



RF MEASUREMENT REPORT

FCC ID: U4GDL36WF
Applicant: Datalogic S.r.l.
Product: Barcode Reader
Model No.: DL36WF
Brand Name: DATALOGIC
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15 Subpart C (Section 15.247)
Result: Complies
Test Date: 2022-09-13 ~ 2022-10-09

Reviewed By:

Jame Yuan

Approved By:

Robin Wu



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2209RSU002-U3	Rev. 01	Initial Report	2023-02-03	Valid

CONTENTS

Description	Page
1. General Information	5
1.1. Applicant	5
1.2. Manufacturer	5
1.3. Testing Facility	5
1.4. Product Information	6
1.5. Radio Specification under Test	7
1.6. Working Frequencies	8
2. Test Configuration	9
2.1. Test Mode	9
2.2. Test System Connection Diagram	9
2.3. Test Software	9
2.4. Applied Standards	10
2.5. Test Environment Condition	10
3. Antenna Requirements	11
4. Measuring Instrument	12
5. Decision Rules and Measurement Uncertainty	13
5.1. Decision Rules	13
5.2. Measurement Uncertainty	13
6. Test Result	14
6.1. Summary	14
6.2. 6dB Bandwidth Measurement	15
6.2.1. Test Limit	15
6.2.2. Test Procedure	15
6.2.3. Test Setting	15
6.2.4. Test Setup	15
6.2.5. Test Result	15
6.3. Output Power Measurement	16
6.3.1. Test Limit	16
6.3.2. Test Procedure	16
6.3.3. Test Setting	16
6.3.4. Test Setup	16
6.3.5. Test Result	16
6.4. Power Spectral Density Measurement	17
6.4.1. Test Limit	17
6.4.2. Test Procedure	17

6.4.3.	Test Setting	17
6.4.4.	Test Setup	17
6.4.5.	Test Result	18
6.5.	Conducted Band Edge and Out-of-Band Emissions Measurement	19
6.5.1.	Test Limit	19
6.5.2.	Test Procedure	19
6.5.3.	Test Settintg	19
6.5.4.	Test Setup	19
6.5.5.	Test Result	20
6.6.	Radiated Spurious Emission Measurement.....	21
6.6.1.	Test Limit	21
6.6.2.	Test Procedure	21
6.6.3.	Test Setting	21
6.6.4.	Test Setup	23
6.6.5.	Test Result	24
6.7.	Radiated Restricted Band Edge Measurement	25
6.7.1.	Test Limit	25
6.7.2.	Test Procedure	26
6.7.3.	Test Setting	26
6.7.4.	Test Setup	27
6.7.5.	Test Result	27
6.8.	AC Conducted Emissions Measurement	28
6.8.1.	Test Limit	28
6.8.2.	Test Setup	28
6.8.3.	Test Result	28
Appendix A – Test Result.....		29
A.1	Duty Cycle Test Result.....	29
A.2	6dB Bandwidth Test Result	30
A.3	Output Power Test Result	34
A.4	Power Spectral Density Test Result.....	36
A.5	Conducted Band Edge and Out-of-Band Emissions Test Result.....	40
A.6	Radiated Spurious Emission Test Result.....	47
A.7	Radiated Restricted Band Edge Test Result.....	52
A.8	AC Conducted Emissions Test Result	76
Appendix B – Test Setup Photograph		78
Appendix C – EUT Photograph		79

1. General Information

1.1. Applicant

Datalogic S.r.l.

Via San Vitalino no.13,Calderara di Reno -40012(BO)-Italy

1.2. Manufacturer

Datalogic S.r.l.

Via San Vitalino no.13,Calderara di Reno -40012(BO)-Italy

1.3. Testing Facility

☒	Test Site – MRT Suzhou Laboratory Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian’edang Rd., Wuzhong Economic Development Zone, Suzhou, China Laboratory Location (Suzhou - SIP) 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China Laboratory Accreditations A2LA: 3628.01 CNAS: L10551 FCC: CN1166 ISED: CN0001 VCCI: ☐ R-20025 ☐ G-20034 ☐ C-20020 ☐ T-20020 ☐ R-20141 ☐ G-20134 ☐ C-20103 ☐ T-20104
☐	Test Site – MRT Shenzhen Laboratory Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China Laboratory Accreditations A2LA: 3628.02 CNAS: L10551 FCC: CN1284 ISED: CN0105
☐	Test Site – MRT Taiwan Laboratory Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) Laboratory Accreditations TAF: L3261-190725 FCC: 291082, TW3261 ISED: TW3261

1.4. Product Information

Product Name	Barcode Reader
Model No.	DL36WF
S/N	S22HC0200 (Conducted) S22HC0118 (Radiated)
NFC Specification	13.56MHz
Wi-Fi Specification	802.11a/b/g/n/ac
Bluetooth Specification	v5.2 dual mode
WPT Specification	119-140kHz, WPT client type
Operating Temp.	-20 ~ 50°C
Power Type	3.60 ~ 4.35Vdc, typical 3.8Vdc
Accessories	
AC Adapter	Model: S008ACM0500200 Input: 100-240V ~ 50/60Hz, 0.3A Output: 5V, 2A, 10W
Rechargeable Li-ion Battery 1#	Model No.: BTDL36 Rated Voltage: 3.8V Rated Capacity: 3980mAh/15.1Wh Limited Charge Voltage: 4.35V
Rechargeable Li-ion Battery 2#	Model No.: BTDL35 Rated Voltage: 3.8V Rated Capacity: 3980mAh/15.1Wh Limited Charge Voltage: 4.35V
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification under Test

Frequency Range	802.11b/g/n-HT20: 2412 ~ 2462MHz
Channel Number	802.11b/g/n-HT20: 11
Type of Modulation	802.11b: DSSS 802.11g/n: OFDM
Data Rate	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 72.2Mbps
Antenna Type	PIFA
Antenna Gain	0.46 dBi

1.6. Working Frequencies

802.11b/g/n-HT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz
04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz
10	2457 MHz	11	2462 MHz	--	--

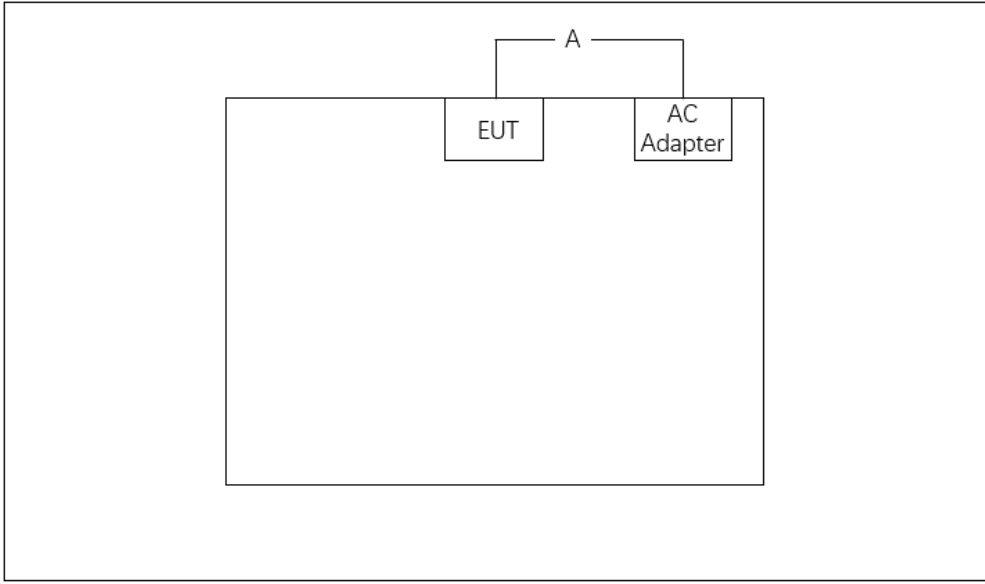
2. Test Configuration

2.1. Test Mode

Mode 1: Transmit by 802.11b (1Mbps)
Mode 2: Transmit by 802.11g (6Mbps)
Mode 3: Transmit by 802.11n-HT20 (MCS0)

2.2. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.

Connection Diagram – Radiated Emission testing & AC Conducted Emissions	
 <pre> graph TD A --- EUT A --- ACAdapter[AC Adapter] EUT --- ACAdapter </pre>	
Cable Type	Cable Description
A	Power Cable
	Shielded, 1.1m

2.3. Test Software

Type the code `***05740574***` to enter engineer mode to implement continuous transmit.

2.4. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15.247
- KDB 558074 D01v05r02
- ANSI C63.10-2013

2.5. Test Environment Condition

Ambient Temperature	15 ~ 35°C
Relative Humidity	20 ~ 75%RH

3. Antenna Requirements

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. 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 provisions of this section.”

- The antenna of the device is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2022-12-29	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2023-08-22	WZ-AC1
Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2022-11-12	WZ-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2023-06-21	WZ-AC1
Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2023-04-21	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE06403	1 year	2023-06-06	WZ-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2022-12-29	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE11039	1 year	2022-11-11	WZ-AC1
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2022-10-28	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2022-12-01	WZ-AC1
Preamplifier	EMCI	EMC184045SE	MRTSUE06640	1 year	2023-01-13	WZ-AC1
Preamplifier	EMCI	EMC051845SE	MRTSUE06987	1 year	2023-09-08	WZ-AC1
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2023-06-04	WZ-SR2
Shielding Room	MIX-BEP	WZ-SR2	MRTSUE06215	5 years	2026-12-20	WZ-SR2
Thermohygrometer	testo	608-H1	MRTSUE06404	1 year	2023-06-06	WZ-SR2
EMI Test Receiver	R&S	ESR3	MRTSUE06909	1 year	2022-11-01	WZ-SR2
Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2023-04-06	WZ-SR5
Thermohygrometer	testo	608-H1	MRTSUE06402	1 year	2023-06-06	WZ-SR5
Shielding Room	HUAMING	WZ-SR5	MRTSUE06442	N/A	N/A	WZ-SR5
Attenuator	MVE	MVE2213	MRTSUE11089	1 year	2023-06-09	WZ-SR5
USB Power Sensor	Keysight	U2021XA	MRTSUE06446	1 year	2023-06-04	WZ-SR5

Software	Version	Function
EMI Software	V3.0.0	EMI Test Software
Controller_MF 7802	2.03C	RE Antenna & Turntable
BenchVue Power Meter	2018.1	Power

5. Decision Rules and Measurement Uncertainty

5.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2.

(Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.2. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

AC Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Disturbance
Measurement Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 1.13dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 1.15dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 0.28%

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.247(a)(2)	6dB Bandwidth	Conducted	Pass
15.247(b)(3)	Output Power		Pass
15.247(e)	Power Spectral Density		Pass
15.247(d)	Band Edge / Out-of-Band Emissions		Pass
15.205 15.209	General Field Strength (Restricted Bands and Radiated Emission)	Radiated	Pass
15.207	AC Conducted Emissions 150kHz - 30MHz	Line Conducted	Pass

Remark:

1. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2. For radiated emission tests, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.

6.2. 6dB Bandwidth Measurement

6.2.1. Test Limit

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

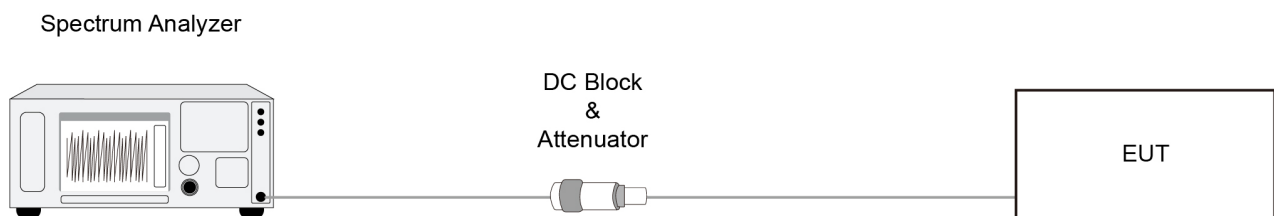
6.2.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.8

6.2.3. Test Setting

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 6$. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set RBW = 100 kHz
3. $VBW \geq 3 \times RBW$
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple
7. Allow the trace to stabilize

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.2.

6.3. Output Power Measurement

6.3.1. Test Limit

The maximum output power shall be less 1 Watt (30dBm).

The conducted output power limit specified in paragraph FCC Part 15.247(b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs FCC Part 15.247(b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.3.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.9.2.3.2

6.3.3. Test Setting

Average Power Measurement

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

6.3.4. Test Setup



6.3.5. Test Result

Refer to Appendix A.3.

6.4. Power Spectral Density Measurement

6.4.1. Test Limit

The maximum permissible power spectral density is 8dBm in any 3 kHz band.

The same method of determining the conducted output power shall be used to determine the power spectral density.

6.4.2. Test Procedure

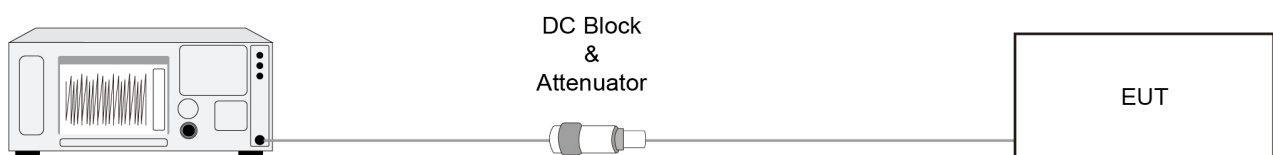
ANSI C63.10 - 2013 - Section 11.10.5

6.4.3. Test Setting

1. Measure the duty cycle (x) of the transmitter output signal.
2. Set instrument center frequency to DTS channel center frequency.
3. Set span to at least 1.5 times the OBW.
4. RBW = 10 kHz.
5. VBW = 30 kHz.
6. Detector = RMS.
7. Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
8. Sweep time = auto couple.
9. Don't use sweep triggering. Allow sweep to "free run".
10. Employ trace averaging (RMS) mode over a minimum of 100 traces.
11. Use the peak marker function to determine the maximum amplitude level.
12. Add $10 \log (1/x)$, where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time. If measured value exceeds requirement specified by regulatory agency, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

6.4.4. Test Setup

Spectrum Analyzer



6.4.5. Test Result

Refer to Appendix A.4.

6.5. Conducted Band Edge and Out-of-Band Emissions Measurement

6.5.1. Test Limit

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100 kHz bandwidth per the PSD procedure.

6.5.2. Test Procedure

ANSI C63.10-2013 - Section 11.11

6.5.3. Test Settling

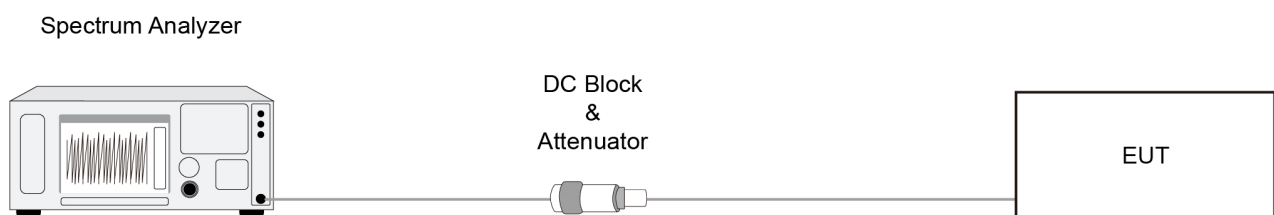
Reference level measurement

1. Set instrument center frequency to DTS channel center frequency
2. Set the span to ≥ 1.5 times the DTS bandwidth
3. Set the RBW = 100 kHz
4. Set the VBW $\geq 3 \times$ RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize

Emission level measurement

1. Set the center frequency and span to encompass frequency range to be measured
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

6.5.4. Test Setup



6.5.5. Test Result

Refer to Appendix A.5.

6.6. Radiated Spurious Emission Measurement

6.6.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.6.2. Test Procedure

ANSI C63.10 - 2013 - Section 11.11 & 11.12

ANSI C63.10 - 2013 - Section 6.3 (General Requirements)

ANSI C63.10 - 2013 - Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 - 2013 - Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 - 2013 - Section 6.6 (Standard test method above 1GHz)

6.6.3. Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000MHz	1MHz

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1GHz

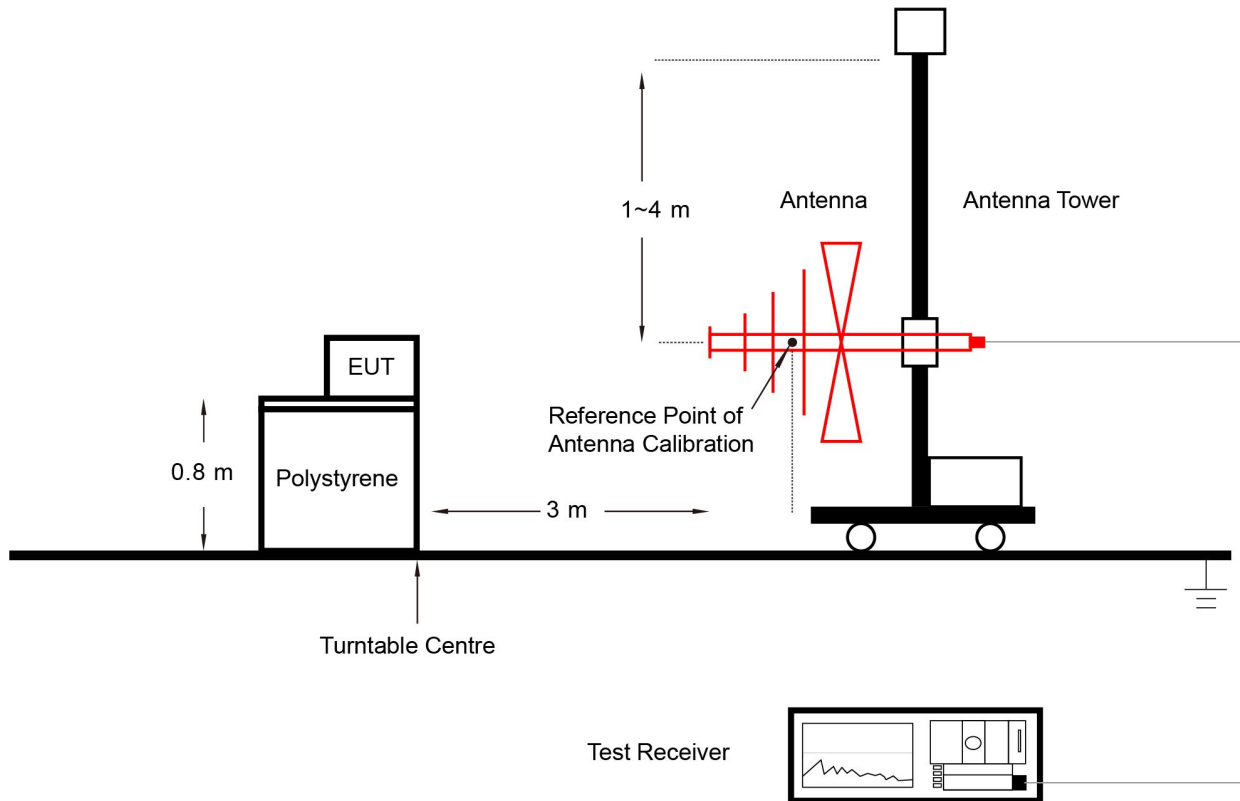
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

