

# FCC Test Report

**Report No.:** 2405S53667A

**Applicant:** Shenzhen RodinBell Technology Co.,Ltd.

**Address:** 905#, Tower B, Xinghe WORLD, Wuhe Avenue, Longgang District,  
Shenzhen,China

**Product Name:** 4-port UHF RFID Module

**Product Model:** M-302

**Multiple Models:** N/A

**Trade Mark:** N/A

**FCC ID:** 2AKQD-M-302

**Standards:** FCC CFR Title 47 Part 15C (§15.247)

**Test Date:** 2024-05-15 to 2024-05-28

**Test Result:** Complied

**Report Date:** 2024-05-30

**Reviewed by:**

*Abel chen*

Abel Chen  
Project Engineer

**Approved by:**

*Jacob Kong*

Jacob Kong  
Manager

**Prepared by:**

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## Revision History

Version No.	Issued Date	Description
00	2024-05-30	Original

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# 1 General Information

## 1.1 Client Information

Applicant:	Shenzhen RodinBell Technology Co.,Ltd.
Address:	905#, Tower B, Xinghe WORLD, Wuhe Avenue, Longgang District, Shenzhen,China
Manufacturer:	Shenzhen RodinBell Technology Co.,Ltd.
Address:	905#, Tower B, Xinghe WORLD, Wuhe Avenue, Longgang District, Shenzhen,China

## 1.2 Product Description of EUT

The EUT is 4-port UHF RFID Module that contains LoRa radio, this report covers the full testing of the LoRa radio.

Sample Serial Number	OSEB119024-1 for CE&RE test, OSEB119024-2 for RF conducted test (assigned by WATC)
Sample Received Date	2024-04-16
Sample Status	Good Condition
Frequency Range	902 MHz -928 MHz
Maximum Conducted Peak Output Power	29.87dBm
Modulation Technology	GFSK
Spatial Streams	SISO (4TX, 4RX)
Antenna Gain <sup>#</sup>	2dBi (It is provided by the applicant.)
Power Supply	DC 4.5V~5.5V
Operating temperature <sup>#</sup>	-20 deg.C to +65 deg.C
Adapter Information	N/A
Modification	Sample No Modification by the test lab

## 1.3 Antenna information

<b>15.203 requirement:</b>	
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
<b>Device Antenna information:</b>	
The EUT antenna is an external antenna with unique antenna connector, please see product internal photos for details.	

## 1.4 Related Submittal(s)/Grant(s)

No related submittal(s)/Grant(s)

## 1.5 Measurement Uncertainty

Parameter		Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
AC Power Lines Conducted Emissions		±3.14dB
Emissions, Radiated	Below 30MHz	±2.78dB
	Below 1GHz	±4.84dB
	Above 1GHz	±5.44dB
Emissions, Conducted		1.75dB
Conducted Power		0.74dB
Frequency Error		150Hz
Bandwidth		0.34%
Power Spectral Density		0.74dB

**Note:** The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor *K* with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

## 1.6 Laboratory Location

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Tel: +86-755-29691511, Email: [qa@watc.com.cn](mailto:qa@watc.com.cn)

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

## 1.7 Test Methodology

FCC CFR 47 Part 2

FCC CFR 47 Part 15

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10-2020

## 2 Description of Measurement

### 2.1 Test Configuration

Operating channels:							
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	902.5	14	909	27	915.5	40	922
2	903	15	909.5	28	916	41	922.5
...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...
...	...	...	...	...	...	50	927
12	908	25	914.5	38	921	51	927.5
13	908.5	26	915	39	921.5	/	/

According to ANSI C63.10-2020 chapter 5.6.1 Table 11 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:

Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	902.5	26	915	51	927.5

Test Mode:				
Transmitting mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.			
Exercise software#:	UHF Demo			
Mode	Data rate	Power Level Setting#		
		Low Channel	Middle Channel	High Channel
FHSS	/	30	30	30

The exercise software and the maximum power setting that provided by manufacturer.

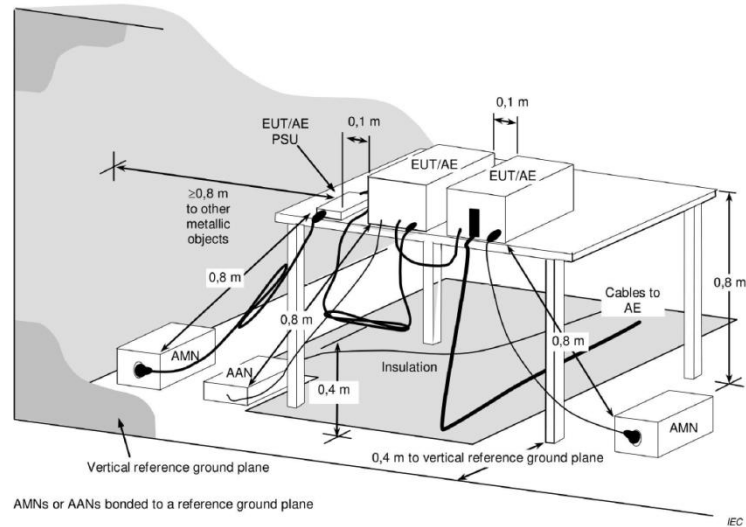
Worst-Case Configuration:
For radiated emissions, EUT was investigated in three orthogonal orientation, the worst-case orientation was recorded in report
For AC Line conducted emission and radiated emission 9kHz-1GHz was performed with the EUT transmits at the channel with highest output power as worst-case scenario.
The EUT have four antennas, but only support to operation in SISO mode. Pre-test all antenna port output power, the antenna 3 which with highest output power was the worst case select to test.

### 2.2 Test Auxiliary Equipment

Manufacturer	Description	Model	Serial Number
Unknown	Power supply	Unknown	Unknown
Unknown	Evaluation board	Unknown	Unknown

## 2.3 Test Setup

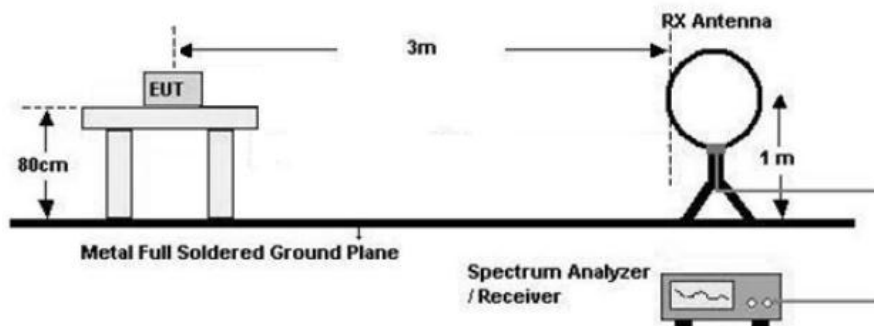
### 1) Conducted emission measurement:



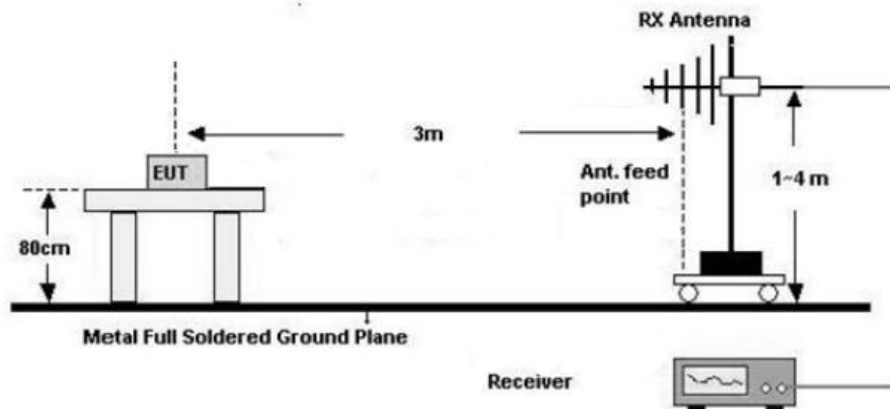
**Note:** The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

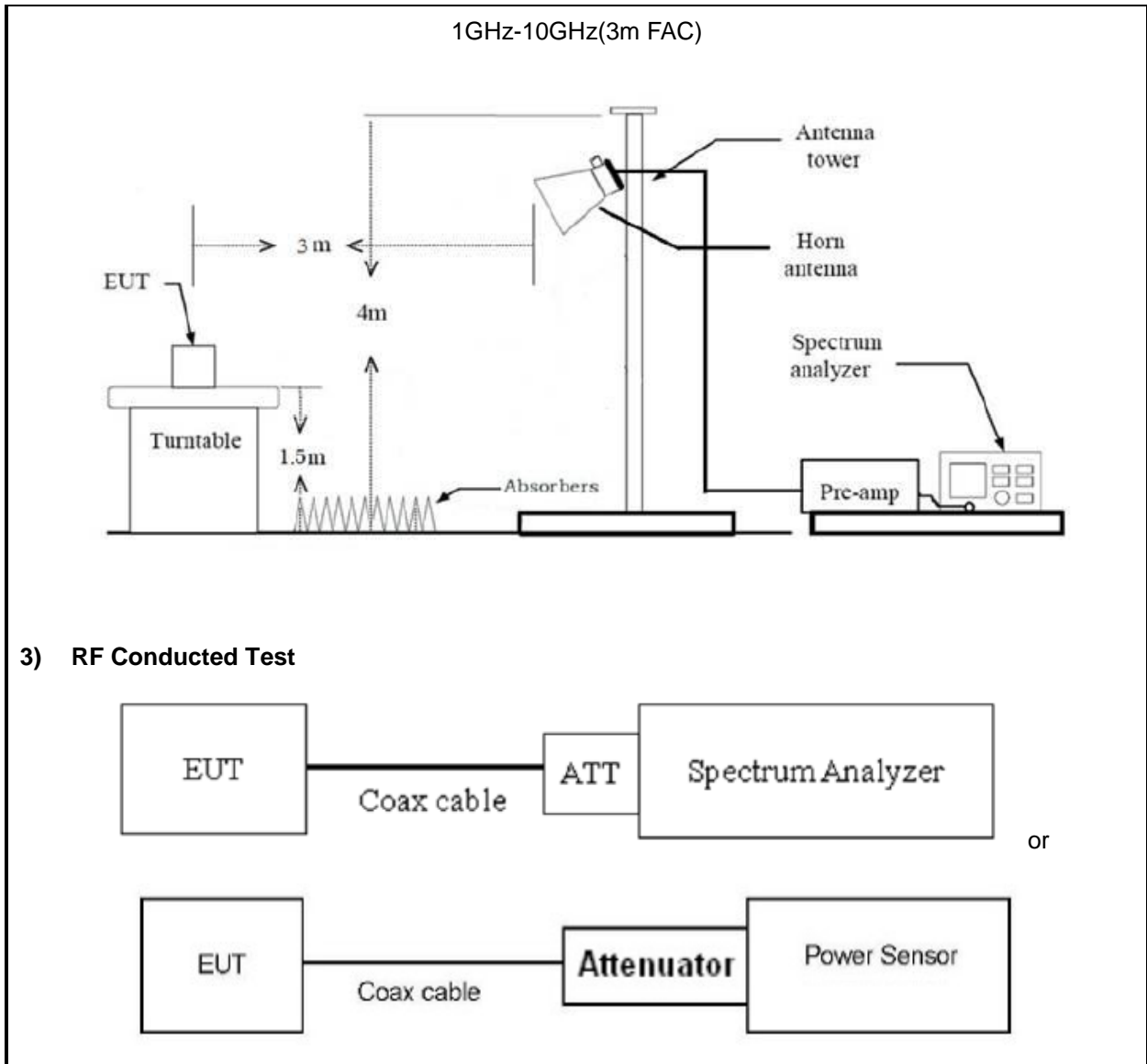
### 2) Radiated emission measurement:

Below 30MHz (3m SAC)



30MHz-1GHz (3m SAC)





## 2.4 Test Procedure

### Conducted emission:

1. The E.U.T is placed on a non-conducting table 40cm from the vertical ground plane and 80cm above the horizontal ground plane (Please refer to the block diagram of the test setup and photographs).
2. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
3. Line conducted data is recorded for both Line and Neutral

### Radiated Emission Procedure:

#### a) For below 30MHz

1. All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz- 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate



compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were  $40 \cdot \log(\text{test distance} / \text{specification distance})$ .

2. Loop antenna use, investigation was done on the three antenna orientations (parallel, perpendicular, ground-parallel)

**b) For 30MHz-1GHz:**

1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.

