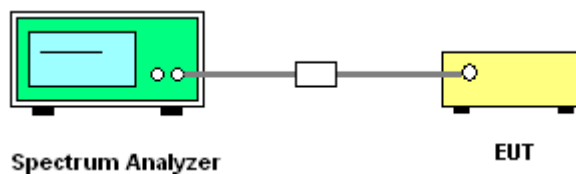
### 3.4.2 Measuring Instruments

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.

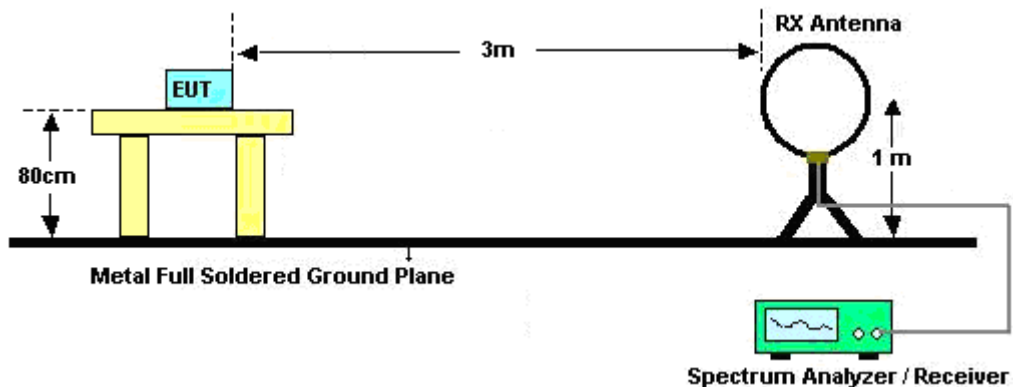
#### 3.5.3 Test Procedures

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:  $\text{Antenna Factor} + \text{Cable Loss} + \text{Read Level} - \text{Preamp Factor} = \text{Level}$
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-“.

7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-“.
8. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW = 100 kHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW = 3 MHz for  $f \geq 1$  GHz for peak measurement.For average measurement:
  - VBW = 10 Hz, when duty cycle is no less than 98 percent.
  - VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

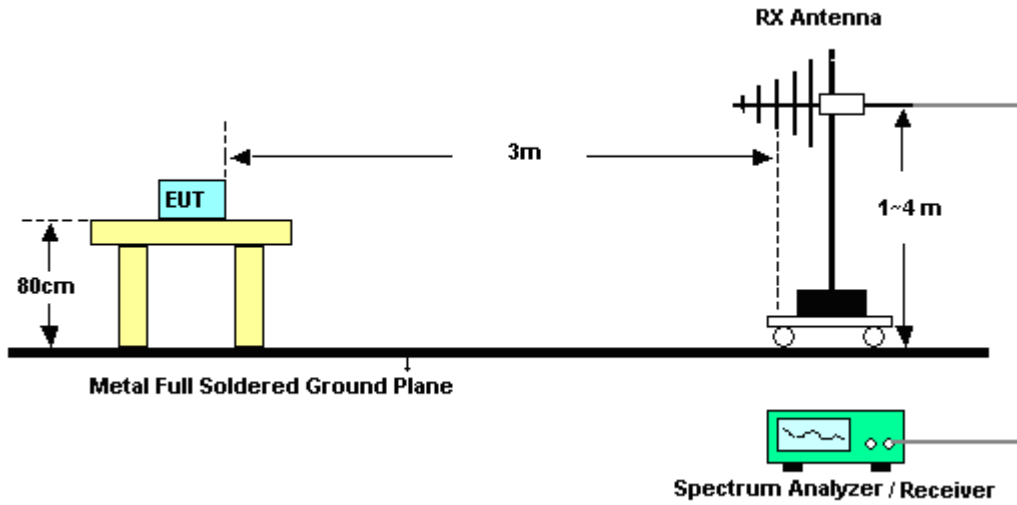
### 3.5.4 Test Setup

For radiated emissions below 30MHz

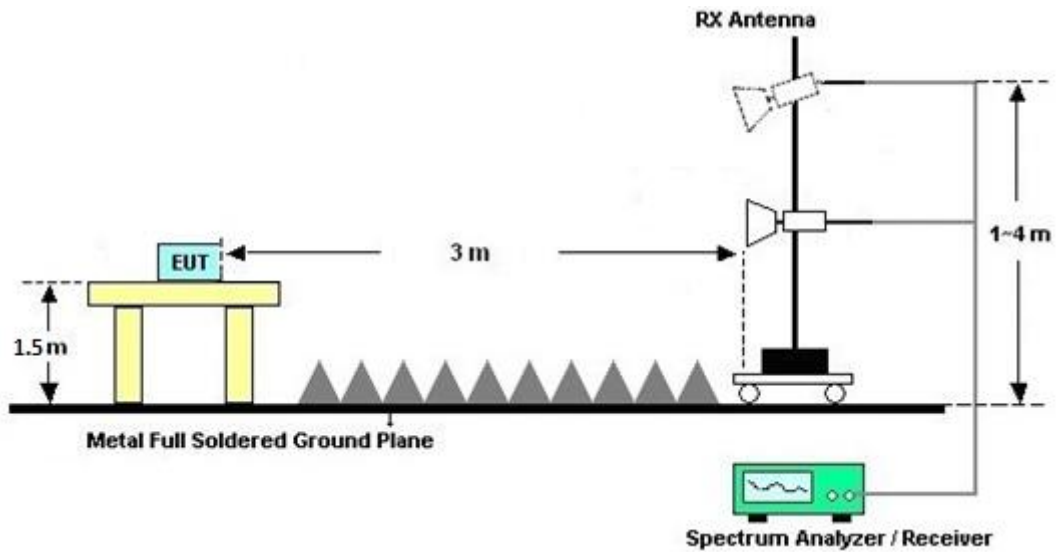




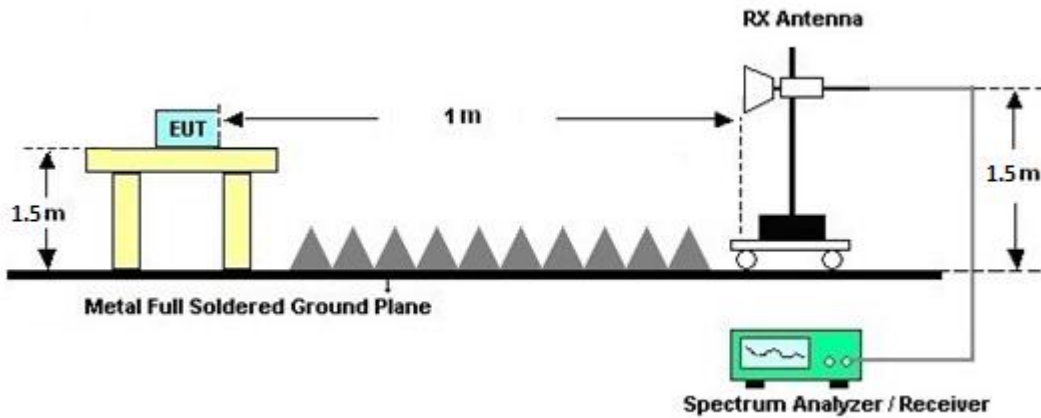
For radiated emissions from 30MHz to 1GHz



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 ~ 10<sup>th</sup> 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.

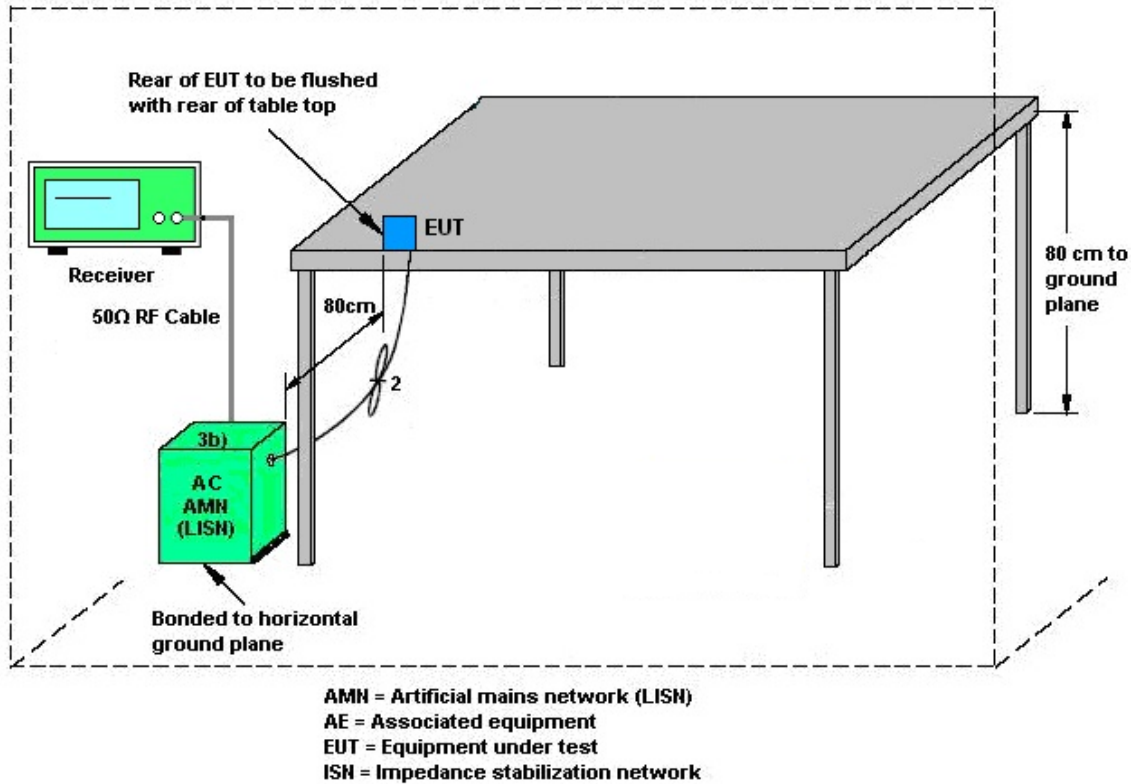
#### 3.6.2 Measuring Instruments

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	Apr. 30, 2023~ May 03, 2023	Sep. 19, 2023	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	41912 & 05	30MHz~1GHz	Feb. 05, 2023	Apr. 30, 2023~ May 03, 2023	Feb. 04, 2024	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02294	1GHz~18GHz	Jun. 23, 2022	Apr. 30, 2023~ May 03, 2023	Jun. 22, 2023	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	00991	18GHz~40GHz	May 14, 2022	Apr. 30, 2023~ May 03, 2023	May 13, 2023	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 26, 2022	Apr. 30, 2023~ May 03, 2023	Dec. 25, 2023	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-303	17100018000 55007	1GHz~18GHz	Jun. 15, 2022	Apr. 30, 2023~ May 03, 2023	Jun. 14, 2023	Radiation (03CH15-HY)
Preamplifier	EM Electronics	EM01G18G	060802	1GHz~18GHz	Mar. 03, 2023	Apr. 30, 2023~ May 03, 2023	Mar. 02, 2024	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 28, 2022	Apr. 30, 2023~ May 03, 2023	Jun. 27, 2023	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Oct. 18, 2022	Apr. 30, 2023~ May 03, 2023	Oct. 17, 2023	Radiation (03CH15-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200485	10Hz~44GHz	Mar. 11, 2023	Apr. 30, 2023~ May 03, 2023	Mar. 10, 2024	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Apr. 30, 2023~ May 03, 2023	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Apr. 30, 2023~ May 03, 2023	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24 (k5)	RK-000451	N/A	N/A	Apr. 30, 2023~ May 03, 2023	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY582185/4, MY9838/4PE, 519228/2	30MHz~18G	Jun. 21, 2022	Apr. 30, 2023~ May 03, 2023	Jun. 20, 2023	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2,804 012/2	30MHz-40GHz	Jan. 03, 2023	Apr. 30, 2023~ May 03, 2023	Jan. 02, 2024	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 07, 2023	Apr. 30, 2023~ May 03, 2023	Mar. 06, 2024	Radiation (03CH15-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 17, 2022	Apr. 19, 2023~ Apr. 29, 2023	Nov. 16, 2023	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 12 (NO:113)	10MHz~6GHz	Dec. 13, 2022	Apr. 19, 2023~ Apr. 29, 2023	Dec. 12, 2023	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz(amp)	Aug. 03, 2022	Apr. 19, 2023~ Apr. 29, 2023	Aug. 02, 2023	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Mar. 30, 2023	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2022	Mar. 30, 2023	Nov. 30, 2023	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2022	Mar. 30, 2023	Nov. 16, 2023	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 17, 2022	Mar. 30, 2023	Nov. 16, 2023	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Mar. 30, 2023	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Aug. 01, 2022	Mar. 30, 2023	Jul. 31, 2023	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 29, 2022	Mar. 30, 2023	Dec. 28, 2023	Conduction (CO05-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% ( $U = 2Uc(y)$ )	6.30 dB
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.20 dB
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### Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.40 dB
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### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.20 dB
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**Appendix A. Test Result of Conducted Test Items**

Test Engineer:	James Li	Temperature:	21~25	°C
Test Date:	2023/4/19~2023/4/29	Relative Humidity:	51~54	%



**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

2.4GHz Band Single Antenna										
Mod.	Data Rate	N <sub>TX</sub>	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	12.94	-	8.10	-	0.50	Pass
11b	1Mbps	1	6	2437	12.99	-	9.10	-	0.50	Pass
11b	1Mbps	1	11	2462	12.99	-	8.58	-	0.50	Pass
11g	6Mbps	1	1	2412	17.83	-	15.32	-	0.50	Pass
11g	6Mbps	1	6	2437	17.78	-	15.18	-	0.50	Pass
11g	6Mbps	1	11	2462	17.73	-	15.36	-	0.50	Pass
HT20	MCS0	1	1	2412	18.33	-	15.36	-	0.50	Pass
HT20	MCS0	1	6	2437	18.43	-	15.16	-	0.50	Pass
HT20	MCS0	1	11	2462	18.33	-	15.50	-	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	12.10	-		30.00	-	-2.30	-	9.80	-	36.00	-	Pass
11b	1Mbps	1	6	2437	12.50	-		30.00	-	-2.30	-	10.20	-	36.00	-	Pass
11b	1Mbps	1	11	2462	13.00	-		30.00	-	-2.30	-	10.70	-	36.00	-	Pass
11g	6Mbps	1	1	2412	11.90	-		30.00	-	-2.30	-	9.60	-	36.00	-	Pass
11g	6Mbps	1	6	2437	11.80	-		30.00	-	-2.30	-	9.50	-	36.00	-	Pass
11g	6Mbps	1	11	2462	12.20	-		30.00	-	-2.30	-	9.90	-	36.00	-	Pass
HT20	MCS0	1	1	2412	11.60	-		30.00	-	-2.30	-	9.30	-	36.00	-	Pass
HT20	MCS0	1	6	2437	11.80	-		30.00	-	-2.30	-	9.50	-	36.00	-	Pass
HT20	MCS0	1	11	2462	12.20	-		30.00	-	-2.30	-	9.90	-	36.00	-	Pass

