

Test Report No.: FCC2024-0057-RF

# **TEST REPORT**

FCC ID	:	2BMKIHIGHMATE
Applicant	:	RobotPlusPlus Co., Ltd.
Product Name	:	Industrial Wireless Remote Control
Model No.	:	RPP-WRC-V34

# CVC Testing Technology Co., Ltd.

Applicant		Name: RobotPlusPlus Co., Ltd.			
Applicant		Address: Hong-An Road 87,Fangshan, Beijing, China			
		Name: RobotPlusPlus Co., Ltd.			
Manufacturer		Address: Hong-An Re	oad 87,Fangshan, Be	eijing, China	
		Product Name : Indu	strial Wireless Remo	te Control	
		Model No. : RPP-WR	Model No. : RPP-WRC-V34		
Equipment Under Te	est	Trade mark : ROBOTA			
•••		Serial no. : N/A			
	0004.44	Sampling : 1-1		0005 0.00	
Date of Receipt.	2024.11	.22	Date of Testing	2025.3.20	
Test S	pecificat	ion	Те	st Result	
ANSI C63.10-2020/Cor1-;	5C Radio Frequency Devices //Cor1-2023 15.247 Meas Guidance v05r02		PASS		
		The equipment unde		to comply with the	
	14	requirements of the star	ndards applied.		
Evaluation of Test R	esuit		Seal of	CVC	
				ate: 2025-3-27	
Approved by:		Reviewed by:	Tested	by:	
Chen Huawen		Xu Zhenfei	Lu W	eiji	
Chenturan		Xuzhanfei	L	u Wei Ji	
Other Aspects: NONE.					
Abbreviations:OK, Pass= pa	ssed	Fail = failed N/A= not ap	plicable EUT= equip	ment, sample(s) under tested	
Note: This test report relates of	only to the E	UT, and shall not be reprodu	uced except in full, without	t written approval of <b>CVC</b> .	

# **TABLE OF CONTENTS**

1. GENERAL PRODUCT INFORMATION	4
1.1 GENERAL INFORMATION	4
2. TEST SITES	5
2.1 TEST FACILITIES 2.2 DESCRIPTION OF NON-STANDARD METHOD AND DEVIATIONS 2.3 LIST OF TEST AND MEASUREMENT INSTRUMENTS	5
3. TEST CONFIGURATION	6
3.1 TEST MODE 3.2 DUTY CYCLE	8
4. SUMMARY OF MEASUREMENT RESULTS	0
4. SUMMARY OF MEASUREMENT RESULTS	
4. SUMMARY OF MEASUREMENT RESULTS	
	10 10 13 20 22 24 24 26 28

# General Product Information General information

Product Name	Industrial Wireless Remote Control		
Model No.	RPP-WRC-V34		
Additional model	1		
Power Supply	DC 7.4V		
Serial Number(SN)	/		
Hardware	V01		
Software	V01		
specific power settings	Default		
Antenna Type	External antenna		
Antenna connection	Detachable antenna		
Antenna Gain	3.5 dBi (provided by client)		
Beamforming gain	Unsupported (provided by client)		
Frequency Range	902~928MHz		
Channel Number	1 Channel		
Type of Modulation	LORA		
Max. Conducted Power	6.36 dBm		
Operate Temp.Range	-40~ +85℃		
Note: 1 The information of the	ELIT is declared by the manufacturer		

1. The information of the EUT is declared by the manufacturer.

2. The laboratory is not responsible for the product technical specification provided by the client.

# 2. Test Sites

# 2.1 Test Facilities

The tests and measurements refer to this report were performed by RF testing Lab. of CVC Testing Technology Co., Ltd.

Add.: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, Guangdong, 510663, People's Republic of China

Telephone : +86-20-32293888 Fax : +86-20-32293889

FCC(Test firm designation number: CN1282)

# 2.2 Description of Non-standard Method and Deviations

The testing and measurement methods used in this report are applied by all standard methods. Not any non-standard method or deviation from the used standards was used.

# 2.3 List of Test and Measurement Instruments

Refer to Appendix X.

# 3. Test Configuration

# 3.1 Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Test Mode	Antenna Delivery	Test Channel
LORA	1TX / 1RX	1

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate and different channels. Preliminary tests have been done on all the configurations for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case are shown as following table.