**c) For above 1GHz:**

1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m.
2. EUT works in each mode of operation that needs to be tested, and having the EUT continuously working. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.
3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
4. Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

**RF Conducted Test:**

1. The antenna port of EUT was connected to the RF port of the test equipment (Power Meter or Spectrum analyzer) through Attenuator and RF cable.
2. The cable assembly insertion loss of 6.5dB (including 6 dB Attenuator and 0.5dB cable) was entered as an offset in the power meter. Note: Actual cable loss was unavailable at the time of testing, therefore a loss of 0.5dB was assumed as worst case. This was later verified to be true by laboratory. ( if the RF cable provided by client, the cable loss declared by client)
3. The EUT is keeping in continuous transmission mode and tested in all modulation modes.

## 2.5 Measurement Method

Description of Test	Measurement Method
AC Line Conducted Emissions	ANSI C63.10-2020 Section 6.2
Maximum Conducted Output Power	ANSI C63.10-2020 Section 7.8.5
20 dB Emission Bandwidth	ANSI C63.10-2020 Section 6.9.2
99% Occupied Bandwidth	ANSI C63.10-2020 Section 6.9.3

Channel separation	ANSI C63.10-2020 Section 7.8.2
Number of hopping Frequency	ANSI C63.10-2020 Section 7.8.3
Time of occupancy (dwell time)	ANSI C63.10-2020 Section 7.8.4
100kHz Bandwidth of Frequency Band Edge	ANSI C63.10-2020 Section 7.8.7.2&6.10
Radiated emission	ANSI C63.10-2020 Section 7.8.8&6.3&6.4&6.5&6.6

## 2.6 Measurement Equipment

Manufacturer	Description	Model	Management No.	Calibration Date	Calibration Due Date
<b>Conducted Emission Test</b>					
ROHDE& SCHWARZ	EMI TEST RECEIVER	ESR	101817	2023/7/3	2024/7/2
R&S	LISN	ENV216	101748	2023/8/1	2024/7/31
N/A	Coaxial Cable	NO.12	N/A	2023/7/3	2024/7/2
Farad	Test Software	EZ-EMC	Ver. EMEC-3A1	/	/
<b>Radiated Emission Test</b>					
R&S	EMI test receiver	ESR3	102758	2023/7/3	2024/7/2
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSV40-N	101608	2023/7/3	2024/7/2
COM-POWER	preamplifier	PAM-118A	18040152	2023/8/21	2024/8/20
BACL	Loop Antenna	1313-1A	4010611	2024/2/7	2027/2/6
SCHWARZBECK	Log - periodic wideband antenna	VULB 9163	9163-872	2023/7/7	2024/7/6
Astro Antenna Ltd	Horn antenna	AHA-118S	3015	2023/7/6	2024/7/5
Oulitong	Band Reject Filter	OBSF-902-928-40S	OE02104362	2023/9/15	2024/9/14
N/A	Coaxial Cable	N/A	NO.9	2023/8/8	2024/8/7
N/A	Coaxial Cable	N/A	NO.10	2023/8/8	2024/8/7
N/A	Coaxial Cable	N/A	NO.11	2023/8/8	2024/8/7
Audix	Test Software	E3	191218 V9	/	/
<b>RF Conducted Test</b>					
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSU-26	200680/026	2023/7/12	2024/7/11
narda	6dB attenuator	603-06-1	N/A	2023/7/26	2024/7/25

Note: All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or International standards.

### 3 Test Results

#### 3.1 Test Summary

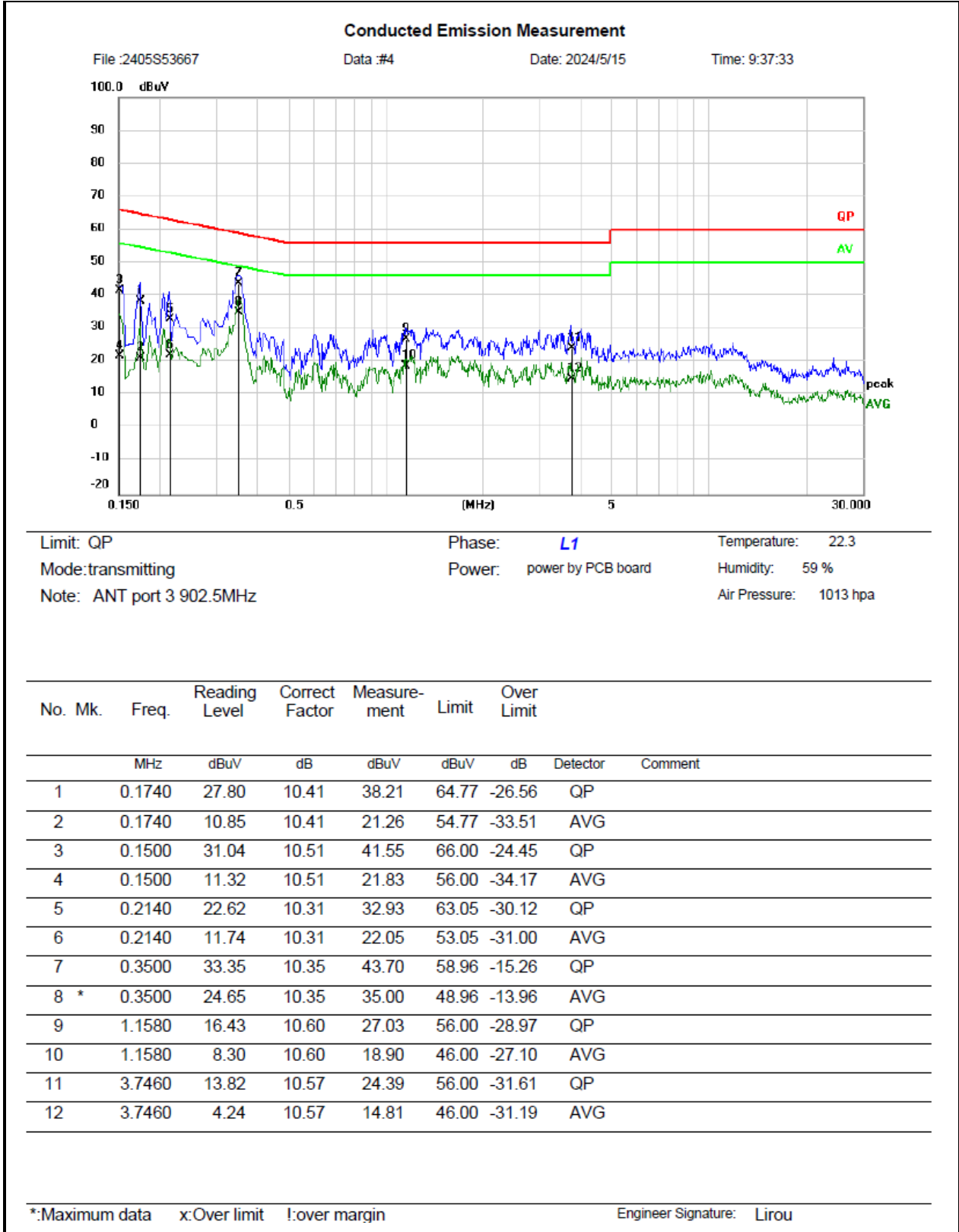
FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.247 (a)(1)(i)	20dB Emission Bandwidth	Compliance
-	99% Occupied Bandwidth	Report only
§15.247 (a)(1)(i)	Channel separation	Compliance
§15.247 (a)(1)(i)	Number of hopping Frequency	Compliance
§15.247 (a)(1)(i)	Time of occupancy (dwell time)	Compliance
§15.247(b)(2)	Maximum Conducted Output Power	Compliance
§15.247(d)	100kHz Bandwidth of Frequency Band Edge	Compliance
§15.205, §15.209, §15.247(d)	Radiated emission	Compliance

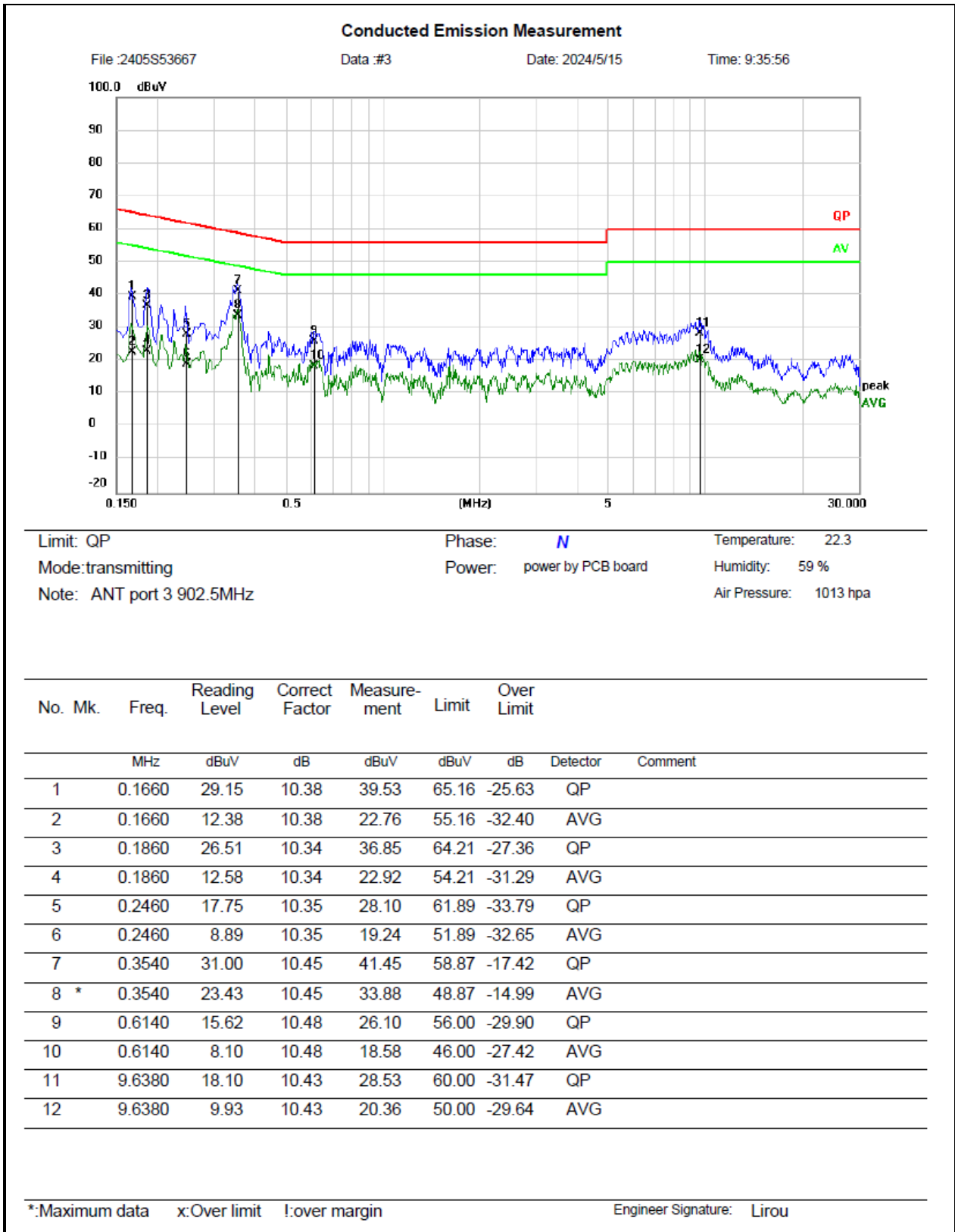
### 3.2 Limit

Test items	Limit
AC Line Conducted Emissions	See details §15.207 (a)
Conducted Output Power	For frequency hopping systems operating in the 902–928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.
20dB Emission Bandwidth Channel separation Number of hopping Frequency Time of occupancy (dwell time)	For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
Spurious Emissions, 100kHz Bandwidth of Frequency Band Edge	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

### 3.3 AC Line Conducted Emissions Test Data

<b>Test Date:</b>	2024-05-15	<b>Test By:</b>	Lirou Li
<b>Environment condition:</b>	Temperature: 22.3°C; Relative Humidity:59%; ATM Pressure: 101.3kPa		





**Remark:**

Measurement (dBuV)= Reading Level (dBuV) + Correct Factor(dB)

Correct Factor(dB)= LISN Voltage Division Factor (dB)+ Cable loss(dB)

