

TEST REPORT

Product Name: Carbon Monoxide Alarm
Trade Mark: X-SENSE
Model No.: XC0C-MR
HVIN: XC0C-MR_V1.0
Report Number: 25061218423RFC-1
FCC 47 CFR Part 15 Subpart C
RSS-210 Issue 11
RSS-Gen Issue 5
FCC ID: 2AU4DDDA
IC: 32919-AAL
Test Result: PASS
Date of Issue: July 10, 2025

Prepared for:

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Version

Version No.	Date	Description
V1.0	July 10, 2025	Original



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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	X-Sense Innovations Co., Ltd.
Address of Applicant:	Room 1703, Building 7A, International Innovation Valley, Dashi 1st Road, Shenzhen, 518055, CHINA
Manufacturer:	X-Sense Electronics Co., Ltd.
Address of Manufacturer:	Room 402, Building 4, No. 9, Jinshagang 1st Road, Shixia Village, Dalang Town, Dongguan City, 523750 Guangdong, P.R. CHINA
Factory:	X-Sense Electronics Co., Ltd.
Address of Factory:	Room 402, Building 4, No. 9, Jinshagang 1st Road, Shixia Village, Dalang Town, Dongguan City, 523750 Guangdong, P.R. CHINA

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Carbon Monoxide Alarm
Model No.:	XC0C-MR
HVIN:	XC0C-MR_V1.0
Trade Mark:	X-SENSE
DUT Stage:	Identical Prototype
EUT Supports Function:	915.275MHz
Power Supply:	3VDC
Software Version: (Provided by the customer)	V1.1.0
Hardware Version: (Provided by the customer)	XC0C-MR_V1.0
Sample Received Date:	June 10, 2025
Sample Tested Date:	June 14, 2025 to June 29, 2025

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Frequency Range:	915.275MHz
Type of Modulation:	FSK
Number of Channels:	1
Antenna Type:	Spring antenna
Antenna Gain: (Provided by the customer)	-33.43 dBi
Maximum Field Strength:	86.27 dBμV/m@3m
Normal Test Voltage:	3.0 Vdc

1.4 OTHER INFORMATION

Operation Frequency Each of Channel	
$f = 2405 + k \text{ MHz, } k = 0, \dots, 70$	
Note:	
f	is the operating frequency (MHz);
k	is the operating channel.

1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested independently

1.6 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

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1.7 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1

The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.

Designation Number: CN1194

Test Firm Registration Number: 259480

1.8 DEVIATION FROM STANDARDS

None.

1.9 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.10 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.11 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product 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.

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.2 dB
2	Conducted emission 150KHz-30MHz	±2.7 dB
3	Radiated emission 9KHz-30MHz	±4.7 dB
4	Radiated emission 30MHz-1GHz	±4.6 dB
5	Radiated emission 1GHz-18GHz	±4.4 dB
6	Radiated emission 18GHz-26GHz	±4.6 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB
8	Radio Frequency	±7.0x10 ⁻⁸
9	Transmission Time	±0.19%
10	Occupied Bandwidth	±1.86%

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2. TEST SUMMARY

Test Cases			
Test Item	Test Requirement	Test Method	Result
Antenna Requirement	FCC 47 CFR Part 15 Subpart C Section 15.203 RSS-Gen Issue 5, Section 6.8	ANSI C63.10-2013	PASS
Conducted Emission	FCC 47 CFR Part 15 Subpart C Section 15.207 RSS-Gen Issue 5, Section 8.8	ANSI C63.10-2013	N/A ^{Note1, 2}
Radiated Emission	FCC 47 CFR Part 15 Subpart C Section 15.249 (a)(c)(d)(e)/15.209 RSS-210 Issue 11, Annex B.10 RSS-Gen Issue 5, Section 8.9	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	FCC 47 CFR Part 15 Subpart C Section 15.249(a) RSS-210 Issue 11, Annex B.10	ANSI C63.10-2013	PASS
20 dB bandwidth	FCC 47 CFR Part 15 Subpart C Section 15.215 (c)	ANSI C63.10-2013	PASS
Occupied Bandwidth	RSS-Gen Issue 5, Section 6.7	ANSI C63.10-2013	PASS
Note: 1) N/A: In this whole report not application.			