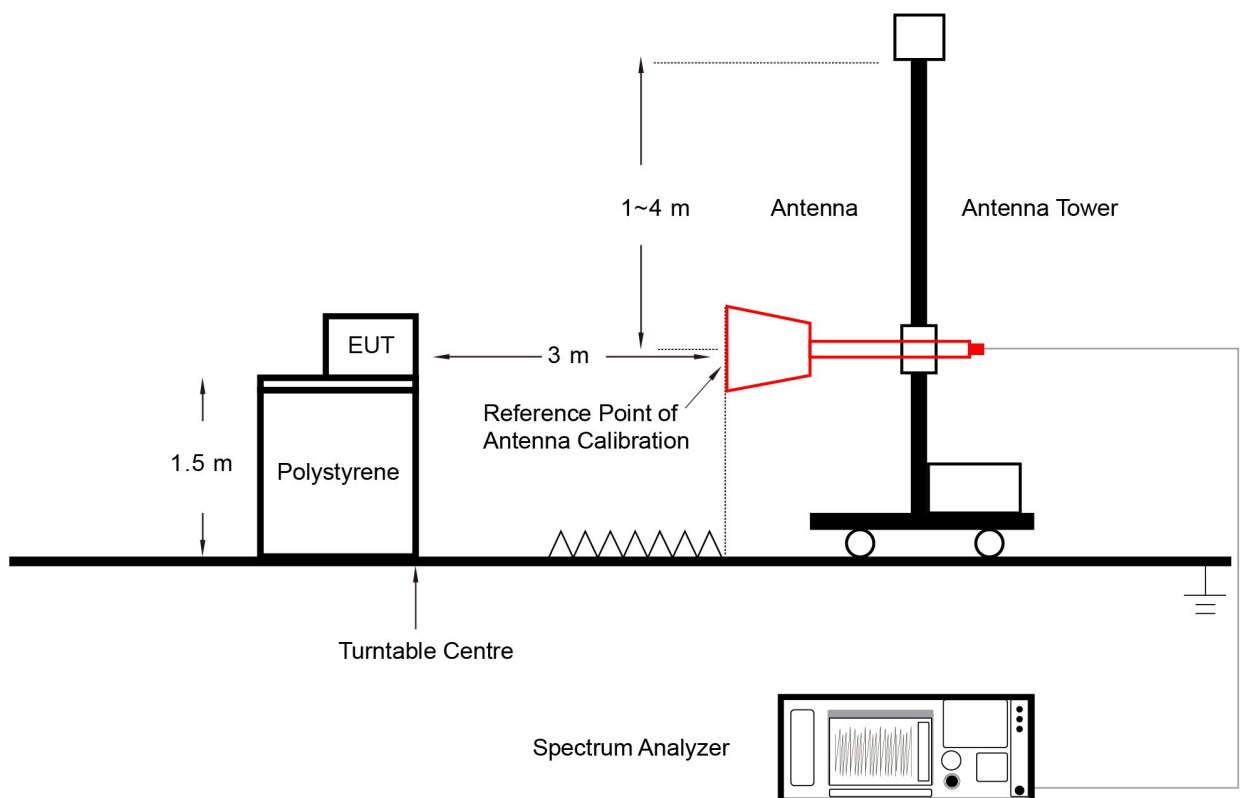
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

6.6.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.6.5. Test Result

Refer to Appendix A.6.

6.7. Radiated Restricted Band Edge Measurement

6.7.1. Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41	--	--	--

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.7.2. Test Procedure

ANSI C63.10-2013 Section 6.3 & 6.6 & 11.13

6.7.3. Test Setting

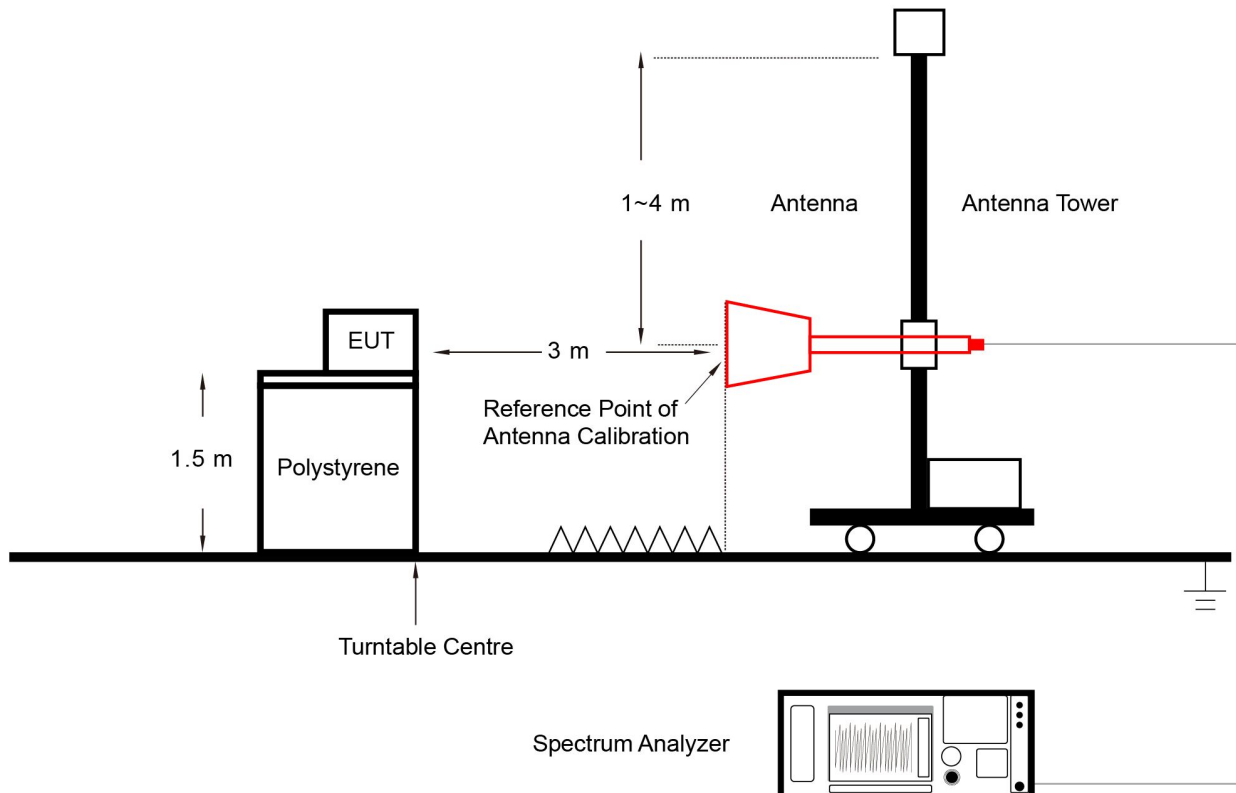
Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW $\geq 1/T$
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

6.7.4. Test Setup



6.7.5. Test Result

Refer to Appendix A.7.

6.8. AC Conducted Emissions Measurement

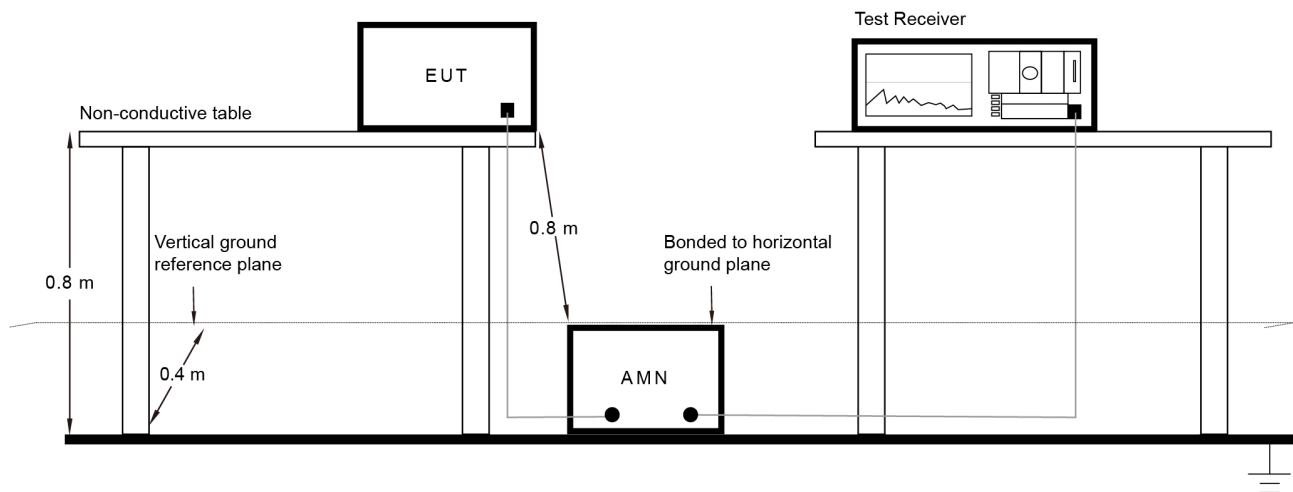
6.8.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.8.2. Test Setup



6.8.3. Test Result

Refer to Appendix A.8.

Appendix A – Test Result

A.1 Duty Cycle Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2022-09-13		

Test Mode	Duty Cycle
802.11b	99.47%
802.11g	96.87%
802.11n-HT20	96.35%



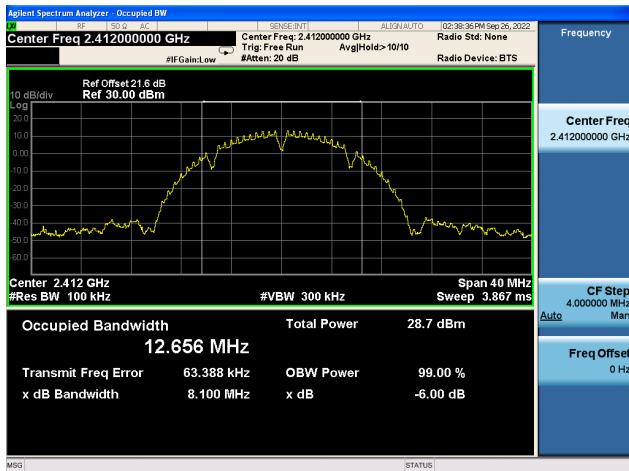
A.2 6dB Bandwidth Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2022-09-26		

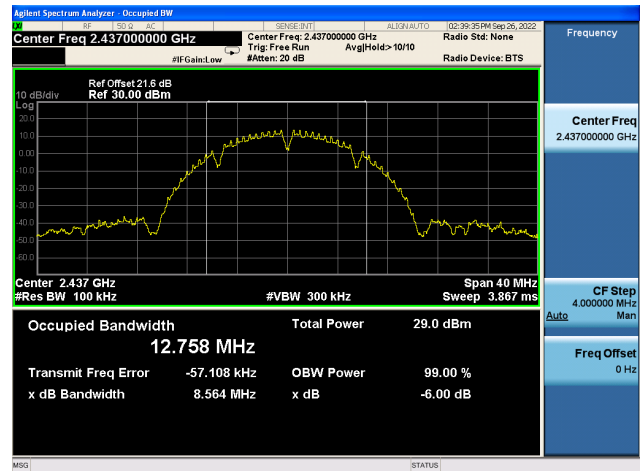
Test Mode	Data Rate / MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
11b	1Mbps	01	2412	8.100	≥ 0.5
11b	1Mbps	06	2437	8.564	≥ 0.5
11b	1Mbps	11	2462	8.070	≥ 0.5
11g	6Mbps	01	2412	15.16	≥ 0.5
11g	6Mbps	06	2437	15.17	≥ 0.5
11g	6Mbps	11	2462	15.43	≥ 0.5
11n-HT20	MCS0	01	2412	15.14	≥ 0.5
11n-HT20	MCS0	06	2437	15.14	≥ 0.5
11n-HT20	MCS0	11	2462	15.45	≥ 0.5

802.11b 6dB Bandwidth

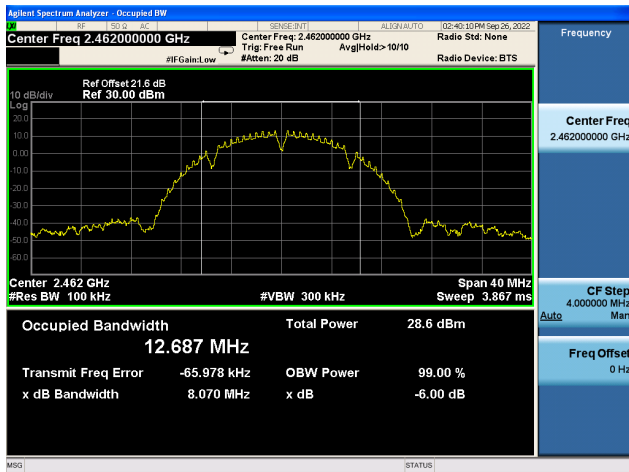
Channel 01 (2412MHz)

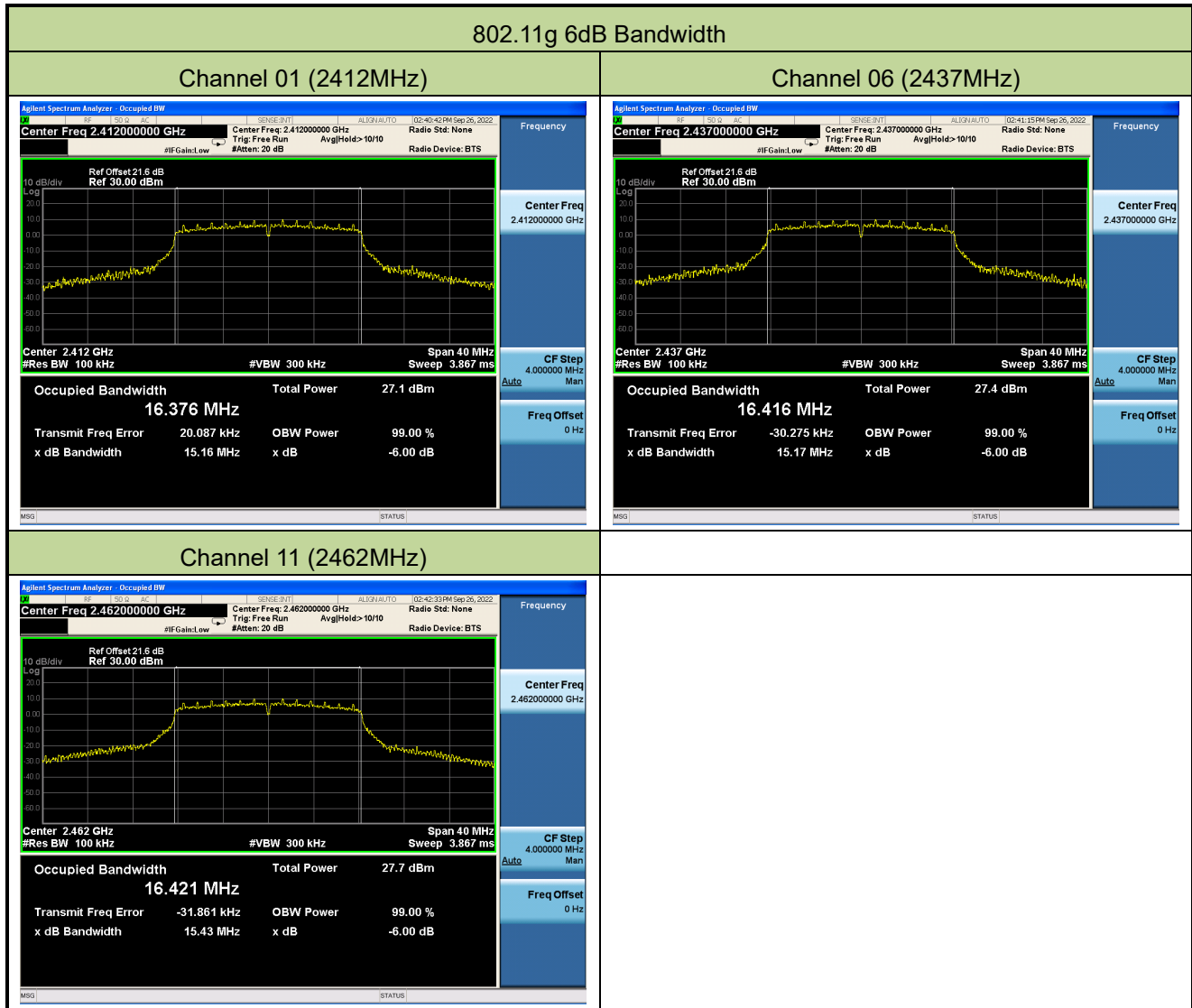


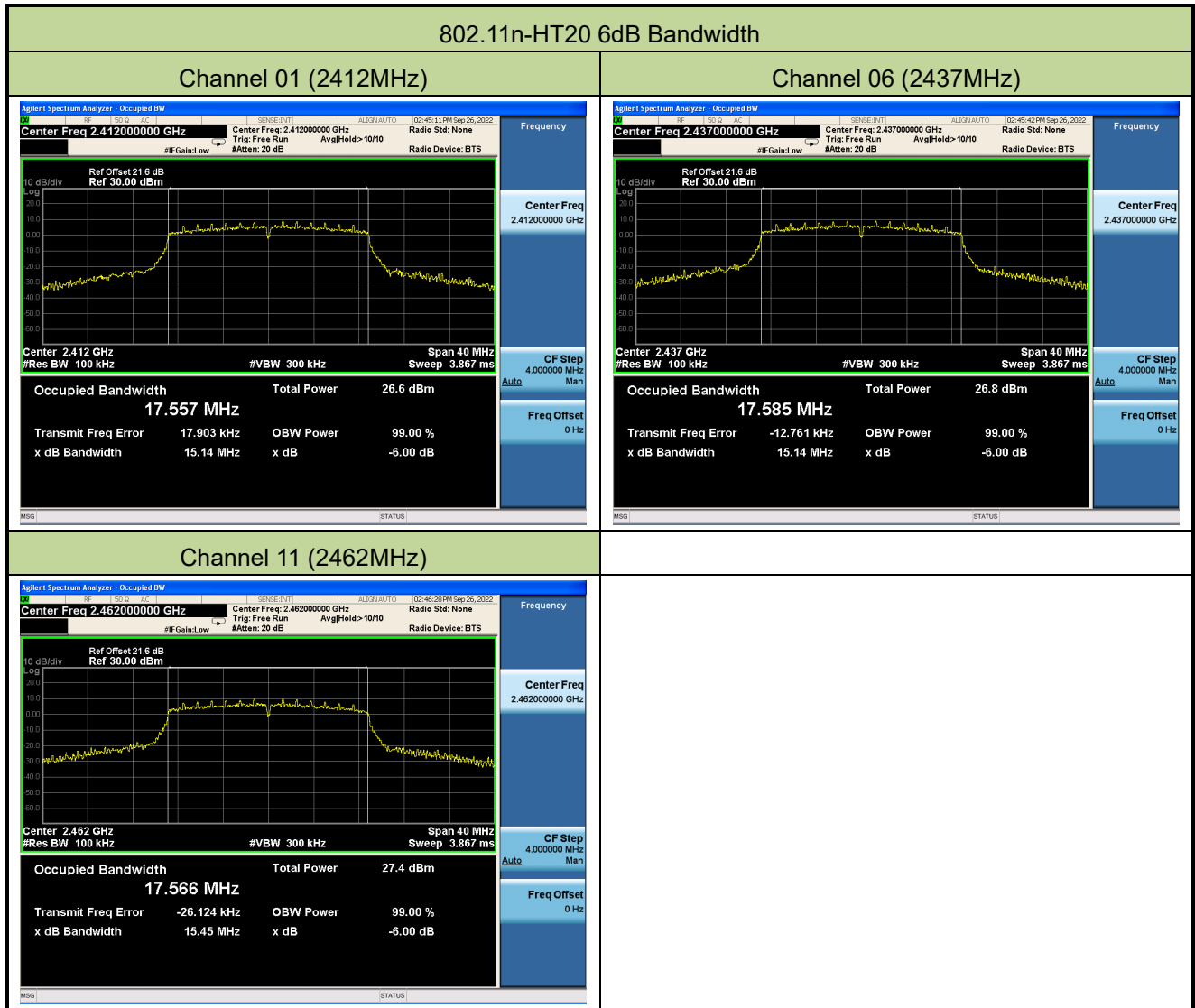
Channel 06 (2437MHz)



Channel 11 (2462MHz)







A.3 Output Power Test Result

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (gray marker) for final test of each channel.