Over Limit = Measurement – Limit

### 3.4 Radiated emission Test Data

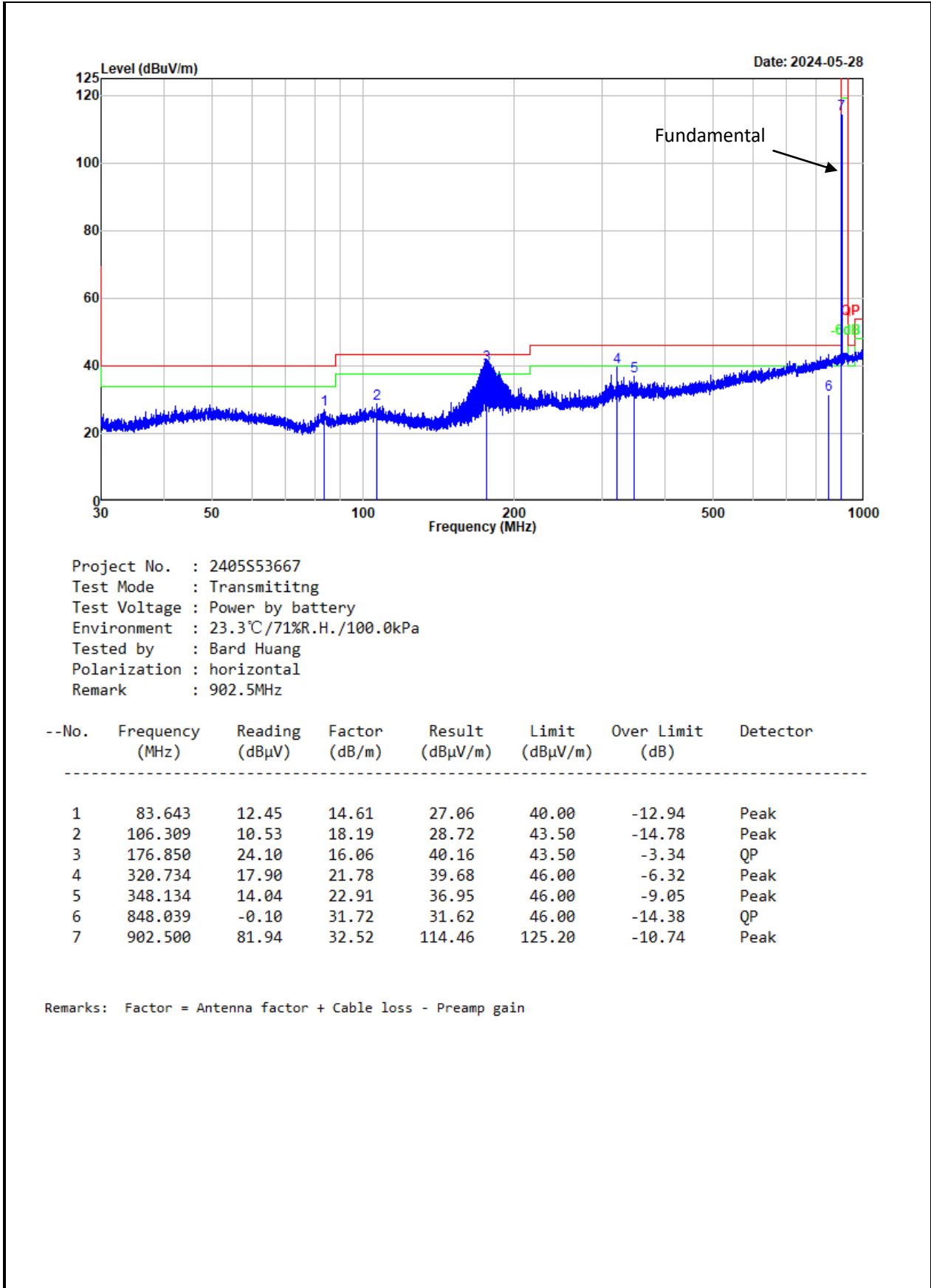
9 kHz-30MHz:

<b>Test Date:</b>	2024-05-28	<b>Test By:</b>	Bard Huang
<b>Environment condition:</b>	Temperature: 23.3°C; Relative Humidity:71%; ATM Pressure: 100.0kPa		

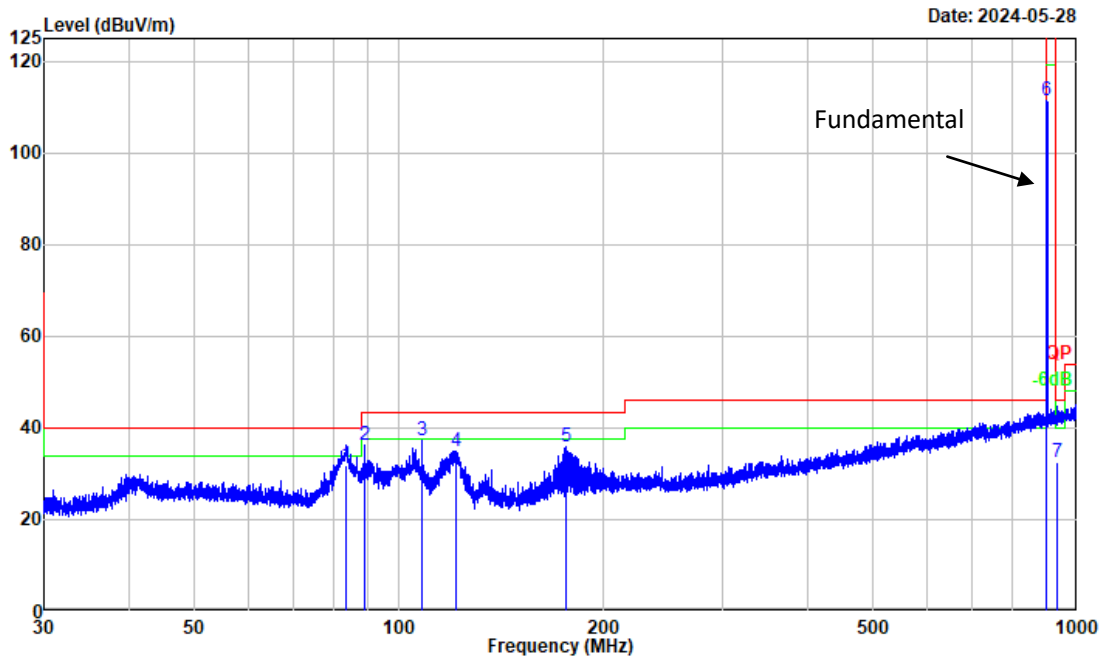
For radiated emissions below 30MHz, there were no emissions found within 20dB of limit.

**30MHz-1GHz:**

<b>Test Date:</b>	2024-05-28	<b>Test By:</b>	Bard Huang
<b>Environment condition:</b>	Temperature: 23.3°C; Relative Humidity:71%; ATM Pressure: 100.0kPa		



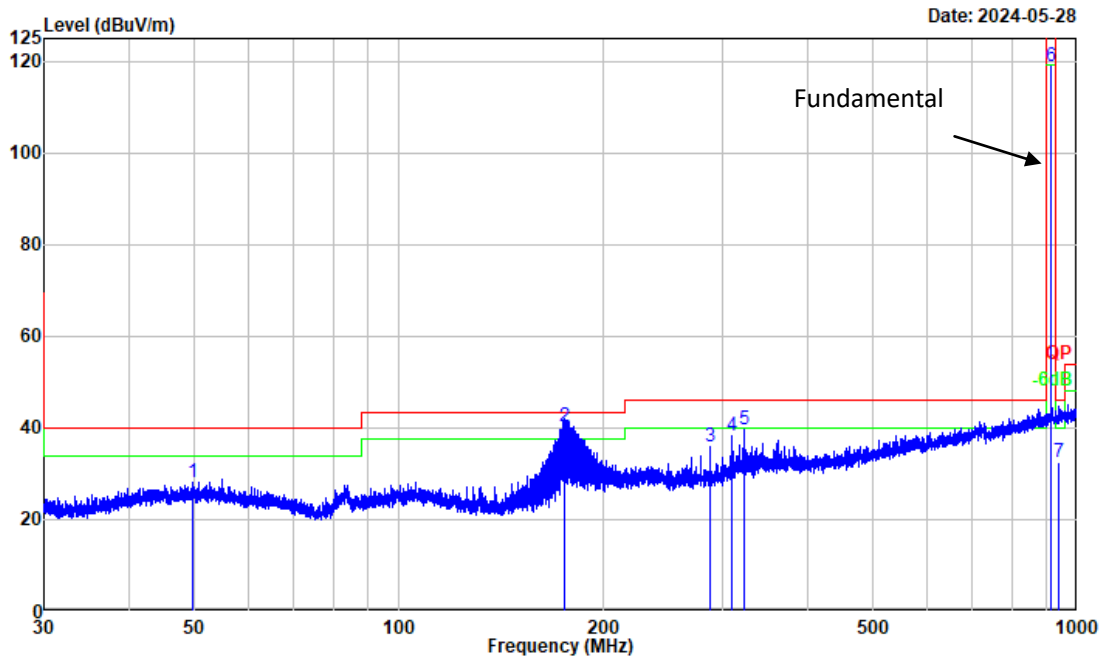




Project No. : 2405S53667  
 Test Mode : Transmitting  
 Test Voltage : Power by battery  
 Environment : 23.3°C/71%R.H./100.0kPa  
 Tested by : Bard Huang  
 Polarization : vertical  
 Remark : 902.5MHz

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	83.753	17.30	14.63	31.93	40.00	-8.07	QP
2	89.171	20.30	16.06	36.36	43.50	-7.14	Peak
3	108.379	19.26	18.13	37.39	43.50	-6.11	Peak
4	121.357	18.92	16.08	35.00	43.50	-8.50	Peak
5	176.308	20.00	16.00	36.00	43.50	-7.50	Peak
6	902.500	79.00	32.52	111.52	125.20	-13.68	Peak
7	932.672	-0.30	32.83	32.53	46.00	-13.47	QP

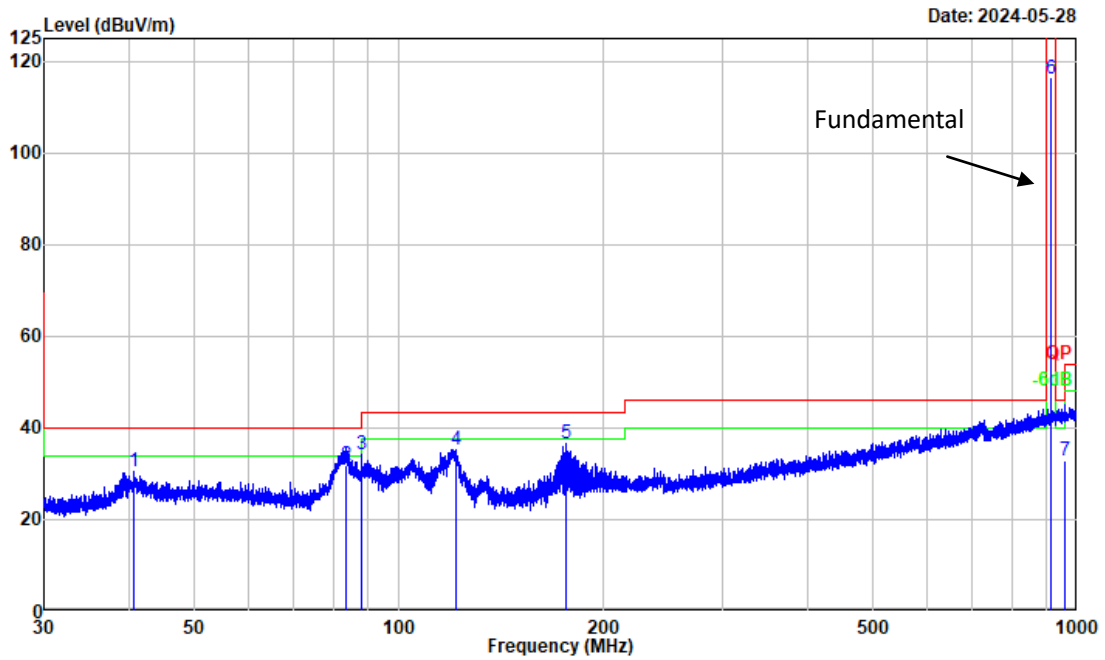
Remarks: Factor = Antenna factor + Cable loss - Preamp gain



Project No. : 2405S53667  
 Test Mode : Transmitting  
 Test Voltage : Power by battery  
 Environment : 23.3°C/71%R.H./100.0kPa  
 Tested by : Bard Huang  
 Polarization : horizontal  
 Remark : 915MHz