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

**TEST RESULTS DATA**  
**Peak Power Spectral Density**

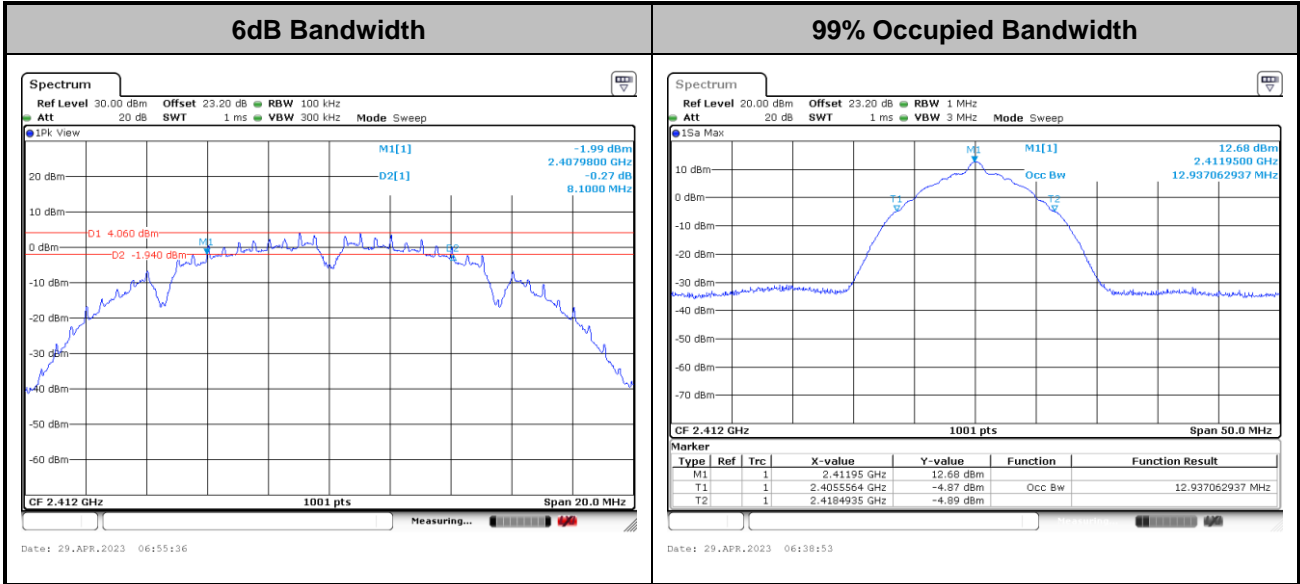
2.4GHz Band Single Antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)			DG (dBi)		Peak PSD Limit (dBm/3kHz)		Pass/Fail
					Ant1	Ant2	Worse + 3.01	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	1	1	2412	-7.80	-		-2.30	-	8.00	-	Pass
11b	1Mbps	1	6	2437	-10.38	-		-2.30	-	8.00	-	Pass
11b	1Mbps	1	11	2462	-9.91	-		-2.30	-	8.00	-	Pass
11g	6Mbps	1	1	2412	-13.11	-		-2.30	-	8.00	-	Pass
11g	6Mbps	1	6	2437	-13.27	-		-2.30	-	8.00	-	Pass
11g	6Mbps	1	11	2462	-13.38	-		-2.30	-	8.00	-	Pass
HT20	MCS0	1	1	2412	-13.34	-		-2.30	-	8.00	-	Pass
HT20	MCS0	1	6	2437	-11.89	-		-2.30	-	8.00	-	Pass
HT20	MCS0	1	11	2462	-13.63	-		-2.30	-	8.00	-	Pass