Test Mode	Bandwidth (MHz)	Channel No.	Frequency (MHz)	Data Rate / MCS	Average Power (dBm)
802.11b	20	1	2412	1Mbps	19.98
				2Mbps	19.91
				5.5Mbps	19.94
				11Mbps	19.91
802.11g	20	1	2412	6Mbps	20.10
				9Mbps	20.05
				12Mbps	20.03
				18Mbps	20.06
				24Mbps	20.07
				36Mbps	19.61
				48Mbps	19.26
				54Mbps	18.95
802.11n	20	1	2412	MCS0	19.88
				MCS1	19.75
				MCS2	19.77
				MCS3	19.74
				MCS4	19.67
				MCS5	18.95
				MCS6	18.98
				MCS7	18.94

Note: The above power table is only for evaluating the worst data rate.

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2022-09-19 ~ 2022-09-28		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)	Limit (dBm)
11b	1Mbps	01	2412	20.27	≤ 30.00
11b	1Mbps	06	2437	20.38	≤ 30.00
11b	1Mbps	11	2462	20.38	≤ 30.00
11g	6Mbps	01	2412	19.78	≤ 30.00
11g	6Mbps	06	2437	19.75	≤ 30.00
11g	6Mbps	11	2462	19.96	≤ 30.00
11n-HT20	MCS0	01	2412	19.74	≤ 30.00
11n-HT20	MCS0	06	2437	19.63	≤ 30.00
11n-HT20	MCS0	11	2462	19.48	≤ 30.00

A.4 Power Spectral Density Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2022-09-26 ~ 2022-09-29		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	AVPSD (dBm / 10kHz)	Duty Cycle (%)	Total PSD (dBm / 10kHz)	Limit (dBm / 3kHz)
11b	1Mbps	01	2412	-6.229	99.47	-6.229	≤ 8.00
11b	1Mbps	06	2437	-6.201	99.47	-6.201	≤ 8.00
11b	1Mbps	11	2462	-6.165	99.47	-6.165	≤ 8.00
11g	6Mbps	01	2412	-8.811	96.87	-8.673	≤ 8.00
11g	6Mbps	06	2437	-8.925	96.87	-8.787	≤ 8.00
11g	6Mbps	11	2462	-8.835	96.87	-8.697	≤ 8.00
11n-HT20	MCS0	01	2412	-9.213	96.35	-9.052	≤ 8.00
11n-HT20	MCS0	06	2437	-8.765	96.35	-8.604	≤ 8.00
11n-HT20	MCS0	11	2462	-8.907	96.35	-8.746	≤ 8.00

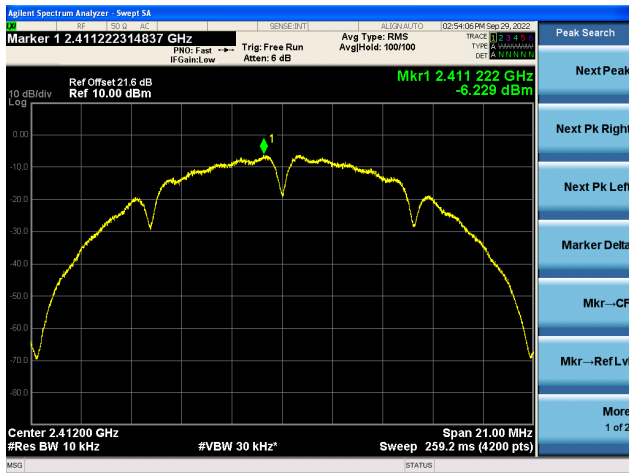
Note:

When EUT duty cycle > 98%, Total GPSD = AVGPSD

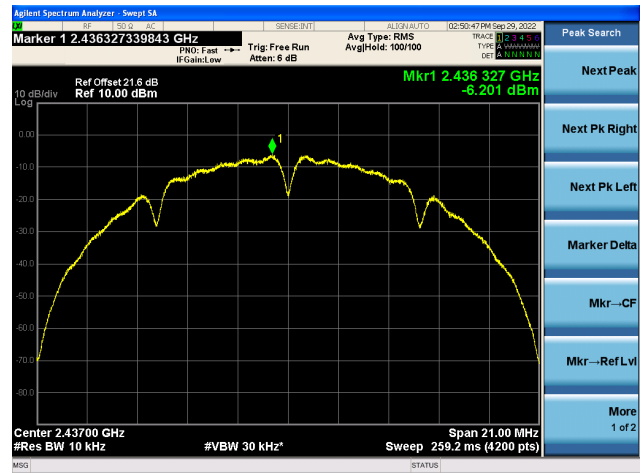
When EUT duty cycle ≤ 98%, Total GPSD = AVGPSD + 10*log (1/Duty Cycle).

802.11b - PSD

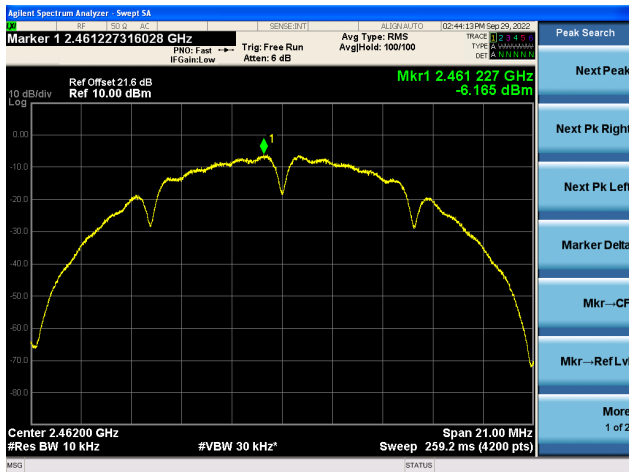
Channel 01 (2412MHz)



Channel 06 (2437MHz)

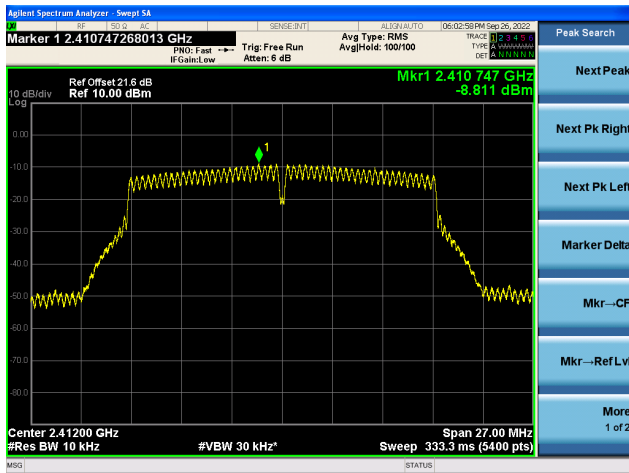


Channel 11 (2462MHz)

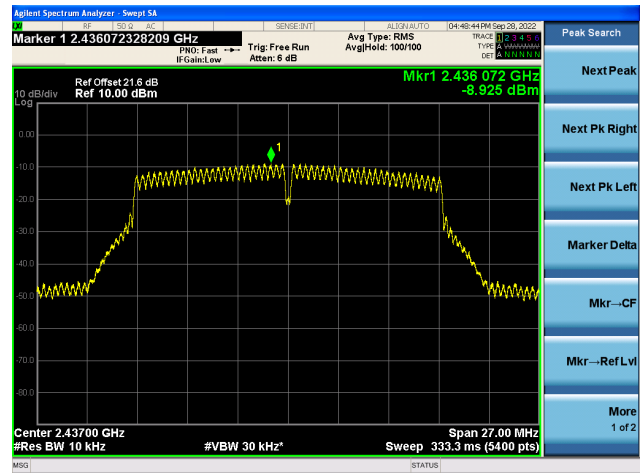


802.11g - PSD

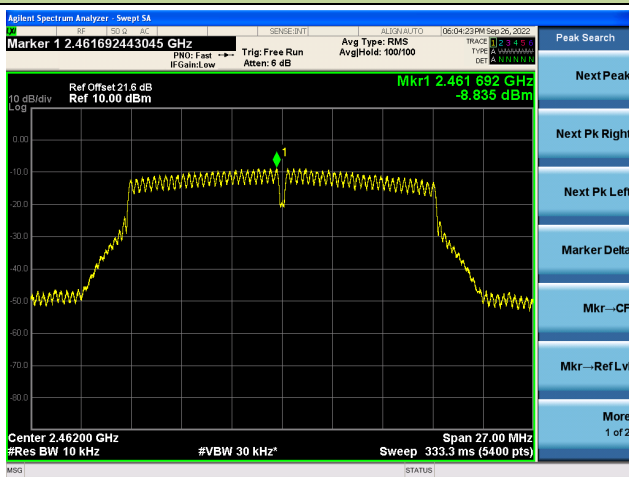
Channel 01 (2412MHz)



Channel 06 (2437MHz)

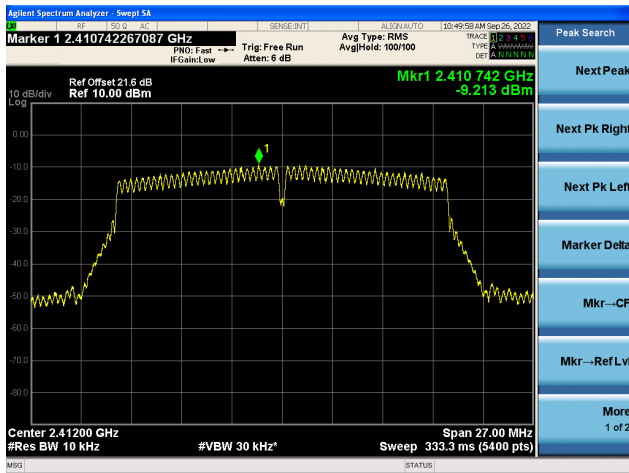


Channel 11 (2462MHz)

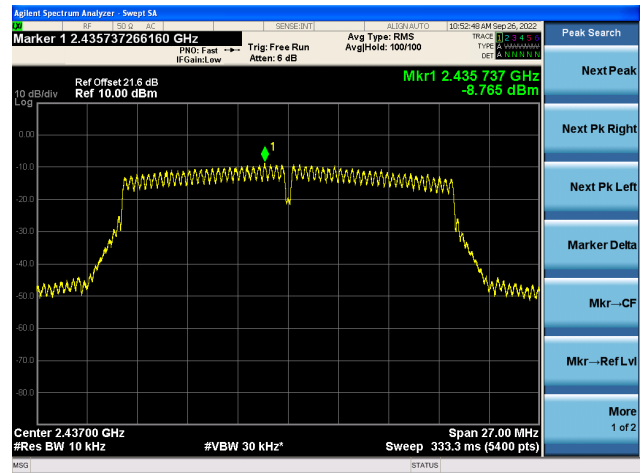


802.11n-HT20 - PSD

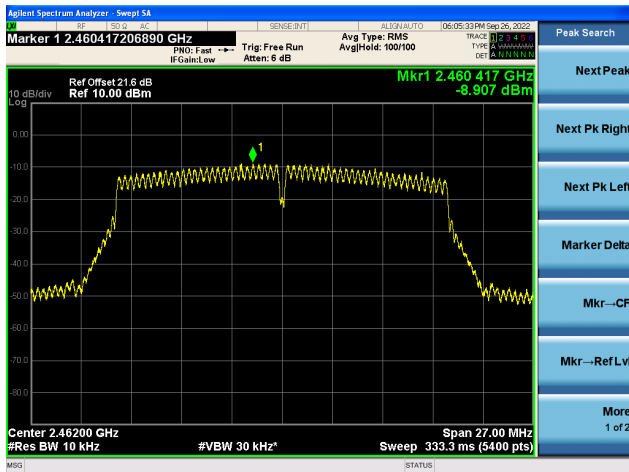
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



A.5 Conducted Band Edge and Out-of-Band Emissions Test Result

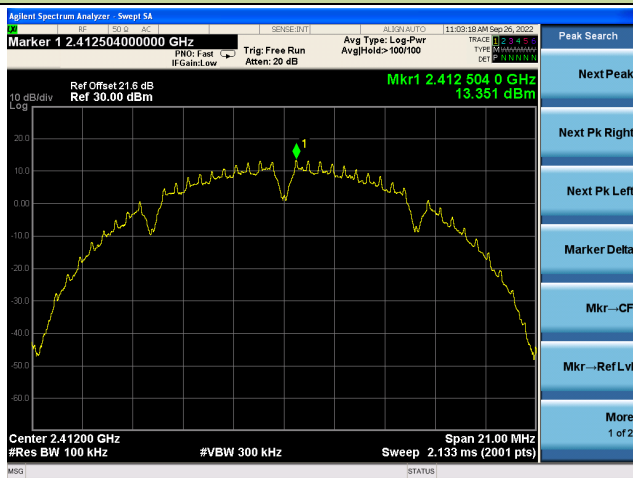
Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2022-09-26		

Test Mode	Data Rate / MCS	Channel No.	Frequency (MHz)	Limit
11b	1Mbps	01	2412	30dBc
11b	1Mbps	06	2437	30dBc
11b	1Mbps	11	2462	30dBc
11g	6Mbps	01	2412	30dBc
11g	6Mbps	06	2437	30dBc
11g	6Mbps	11	2462	30dBc
11n-HT20	MCS0	01	2412	30dBc
11n-HT20	MCS0	06	2437	30dBc
11n-HT20	MCS0	11	2462	30dBc

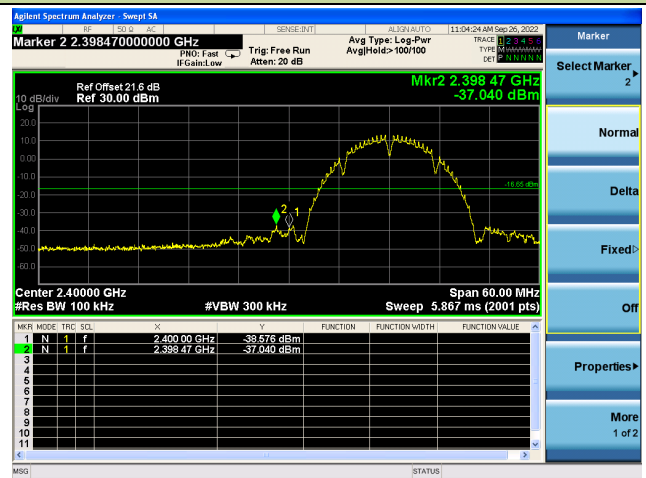
802.11b Out-of-Band Emissions

Channel 01 (2412MHz)

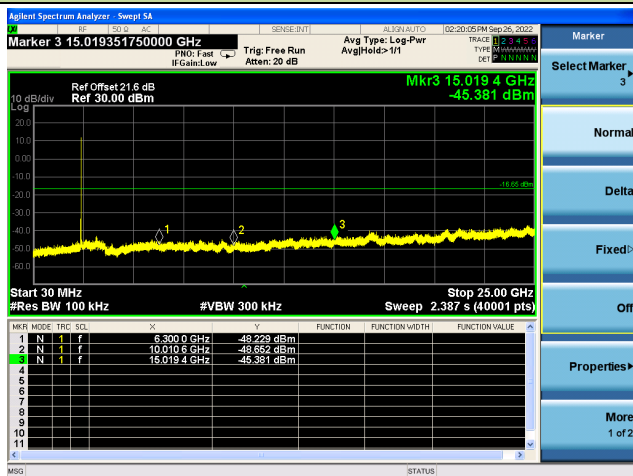
100kHz PSD Reference Level



Low Band Edge

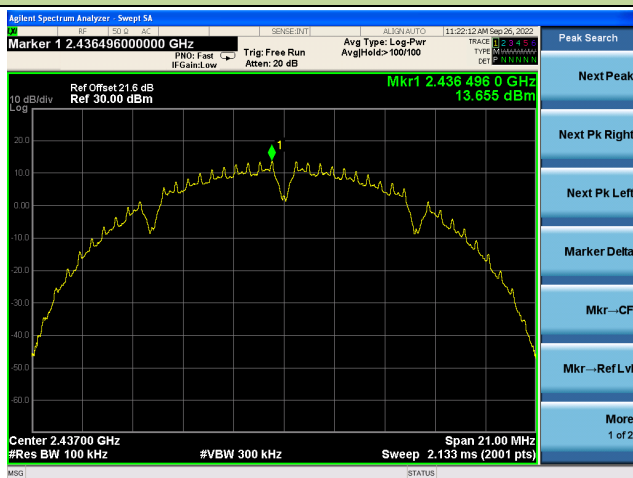


Spurious Emission

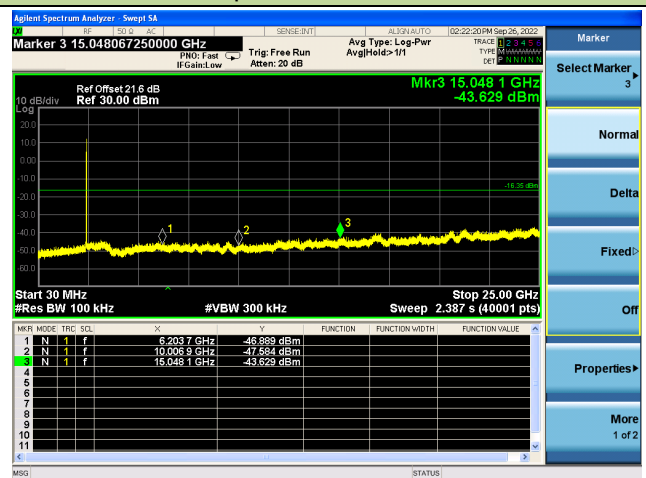


Channel 06 (2437MHz)

100kHz PSD Reference Level



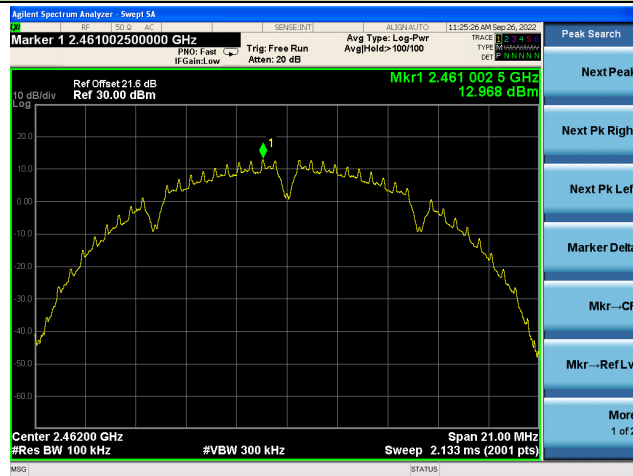
Spurious Emission



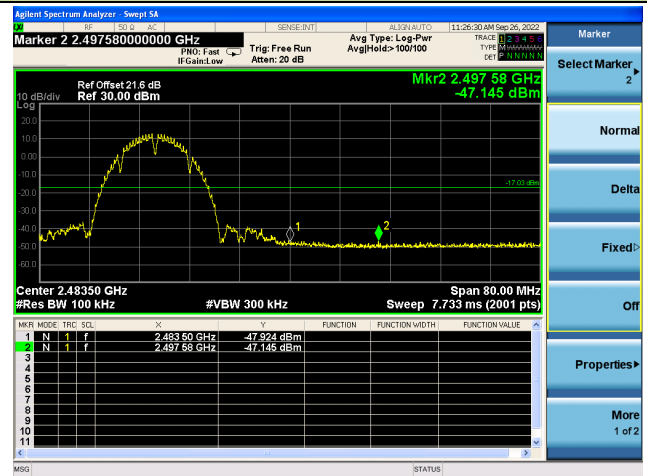
802.11b Out-of-Band Emissions

Channel 11 (2462MHz)