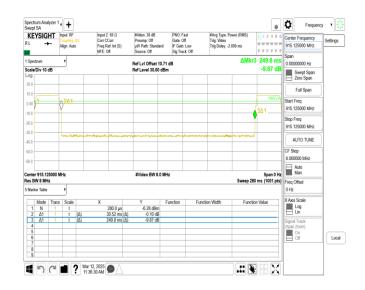
Test Mode	Antenna 1	Antenna 2	MIMO
LORA	$\checkmark$	/	/

#### Test Report No. FCC2024-0057-RF

Test Items	Test Antennas	Test Modes	Test Channels
Radiated Emissions	Antenna 1	LORA	1
Maximum conducted output power	Antenna 1	LORA	1
Minimum 6 dB bandwidth	Antenna 1	LORA	1
Occupied Channel Bandwidth	Antenna 1	LORA	1
Band Edge Measurement	Antenna 1	LORA	1
Maximum Power spectral density	Antenna 1	LORA	1
Spurious RF Conducted Emissions	Antenna 1	LORA	1

# 3.2 Duty cycle

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
LORA	Ant1	915.125	30.52	249.76	12.22		



# 4. Summary of measurement results

Summary of measurements of results	Clause in FCC rules	Verdict	Note
Conducted Emissions	15.207	N/A	See note 2
Radiated Emissions	15.247(d),15.205,15.209	PASS	/
Maximum conducted output power	15.247(b)(3)	PASS	/
Minimum 6 dB bandwidth	15.247(a)(2)	PASS	/
Occupied Channel Bandwidth	15.247(a)(2)	PASS	/
Band Edge Measurement	15.247(d)	PASS	1
Maximum Power spectral density	15.247(e)	PASS	/
Spurious RF Conducted Emissions	15.247(d)	PASS	/
Antenna Requirement	15.203	PASS	See note 1

Note 1: According to 15.203, it is considered sufficient to comply with the provisions of this section. Note 2: Not applicable to DC powered devices.

# 5. Measurement procedure

# 5.1 Conducted Emission

### Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.2kPa

# Method of Measurement:

The EUT was setup according to ANSI C63.10-2020/Cor1-2023 for compliance to FCC 47CFR 15.247 requirements. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

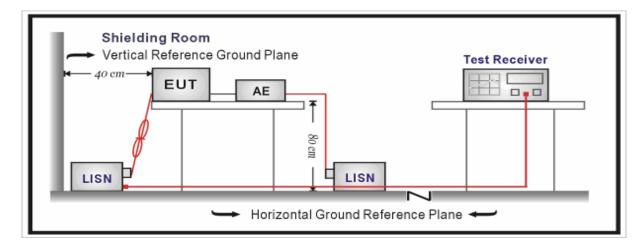
The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

Frequency	Conducted L	_imits(dBµV)	
(MHz)	Quasi-peak	Average	
0.15 - 0.5	66 to 56 <sup>*</sup>	56 to 46 <sup>*</sup>	
0.5 - 5	56	46	
5 - 30	60	50	
Note 1: The lower limit shall apply at the transition frequencies.			
Note 2: The limit	t decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5		
MHz.			

### Limits:

# Test Setup:



# Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Notes:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Level =Reading + Factor.

# Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96. U= 3.12 dB.

Conducted Emission applies to an intentional radiator that is designed to be connected to the public utility (AC) power line. Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

# 5.2 Radiated Emission

# Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.2kPa

# Method of Measurement:

The EUT was setup and tested according to ANSI C63.10-2020/Cor1-2023.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from Antenna to the EUT was 3 meters.

The Antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the Antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2020/Cor1-2023 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn Antenna will be bended down a little (as horn Antenna has the narrow beamwidth) in order to keeping the Antenna in the "cone of radiation" of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

### Limits:

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) (see Section 15.205(c)).