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
<input checked="" type="checkbox"/>	3m SAC	ETS-LINDGREN	3M	Euroshiedpn-CT001270-1317	11-Nov-2023	10-Nov-2026
<input checked="" type="checkbox"/>	Receiver	R&S	ESIB26	100114	25-Oct-2024	24-Oct-2025
<input checked="" type="checkbox"/>	Loop Antenna	ETS-LINDGREN	6502	00202525	28-Oct-2024	27-Oct-2025
<input checked="" type="checkbox"/>	Broadband Antenna	ETS-LINDGREN	3142E	00201566	29-Oct-2024	28-Oct-2025
<input checked="" type="checkbox"/>	6dB Attenuator	Talent	RA6A5-N-18	18103001	29-Oct-2024	28-Oct-2025
<input checked="" type="checkbox"/>	Preamplifier	HP	8447F	2805A02960	25-Oct-2024	24-Oct-2025
<input checked="" type="checkbox"/>	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	29-Mar-2025	28-Mar-2026
<input checked="" type="checkbox"/>	Pre-amplifier	ETS-LINDGREN	00118385	00201874	29-Mar-2025	28-Mar-2026
<input type="checkbox"/>	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	28-Oct-2024	27-Oct-2025
<input type="checkbox"/>	Pre-amplifier	ETS-LINDGREN	00118384	00202652	28-Oct-2024	27-Oct-2025
<input checked="" type="checkbox"/>	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
<input checked="" type="checkbox"/>	Test Software	Audix	e3	Software Version: 9.160323		

Conducted RF test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
<input checked="" type="checkbox"/>	Spectrum analyzer	R&S	FSV40-N	101653	28-Mar-2025	27-Mar-2026

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (Vdc)	Relative Humidity (%)
NT/NV	+15 to +35	3	20 to 75
Remark: 1) NV: Normal Voltage; NT: Normal Temperature			

4.1.2 Record of Normal Environment

Test Item	Temp. (°C)	Relative Humidity (%)	Pressure (kPa)	Sample No.	Tested by
Radiated Emission	25.2	62.5	99.3	S202506126235-ZJA05/6	Fire Huo
Restricted bands around fundamental frequency (Radiated Emission)					
20dB Bandwidth & Occupied Bandwidth	23.2	43.7	99.9	S202506126235-ZJA06/6	Hank Wu
Duty cycle					

