



RF MEASUREMENT REPORT

FCC ID: Y7V-VC3140C1
Applicant: ASSA ABLOY Global Solutions Norway AS
Product: Wall reader 3140
Model No.: VC550, VC560, VC570, VC580
Brand Name: vingcard ASSA ABLOY
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15 Subpart C (Section 15.247)
Result: Complies
Received Date: 2025-03-31
Test Date: 2025-04-12 ~ 2025-05-29

Reviewed By:

Denise Zhou

Denise Zhou

Approved By:

Robin Wu

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. Testing was performed in accordance with the applicable measurement procedures. The test results reported herein apply only to the specific 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
R25S1081033-U203	V01	Initial Report	2026-07-16	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	6
1.6. Working Frequencies	6
2. Test Configuration	7
2.1. Test Mode	7
2.2. Test System Connection Diagram	7
2.3. Test Software	7
2.4. Applied Standards	8
2.5. Test Environment Condition	8
3. Antenna Requirements	9
4. Measuring Instrument	10
5. Decision Rules and Measurement Uncertainty	11
5.1. Decision Rules	11
5.2. Measurement Uncertainty	11
6. Test Result	12
6.1. Summary	12
6.2. 6 dB Bandwidth Measurement	13
6.2.1. Test Limit	13
6.2.2. Test Procedure	13
6.2.3. Test Setting	13
6.2.4. Test Setup	13
6.2.5. Test Result	13
6.3. Output Power Measurement	14
6.3.1. Test Limit	14
6.3.2. Test Procedure	14
6.3.3. Test Setting	14
6.3.4. Test Setup	14
6.3.5. Test Result	14
6.4. Power Spectral Density Measurement	15
6.4.1. Test Limit	15
6.4.2. Test Procedure	15

6.4.3.	Test Setting	15
6.4.4.	Test Setup	15
6.4.5.	Test Result	15
6.5.	Conducted Band Edge and Out-of-Band Emissions Measurement	16
6.5.1.	Test Limit	16
6.5.2.	Test Procedure	16
6.5.3.	Test Setting	16
6.5.4.	Test Setup	16
6.5.5.	Test Result	17
6.6.	Radiated Spurious Emission Measurement.....	18
6.6.1.	Test Limit	18
6.6.2.	Test Procedure	18
6.6.3.	Test Setting	18
6.6.4.	Test Setup	20
6.6.5.	Test Result	21
6.7.	Radiated Restricted Band Edge Measurement	22
6.7.1.	Test Limit	22
6.7.2.	Test Procedure	23
6.7.3.	Test Setting	23
6.7.4.	Test Setup	24
6.7.5.	Test Result	25
6.8.	AC Conducted Emissions Measurement	26
6.8.1.	Test Limit	26
6.8.2.	Test Setup	26
6.8.3.	Test Result	26
Appendix A - Test Result.....		27
A.1	6 dB Bandwidth Test Result	27
A.2	Output Power Test Result	28
A.3	Power Spectral Density Test Result.....	29
A.4	Conducted Band Edge and Out-of-Band Emissions Test Result.....	30
A.5	Radiated Spurious Emission Test Result.....	32
A.6	Radiated Restricted Band Edge Test Result.....	42
Appendix B - Test Setup Photograph		50
Appendix C - EUT Photograph		51

1. General Information

1.1. Applicant

ASSA ABLOY Global Solutions Norway AS

Postboks 340, Anolitveien 1-3, 1402,Ski, Norway

1.2. Manufacturer

ASSA ABLOY Global Solutions Norway AS

Postboks 340, Anolitveien 1-3, 1402,Ski, Norway

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 Location (Suzhou - Wujiang)	
Building 1, No.1 Xingdong Road, Wujiang, Suzhou, Jiangsu, People's Republic of China		
Laboratory Accreditations		
A2LA: 3628.01		CNAS: L10551
FCC: CN1166		ISED: CN0001
☐	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	
FCC: CN1284		ISED: CN0105

1.4. Product Information

Product Name	Wall reader 3140
Model No.	VC550, VC560, VC570, VC580
Model Difference	VC550: No Keypad Low Ingress Protection VC560: No Keypad High Ingress Protection VC570: With Keypad Low Ingress Protection VC580: With Keypad High Ingress Protection
Brand Name	vingcard ASSA ABLOY
EUT Identification No.	20250331Sample#09 (Conducted) 20250331Sample#05 (Radiated)
Bluetooth Specification	Bluetooth_LE
802.15.4 Specification	802.15.4
NFC Specification	13.56 MHz
Antenna Information	Refer to section 1.5
Operating Temperature	-20 ~ 70 °C
Power Voltage	12 VDC (5 ~ 32 VDC)
Notes: 1. The information of the EUT (Equipment Under Test) was provided by the manufacturer. The accuracy, completeness, and validity of the information are solely the responsibility of the manufacturer. 2. High ingress protection device has ring oval and potted and fixed cable. Low ingress protection device does not have ring oval and potted and fixed cable. Others are identical. Model VC580 is selected for test.	

1.5. Radio Specification under Test

Frequency Range	2400 ~ 2483.5 MHz
Channel Number	16
Modulation Type	O-QPSK
Antenna Type	PCB Antenna
Antenna Gain	2.60 dBi

1.6. Working Frequencies

Channel	Frequency	Channel	Frequency	Channel	Frequency
11	2405 MHz	12	2410 MHz	13	2415 MHz
14	2420 MHz	15	2425 MHz	16	2430 MHz
17	2435 MHz	18	2440 MHz	19	2445 MHz
20	2450 MHz	21	2455 MHz	22	2460 MHz
23	2465 MHz	24	2470 MHz	25	2475 MHz
26	2480 MHz	--	--	--	--

2. Test Configuration

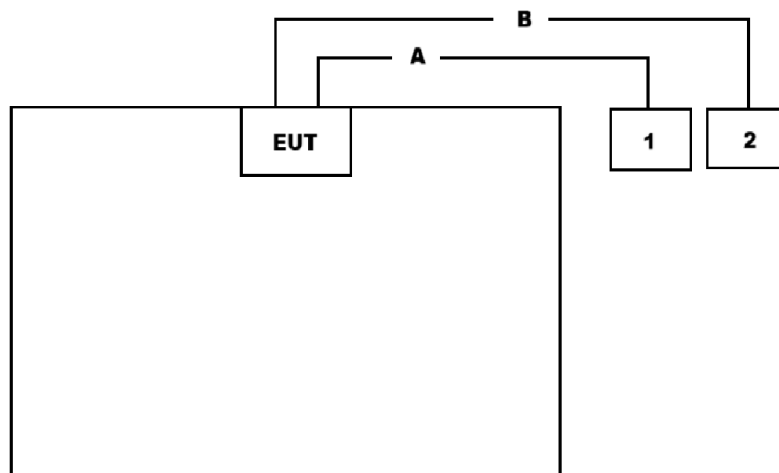
2.1. Test Mode

Mode 1: Transmit by 802.15.4

2.2. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10-2020 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.

Connection Diagram



Cable Type		Cable Description	Length
A	USB Cable	Shielded	> 10 m
B	DC Cable	Non shielded	> 10 m
Product		Manufacturer	Model No.
1	Notebook	Lenovo	E430 C
2	DC Power Supply	MESTEK	DP 6020

2.3. Test Software

The test utility software used during testing was “Putty” (Version: 0.67) and the commands were provided by the manufacturer.

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 D01 v05r02
- ANSI C63.10-2020
- ANSI C63.10-2020/Cor1-2023
- ANSI C63.10a-2024

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
EXA Signal Analyzer	Keysight	N9010B	MRTSUE07147	1 year	2025-11-06	WJ-AC2
Horn Antenna	RFSPIN	DRH18-E	MRTSUE07105	1 year	2025-05-12	WJ-AC2
Horn Antenna	RFSPIN	DRH18-E	MRTSUE07105	1 year	2026-05-12	WJ-AC2
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06599	1 year	2025-09-08	WJ-AC2
Preamplifier	EMCI	EMC184045SE	MRTSUE07103	1 year	2026-04-09	WJ-AC2
Thermohygrometer	testo	608-H1	MRTSUE11315	1 year	2025-06-24	WJ-AC2
Thermohygrometer	testo	608-H1	MRTSUE11332	1 year	2025-06-24	WJ-AC2
Anechoic Chamber	TDK	WJ-AC2	MRTSUE07117	1 year	2025-05-14	WJ-AC2
Anechoic Chamber	TDK	WJ-AC2	MRTSUE07117	1 year	2026-05-12	WJ-AC2
EMI Test Receiver	R&S	ESR3	MRTSUE07110	1 year	2025-04-24	WJ-AC1
EMI Test Receiver	R&S	ESR3	MRTSUE07110	1 year	2026-04-19	WJ-AC1
EXA Signal Analyzer	Keysight	N9010B	MRTSUE07148	1 year	2025-05-11	WJ-AC1
EXA Signal Analyzer	Keysight	N9010B	MRTSUE07148	1 year	2026-04-26	WJ-AC1
Active Loop Antenna	Schwarzbeck	FMZB 1519-60 D	MRTSUE07076	1 year	2025-11-19	WJ-AC1
TRILOG Broad Band Antenna	Schwarzbeck	VULB 9163	MRTSUE07099	1 year	2025-04-24	WJ-AC1
TRILOG Broad Band Antenna	Schwarzbeck	VULB 9163	MRTSUE07099	1 year	2026-04-22	WJ-AC1
Horn Antenna	ETS	3117	MRTSUE06257	1 year	2025-09-08	WJ-AC1
Microwave Broadband Preamplifier	Schwarzbeck	BBV 9718 D	MRTSUE07084	1 year	2025-12-22	WJ-AC1
Thermohygrometer	testo	608-H1	MRTSUE11333	1 year	2025-06-24	WJ-AC1
Thermohygrometer	testo	608-H1	MRTSUE11402	1 year	2025-12-01	WJ-AC1
Anechoic Chamber	TDK	WJ-AC1	MRTSUE07115	1 year	2025-05-17	WJ-AC1
Anechoic Chamber	TDK	WJ-AC1	MRTSUE07115	1 year	2026-05-16	WJ-AC1
USB Power Sensor	Keysight	U2021XA	MRTSUE07141	1 year	2026-03-15	WJ-SR3
Signal Analyzer	Keysight	N9020B	MRTSUE07037	1 year	2025-09-03	WJ-SR3
Fixed Attenuator	MVE	MVE2213	MRTSUE07323	Note	Note	WJ-SR3
RF Cable	UCwave	UCE500	MRTSUE07349	Note	Note	WJ-SR3
Thermohygrometer	testo	608-H1	MRTSUE11331	1 year	2025-06-24	WJ-SR3
Shielding Room	TDK	WJ-SR3	MRTSUE07125	N/A	N/A	WJ-SR3

Note: The loss of the Fixed Attenuator & RF Cable will be measured before testing.

Software	Version	Function
e3	230711	RE & CE
CONTROLLER CO3000	V 1.03.02	RE Antenna & Turntable
Agilent Power Panel	V 3.9	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 $k = 2$.

Radiated Emission Measurement	
The maximum measurement uncertainty is evaluated as:	
Coaxial:	9 kHz ~ 30 MHz: 2.35 dB
Coplanar:	9 kHz ~ 30 MHz: 2.37 dB
Horizontal:	30 MHz ~ 200 MHz: 3.47 dB
	200 MHz ~ 1 GHz: 4.17 dB
	1 GHz ~ 40 GHz: 4.97 dB
Vertical:	30 MHz ~ 200 MHz: 4.07 dB
	200 MHz ~ 1 GHz: 5.28 dB
	1 GHz ~ 40 GHz: 4.84 dB
Spurious Emissions, Conducted	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2 U_c(y)$): 2.5 dB	
Output Power	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2 U_c(y)$): 1.5 dB	
Power Spectrum Density	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2 U_c(y)$): 2.5 dB	
Occupied Bandwidth	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2 U_c(y)$): 3.2%	

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.247(a)(2)	6 dB 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 150 kHz-30 MHz	Line Conducted	N/A

Notes:

1. The analyzer plots shown in this section were captured using a correction table to account for cable and attenuator losses in the system connecting the EUT to the analyzer across relevant frequencies.
2. "N/A" means that this item is not applicable, and the detail information refer to relevant section.
3. 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. 6 dB Bandwidth Measurement

6.2.1. Test Limit

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

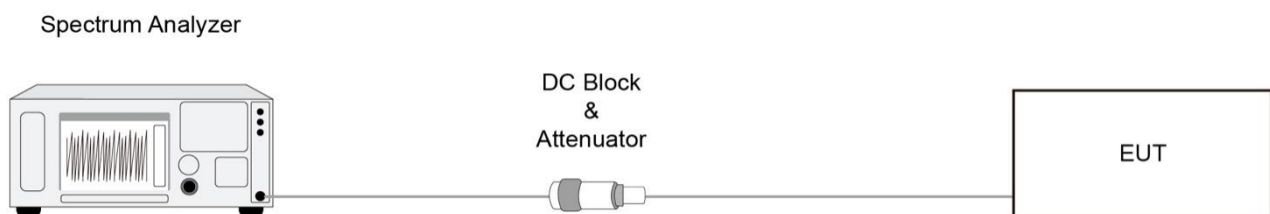
6.2.2. Test Procedure

ANSI C63.10-2020 - Section 11.8

6.2.3. Test Setting

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6 dB 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. RBW = 1% to 5% of the OBW, but not less than 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.1.