Frequency	Limit (µV/m)	Limit (dBµV/m @3m)	Remark	
0.009MHz-0.490MHz	2400/F(kHz)@300m	20lg(24000000/F(kHz))	Quasi-peak Level	
0.490MHz~1.705MHz	24000/F(kHz)@30m	20lg(2400000/F(kHz))	Quasi-peak Level	
1.705MHz~30.0MHz	30@30m	69.54	Quasi-peak Level	
30MHz-88MHz	100@3m	40.0	Quasi-peak Level	
88MHz-216MHz	150@3m	43.5	Quasi-peak Level	
216MHz-960MHz	200@3m	46.0	Quasi-peak Level	
960MHz-1GHz	500@3m	54.0	Quasi-peak Level	
Above 1GHz	500@3m	54.0	Average Level	

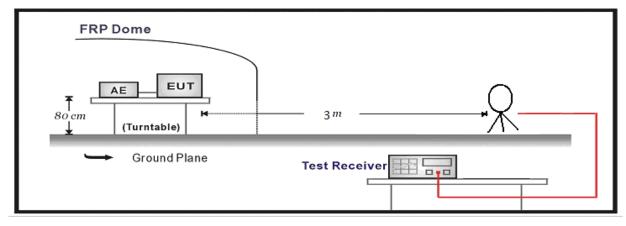
5000@3m 74.0 Peak Level	
-------------------------	--

#### Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

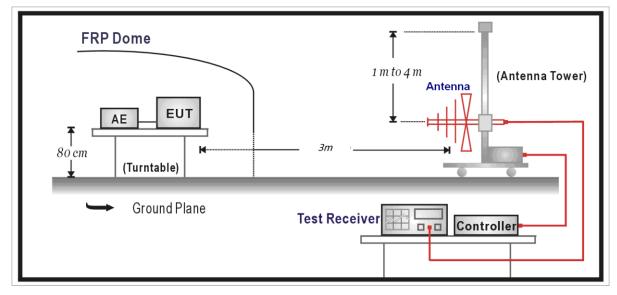
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	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.
12.57675-12.57725	322-335.4	3600-4400	/
13.36-13.41	1	/	1

# Test Setup:

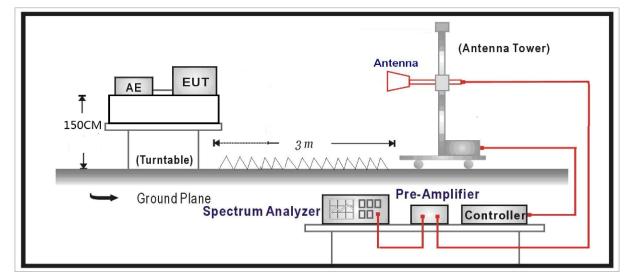
Below 30MHz Test Setup:



#### Below 1GHz Test Setup:



Above 1GHz Test Setup:



# Measurement Data:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Level =Reading - Factor

Factor = Preamplifier Factor – Antenna Factor–Cable Loss

# Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.19 dB
200MHz-1GHz	3.63 dB
Above 1GHz	3.68 dB

