



# FCC RADIO TEST REPORT

**FCC ID** : B32P630  
**Equipment** : Point of Sales Terminal  
**Brand Name** : Verifone  
**Model Name** : P630  
**Applicant** : Verifone, Inc.  
1400 West Stanford Ranch Road,  
Suite 200, Rocklin CA 95765 USA  
**Manufacturer** : Verifone, Inc.  
**Standard** : FCC Part 15 Subpart C §15.247

The product was received on May 18, 2021 and testing was started from Jun. 01, 2021 and completed on Jul. 07, 2021. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Approved by: Louis Wu

**Sporton International Inc. EMC & Wireless Communications Laboratory**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



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### History of this test report

Report No.	Version	Description	Issued Date
FR002036-01C	01	Initial issue of report	Jul. 16, 2021



## 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	Under limit 2.22 dB at 2483.760 MHz
3.6	15.207	AC Conducted Emission	Pass	Under limit 12.16 dB at 0.501 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	Pass	-

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

**Reviewed by: Yun Huang**

**Report Producer: Celery Wei**



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Antenna Type	WLAN: FPC Antenna Bluetooth: FPC Antenna NFC: Loop Antenna

Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	0.73

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

## 1.2 Modification of EUT

No modifications are made to the EUT during all test items.



### 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> TH02-HY, CO05-HY

**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> 03CH15-HY (TAF Code: .3786)
<b>Remark:</b>	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory

**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 of 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 DTS Meas. Guidance v05r02
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ ANSI C63.10-2013

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
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). 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 find X plane as worst plane.
  
- 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

Final test modes are considering the modulation and worse data rates as below table.

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

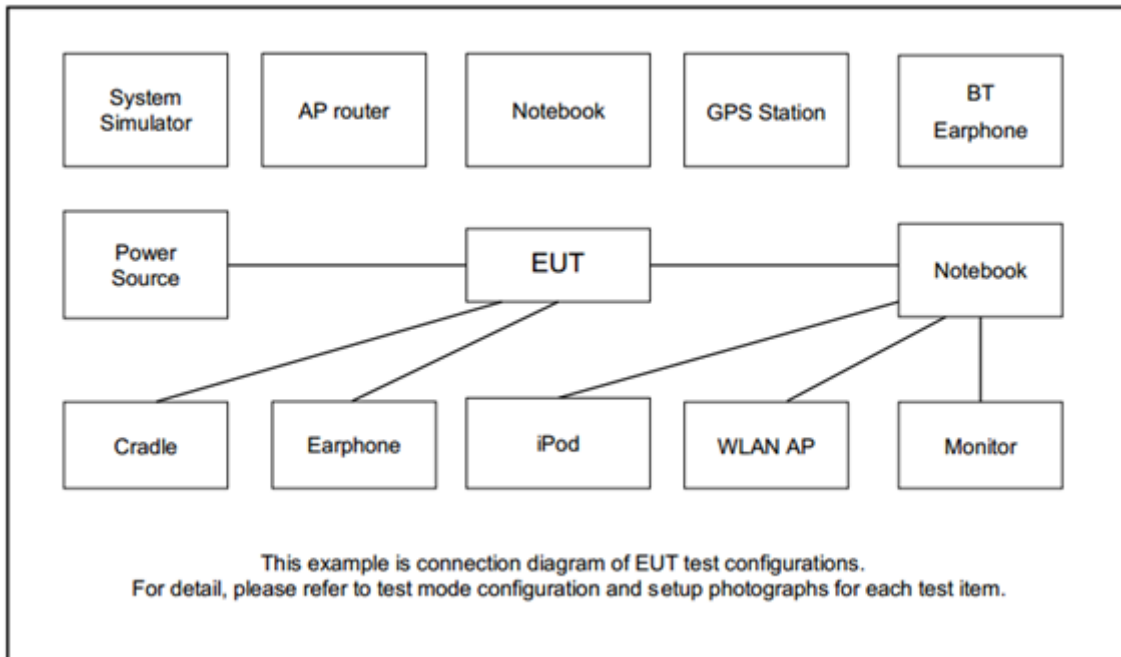
Test Cases	
AC Conducted Emission	Mode 1: WLAN (2.4GHz) Link + Bluetooth Link + MPEG4 + TC 1 + Adapter
<b>Remark:</b> TC 1 stands for test configuration, and consists of *EUT*: TF Card, SAM-1 Card and SAM-2 Card Link. *Dongle 1*: RJ45 (Load), USB 2.0 (Load), Mini USB (Load) and RS232 (Load).	

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 final modulation and the worst data rate was reference the max RF conducted power.



### 2.3 Connection Diagram of Test System



### 2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	SAM Card	N/A	N/A	N/A	N/A	N/A
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
6.	RJ45 Cable	N/A	N/A	N/A	Unshielded, 1.2m	N/A
7.	USB Cable	N/A	N/A	N/A	Unshielded, 1.0m	N/A
8.	Mini USB Cable	N/A	N/A	N/A	Unshielded, 1.0m	N/A
9.	RS232 Cable	N/A	N/A	N/A	Unshielded, 1.2m	N/A



## 2.5 EUT Operation Test Setup

The RF test items, utility “QRCT 3.0.246.0” 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

See list of measuring equipment of 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 was connected to the spectrum analyzer by RF cable and attenuator. The path loss was 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.

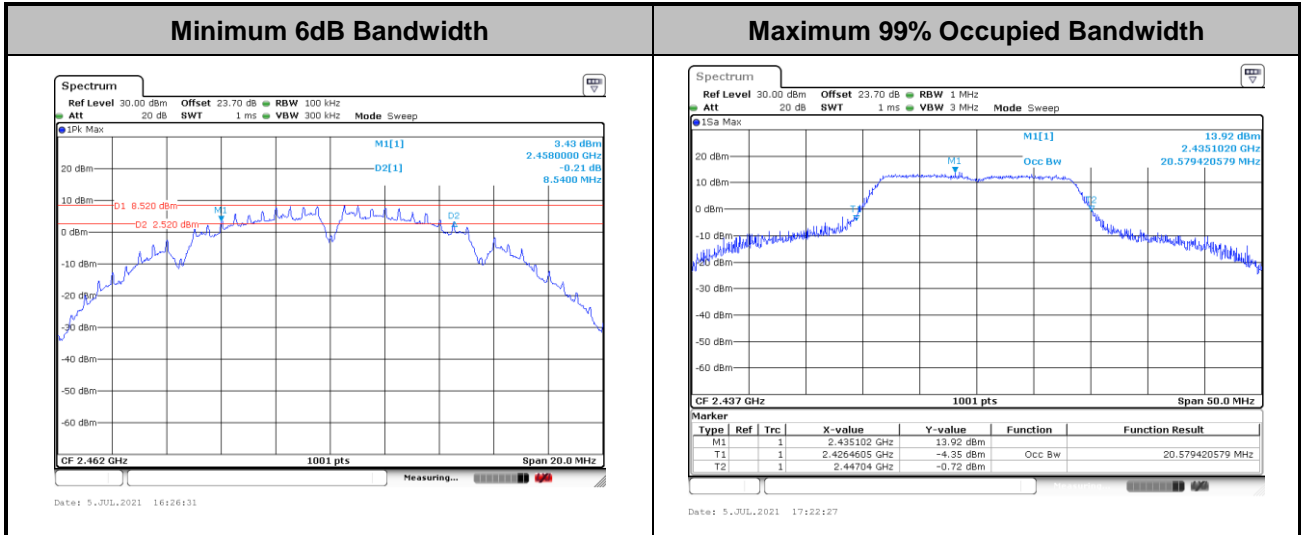
##### 3.1.4 Test Setup





### 3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A.



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

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

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

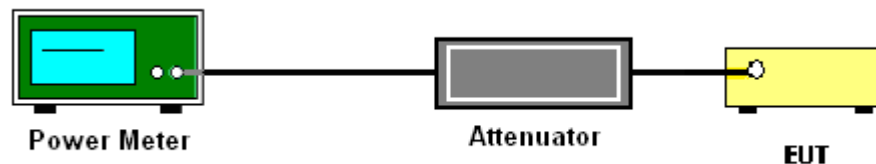
### 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.2.3 Test Procedures

1. For Peak Power, the testing follows ANSI C63.10 Section 11.9.1.3 PKPM1
2. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
3. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. Set the maximum power setting and enable the EUT to transmit continuously.
5. Measure the conducted output power and record the results in the test report.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Peak Output Power

Please refer to Appendix A.

### 3.2.6 Test Result of Average Output Power (Reporting Only)

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.

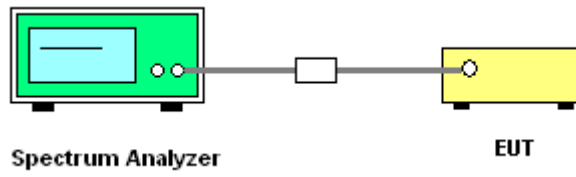
#### **3.3.2 Measuring Instruments**

See list of measuring equipment of this test report.

#### **3.3.3 Test Procedures**

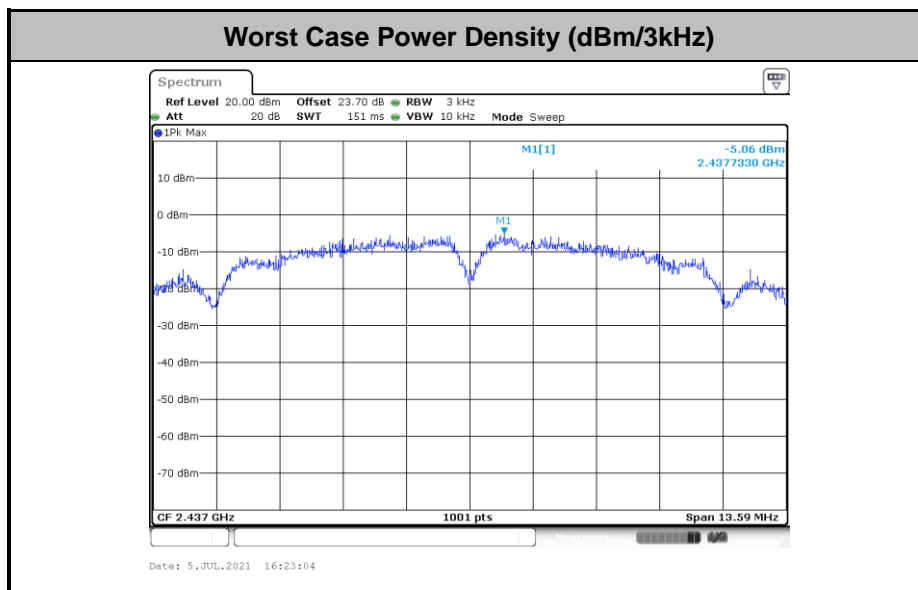
1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
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.

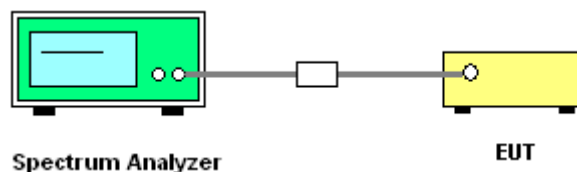
### 3.4.2 Measuring Instruments

See list of measuring equipment of 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 was connected to the spectrum analyzer by RF cable and attenuator. The path loss was 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





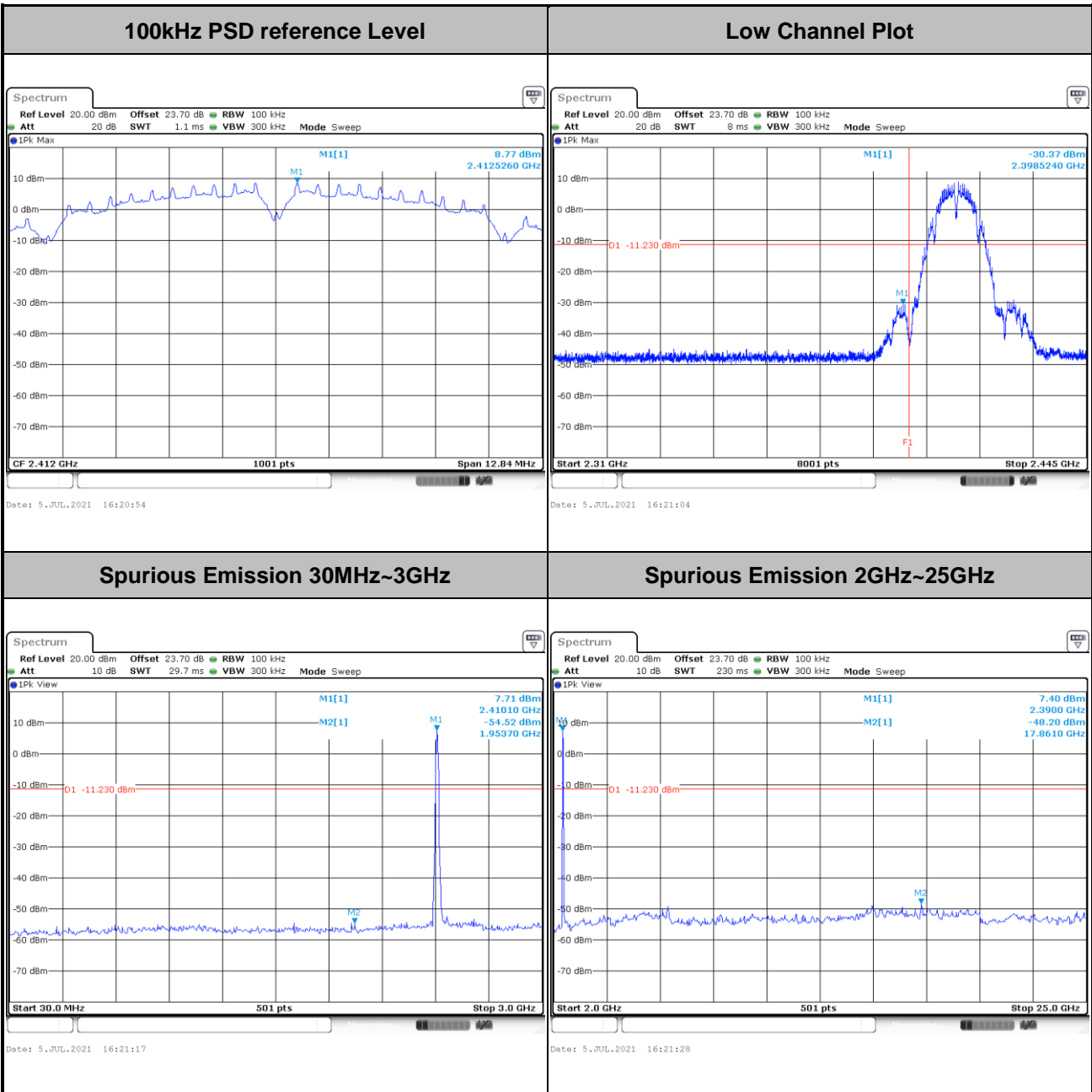


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Engineer :	Ching Chen and Junyu Jhou	Temperature :	24.2~25.2°C
		Relative Humidity :	52.9~54.5%