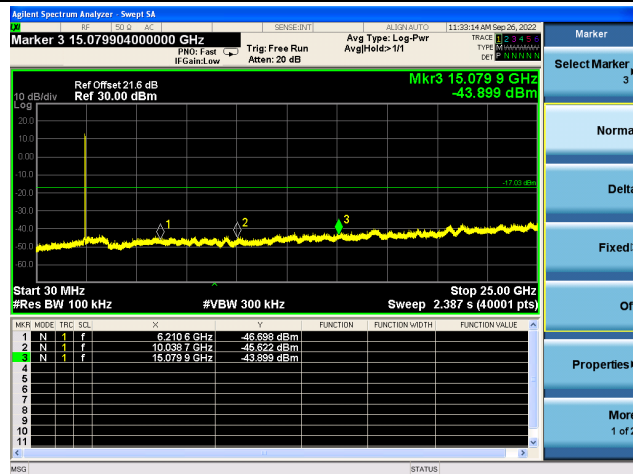
100kHz PSD Reference Level



High Band Edge



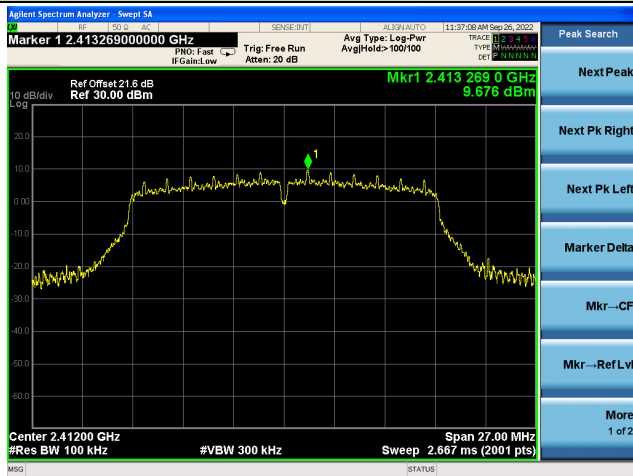
Spurious Emission



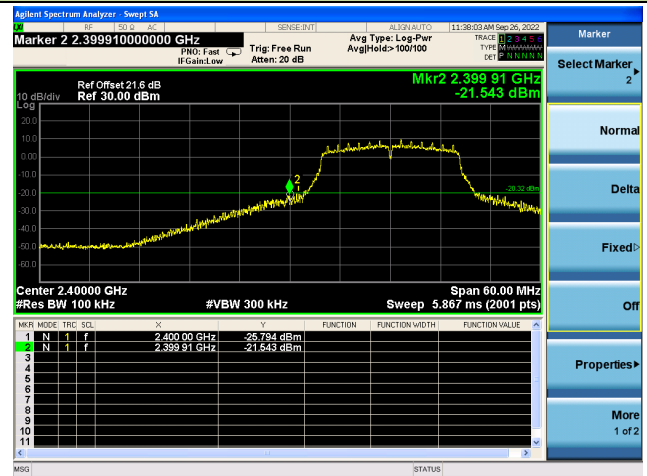
802.11g Out-of-Band Emissions

Channel 01 (2412MHz)

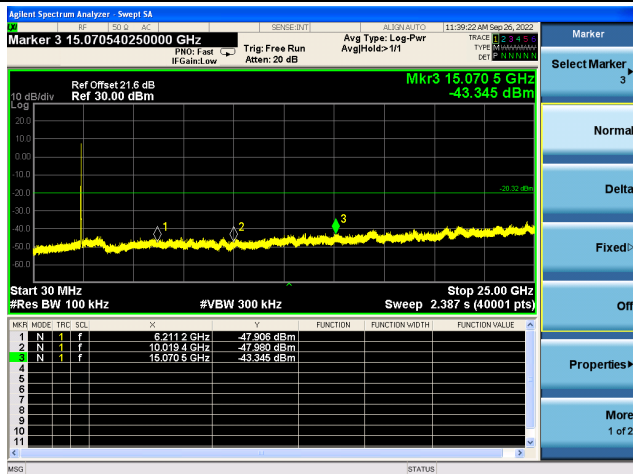
100kHz PSD Reference Level



Low Band Edge

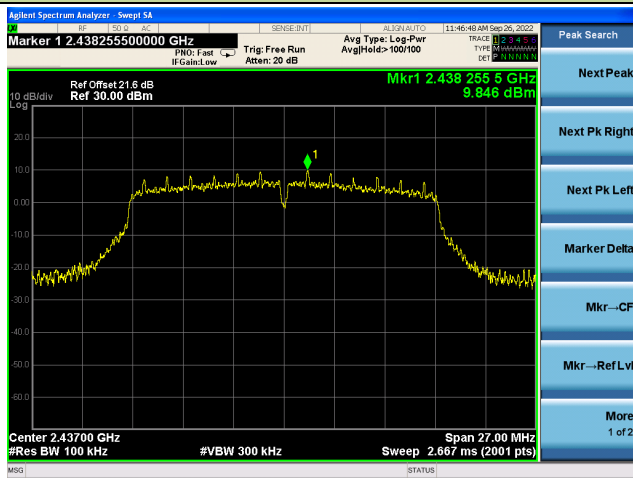


Spurious Emission

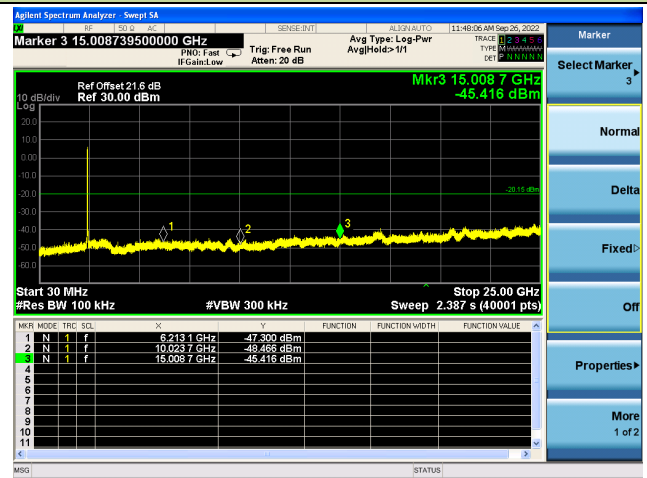


Channel 06 (2437MHz)

100kHz PSD Reference Level



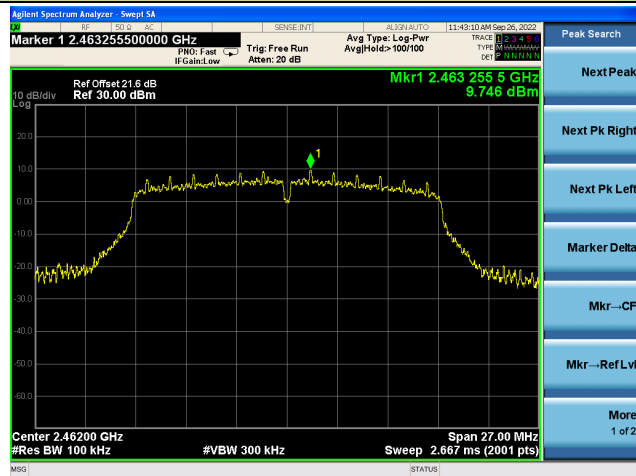
Spurious Emission



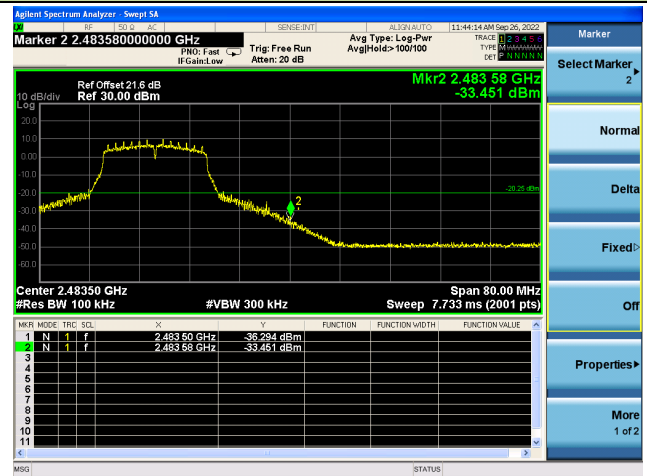
802.11g Out-of-Band Emissions –Ant 0

Channel 11 (2462MHz)

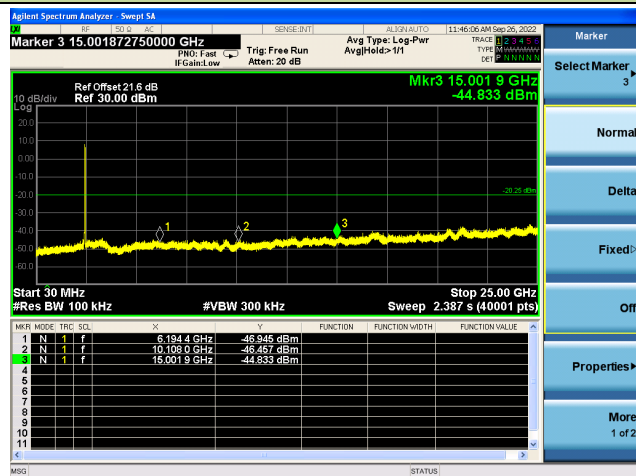
100kHz PSD Reference Level



High Band Edge



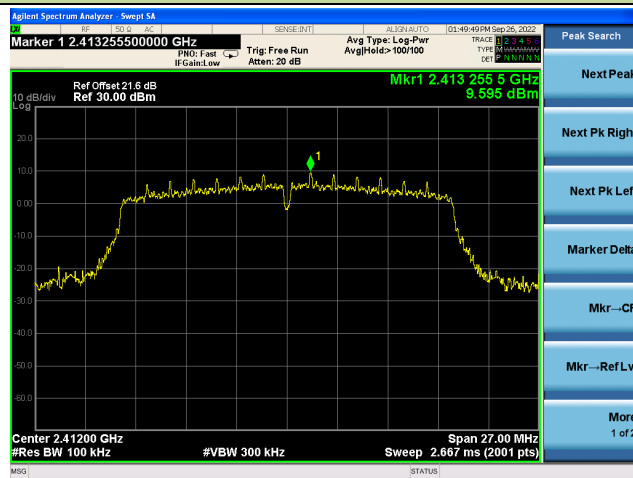
Spurious Emission



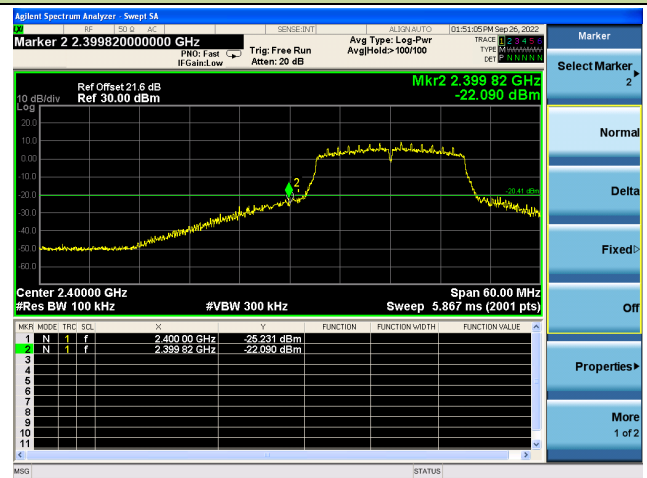
802.11n-HT20 Out-of-Band Emissions

Channel 01 (2412MHz)

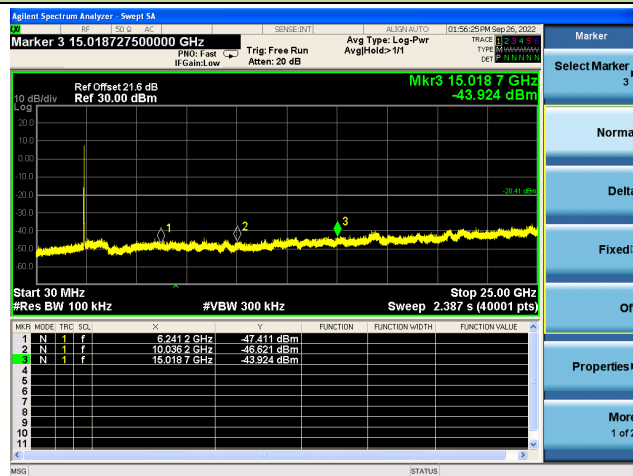
100kHz PSD Reference Level



Low Band Edge

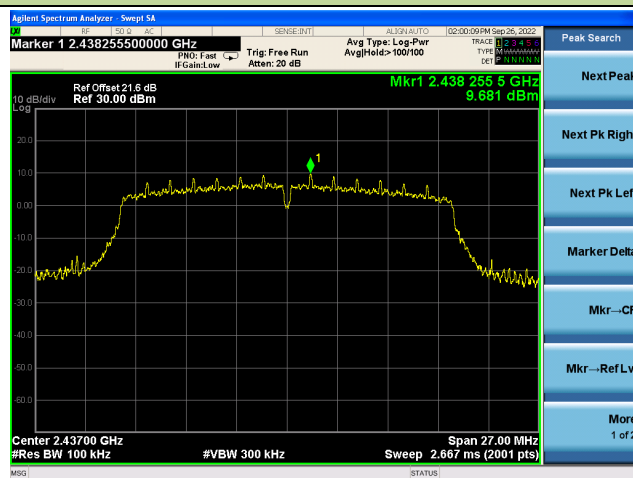


Spurious Emission

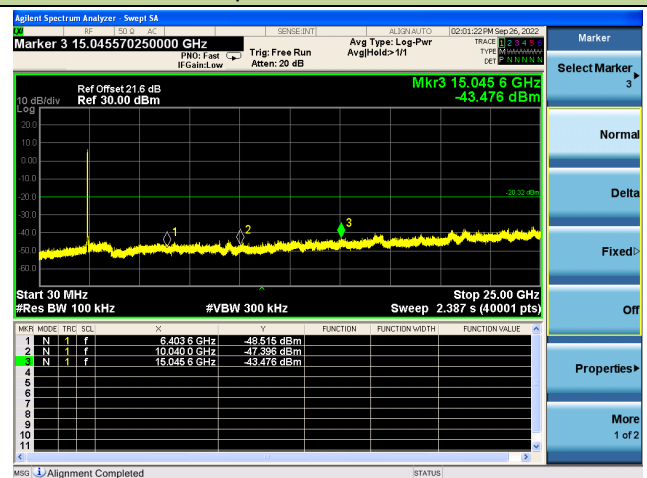


Channel 06 (2437MHz)

100kHz PSD Reference Level



Spurious Emission



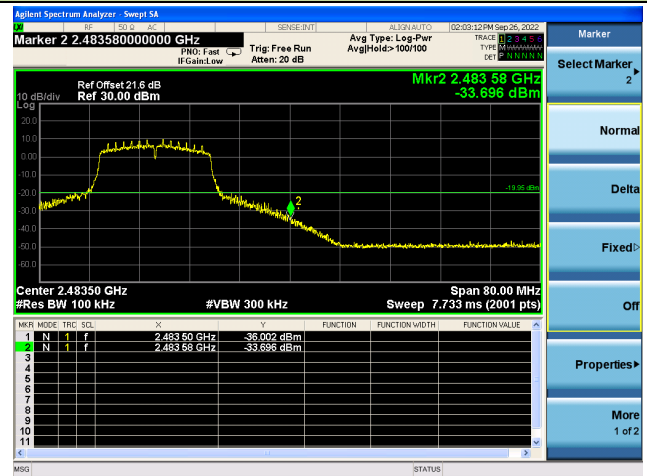
802.11n-HT20 Out-of-Band Emissions

Channel 11 (2462MHz)

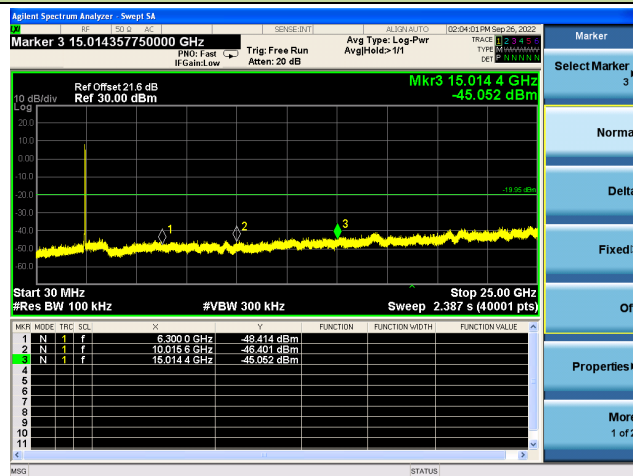
100kHz PSD Reference Level



High Band Edge



Spurious Emission



A.6 Radiated Spurious Emission Test Result

Test Site	WZ-AC1	Test Engineer	Carl Jiang
Test Date	2022-09-22	Test Mode:	802.11b
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	9066.5	36.9	10.7	47.6	74.0	-26.4	Peak	Horizontal
	10877.0	35.4	13.4	48.8	74.0	-25.2	Peak	Horizontal
	12118.0	35.4	12.2	47.6	74.0	-26.4	Peak	Horizontal
	9389.5	34.2	12.0	46.2	74.0	-27.8	Peak	Vertical
	10885.5	34.8	13.4	48.2	74.0	-25.8	Peak	Vertical
	12203.0	36.1	12.1	48.2	74.0	-25.8	Peak	Vertical
06	9134.5	36.2	11.1	47.3	74.0	-26.7	Peak	Horizontal
	10868.5	35.3	13.3	48.6	74.0	-25.4	Peak	Horizontal
	12143.5	35.9	12.1	48.0	74.0	-26.0	Peak	Horizontal
	9168.5	35.3	11.2	46.5	74.0	-27.5	Peak	Vertical
	10987.5	35.3	13.6	48.9	74.0	-25.1	Peak	Vertical
	12390.0	36.3	11.7	48.0	74.0	-26.0	Peak	Vertical
11	9126.0	34.7	11.2	45.9	74.0	-28.1	Peak	Horizontal
	10792.0	35.4	13.6	49.0	74.0	-25.0	Peak	Horizontal
	12364.5	35.7	12.0	47.7	74.0	-26.3	Peak	Horizontal
	9151.5	35.3	11.1	46.4	74.0	-27.6	Peak	Vertical
	11480.5	36.5	13.0	49.5	74.0	-24.5	Peak	Vertical
	12407.0	35.8	11.9	47.7	74.0	-26.3	Peak	Vertical