#### SPURIOUS EMISSIONS:

#### WIFI:

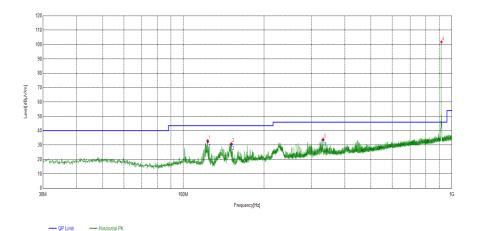
Γ

During the test, the Radiates Emission from 9kHz to 1GHz was performed in all modes with all channels and all antennas. LORA, Channel 1, Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Radiates Emission 9k~1G									
Test channel Worst-Case									
Suspected List									
Polarity	Factor [dB]	Readin g [dBµV/ m]	Level [dBµV/ m]	Limit [dBµV/ m]	Margin [dB]	Detect or	Height [cm]	Angle deg	Pass/ Fail
Horizontal	10.08	23.05	33.13			PK	100	352	
Horizontal	9.57	21.48	31.05			PK	100	352	
Horizontal	16.26	17.86	34.12			PK	100	194	
Horizontal	25.99	75.79	101.78			PK	100	318	
	Polarity Horizontal Horizontal Horizontal	Polarity Factor [dB] Horizontal 10.08 Horizontal 9.57 Horizontal 16.26	Polarity Factor [dB] Readin [dB] [dBµV/ m] Horizontal 10.08 23.05 Horizontal 16.26 17.86	Polarity     Factor [dB]     Readin g [dB]V/ [dB]     Level [dBµV/ m]       Horizontal     10.08     23.05     33.13       Horizontal     9.57     21.48     31.05       Horizontal     16.26     17.86     34.12	Polarity     Factor [dB]     Readin g [dBµV/ m]     Level [dBµV/ m]     Limit [dBµV/ m]       Horizontal     10.08     23.05     33.13        Horizontal     9.57     21.48     31.05        Horizontal     16.26     17.86     34.12	Polarity     Factor [dB]     Readin g [dBµV/ m]     Level [dBµV/ m]     Limit [dBµV/ m]     Margin [dBµV/ m]       Horizontal     10.08     23.05     33.13         Horizontal     9.57     21.48     31.05         Horizontal     16.26     17.86     34.12	Polarity     Factor [dB]     Readin g [dBµV/ m]     Level [dBµV/ m]     Limit [dBµV/ m]     Margin [dBµV/ m]     Detect or       Horizontal     10.08     23.05     33.13       PK       Horizontal     9.57     21.48     31.05      PK     PK       Horizontal     16.26     17.86     34.12      PK	Polarity     Factor [dB]     Readin g [dBµV/ m]     Level [dBµV/ m]     Limit [dBµV/ m]     Margin [dBµV/ m]     Detect or     Height [cm]       Horizontal     10.08     23.05     33.13       PK     100       Horizontal     9.57     21.48     31.05       PK     100       Horizontal     16.26     17.86     34.12       PK     100	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

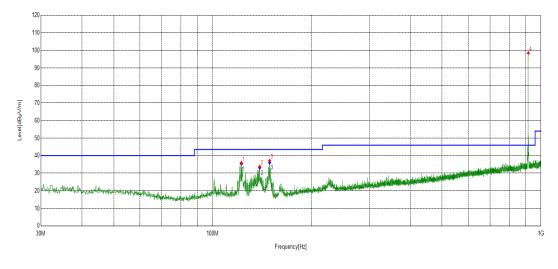
			Final	Data List				
Frequency [MHz]	Polarity	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fa il
123.3233	Horizontal	10.08	32.27	43.50	11.23	120	352	PASS
151.0681	Horizontal	9.57	30.44	43.50	13.06	130	352	PASS
331.7002	Horizontal	16.26	33.51	46.00	12.49	150	194	PASS



Radiates E	mission	9k~1	9k~1G							
Test chann										
Suspected List										
Frequency [MHz]	Polarity	Factor [dB]							Pass/ Fail	
122.3532	Vertical	10.14	25.80	35.94			PK	100	65	
139.1359	Vertical	9.49	24.27	33.76			PK	100	58	
149.1279	Vertical	9.52	27.64	37.16			PK	100	65	
915.0195	Vertical	25.99	72.48	98.47			PK	100	98	

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List										
Frequency [MHz]	Polarity	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fa il		
122.3532	Vertical	10.14	35.38	43.50	8.12	140	65	PASS		
139.1359	Vertical	9.49	33.08	43.50	10.42	170	58	PASS		
149.1279	Vertical	9.52	36.03	43.50	7.47	120	65	PASS		