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



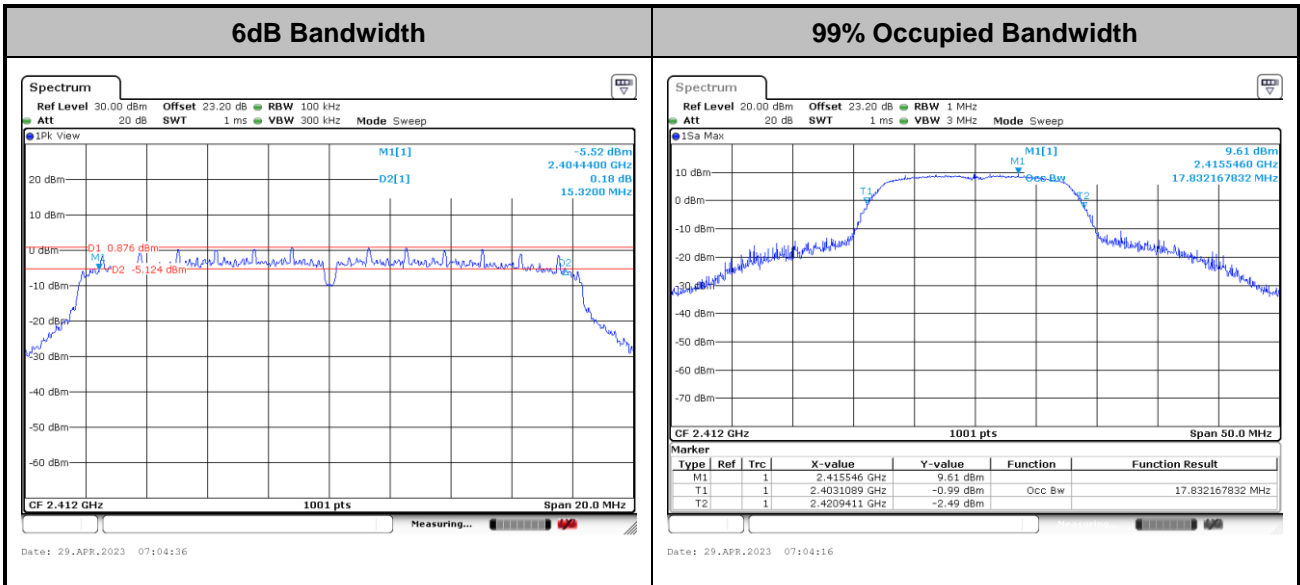
# 6dB and 99% Occupied Bandwidth

<802.11b>



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

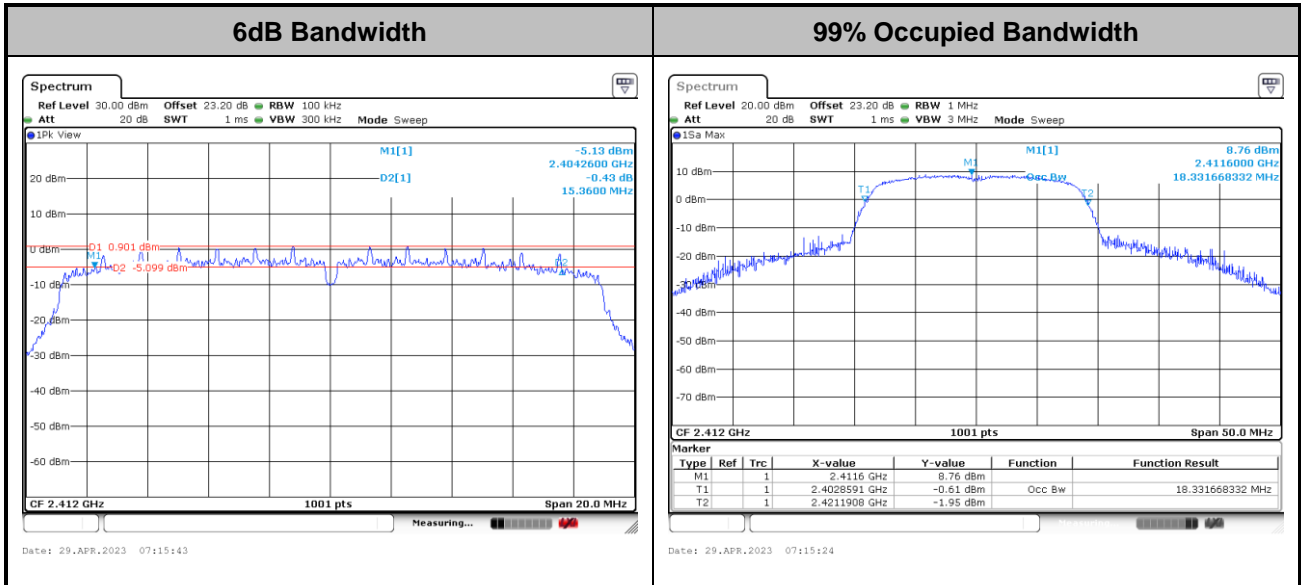
<802.11g>



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



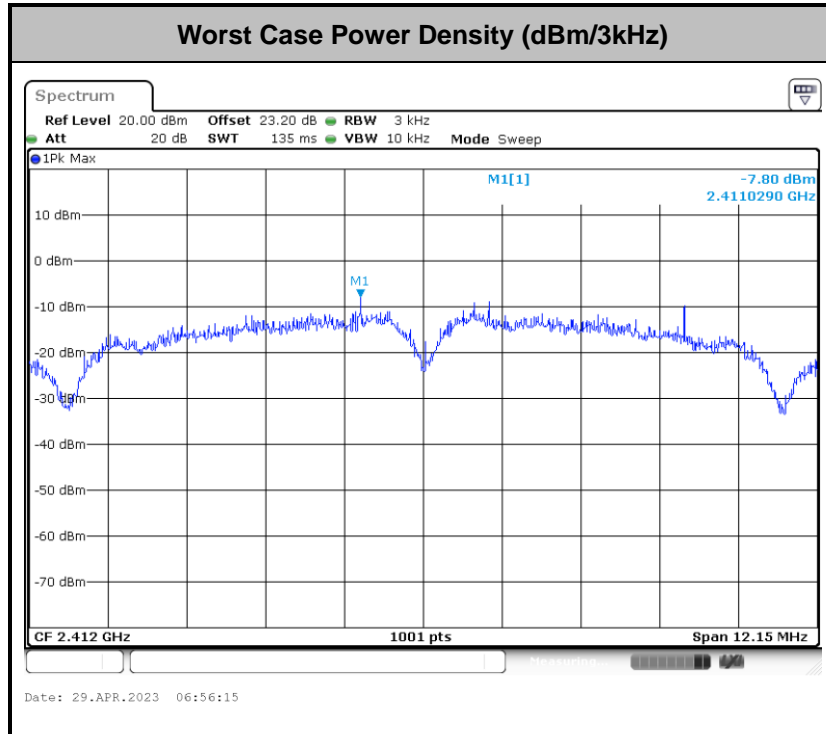
<802.11n HT20>



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



# Power Spectral Density(dBm/3kHz)

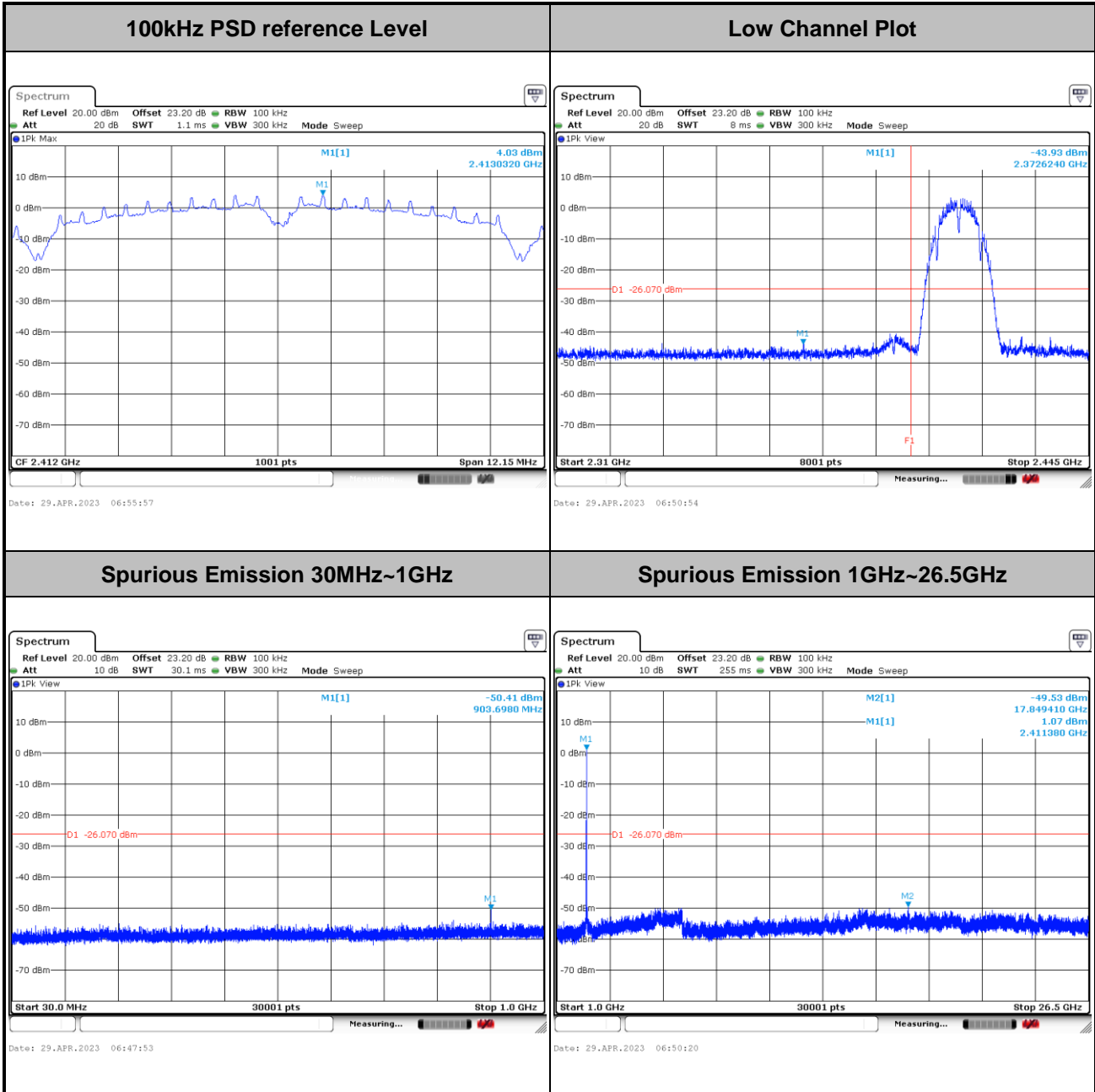




# Band Edges and Spurious Emission

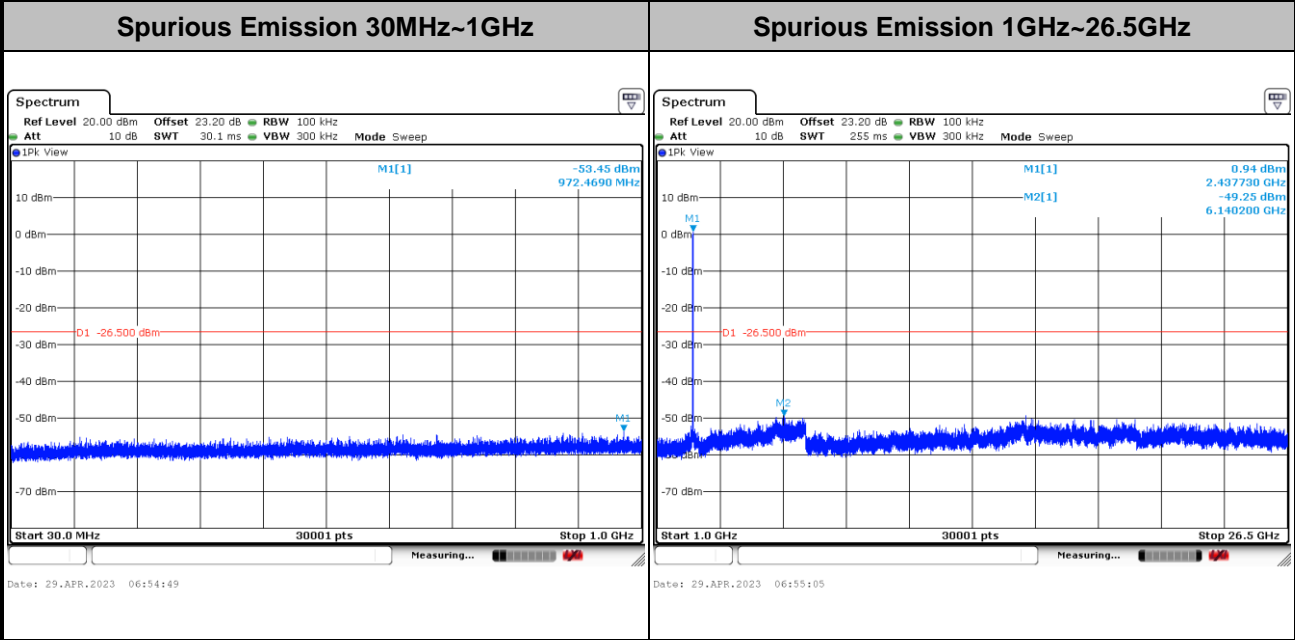
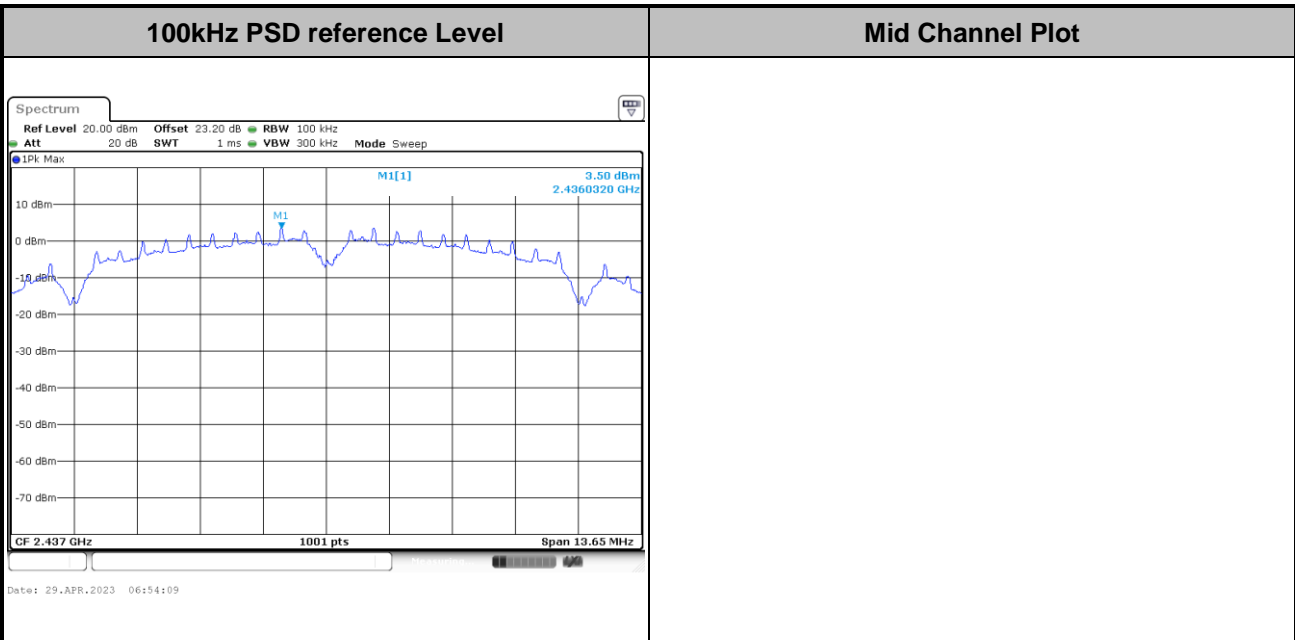
Number of TX = 1, Ant. 1 (Measured)

Test Mode :	802.11b	Test Channel :	01
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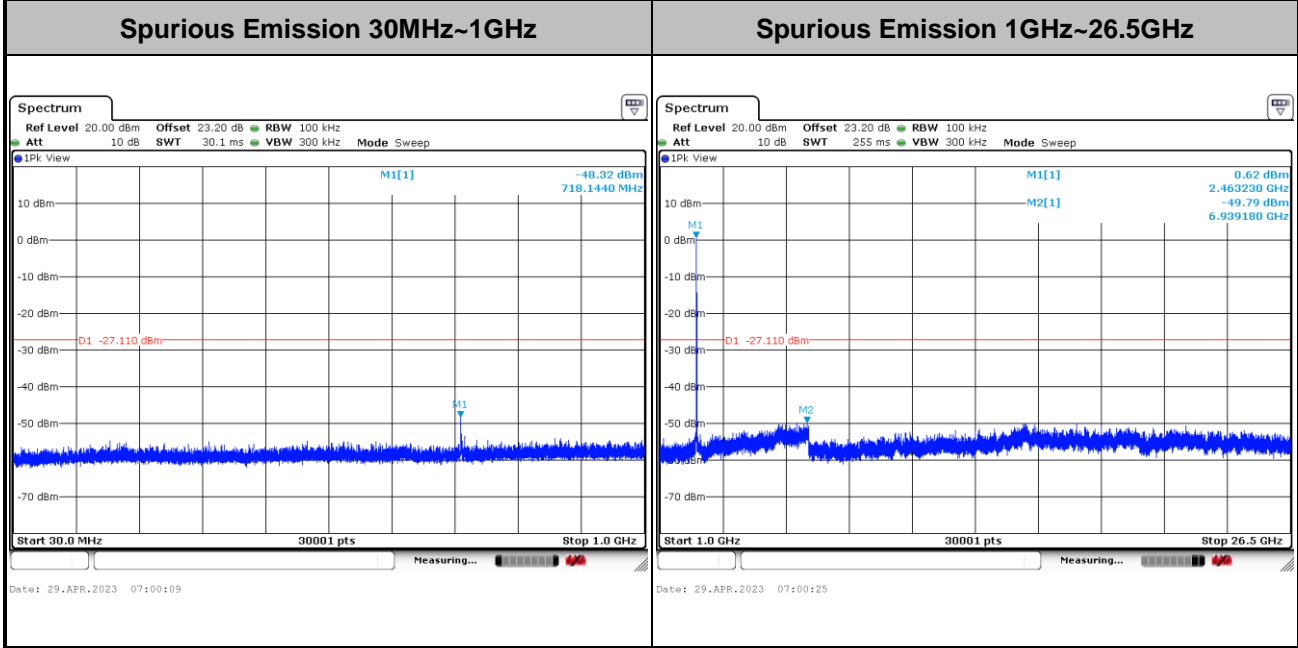
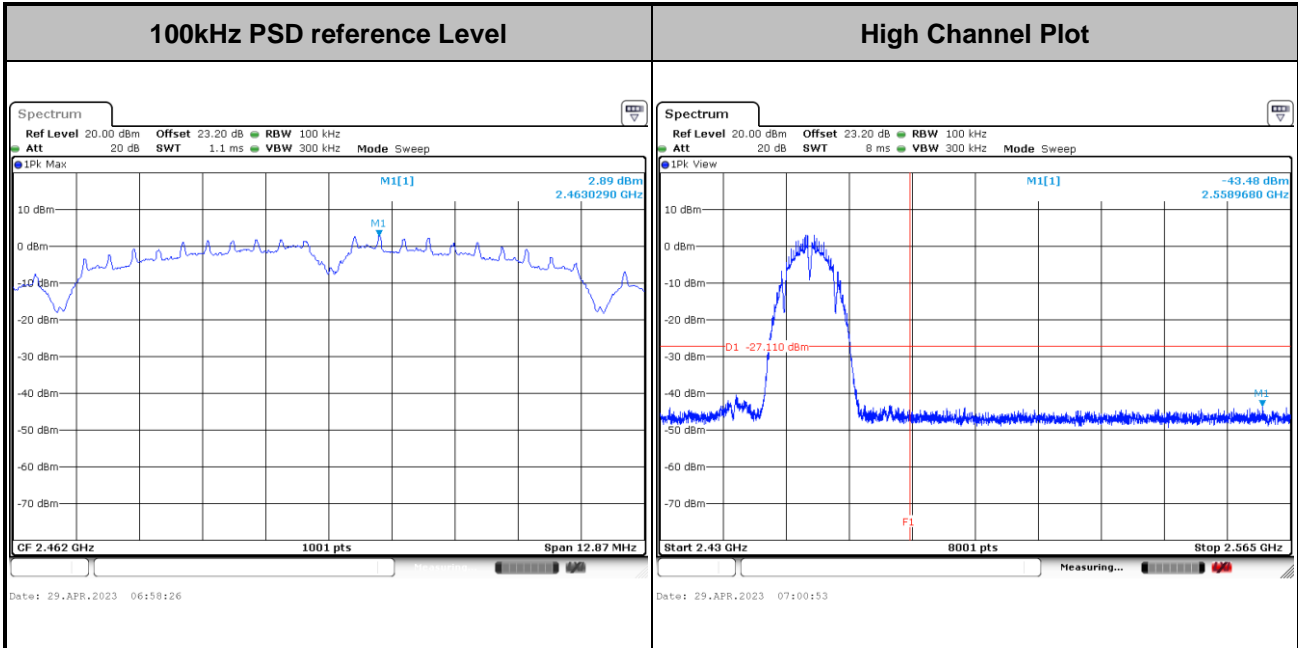
Test Mode :	802.11b	Test Channel :	06
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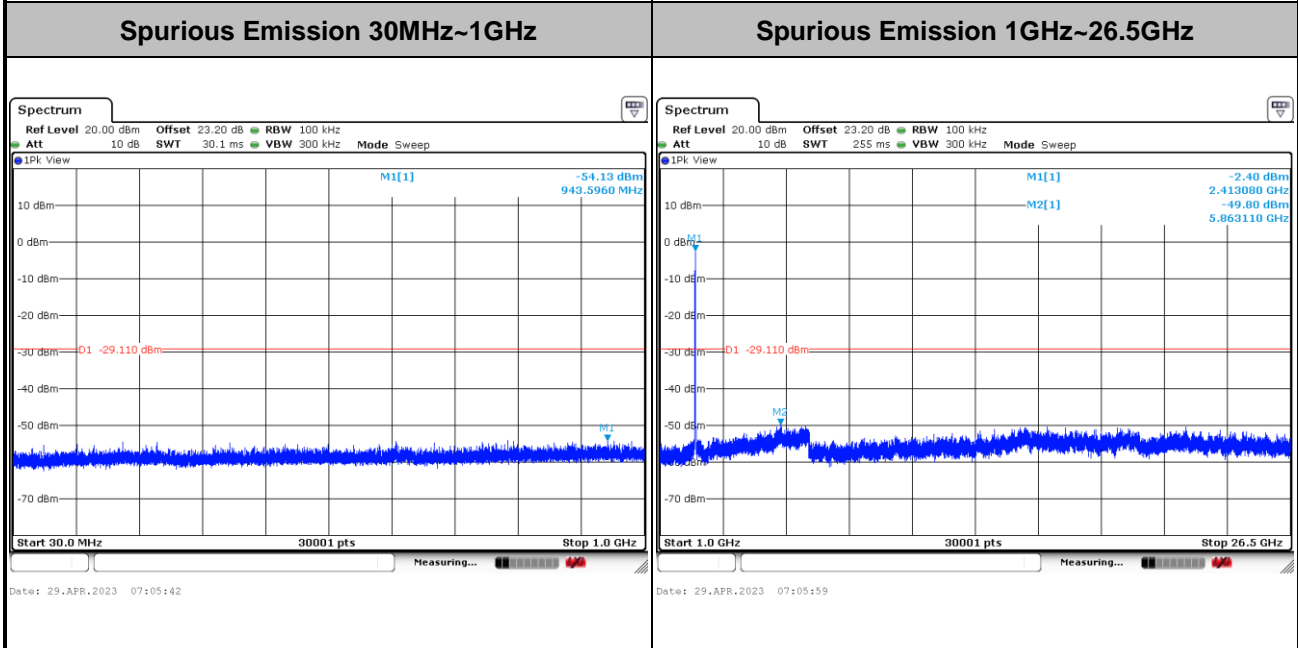
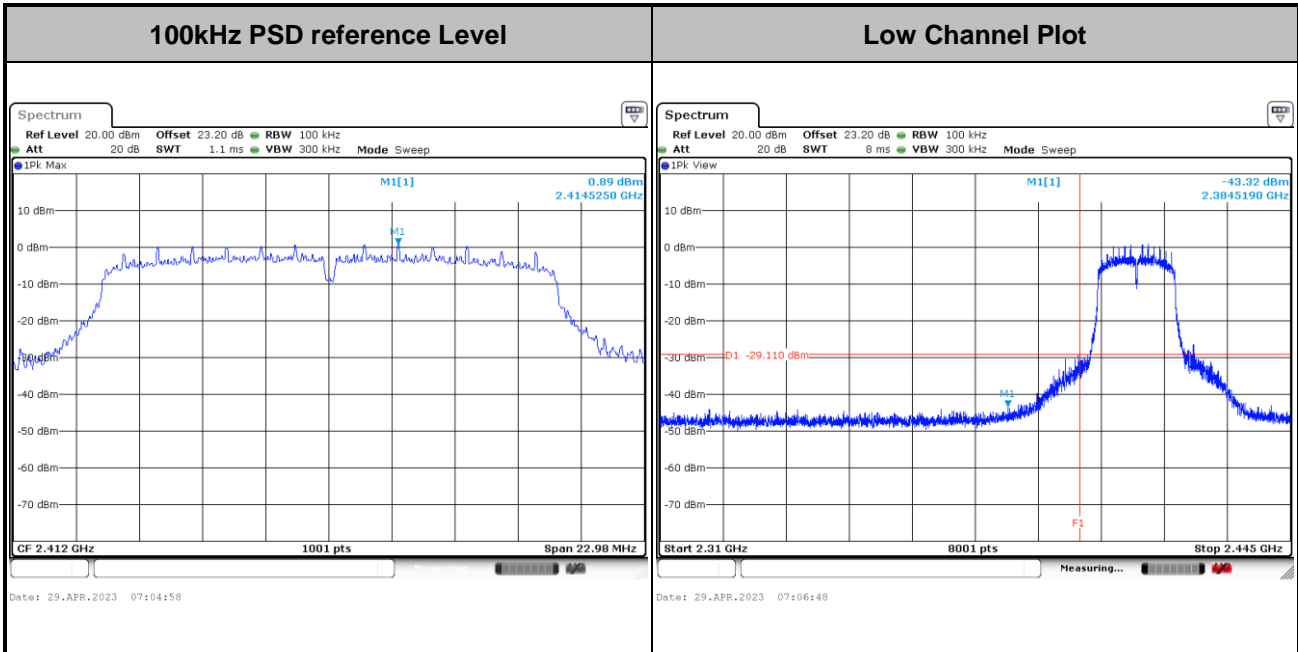