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Test Site	WZ-AC1	Test Engineer	Carl Jiang
Test Date	2022-09-22	Test Mode:	802.11g
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	9058.0	37.0	10.5	47.5	74.0	-26.5	Peak	Horizontal
	11089.5	35.9	13.3	49.2	74.0	-24.8	Peak	Horizontal
	12407.0	35.7	11.9	47.6	74.0	-26.4	Peak	Horizontal
	9134.5	34.5	11.1	45.6	74.0	-28.4	Peak	Vertical
	10894.0	35.3	13.4	48.7	74.0	-25.3	Peak	Vertical
	12050.0	35.0	12.4	47.4	74.0	-26.6	Peak	Vertical
06	9126.0	36.5	11.2	47.7	74.0	-26.3	Peak	Horizontal
	10928.0	34.8	13.5	48.3	74.0	-25.7	Peak	Horizontal
	12594.0	35.9	11.8	47.7	74.0	-26.3	Peak	Horizontal
	9058.0	35.0	10.5	45.5	74.0	-28.5	Peak	Vertical
	10928.0	35.6	13.5	49.1	74.0	-24.9	Peak	Vertical
	12534.5	35.7	11.8	47.5	74.0	-26.5	Peak	Vertical
11	8437.5	36.7	8.6	45.3	74.0	-28.7	Peak	Horizontal
	10877.0	34.5	13.4	47.9	74.0	-26.1	Peak	Horizontal
	11497.5	35.5	13.3	48.8	74.0	-25.2	Peak	Horizontal
	9126.0	35.7	11.2	46.9	74.0	-27.1	Peak	Vertical
	11574.0	36.7	12.7	49.4	74.0	-24.6	Peak	Vertical
	12007.5	34.9	12.3	47.2	74.0	-26.8	Peak	Vertical

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Test Site	WZ-AC1	Test Engineer	Carl Jiang
Test Date	2022-09-22	Test Mode:	802.11n-HT20
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

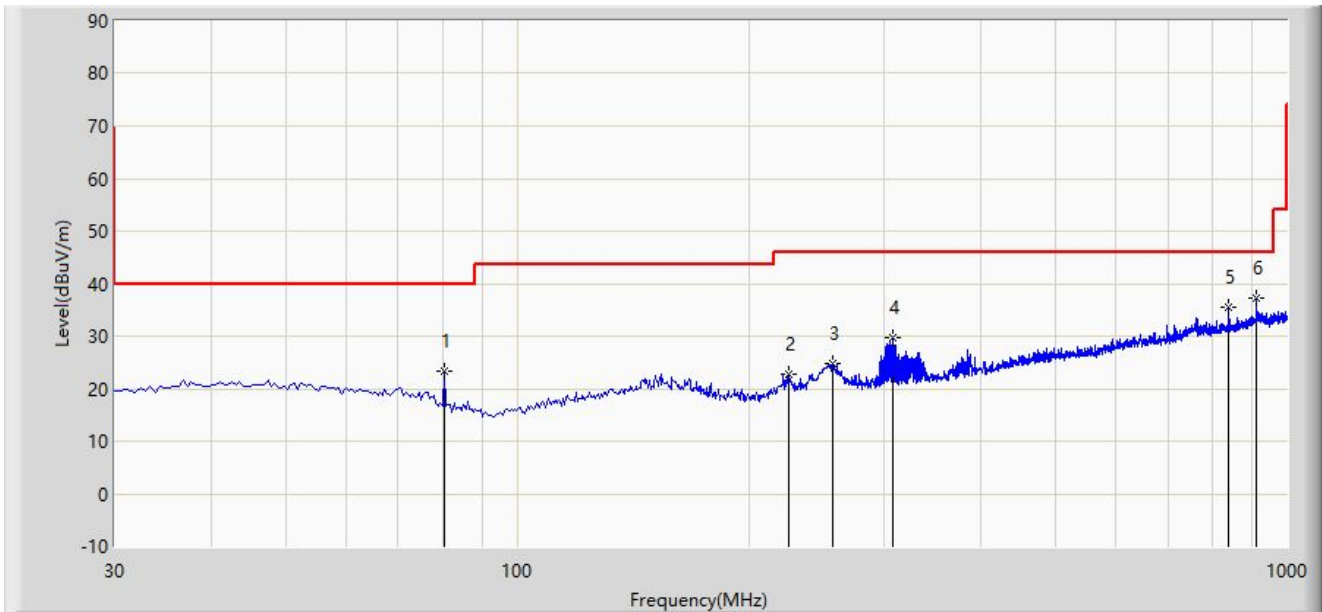
Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	9491.5	36.0	11.8	47.8	74.0	-26.2	Peak	Horizontal
	10885.5	34.9	13.4	48.3	74.0	-25.7	Peak	Horizontal
	12177.5	35.5	12.1	47.6	74.0	-26.4	Peak	Horizontal
	8225.0	36.1	8.5	44.6	74.0	-29.4	Peak	Vertical
	10996.0	35.4	13.6	49.0	74.0	-25.0	Peak	Vertical
	12058.5	37.2	12.3	49.5	74.0	-24.5	Peak	Vertical
06	9117.5	35.6	11.0	46.6	74.0	-27.4	Peak	Horizontal
	10953.5	35.6	13.5	49.1	74.0	-24.9	Peak	Horizontal
	11608.0	36.5	12.7	49.2	74.0	-24.8	Peak	Horizontal
	9151.5	34.0	11.1	45.1	74.0	-28.9	Peak	Vertical
	11412.5	35.6	12.9	48.5	74.0	-25.5	Peak	Vertical
	12560.0	35.5	11.8	47.3	74.0	-26.7	Peak	Vertical
11	9134.5	35.9	11.1	47.0	74.0	-27.0	Peak	Horizontal
	10996.0	35.5	13.6	49.1	74.0	-24.9	Peak	Horizontal
	12330.5	36.1	12.0	48.1	74.0	-25.9	Peak	Horizontal
	9134.5	35.5	11.1	46.6	74.0	-27.4	Peak	Vertical
	11115.0	35.7	12.8	48.5	74.0	-25.5	Peak	Vertical
	12109.5	35.5	12.1	47.6	74.0	-26.4	Peak	Vertical

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Result of Radiated Emission below 1GHz:

Site: WZ-AC1	Test Date: 2022-10-08
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: VULB 9168_25-2000MHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		80.440	23.286	9.398	-16.714	40.000	13.888	PK
2		225.455	22.784	8.168	-23.216	46.000	14.616	PK
3		257.465	24.724	7.903	-21.276	46.000	16.821	PK
4		307.420	29.834	11.215	-16.166	46.000	18.619	PK
5		840.920	35.423	6.749	-10.577	46.000	28.674	PK
6	*	912.215	37.144	7.457	-8.856	46.000	29.686	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

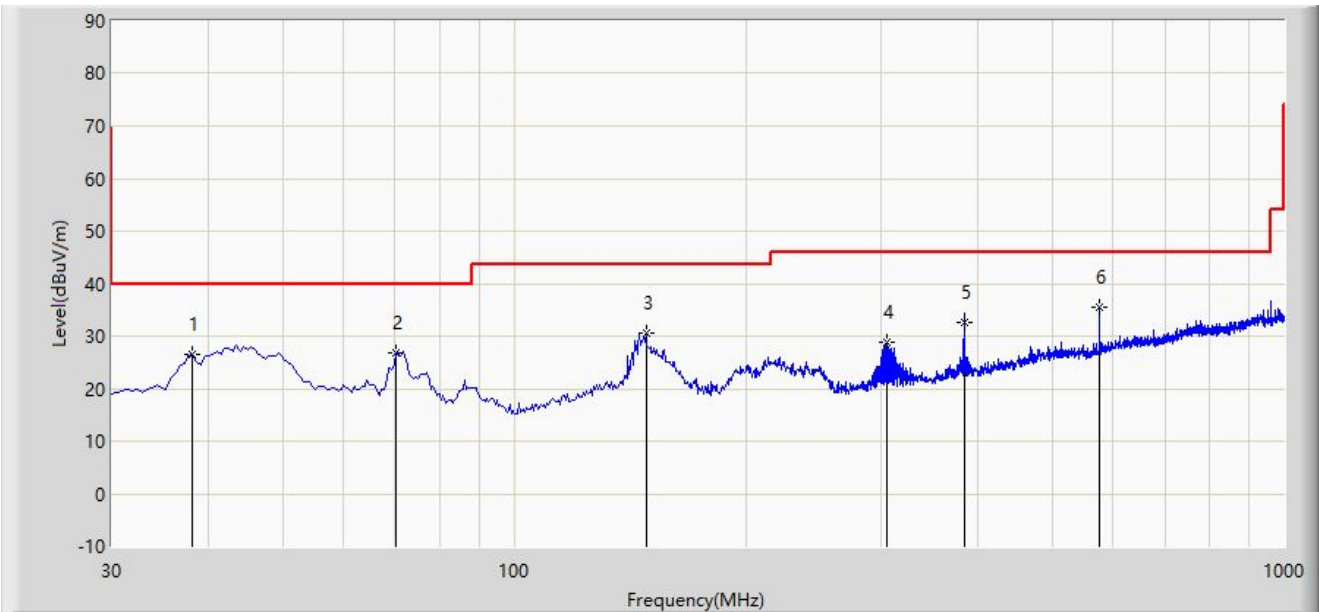
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value.

Therefore, the data is not presented in the report.

Site: WZ-AC1	Test Date: 2022-10-08
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: VULB 9168_25-2000MHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		38.245	26.624	8.548	-13.376	40.000	18.076	PK
2		70.255	26.947	10.818	-13.053	40.000	16.129	PK
3		148.340	30.447	12.517	-13.053	43.500	17.930	PK
4		305.480	28.757	10.213	-17.243	46.000	18.544	PK
5		384.050	32.594	12.141	-13.406	46.000	20.453	PK
6	*	576.110	35.498	10.647	-10.502	46.000	24.851	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

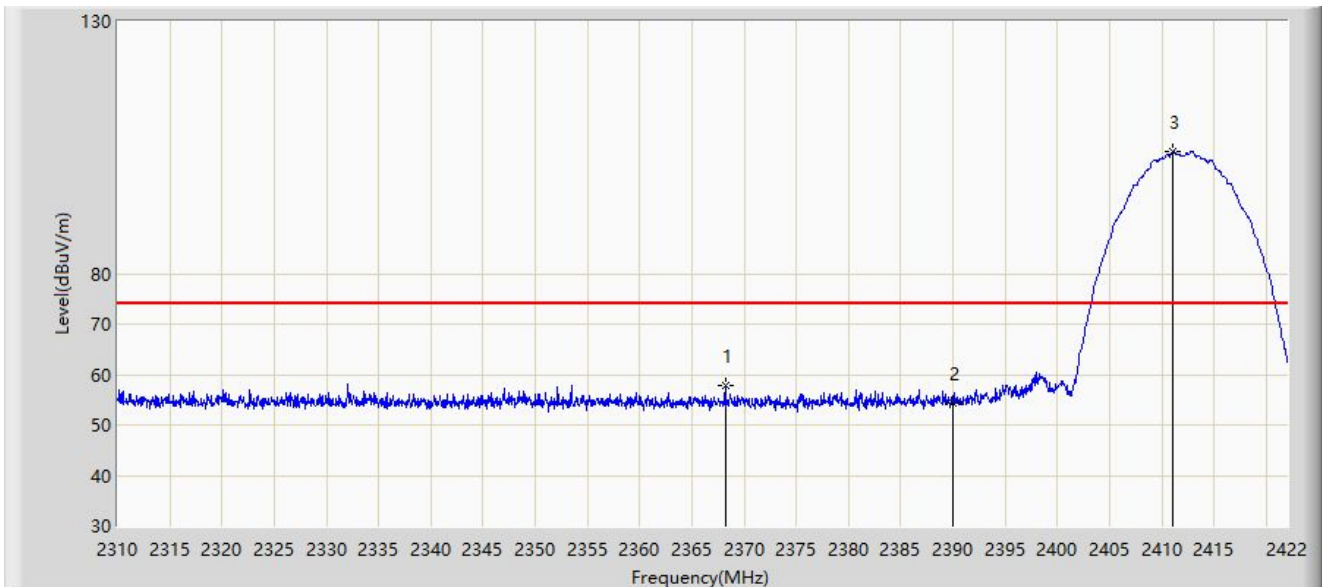
Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value.

Therefore, the data is not presented in the report.

A.7 Radiated Restricted Band Edge Test Result

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2412MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2368.184	57.700	26.631	-16.300	74.000	31.069	PK
2		2390.000	54.474	23.482	-19.526	74.000	30.992	PK
3		2411.024	104.162	73.205	N/A	N/A	30.957	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2412MHz	



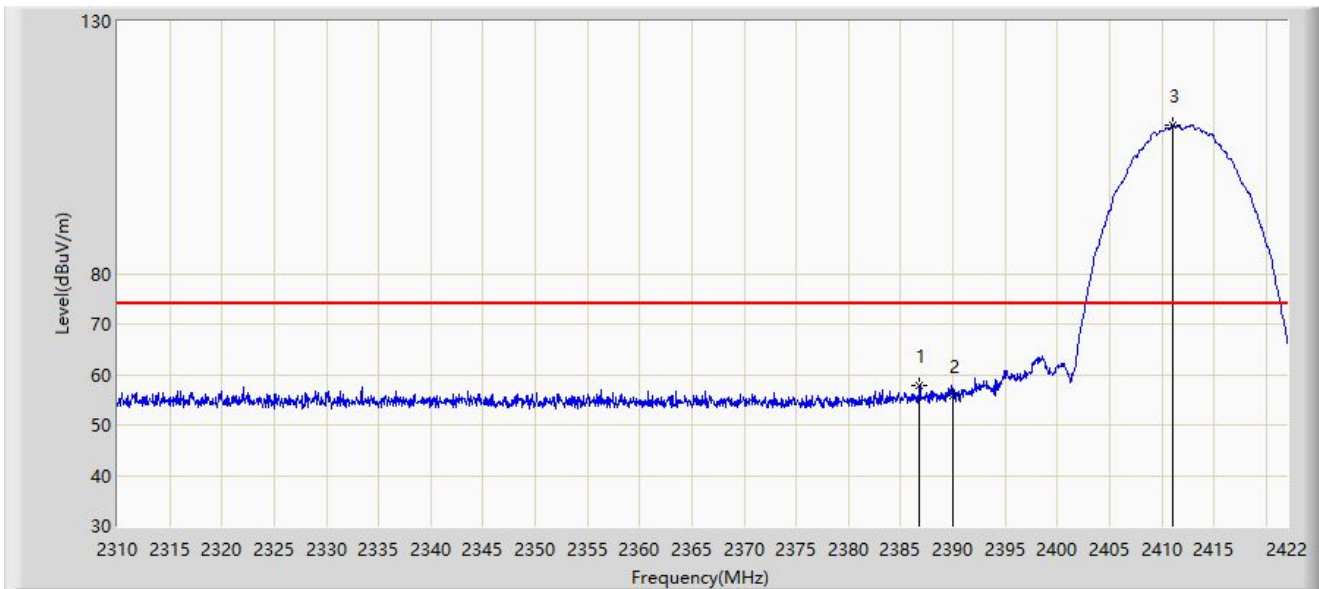
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2390.000	38.213	7.221	-15.787	54.000	30.992	AV
2		2411.192	101.085	70.129	N/A	N/A	30.957	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2412MHz	



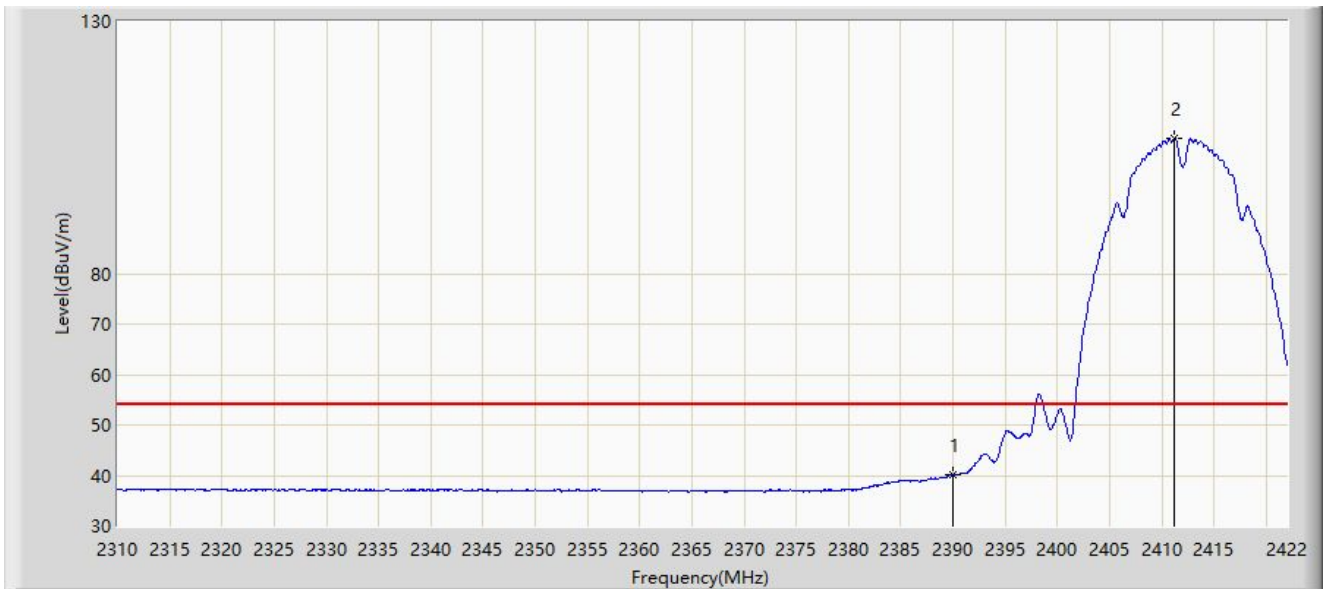
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2386.776	57.934	26.940	-16.066	74.000	30.994	PK
2		2390.000	55.682	24.690	-18.318	74.000	30.992	PK
3		2411.024	109.500	78.543	N/A	N/A	30.957	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2412MHz	



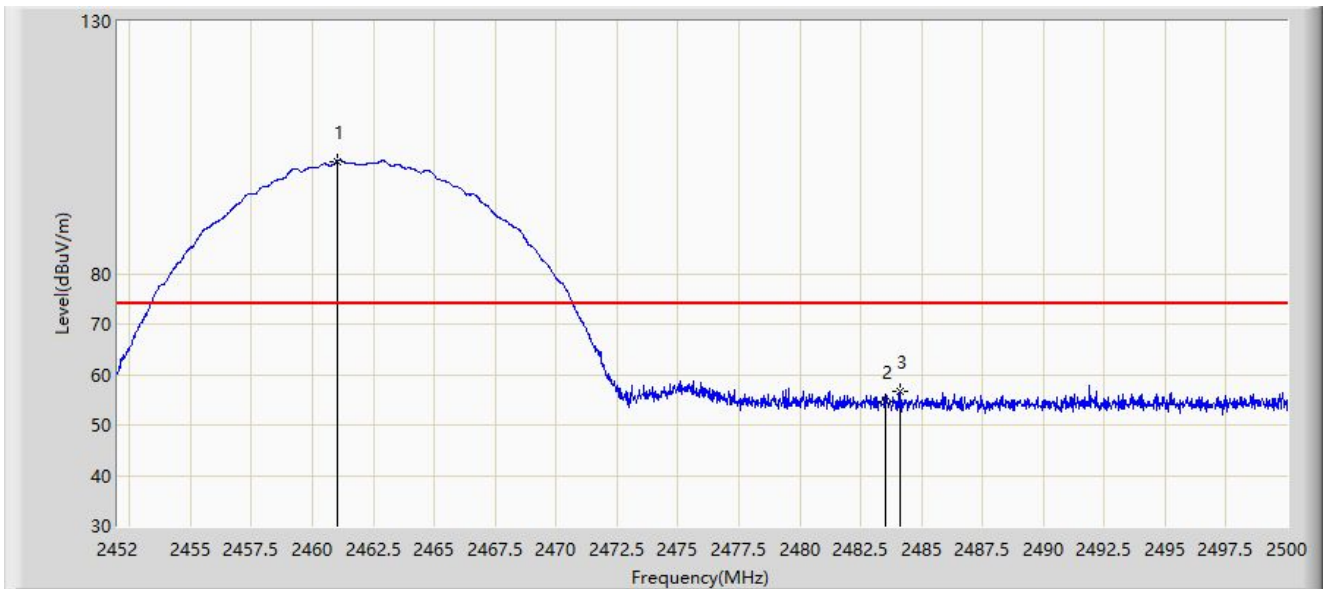
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2390.000	40.189	9.197	-13.811	54.000	30.992	AV
2		2411.192	106.917	75.961	N/A	N/A	30.957	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2461.000	102.256	71.376	N/A	N/A	30.880	PK
2		2483.500	54.539	23.648	-19.461	74.000	30.892	PK
3	*	2484.112	56.640	25.750	-17.360	74.000	30.891	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz	