4.2 TEST CHANNELS

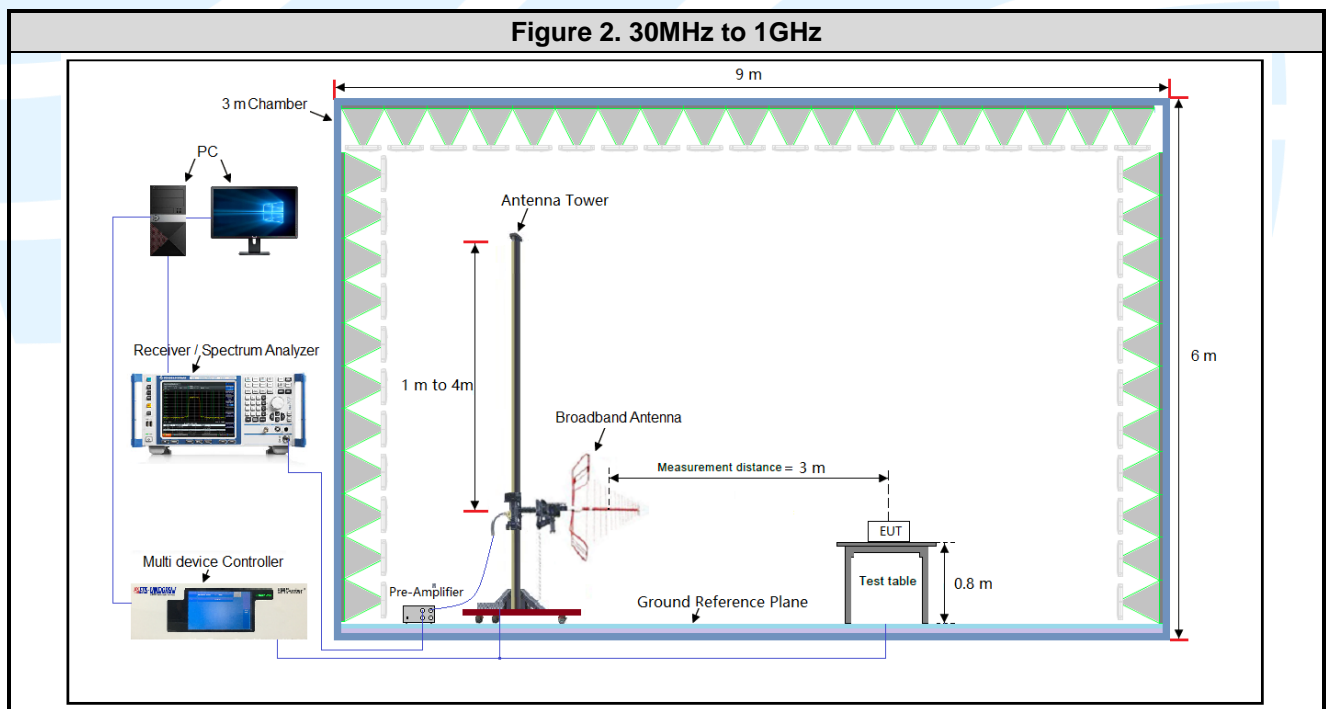
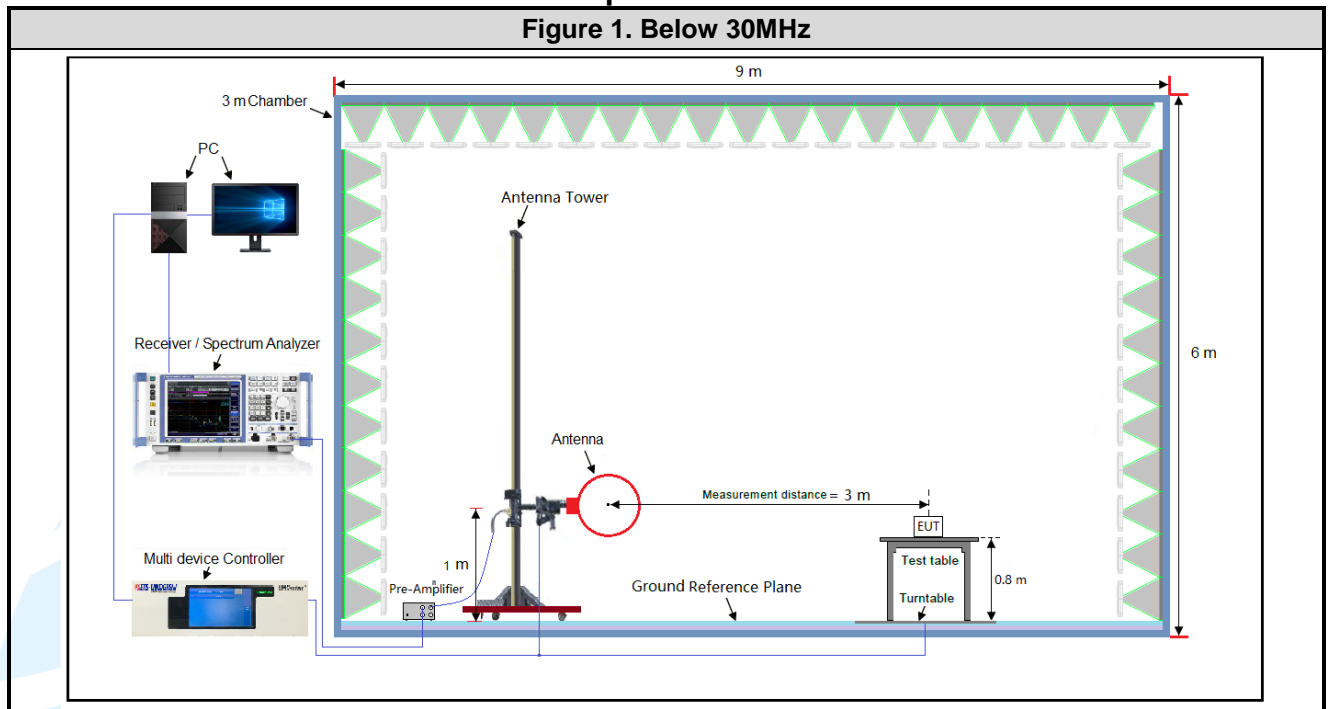
Type of Modulation	Tx/Rx Frequency	Test RF Channel Lists
FSK	915.275MHz	Channel 1: 915.275 MHz