Test Mode :	802.11b	Test Channel :	11
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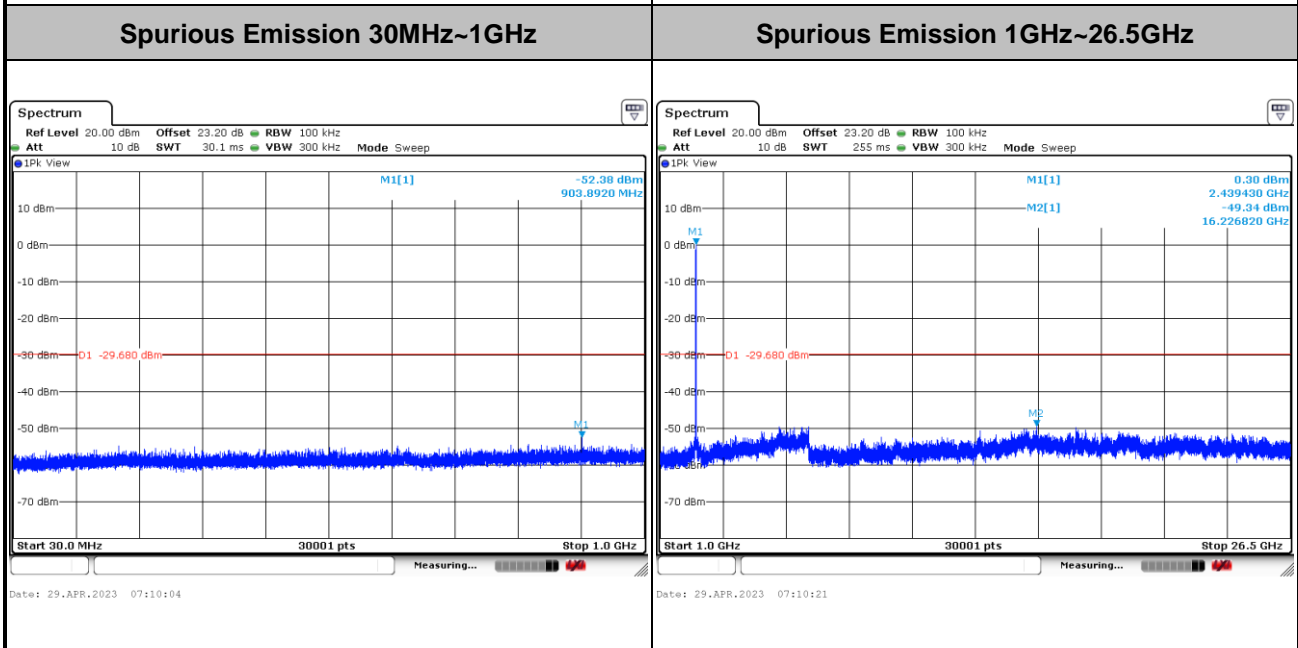
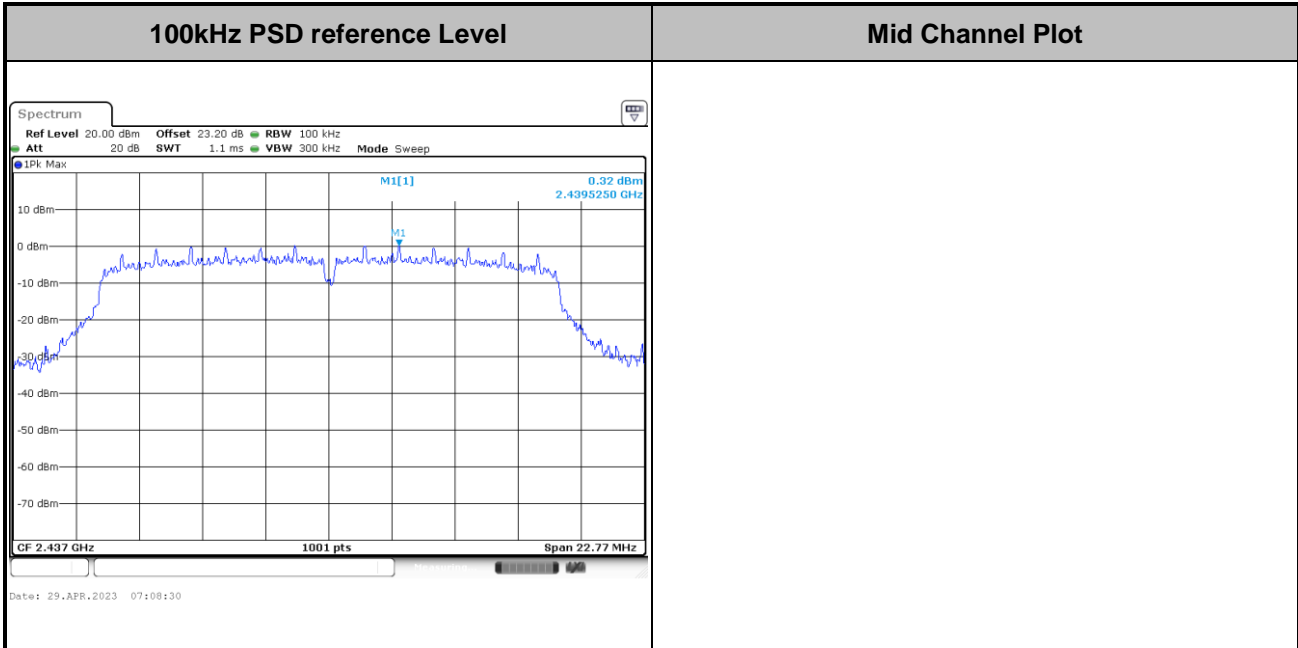


Test Mode :	802.11g	Test Channel :	01
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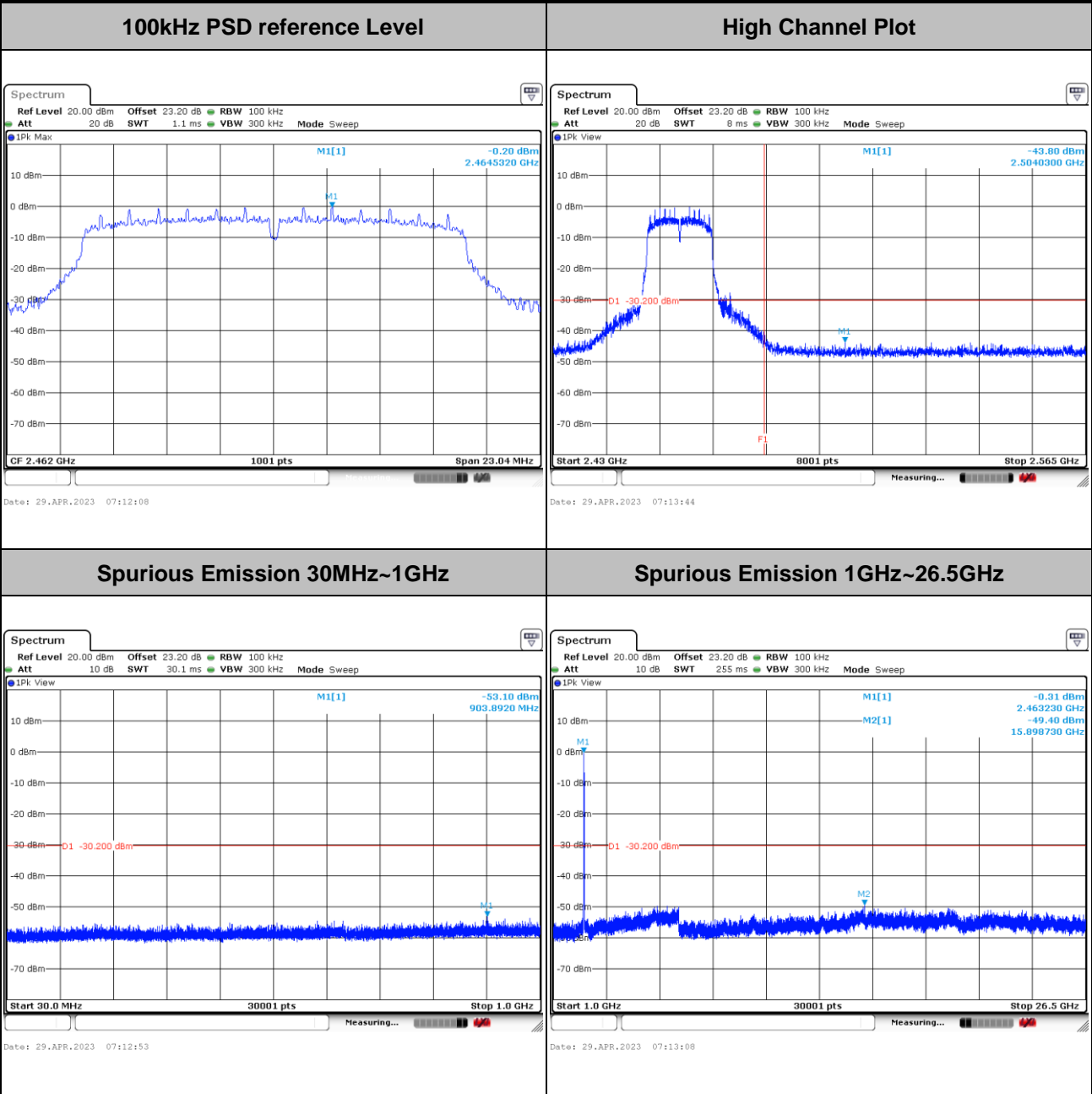


Test Mode :	802.11g	Test Channel :	06
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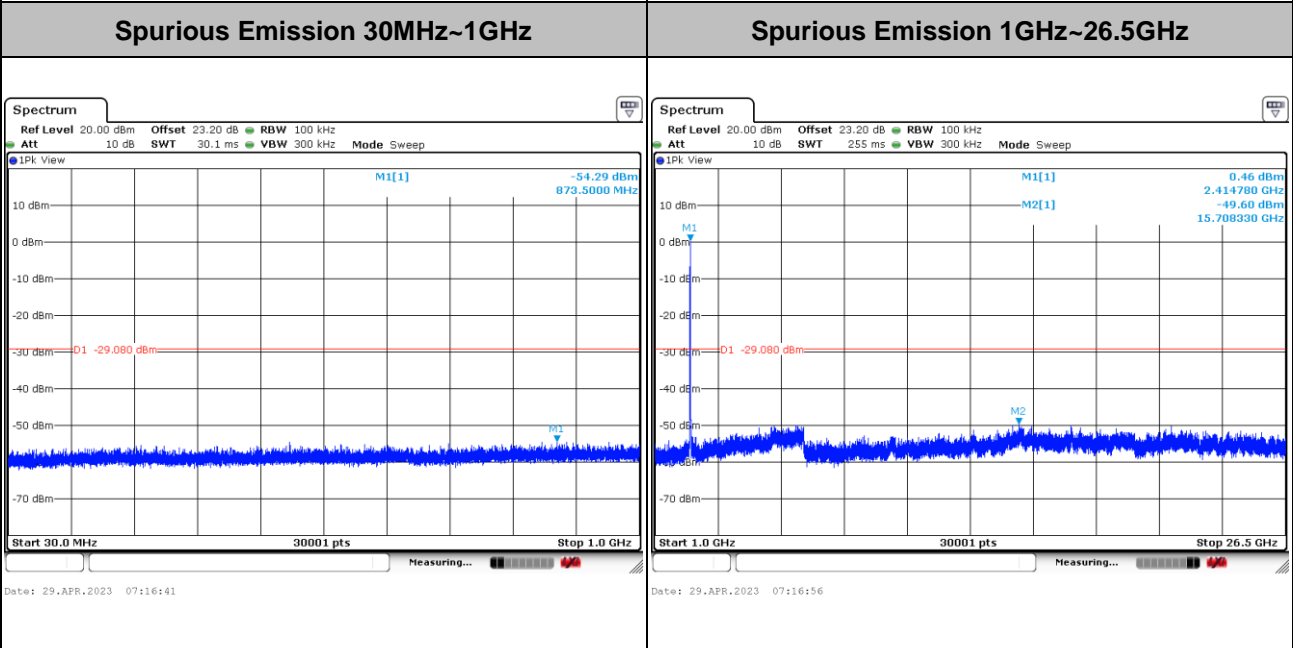
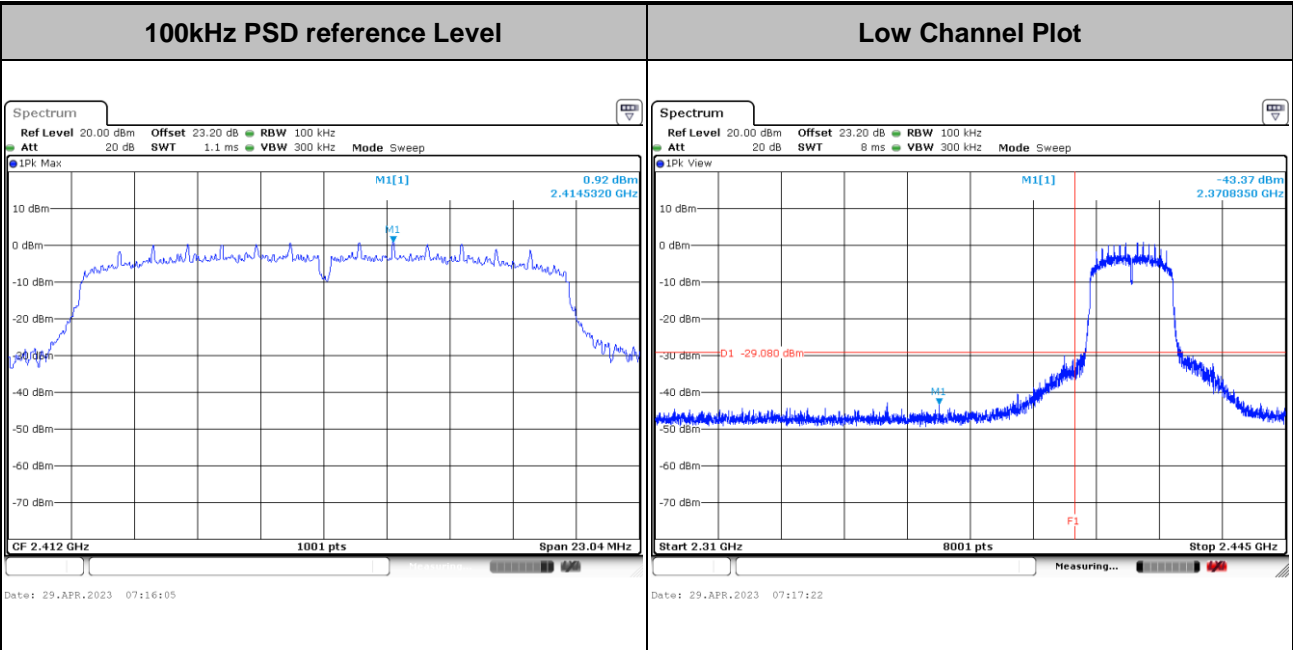