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

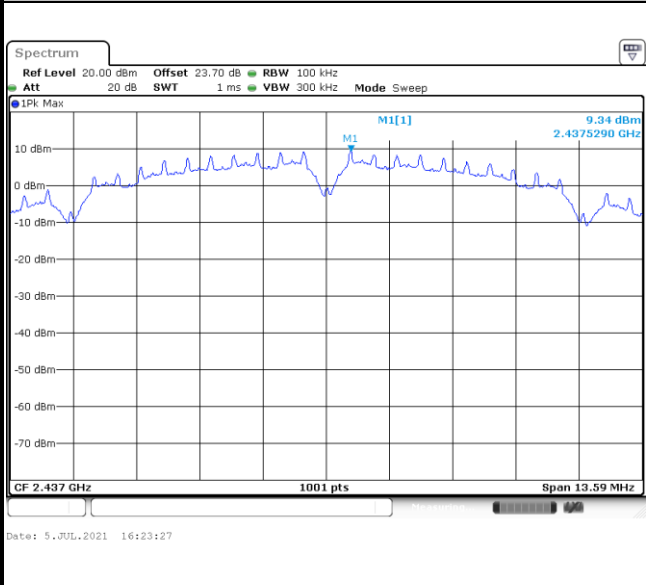
Test Mode :	802.11b	Test Channel :	01
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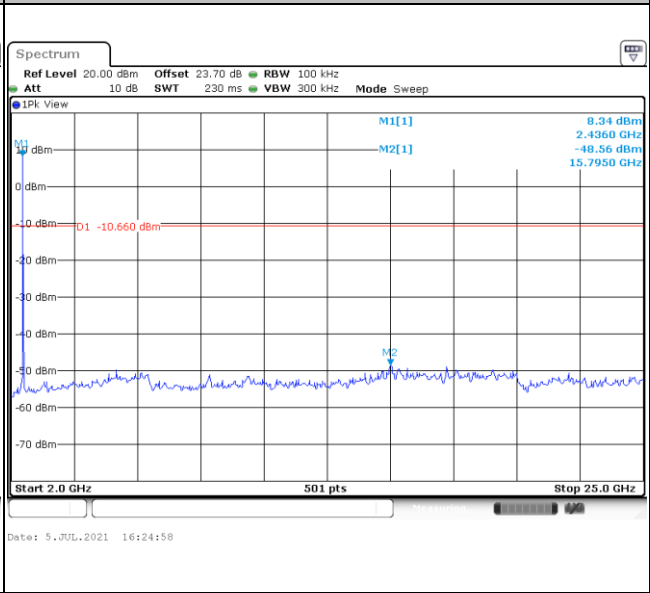
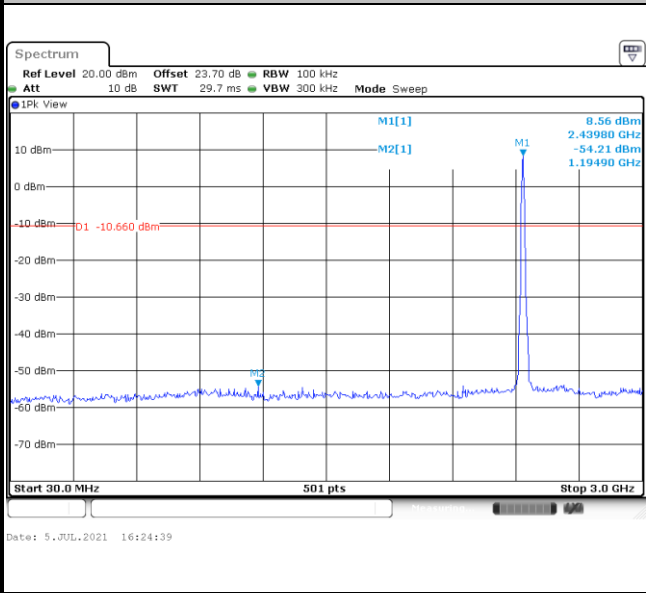


Test Mode :	802.11b	Test Channel :	06
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100kHz PSD reference Level	Mid Channel Plot
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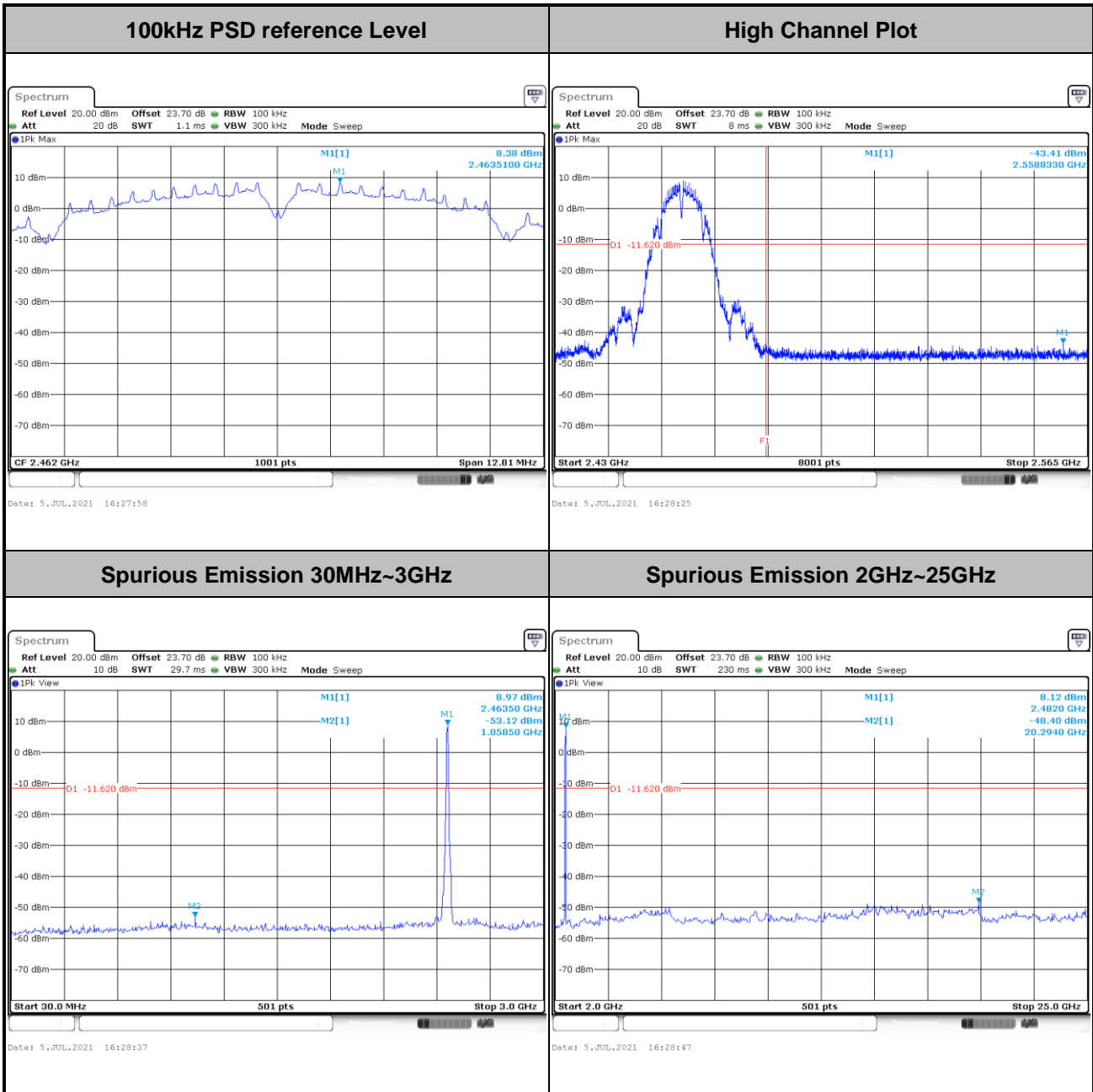


Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
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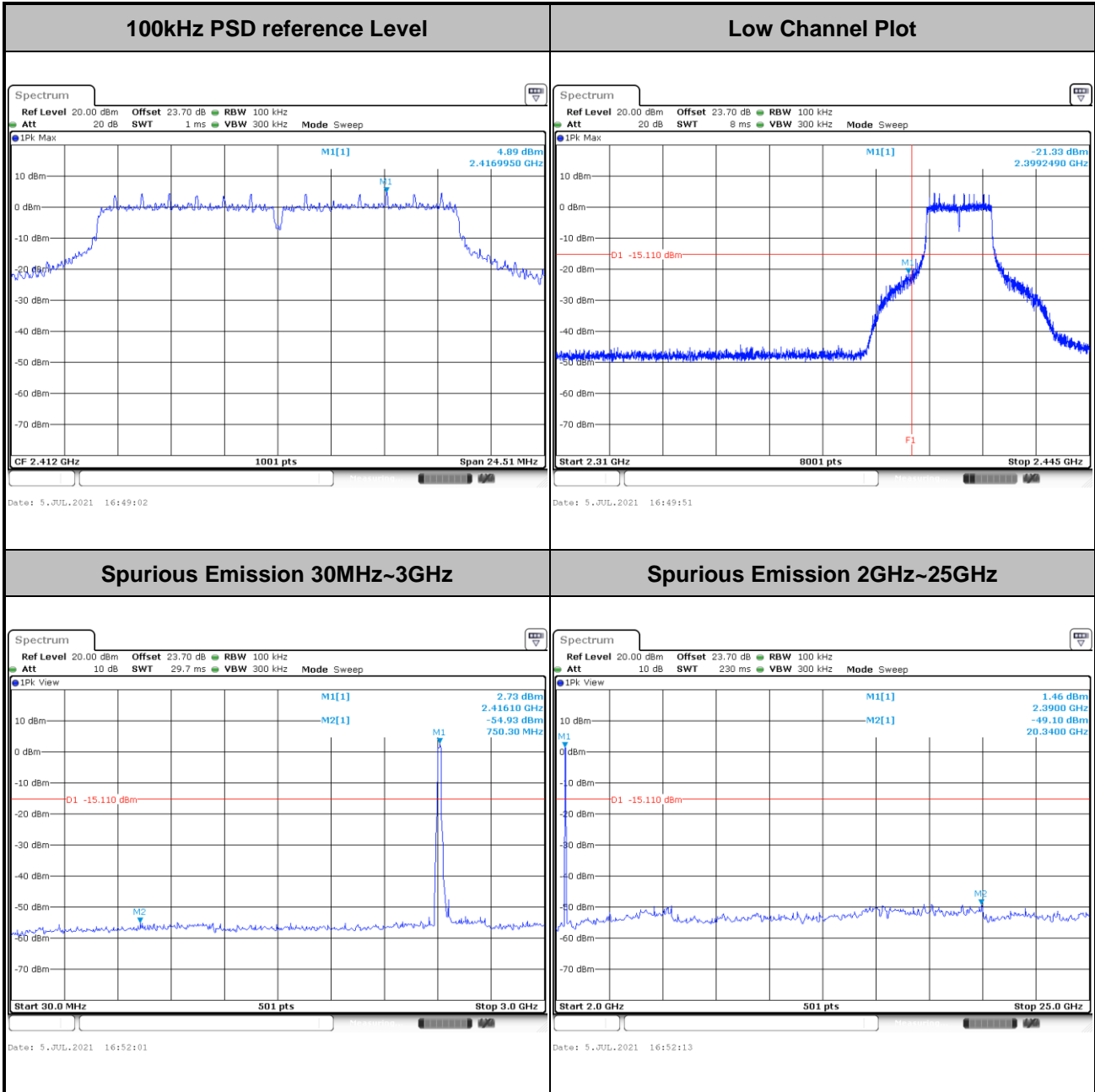


Test Mode :	802.11b	Test Channel :	11
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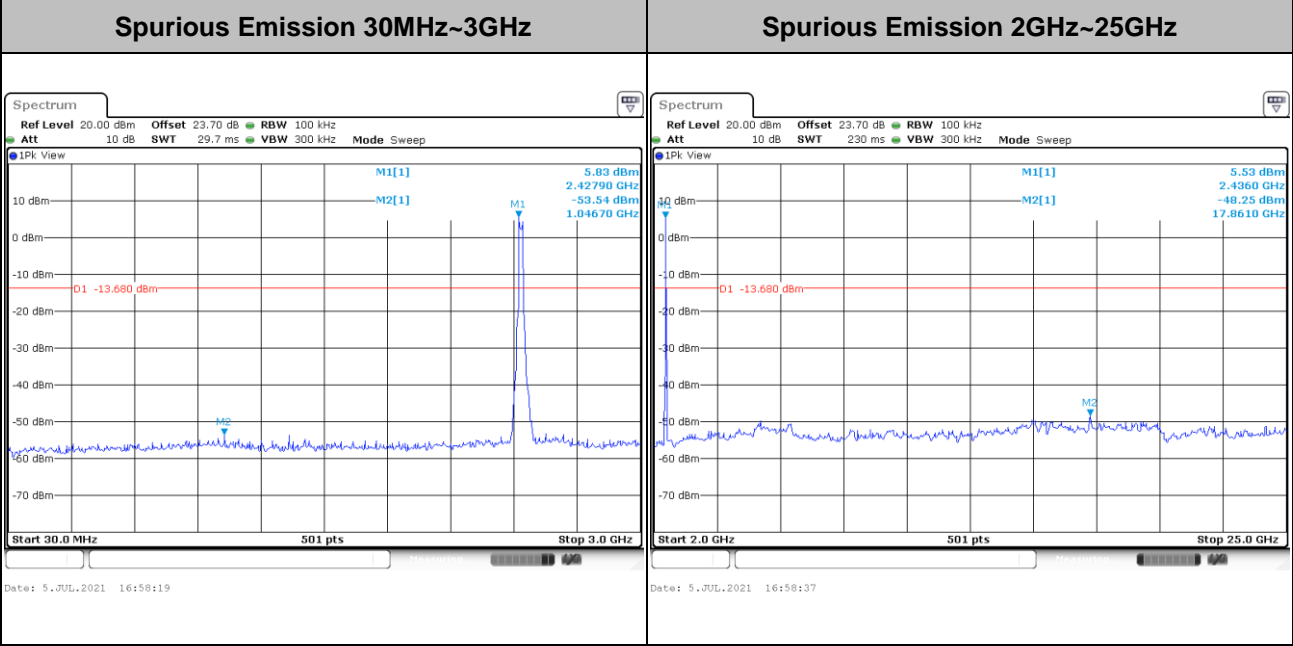
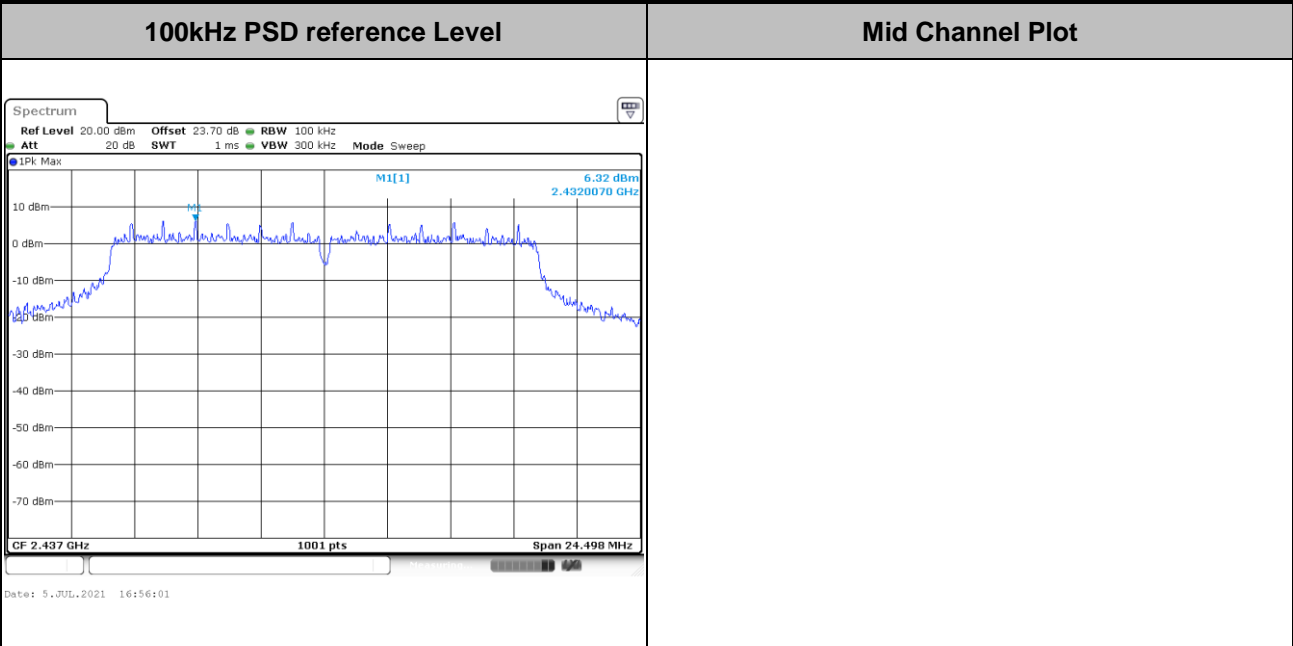