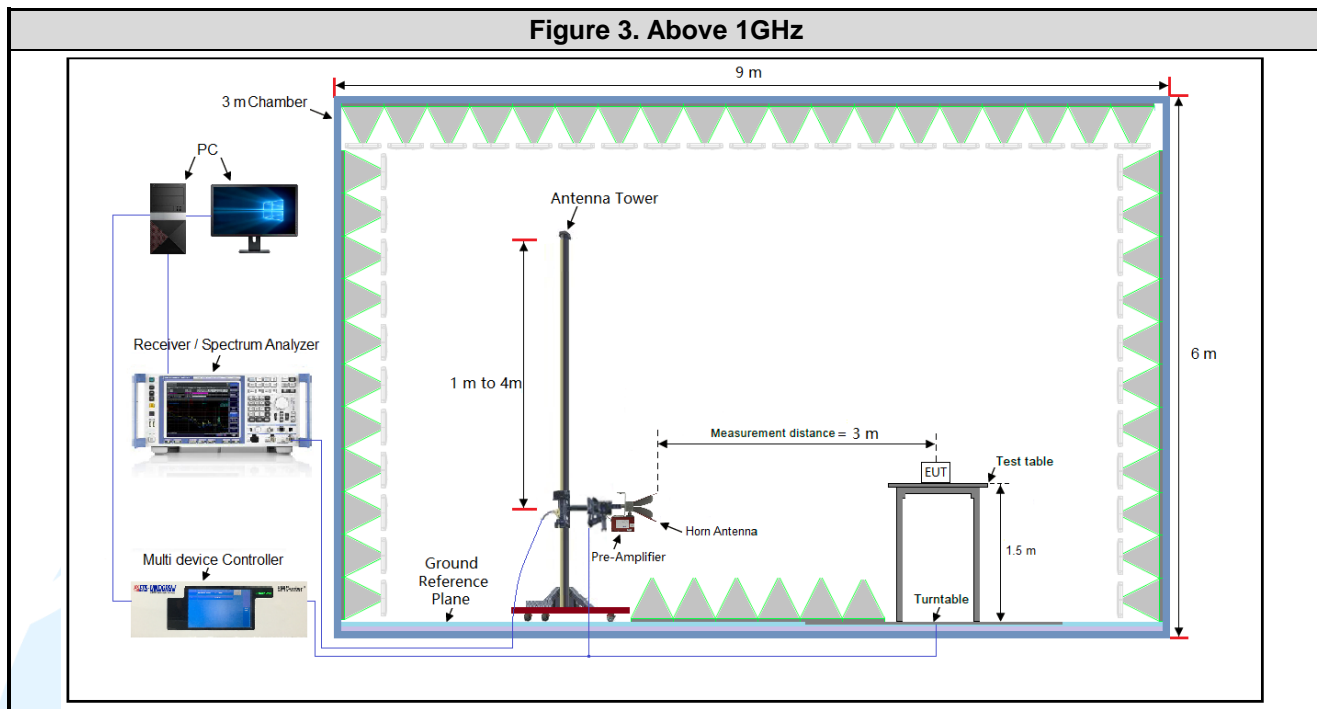
4.3 EUT TEST STATUS

Modulation Mode	Tx Function	Description
FSK	1Tx	Keep the EUT in continuously transmitting with modulation test single.