6.3. Output Power Measurement

6.3.1. Test Limit

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

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 C63.10-2020 - Section 11.9.1.2

ANSI C63.10 - 2013 - Section 11.9.2.3.2

6.3.3. Test Setting

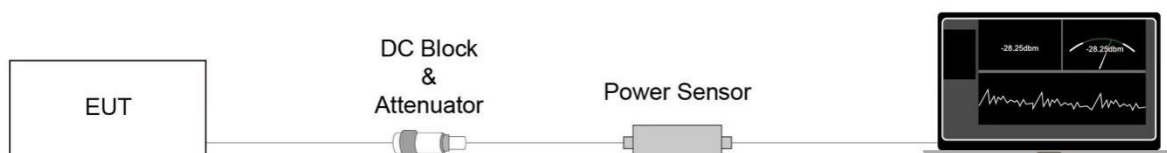
Method PKPM1 (Peak Power Measurement of Signals with DTS BW $\leq$ 50 MHz)

Peak 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 pulse sensor employs a VBW = 50 MHz so this method was only used for signals whose DTS bandwidth was less than or equal to 50 MHz.

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.2.

6.4. Power Spectral Density Measurement

6.4.1. Test Limit

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

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

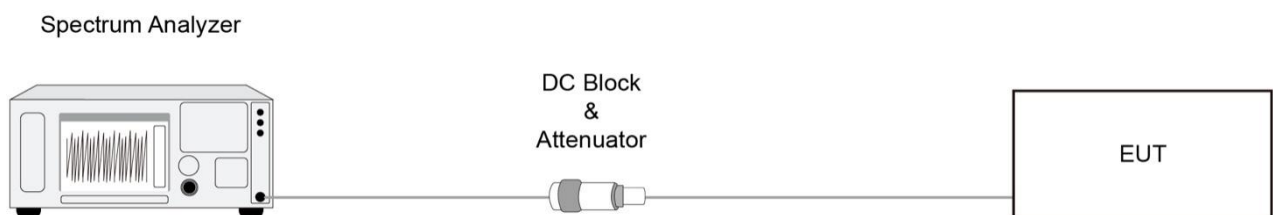
6.4.2. Test Procedure

ANSI C63.10-2020 - Section 11.10.2

6.4.3. Test Setting

1. Analyzer was set to the center frequency of the DTS channel under investigation
2. Span > 1.5 times the DTS channel bandwidth
3. RBW = 3 kHz
4. VBW $\geq 3 \times$ RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Trace was allowed to stabilize

6.4.4. Test Setup



6.4.5. Test Result

Refer to Appendix A.3.

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 20 dB 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 C63.10-2020 - Section 11.11

6.5.3. Test Setting

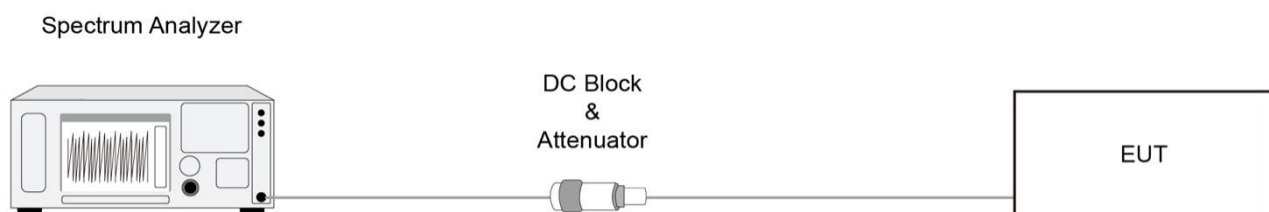
Reference level measurement

1. Set instrument center frequency to DTS channel center frequency
2. Span ≥ 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 = 100 kHz
3. VBW $\geq 3 \times$ RBW
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.4.

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 [μV/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 C63.10-2020 - Section 11.11 & 11.12

ANSI C63.10-2020 - Section 7.5

ANSI C63.10-2020 - Section 6.3 (General Requirements)

ANSI C63.10-2020 - Section 6.4 (Standard test method below 30 MHz)

ANSI C63.10-2020 - Section 6.5 (Standard test method above 30 MHz to 1 GHz)

ANSI C63.10-2020 - Section 6.6 (Standard test method above 1 GHz)

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
> 1000 MHz	1 MHz

Quasi-Peak Measurements below 1 GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1 MHz
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 1 GHz

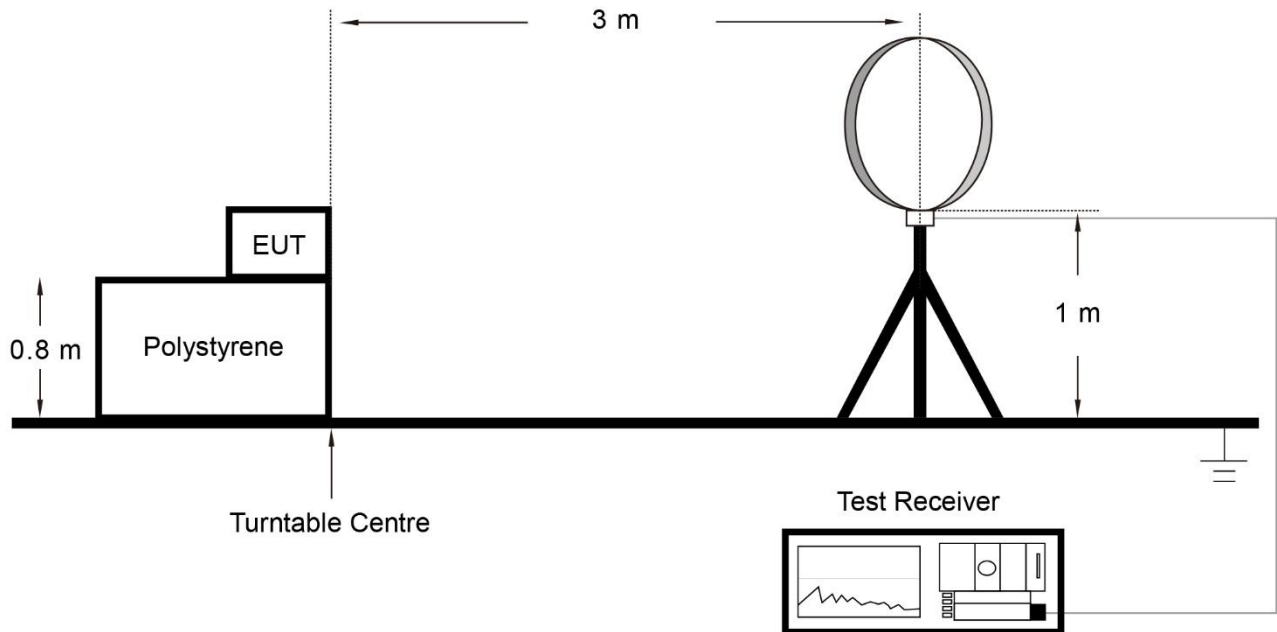
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1 MHz
3. VBW = 3 MHz
4. Detector = Peak
5. Sweep time = Auto couple
6. Trace mode = Max hold
7. Trace was allowed to stabilize

Average Measurements above 1 GHz

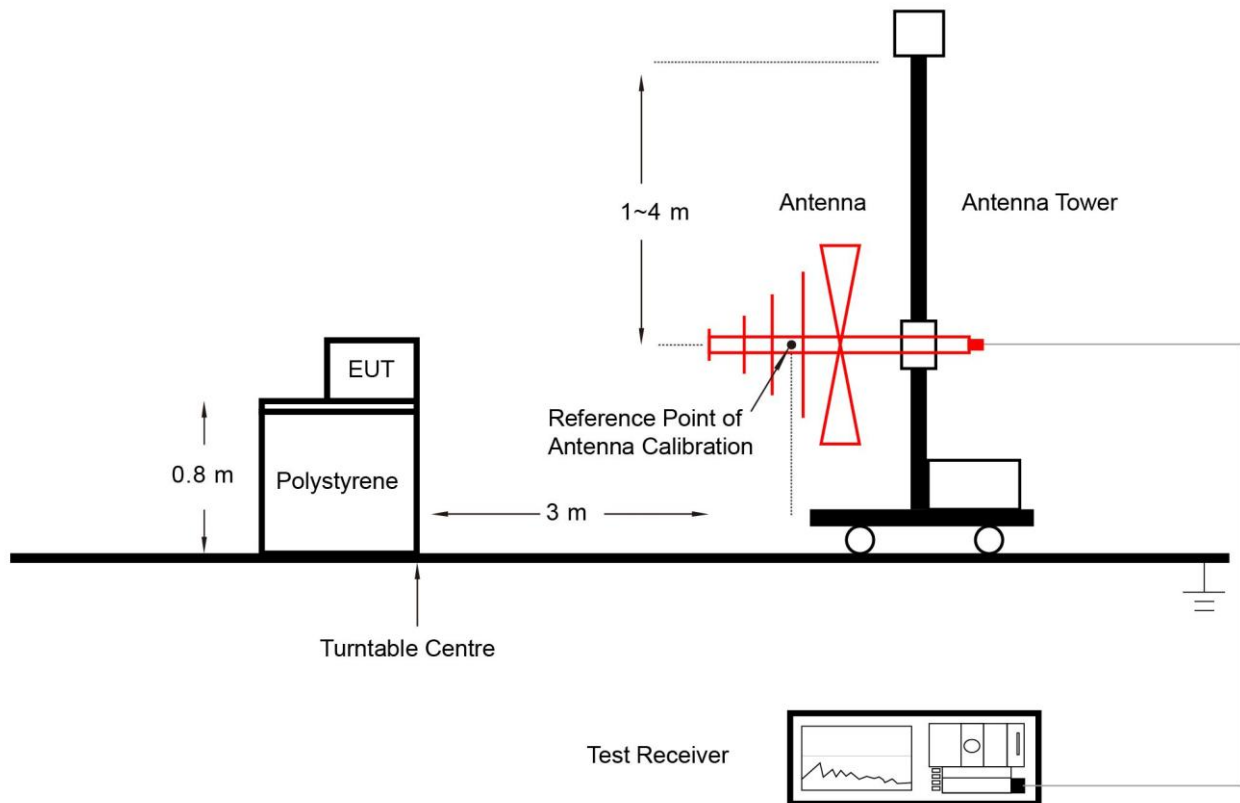
1. Make EUT is transmitting to obtain the “worst-case” pulse on time.
2. Couple the final radio frequency output signal to the input of a spectrum analyzer.
3. Adjust the center frequency of the spectrum analyzer to the center of the RF signal.
4. Set the spectrum analyzer for zero span.
5. Sweep time = 100ms.
6. Set the trigger on the spectrum analyzer to capture at least one period of the pulse train, including any blanking intervals.
7. Determine the total maximum pulse “on time” (t_{on}) over one period of the pulse train.
8. The duty cycle is then determined by dividing the total maximum “on time” by the period of the pulse train ($t_{on}/100ms$).
9. Determine the duty cycle correction factor. Duty Cycle Factor = $20 \times \text{Log (Duty Cycle)}$.
10. This correction factor may then be subtracted from the peak pulse amplitude (in dB) to find the average emission.