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	49.710	8.58	19.62	28.20	40.00	-11.80	Peak
2	175.922	24.20	15.97	40.17	43.50	-3.33	QP
3	287.315	15.06	20.90	35.96	46.00	-10.04	Peak
4	310.360	16.76	21.49	38.25	46.00	-7.75	Peak
5	322.284	17.68	21.85	39.53	46.00	-6.47	Peak
6	915.000	86.21	32.66	118.87	125.20	-6.33	Peak
7	938.003	-0.30	32.85	32.55	46.00	-13.45	QP

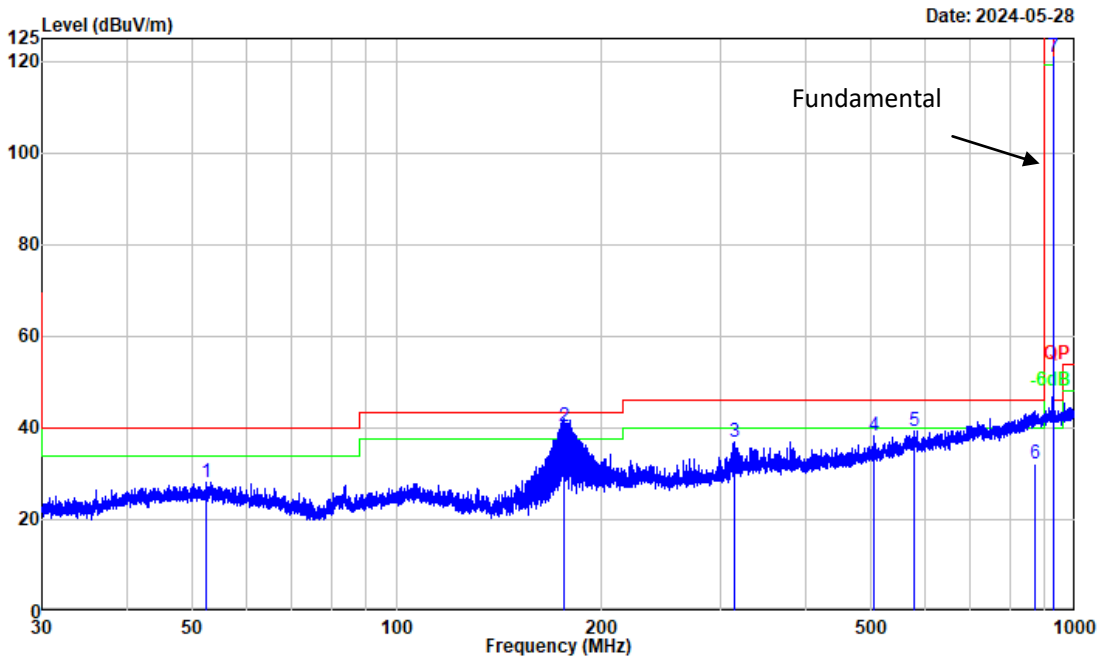
Remarks: Factor = Antenna factor + Cable loss - Preamp gain



Project No. : 2405S53667  
 Test Mode : Transmitting  
 Test Voltage : Power by battery  
 Environment : 23.3°C/71%R.H./100.0kPa  
 Tested by : Bard Huang  
 Polarization : vertical  
 Remark : 915MHz

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	40.757	12.05	18.43	30.48	40.00	-9.52	Peak
2	83.790	17.29	14.64	31.93	40.00	-8.07	QP
3	88.199	18.59	15.77	34.36	43.50	-9.14	Peak
4	121.623	19.21	16.02	35.23	43.50	-8.27	Peak
5	175.999	20.64	15.97	36.61	43.50	-6.89	Peak
6	915.000	83.50	32.66	116.16	125.20	-9.04	Peak
7	958.369	-0.20	33.07	32.87	46.00	-13.13	QP

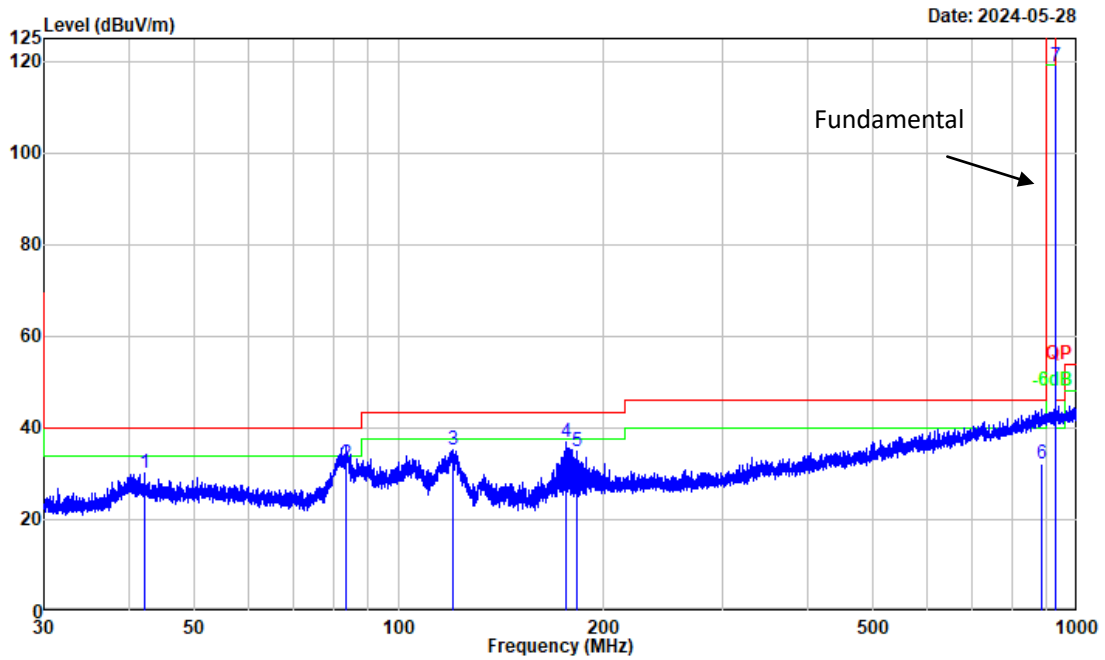
Remarks: Factor = Antenna factor + Cable loss - Preamp gain



Project No. : 2405S53667  
 Test Mode : Transmitting  
 Test Voltage : Power by battery  
 Environment : 23.3°C/71%R.H./100.0kPa  
 Tested by : Bard Huang  
 Polarization : horizontal  
 Remark : 927.5MHz

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	52.303	8.72	19.54	28.26	40.00	-11.74	Peak
2	176.153	24.49	15.99	40.48	43.50	-3.02	QP
3	315.297	15.40	21.63	37.03	46.00	-8.97	Peak
4	504.884	12.26	25.95	38.21	46.00	-7.79	Peak
5	577.617	11.76	27.52	39.28	46.00	-6.72	Peak
6	874.082	0.10	32.16	32.26	46.00	-13.74	QP
7	927.500	88.25	32.81	121.06	125.20	-4.14	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain



Project No. : 2405S53667  
 Test Mode : Transmitting  
 Test Voltage : Power by battery  
 Environment : 23.3°C/71%R.H./100.0kPa  
 Tested by : Bard Huang  
 Polarization : vertical  
 Remark : 927.5MHz

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	42.304	11.15	18.92	30.07	40.00	-9.93	Peak
2	83.643	17.49	14.61	32.10	40.00	-7.90	QP
3	120.034	18.89	16.37	35.26	43.50	-8.24	Peak
4	176.617	20.91	16.03	36.94	43.50	-6.56	Peak
5	183.081	18.34	16.64	34.98	43.50	-8.52	Peak
6	887.208	-0.30	32.34	32.04	46.00	-13.96	QP
7	927.500	86.09	32.81	118.90	125.20	-6.30	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

**Remark:**

Result = Reading + Factor

Factor = Antenna factor + Cable loss – Amplifier gain

Over Limit = Result – Limit

**Above 1GHz:**

<b>Test Date:</b>	2024-05-24	<b>Test By:</b>	Luke Li
<b>Environment condition:</b>	Temperature: 22.4°C; Relative Humidity:65%; ATM Pressure: 100.4kPa		

Frequency (MHz)	Reading level (dBµV)	Polar	Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
Low Channel							
1805.000	66.77	horizontal	-3.25	63.52	94.46	-30.94	Peak
2707.500	54.72	horizontal	-2.49	52.23	54.00	-1.77	Average
2707.500	59.37	horizontal	-2.49	56.88	74.00	-17.12	Peak
1805.000	69.20	vertical	-3.25	65.95	91.52	-25.57	Peak
2707.500	55.20	vertical	-2.49	52.71	54.00	-1.29	Average
2707.500	59.84	vertical	-2.49	57.35	74.00	-16.65	Peak
Middle Channel							
1830.000	67.26	horizontal	-3.27	63.99	98.87	-34.88	Peak
2745.000	54.41	horizontal	-2.49	51.92	74.00	-22.08	Peak
1830.000	69.55	vertical	-3.27	66.28	96.16	-29.88	Peak
2745.000	56.01	vertical	-2.49	53.52	74.00	-20.48	Peak
High Channel							
1855.000	67.93	horizontal	-3.31	64.62	101.06	-36.44	Peak
2782.500	50.93	horizontal	-2.50	48.43	74.00	-25.57	Peak
1855.000	70.93	vertical	-3.31	67.62	98.90	-31.28	Peak
2782.500	52.46	vertical	-2.50	49.96	74.00	-24.04	Peak

*Remark:*

*Corrected Amplitude= Reading level + corrected Factor*

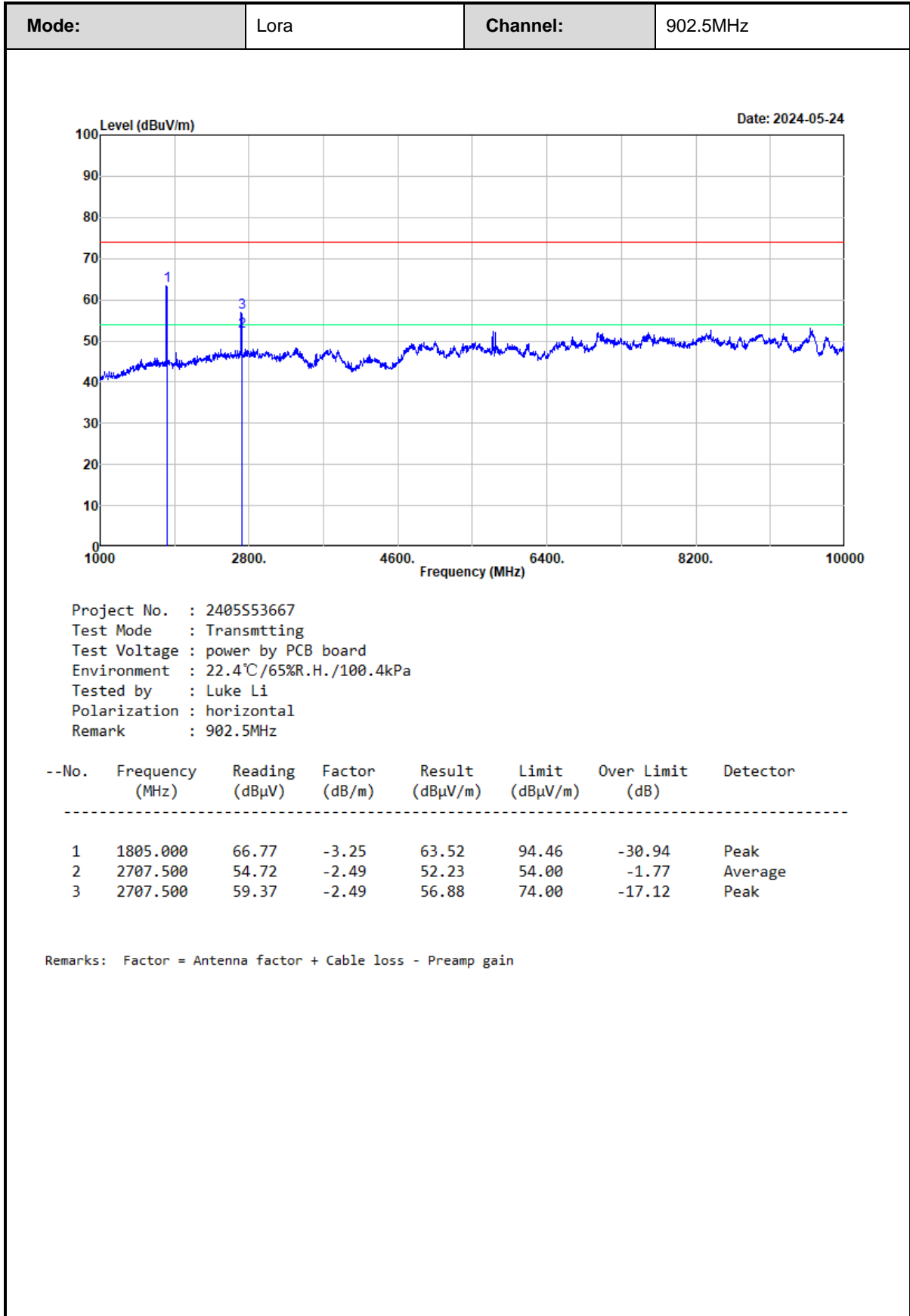
*Corrected Factor = Antenna factor + Cable loss – Amplifier gain*