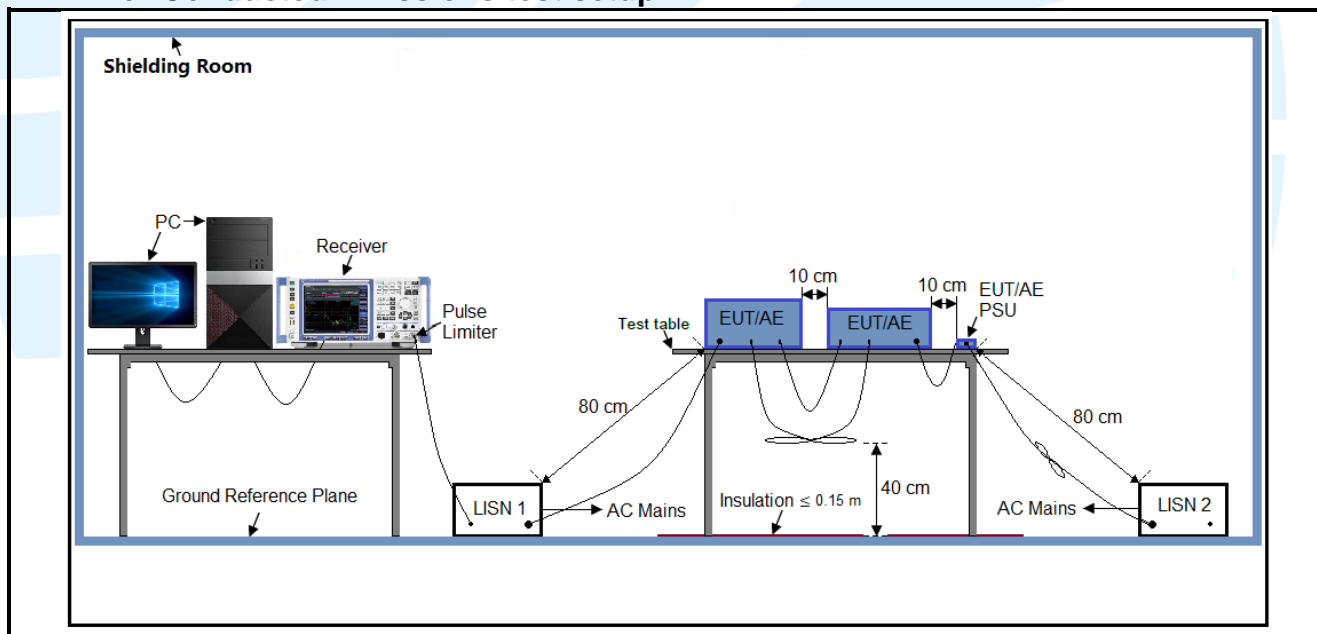
4.4 TEST SETUP

4.4.1 For Radiated Emissions test setup

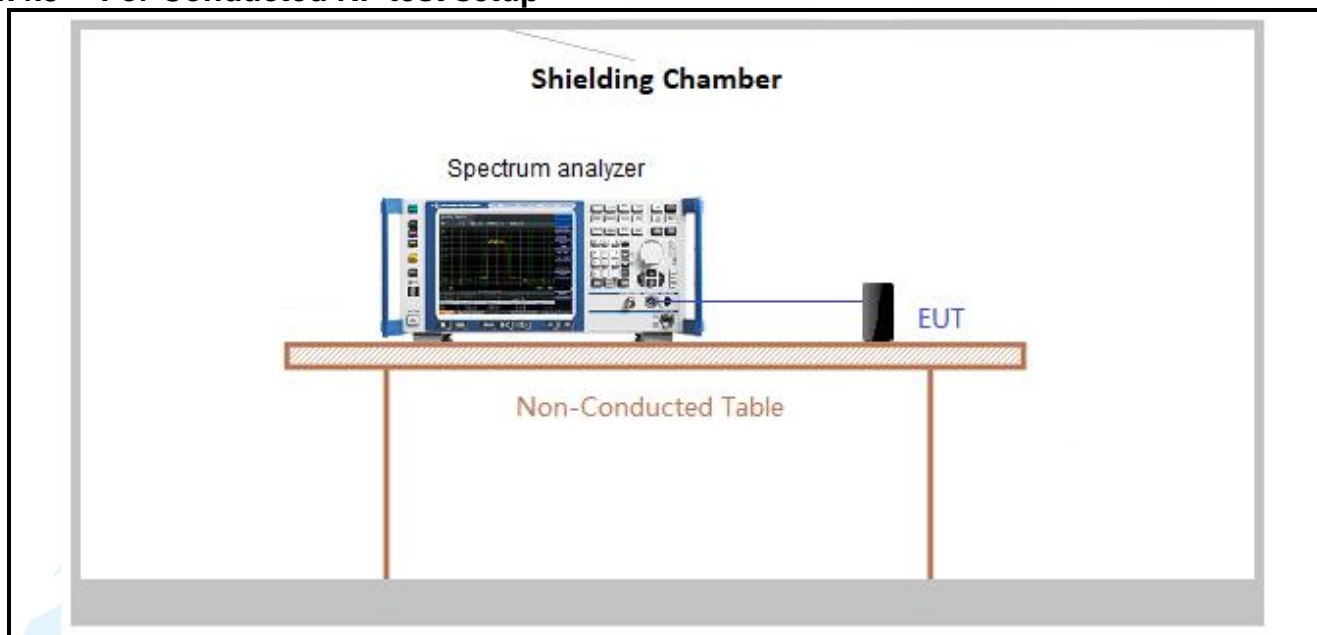




4.4.2 For Conducted Emissions test setup



4.4.3 For Conducted RF test setup



4.5 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was powered by a 3Vdc battery. Only the worst case data were recorded in this test report.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