6.6.4. Test Setup

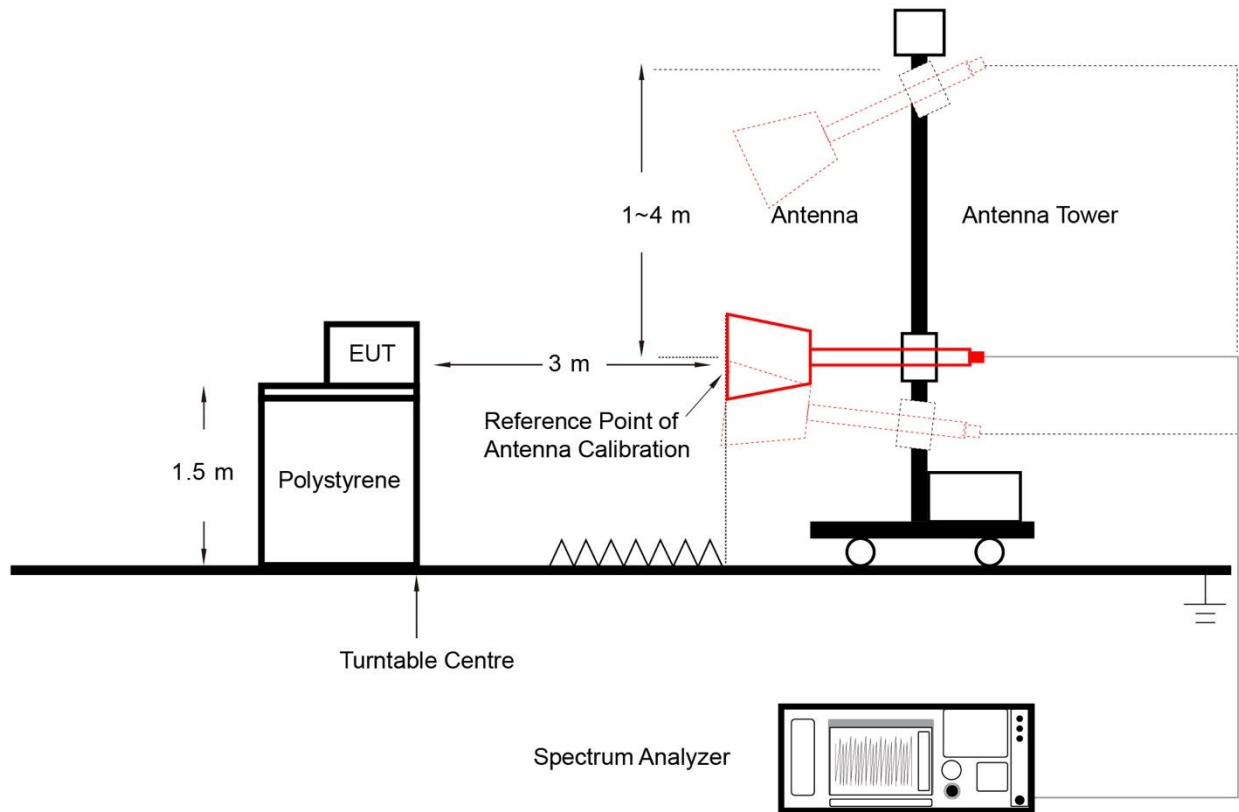
Below 30 MHz Test Setup:



Below 1 GHz Test Setup:



Above 1 GHz Test Setup:



6.6.5. Test Result

Refer to Appendix A.5.

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 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 [$\mu\text{V/m}$]	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 C63.10-2020 Section 6.3 & 6.6 & 7.5 & 11.12

6.7.3. Test Setting

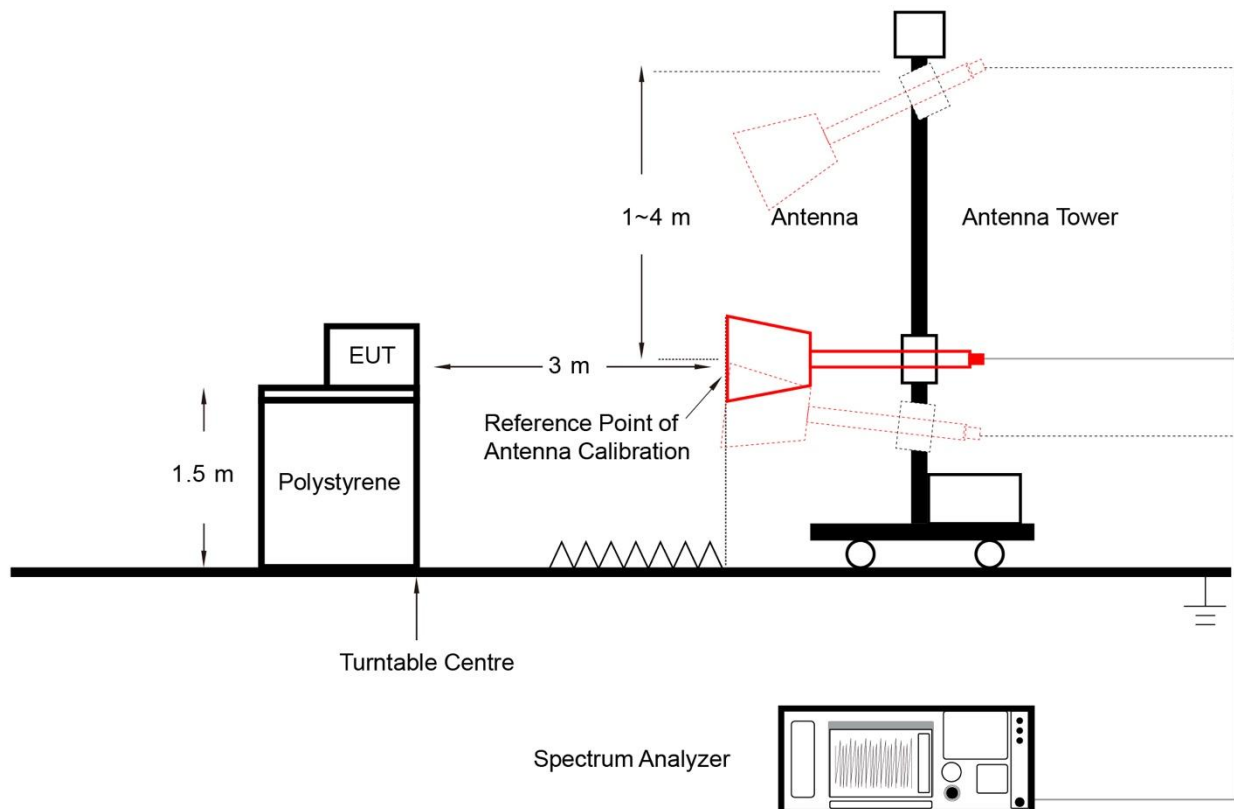
Peak Field Strength Measurements

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

Average Field Strength Measurements

1. Make EUT is transmitting to obtain the “worst-case” pulse on time.
2. Couple the final radio frequency output signal to the input of a spectrum analyzer.
3. Adjust the center frequency of the spectrum analyzer to the center of the RF signal.
4. Set the spectrum analyzer for zero span.
5. Sweep time = 100ms.
6. Set the trigger on the spectrum analyzer to capture at least one period of the pulse train, including any blanking intervals.
7. Determine the total maximum pulse “on time” (t_{on}) over one period of the pulse train.
8. The duty cycle is then determined by dividing the total maximum “on time” by the period of the pulse train ($t_{on}/100ms$).
9. Determine the duty cycle correction factor. Duty Cycle Factor = $20 \times \text{Log (Duty Cycle)}$.
10. This correction factor may then be subtracted from the peak pulse amplitude (in dB) to find the average emission.

6.7.4. Test Setup



6.7.5. Test Result

Refer to Appendix A.6.

6.8. AC Conducted Emissions Measurement

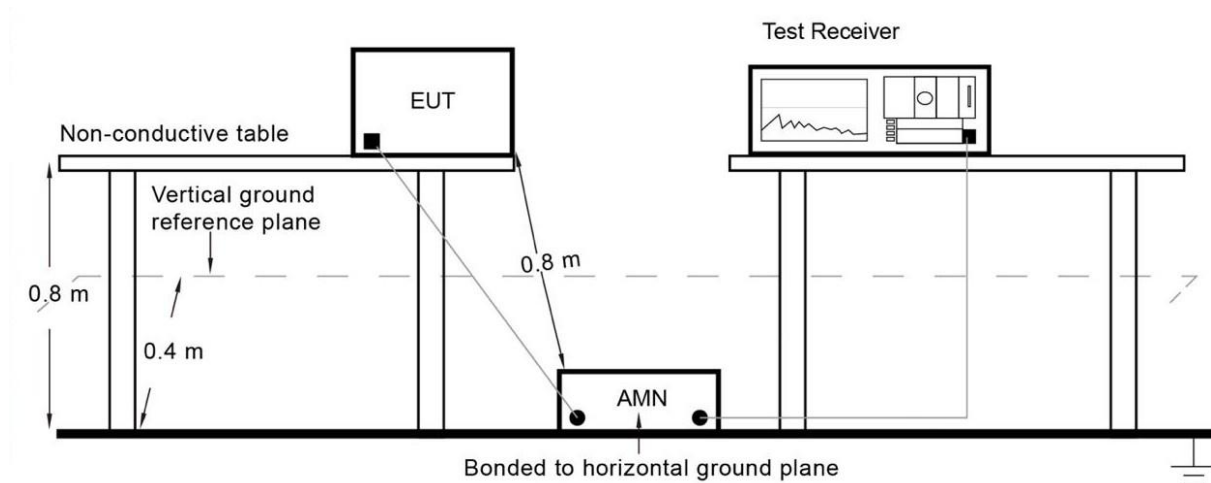
6.8.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dB μ V)	AV (dB μ V)
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 0.15 MHz to 0.5 MHz.

6.8.2. Test Setup



6.8.3. Test Result

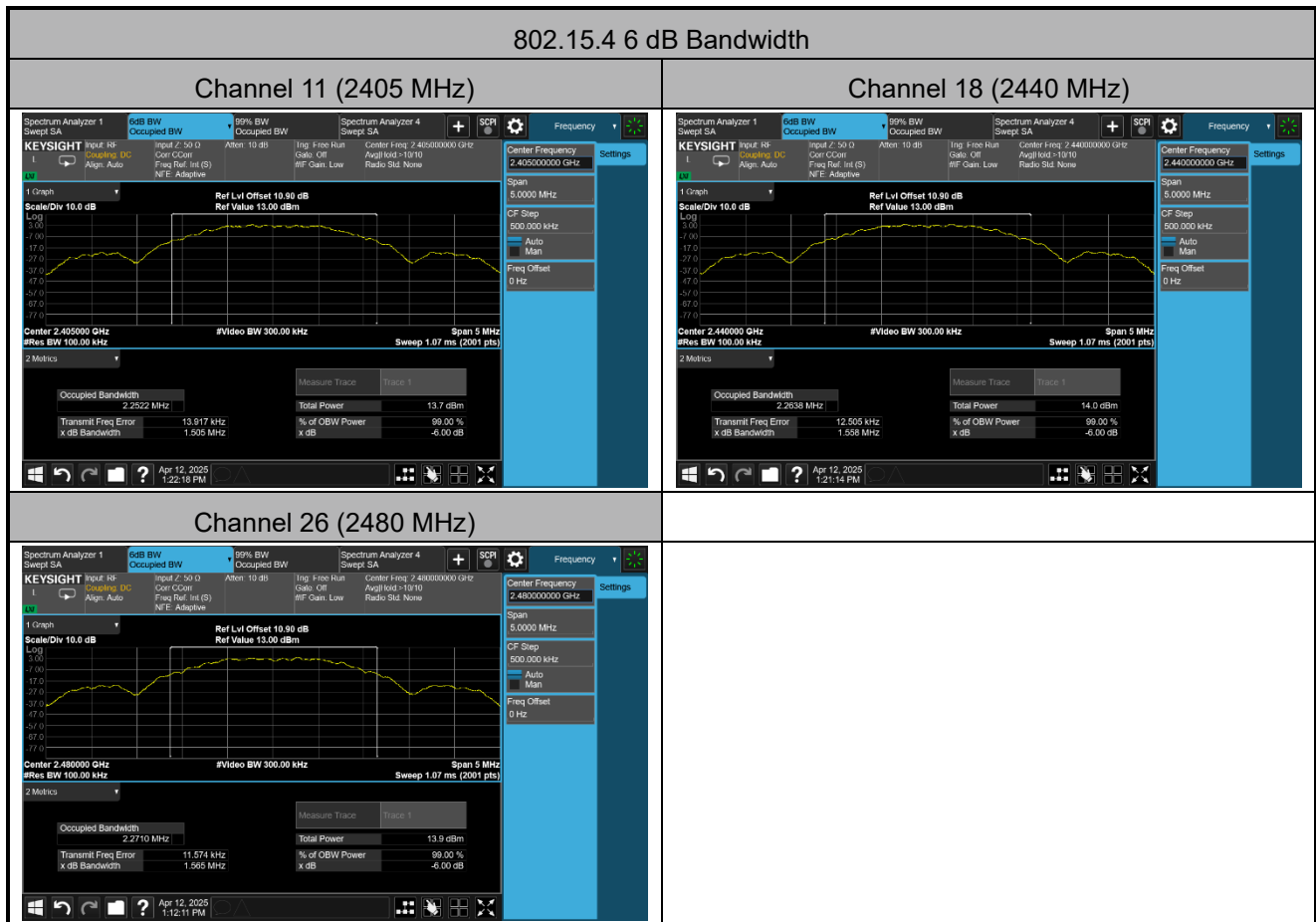
The EUT is powered by DC, so this item is not applicable.