Test Mode :	802.11g	Test Channel :	11
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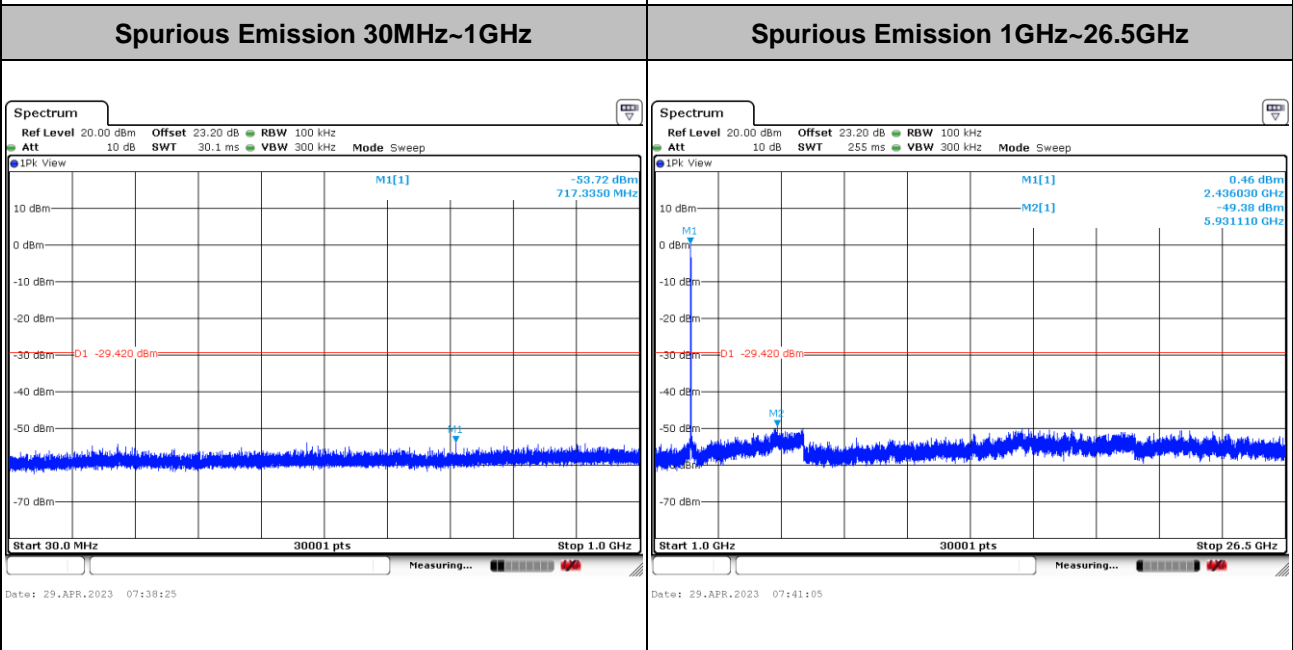
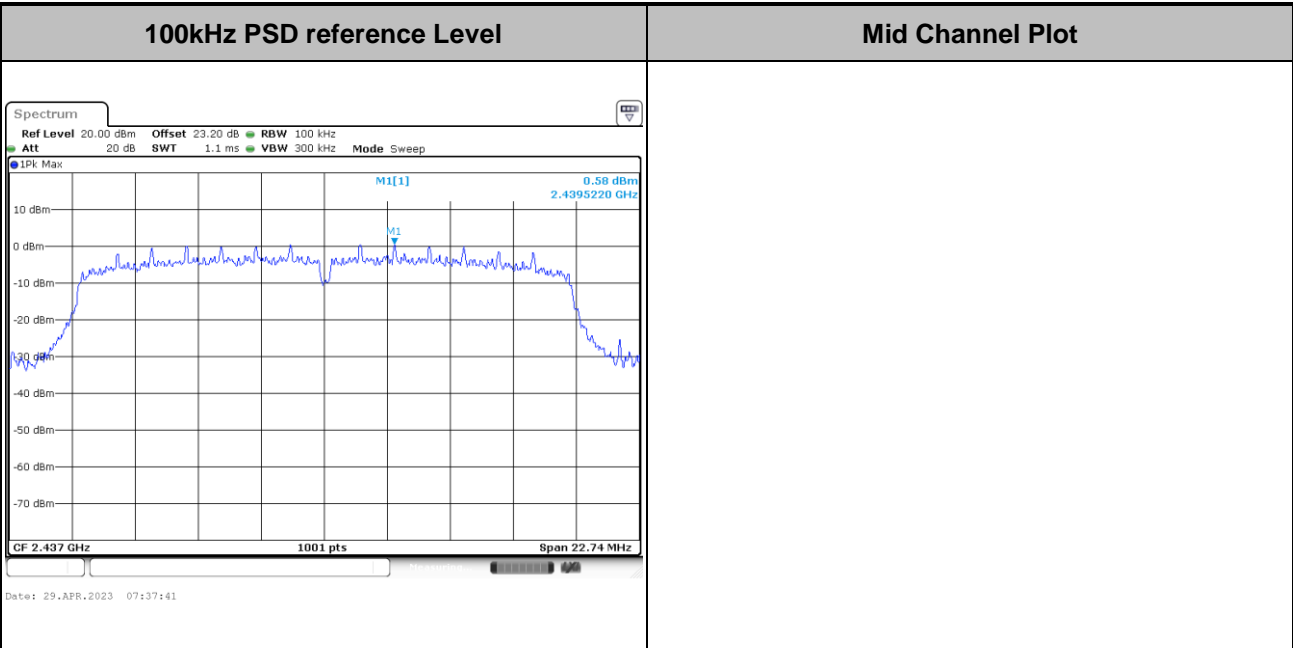


<b>Test Mode :</b>	802.11n HT20	<b>Test Channel :</b>	01
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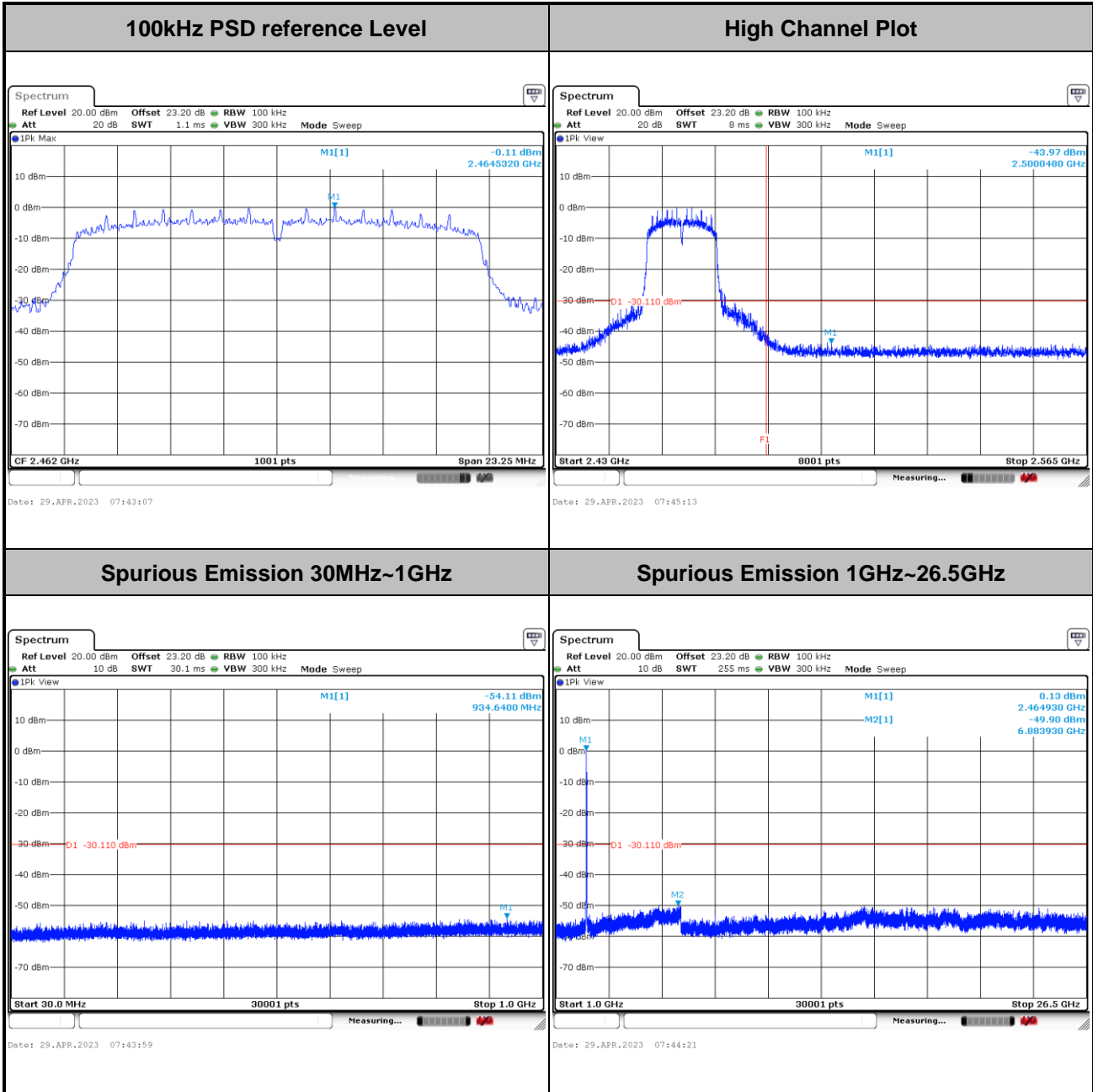


Test Mode :	802.11n HT20	Test Channel :	06
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Test Mode :	802.11n HT20	Test Channel :	11
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## Appendix B. AC Conducted Emission Test Results

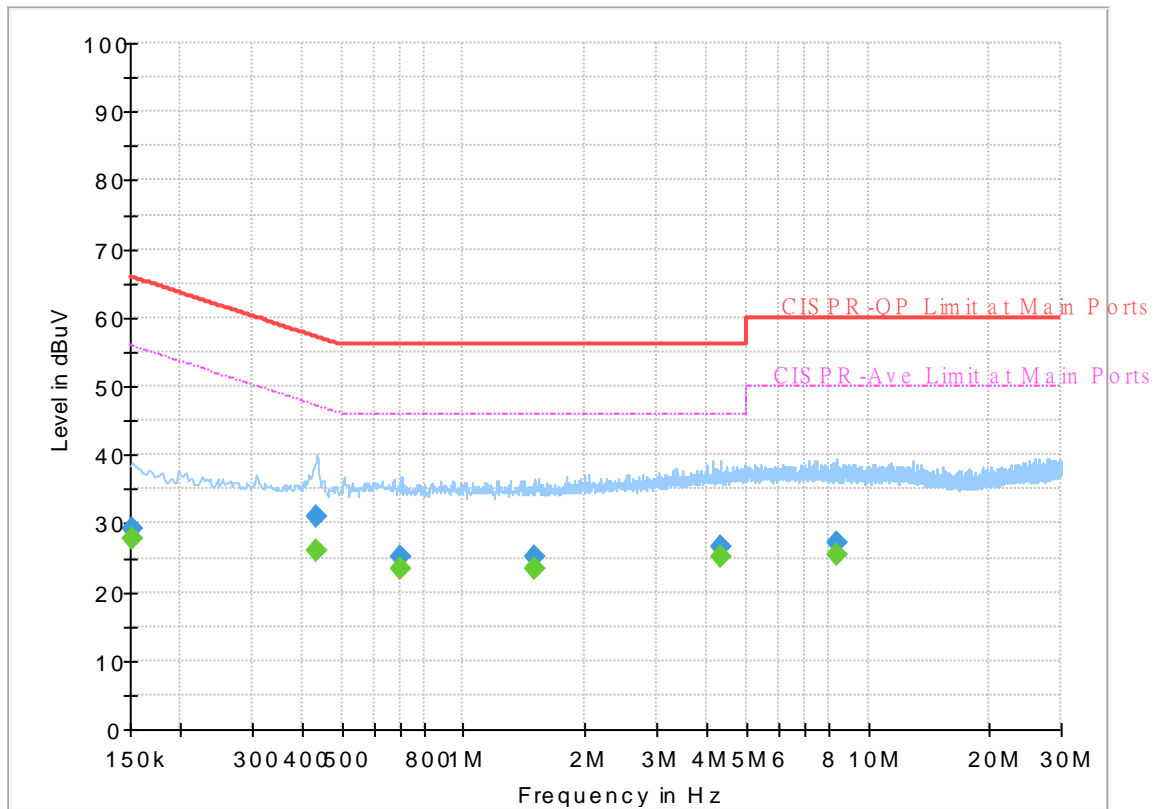
Test Engineer :	Tom Lee	Temperature :	23~26°C
		Relative Humidity :	45~55%



## EUT Information

Report NO : 280405  
 Test Mode : Mode 1  
 Test Voltage : 120Vac/60Hz  
 Phase : Line

Full Spectrum



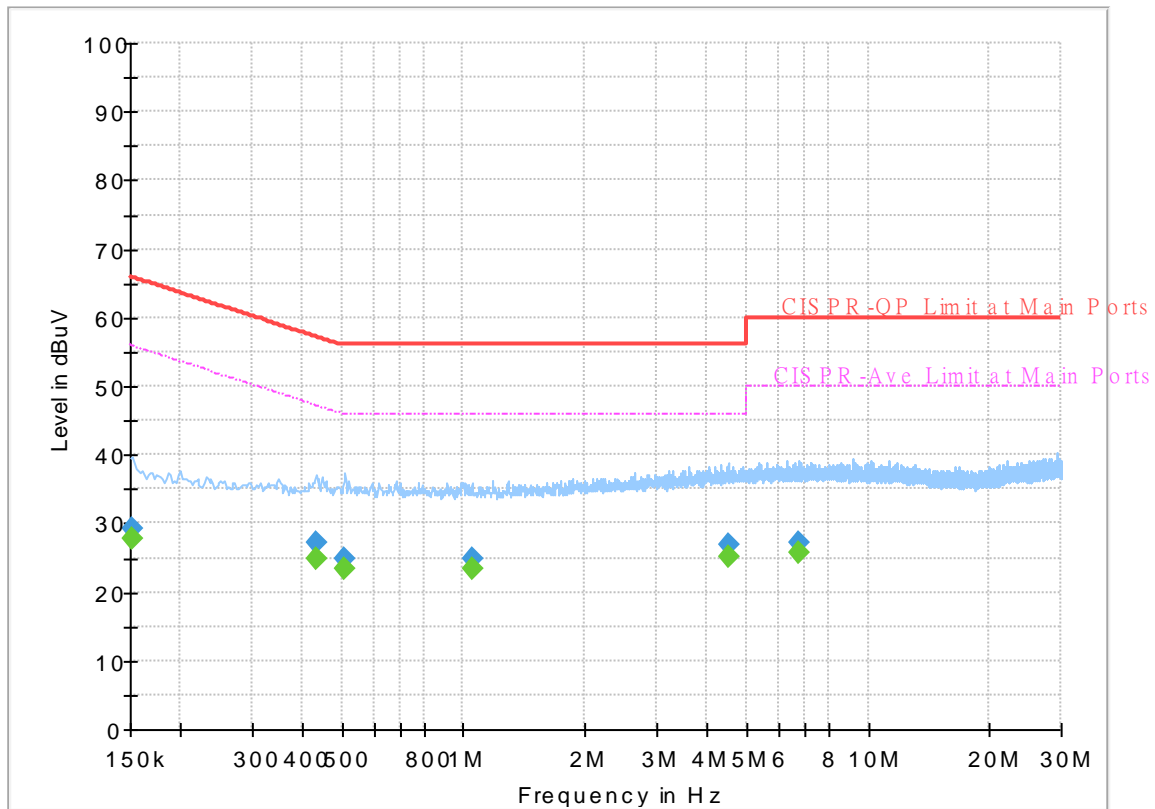
## Final\_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	27.77	55.88	28.11	L1	OFF	19.9
0.152250	29.12	---	65.88	36.76	L1	OFF	19.9
0.433500	---	26.10	47.19	21.09	L1	OFF	19.9
0.433500	31.06	---	57.19	26.13	L1	OFF	19.9
0.701250	---	23.39	46.00	22.61	L1	OFF	19.9
0.701250	25.15	---	56.00	30.85	L1	OFF	19.9
1.504500	---	23.40	46.00	22.60	L1	OFF	19.9
1.504500	25.03	---	56.00	30.97	L1	OFF	19.9
4.341750	---	25.20	46.00	20.80	L1	OFF	20.0
4.341750	26.74	---	56.00	29.26	L1	OFF	20.0
8.362500	---	25.47	50.00	24.53	L1	OFF	20.2
8.362500	27.18	---	60.00	32.82	L1	OFF	20.2