Test Mode :	802.11g	Test Channel :	01
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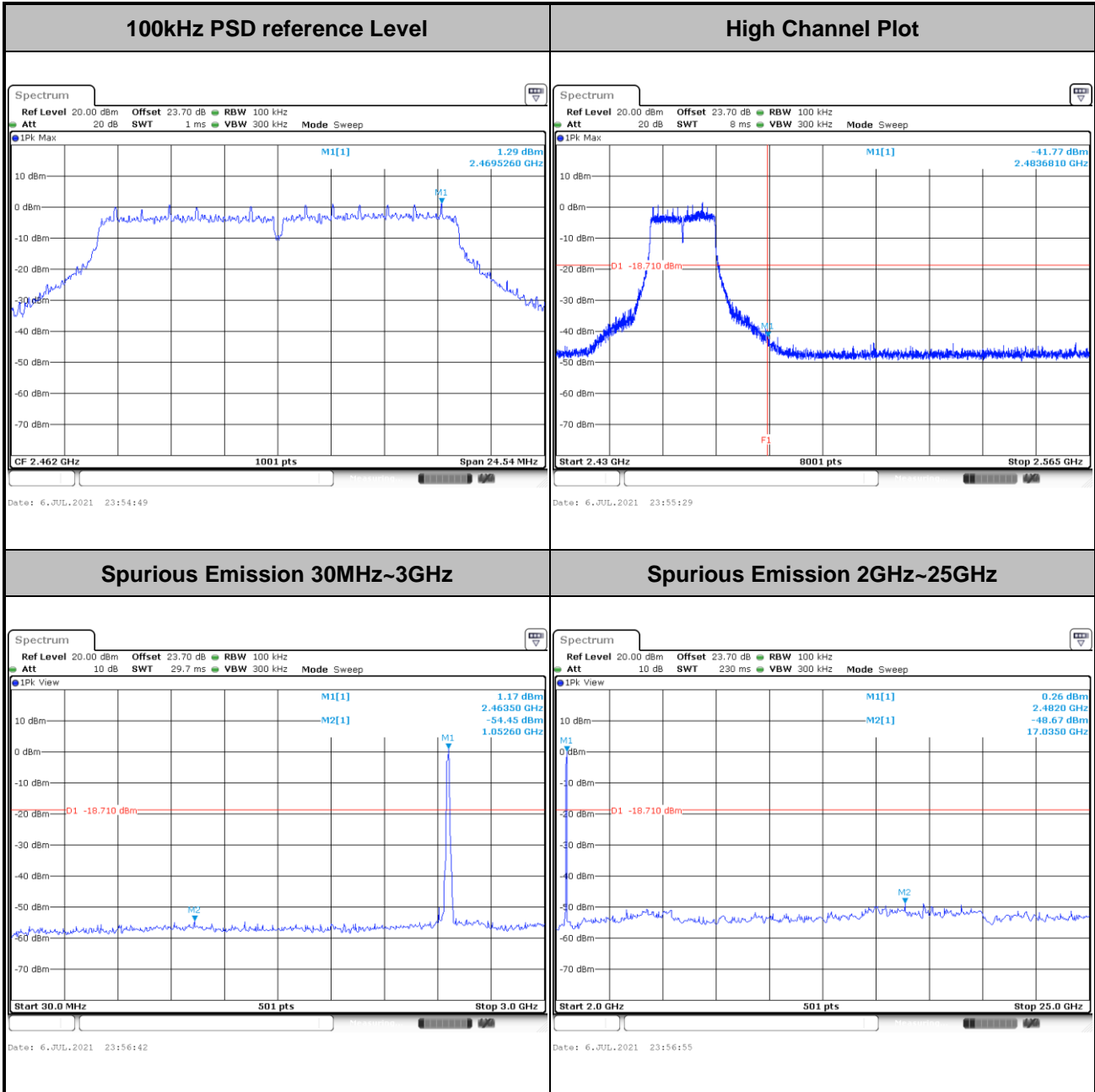


Test Mode :	802.11g	Test Channel :	06
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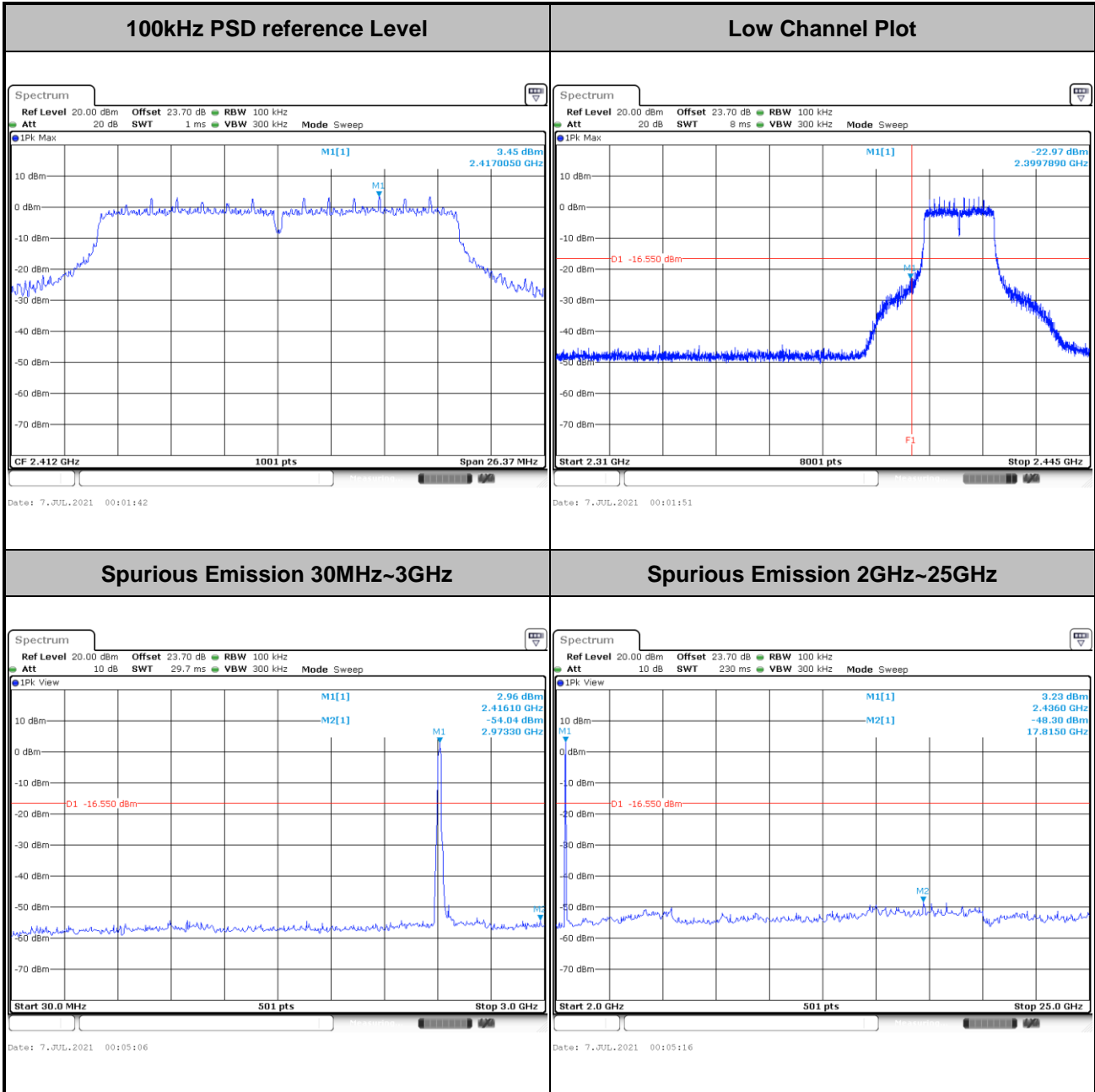


Test Mode :	802.11g	Test Channel :	11
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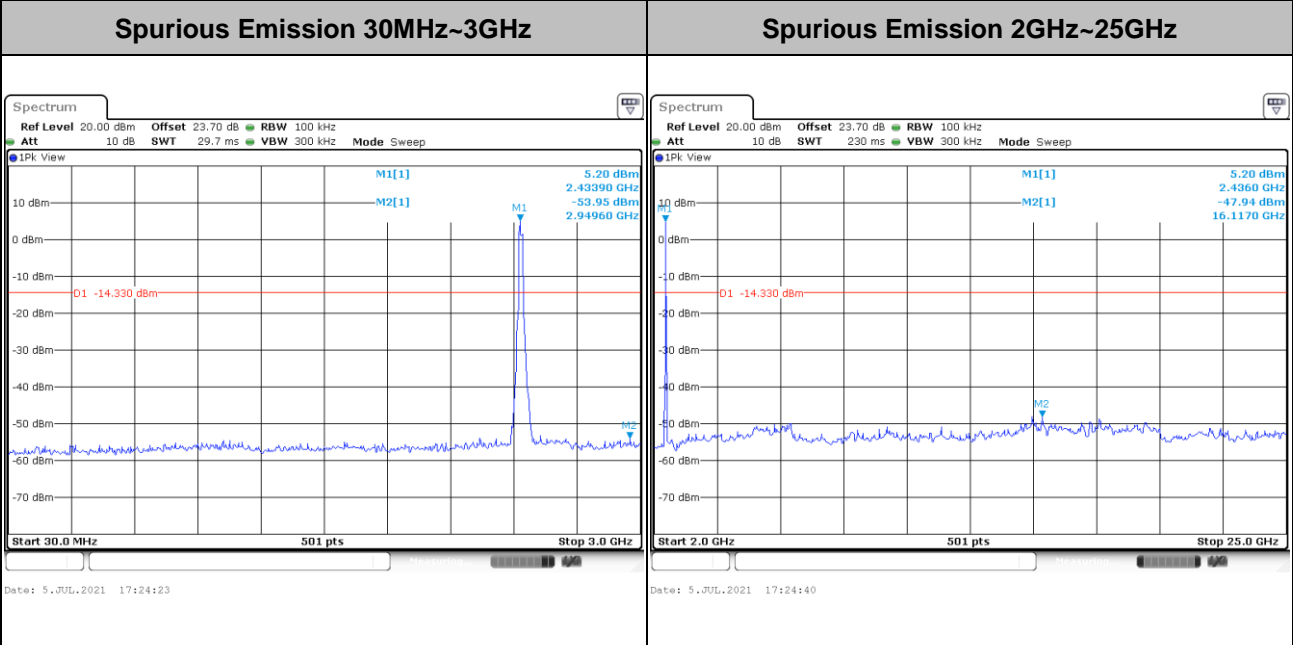
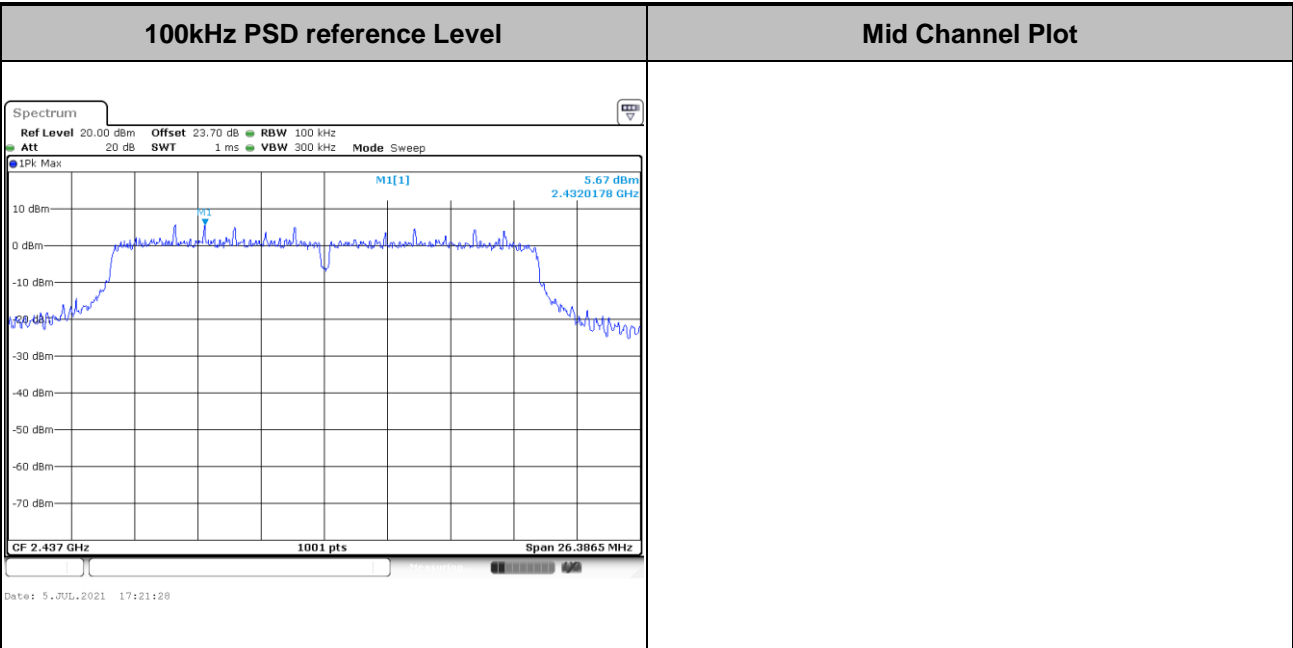