Appendix A - Test Result

A.1 6 dB Bandwidth Test Result

Test Site	WJ-SR3	Test Engineer	Simon Lu
Test Date	2025-04-12		

Test Mode	Modulation Mode	Channel No.	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
802.15.4	O-QPSK	11	2405	1.505	≥ 0.5	Pass
802.15.4	O-QPSK	18	2440	1.558	≥ 0.5	Pass
802.15.4	O-QPSK	26	2480	1.565	≥ 0.5	Pass



A.2 Output Power Test Result

Test Site	WJ-SR3	Test Engineer	Simon Lu
Test Date	2025-04-12		

Test Result of Peak Output Power

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Peak Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	6.76	≤ 30.00	Pass
802.15.4	O-QPSK	18	2440	7.01	≤ 30.00	Pass
802.15.4	O-QPSK	26	2480	7.30	≤ 30.00	Pass

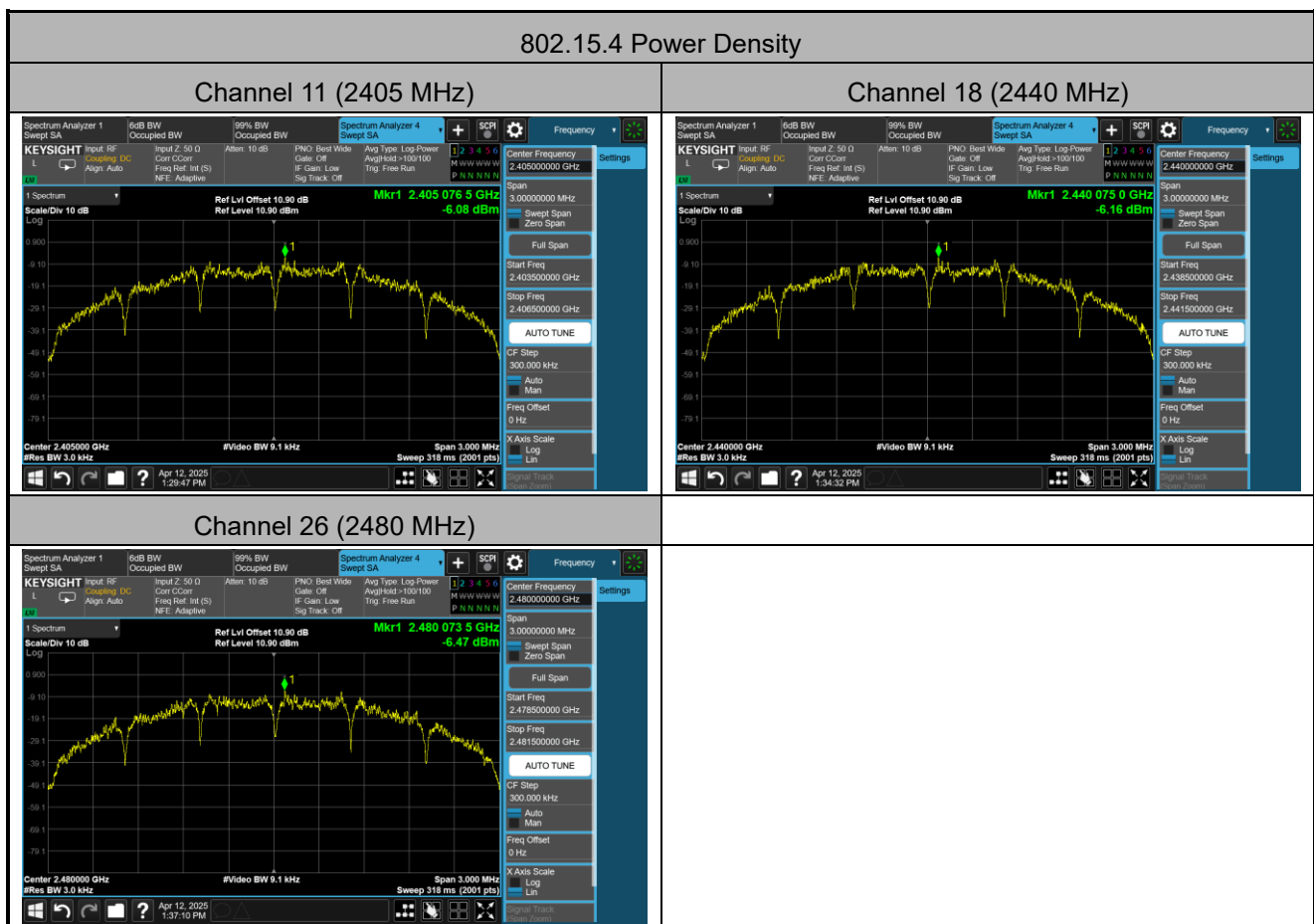
Test Result of Average Output Power (Reporting Only)

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Average Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	6.69	≤ 30.00	Pass
802.15.4	O-QPSK	18	2440	6.93	≤ 30.00	Pass
802.15.4	O-QPSK	26	2480	7.24	≤ 30.00	Pass

A.3 Power Spectral Density Test Result

Test Site	WJ-SR3	Test Engineer	Simon Lu
Test Date	2025-04-12		

Test Mode	Modulation Mode	Channel No.	Frequency (MHz)	PK PSD (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
802.15.4	O-QPSK	11	2405	-6.08	≤ 8.00	Pass
802.15.4	O-QPSK	18	2440	-6.16	≤ 8.00	Pass
802.15.4	O-QPSK	26	2480	-6.47	≤ 8.00	Pass



A.4 Conducted Band Edge and Out-of-Band Emissions Test Result

Test Site	WJ-SR3	Test Engineer	Simon Lu
Test Date	2025-04-12		

Test Mode	Data Rate /MCS	Channel No.	Frequency (MHz)	Limit (dBc)	Result
802.15.4	O-QPSK	11	2405	20	Pass
802.15.4	O-QPSK	18	2440	20	Pass
802.15.4	O-QPSK	26	2480	20	Pass

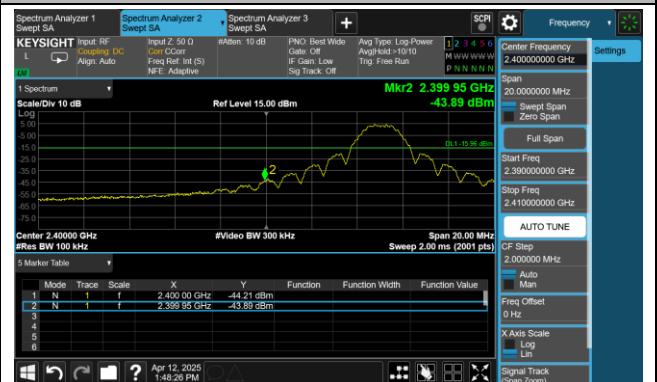
802.15.4 Out-of-Band Emissions

Channel 11 (2405 MHz)

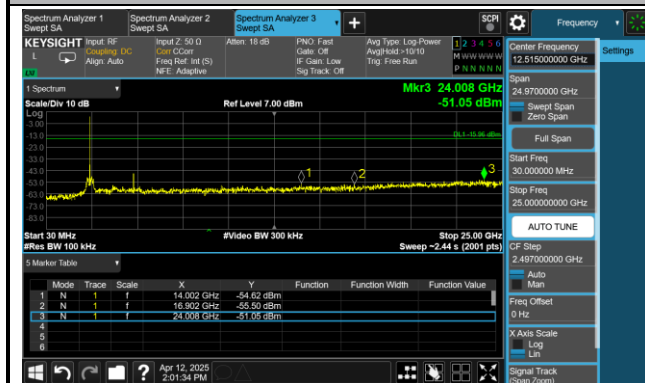
100 kHz PSD Reference Level



Low Band Edge

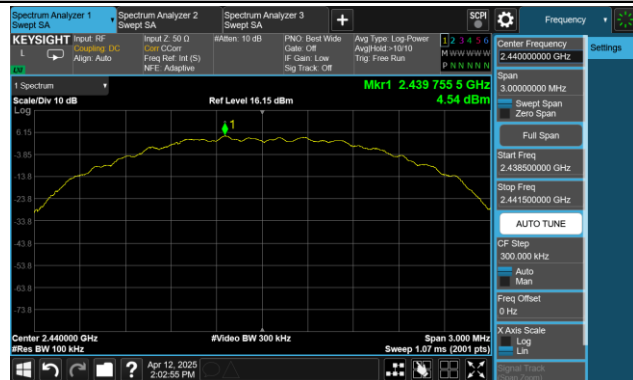


Spurious Emission

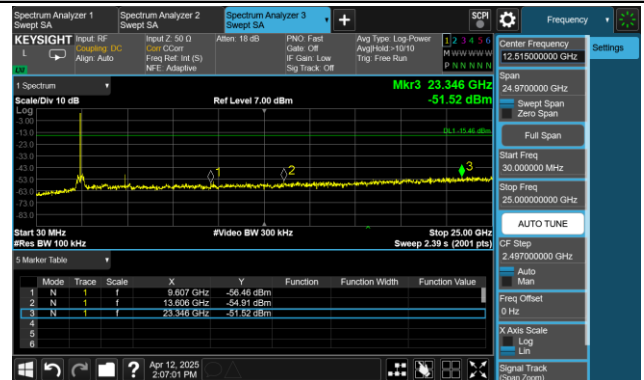


Channel 18 (2440 MHz)

100 kHz PSD Reference Level



Spurious Emission

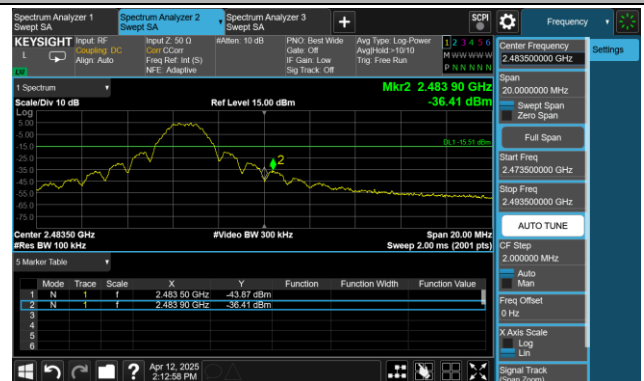


Channel 26 (2480 MHz)

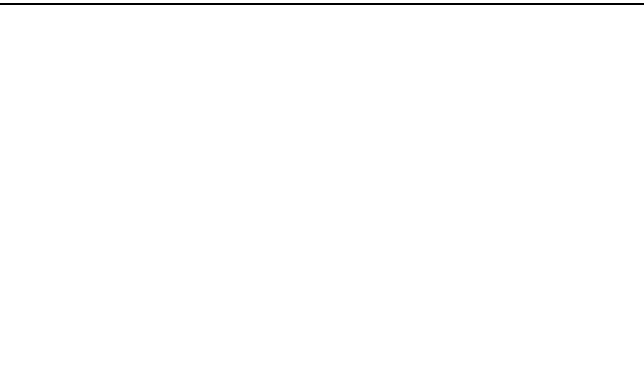
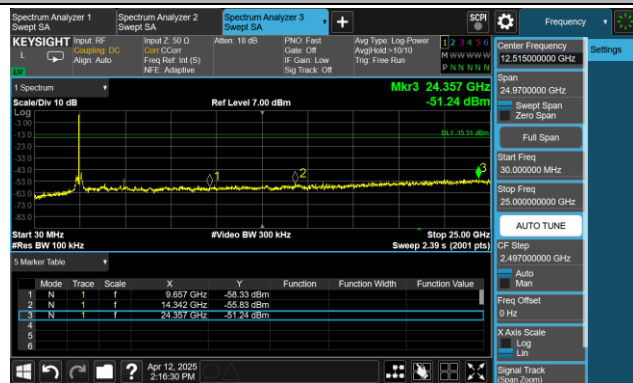
100 kHz PSD Reference Level