## EUT Information

Report NO : 280405  
 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)
0.152250	---	27.81	55.88	28.07	N	OFF	19.9
0.152250	29.11	---	65.88	36.77	N	OFF	19.9
0.433500	---	24.98	47.19	22.21	N	OFF	19.9
0.433500	27.26	---	57.19	29.93	N	OFF	19.9
0.510000	---	23.31	46.00	22.69	N	OFF	19.9
0.510000	24.99	---	56.00	31.01	N	OFF	19.9
1.050000	---	23.25	46.00	22.75	N	OFF	19.9
1.050000	24.99	---	56.00	31.01	N	OFF	19.9
4.501500	---	25.19	46.00	20.81	N	OFF	20.0
4.501500	26.80	---	56.00	29.20	N	OFF	20.0
6.771750	---	25.62	50.00	24.38	N	OFF	20.1
6.771750	27.10	---	60.00	32.90	N	OFF	20.1



### Appendix C. Radiated Spurious Emission

Test Engineer :	Daniel Lee, Quentin Liu and Bigshow Wang	Temperature :	21~26°C
		Relative Humidity :	45~60%

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		2386.372	52.39	-21.61	74	45.84	27.29	16.03	36.77	252	1	P	H	
		2386.006	44.38	-9.62	54	37.84	27.29	16.02	36.77	252	1	A	H	
	*	2412	102.59	-	-	95.82	27.47	16.07	36.77	252	1	P	H	
	*	2412	95.09	-	-	88.32	27.47	16.07	36.77	252	1	A	H	
													H	
														H
			2384.908	51.51	-22.49	74	44.98	27.28	16.02	36.77	100	284	P	V
			2386.86	43.14	-10.86	54	36.59	27.29	16.03	36.77	100	284	A	V
	*		2412	97.76	-	-	90.99	27.47	16.07	36.77	100	284	P	V
	*		2412	92.23	-	-	85.46	27.47	16.07	36.77	100	284	A	V
														V
														V
802.11b CH 06 2437MHz		2356.011	52.15	-21.85	74	45.91	27.05	15.97	36.78	109	1	P	H	
		2356.305	44.44	-9.56	54	38.2	27.05	15.97	36.78	109	1	A	H	
	*	2437	102.5	-	-	95.54	27.62	16.11	36.77	109	1	P	H	
	*	2437	96.91	-	-	89.95	27.62	16.11	36.77	109	1	A	H	
			2485.143	51.65	-22.35	74	44.4	27.84	16.18	36.77	109	1	P	H
			2495.684	42.18	-11.82	54	34.87	27.88	16.2	36.77	109	1	A	H
			2387.028	50.27	-23.73	74	43.71	27.3	16.03	36.77	395	259	P	V
			2383.206	41.21	-12.79	54	34.69	27.27	16.02	36.77	395	259	A	V
	*		2437	100.94	-	-	93.98	27.62	16.11	36.77	395	259	P	V
	*		2437	92.91	-	-	85.95	27.62	16.11	36.77	395	259	A	V
			2489.044	51.37	-22.63	74	44.09	27.86	16.19	36.77	395	259	P	V
			2486.056	41.93	-12.07	54	34.68	27.84	16.18	36.77	395	259	A	V



<b>802.11b CH 11 2462MHz</b>	*	2462	105.59	-	-	98.46	27.75	16.15	36.77	100	4	P	H
	*	2462	97.2	-	-	90.07	27.75	16.15	36.77	100	4	A	H
		2487.53	52.53	-21.47	74	45.26	27.85	16.19	36.77	100	4	P	H
		2486.892	44.06	-9.94	54	36.8	27.85	16.18	36.77	100	4	A	H
													H
													H
	*	2462	95.16	-	-	88.03	27.75	16.15	36.77	100	275	P	V
	*	2462	86.98	-	-	79.85	27.75	16.15	36.77	100	275	A	V
		2491.126	51.66	-22.34	74	44.38	27.86	16.19	36.77	100	275	P	V
		2493.562	42.26	-11.74	54	34.96	27.87	16.2	36.77	100	275	A	V
													V
													V
<b>Remark</b>	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	48.14	-25.86	74	64.25	32.44	9.41	57.96	148	99	P	H	
		4824	46.37	-7.63	54	62.48	32.44	9.41	57.96	148	99	A	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			4824	51.86	-22.14	74	67.97	32.44	9.41	57.96	100	93	P	V
			4824	47.85	-6.15	54	63.96	32.44	9.41	57.96	100	93	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 )	
802.11b CH 11 2462MHz		4924	49.37	-24.63	74	65.3	32.72	9.38	58.03	143	97	P	H	
		4924	44.39	-9.61	54	60.32	32.72	9.38	58.03	143	97	A	H	
		7380	42.55	-31.45	74	53.85	36.5	10.92	58.72	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			4924	52.15	-21.85	74	68.06	32.74	9.38	58.03	100	97	P	V
			4924	45.97	-8.03	54	61.88	32.74	9.38	58.03	100	97	A	V
			7386	41.51	-32.49	74	52.82	36.5	10.91	58.72	-	-	P	V
														V
														V
														V
														V
														V
														V
													V	
<b>Remark</b>	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> <li>The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.</li> </ol>													



**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		2388.324	62.74	-11.26	74	56.17	27.31	16.03	36.77	253	2	P	H	
		2389.666	51.47	-2.53	54	44.89	27.32	16.03	36.77	253	2	A	H	
	*	2412	100.13	-	-	93.36	27.47	16.07	36.77	253	2	P	H	
	*	2412	92.65	-	-	85.88	27.47	16.07	36.77	253	2	A	H	
													H	
														H
			2389.91	60.69	-13.31	74	54.11	27.32	16.03	36.77	100	287	P	V
			2390	49.71	-4.29	54	43.13	27.32	16.03	36.77	100	287	A	V
	*		2412	97.1	-	-	90.33	27.47	16.07	36.77	100	287	P	V
	*		2412	89.8	-	-	83.03	27.47	16.07	36.77	100	287	A	V
														V
														V
802.11g CH 06 2437MHz		2358.069	52.01	-21.99	74	45.76	27.06	15.97	36.78	108	1	P	H	
		2352.777	42.88	-11.12	54	36.68	27.02	15.96	36.78	108	1	A	H	
	*	2437	102.25	-	-	95.29	27.62	16.11	36.77	108	1	P	H	
	*	2437	94.18	-	-	87.22	27.62	16.11	36.77	108	1	A	H	
			2487.467	51	-23	74	43.73	27.85	16.19	36.77	108	1	P	H
			2493.111	42.68	-11.32	54	35.39	27.87	16.19	36.77	108	1	A	H
			2384.676	50.65	-23.35	74	44.12	27.28	16.02	36.77	395	259	P	V
			2384.823	41.33	-12.67	54	34.8	27.28	16.02	36.77	395	259	A	V
	*		2437	97.28	-	-	90.32	27.62	16.11	36.77	395	259	P	V
	*		2437	89.76	-	-	82.8	27.62	16.11	36.77	395	259	A	V
			2488.795	51.08	-22.92	74	43.8	27.86	16.19	36.77	395	259	P	V
			2495.435	41.97	-12.03	54	34.66	27.88	16.2	36.77	395	259	A	V





<b>802.11g CH 11 2462MHz</b>	*	2462	100.65	-	-	93.52	27.75	16.15	36.77	137	7	P	H
	*	2462	92.78	-	-	85.65	27.75	16.15	36.77	137	7	A	H
		2484.108	60.78	-13.22	74	53.53	27.84	16.18	36.77	137	7	P	H
		2483.644	48.24	-5.76	54	41	27.83	16.18	36.77	137	7	A	H
													H
													H
	*	2462	93.89	-	-	86.76	27.75	16.15	36.77	100	287	P	V
	*	2462	85.5	-	-	78.37	27.75	16.15	36.77	100	287	A	V
		2483.586	56.54	-17.46	74	49.3	27.83	16.18	36.77	100	287	P	V
		2483.528	44.28	-9.72	54	37.04	27.83	16.18	36.77	100	287	A	V
													V
													V
<b>Remark</b>	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 06 2437MHz		4874	47.24	-26.76	74	63.23	32.6	9.4	57.99	192	94	P	H	
		7311	42.04	-31.96	74	53.26	36.66	10.85	58.73	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			4874	47.87	-26.13	74	63.86	32.6	9.4	57.99	139	97	P	V
			7311	42.22	-31.78	74	53.44	36.66	10.85	58.73	-	-	P	V
													V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
<b>Remark</b>	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> <li>The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.</li> </ol>													



**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		2390	64.48	-9.52	74	57.9	27.32	16.03	36.77	248	2	P	H	
		2390	53.06	-0.94	54	46.48	27.32	16.03	36.77	248	2	A	H	
	*	2412	100.09	-	-	93.32	27.47	16.07	36.77	248	2	P	H	
	*	2412	92.45	-	-	85.68	27.47	16.07	36.77	248	2	A	H	
													H	
													H	
			2389.422	63.35	-10.65	74	56.77	27.32	16.03	36.77	100	280	P	V
			2390	51.22	-2.78	54	44.64	27.32	16.03	36.77	100	280	A	V
		*	2412	97.12	-	-	90.35	27.47	16.07	36.77	100	280	P	V
		*	2412	89.71	-	-	82.94	27.47	16.07	36.77	100	280	A	V
													V	
													V	
802.11n HT20 CH 06 2437MHz		2379.972	51.41	-22.59	74	44.93	27.24	16.01	36.77	109	1	P	H	
		2360.568	42.83	-11.17	54	36.55	27.08	15.98	36.78	109	1	A	H	
	*	2437	101.64	-	-	94.68	27.62	16.11	36.77	109	1	P	H	
	*	2437	93.67	-	-	86.71	27.62	16.11	36.77	109	1	A	H	
			2485.226	51.12	-22.88	74	43.87	27.84	16.18	36.77	109	1	P	H
			2491.783	42.26	-11.74	54	34.97	27.87	16.19	36.77	109	1	A	H
			2368.506	50.55	-23.45	74	44.19	27.15	15.99	36.78	393	260	P	V
			2389.674	41.08	-12.92	54	34.5	27.32	16.03	36.77	393	260	A	V
		*	2437	97.51	-	-	90.55	27.62	16.11	36.77	393	260	P	V
		*	2437	89.67	-	-	82.71	27.62	16.11	36.77	393	260	A	V
		2484.313	51.35	-22.65	74	44.1	27.84	16.18	36.77	393	260	P	V	
		2488.38	41.97	-12.03	54	34.7	27.85	16.19	36.77	393	260	A	V	



<b>802.11n</b> <b>HT20</b> <b>CH 11</b> <b>2462MHz</b>	*	2462	101.62	-	-	94.49	27.75	16.15	36.77	100	8	P	H
	*	2462	93.93	-	-	86.8	27.75	16.15	36.77	100	8	A	H
		2483.528	65.9	-8.1	74	58.66	27.83	16.18	36.77	100	8	P	H
		2483.934	49.83	-4.17	54	42.58	27.84	16.18	36.77	100	8	A	H
													H
													H
	*	2462	93.31	-	-	86.18	27.75	16.15	36.77	100	286	P	V
	*	2462	85.81	-	-	78.68	27.75	16.15	36.77	100	286	A	V
		2484.456	57.56	-16.44	74	50.31	27.84	16.18	36.77	100	286	P	V
		2483.934	45.14	-8.86	54	37.89	27.84	16.18	36.77	100	286	A	V
													V
													V
<b>Remark</b>	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 06 2437MHz		4874	45.78	-28.22	74	61.77	32.6	9.4	57.99	100	241	P	H	
		7311	42.34	-31.66	74	53.56	36.66	10.85	58.73	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			4874	47.78	-26.22	74	63.77	32.6	9.4	57.99	297	148	P	V
			7311	42.7	-31.3	74	53.92	36.66	10.85	58.73	-	-	P	V
													V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.													



**Emission above 18GHz  
2.4GHz WIFI 802.11n HT20 (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 802.11n HT20 SHF		24192	41.34	-32.66	74	58.78	38.76	-2.55	53.65	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			21510	40.29	-33.71	74	60.21	38.02	-3.14	54.8	-	-	P
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												



Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (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 802.11n HT20 LF		30	28.69	-11.31	40	36.03	24.41	0.64	32.39	-	-	P	H	
		111.54	27.02	-16.48	43.5	41.05	17.13	1.28	32.44	-	-	P	H	
		208.02	40.32	-3.18	43.5	55.73	15.15	1.82	32.38	-	-	P	H	
		212	39.47	-4.03	43.5	54.99	15.04	1.83	32.39	-	-	P	H	
		332.8	31.22	-14.78	46	41.52	19.89	2.18	32.37	-	-	P	H	
		947.2	33.33	-12.67	46	30.18	30.38	3.81	31.04	-	-	P	H	
														H
														H
														H
														H
														H
														H
			30	36.86	-3.14	40	44.2	24.41	0.64	32.39	-	-	P	V
			50.16	32.63	-7.37	40	49.83	14.36	0.9	32.46	-	-	P	V
			66	28.09	-11.91	40	47.49	12.02	1	32.42	-	-	P	V
			97.32	30.2	-13.3	43.5	45.79	15.6	1.23	32.42	-	-	P	V
			198.12	34.22	-9.28	43.5	49.83	14.98	1.79	32.38	-	-	P	V
		202.4	33.9	-9.6	43.5	49.39	15.09	1.8	32.38	-	-	P	V	
													V	
													V	
													V	
													V	
													V	
													V	
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.													



**Note symbol**

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





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													
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 :	Daniel Lee, Quentin Liu and Bigshow Wang	Temperature :	21~26°C
		Relative Humidity :	45~60%

### Note symbol

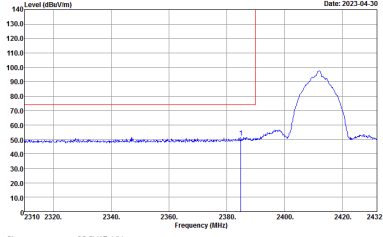
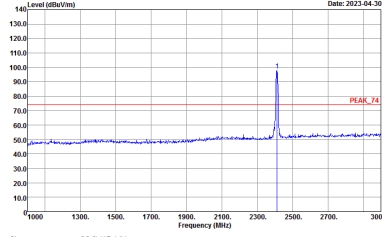
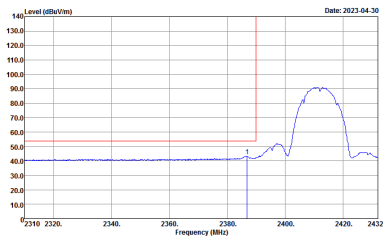
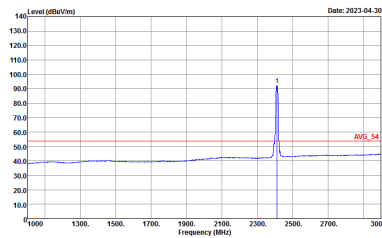
-L	Low channel location
-R	High channel location



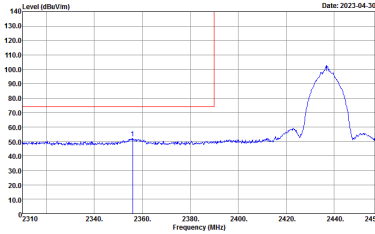
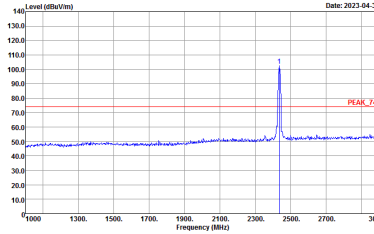
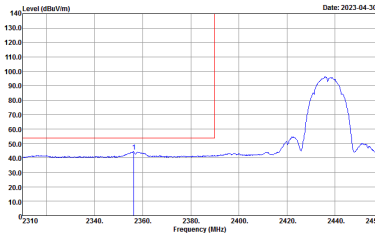
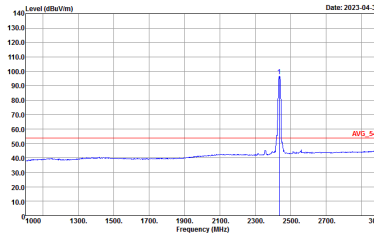
2.4GHz 2400~2483.5MHz
WIFI 802.11b (Band Edge @ 3m)

Table with 2 columns (WIFI, ANT) and 2 rows (Peak, Avg.). Each cell contains a spectral plot (Horizontal and Fundamental) with technical details like Site, Condition, and measurement parameters.