Test Mode :	802.11n HT20	Test Channel :	01
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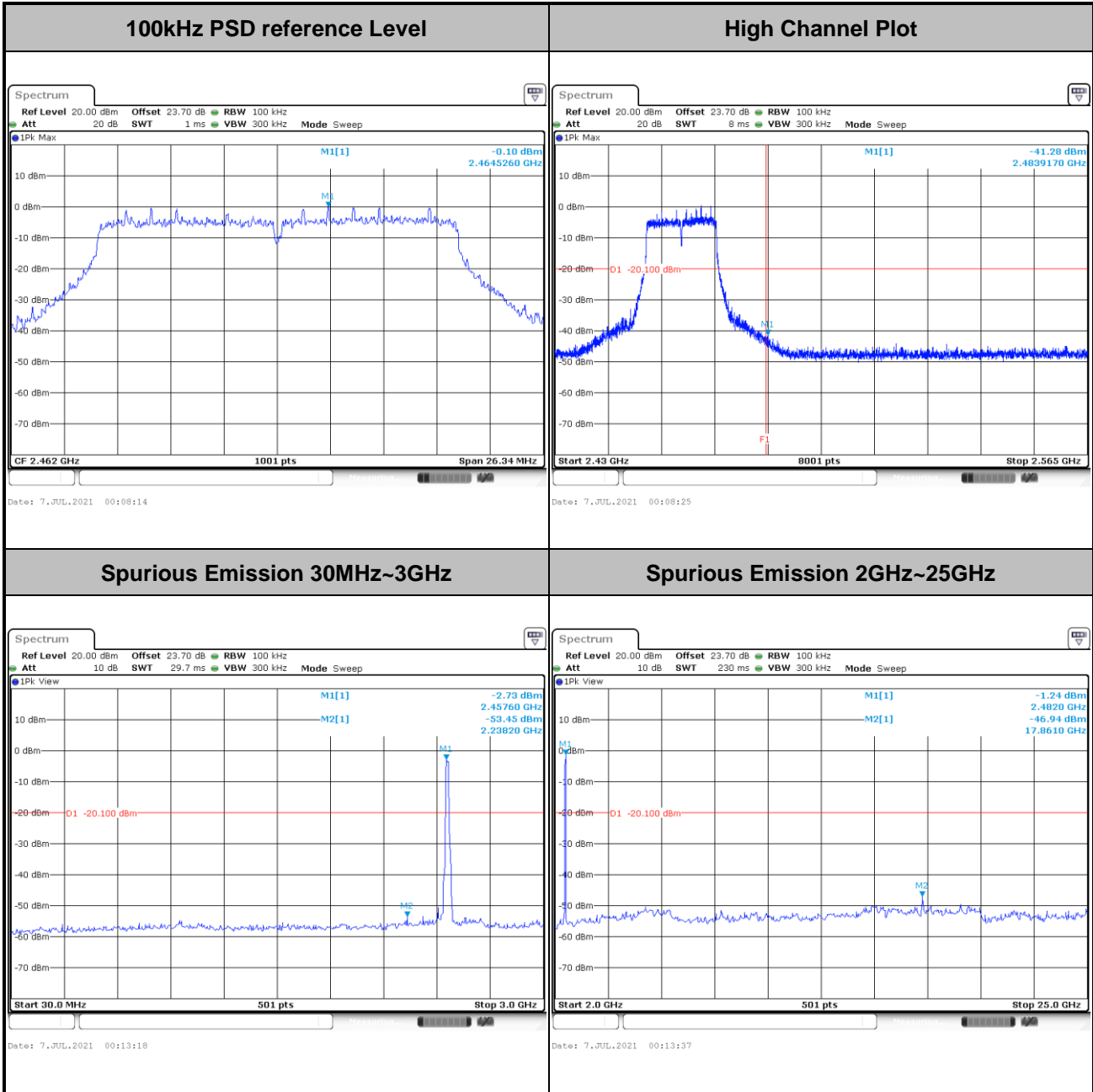
Test Mode :	802.11n HT20	Test Channel :	06
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Test Mode :	802.11n HT20	Test Channel :	11
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### 3.5 Radiated Band Edges and Spurious Emission Measurement

#### 3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was 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

See list of measuring equipment of this test report.

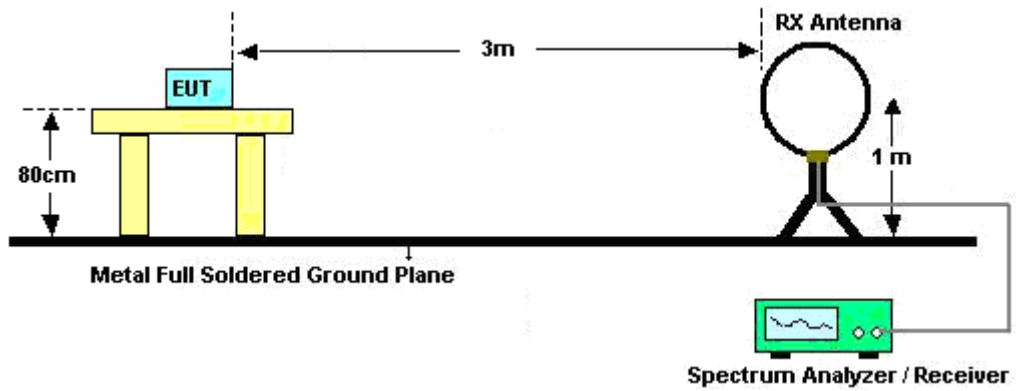


### 3.5.3 Test Procedures

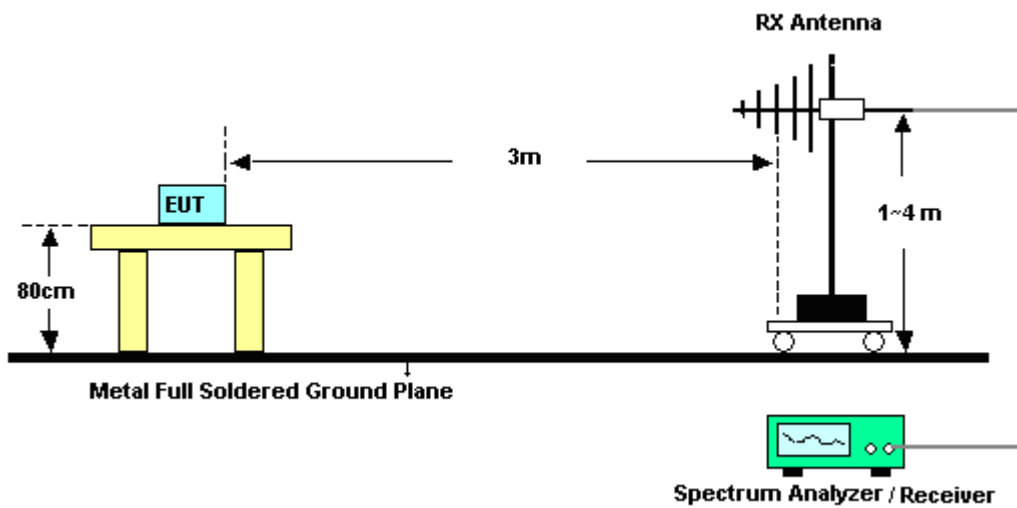
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was 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 was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1 GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
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

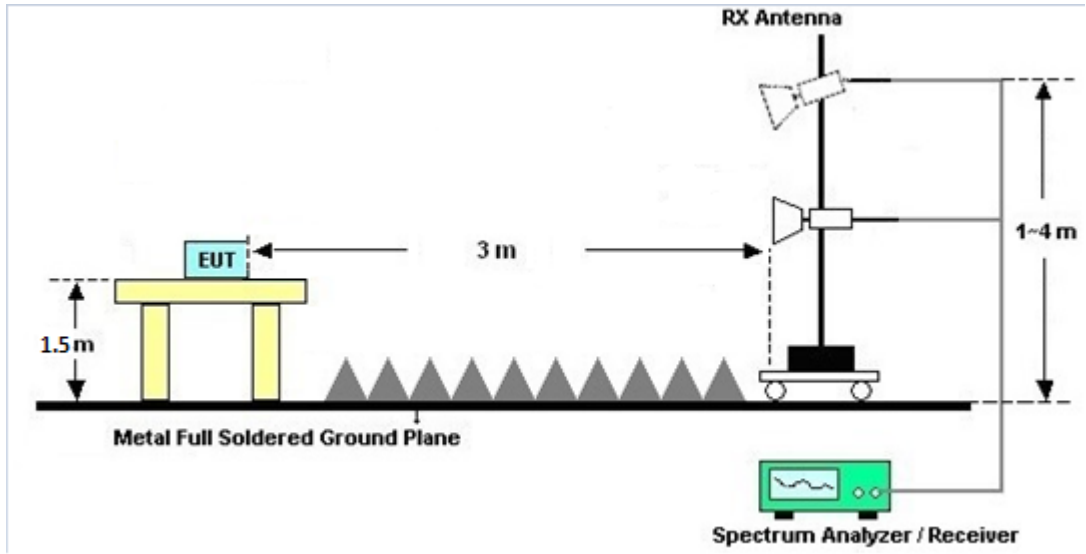
For radiated emissions below 30MHz



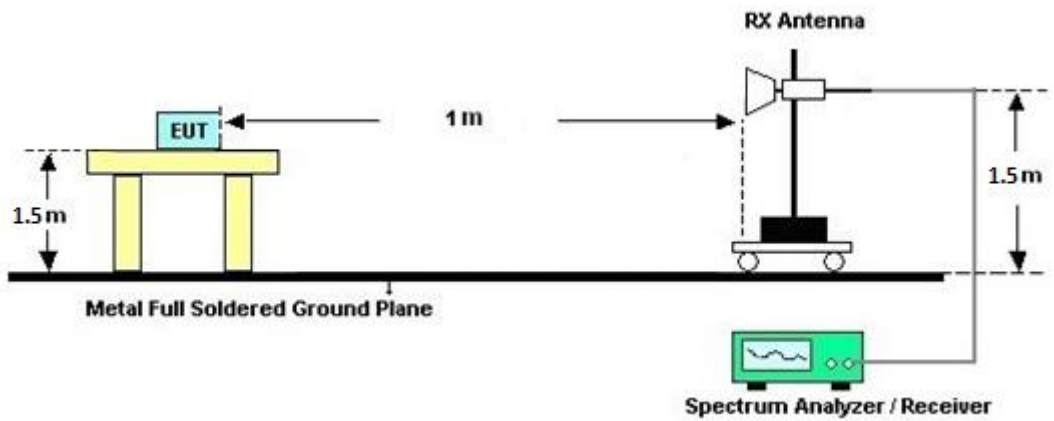
For radiated emissions from 30MHz to 1GHz



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 started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was 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 came 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.

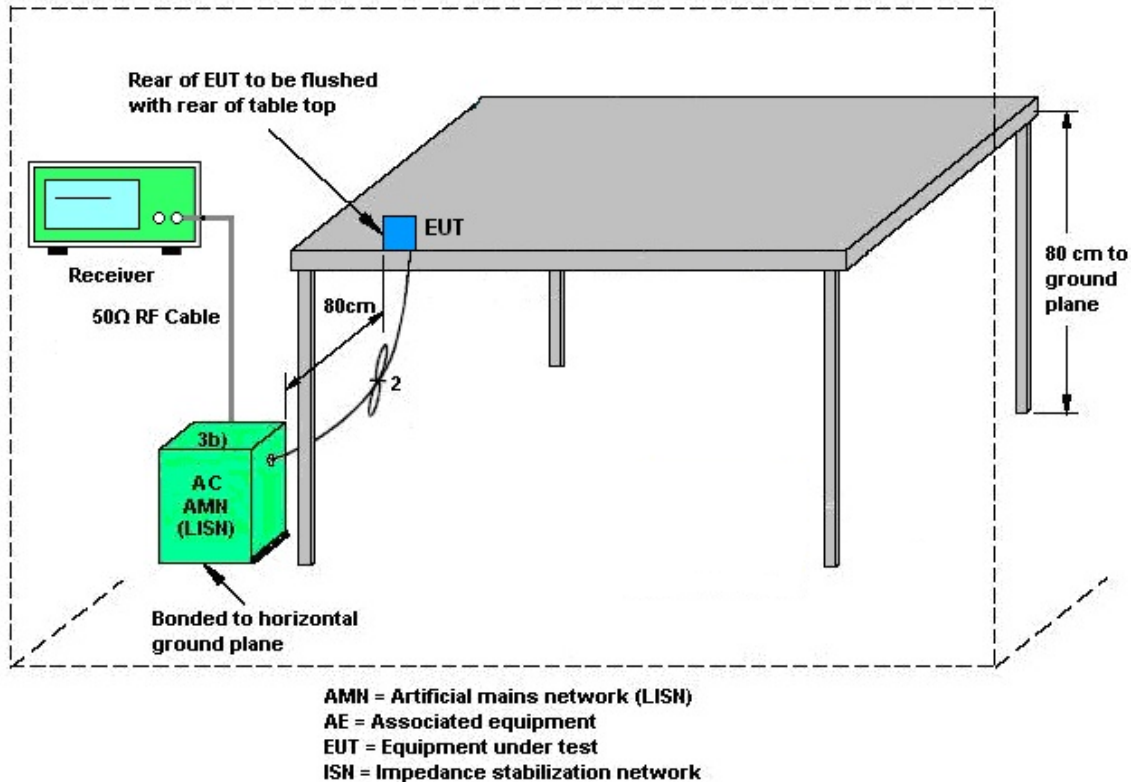
#### 3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

#### 3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was 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 sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
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**

If directional gain of transmitting Antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. 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.