High Band Edge



Spurious Emission



A.5 Radiated Spurious Emission Test Result

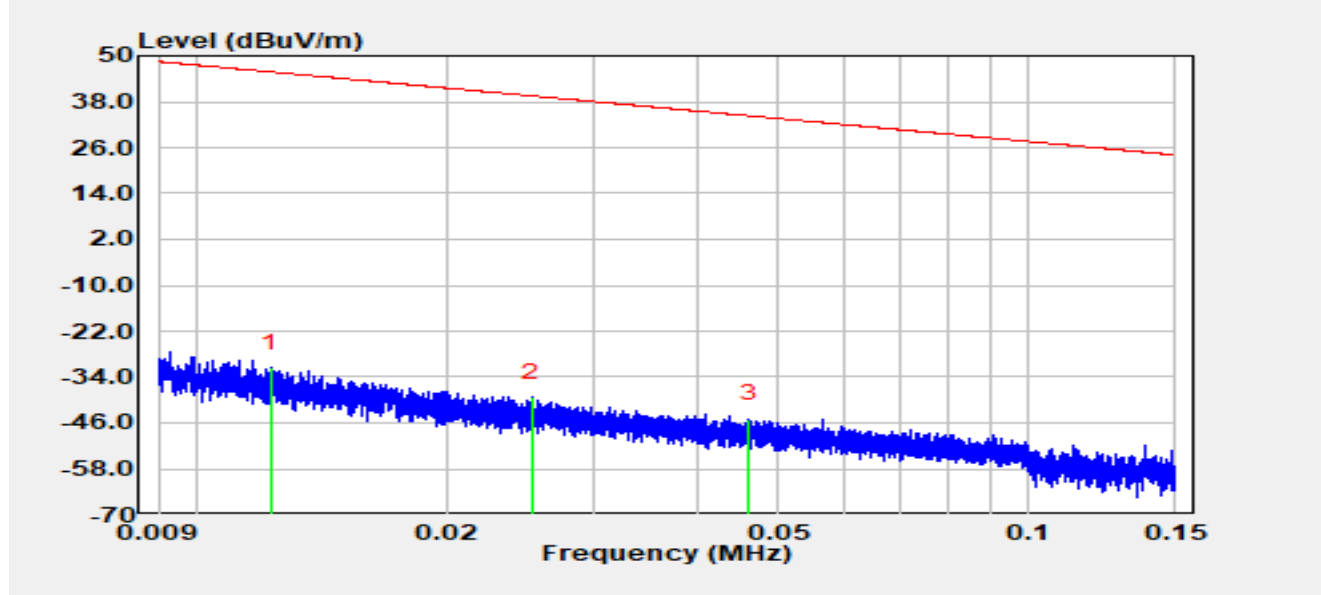
Test Site	WJ-AC2	Test Engineer	Bob Zhang
Test Date	2025-04-24		
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20 dB below limit line within 1-18 GHz, there is not show in the report.		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
11	4809.70	41.81	8.35	50.16	74.00	-23.84	Peak	Horizontal
	11092.90	28.89	18.53	47.42	74.00	-26.58	Peak	Horizontal
	17870.80	26.06	29.50	55.56	74.00	-18.44	Peak	Horizontal
	4809.70	40.29	8.35	48.64	74.00	-25.36	Peak	Vertical
	11885.10	28.49	20.08	48.57	74.00	-25.43	Peak	Vertical
	17814.70	25.99	29.35	55.34	74.00	-18.66	Peak	Vertical
18	4879.40	41.32	8.41	49.73	74.00	-24.27	Peak	Horizontal
	7320.60	42.73	13.39	56.12	74.00	-17.88	Peak	Horizontal
	17870.80	25.51	29.50	55.01	74.00	-18.99	Peak	Horizontal
	4879.40	40.55	8.41	48.96	74.00	-25.04	Peak	Vertical
	7318.90	41.55	13.42	54.97	74.00	-19.03	Peak	Vertical
	17979.60	25.87	29.73	55.60	74.00	-18.40	Peak	Vertical
26	4961.00	39.70	8.41	48.11	74.00	-25.89	Peak	Horizontal
	7437.90	41.06	13.51	54.57	74.00	-19.43	Peak	Horizontal
	17824.90	25.48	29.63	55.11	74.00	-18.89	Peak	Horizontal
	4959.30	39.49	8.38	47.87	74.00	-26.13	Peak	Vertical
	7437.90	41.65	13.51	55.16	74.00	-18.84	Peak	Vertical
	17857.20	25.80	28.97	54.77	74.00	-19.23	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 Channel	Frequency (MHz)	Peak Level (dBμV)	Duty Factor (dB)	Average Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
11	4809.70	50.16	-28.60	21.56	54.00	-32.44	Average	Horizontal
	11092.90	47.42	-28.60	18.82	54.00	-35.18	Average	Horizontal
	17870.80	55.56	-28.60	26.96	54.00	-27.04	Average	Horizontal
	4809.70	48.64	-28.60	20.04	54.00	-33.96	Average	Vertical
	11885.10	48.57	-28.60	19.97	54.00	-34.03	Average	Vertical
	17814.70	55.34	-28.60	26.74	54.00	-27.26	Average	Vertical
18	4879.40	49.73	-28.60	21.13	54.00	-32.87	Average	Horizontal
	7320.60	56.12	-28.60	27.52	54.00	-26.48	Average	Horizontal
	17870.80	55.01	-28.60	26.41	54.00	-27.59	Average	Horizontal
	4879.40	48.96	-28.60	20.36	54.00	-33.64	Average	Vertical
	7318.90	54.97	-28.60	26.37	54.00	-27.63	Average	Vertical
	17979.60	55.60	-28.60	27.00	54.00	-27.00	Average	Vertical
26	4961.00	48.11	-28.60	19.51	54.00	-34.49	Average	Horizontal
	7437.90	54.57	-28.60	25.97	54.00	-28.03	Average	Horizontal
	17824.90	55.11	-28.60	26.51	54.00	-27.49	Average	Horizontal
	4959.30	47.87	-28.60	19.27	54.00	-34.73	Average	Vertical
	7437.90	55.16	-28.60	26.56	54.00	-27.44	Average	Vertical
	17857.20	54.77	-28.60	26.17	54.00	-27.83	Average	Vertical
Note 1: Duty Cycle = Ton Time / 100 ms × 100% = 3.70 ms / 100 ms × 100% = 3.70%, This data is provided by the manufacturer. The accuracy, completeness, and validity of the information are solely the responsibility of the manufacturer. Note 2: Duty Factor = 20 × Log (Duty Cycle) = 20 × Log (3.70%) = -28.60 dB. Note 3: Average Level = Peak Level + Duty Factor.								

The Result of Radiated Emission for 9 kHz ~ 30 MHz:

Site	WJ-AC1	Test Date	2025-05-27
Temperature	18.1 °C	Humidity	50.3%
Limit	FCC_Part 15.209_RSE (3 m)	Test Engineer	Carl Jiang
Test Voltage	DC 12 V	Polarity	Coaxial
Test Mode	Transmit by 802.15.4 at 2480 MHz		

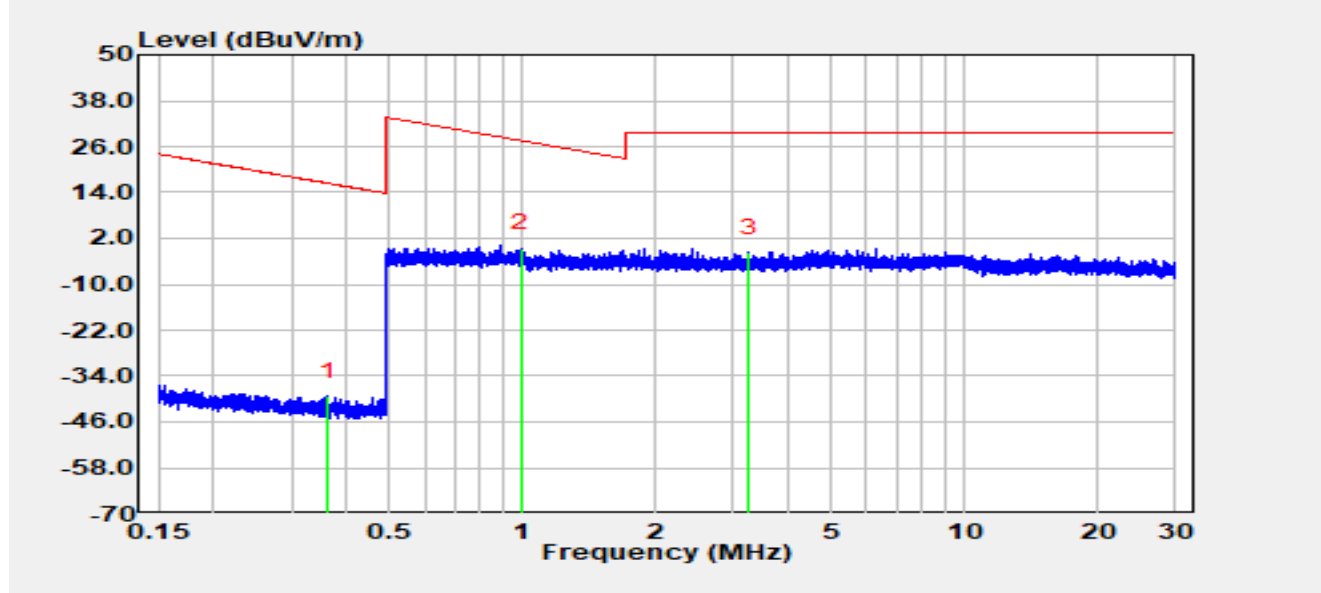


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1	*	0.01	27.88	-59.42	-31.54	-77.35	45.81	Peak
2		0.03	20.80	-60.01	-39.21	-78.74	39.53	Peak
3		0.05	15.15	-60.18	-45.03	-79.34	34.31	Peak

Notes:

1. “*” indicates the worst-case emission level observed during the measurement.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) + 40log(d1/d2) (dB), d1 = 3 m, d2 = 300 m (9 kHz-490 kHz) or 30 m (490 kHz-30 MHz).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WJ-AC1	Test Date	2025-05-27
Temperature	18.1 °C	Humidity	50.3%
Limit	FCC_Part 15.209_RSE (3 m)	Test Engineer	Carl Jiang
Test Voltage	DC 12 V	Polarity	Coaxial
Test Mode	Transmit by 802.15.4 at 2480 MHz		

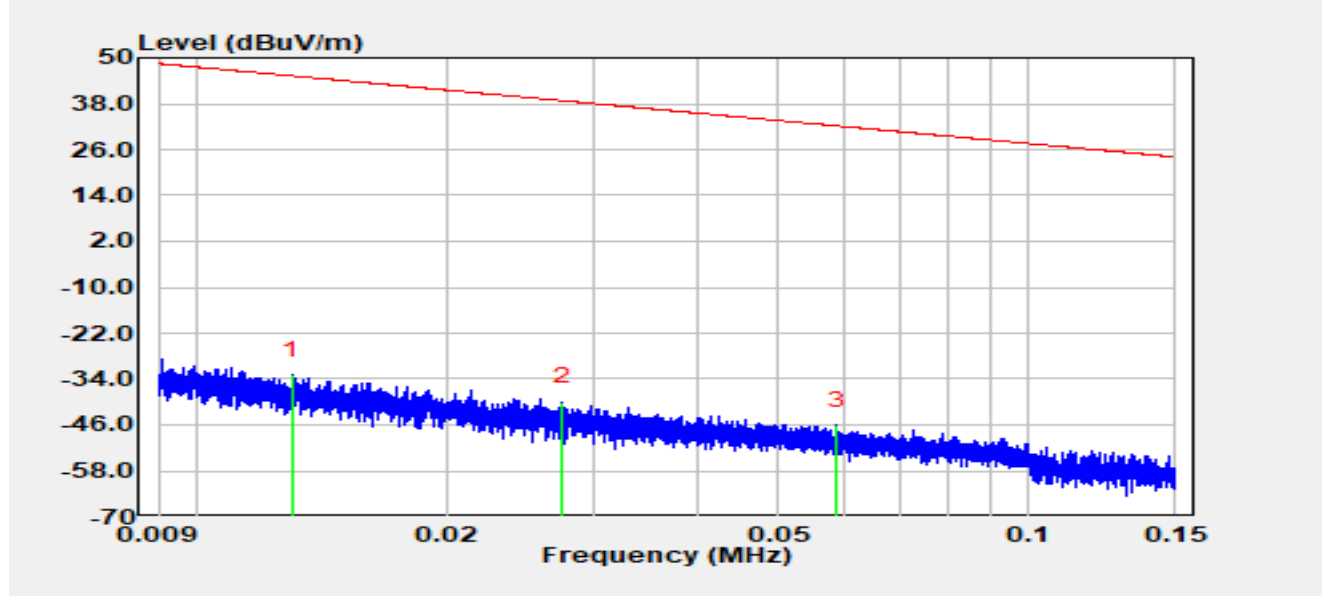


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		0.36	21.00	-60.32	-39.33	-55.72	16.39	Peak
2	*	0.99	19.72	-20.36	-0.64	-28.34	27.69	Peak
3		3.24	18.70	-20.37	-1.67	-31.17	29.50	Peak