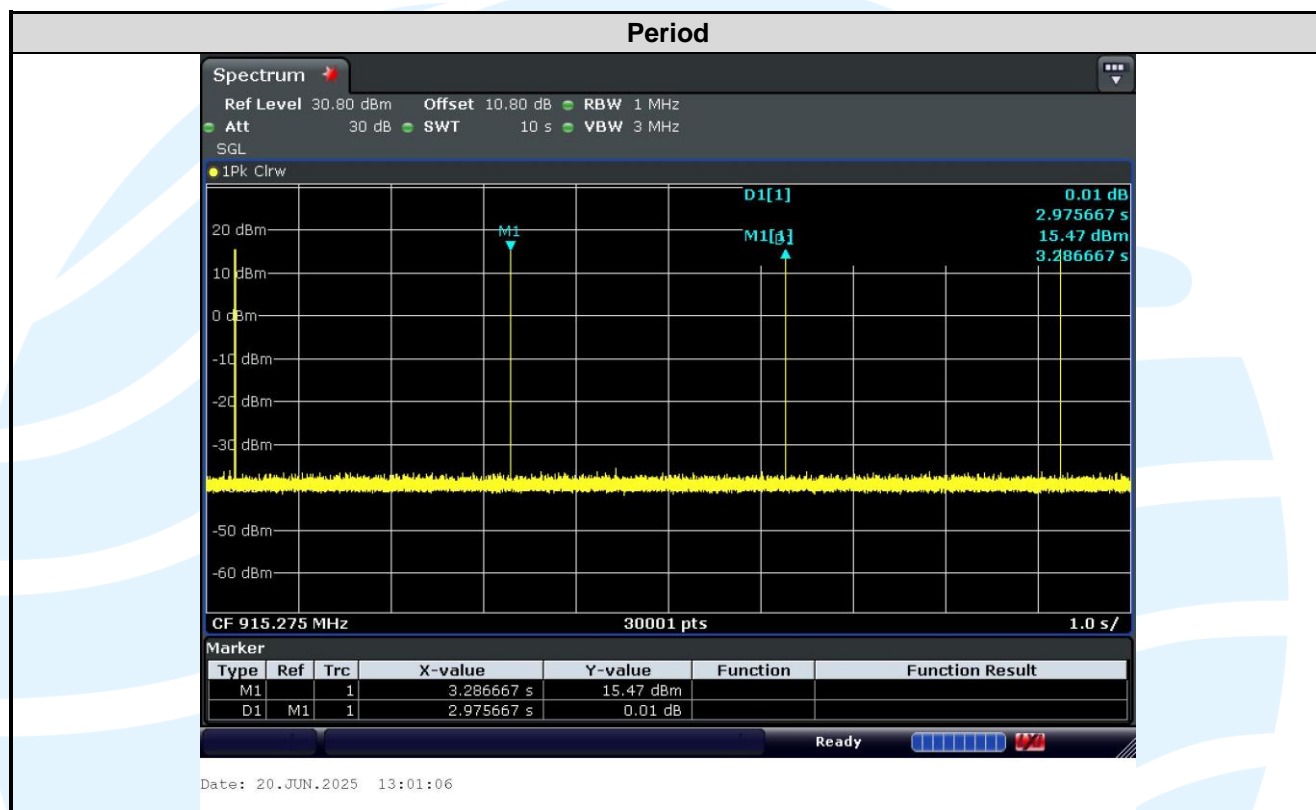
Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