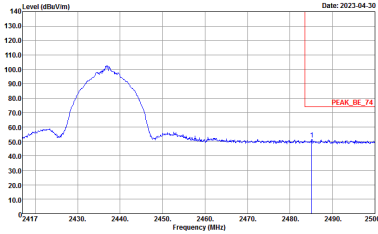
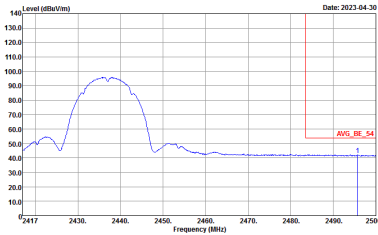


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>

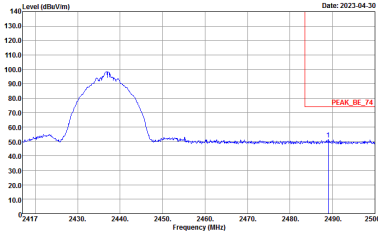
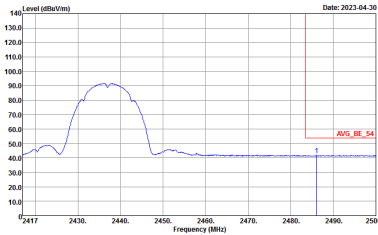


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	Left blank
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWF:Auto</p>	Left blank



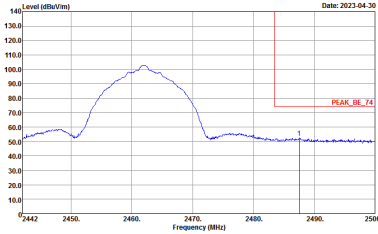
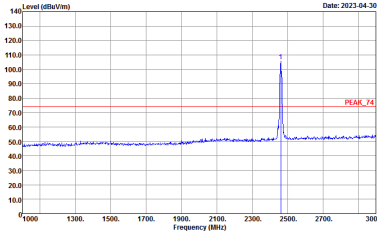
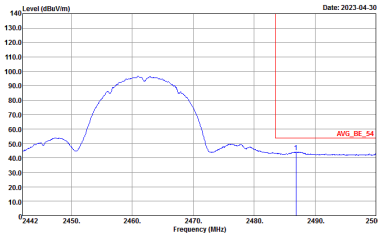
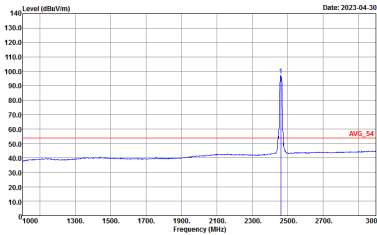
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	Left blank





WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 <p>Level (dBm/Vm) vs Frequency (MHz) plot for Peak Horizontal. The plot shows a broad peak centered around 2462 MHz. A red vertical line marks the peak at approximately 2483.5 MHz, labeled 'PEAK_BE_74'. The y-axis ranges from 10.0 to 140.0 dBm/Vm, and the x-axis ranges from 2442 to 2500 MHz.</p> <p>Site : 03CH15-HY            Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Level (dBm/Vm) vs Frequency (MHz) plot for Peak Fundamental. The plot shows a sharp peak at 2462 MHz. A red vertical line marks the peak, labeled 'PEAK_74'. The y-axis ranges from 10.0 to 140.0 dBm/Vm, and the x-axis ranges from 1900 to 3000 MHz.</p> <p>Site : 03CH15-HY            Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Level (dBm/Vm) vs Frequency (MHz) plot for Avg Horizontal. The plot shows a broad peak centered around 2462 MHz. A red vertical line marks the average level at approximately 2483.5 MHz, labeled 'AVG_BE_54'. The y-axis ranges from 10.0 to 140.0 dBm/Vm, and the x-axis ranges from 2442 to 2500 MHz.</p> <p>Site : 03CH15-HY            Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Level (dBm/Vm) vs Frequency (MHz) plot for Avg Fundamental. The plot shows a sharp peak at 2462 MHz. A red vertical line marks the average level, labeled 'AVG_54'. The y-axis ranges from 10.0 to 140.0 dBm/Vm, and the x-axis ranges from 1900 to 3000 MHz.</p> <p>Site : 03CH15-HY            Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>



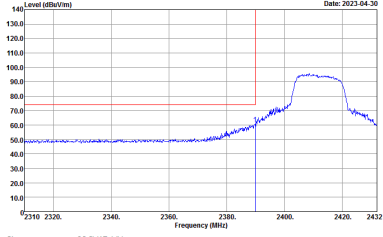
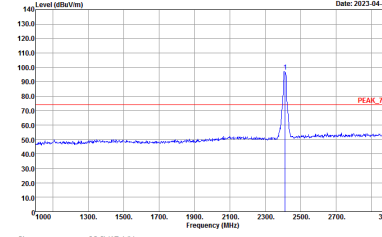
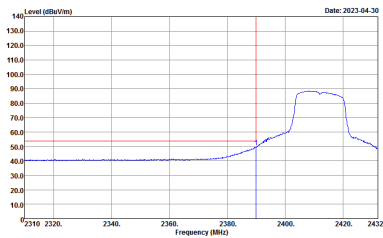
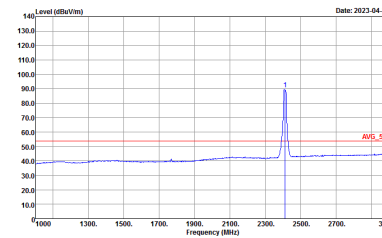
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>



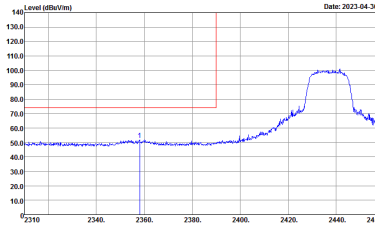
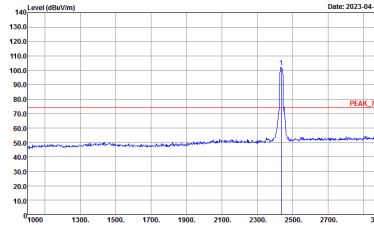
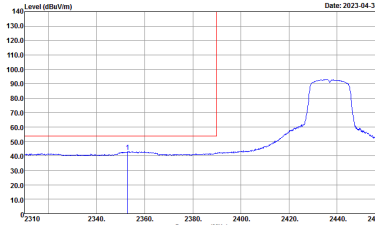
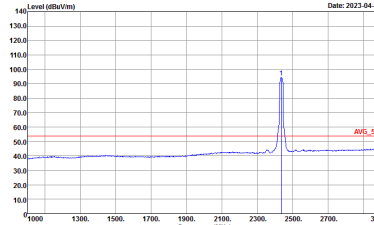
2.4GHz 2400~2483.5MHz  
 WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY          Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY          Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH15-HY          Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL          : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY          Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL          : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>

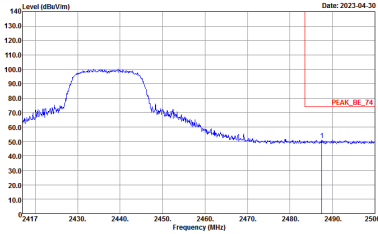
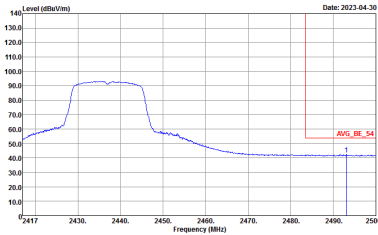


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>

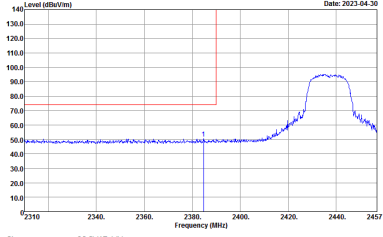
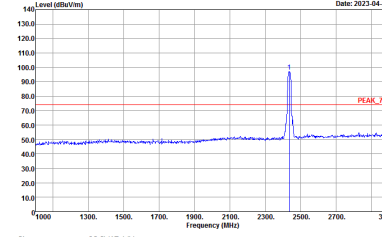
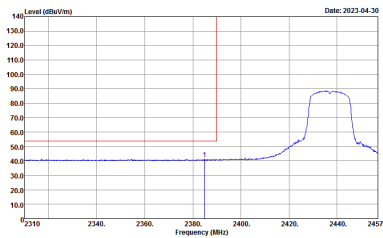
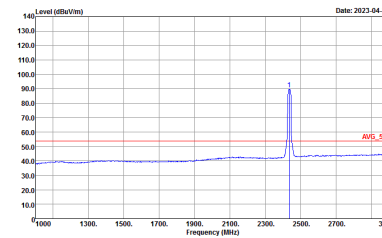


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Level (dBm/100kHz) vs Frequency (MHz) plot showing a peak at approximately 2437 MHz. The y-axis ranges from 10.0 to 140.0 dBm/100kHz, and the x-axis ranges from 2310 to 2457 MHz. A red horizontal line is drawn at approximately 75 dBm/100kHz, and a red vertical line marks the peak frequency.</p> <p>Site : 03CH15-HY            Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Level (dBm/100kHz) vs Frequency (MHz) plot showing a sharp peak at approximately 2437 MHz. The y-axis ranges from 10.0 to 140.0 dBm/100kHz, and the x-axis ranges from 1000 to 3000 MHz. A red horizontal line is drawn at approximately 75 dBm/100kHz, and a red vertical line marks the peak frequency.</p> <p>Site : 03CH15-HY            Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Level (dBm/100kHz) vs Frequency (MHz) plot showing a peak at approximately 2437 MHz. The y-axis ranges from 10.0 to 140.0 dBm/100kHz, and the x-axis ranges from 2310 to 2457 MHz. A red horizontal line is drawn at approximately 54 dBm/100kHz, and a red vertical line marks the peak frequency.</p> <p>Site : 03CH15-HY            Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Level (dBm/100kHz) vs Frequency (MHz) plot showing a sharp peak at approximately 2437 MHz. The y-axis ranges from 10.0 to 140.0 dBm/100kHz, and the x-axis ranges from 1000 to 3000 MHz. A red horizontal line is drawn at approximately 54 dBm/100kHz, and a red vertical line marks the peak frequency.</p> <p>Site : 03CH15-HY            Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>

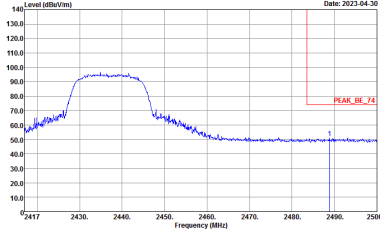
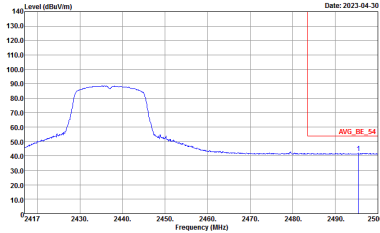


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWF:Auto</p>	Left blank
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWF:Auto</p>	Left blank



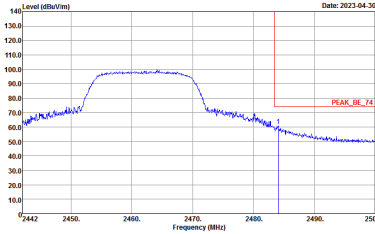
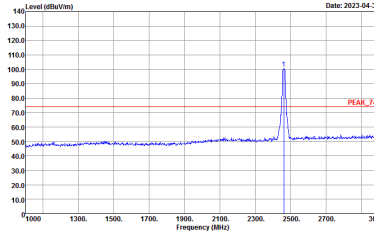
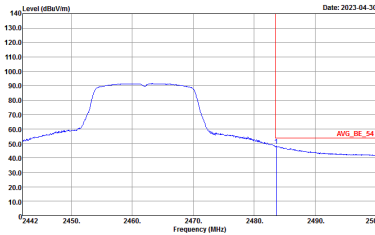
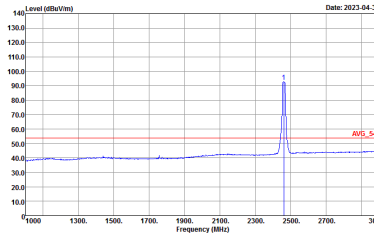
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	Left Blank
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWF:Auto</p>	Left Blank





WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 <p>Level (dBV/m) vs Frequency (MHz) plot for Peak Horizontal. The plot shows a signal level rising from approximately 60 dBV/m at 2442 MHz to a peak of about 100 dBV/m between 2460 MHz and 2475 MHz, then falling back to about 60 dBV/m by 2480 MHz. A red vertical line marks the peak at approximately 2483.5 MHz, labeled 'PEAK_BE_74'.</p> <p>Site : 03CH15-HY            Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Level (dBV/m) vs Frequency (MHz) plot for Peak Fundamental. The plot shows a flat baseline at approximately 50 dBV/m from 1000 MHz to 2400 MHz, followed by a sharp peak at 2462 MHz reaching about 100 dBV/m, and then returning to the baseline. A red vertical line marks the peak at 2462 MHz, labeled 'PEAK_74'.</p> <p>Site : 03CH15-HY            Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Level (dBV/m) vs Frequency (MHz) plot for Avg Horizontal. The plot shows a smoothed signal level rising from approximately 60 dBV/m at 2442 MHz to a peak of about 90 dBV/m between 2460 MHz and 2475 MHz, then falling back to about 60 dBV/m by 2480 MHz. A red vertical line marks the peak at approximately 2483.5 MHz, labeled 'AVG_BE_54'.</p> <p>Site : 03CH15-HY            Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Level (dBV/m) vs Frequency (MHz) plot for Avg Fundamental. The plot shows a smoothed signal level rising from approximately 50 dBV/m at 2400 MHz to a peak at 2462 MHz reaching about 90 dBV/m, and then returning to the baseline. A red vertical line marks the peak at 2462 MHz, labeled 'AVG_54'.</p> <p>Site : 03CH15-HY            Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>



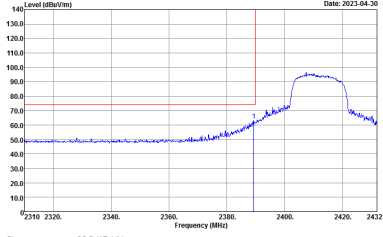
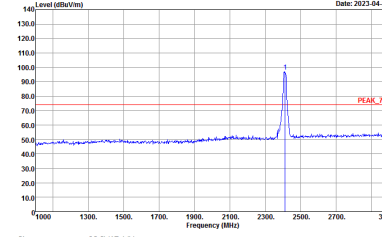
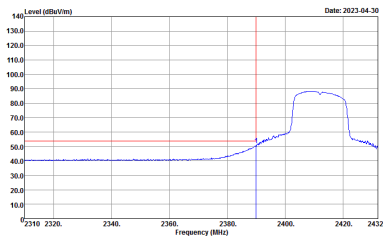
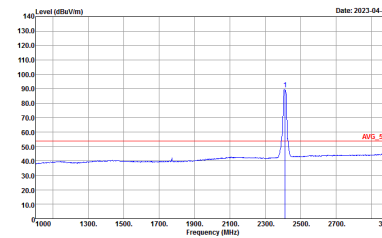
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>