- QP Limit - Vertical PK

During the test, the Radiates Emission from 1GHz to 18GHz was performed in all modes with all channels and all antennas. LORA, Channel 1, Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Radiates Emiss	ion	Above 1G							
Test channel		1							
polarization		Horizontal							
			Su	spected	List				
Frequency [MHz]	Factor [dB]	Reading [dBµV/ m]	Level [dBµV/ m]	Limit [dBµV/ m]	Margin [dB]	Detect or	Height [cm]	Angle deg	Pass/ Fail
1830.3830	-6.09	61.74	55.65	74.00	-18.35	PK	150	160	PASS
6016.80168	5.71	30.86	36.57	74.00	37.43	PK	150	220	PASS
8538.553855	10.04	31.12	41.16	74.00	32.84	PK	150	190	PASS
1830.3830	-6.09	38.23	32.14	54.00	15.77	AV	150	280	PASS
5926.792679	5.34	21.14	26.48	54.00	27.52	AV	150	50	PASS
8510.051005	10.01	20.46	30.47	54.00	23.53	AV	150	180	PASS
Radiates Emissi	ion	Above 1G							
Test channel		1							
polarization		Vertical							
			Su	spected	List				
Frequency [MHz]	Factor [dB]	Reading [dBµV/ m]	Level [dBµV/ m]	Limit [dBµV/ m]	Margin [dB]	Detect or	Height [cm]	Angle deg	Pass/ Fail
4638.163816	0.52	34.37	34.89	74.00	39.11	PK	150	140	PASS
6574.857486	6.68	29.41	36.09	74.00	37.91	PK	150	210	PASS
10437.743774	12.87	29.93	42.80	74.00	31.20	PK	150	160	PASS
4740.174017	0.97	24.29	25.26	54.00	28.74	AV	150	140	PASS
6243.324332	5.96	20.97	26.93	54.00	27.07	AV	150	50	PASS
10328.232823	12.79	20.06	32.85	54.00	21.15	AV AV	150	220	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

# 5.3 Maximum conducted output power

### Ambient condition:

Temperature	Relative humidity	Pressure		
23°C ~25°C	45%~50%	101.2kPa		

### Method of Measurement:

a.A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor and set the detector to PEAK. Record the power level.

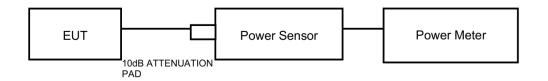
Limits:

	Average Output Power	≤ 1W (30dBm)					
N	ote: the conducted output power limit specified abo	ve is based on the use the antennas with directiona	ıl				

gains that do not exceed 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated Levels above, as appropriate, by the amount in dB that the directional gain of antenna exceeds 6 dBi.

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

### Test Setup:



# Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.44 dB.

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
LORA	Ant1	915.125	6.36	≤30.00	PASS

# 5.4 Minimum 6 dB Bandwidth

# Ambient condition:

Temperature	Relative humidity	Pressure	
23°C ~25°C	45%~50%	101.2kPa	

# Method of Measurement:

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz; VBW is set to greater than 3 times RBW on spectrum analyzer.

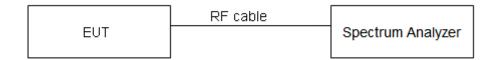
Detector=Peak, Trace mode=Max hold.

#### Limits:

Rule Part 15.247 (a) (2) specifies that "Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz."

Minimum 6dB Bandwidth	≥ 500 kHz
-----------------------	-----------

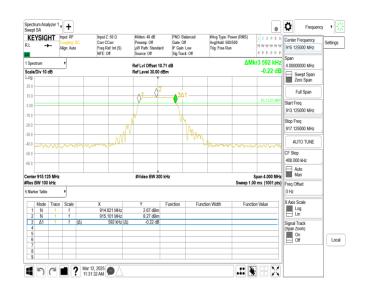
Test Setup:



# Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936 Hz.

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
LORA	Ant1	915.125	0.592	914.821	915.413	≥0.5	PASS



# 5.5 Occupied Channel Bandwidth

# Ambient condition:

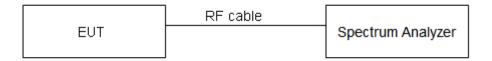
Temperature	Relative humidity	Pressure	
23°C ~25°C	45%~50%	101.2kPa	

### Method of Measurement:

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 1% to 5% of the OBW; video bandwidth (VBW) shall be at least three times RBW on spectrum analyzer.

Detector=Peak, Trace mode=Max hold.

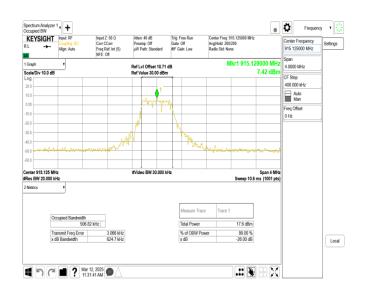
Test Setup:



# Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936 Hz.