Notes:

1. “*” indicates the worst-case emission level observed during the measurement.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) + $40\log(d1/d2)$ (dB), $d1 = 3$ m, $d2 = 300$ m (9 kHz-490 kHz) or 30 m (490 kHz-30 MHz).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WJ-AC1	Test Date	2025-05-27
Temperature	18.1 °C	Humidity	50.3%
Limit	FCC_Part 15.209_RSE (3 m)	Test Engineer	Carl Jiang
Test Voltage	DC 12 V	Polarity	Coplanar
Test Mode	Transmit by 802.15.4 at 2480 MHz		

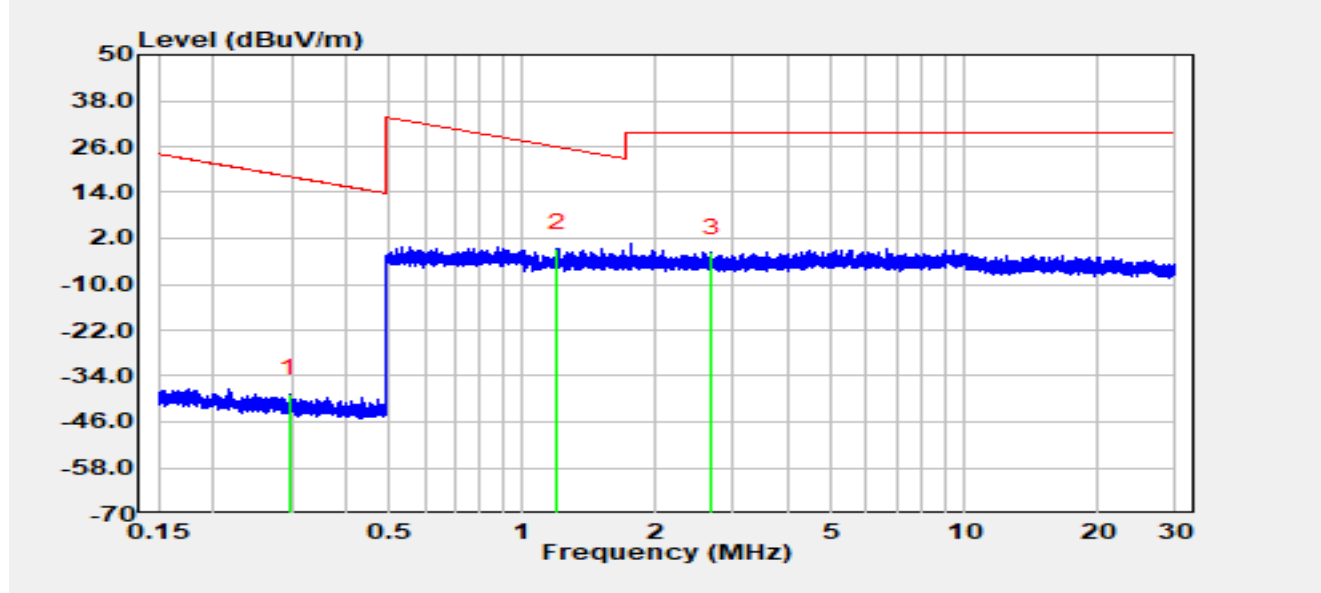


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		0.01	26.39	-59.47	-33.09	-78.37	45.28	Peak
2		0.03	20.14	-60.05	-39.91	-78.71	38.80	Peak
3	*	0.06	14.10	-60.19	-46.09	-78.28	32.19	Peak

Notes:

1. “*” indicates the worst-case emission level observed during the measurement.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) + $40\log(d1/d2)$ (dB), $d1 = 3$ m, $d2 = 300$ m (9 kHz-490 kHz) or 30 m (490 kHz-30 MHz).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WJ-AC1	Test Date	2025-05-27
Temperature	18.1 °C	Humidity	50.3%
Limit	FCC_Part 15.209_RSE (3 m)	Test Engineer	Carl Jiang
Test Voltage	DC 12 V	Polarity	Coplanar
Test Mode	Transmit by 802.15.4 at 2480 MHz		



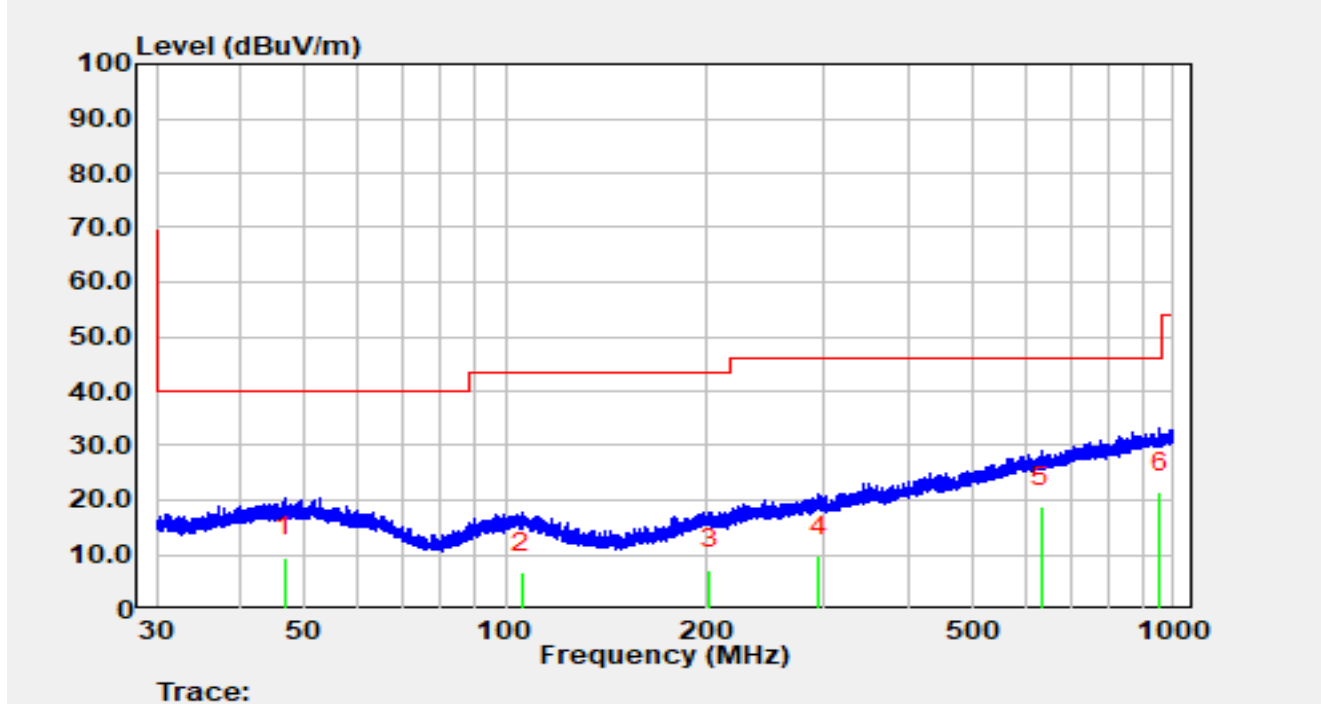
No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		0.30	21.56	-60.31	-38.75	-56.91	18.15	Peak
2	*	1.20	19.63	-20.31	-0.69	-26.73	26.04	Peak
3		2.67	18.53	-20.29	-1.76	-31.26	29.50	Peak

Notes:

1. “ * ” indicates the worst-case emission level observed during the measurement.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) + 40log(d1/d2) (dB), d1 = 3 m, d2 = 300 m (9 kHz-490 kHz) or 30 m (490 kHz-30 MHz).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m)

The Result of Radiated Emission for 30 MHz ~ 1 GHz:

Site	WJ-AC1	Test Date	2025-05-27
Temperature	18.1 °C	Humidity	50.3%
Limit	FCC_Part 15.209_RSE (3 m)	Test Engineer	Carl Jiang
Test Voltage	DC 12 V	Polarity	Horizontal
Test Mode	Transmit by 802.15.4 at 2480 MHz		

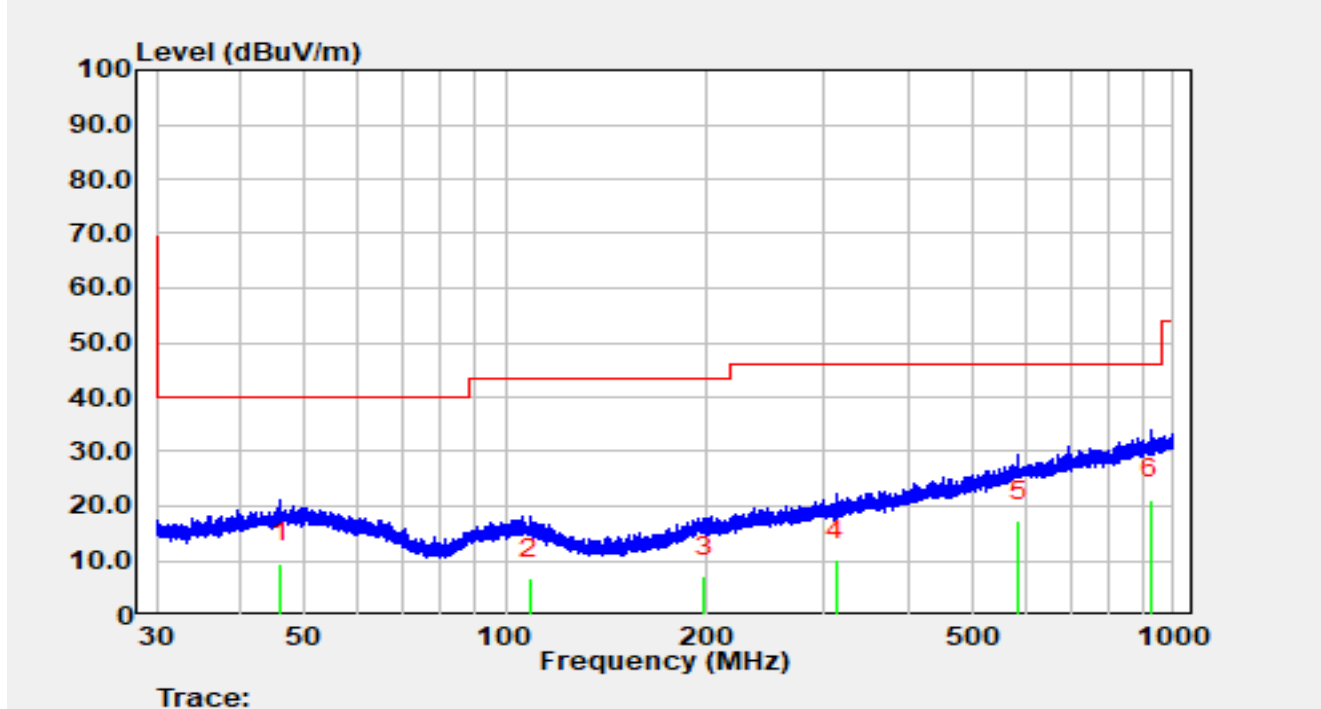


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		46.617	-10.10	19.64	9.54	-30.46	40.00	QP
2		105.642	-11.20	17.95	6.75	-36.75	43.50	QP
3		201.605	-10.70	17.96	7.26	-36.24	43.50	QP
4		293.908	-10.70	20.49	9.79	-36.21	46.00	QP
5		632.575	-8.70	27.41	18.71	-27.29	46.00	QP
6	*	955.438	-9.70	31.10	21.40	-24.60	46.00	QP

Notes:

1. " * ", means this data is the worst emission level.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WJ-AC1	Test Date	2025-05-27
Temperature	18.1 °C	Humidity	50.3%
Limit	FCC_Part 15.209_RSE (3 m)	Test Engineer	Carl Jiang
Test Voltage	DC 12 V	Polarity	Vertical
Test Mode	Transmit by 802.15.4 at 2480 MHz		