*Margin = Corrected Amplitude – Limit*

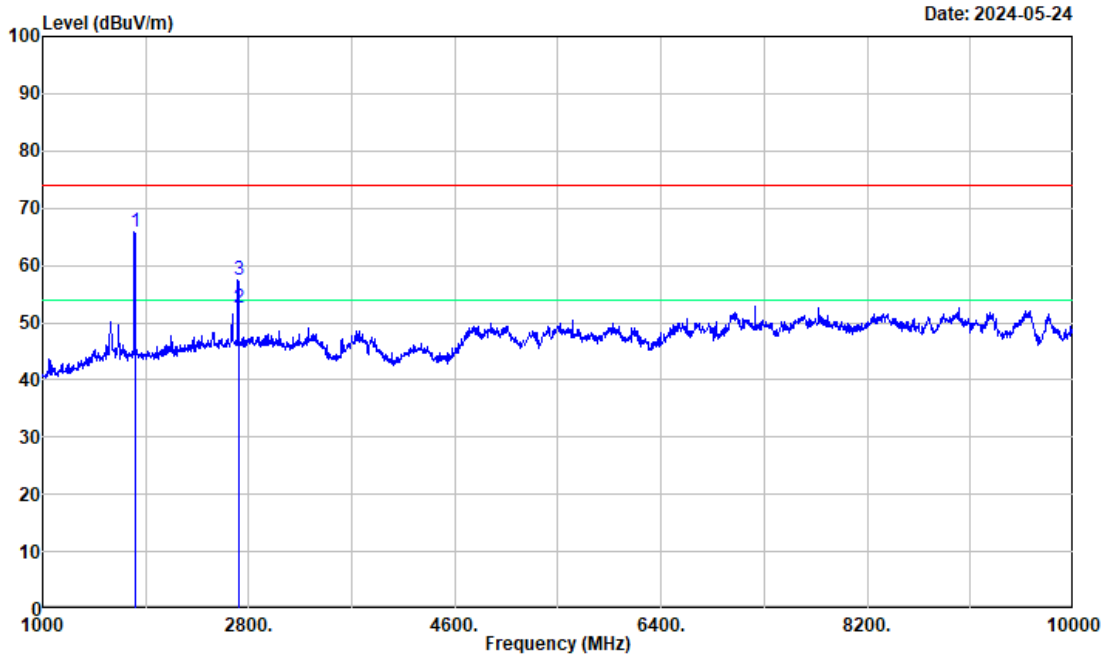
*For the test result of Peak below the Peak limit more than 20dB, which can compliance with the average limit, just the Peak level was recorded.*

*The emission levels of other frequencies that were lower than the limit 20dB, not show in test report.*

**Test plot for example as below:**



<b>Mode:</b>	Lora	<b>Channel:</b>	902.5MHz
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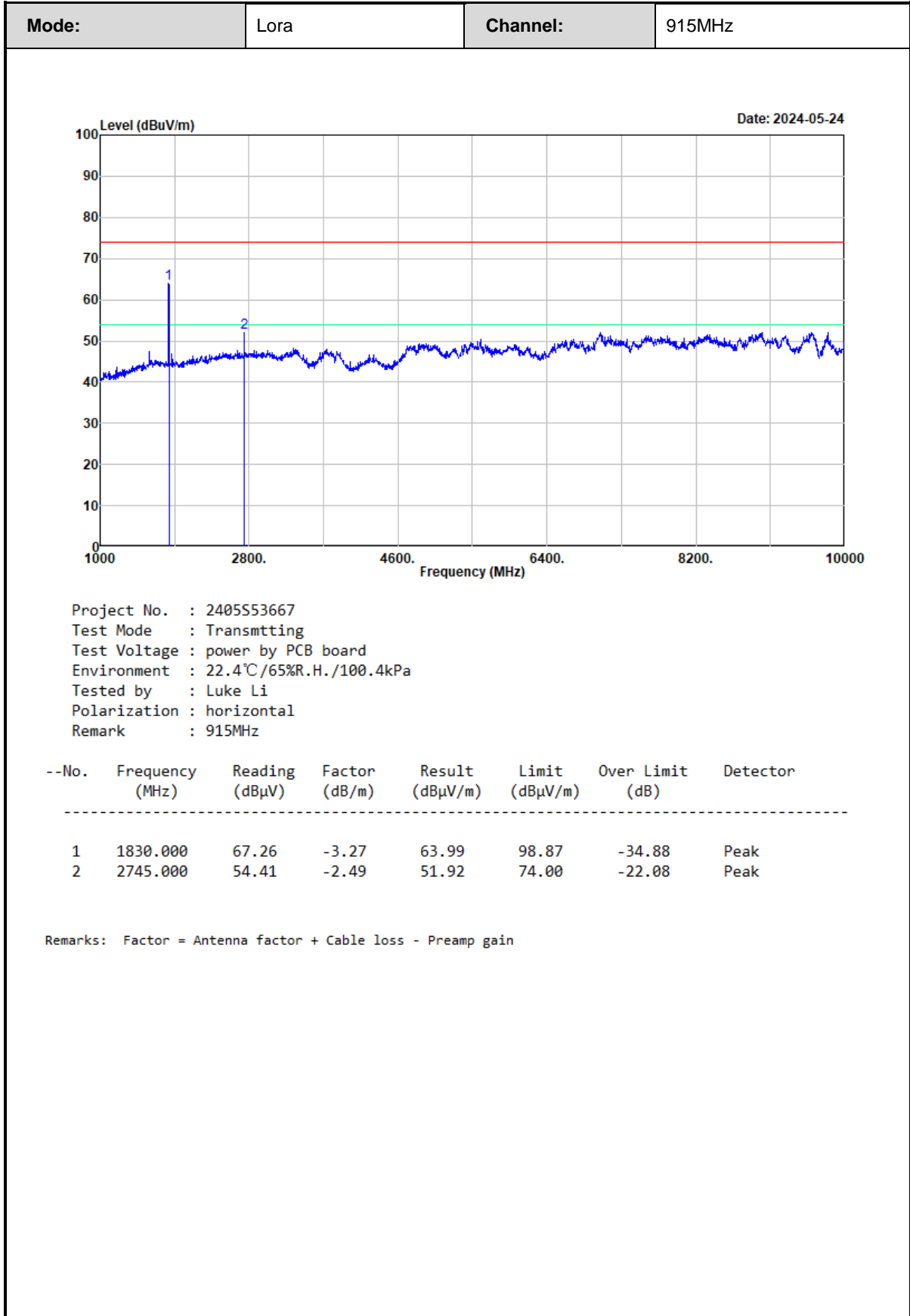


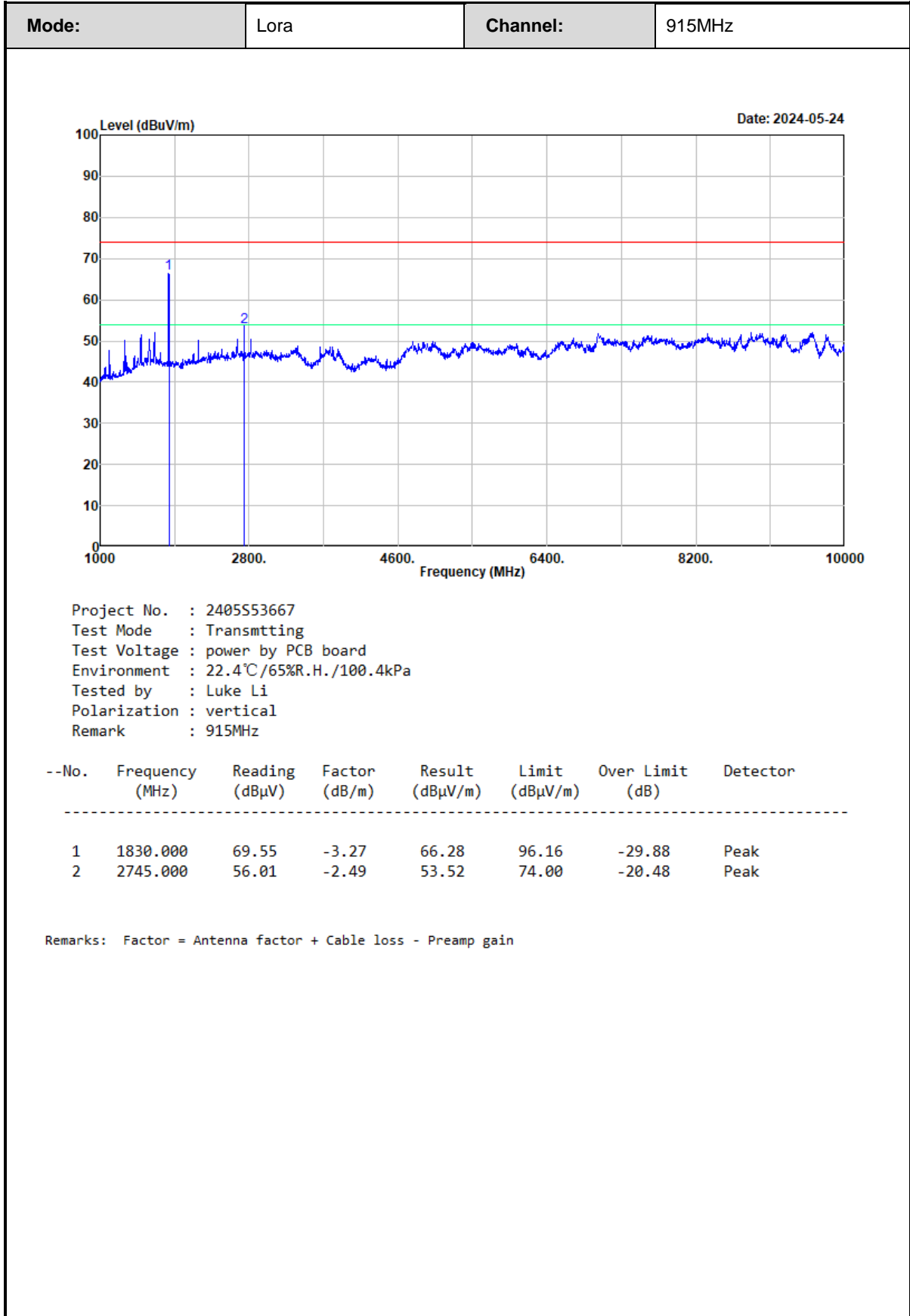
Project No. : 240553667  
 Test Mode : Transmitting  
 Test Voltage : power by PCB board  
 Environment : 22.4°C/65%R.H./100.4kPa  
 Tested by : Luke Li  
 Polarization : vertical  
 Remark : 902.5MHz