TestMode	Antenna	nna Channel OCB [MHz] Limit[MHz]		Verdict	
LORA	Ant1	915.125	0.50682		



# 5.6 Band Edge Measurement

# Ambient condition:

Temperature	Relative humidity	Pressure	
23°C ~25°C	45%~50%	101.2kPa	

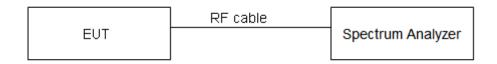
### Method of Measurement:

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer.

### Limits:

Rule Part 15.247(d) specifies that "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.

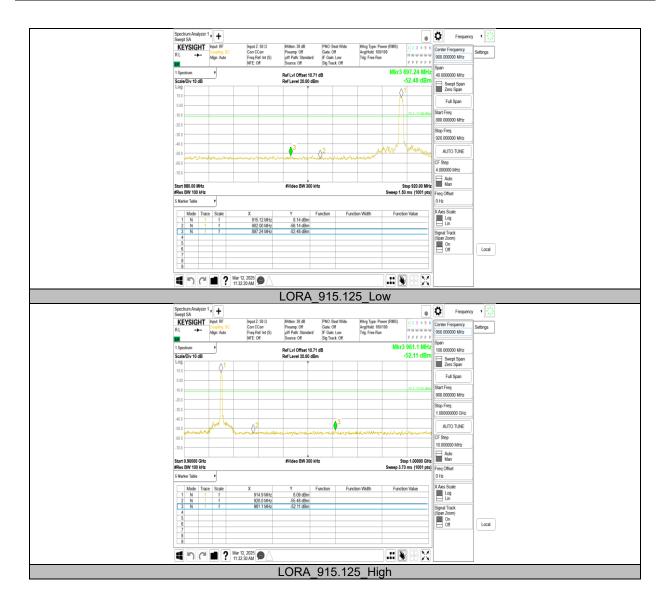
Test Setup:



# Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U= 936 Hz, 2 GHz-3 GHz = 1.407 dB.

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
LORA	Ant1	Low	915.125	8.14	-52.48	≤-11.86	PASS
LORA	Ant1	High	915.125	8.09	-52.11	≤-11.91	PASS



# 5.7 Maximum Power Spectral Density

Ambient condition:

Temperature	Relative humidity	Pressure	
23°C ~25°C	45%~50%	101.2kPa	

### Method of Measurement:

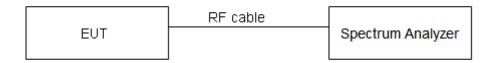
During the process of the testing, The EUT was connected to Spectrum Analyzer with a known loss. The EUT is max power transmission with proper modulation. The Peak detector is used.

The conducted Power is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

#### Limits:

Rule Part 15.247(e) specifies that" For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Test Setup:

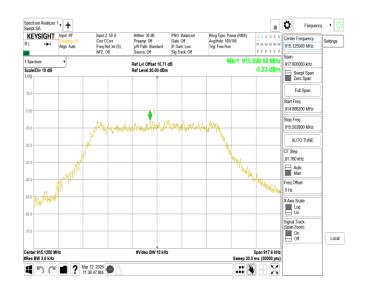


# Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U = 0.75dB.

### Test Report No. FCC2024-0057-RF Test Results:

TestMode	Antenna	Channel	Result [dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
LORA	Ant1	915.125	-5.23	≤8	PASS



# 5.8 Spurious RF Conducted Emissions

### Ambient condition:

Temperature	Relative humidity	Pressure	
23°C ~25°C	45%~50%	101.2kPa	

# Method of Measurement:

The EUT was connected to the spectrum analyzer with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. Set RBW to100kHz and VBW to 300 kHz, Sweep is set to AUTO .The test is in transmitting mode.

### Limits:

Rule Part 15.247(d) pacifies that "In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.