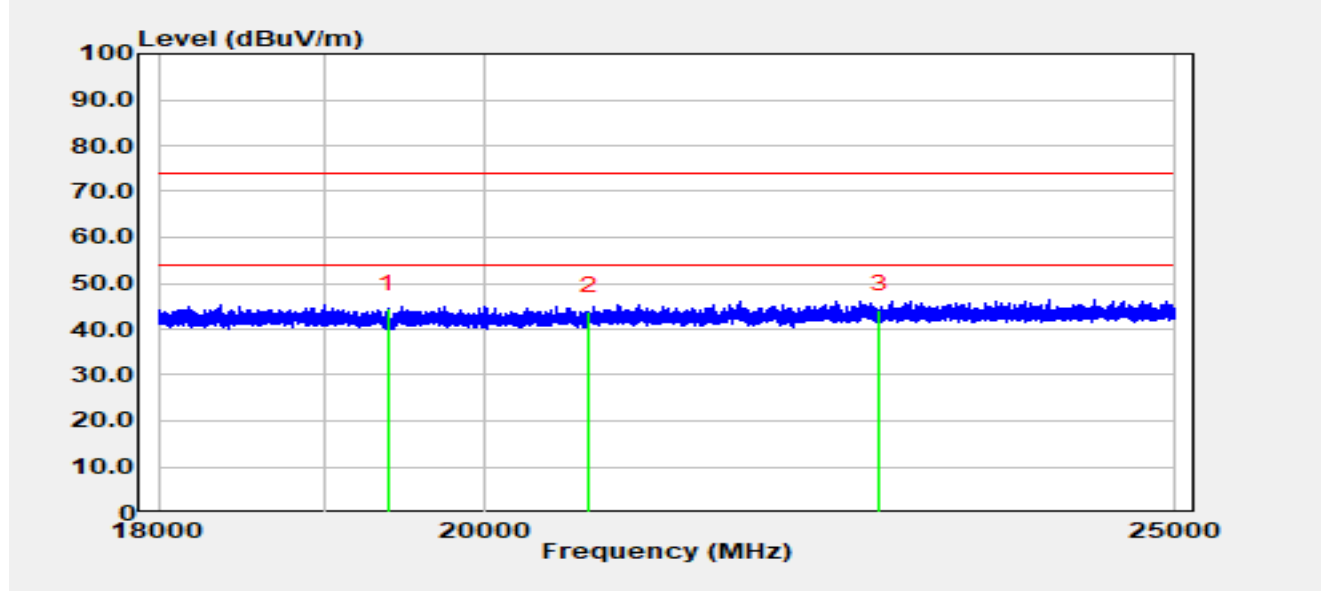
No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		46.113	-10.00	19.62	9.62	-30.38	40.00	QP
2		108.647	-11.10	17.73	6.63	-36.87	43.50	QP
3		198.518	-10.80	17.89	7.09	-36.41	43.50	QP
4		313.166	-10.80	20.92	10.12	-35.88	46.00	QP
5		587.050	-9.60	26.79	17.19	-28.81	46.00	QP
6	*	921.869	-9.70	30.92	21.22	-24.78	46.00	QP

Notes:

1. " * ", means this data is the worst emission level.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

The Result of Radiated Emission for 18 GHz ~ 25 GHz:

Site	WJ-AC2	Test Date	2025-05-29
Temperature	23.5 °C	Humidity	40.4%
Limit	FCC_Part 15.209_RSE (3 m)	Test Engineer	Bob Zhang
Test Voltage	By DC 12 V	Polarity	Horizontal
Test Mode	Transmit by 802.15.4 at 2480 MHz		

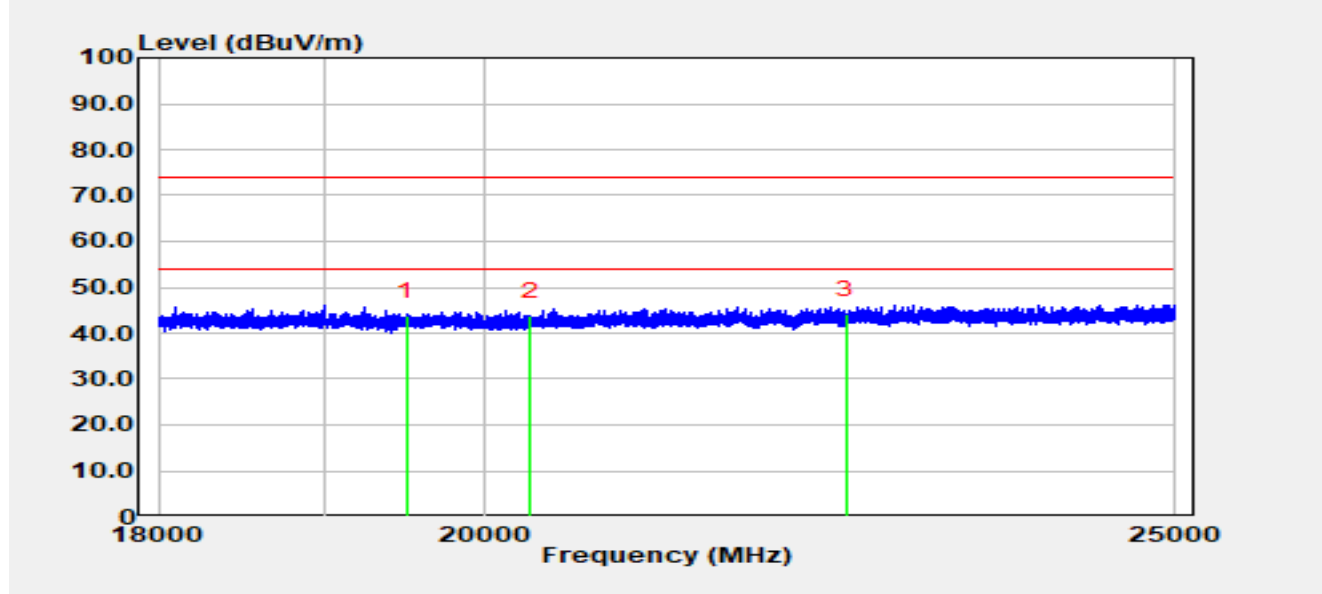


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1	*	19383.90	52.90	-8.46	44.43	-29.57	74.00	Peak
2		20683.80	51.12	-7.34	43.78	-30.22	74.00	Peak
3		22720.10	49.13	-4.87	44.26	-29.74	74.00	Peak

Notes:

1. "*" indicates the worst-case emission level observed during the measurement.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - AMP (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WJ-AC2	Test Date	2025-05-29
Temperature	23.5 °C	Humidity	40.4%
Limit	FCC_Part 15.209_RSE (3 m)	Test Engineer	Bob Zhang
Test Voltage	By DC 12 V	Polarity	Vertical
Test Mode	Transmit by 802.15.4 at 2480 MHz		



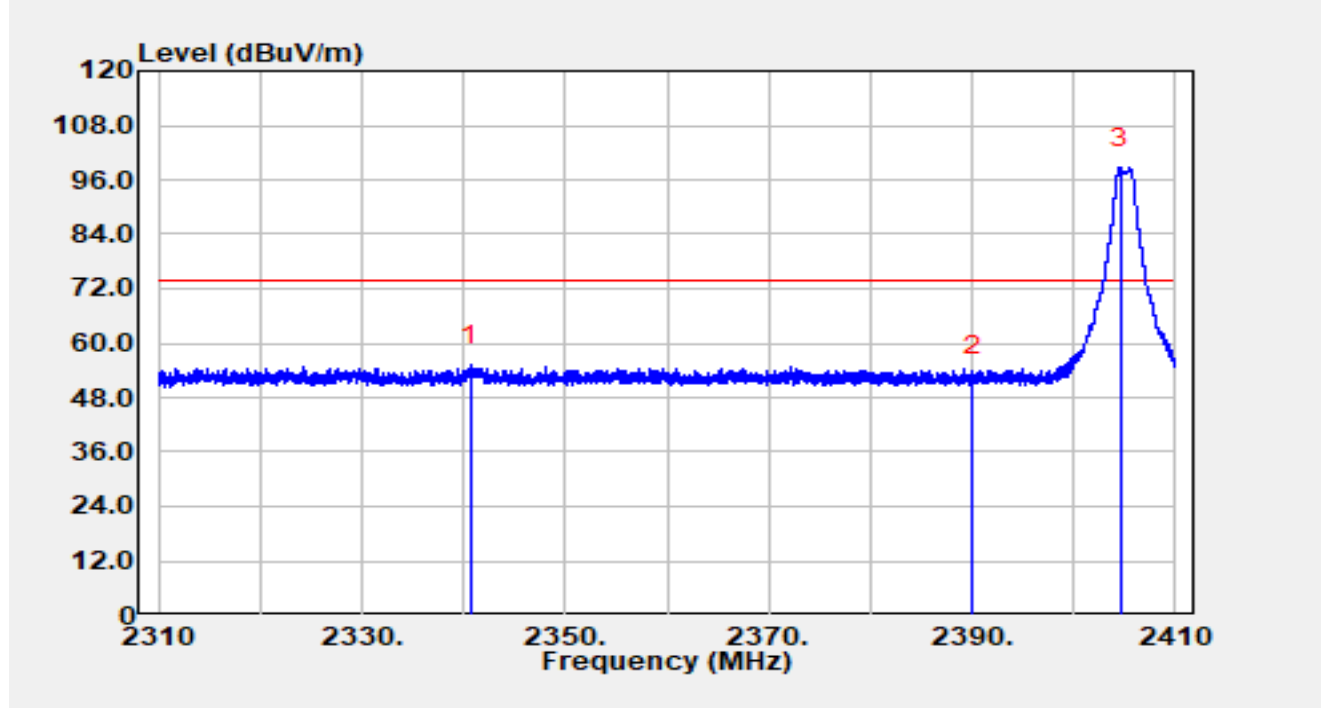
No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		19499.40	51.64	-8.02	43.62	-30.38	74.00	Peak
2		20297.40	51.50	-7.87	43.63	-30.37	74.00	Peak
3	*	22481.40	49.41	-5.36	44.04	-29.96	74.00	Peak

Notes:

1. " *" indicates the worst-case emission level observed during the measurement.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - AMP (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

A.6 Radiated Restricted Band Edge Test Result

Site	WJ-AC2	Test Date	2025-04-24
Temperature	23.5 °C	Humidity	40.4%
Limit	FCC_Part 15_Band Edge (3 m)	Test Engineer	Bob Zhang
Factor	DRH18-E_07105	Polarity	Horizontal
EUT	Wall reader 3140	Test Voltage	By DC 12 V
Test Mode	Transmit by 802.15.4 at 2405 MHz		



No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1	*	2340.670	25.58	29.49	55.07	-18.93	74.00	Peak
2		2390.000	23.21	29.59	52.80	-21.20	74.00	Peak
3		2404.540	68.98	29.64	98.62	N/A	N/A	Peak

Notes:

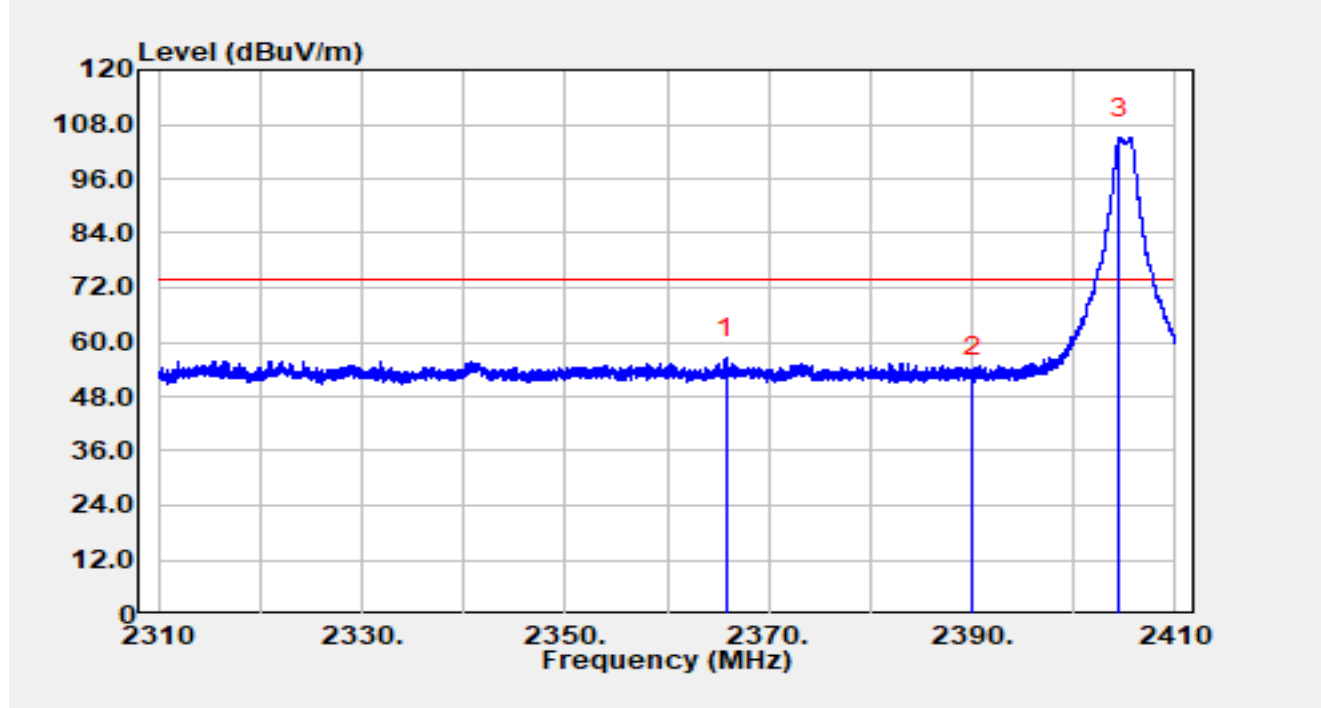
1. " * ", means this data is the worst emission level.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

No	Mark	Frequency (MHz)	Peak Level (dBμV)	Duty Factor (dB)	Average Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1	*	2340.670	55.07	-28.60	26.47	-27.53	54.00	Average
2		2390.000	52.80	-28.60	24.20	-29.80	54.00	Average
3		2404.540	98.62	-28.60	70.02	N/A	N/A	Average

Notes:

1. " * ", means this data is the worst emission level.
2. Duty Cycle = Ton Time / 100 ms × 100% = 3.70 ms / 100 ms × 100% = 3.70%, This data is provided by the manufacturer. The accuracy, completeness, and validity of the information are solely the responsibility of the manufacturer.
3. Duty Factor = 20 × Log (Duty Cycle) = 20 × Log (3.70%) = -28.60 dB.
4. Average Level = Peak Level + Duty Factor.