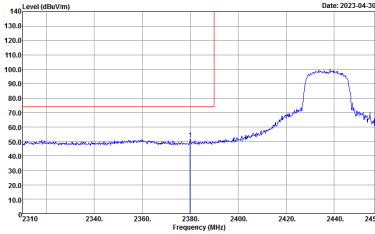
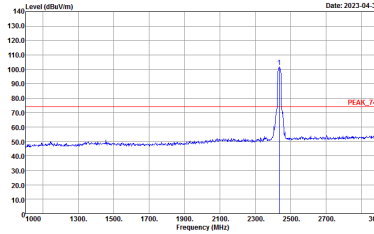
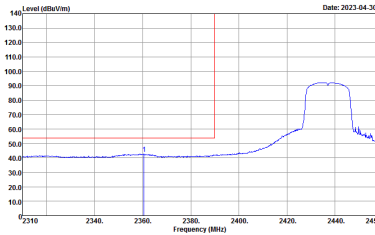
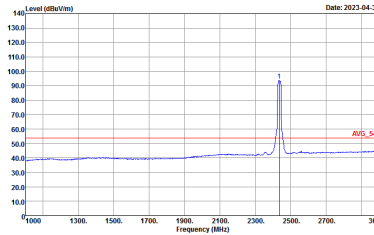
**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Fundamental
<b>Peak</b>	<p>Site : 03CH15-HY            Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY            Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
<b>Avg.</b>	<p>Site : 03CH15-HY            Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY            Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL            : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>

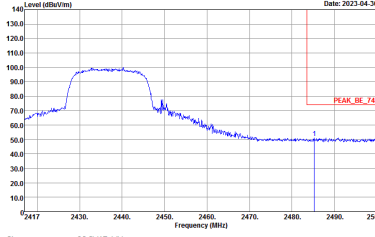
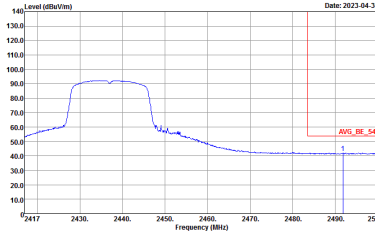


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz 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 : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>

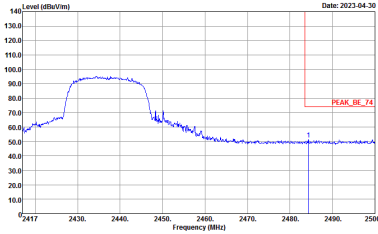
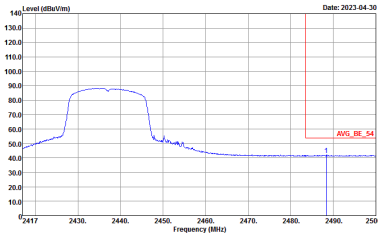


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWF:Auto</p>	Left blank
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWF:Auto</p>	Left blank



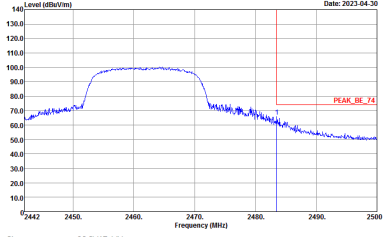
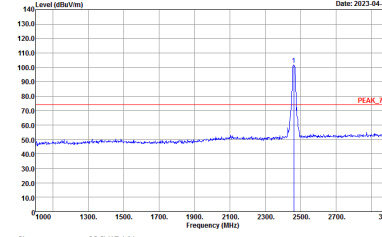
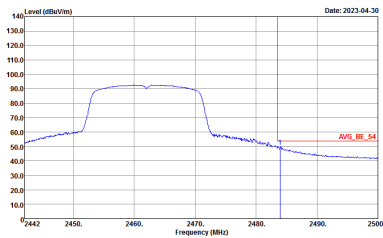
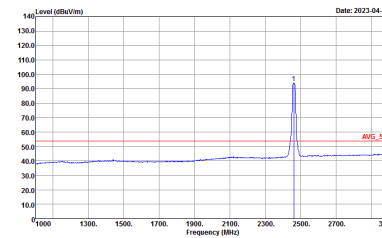
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY            Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY            Condition : PEAK_74 3m 91200_02294_220623 VERTICAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH15-HY            Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL            : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY            Condition : AVG_54 3m 91200_02294_220623 VERTICAL            : RBW:1000.000KHz VBW:3.000KHz 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 : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left Blank
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz 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 : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>



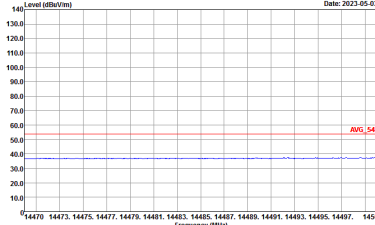
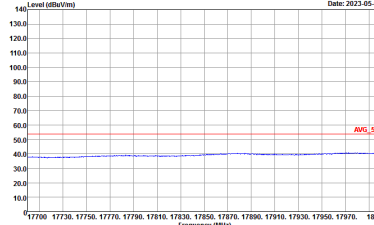
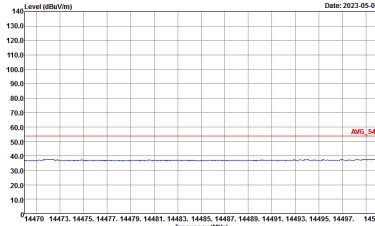
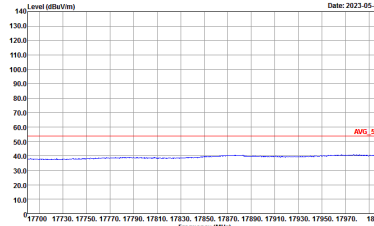
WIFI	2.4GHz 2400~2483.5MHz Fundamental @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 VERTICAL : RBW:1000.000KHz VBW:3.000KHz 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 : 03CH15-HY            Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL</p>	<p>Site : 03CH15-HY            Condition : PEAK_74 3m 91200_02294_220623 VERTICAL</p>

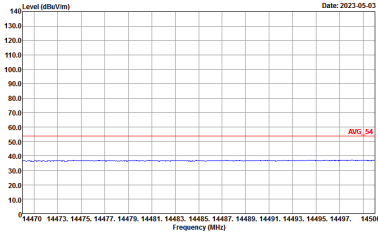
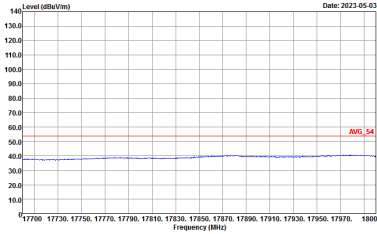
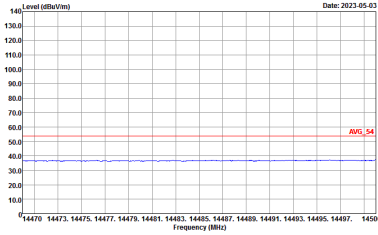
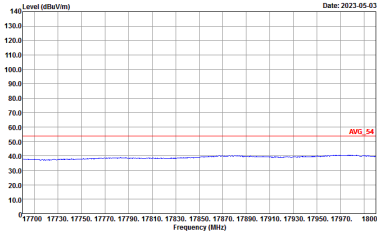


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
<p><b>14.47G</b> <b>~14.5G</b> <b>Avg.</b></p>	 <p>Date: 2023-05-03</p> <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL</p>	 <p>Date: 2023-05-03</p> <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL</p>
<p><b>17.7G</b> <b>~18G</b> <b>Avg.</b></p>	 <p>Date: 2023-05-03</p> <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_02294_220623 VERTICAL</p>	 <p>Date: 2023-05-03</p> <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_02294_220623 VERTICAL</p>

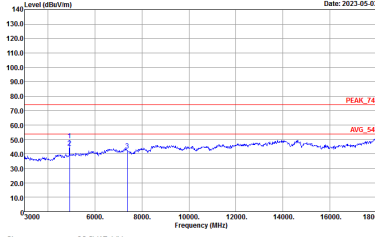
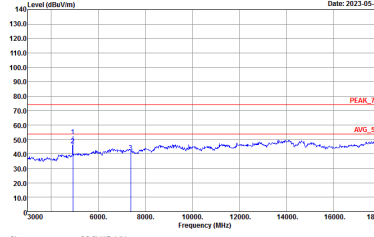


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 VERTICAL</p>

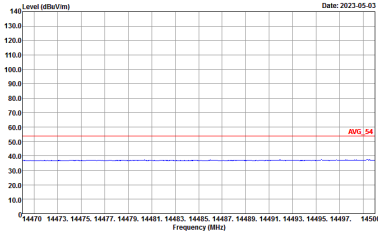
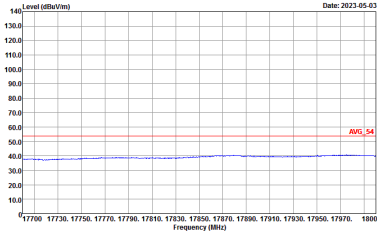
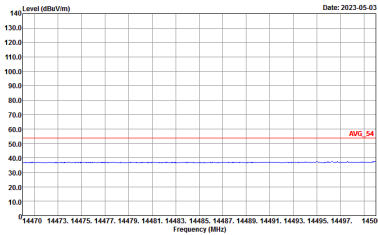
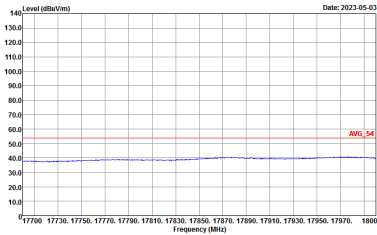


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
<p><b>14.47G</b> <b>~14.5G</b> <b>Avg.</b></p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL</p>
<p><b>17.7G</b> <b>~18G</b> <b>Avg.</b></p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_02294_220623 VERTICAL</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_02294_220623 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_02294_220623 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
<p><b>14.47G</b> <b>~14.5G</b> <b>Avg.</b></p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL</p>
<p><b>17.7G</b> <b>~18G</b> <b>Avg.</b></p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_02294_220623 VERTICAL</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_02294_220623 VERTICAL</p>

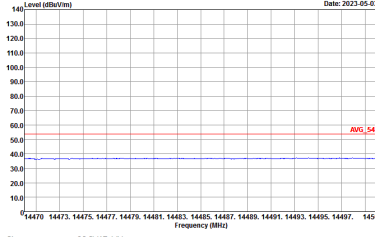
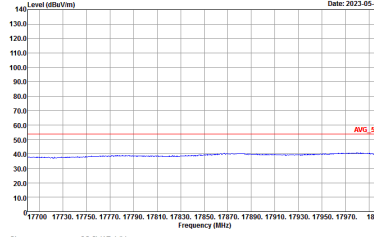
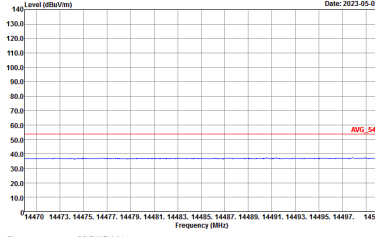
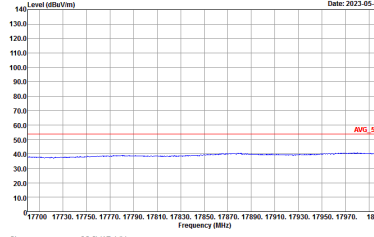




2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

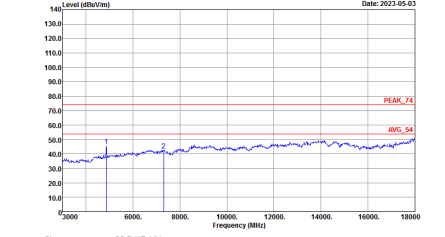
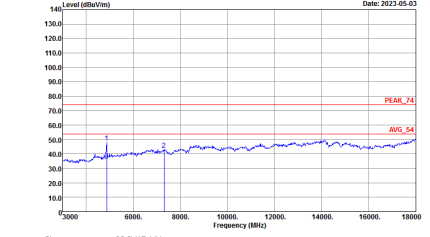
Table with 3 columns: WIFI, ANT, and measurement results for Horizontal and Vertical orientations. Includes sub-headers for Peak and Avg. and two line graphs showing Level (dBuV/m) vs Frequency (MHz).



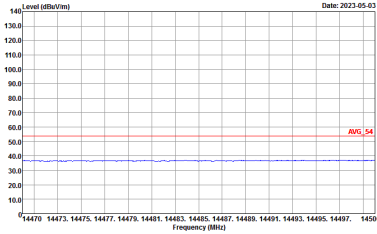
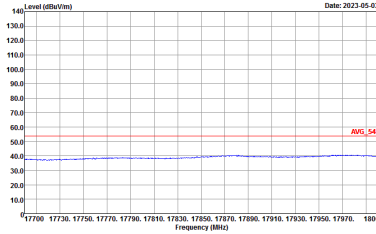
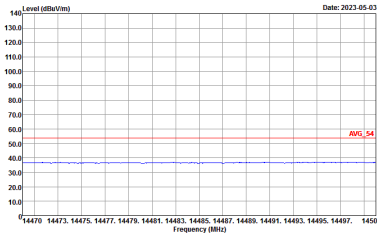
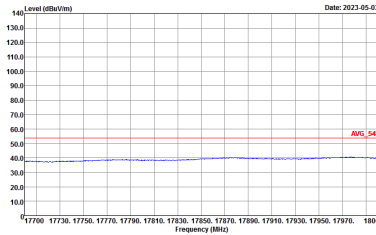
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
<p><b>14.47G</b> <b>~14.5G</b> <b>Avg.</b></p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL</p>
<p><b>17.7G</b> <b>~18G</b> <b>Avg.</b></p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_02294_220623 VERTICAL</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_02294_220623 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 CH06 2437MHz	
1	Horizontal	Vertical
<p><b>Peak</b></p> <p><b>Avg.</b></p>	 <p>Site : 03CH15-HY            Condition : PEAK_74 3m 91200_02294_220623 HORIZONTAL</p>	 <p>Site : 03CH15-HY            Condition : PEAK_74 3m 91200_02294_220623 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
<p>14.47G ~14.5G Avg.</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_02294_220623 HORIZONTAL</p>
<p>17.7G ~18G Avg.</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_02294_220623 VERTICAL</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_02294_220623 VERTICAL</p>



Emission above 18GHz  
2.4GHz WIFI 802.11n HT20 (SHF @ 1m)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 SHF	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH11-HY Condition : PEAK_74 1m SHF_00991_220514 HORIZONTAL</p>	<p>Site : 03CH11-HY Condition : PEAK_74 1m SHF_00991_220514 VERTICAL</p>



Emission below 1GHz  
2.4GHz WIFI 802.11n HT20 (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 LF	
1	Horizontal	Vertical
QP / Peak	<p>Site : 03CH15-HY Condition : QP-3m 1581LOG_230318_16 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : QP-3m 1581LOG_230318_16 VERTICAL</p>



## Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
802.11b	96.90	625	1.60	3kHz
802.11g	95.86	695	1.44	3kHz
2.4GHz 802.11n HT20	96.35	660	3kHz	