# Test Setup:

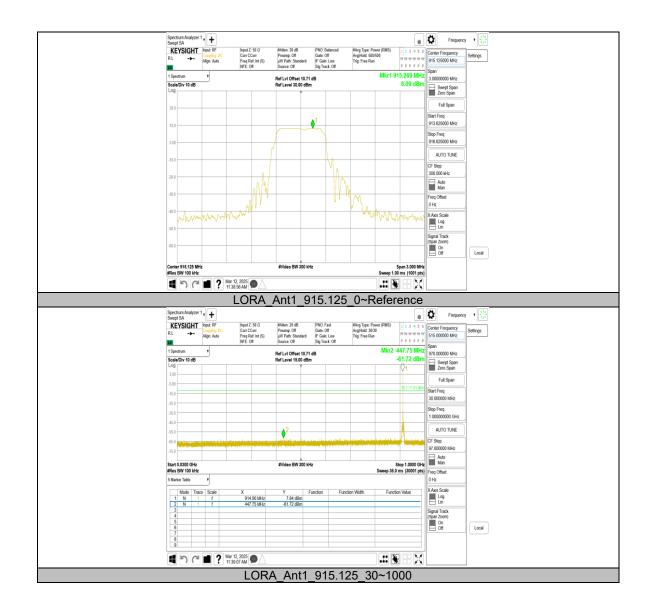


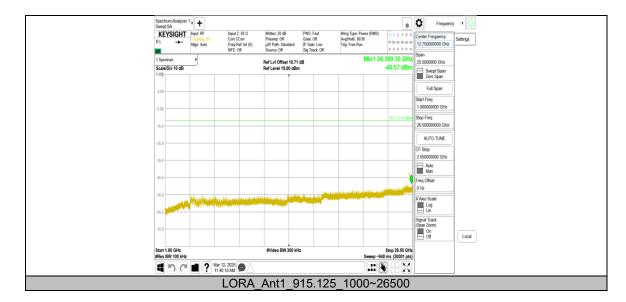
# Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
	Ant1 915.125		Reference	8.09	8.09		PASS
LORA		915.125	30~1000	8.09	-61.72	≤-11.91	PASS
			1000~26500	8.09	-48.57	≤-11.91	PASS





# 6. Appendix X

Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufact urer	Cal. Due
Communication Shielded Room 2	4m*3m*3m	CRTDSWKSR 44301	/	CRT	2027/04/22
Spectrum Analyzer	FSV40	101580	DZ-000238-3	R&S	2025/04/22
Power Meter	JS0806-2	19H9080187	DZ-000241	Tonscend	2025/04/27
Programmable DC Power Supply	E3644A	MY58036222	DZ-000178	KEYSIG HT	2025/04/11
5m Semi-Anechoic Chamber	SAC-5	SAC-5-2.0	EM-000557	COMTES T	2027/02/01
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIG HT	2025/12/26
EMI Test Receiver	ESR7	102235	EM-000574	R&S	2025/12/26
loop antenna	HLA 6121	540046	EM-000546	TESEQ	2025/06/04
Broadband Antenna	VULB 9163	9163-530	EM-000342	SCHWAR ZBECK	2025/06/09
Waveguide Horn Antenna	HF906	360306/008	EM-000093	R&S	2025/12/26
Waveguide Horn Antenna	BBHA9170	00949	DZ-000209-2	SCHWAR ZBECK	2025/08/03
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWAR ZBECK	2025/06/02
Bandstop Filters	SW-BSF-2400-100-7-A 1	/	EM-000495	/	2025/08/29
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWAR ZBECK	2025/06/03
Temperature and humidity meter	МНО-С201	/	DZ-000249-2	Seconds test	2025/07/28
Temperature and humidity meter	МНО-С201	/	DZ-000249-5	Seconds test	2025/07/28

Dynacomm	Software Release	Software Developer	
TS1120-3 Test System(Conduction test)	3.3.38	Tonscend	
TS+ (5m,Radiation test)	JS32-RE 5.0.0	Tonscend	

The End

# Important

- 1. The test report is invalid without the official stamp of CVC;
- 2. Any part photocopies of the test report are forbidden without the written permission from CVC;
- 3. The test report is invalid without the signatures of Author and Reviewer;
- 4. The test report is invalid if altered;
- 5. Objections to the test report must be submitted to CVC within 15 days;
- 6. Generally, commission test is responsible for the tested samples only;
- 7. As for the test result, "—" or " N/A" means "not applicable", " / "means "not testing", "P" means "pass" and "F" means "fail".

Address: No.3,Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, China (Test location)Post Code: 510663Tel: 020-32293888FAX: 020 32293889E-mail: office@cvc.org.cn