### **3.7.3 Antenna Gain**

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



## 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	Jul. 14, 2020	Jun. 12, 2021~ Jul. 06, 2021	Jul. 13, 2021	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01 N-06	41912 & 05	30MHz~1GHz	Feb. 08, 2021	Jun. 12, 2021~ Jul. 06, 2021	Feb. 07, 2022	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 28, 2020	Jun. 12, 2021~ Jul. 06, 2021	Dec. 27, 2021	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-016 20	1GHz~18GHz	Nov. 03, 2020	Jun. 12, 2021~ Jul. 06, 2021	Nov. 02, 2021	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 251	18GHz~40GHz	Dec. 02, 2020	Jun. 12, 2021~ Jul. 06, 2021	Dec. 01, 2021	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-3 03	171000180 0055006	1GHz~18GHz	May 06, 2021	Jun. 12, 2021~ Jul. 06, 2021	May 05, 2022	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY532701 95	1GHz~26.5GHz	Aug. 21, 2020	Jun. 12, 2021~ Jul. 06, 2021	Aug. 20, 2021	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	0600789	18-40GHz	Oct. 27, 2020	Jun. 12, 2021~ Jul. 06, 2021	Oct. 26, 2021	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE )	MY541300 85	20MHz~8.4GHz	Nov. 02, 2020	Jun. 12, 2021~ Jul. 06, 2021	Nov. 01, 2021	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	E4446A	MY501801 36	3Hz~44GHz	May 07, 2021	Jun. 12, 2021~ Jul. 06, 2021	May 06, 2022	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jun. 12, 2021~ Jul. 06, 2021	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jun. 12, 2021~ Jul. 06, 2021	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24(k 5)	RK-00045 1	N/A	N/A	Jun. 12, 2021~ Jul. 06, 2021	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY36980/ 4, MY9838/4 PE,508405 /2E	30MHz~18G	Nov. 16, 2020	Jun. 12, 2021~ Jul. 06, 2021	Nov. 15, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz-40GHz	Feb. 22, 2021	Jun. 12, 2021~ Jul. 06, 2021	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz-40GHz	Feb. 22, 2021	Jun. 12, 2021~ Jul. 06, 2021	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4 PE	9kHz~30MHz	Mar. 11, 2021	Jun. 12, 2021~ Jul. 06, 2021	Mar. 10, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WLJ4-1000-1 530-6000-40S T	SN4	1.53GHz Low Pass Filter	Jul. 03, 2020	Jun. 12, 2021~ Jun. 23, 2021	Jul. 02, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WLK4-1000-1 530-8000-40S S	SN12	1.53GHz Low Pass Filter	Sep. 15, 2020	Jun. 24, 2021~ Jul. 06, 2021	Sep. 14, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WHKX12-270 0-3000-18000 -60ST	SN4	3GHz High Pass Filter	Sep. 16, 2020	Jun. 12, 2021~ Jun. 23, 2021	Sep. 15, 2021	Radiation (03CH15-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Sensor	DARE	RPR3006W	16I00054S NO10	10MHz-6GHz	Dec. 16, 2020	Jun. 01, 2021~ Jul. 07, 2021	Dec. 15, 2021	Conducted (TH02-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz ~ 40GHz	Jul. 22, 2020	Jun. 01, 2021~ Jul. 07, 2021	Jul. 21, 2021	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSQ	200578/02 6	20Hz-26.5GHz	Jul. 17, 2020	Jun. 01, 2021~ Jul. 07, 2021	Jul. 16, 2021	Conducted (TH02-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2021	Jun. 01, 2021~ Jul. 07, 2021	Mar. 16, 2022	Conducted (TH02-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jun. 18, 2021	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 30, 2020	Jun. 18, 2021	Nov. 29, 2021	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 18, 2020	Jun. 18, 2021	Nov. 17, 2021	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 16, 2020	Jun. 18, 2021	Nov. 15, 2021	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jun. 18, 2021	N/A	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Feb. 25, 2021	Jun. 18, 2021	Feb. 24, 2022	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 31, 2020	Jun. 18, 2021	Dec. 30, 2021	Conduction (CO05-HY)



## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.3 dB
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.7 dB
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.3 dB
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### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.9 dB
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**Appendix A. Test Result of Conducted Test Items**

Test Engineer:	Ching Chen/Junyu Jhou	Temperature:	24.2~25.2	°C
Test Date:	2021/6/1~2021/7/7	Relative Humidity:	52.9~54.5	%

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

2.4GHz Band Single Antenna										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)		6dB BW (MHz)		6dB BW Limit (MHz)	Pass/Fail
					Ant1	Ant2	Ant1	Ant2		
11b	1Mbps	1	1	2412	13.84	-	8.56	-	0.50	Pass
11b	1Mbps	1	6	2437	13.84	-	9.06	-	0.50	Pass
11b	1Mbps	1	11	2462	13.74	-	8.54	-	0.50	Pass
11g	6Mbps	1	1	2412	19.68	-	16.34	-	0.50	Pass
11g	6Mbps	1	6	2437	20.38	-	16.33	-	0.50	Pass
11g	6Mbps	1	11	2462	18.53	-	16.36	-	0.50	Pass
HT20	MCS0	1	1	2412	19.78	-	17.58	-	0.50	Pass
HT20	MCS0	1	6	2437	20.58	-	17.59	-	0.50	Pass
HT20	MCS0	1	11	2462	19.18	-	17.56	-	0.50	Pass

**TEST RESULTS DATA**  
**Peak Output Power**

2.4GHz Band Single Antenna																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	1	1	2412	19.82	-		30.00	-	0.73	-	20.55	-	36.00	-	Pass
11b	1Mbps	1	6	2437	20.22	-		30.00	-	0.73	-	20.95	-	36.00	-	Pass
11b	1Mbps	1	11	2462	19.81	-		30.00	-	0.73	-	20.54	-	36.00	-	Pass
11g	6Mbps	1	1	2412	21.85	-		30.00	-	0.73	-	22.58	-	36.00	-	Pass
11g	6Mbps	1	6	2437	22.28	-		30.00	-	0.73	-	23.01	-	36.00	-	Pass
11g	6Mbps	1	11	2462	21.12	-		30.00	-	0.73	-	21.85	-	36.00	-	Pass
HT20	MCS0	1	1	2412	21.70	-		30.00	-	0.73	-	22.43	-	36.00	-	Pass
HT20	MCS0	1	6	2437	22.21	-		30.00	-	0.73	-	22.94	-	36.00	-	Pass
HT20	MCS0	1	11	2462	20.97	-		30.00	-	0.73	-	21.70	-	36.00	-	Pass

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

**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	17.50	-		30.00	-	0.73	-	18.23	-	36.00	-	Pass
11b	1Mbps	1	6	2437	18.00	-		30.00	-	0.73	-	18.73	-	36.00	-	Pass
11b	1Mbps	1	11	2462	17.90	-		30.00	-	0.73	-	18.63	-	36.00	-	Pass
11g	6Mbps	1	1	2412	16.50	-		30.00	-	0.73	-	17.23	-	36.00	-	Pass
11g	6Mbps	1	6	2437	17.70	-		30.00	-	0.73	-	18.43	-	36.00	-	Pass
11g	6Mbps	1	11	2462	13.00	-		30.00	-	0.73	-	13.73	-	36.00	-	Pass
HT20	MCS0	1	1	2412	15.10	-		30.00	-	0.73	-	15.83	-	36.00	-	Pass
HT20	MCS0	1	6	2437	17.30	-		30.00	-	0.73	-	18.03	-	36.00	-	Pass
HT20	MCS0	1	11	2462	12.10	-		30.00	-	0.73	-	12.83	-	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	-5.58	-		0.73	-	8.00	-	Pass
11b	1Mbps	1	6	2437	-5.06	-		0.73	-	8.00	-	Pass
11b	1Mbps	1	11	2462	-5.36	-		0.73	-	8.00	-	Pass
11g	6Mbps	1	1	2412	-8.18	-		0.73	-	8.00	-	Pass
11g	6Mbps	1	6	2437	-7.67	-		0.73	-	8.00	-	Pass
11g	6Mbps	1	11	2462	-12.66	-		0.73	-	8.00	-	Pass
HT20	MCS0	1	1	2412	-10.50	-		0.73	-	8.00	-	Pass
HT20	MCS0	1	6	2437	-9.43	-		0.73	-	8.00	-	Pass
HT20	MCS0	1	11	2462	-14.38	-		0.73	-	8.00	-	Pass

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



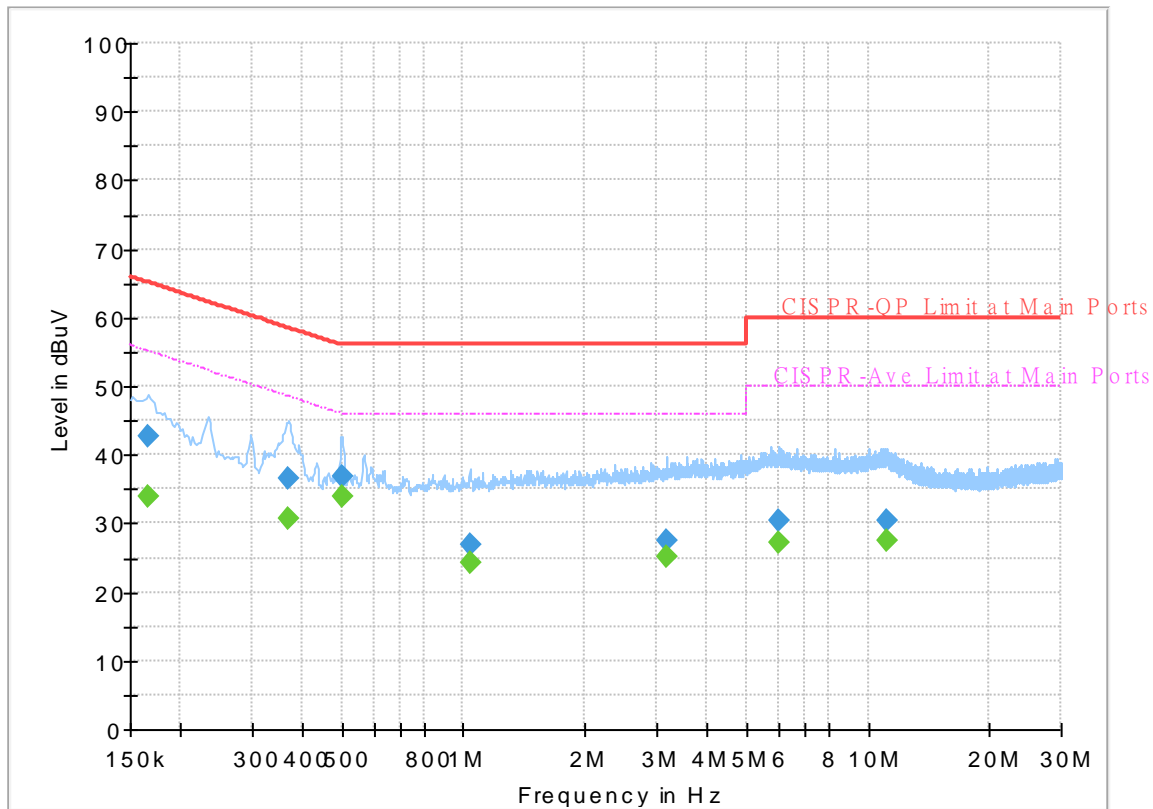
## Appendix B. AC Conducted Emission Test Results

Test Engineer :	Calvin Wang	Temperature :	23~26°C
		Relative Humidity :	40~50%

# EUT Information

Report NO : 002036-01  
 Test Mode : Mode 1  
 Test Voltage : 120Vac/60Hz  
 Phase : Line

Full Spectrum



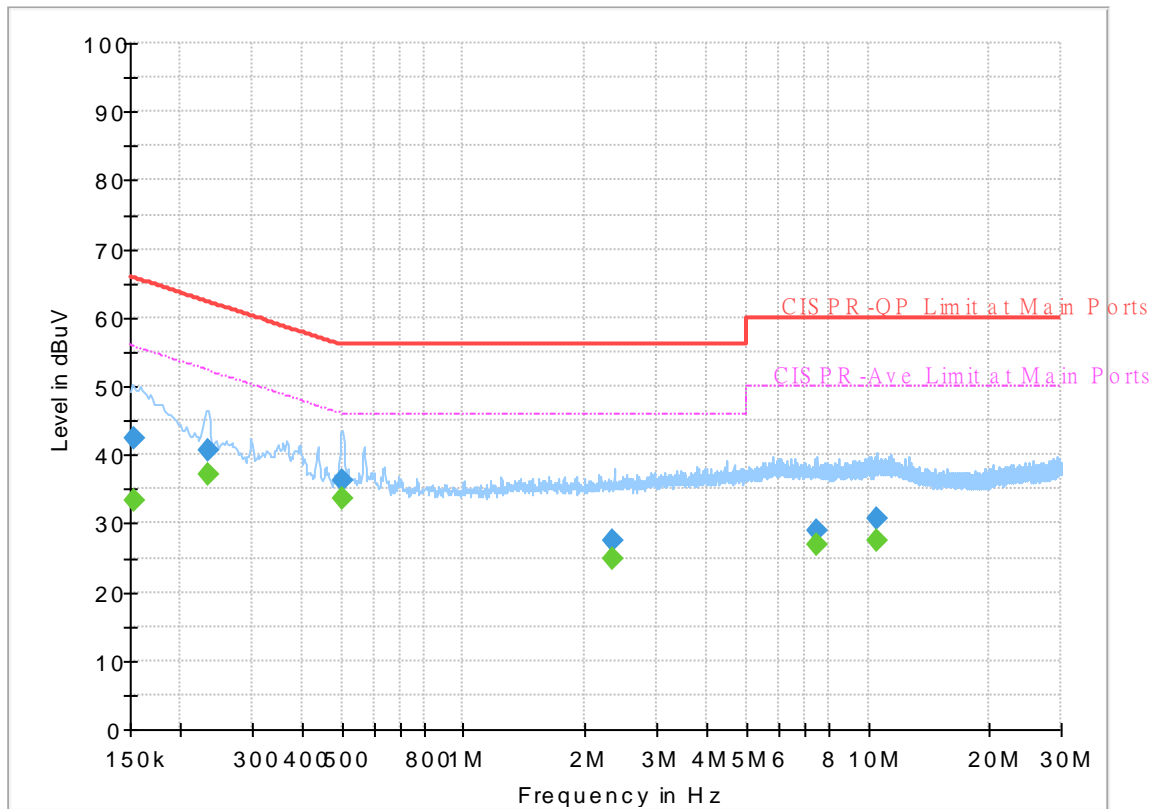
## Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.165750	---	33.97	55.17	21.20	L1	OFF	19.5
0.165750	42.79	---	65.17	22.38	L1	OFF	19.5
0.368250	---	30.85	48.54	17.69	L1	OFF	19.5
0.368250	36.60	---	58.54	21.94	L1	OFF	19.5
0.501000	---	33.84	46.00	12.16	L1	OFF	19.7
0.501000	36.78	---	56.00	19.22	L1	OFF	19.7
1.036500	---	24.25	46.00	21.75	L1	OFF	20.0
1.036500	26.81	---	56.00	29.19	L1	OFF	20.0
3.178500	---	25.29	46.00	20.71	L1	OFF	19.9
3.178500	27.55	---	56.00	28.45	L1	OFF	19.9
6.002250	---	27.09	50.00	22.91	L1	OFF	19.9
6.002250	30.36	---	60.00	29.64	L1	OFF	19.9
11.123250	---	27.40	50.00	22.60	L1	OFF	20.0
11.123250	30.42	---	60.00	29.58	L1	OFF	20.0

# EUT Information

Report NO : 002036-01  
 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)
0.152633	---	33.40	55.86	22.46	N	OFF	19.5
0.152633	42.42	---	65.86	23.44	N	OFF	19.5
0.232800	---	37.19	52.35	15.16	N	OFF	19.5
0.232800	40.76	---	62.35	21.59	N	OFF	19.5
0.502800	---	33.64	46.00	12.36	N	OFF	19.7
0.502800	36.28	---	56.00	19.72	N	OFF	19.7
2.348250	---	24.98	46.00	21.02	N	OFF	20.0
2.348250	27.57	---	56.00	28.43	N	OFF	20.0
7.449000	---	26.81	50.00	23.19	N	OFF	20.0
7.449000	29.00	---	60.00	31.00	N	OFF	20.0
10.554810	---	27.46	50.00	22.54	N	OFF	20.1
10.554810	30.61	---	60.00	29.39	N	OFF	20.1