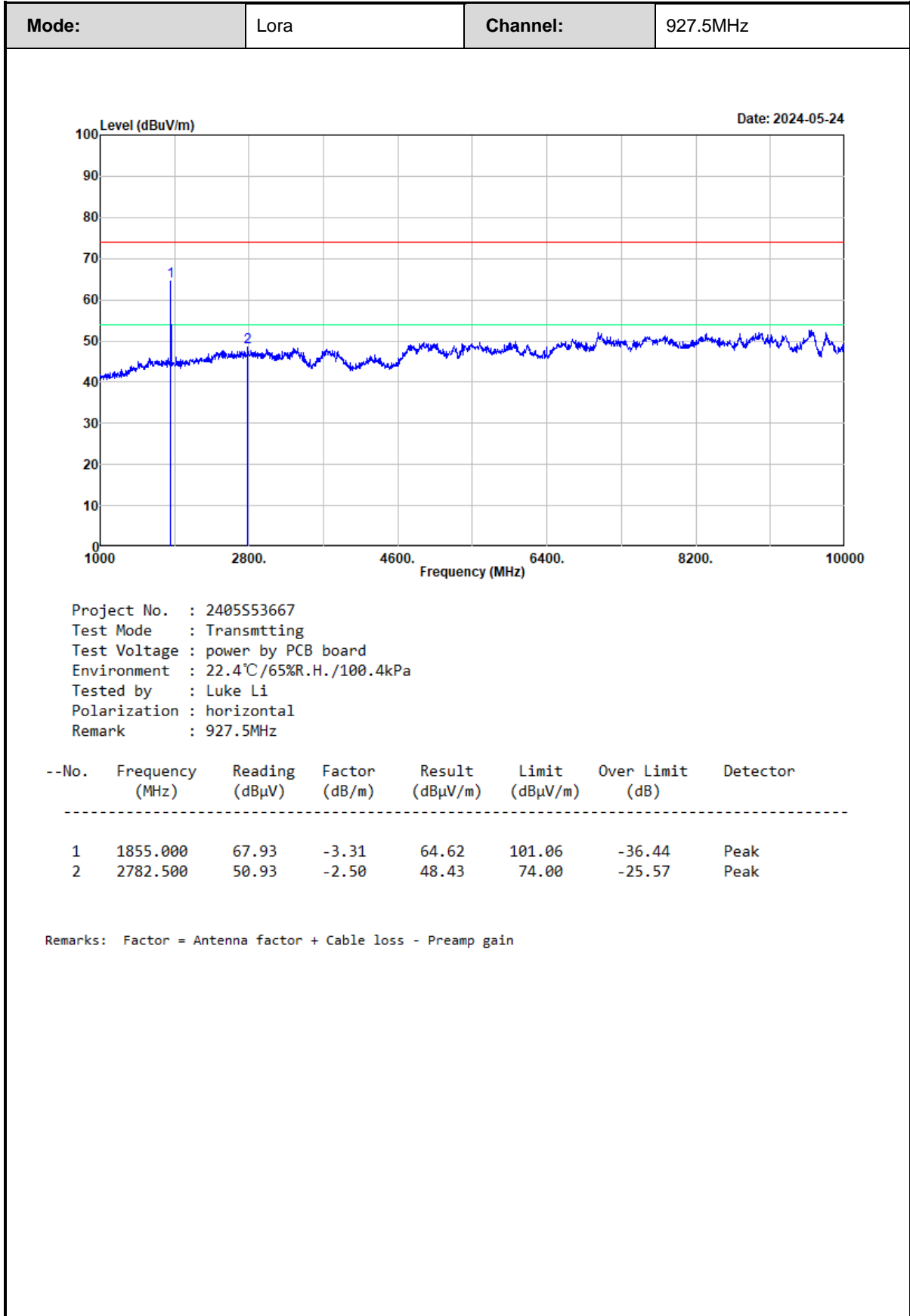
--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	1805.000	69.20	-3.25	65.95	91.52	-25.57	Peak
2	2707.500	55.20	-2.49	52.71	54.00	-1.29	Average
3	2707.500	59.84	-2.49	57.35	74.00	-16.65	Peak

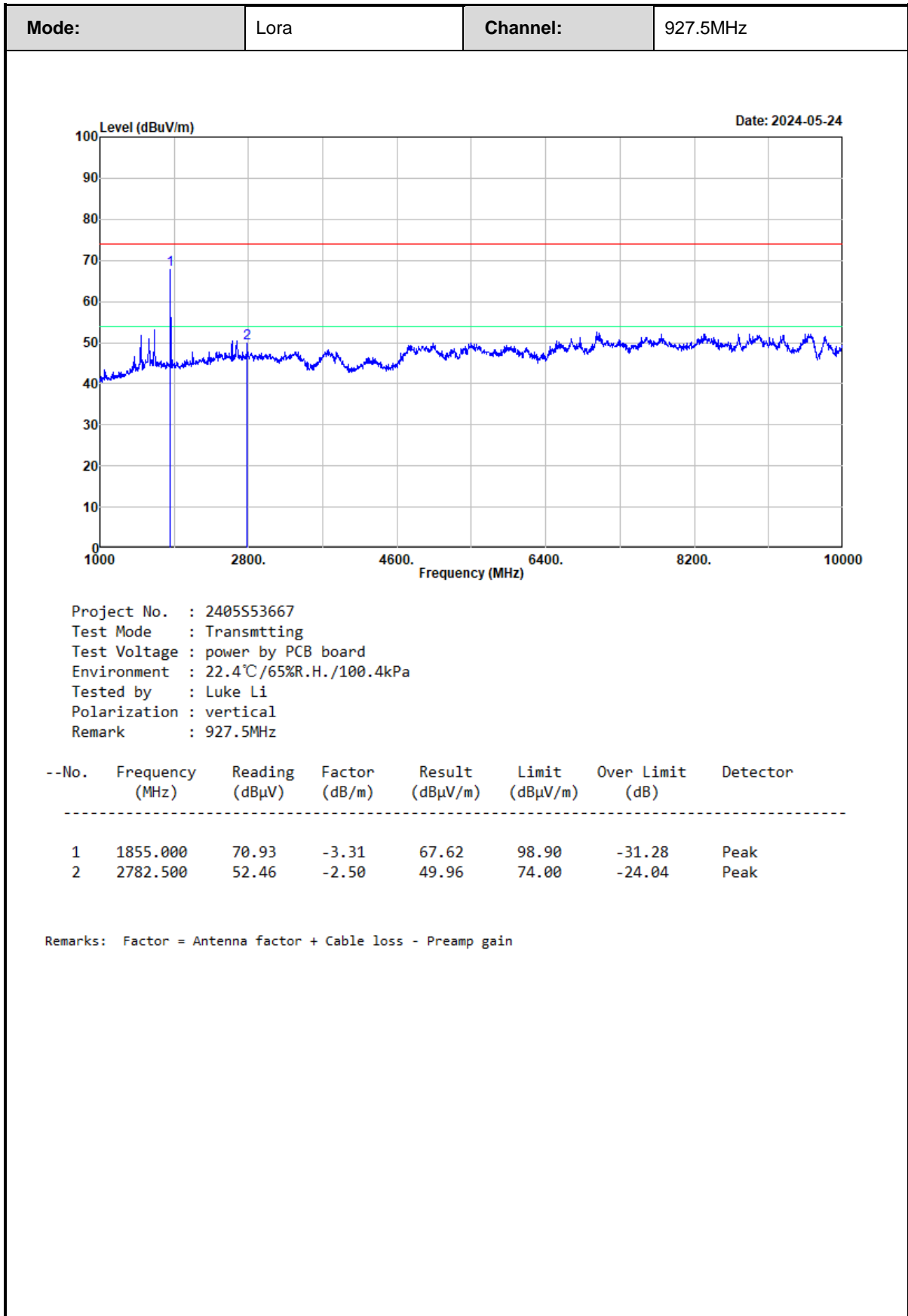
Remarks: Factor = Antenna factor + Cable loss - Preamp gain











### 3.5 RF Conducted Test Data

<b>Test Date:</b>	2024-05-28	<b>Test By:</b>	Ryan Zhang
<b>Environment condition:</b>	Temperature: 23.2°C;RelativeHumidity:62%; ATM Pressure: 100.1kPa		

#### 3.5.1 20 dB Emission Bandwidth and 99% Occupied Bandwidth

Test Mode	Channel [MHz]	20dB BW [MHz]	99% OBW [MHz]	20dB BW Limit [MHz]	Verdict
FHSS	902.5	0.088	0.093	0.250	Pass
	915	0.088	0.092	0.250	Pass
	927.5	0.089	0.092	0.250	Pass

#### 3.5.2 Maximum Conducted Peak Output Power

Ant Port	Test Mode	Channel[MHz]	Conducted power [dBm]	Limit[dBm]	Verdict
1	FHSS	902.5	29.84	30	Pass
		915	29.61	30	Pass
		927.5	29.40	30	Pass
2	FHSS	902.5	29.79	30	Pass
		915	29.72	30	Pass
		927.5	29.82	30	Pass
3	FHSS	902.5	29.87	30	Pass
		915	29.72	30	Pass
		927.5	29.71	30	Pass
4	FHSS	902.5	29.76	30	Pass
		915	29.41	30	Pass
		927.5	29.50	30	Pass

#### 3.5.3 Channel separation

Test Mode	Channel[MHz]	Result[MHz]	Limit[MHz]	Verdict
FHSS	902.5	0.5	≥0.088	Pass
	915	0.5	≥0.088	Pass
	927.5	0.5	≥0.089	Pass

Note: Limit ≥ 20dB BW

### 3.5.4 Number of hopping Frequency

Test Mode	Channel	Result[Num]	Limit[Num]	Verdict
FHSS	Hop	51	>=50	Pass

### 3.5.5 Time of occupancy (dwell time)

Test Mode	Channel[MHz]	Pulse Time [ms]	Total Hops [Num]	Result[s]	Limit[s]	Verdict
FHSS	915	20.513	10	0.205	0.400	Pass

Note:

Result = Total Hops\* Pulse time

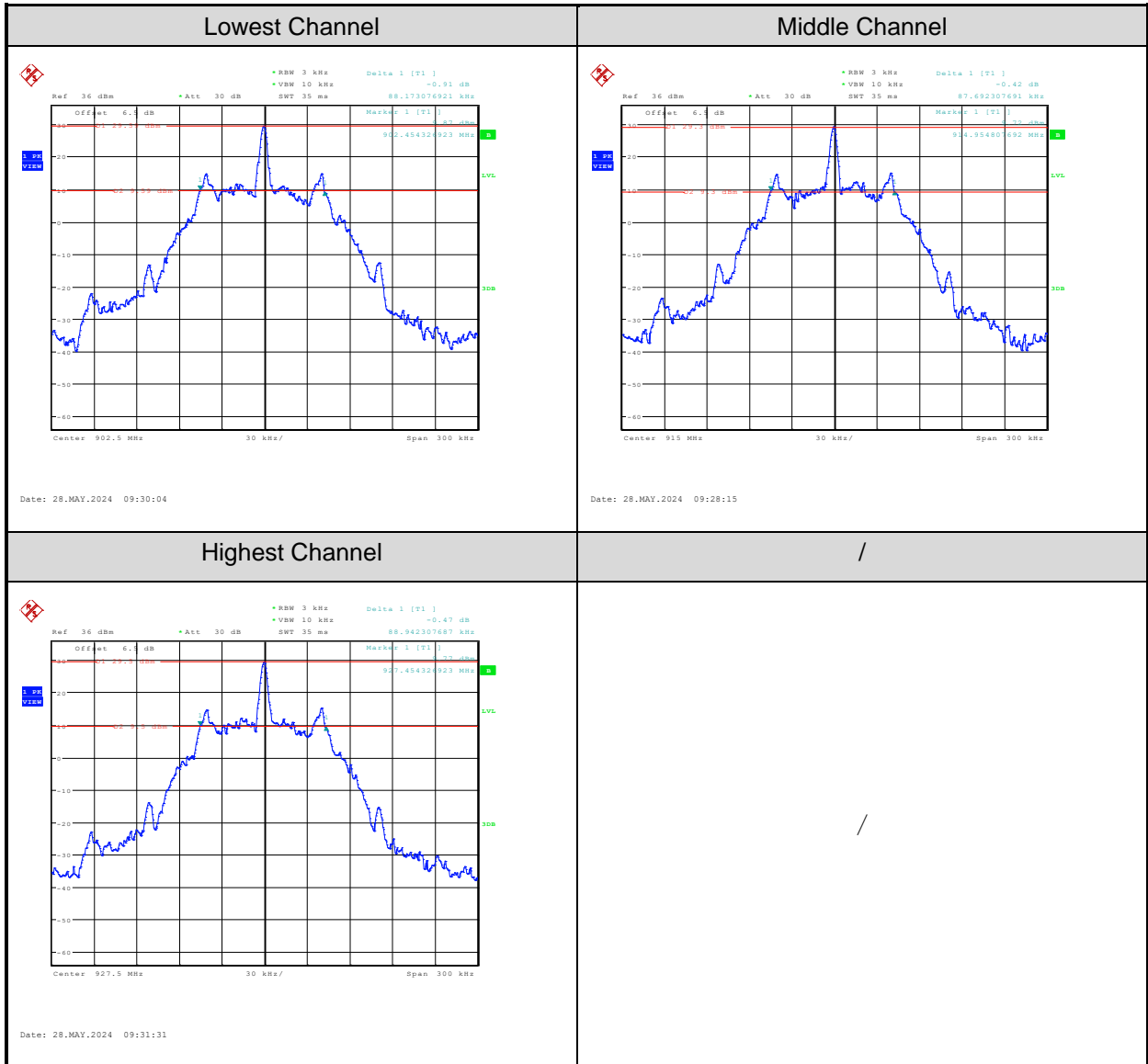
Observe period is 20s

### 3.5.6 100 kHz Bandwidth of Frequency Band Edge

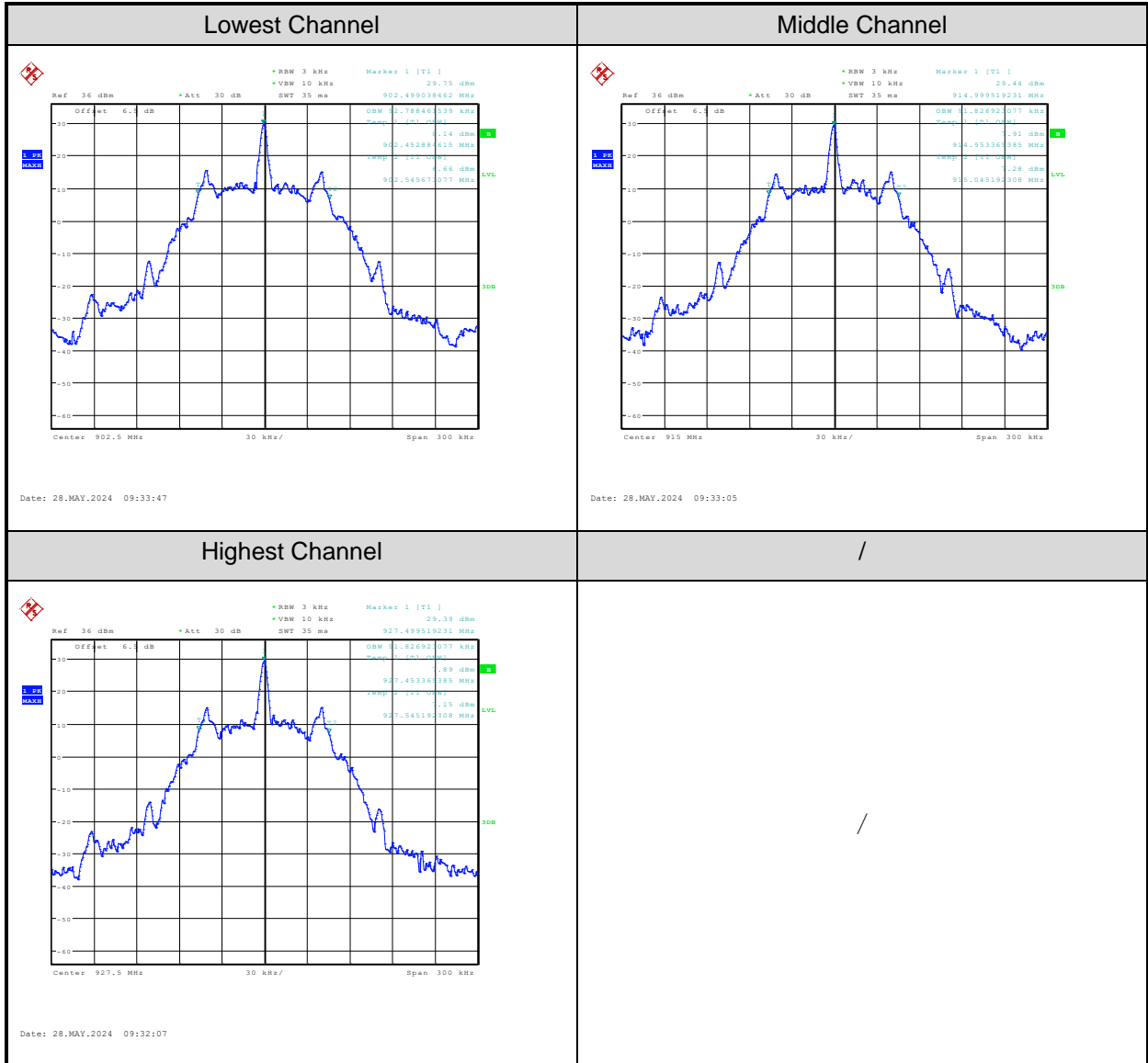
EUT Operation Mode	Test Mode	Channel	Result	Limit	Verdict
Non-Hopping	FHSS	Lowest	Refer test plot	Refer test plot	Pass
		Highest	Refer test plot	Refer test plot	Pass
Hopping	FHSS	Lowest	Refer test plot	Refer test plot	Pass
		Highest	Refer test plot	Refer test plot	Pass