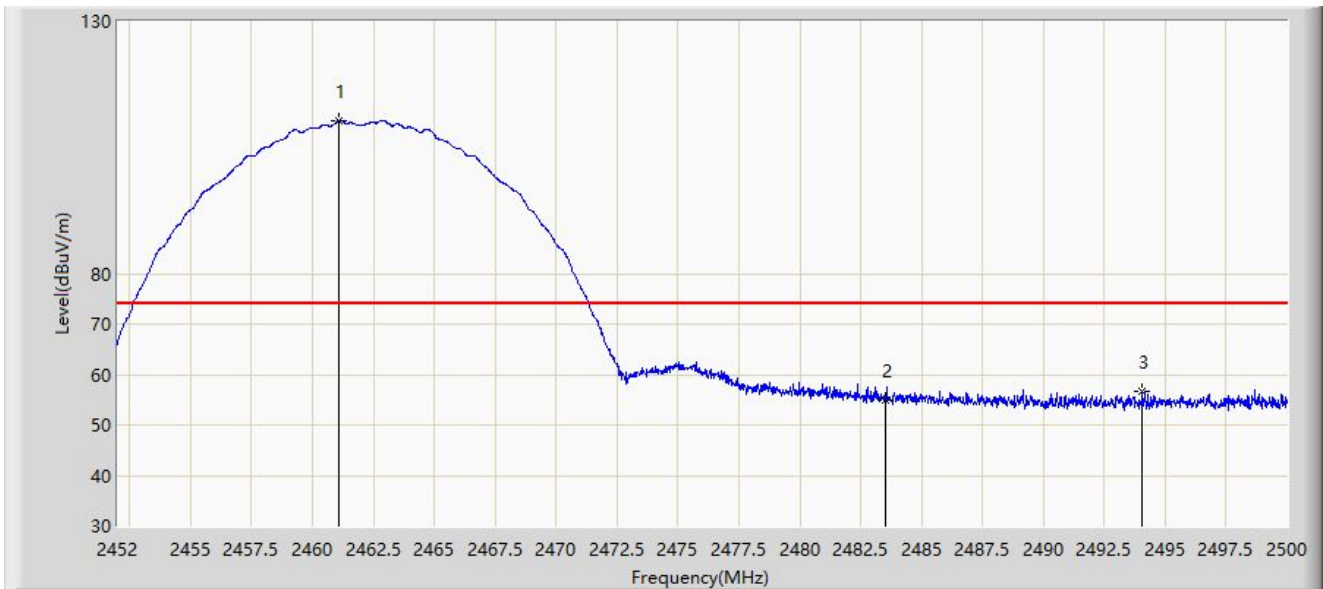
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2461.168	99.115	68.235	N/A	N/A	30.881	AV
2	*	2483.500	37.643	6.752	-16.357	54.000	30.892	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz	



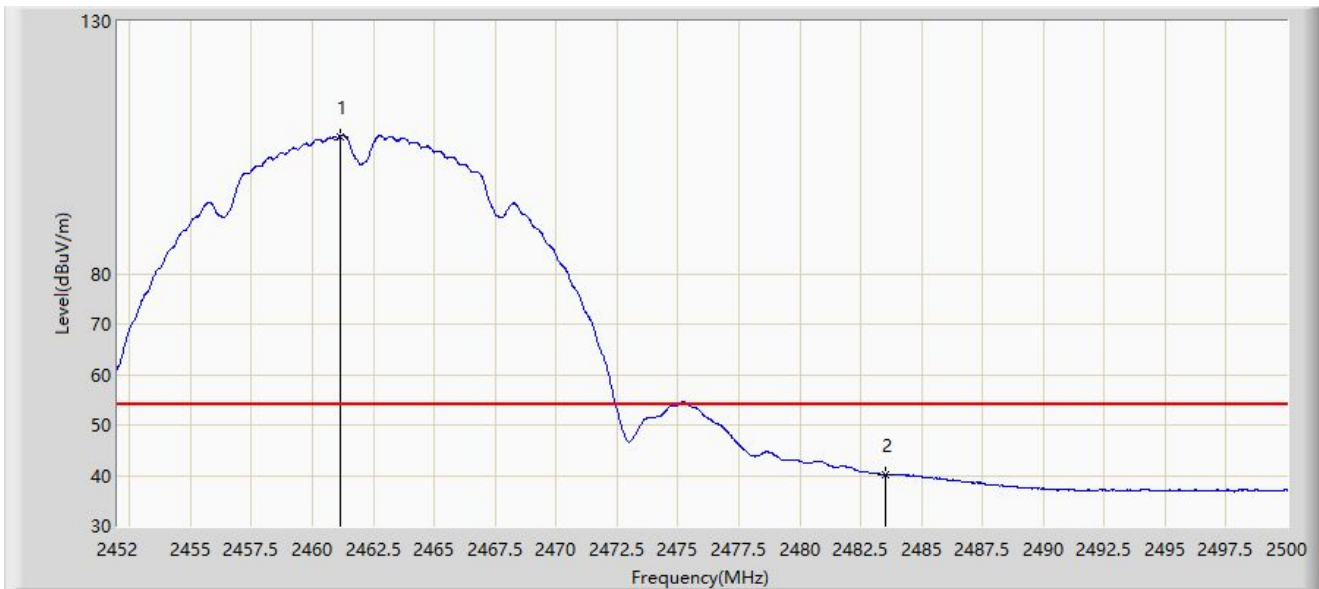
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2461.096	110.289	79.409	N/A	N/A	30.880	PK
2		2483.500	54.976	24.085	-19.024	74.000	30.892	PK
3	*	2494.072	56.793	25.910	-17.207	74.000	30.883	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz	



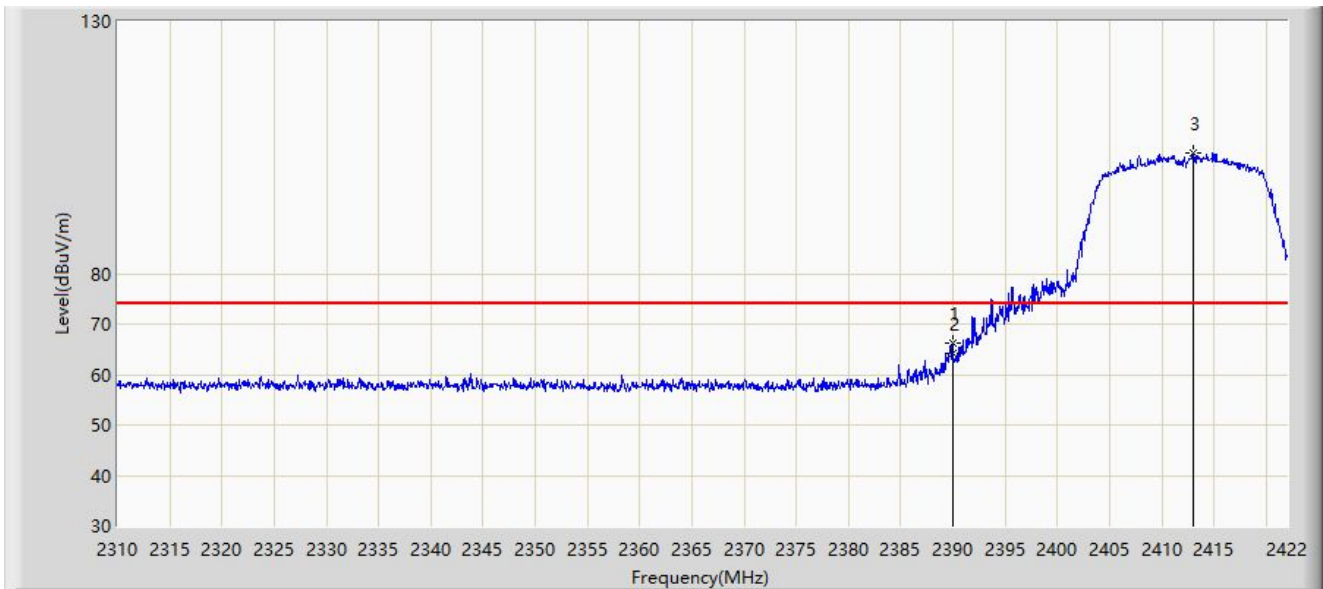
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2461.120	107.202	76.322	N/A	N/A	30.880	AV
2	*	2483.500	40.130	9.239	-13.870	54.000	30.892	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11g at 2412MHz	



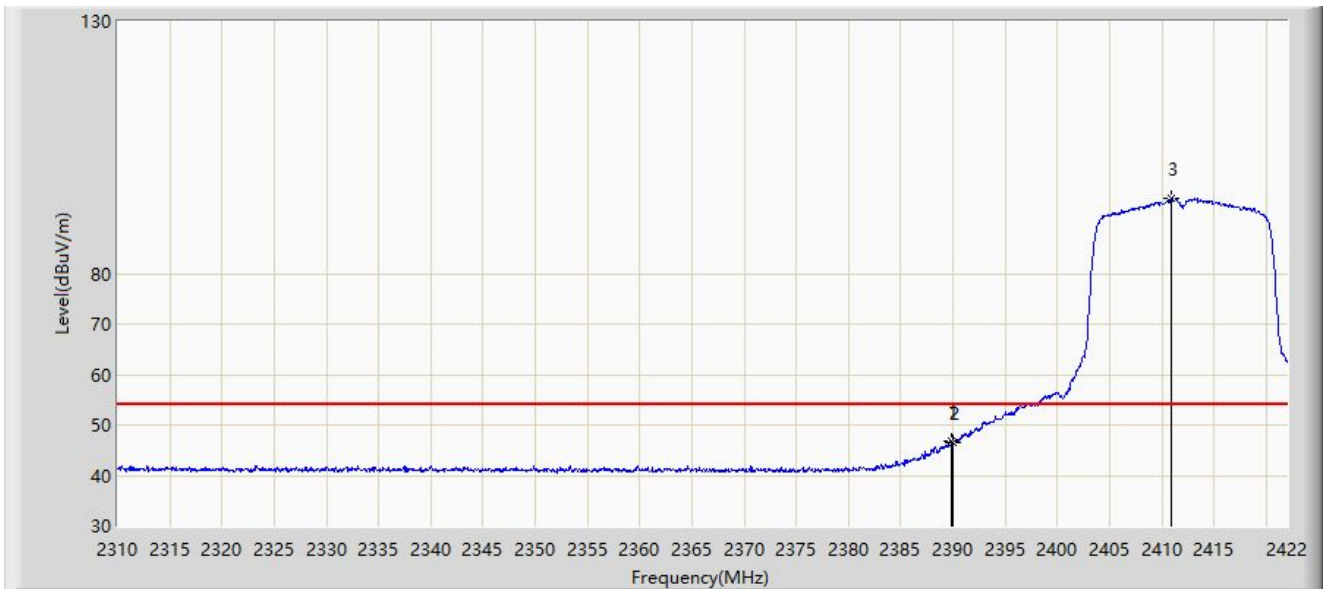
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2389.968	66.175	35.183	-7.825	74.000	30.992	PK
2		2390.000	64.094	33.102	-9.906	74.000	30.992	PK
3		2413.040	104.050	73.098	N/A	N/A	30.951	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11g at 2412MHz	



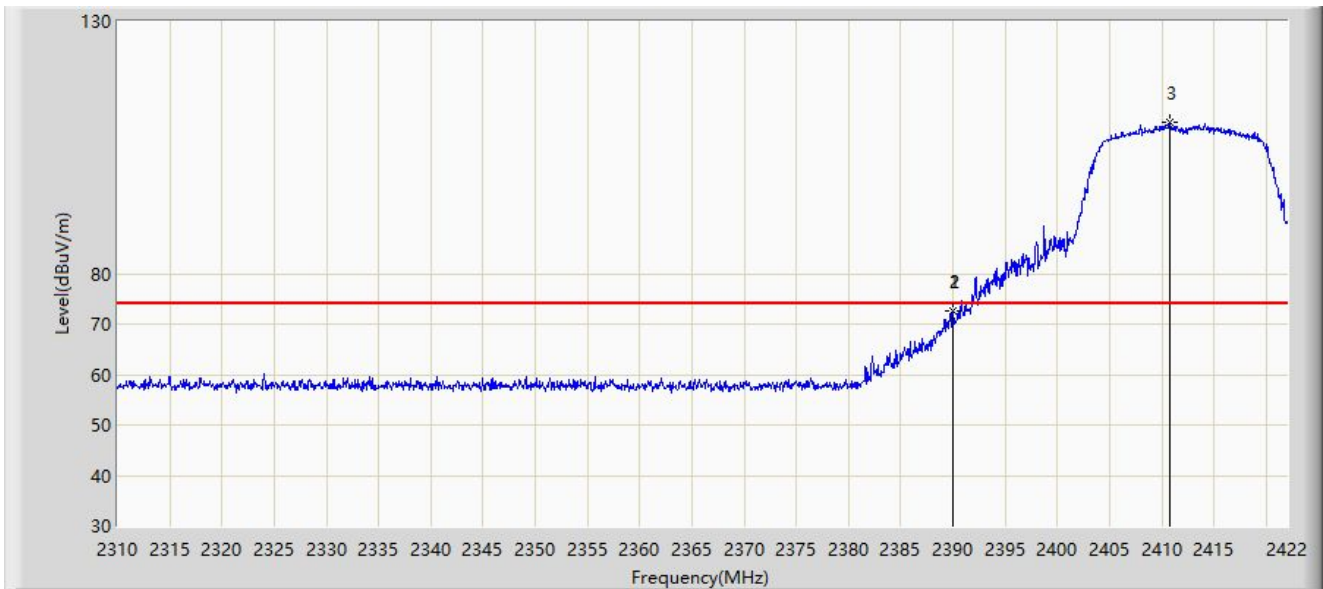
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2389.800	46.931	15.939	-7.069	54.000	30.993	AV
2		2390.000	46.575	15.583	-7.425	54.000	30.992	AV
3		2410.912	94.911	63.954	N/A	N/A	30.957	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11g at 2412MHz	



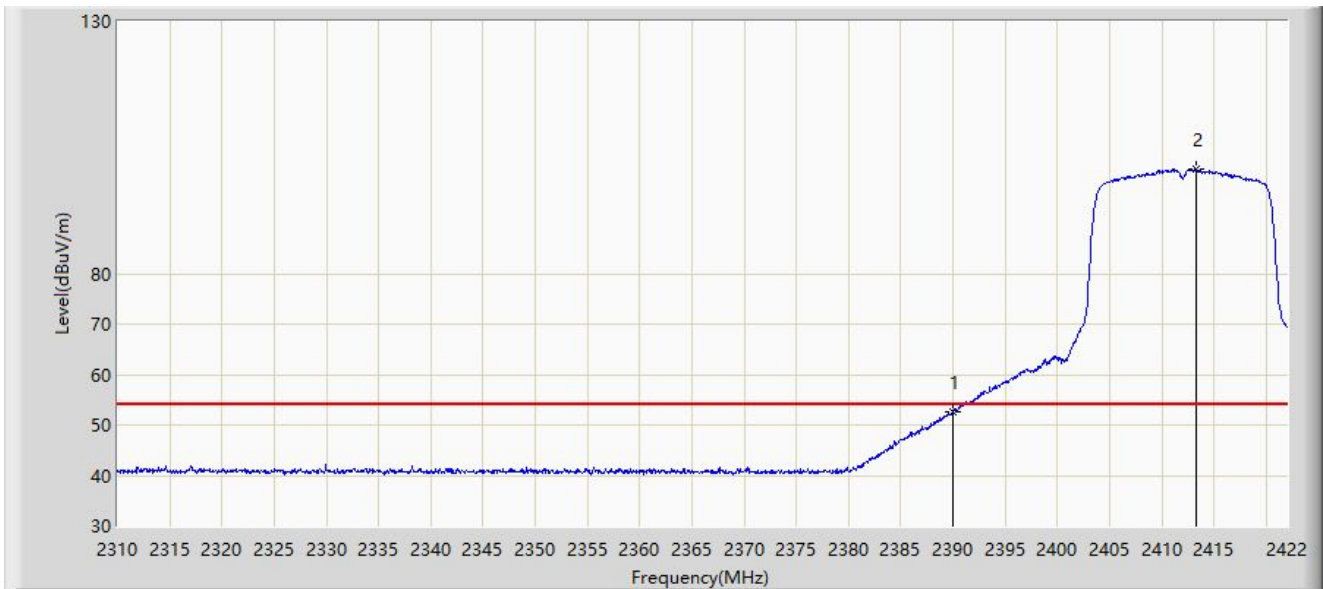
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2389.968	72.584	41.592	-1.416	74.000	30.992	PK
2		2390.000	72.510	41.518	-1.490	74.000	30.992	PK
3		2410.800	109.863	78.905	N/A	N/A	30.958	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11g at 2412MHz	



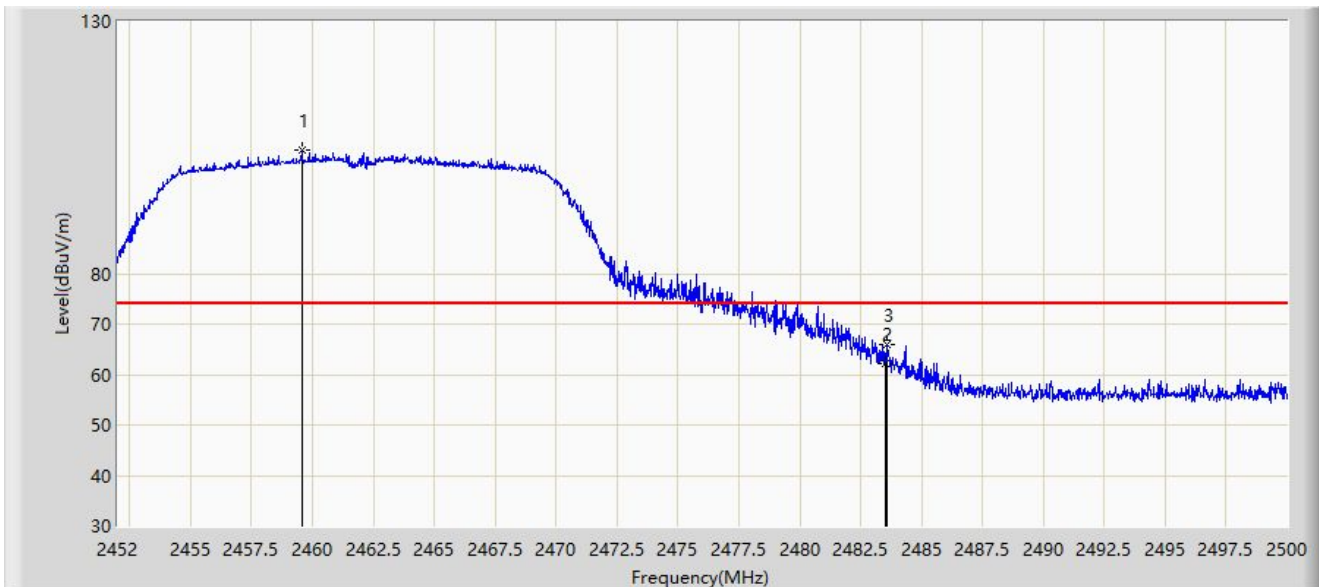
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2390.000	52.741	21.749	-1.259	54.000	30.992	AV
2		2413.264	100.771	69.820	N/A	N/A	30.951	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11g at 2462MHz	