### Appendix C. Radiated Spurious Emission

Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	22.1~23.1°C
		Relative Humidity :	55~60%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
802.11b CH 01 2412MHz		2361.15	55.23	-18.77	74	41.98	27.66	16.52	30.93	330	242	P	H	
		2389.86	44.01	-9.99	54	30.83	27.54	16.56	30.92	330	242	A	H	
	*	2412	105.41	-	-	92.22	27.5	16.6	30.91	330	242	P	H	
	*	2412	102.2	-	-	89.01	27.5	16.6	30.91	330	242	A	H	
													H	
														H
			2372.26	54.98	-19.02	74	41.76	27.61	16.53	30.92	100	271	P	V
			2389.97	43.8	-10.2	54	30.62	27.54	16.56	30.92	100	271	A	V
	*		2412	104.28	-	-	91.09	27.5	16.6	30.91	100	271	P	V
	*		2412	101.1	-	-	87.91	27.5	16.6	30.91	100	271	A	V
														V
														V
802.11b CH 06 2437MHz		2360.24	55.67	-18.33	74	42.43	27.66	16.51	30.93	370	253	P	H	
		2361.04	43.92	-10.08	54	30.67	27.66	16.52	30.93	370	253	A	H	
	*	2437	103.73	-	-	90.49	27.5	16.64	30.9	370	253	P	H	
	*	2437	100.55	-	-	87.31	27.5	16.64	30.9	370	253	A	H	
			2486.32	55.71	-18.29	74	42.45	27.43	16.71	30.88	370	253	P	H
			2485.06	43.95	-10.05	54	30.69	27.43	16.71	30.88	370	253	A	H
			2345.68	56.05	-17.95	74	42.78	27.71	16.49	30.93	100	285	P	V
			2310.16	43.99	-10.01	54	30.73	27.78	16.43	30.95	100	285	A	V
	*		2437	104.91	-	-	91.67	27.5	16.64	30.9	100	285	P	V
	*		2437	101.79	-	-	88.55	27.5	16.64	30.9	100	285	A	V
			2499.82	54.98	-19.02	74	41.72	27.4	16.73	30.87	100	285	P	V
			2485.06	44.09	-9.91	54	30.83	27.43	16.71	30.88	100	285	A	V



<b>802.11b CH 11 2462MHz</b>	*	2462	103.27	-	-	90	27.48	16.68	30.89	400	250	P	H
	*	2462	100.15	-	-	86.88	27.48	16.68	30.89	400	250	A	H
		2484.95	56.16	-17.84	74	42.9	27.43	16.71	30.88	400	250	P	H
		2483.55	46.32	-7.68	54	33.06	27.43	16.71	30.88	400	250	A	H
													H
													H
	*	2462	105.8	-	-	92.53	27.48	16.68	30.89	100	288	P	V
	*	2462	102.67	-	-	89.4	27.48	16.68	30.89	100	288	A	V
		2484.8	57.13	-16.87	74	43.87	27.43	16.71	30.88	100	288	P	V
		2487.35	48.08	-5.92	54	34.81	27.43	16.72	30.88	100	288	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 )	Over Limit ( 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	38.17	-35.83	74	55.86	31.1	10.07	58.86	100	0	P	H
		18000	58.18	-15.82	74	47.53	49	18.89	57.24	100	51	P	H
		18000	50.13	-3.87	54	39.48	49	18.89	57.24	100	51	A	H
													H
		4824	39.34	-34.66	74	57.03	31.1	10.07	58.86	100	0	P	V
		18000	58.88	-15.12	74	48.23	49	18.89	57.24	100	35	P	V
		18000	50.23	-3.77	54	39.58	49	18.89	57.24	100	35	A	V
802.11b CH 06 2437MHz		4874	38.62	-35.38	74	56.36	31.05	10.11	58.9	100	0	P	H
		7311	43.7	-30.3	74	53.52	36.3	12.31	58.43	100	0	P	H
		17985	58.6	-15.4	74	48.26	48.73	18.88	57.27	100	35	P	H
		17985	49.81	-4.19	54	39.47	48.73	18.88	57.27	100	35	A	H
		4874	38.63	-35.37	74	56.37	31.05	10.11	58.9	100	0	P	V
		7311	43.81	-30.19	74	53.63	36.3	12.31	58.43	100	0	P	V
		18000	58.89	-15.11	74	48.24	49	18.89	57.24	100	47	P	V
		18000	50.17	-3.83	54	39.52	49	18.89	57.24	100	47	A	V
802.11b CH 11 2462MHz		4924	41.57	-32.43	74	59.28	31.1	10.14	58.95	100	0	P	H
		7386	45.79	-28.21	74	55.43	36.3	12.35	58.29	100	0	P	H
		18000	60.24	-13.76	74	49.59	49	18.89	57.24	100	30	P	H
		18000	50.21	-3.79	54	39.56	49	18.89	57.24	100	30	A	H
		4924	41.06	-32.94	74	58.77	31.1	10.14	58.95	100	0	P	V
		7386	45.97	-28.03	74	55.61	36.3	12.35	58.29	100	0	P	V
		18000	60.62	-13.38	74	49.97	49	18.89	57.24	100	20	P	V
		18000	50.59	-3.41	54	39.94	49	18.89	57.24	100	20	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( 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		2389.905	64.16	-9.84	74	50.98	27.54	16.56	30.92	179	252	P	H	
		2390	50.32	-3.68	54	37.14	27.54	16.56	30.92	179	252	A	H	
	*	2412	103.24	-	-	90.05	27.5	16.6	30.91	179	252	P	H	
	*	2412	95.49	-	-	82.3	27.5	16.6	30.91	179	252	A	H	
													H	
													H	
			2389.905	63.57	-10.43	74	50.39	27.54	16.56	30.92	100	283	P	V
			2390	50.24	-3.76	54	37.06	27.54	16.56	30.92	100	283	A	V
	*		2412	104.32	-	-	91.13	27.5	16.6	30.91	100	283	P	V
	*		2412	96.37	-	-	83.18	27.5	16.6	30.91	100	283	A	V
													V	
													V	
802.11g CH 06 2437MHz		2390	55.75	-18.25	74	42.57	27.54	16.56	30.92	323	243	P	H	
		2332.08	44.57	-9.43	54	31.3	27.74	16.47	30.94	323	243	A	H	
	*	2437	106.81	-	-	93.57	27.5	16.64	30.9	323	243	P	H	
	*	2437	99.15	-	-	85.91	27.5	16.64	30.9	323	243	A	H	
			2484.88	57.2	-16.8	74	43.94	27.43	16.71	30.88	323	243	P	H
			2483.53	45.76	-8.24	54	32.5	27.43	16.71	30.88	323	243	A	H
			2350.48	54.54	-19.46	74	41.27	27.7	16.5	30.93	100	287	P	V
			2375.76	44.59	-9.41	54	31.37	27.6	16.54	30.92	100	287	A	V
	*		2437	106.26	-	-	93.02	27.5	16.64	30.9	100	287	P	V
	*		2437	98.49	-	-	85.25	27.5	16.64	30.9	100	287	A	V
			2485.96	57.32	-16.68	74	44.06	27.43	16.71	30.88	100	287	P	V
			2483.89	46.57	-7.43	54	33.31	27.43	16.71	30.88	100	287	A	V





<b>802.11g CH 11 2462MHz</b>	*	2462	99.98	-	-	86.71	27.48	16.68	30.89	100	8	P	H
	*	2462	92.23	-	-	78.96	27.48	16.68	30.89	100	8	A	H
		2483.56	62.61	-11.39	74	49.35	27.43	16.71	30.88	100	8	P	H
		2483.56	50.37	-3.63	54	37.11	27.43	16.71	30.88	100	8	A	H
													H
													H
	*	2462	102.32	-	-	89.05	27.48	16.68	30.89	100	285	P	V
	*	2462	94.32	-	-	81.05	27.48	16.68	30.89	100	285	A	V
		2483.68	66.06	-7.94	74	52.8	27.43	16.71	30.88	100	285	P	V
		2483.76	51.78	-2.22	54	38.52	27.43	16.71	30.88	100	285	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 )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11g CH 01 2412MHz		4824	38.5	-35.5	74	56.19	31.1	10.07	58.86	100	0	P	H
		18000	59.21	-14.79	74	48.56	49	18.89	57.24	100	38	P	H
		18000	50.46	-3.54	54	39.81	49	18.89	57.24	100	38	A	H
													H
		4824	38.06	-35.94	74	55.75	31.1	10.07	58.86	100	0	P	V
		17985	59.42	-14.58	74	49.08	48.73	18.88	57.27	100	47	P	V
		17985	49.62	-4.38	54	39.28	48.73	18.88	57.27	100	47	A	V
802.11g CH 06 2437MHz		4874	39.43	-34.57	74	57.17	31.05	10.11	58.9	100	0	P	H
		7311	44.38	-29.62	74	54.2	36.3	12.31	58.43	100	0	P	H
		18000	58.55	-15.45	74	47.9	49	18.89	57.24	100	58	P	H
		18000	50.24	-3.76	54	39.59	49	18.89	57.24	100	58	A	H
		4874	38.73	-35.27	74	56.47	31.05	10.11	58.9	100	0	P	V
		7311	43.98	-30.02	74	53.8	36.3	12.31	58.43	100	0	P	V
		17970	59.21	-14.79	74	49.19	48.46	18.87	57.31	100	65	P	V
		17970	49.49	-4.51	54	39.47	48.46	18.87	57.31	100	65	A	V
802.11g CH 11 2462MHz		4924	39.17	-34.83	74	56.88	31.1	10.14	58.95	100	0	P	H
		7386	45.01	-28.99	74	54.65	36.3	12.35	58.29	100	0	P	H
		17985	59.29	-14.71	74	48.95	48.73	18.88	57.27	100	30	P	H
		17985	49.28	-4.72	54	38.94	48.73	18.88	57.27	100	30	A	H
		4924	39.86	-34.14	74	57.57	31.1	10.14	58.95	100	0	P	V
		7386	44.36	-29.64	74	54	36.3	12.35	58.29	100	0	P	V
		18000	59.37	-14.63	74	48.72	49	18.89	57.24	100	20	P	V
		18000	49.4	-4.6	54	38.75	49	18.89	57.24	100	20	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( 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	63.81	-10.19	74	50.63	27.54	6.64	30.92	100	255	P	H	
		2390	49.46	-4.54	54	36.28	27.54	6.64	30.92	100	255	A	H	
	*	2412	101.76	-	-	88.57	27.5	6.68	30.91	100	255	P	H	
	*	2412	94.28	-	-	81.09	27.5	6.68	30.91	100	255	A	H	
													H	
														H
			2389.905	65.61	-8.39	74	52.43	27.54	6.64	30.92	105	287	P	V
			2390	51.3	-2.7	54	38.12	27.54	6.64	30.92	105	287	A	V
		*	2412	104.54	-	-	91.35	27.5	6.68	30.91	105	287	P	V
		*	2412	96.37	-	-	83.18	27.5	6.68	30.91	105	287	A	V
													V	
													V	
802.11n HT20 CH 06 2437MHz		2359.12	55.06	-18.94	74	41.82	27.66	16.51	30.93	326	242	P	H	
		2359.6	44.85	-9.15	54	31.61	27.66	16.51	30.93	326	242	A	H	
	*	2437	106.21	-	-	92.97	27.5	16.64	30.9	326	242	P	H	
	*	2437	98.4	-	-	85.16	27.5	16.64	30.9	326	242	A	H	
			2483.53	56.16	-17.84	74	42.9	27.43	16.71	30.88	326	242	P	H
			2488.48	45.88	-8.12	54	32.61	27.42	16.72	30.87	326	242	A	H
			2310.48	54.52	-19.48	74	41.26	27.78	16.43	30.95	100	295	P	V
			2311.92	44.57	-9.43	54	31.31	27.78	16.43	30.95	100	295	A	V
		*	2437	105.57	-	-	92.33	27.5	16.64	30.9	100	295	P	V
		*	2437	97.3	-	-	84.06	27.5	16.64	30.9	100	295	A	V
		2488.57	55.63	-18.37	74	42.36	27.42	16.72	30.87	100	295	P	V	
		2488.48	46.5	-7.5	54	33.23	27.42	16.72	30.87	100	295	A	V	



<b>802.11n</b> <b>HT20</b> <b>CH 11</b> <b>2462MHz</b>	*	2462	99.67	-	-	86.4	27.48	16.68	30.89	100	9	P	H
	*	2462	91.44	-	-	78.17	27.48	16.68	30.89	100	9	A	H
		2484.2	64.16	-9.84	74	50.9	27.43	16.71	30.88	100	9	P	H
		2483.52	50.56	-3.44	54	37.3	27.43	16.71	30.88	100	9	A	H
													H
													H
	*	2462	100.56	-	-	87.29	27.48	16.68	30.89	100	271	P	V
	*	2462	92.73	-	-	79.46	27.48	16.68	30.89	100	271	A	V
		2483.56	64.46	-9.54	74	51.2	27.43	16.71	30.88	100	271	P	V
		2483.52	51.04	-2.96	54	37.78	27.43	16.71	30.88	100	271	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 )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )	
802.11n HT20 CH 01 2412MHz		4824	39.4	-34.6	74	57.09	31.1	10.07	58.86	100	0	P	H	
		18000	59.14	-14.86	74	48.49	49	18.89	57.24	100	33	P	H	
		18000	49.03	-4.97	54	38.38	49	18.89	57.24	100	33	A	H	
													H	
			4824	38.46	-35.54	74	56.15	31.1	10.07	58.86	100	0	P	V
			18000	58.52	-15.48	74	47.87	49	18.89	57.24	100	23	P	V
			18000	49.49	-4.51	54	38.84	49	18.89	57.24	100	23	A	V
													V	
802.11n HT20 CH 06 2437MHz		4874	39.24	-34.76	74	56.98	31.05	10.11	58.9	100	0	P	H	
		7311	44.26	-29.74	74	54.08	36.3	12.31	58.43	100	29	P	H	
		17970	58.93	-15.07	74	48.91	48.46	18.87	57.31	100	29	P	H	
		17970	48.88	-5.12	54	38.86	48.46	18.87	57.31	100	0	A	H	
			4874	38.75	-35.25	74	56.49	31.05	10.11	58.9	100	0	P	V
			7311	43.99	-30.01	74	53.81	36.3	12.31	58.43	100	0	P	V
			18000	59.4	-14.6	74	48.75	49	18.89	57.24	100	19	P	V
		18000	49.41	-4.59	54	38.76	49	18.89	57.24	100	19	A	V	
802.11n HT20 CH 11 2462MHz		4924	40.84	-33.16	74	58.55	31.1	10.14	58.95	100	0	P	H	
		7386	44.35	-29.65	74	53.99	36.3	12.35	58.29	100	0	P	H	
		18000	59.41	-14.59	74	48.76	49	18.89	57.24	100	30	P	H	
			18000	49.39	-4.61	54	38.74	49	18.89	57.24	100	30	A	H
			4924	40.16	-33.84	74	57.87	31.1	10.14	58.95	100	0	P	V
			7386	45	-29	74	54.64	36.3	12.35	58.29	100	0	P	V
			18000	59	-15	74	48.35	49	18.89	57.24	100	20	P	V
		18000	49.19	-4.81	54	38.54	49	18.89	57.24	100	20	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



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

WIFI Ant. 1	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
2.4GHz 802.11g SHF		21496	39.07	-34.93	74	43.78	38.3	11.69	54.7	150	0	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			21568	38.56	-35.44	74	43.2	38.31	11.75	54.7	150	0	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.												