## Test Plots:

### 20 dB Emission Bandwidth:

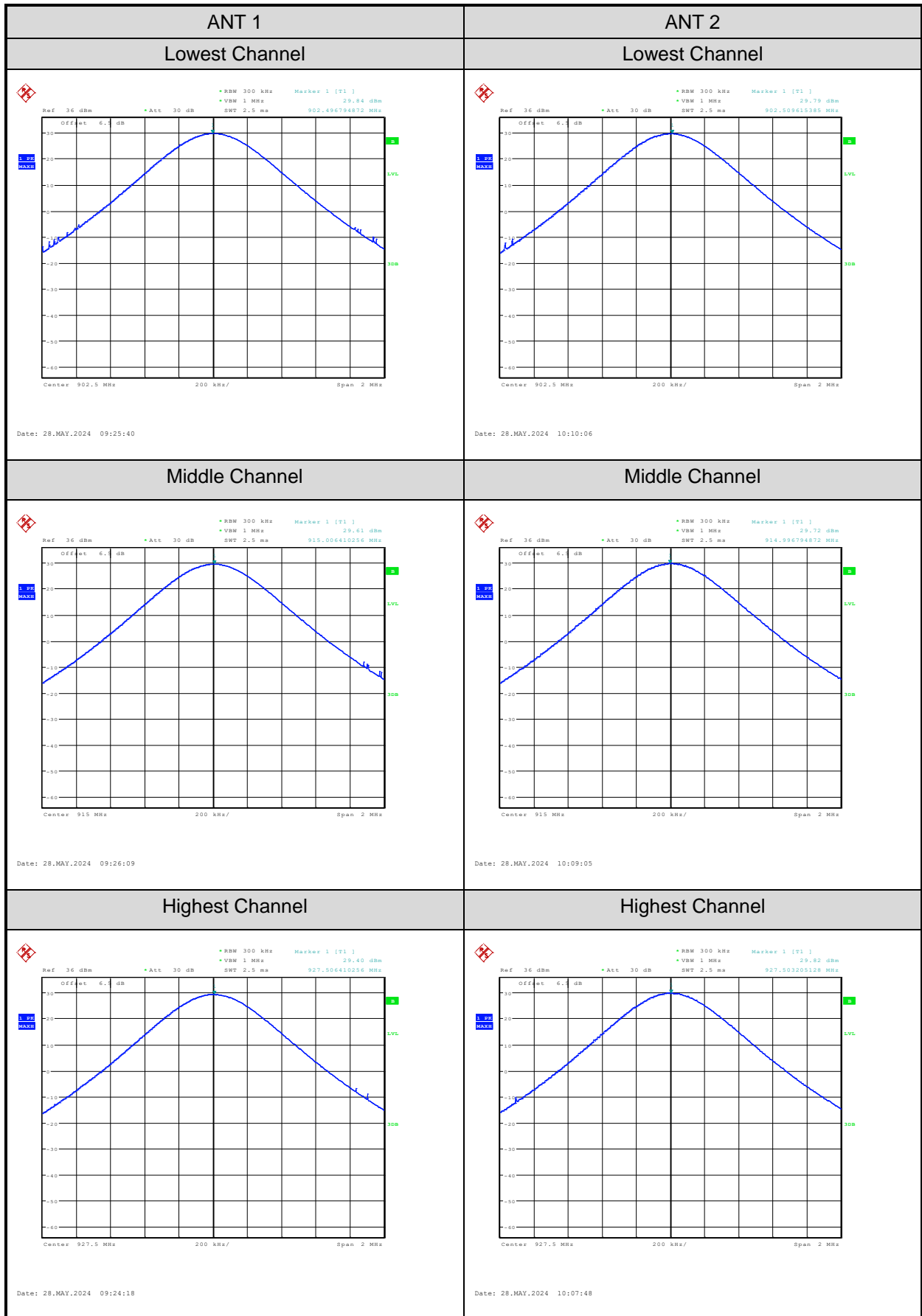


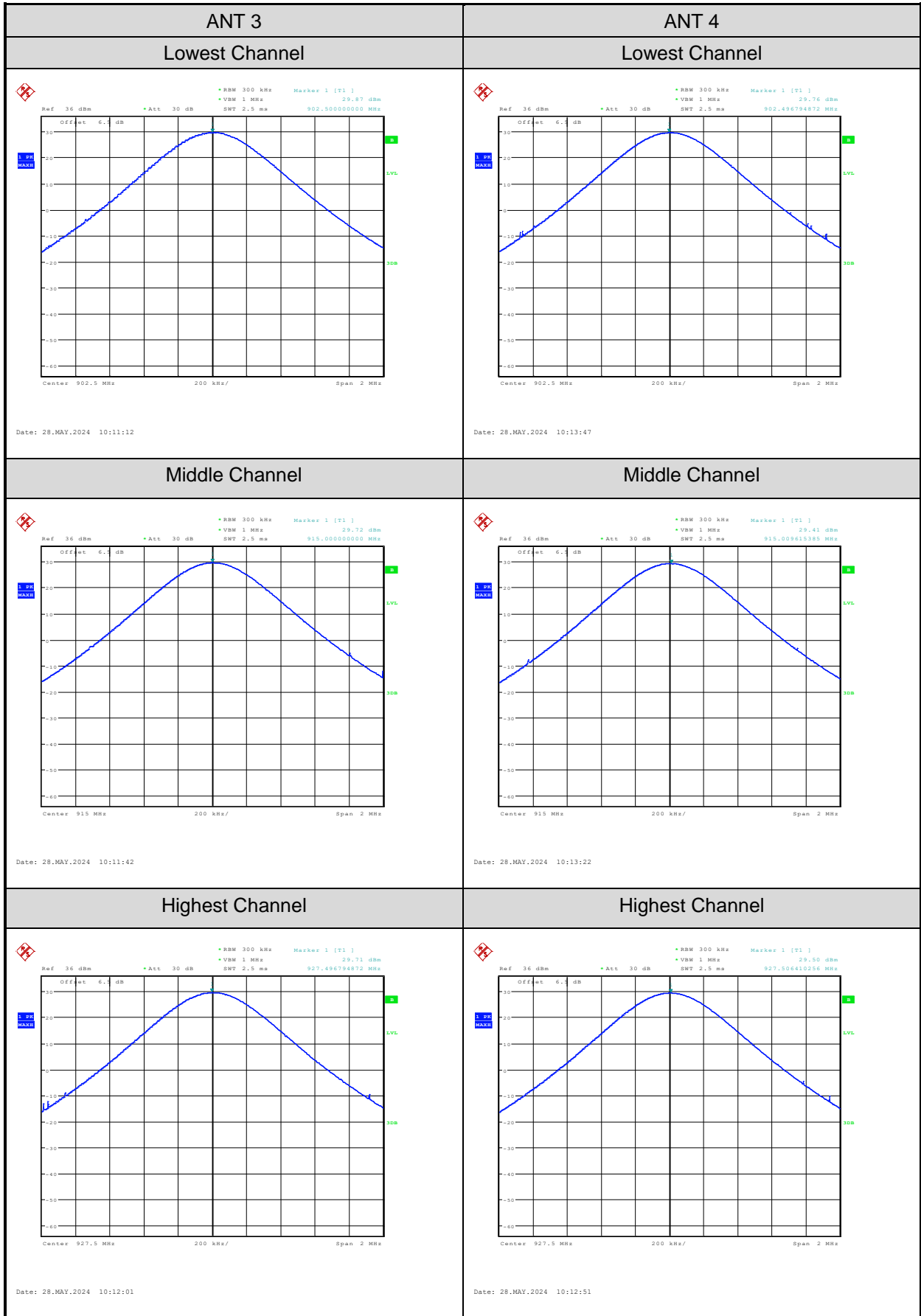
**99% Occupied Bandwidth:**



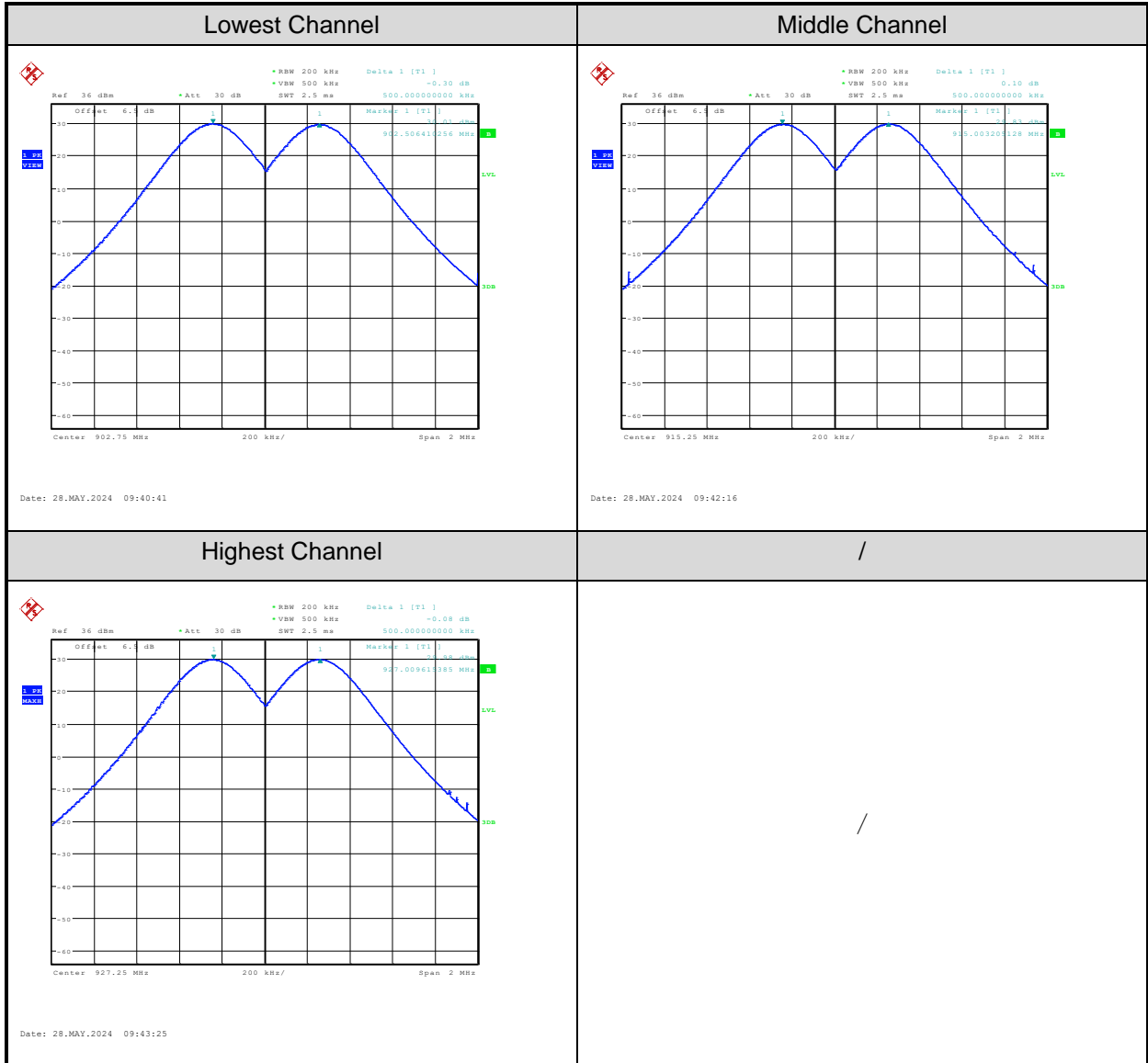


**3.5.2 Maximum Conducted Peak Output Power**

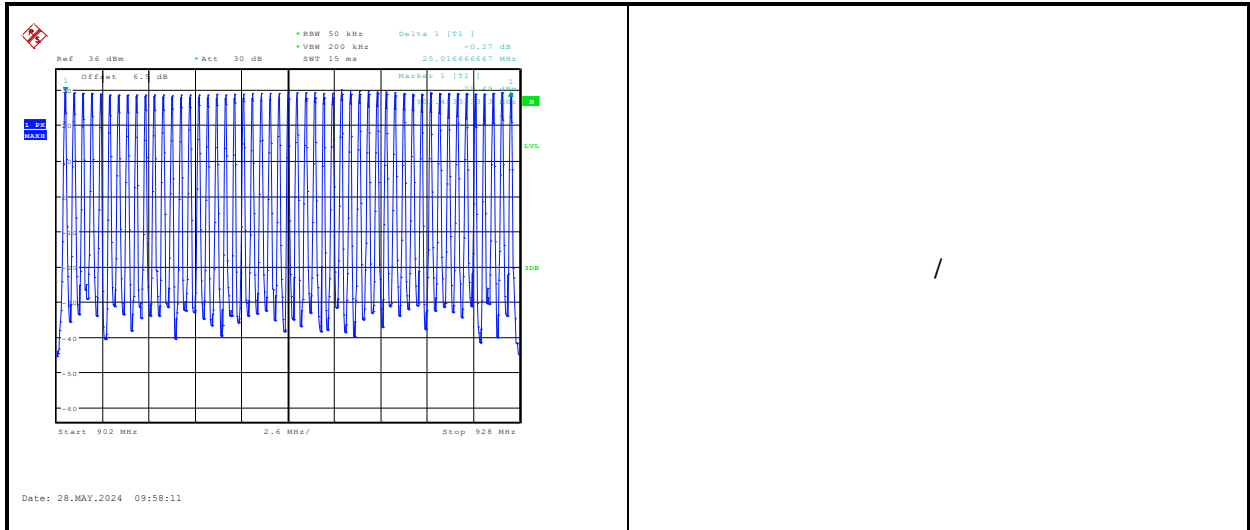




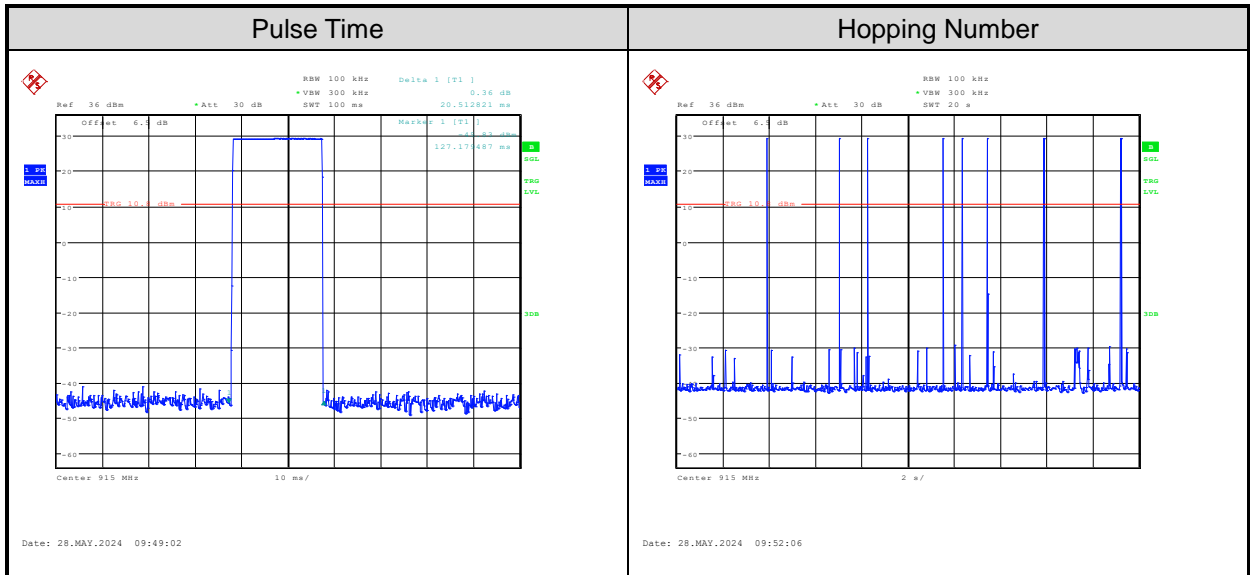
**Channel separation:**



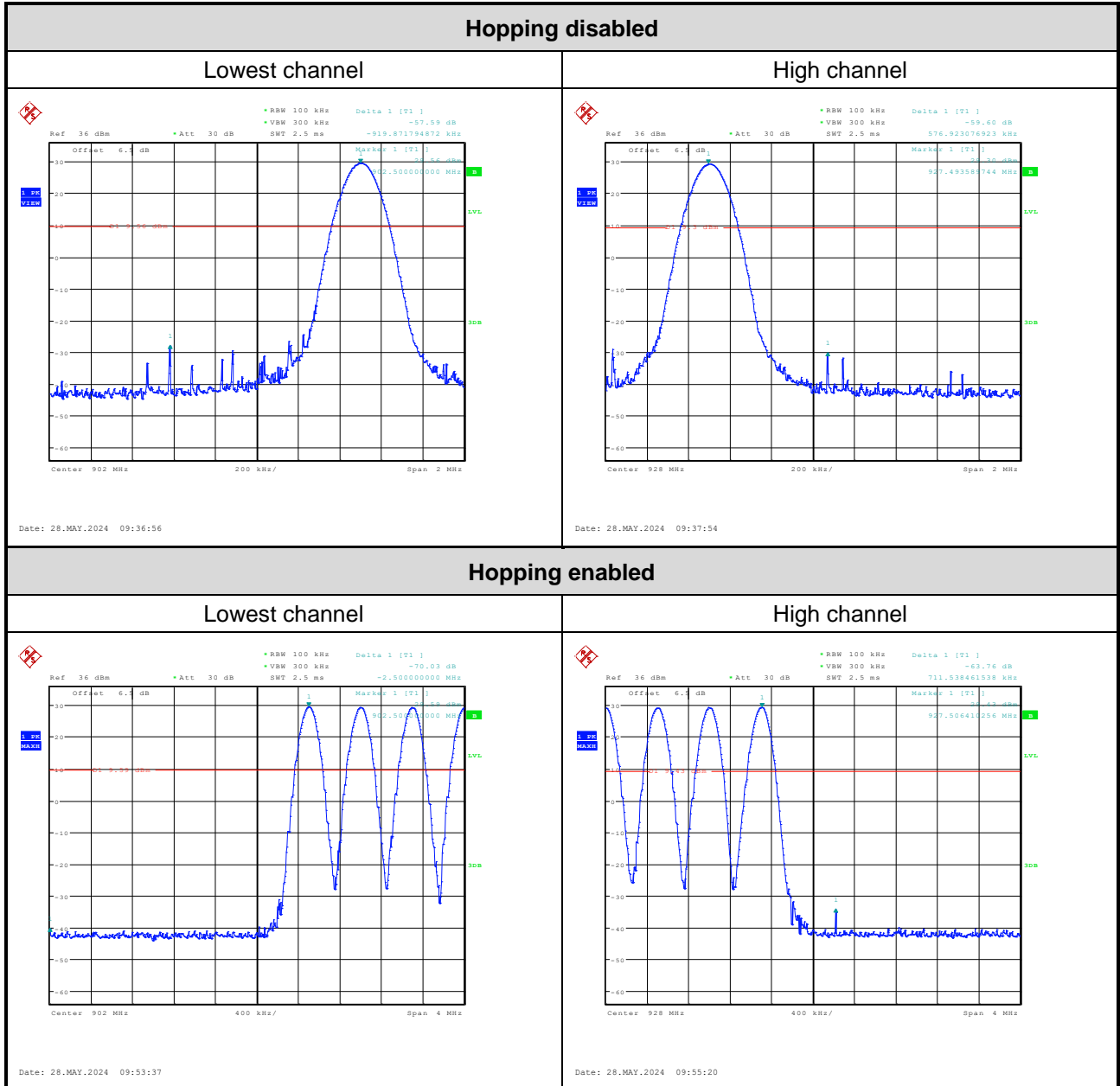
**Number of hopping Frequency**



**Time of occupancy (dwell time)**



**100kHz Bandwidth of Frequency Band Edge:**



## 4 Test Setup Photo

Please refer to the attachment 2405S53667 Test Setup photo.

## 5 E.U.T Photo

Please refer to the attachment 2405S53667 External photo and 2405S53667 Internal photo.

**---End of Report---**