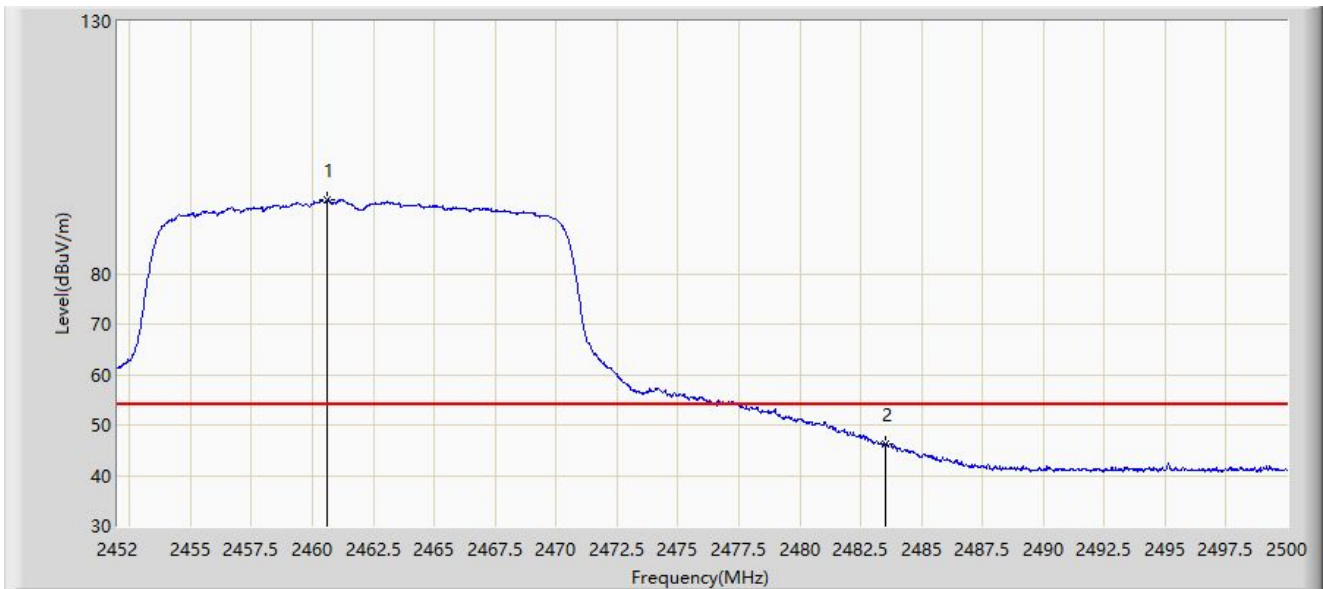
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2459.560	104.379	73.501	N/A	N/A	30.877	PK
2		2483.500	62.309	31.418	-11.691	74.000	30.892	PK
3	*	2483.584	65.844	34.953	-8.156	74.000	30.892	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11g at 2462MHz	



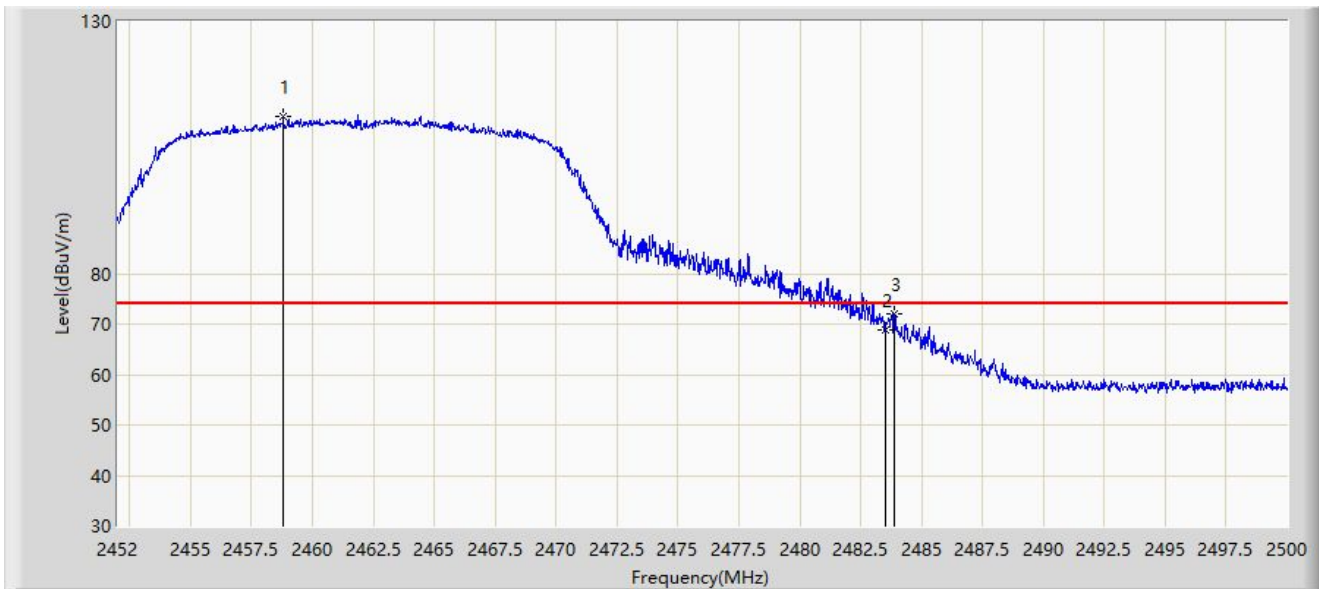
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2460.616	94.521	63.642	N/A	N/A	30.879	AV
2	*	2483.500	46.199	15.308	-7.801	54.000	30.892	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11g at 2462MHz	



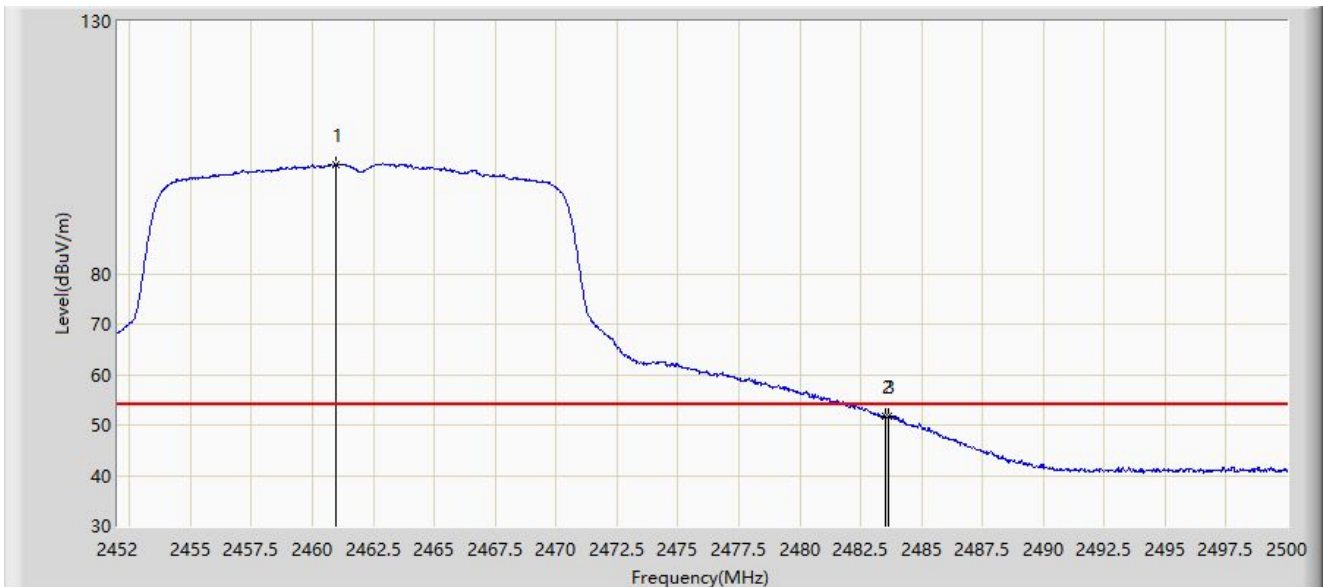
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2458.792	111.298	80.422	N/A	N/A	30.876	PK
2		2483.500	68.761	37.870	-5.239	74.000	30.892	PK
3	*	2483.896	72.154	41.263	-1.846	74.000	30.891	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11g at 2462MHz	



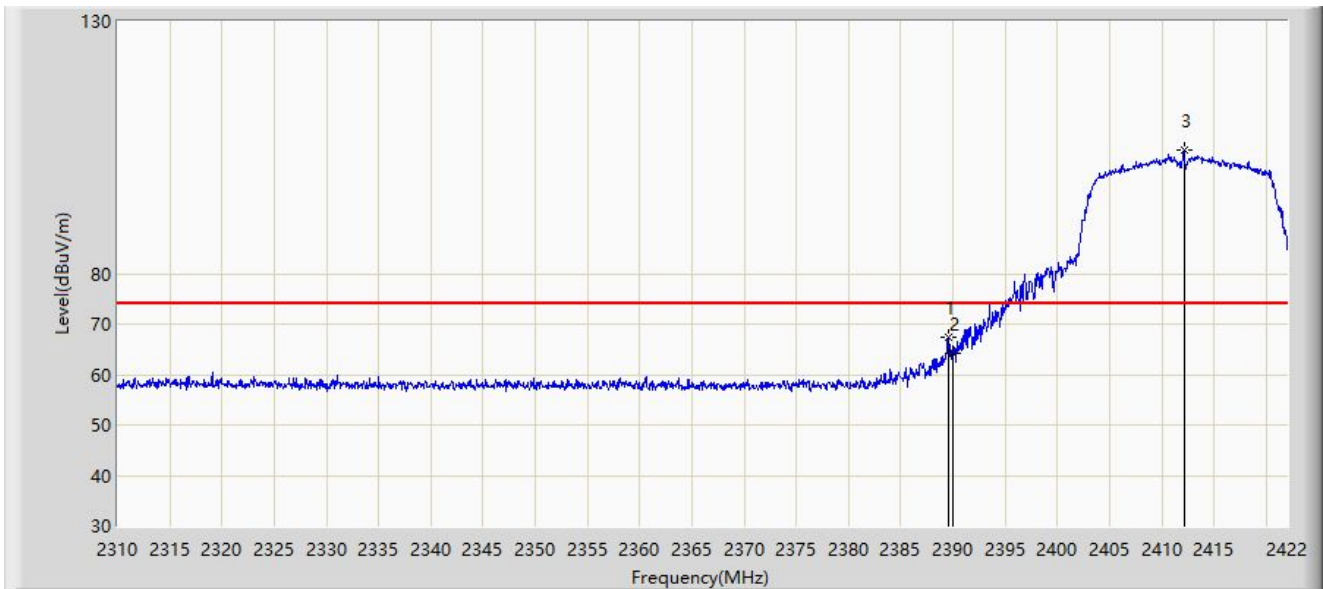
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2460.976	101.626	70.746	N/A	N/A	30.880	AV
2		2483.500	51.662	20.771	-2.338	54.000	30.892	AV
3	*	2483.656	51.802	20.911	-2.198	54.000	30.892	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2412MHz	



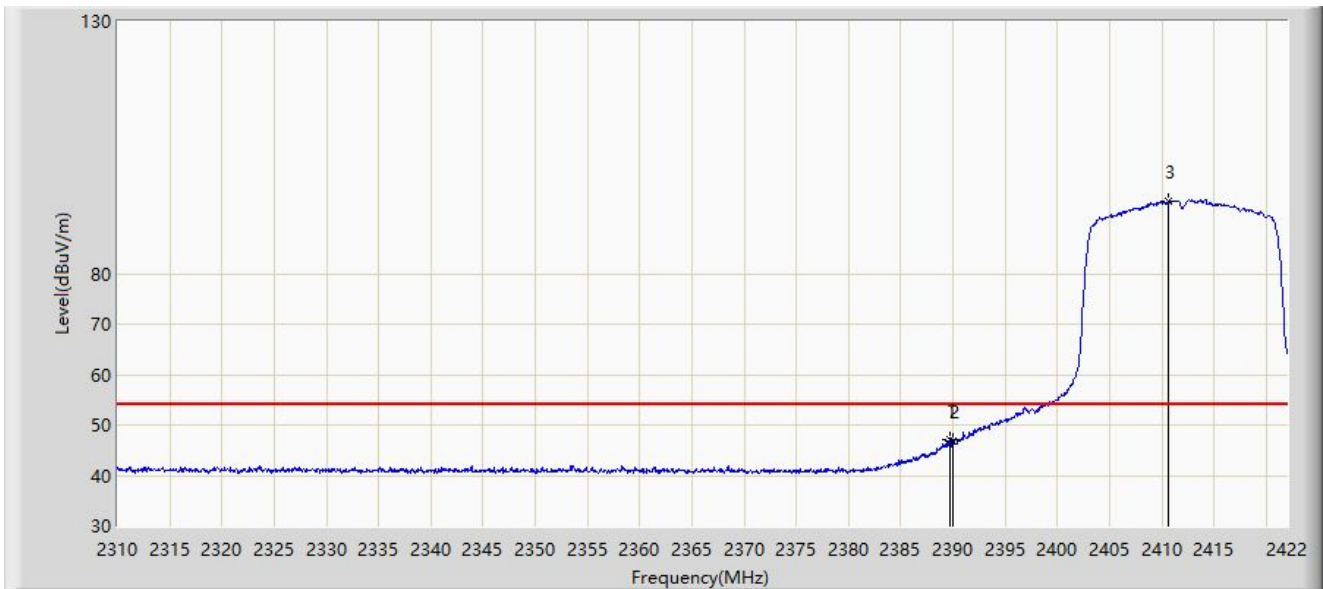
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2389.520	67.449	36.457	-6.551	74.000	30.992	PK
2		2390.000	64.318	33.326	-9.682	74.000	30.992	PK
3		2412.144	104.568	73.614	N/A	N/A	30.954	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2412MHz	



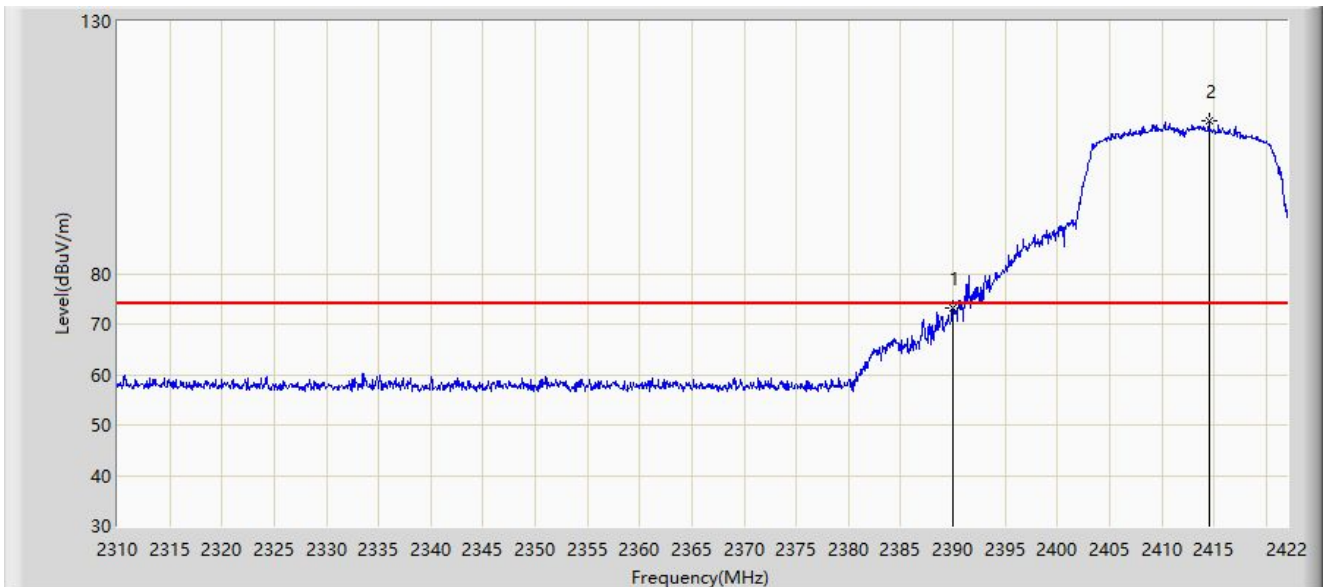
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2389.688	47.122	16.130	-6.878	54.000	30.992	AV
2		2390.000	46.889	15.897	-7.111	54.000	30.992	AV
3		2410.688	94.444	63.486	N/A	N/A	30.958	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2412MHz	



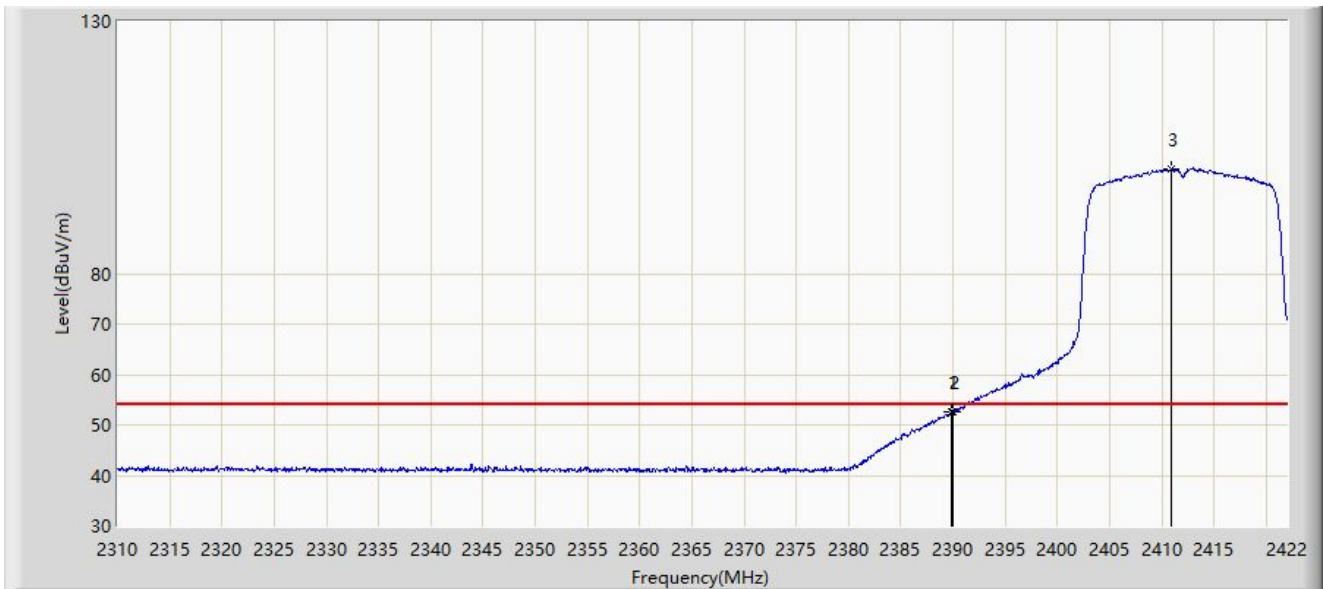
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2390.000	73.088	42.096	-0.912	74.000	30.992	PK
2		2414.496	110.388	79.440	N/A	N/A	30.947	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2412MHz	