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
2.4GHz 802.11g LF		78.5	24.49	-15.51	40	42.59	13.16	1.24	32.5	-	-	P	H	
		103.72	25.41	-18.09	43.5	40.18	16.28	1.46	32.51	-	-	P	H	
		141.55	24.77	-18.73	43.5	38.15	17.42	1.7	32.5	-	-	P	H	
		365.62	32.47	-13.53	46	41.5	20.86	2.61	32.5	-	-	P	H	
		394.72	35.09	-10.91	46	43.07	21.74	2.7	32.42	100	0	P	H	
		487.84	30.55	-15.45	46	36.28	23.78	3.03	32.54	-	-	P	H	
														H
														H
														H
														H
														H
														H
			30	29.62	-10.38	40	36.85	24.59	0.67	32.49	100	0	P	V
			67.83	28.47	-11.53	40	47.84	12.04	1.13	32.54	-	-	P	V
			150.28	25.83	-17.67	43.5	39.58	16.99	1.76	32.5	-	-	P	V
			351.07	31.16	-14.84	46	40.69	20.45	2.56	32.54	-	-	P	V
			365.62	34.43	-11.57	46	43.46	20.86	2.61	32.5	-	-	P	V
			394.72	33.05	-12.95	46	41.03	21.74	2.7	32.42	-	-	P	V
														V
														V
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



**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>over limit</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	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	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. Over Limit(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. Over Limit(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. Over Limit(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 :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	22.1~23.1°C
		Relative Humidity :	55~60%

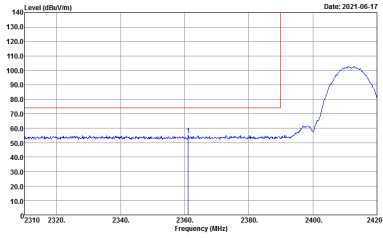
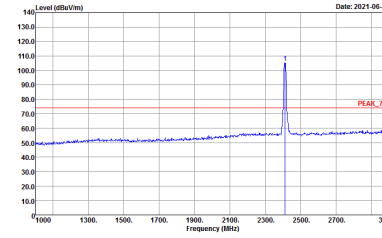
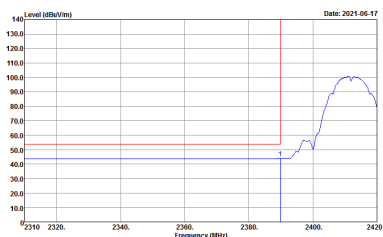
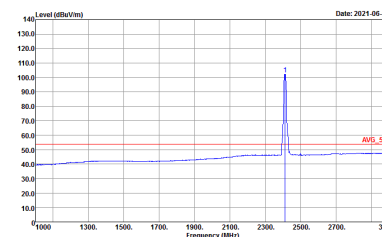
### Note symbol

-L	Low channel location
-R	High channel location



2.4GHz 2400~2483.5MHz

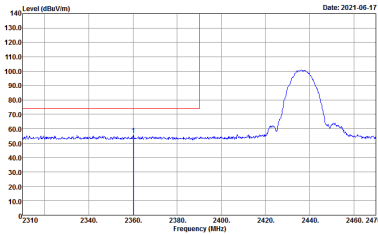
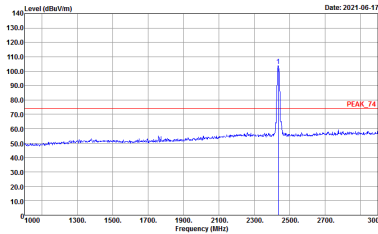
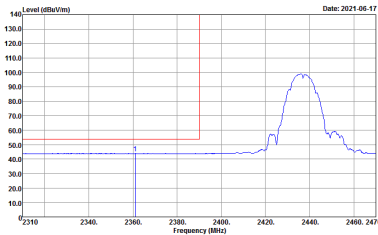
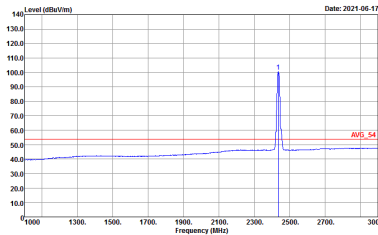
WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH15-HY Condition : AV6_BE_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : AV6_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

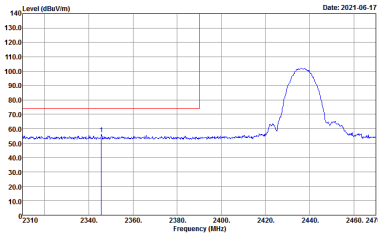
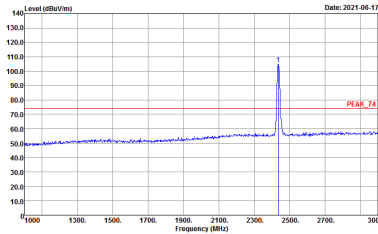
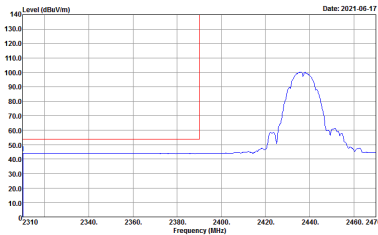
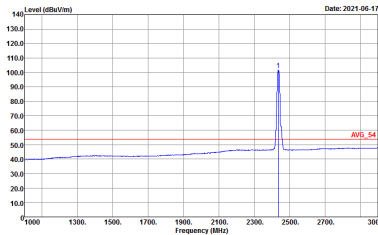


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AV6_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

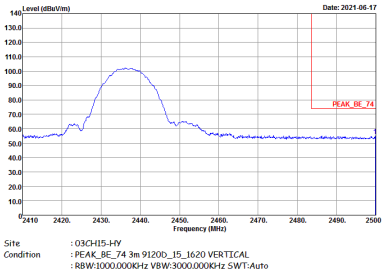
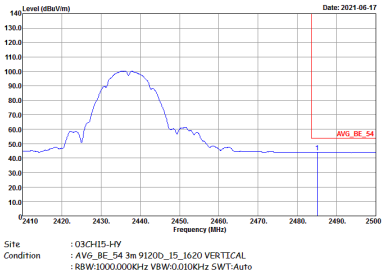


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left blank
Avg.	<p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	Left blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical Peak. The plot shows a peak at approximately 2437 MHz with a level of about 100 dBuV/m. The x-axis ranges from 2310 to 2470 MHz, and the y-axis ranges from 10.0 to 140.0 dBuV/m.</p> <p>Site : 03CH15-HY  Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL  : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Fundamental Peak. The plot shows a sharp peak at approximately 2437 MHz with a level of about 100 dBuV/m. The x-axis ranges from 1000 to 3000 MHz, and the y-axis ranges from 10.0 to 140.0 dBuV/m.</p> <p>Site : 03CH15-HY  Condition : PEAK_74 3m 91200_15_1620 VERTICAL  : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical Average. The plot shows a peak at approximately 2437 MHz with a level of about 100 dBuV/m. The x-axis ranges from 2310 to 2470 MHz, and the y-axis ranges from 10.0 to 140.0 dBuV/m.</p> <p>Site : 03CH15-HY  Condition : AV6_BE_54 3m 91200_15_1620 VERTICAL  : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Fundamental Average. The plot shows a sharp peak at approximately 2437 MHz with a level of about 100 dBuV/m. The x-axis ranges from 1000 to 3000 MHz, and the y-axis ranges from 10.0 to 140.0 dBuV/m.</p> <p>Site : 03CH15-HY  Condition : AV6_54 3m 91200_15_1620 VERTICAL  : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>



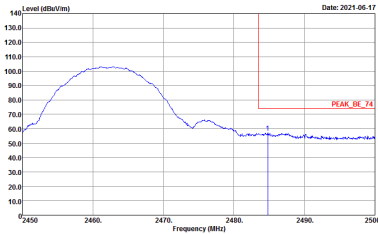
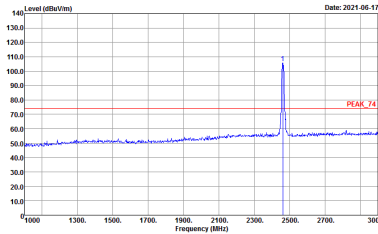
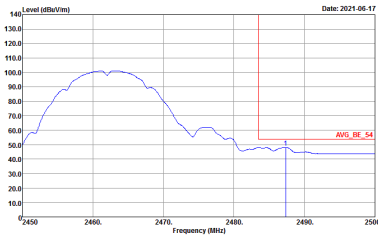
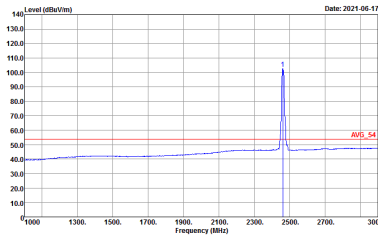
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	Left blank





WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Vertical	Fundamental
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Peak Vertical. The plot shows a broad peak around 2460 MHz and a sharp peak at 2462 MHz labeled 'PEAK_BE_74'. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 2450 to 2500 MHz.</p> <p>Site : 03CH15-HY            Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Peak Fundamental. The plot shows a sharp peak at 2462 MHz labeled 'PEAK_74'. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 1000 to 3000 MHz.</p> <p>Site : 03CH15-HY            Condition : PEAK_74 3m 91200_15_1620 VERTICAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Avg. Vertical. The plot shows a broad peak around 2460 MHz and a sharp peak at 2462 MHz labeled 'AVG_BE_54'. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 2450 to 2500 MHz.</p> <p>Site : 03CH15-HY            Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL            : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Avg. Fundamental. The plot shows a sharp peak at 2462 MHz labeled 'AVG_54'. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 1000 to 3000 MHz.</p> <p>Site : 03CH15-HY            Condition : AVG_54 3m 91200_15_1620 VERTICAL            : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>



2.4GHz 2400~2483.5MHz

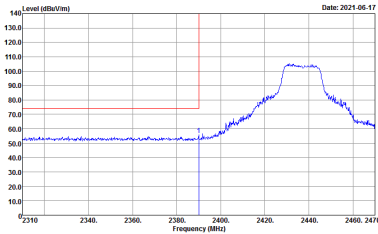
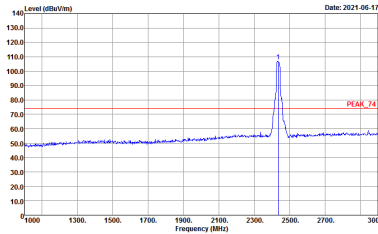
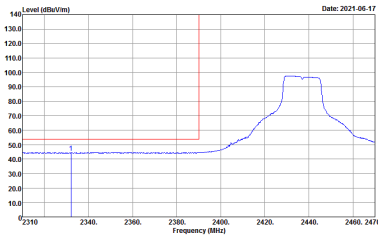
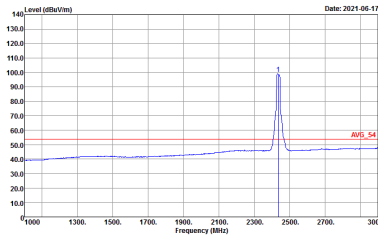
WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Vertical	Fundamental
Peak	<p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical Peak. The plot shows a signal level that rises from approximately 50 dBuV/m at 2380 MHz to about 100 dBuV/m at 2415 MHz. A red vertical line is positioned at 2412 MHz. The date is 2021-06-16.</p> <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Level (dBuV/m) vs Frequency (MHz) plot for Fundamental Peak. The plot shows a sharp peak at approximately 2412 MHz with a level of about 100 dBuV/m. A red horizontal line is labeled 'PEAK 74'. The date is 2021-06-16.</p> <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical Avg. The plot shows a signal level that rises from approximately 50 dBuV/m at 2380 MHz to about 100 dBuV/m at 2415 MHz. A red vertical line is positioned at 2412 MHz. The date is 2021-06-16.</p> <p>Site : 03CH15-HY Condition : AV6_BE_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	<p>Level (dBuV/m) vs Frequency (MHz) plot for Fundamental Avg. The plot shows a sharp peak at approximately 2412 MHz with a level of about 100 dBuV/m. A red horizontal line is labeled 'AVG 54'. The date is 2021-06-16.</p> <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>

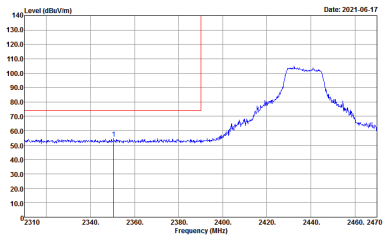
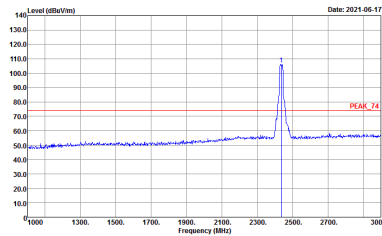
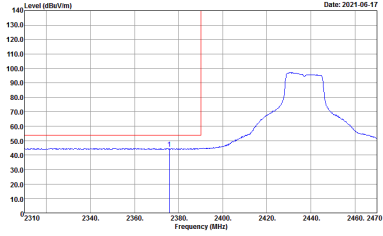
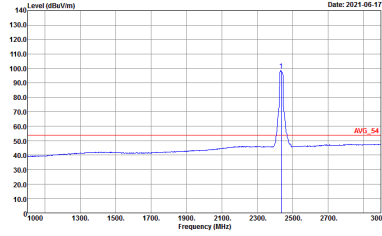


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AV6_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>

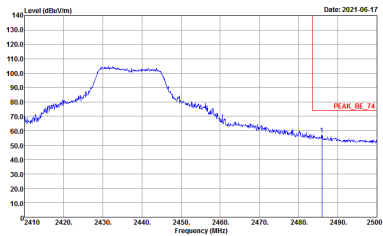
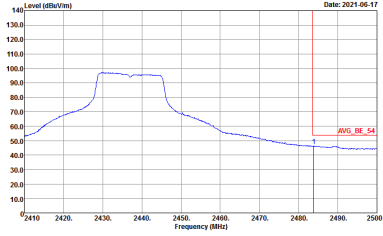


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	<p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	Left blank



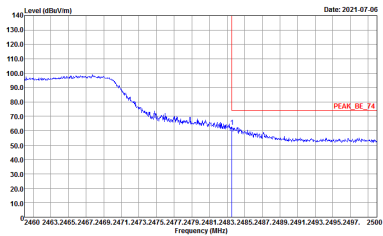
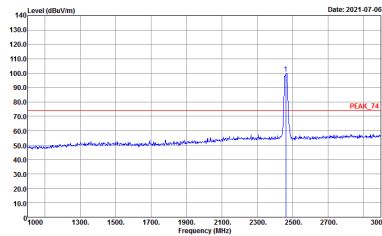
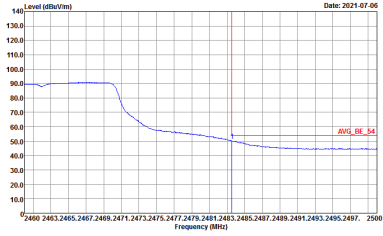
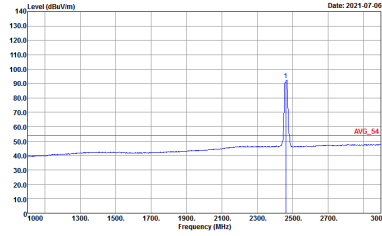
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AV6_BE_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>