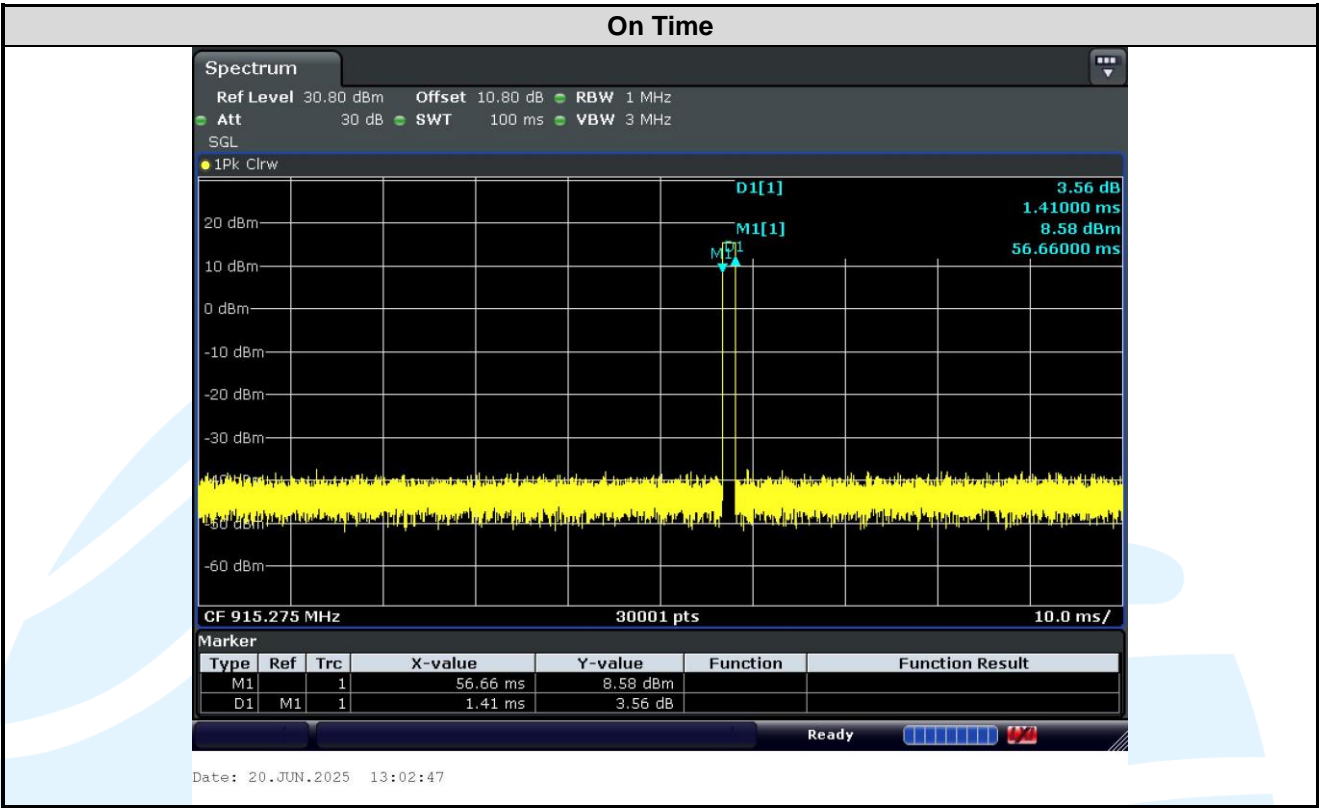
4.6 DUTY CYCLE

Period (ms)	On Time (ms)	Duty Cycle (linear)	Duty Cycle (%)	Average Factor (dB)
2975.667	1.41	0.000474	0.0474%	-23.24

Remark:

- 1) Duty cycle= On Time/ Period;
- 2) Duty Cycle factor = $10 * \log(1/ \text{Duty cycle})$;
- 3) Average factor = $10 * \log_{10} \text{Duty Cycle}$.





5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 15	Radio Frequency Devices
2	RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus
3	RSS-210 Issue 11	Licence-Exempt Radio Apparatus: Category I Equipment
4	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

5.2 ANTENNA REQUIREMENT

Standard Requirement
15.203 Requirement: 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.
RSS-Gen Issue 4, Section 6.8 requirement: According to RSS-Gen Issue 5, section 6.8, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns.
EUT Antenna: Antenna in the interior of the equipment and no consideration of replacement. The gain of the antenna is -33.43 dBi.

5.3 RADIATED EMISSION

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.249 (a)(c)(d)(e)/15.209,
RSS-210 Issue 11, Annex B.10,
RSS-Gen Issue 5, Section 8.9

Test Method: ANSI C63.10-2013 Section 6.6.4.3

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009 MHz-0.090 MHz	Peak	10 kHz	30 KHz	Peak
0.009 MHz-0.090 MHz	Average	10 kHz	30 KHz	Average
0.090 MHz-0.110 MHz	Quasi-peak	10 kHz	30 KHz	Quasi-peak
0.110 MHz-0.490 MHz	Peak	10 kHz	30 KHz	Peak
0.110 MHz-0.490 MHz	Average	10 kHz	30 KHz	Average
0.490 MHz -30 MHz	Quasi-peak	10 kHz	30 kHz	Quasi-peak
30 MHz-1 GHz	Quasi-peak	100 kHz	300 KHz	Quasi-peak
Above 1 GHz	Peak	1 MHz	3 MHz	Peak
	Peak	1 MHz	10 Hz	Average

Limits:

Spurious Emissions

Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009 MHz-0.490 MHz	2400/F(kHz)	--	--	300
0.490 MHz-1.705 MHz	24000/F(kHz)	--	--	30
1.705 MHz-30 MHz	30	--	--	30
30 MHz-88 MHz	100	40.0	Quasi-peak	3

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88 MHz-216 MHz	150	43.5	Quasi-peak	3
216 MHz-960 MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1 GHz	500	54.0	Average	3

Field strength of the fundamental signal

Limit (dB μ V/m @3m)	Detector
94	Quasi-peak

Remark:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Test Setup: Refer to section 4.4.1 for details.