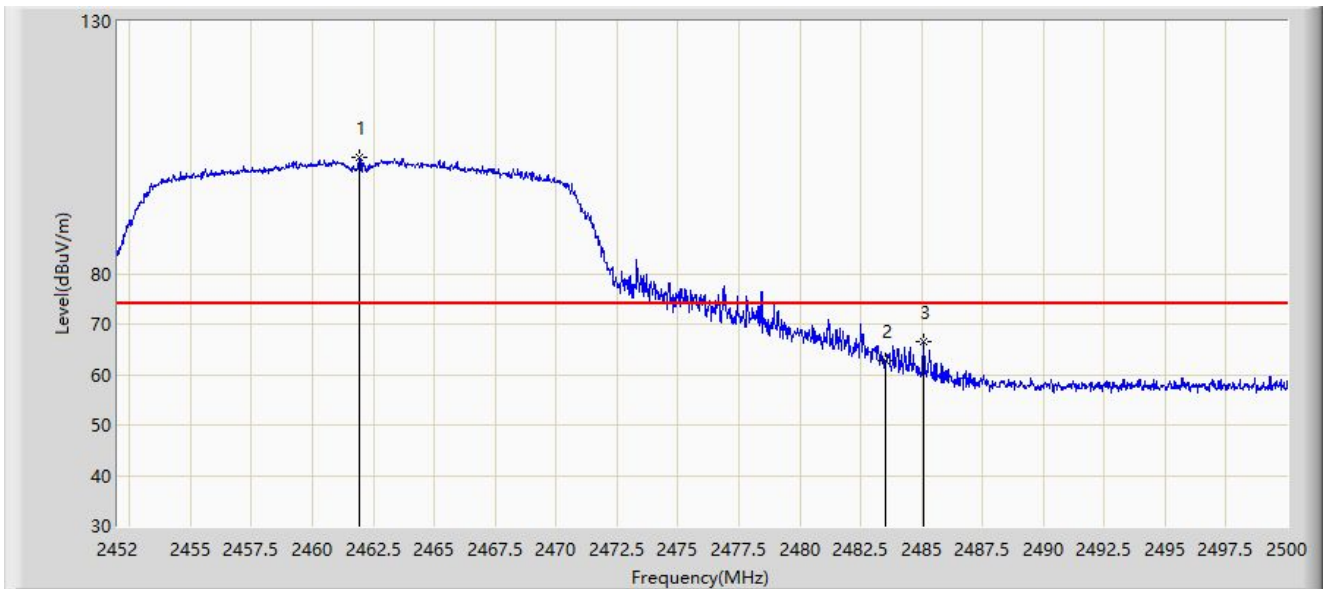
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2389.912	52.629	21.637	-1.371	54.000	30.992	AV
2		2390.000	52.497	21.505	-1.503	54.000	30.992	AV
3		2410.912	100.729	69.772	N/A	N/A	30.957	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2462MHz	



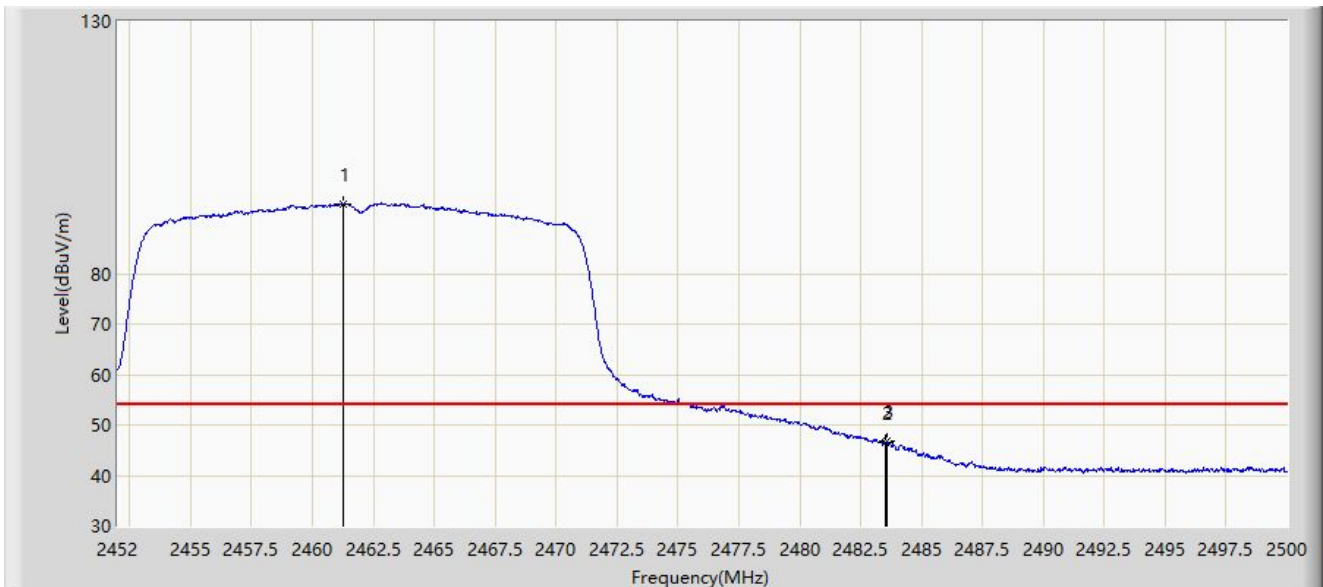
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2461.936	103.115	72.233	N/A	N/A	30.882	PK
2		2483.500	62.624	31.733	-11.376	74.000	30.892	PK
3	*	2485.096	66.633	35.744	-7.367	74.000	30.889	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Horizontal
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2462MHz	



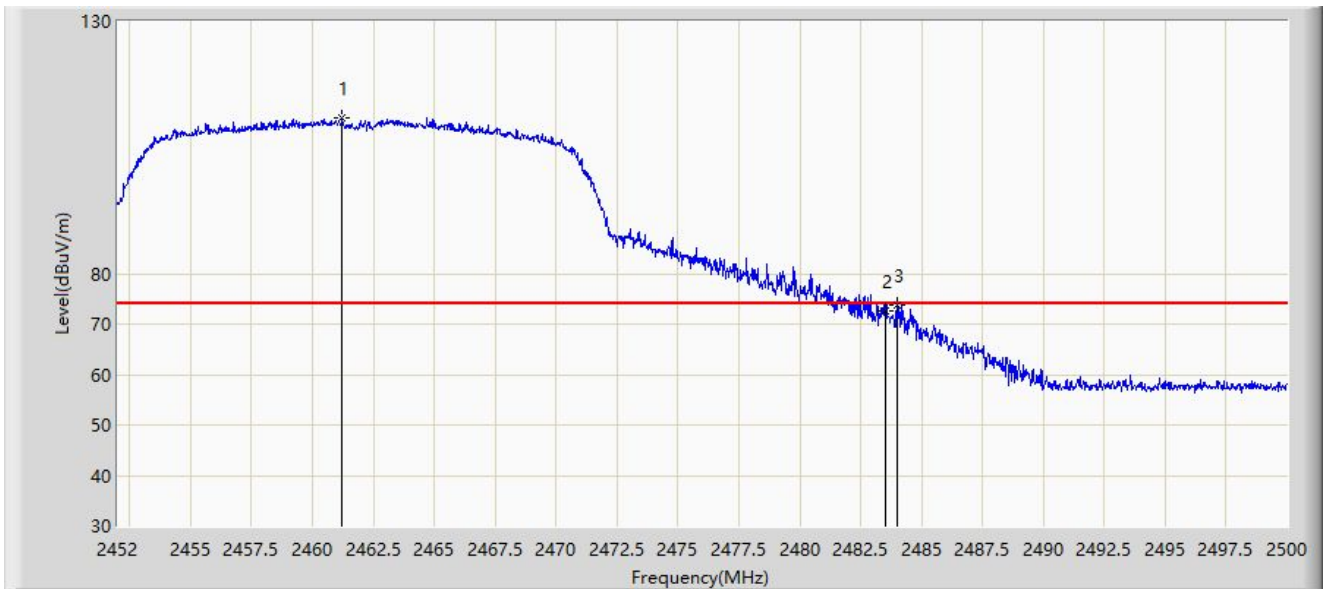
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2461.288	93.831	62.950	N/A	N/A	30.881	AV
2		2483.500	46.485	15.594	-7.515	54.000	30.892	AV
3	*	2483.560	46.719	15.828	-7.281	54.000	30.892	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2462MHz	



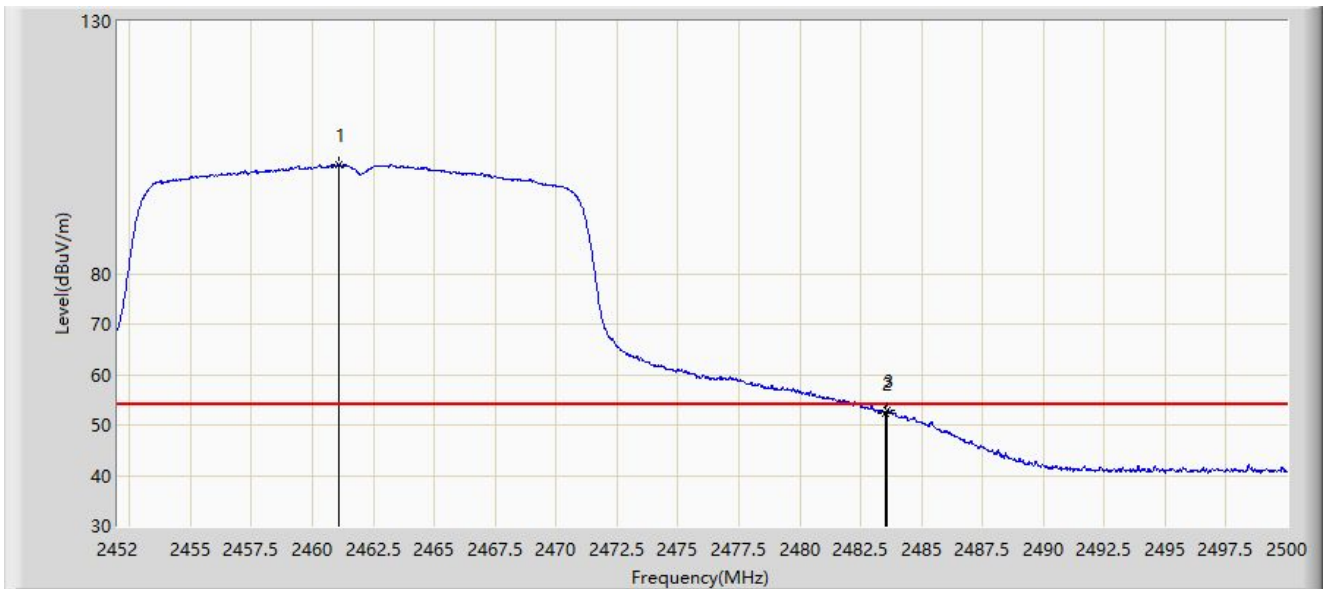
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2461.216	110.888	80.008	N/A	N/A	30.881	PK
2		2483.500	72.492	41.601	-1.508	74.000	30.892	PK
3	*	2483.992	73.878	42.987	-0.122	74.000	30.891	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: WZ-AC1	Test Date: 2022-09-20
Limit: FCC_Part 15_15.209 RE(3m)	Engineer: Carl Jiang
Probe: BBHA9120D_1167_1-18GHz	Polarity: Vertical
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11n-HT20 at 2462MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2461.096	101.605	70.725	N/A	N/A	30.880	AV
2		2483.500	52.445	21.554	-1.555	54.000	30.892	AV
3	*	2483.584	52.794	21.903	-1.206	54.000	30.892	AV

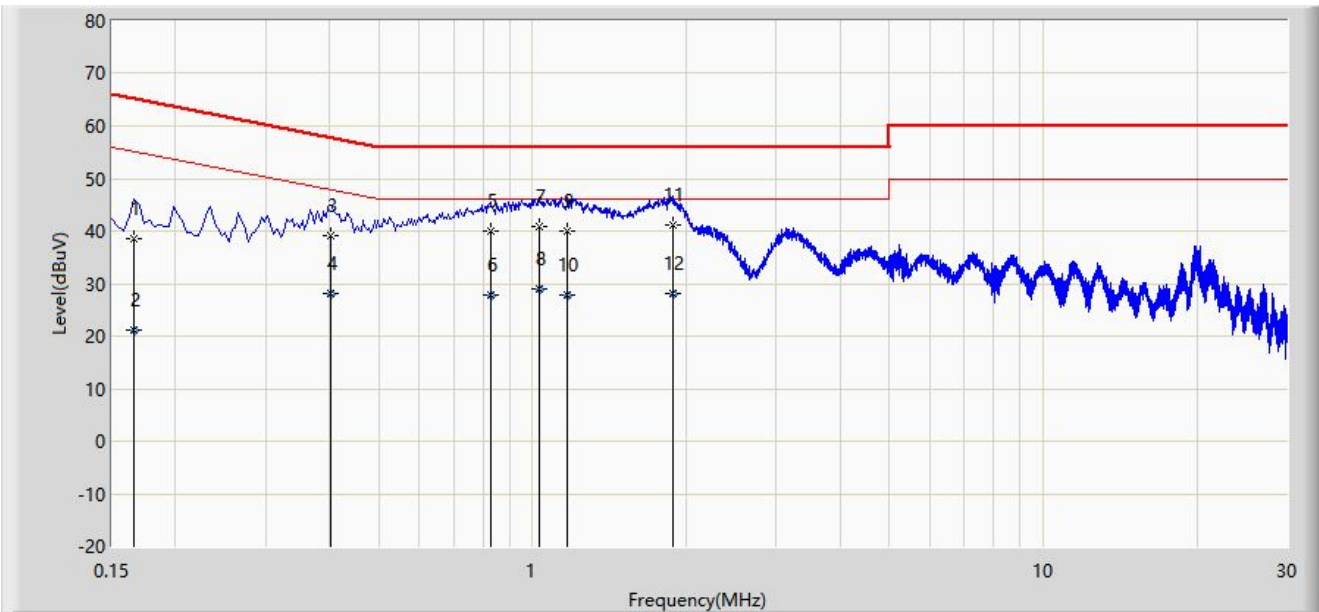
Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

A.8 AC Conducted Emissions Test Result

Site: WZ-SR2	Test Date: 2022-10-09
Limit: FCC_Part15.207_CE_AC Power	Engineer: Helen Han
Probe: ENV216_101683_Filter Off_E	Polarity: Line
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz	



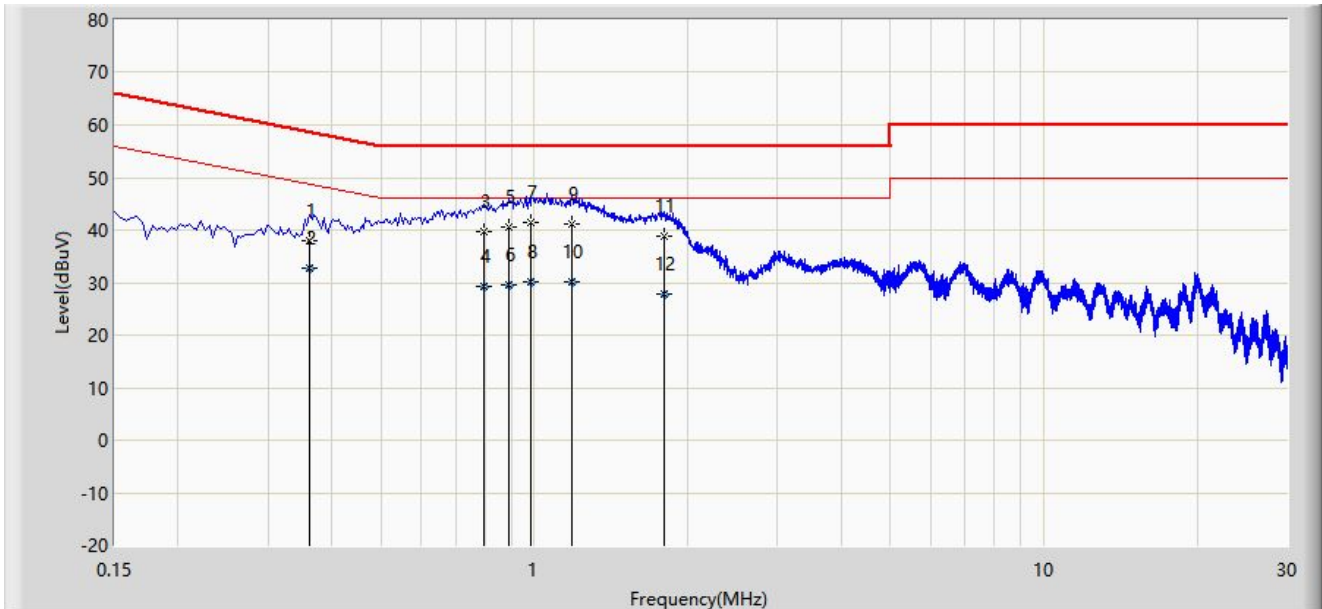
No	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1		0.166	38.616	28.736	-26.542	65.158	9.880	QP
2		0.166	21.039	11.159	-34.119	55.158	9.880	AV
3		0.402	39.198	29.271	-18.614	57.812	9.927	QP
4		0.402	28.032	18.106	-19.780	47.812	9.927	AV
5		0.830	40.078	30.115	-15.922	56.000	9.962	QP
6		0.830	27.885	17.923	-18.115	46.000	9.962	AV
7		1.034	40.818	30.837	-15.182	56.000	9.981	QP
8		1.034	29.028	19.047	-16.972	46.000	9.981	AV
9		1.170	39.950	29.966	-16.050	56.000	9.984	QP
10		1.170	27.755	17.771	-18.245	46.000	9.984	AV
11	*	1.878	41.027	31.030	-14.973	56.000	9.997	QP
12		1.878	28.107	18.109	-17.893	46.000	9.997	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB).

Note 3: Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Site: WZ-SR2	Test Date: 2022-10-09
Limit: FCC_Part15.207_CE_AC Power	Engineer: Helen Han
Probe: ENV216_101683_Filter Off_E	Polarity: Neutral
EUT: Barcode Reader	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11b at 2462MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1		0.362	38.039	28.102	-20.643	58.682	9.937	QP
2		0.362	32.713	22.776	-15.969	48.682	9.937	AV
3		0.794	39.825	29.840	-16.175	56.000	9.985	QP
4		0.794	29.135	19.150	-16.865	46.000	9.985	AV
5		0.890	40.694	30.703	-15.306	56.000	9.991	QP
6		0.890	29.491	19.500	-16.509	46.000	9.991	AV
7	*	0.986	41.526	31.527	-14.474	56.000	10.000	QP
8		0.986	30.287	20.287	-15.713	46.000	10.000	AV
9		1.182	41.150	31.146	-14.850	56.000	10.004	QP
10		1.182	30.123	20.119	-15.877	46.000	10.004	AV
11		1.794	38.749	28.733	-17.251	56.000	10.016	QP
12		1.794	27.812	17.796	-18.188	46.000	10.016	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB).

Note 3: Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Appendix B – Test Setup Photograph

Refer to “2209RSU002-UT” file.

Appendix C – EUT Photograph

Refer to “2209RSU002-UE” file.

_____ The End _____