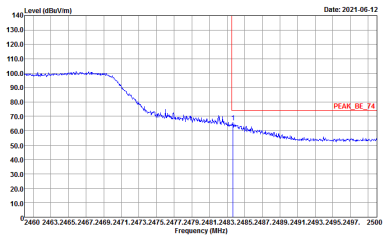
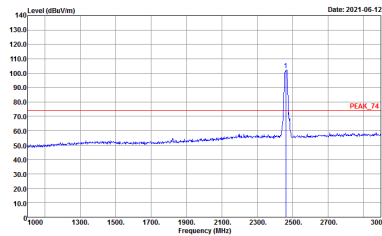
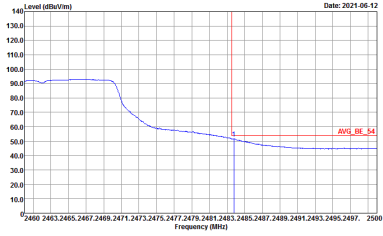
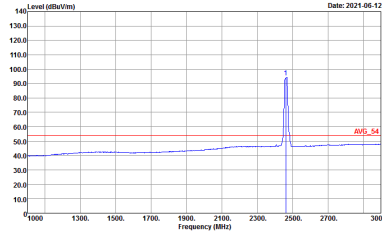
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left Blank
Avg.	 <p>Site : 03CH15-HY Condition : AV6_BE_54 3m 91200_15_1620 VERTICAL : RBW:1000.000kHz VBW:11000kHz SWT:Auto</p>	Left Blank





WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AV6_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz 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 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AV6_BE_54 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>

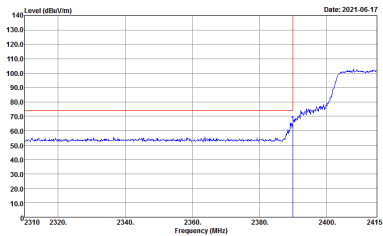
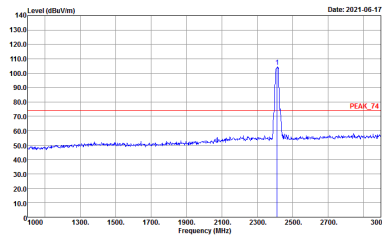
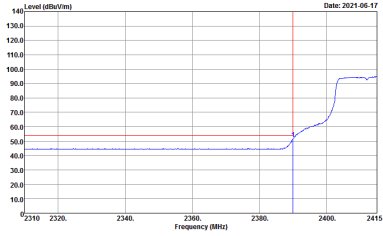
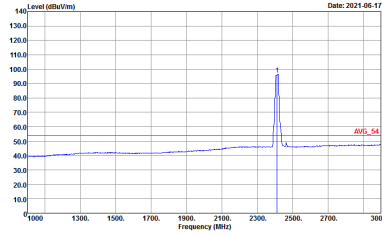


2.4GHz 2400~2483.5MHz

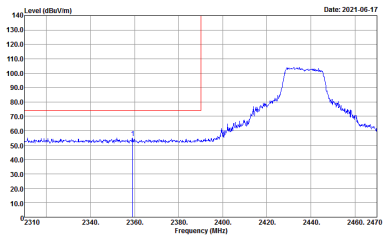
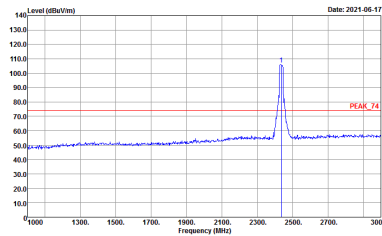
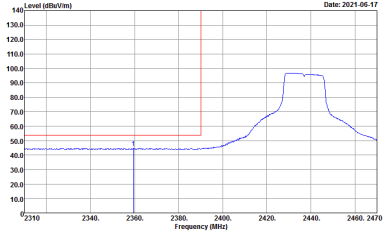
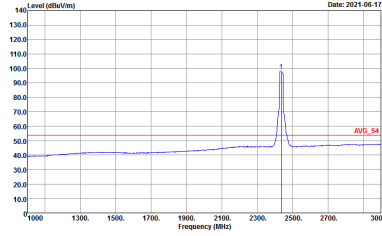
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	<p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:10000kHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:10000kHz SWT:Auto</p>

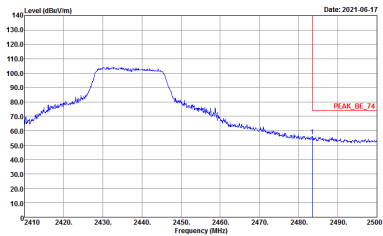
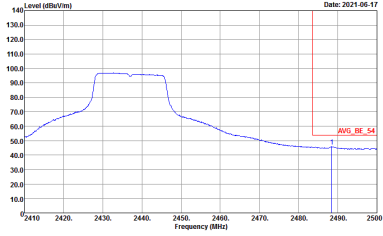


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AV6_BE_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing a peak at approximately 2437 MHz. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 2310 to 2470 MHz. A red vertical line marks the peak at 2437 MHz.</p> <p>Site : 03CH15-HY            Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL                          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing a sharp peak at 2437 MHz. The y-axis ranges from 0 to 140 dBuV/m, and the x-axis ranges from 1000 to 3000 MHz. A red horizontal line indicates the peak level at approximately 75 dBuV/m, labeled 'PEAK_74'.</p> <p>Site : 03CH15-HY            Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL                          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing the average spectrum. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 2310 to 2470 MHz. A red vertical line marks the peak at 2437 MHz.</p> <p>Site : 03CH15-HY            Condition : AV6_BE_54 3m 91200_15_1620 HORIZONTAL                          : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot showing the average spectrum. The y-axis ranges from 0 to 140 dBuV/m, and the x-axis ranges from 1000 to 3000 MHz. A red horizontal line indicates the average level at approximately 54 dBuV/m, labeled 'AVG_54'.</p> <p>Site : 03CH15-HY            Condition : AV6_54 3m 91200_15_1620 HORIZONTAL                          : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>

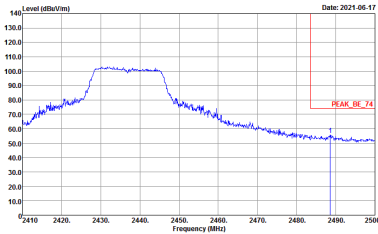
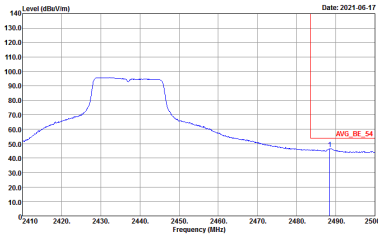


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000kHz VBW:1000kHz SWT:Auto</p>	Left blank



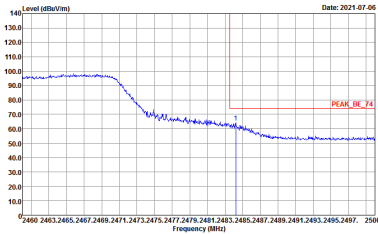
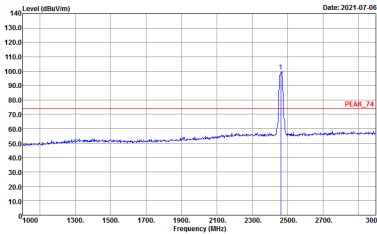
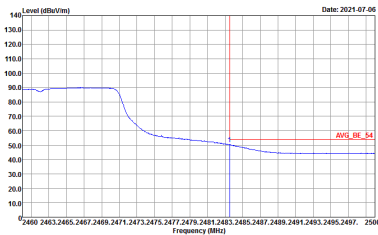
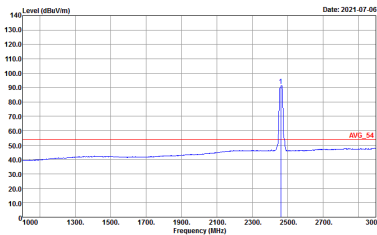
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Vertical	Fundamental
<b>Peak</b>	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
<b>Avg.</b>	<p>Site : 03CH15-HY Condition : AV6_BE_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : AV6_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>



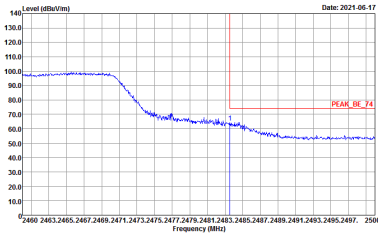
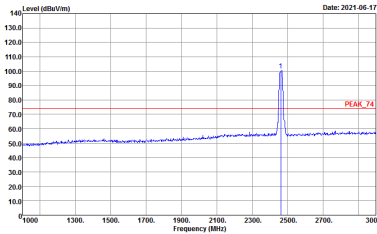
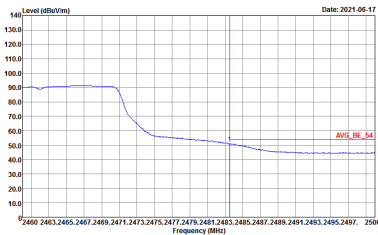
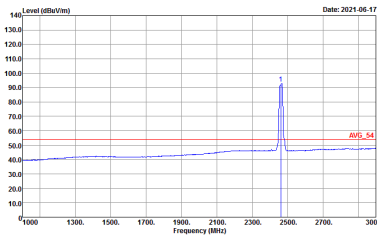
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Vertical	Fundamental
<p><b>Peak</b></p>	 <p>Site : 03CH15-HY            Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Left Blank</p>
<p><b>Avg.</b></p>	 <p>Site : 03CH15-HY            Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL            : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	<p>Left Blank</p>





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_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AV6_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>

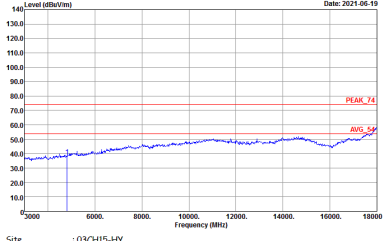
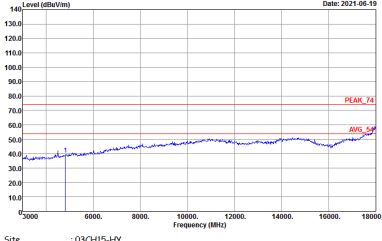


WIFI	2.4GHz 2400~2483.5MHz Fundamental @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH15-HY Condition : AV6_BE_54 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>	 <p>Site : 03CH15-HY Condition : AV6_54 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:1000KHz SWT:Auto</p>

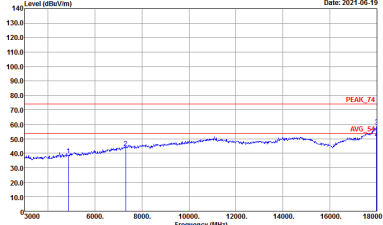
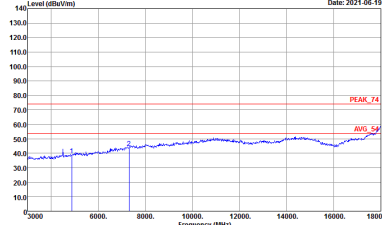


2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 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_15_1620 HORIZONTAL</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 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_15_1620 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL</p>

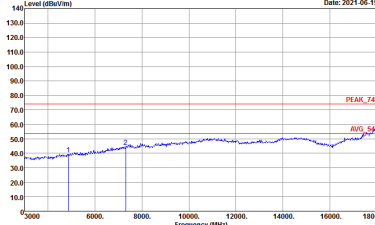
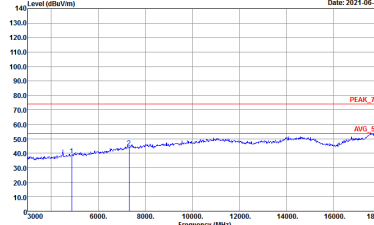


2.4GHz 2400~2483.5MHz

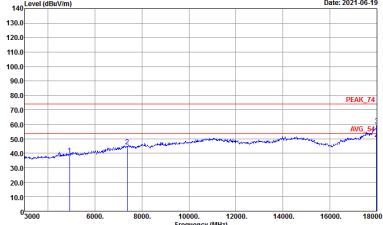
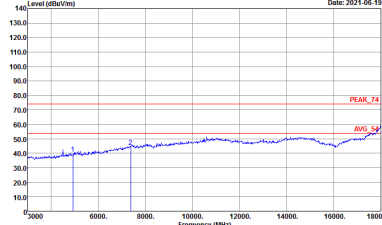
WIFI 802.11g (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 <p>Date: 2021-06-19</p> <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL</p>	 <p>Date: 2021-06-19</p> <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL</p>





2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL</p>



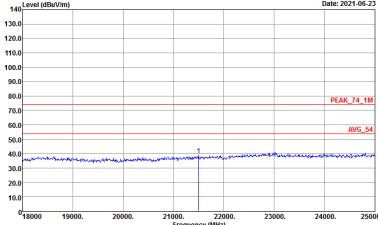
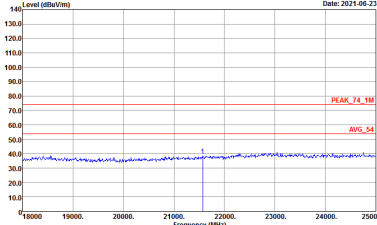
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL</p>

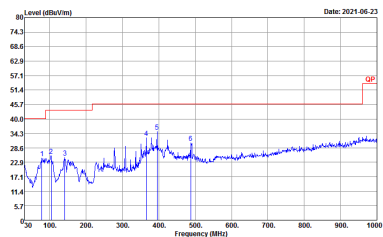
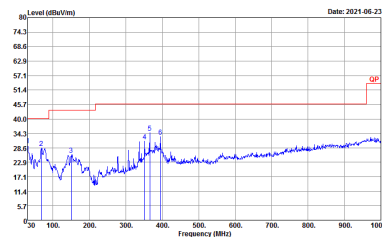


Emission above 18GHz  
2.4GHz WIFI 802.11g (SHF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g SHF	
1	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH15-HY Condition : PEAK_74_1M 1m SHF HORN B8HA9170576 HORIZONTAL</p>	 <p>Site : 03CH15-HY Condition : PEAK_74_1M 1m SHF HORN B8HA9170576 VERTICAL</p>



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

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g LF	
1	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH15-HY Condition : QP 3m BIL06_41912_20210208 HORIZONTAL</p>	 <p>Site : 03CH15-HY Condition : QP 3m BIL06_41912_20210208 VERTICAL</p>



## Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
802.11b	98.39	-	-	10Hz	0.07
802.11g	91.03	2030	0.49	1kHz	0.41
2.4GHz 802.11n HT20	90.43	1890	0.53	1kHz	0.44