Site	WJ-AC2	Test Date	2025-04-24
Temperature	23.5 °C	Humidity	40.4%
Limit	FCC_Part 15_Band Edge (3 m)	Test Engineer	Bob Zhang
Factor	DRH18-E_07105	Polarity	Vertical
EUT	Wall reader 3140	Test Voltage	By DC 12 V
Test Mode	Transmit by 802.15.4 at 2405 MHz		



No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1	*	2365.780	26.90	29.56	56.46	-17.54	74.00	Peak
2		2390.000	22.91	29.59	52.50	-21.50	74.00	Peak
3		2404.520	75.36	29.64	104.99	N/A	N/A	Peak

Notes:

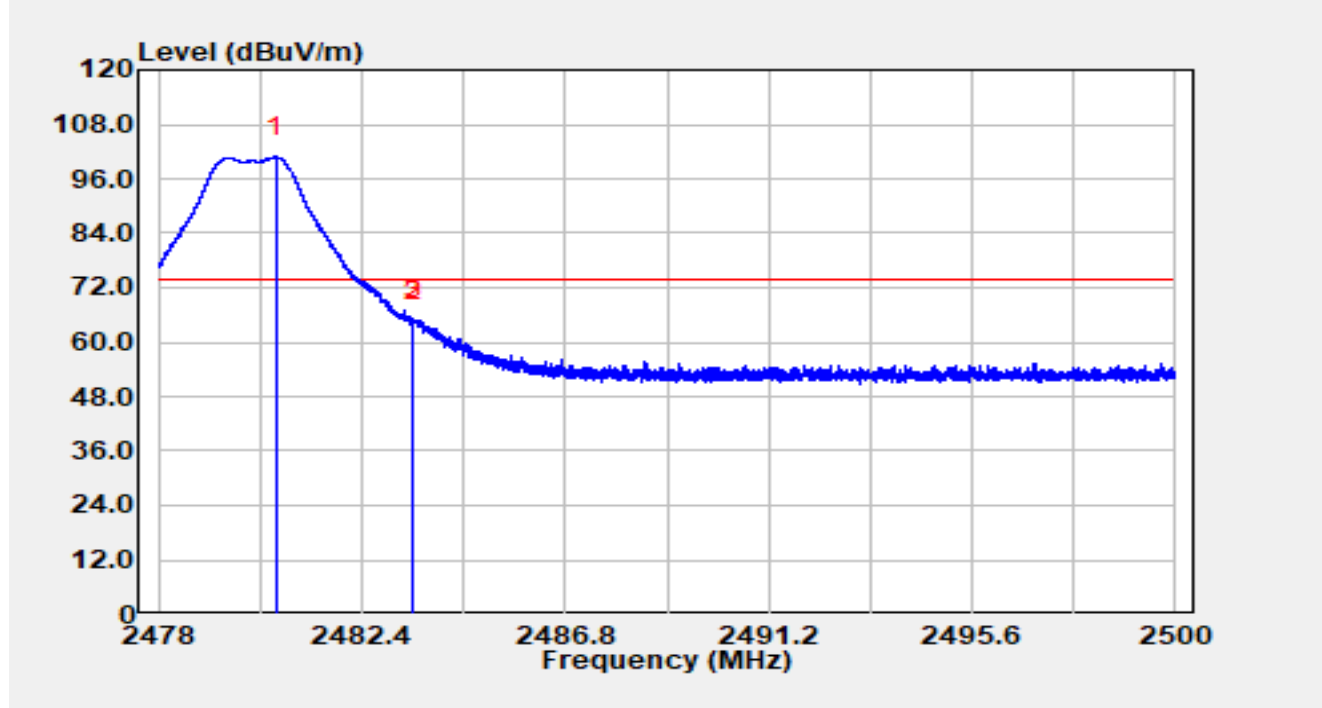
1. " * ", means this data is the worst emission level.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

No	Mark	Frequency (MHz)	Peak Level (dBμV)	Duty Factor (dB)	Average Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1	*	2365.780	56.46	-28.60	27.86	-26.14	54.00	Average
2		2390.000	52.50	-28.60	23.90	-30.10	54.00	Average
3		2404.520	104.99	-28.60	76.39	N/A	N/A	Average

Notes:

1. " * ", means this data is the worst emission level.
2. Duty Cycle = Ton Time / 100 ms × 100% = 3.70 ms / 100 ms × 100% = 3.70%, This data is provided by the manufacturer. The accuracy, completeness, and validity of the information are solely the responsibility of the manufacturer.
3. Duty Factor = 20 × Log (Duty Cycle) = 20 × Log (3.70%) = -28.60 dB.
4. Average Level = Peak Level + Duty Factor.

Site	WJ-AC2	Test Date	2025-04-24
Temperature	23.5 °C	Humidity	40.4%
Limit	FCC_Part 15_Band Edge (3 m)	Test Engineer	Bob Zhang
Factor	DRH18-E_07105	Polarity	Horizontal
EUT	Wall reader 3140	Test Voltage	By DC 12 V
Test Mode	Transmit by 802.15.4 at 2480 MHz		



No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		2480.528	71.03	29.75	100.78	N/A	N/A	Peak
2		2483.500	34.90	29.76	64.66	-9.34	74.00	Peak
3	*	2483.522	35.39	29.76	65.16	-8.84	74.00	Peak

Notes:

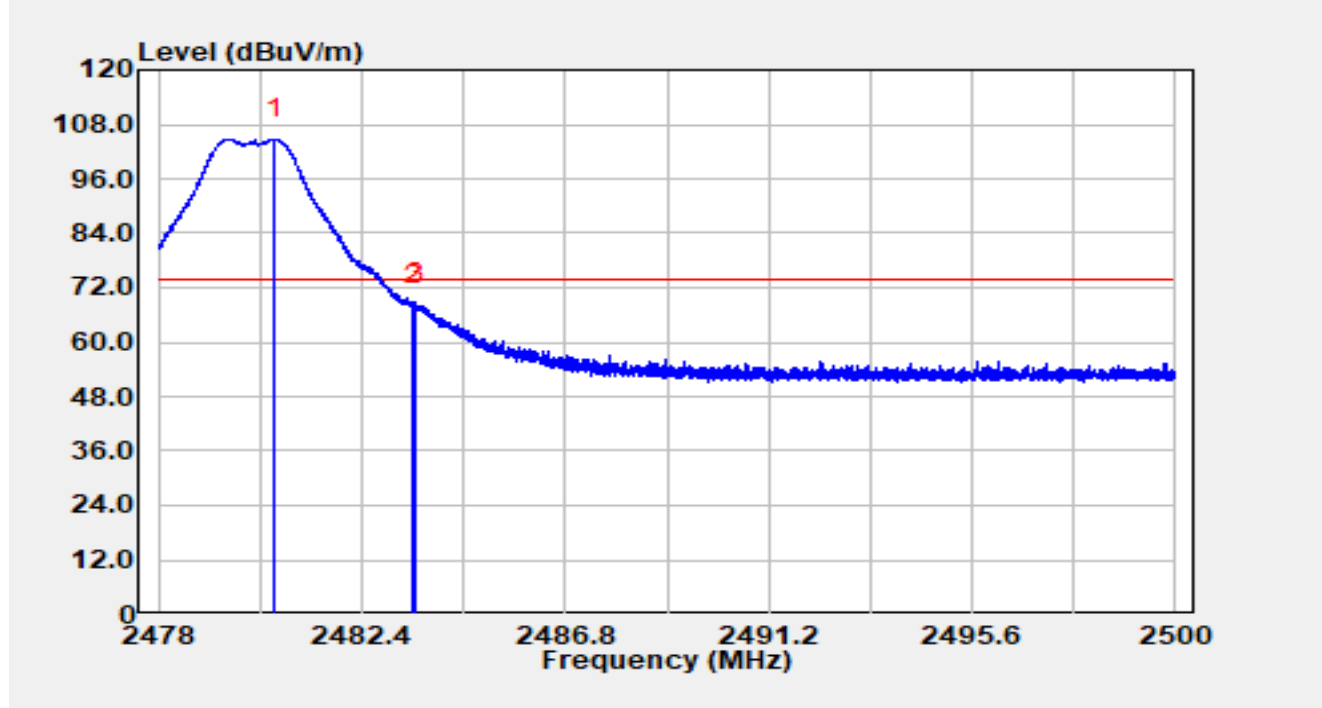
1. " * ", means this data is the worst emission level.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

No	Mark	Frequency (MHz)	Peak Level (dBμV)	Duty Factor (dB)	Average Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		2480.528	100.78	-28.60	72.18	N/A	N/A	Average
2		2483.500	64.66	-28.60	36.06	-17.94	54.00	Average
3	*	2483.522	65.16	-28.60	36.56	-17.44	54.00	Average

Notes:

1. " * ", means this data is the worst emission level.
2. Duty Cycle = Ton Time / 100 ms × 100% = 3.70 ms / 100 ms × 100% = 3.70%, This data is provided by the manufacturer. The accuracy, completeness, and validity of the information are solely the responsibility of the manufacturer.
3. Duty Factor = 20 × Log (Duty Cycle) = 20 × Log (3.70%) = -28.60 dB.
4. Average Level = Peak Level + Duty Factor.

Site	WJ-AC2	Test Date	2025-04-24
Temperature	23.5 °C	Humidity	40.4%
Limit	FCC_Part 15_Band Edge (3 m)	Test Engineer	Bob Zhang
Factor	DRH18-E_07105	Polarity	Vertical
EUT	Wall reader 3140	Test Voltage	By DC 12 V
Test Mode	Transmit by 802.15.4 at 2480 MHz		



No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		2480.512	74.94	29.75	104.70	N/A	N/A	Peak
2		2483.500	38.52	29.76	68.28	-5.72	74.00	Peak
3	*	2483.566	38.85	29.76	68.62	-5.38	74.00	Peak

Notes:

1. " * ", means this data is the worst emission level.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

No	Mark	Frequency (MHz)	Peak Level (dBμV)	Duty Factor (dB)	Average Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		2480.512	104.70	-28.60	76.10	N/A	N/A	Average
2		2483.500	68.28	-28.60	39.68	-14.32	54.00	Average
3	*	2483.566	68.62	-28.60	40.02	-13.98	54.00	Average

Notes:

1. " * ", means this data is the worst emission level.
2. Duty Cycle = Ton Time / 100 ms × 100% = 3.70 ms / 100 ms × 100% = 3.70%, This data is provided by the manufacturer. The accuracy, completeness, and validity of the information are solely the responsibility of the manufacturer.
3. Duty Factor = 20 × Log (Duty Cycle) = 20 × Log (3.70%) = -28.60 dB.
4. Average Level = Peak Level + Duty Factor.

Appendix B - Test Setup Photograph

Refer to “R25S1081033-UT” file.

Appendix C - EUT Photograph

Refer to "R25S1081033-UE" file.

_____ The End _____