Test Procedures:

1. From 30 MHz to 1GHz test procedure as below:
 - 1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
 - 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
 - 3) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
 - 4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
 - 5) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
 - 6) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
2. Above 1GHz test procedure as below:
 - 1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
 - 2) Test the EUT in the lowest channel ,middle channel, the Highest channel
 - 3) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
 - 4) Repeat above procedures until all frequencies measured was complete.

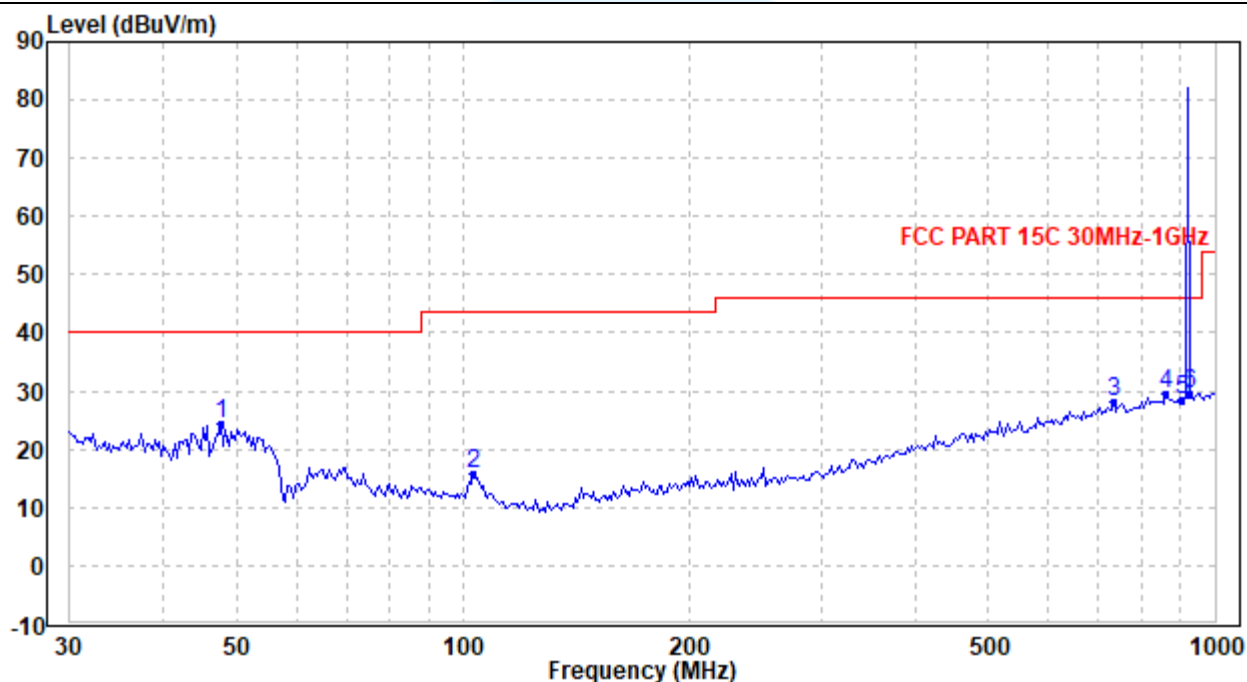
Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement data as follows:

Radiated Emission Test Data (9 KHz ~ 30 MHz):

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

Radiated Emission Test Data (30 MHz ~ 1 GHz):
Lowest Channel
Horizontal


No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	47.703	37.62	-13.10	24.52	40.00	-15.48	Peak
2	103.335	31.42	-15.67	15.75	43.50	-27.75	Peak
3	734.037	25.92	2.12	28.04	46.00	-17.96	Peak
4	862.802	25.43	4.15	29.58	46.00	-16.42	Peak
5	902.000	23.82	4.82	28.64	46.00	-17.36	Peak
6	928.000	24.72	4.83	29.55	46.00	-16.45	Peak

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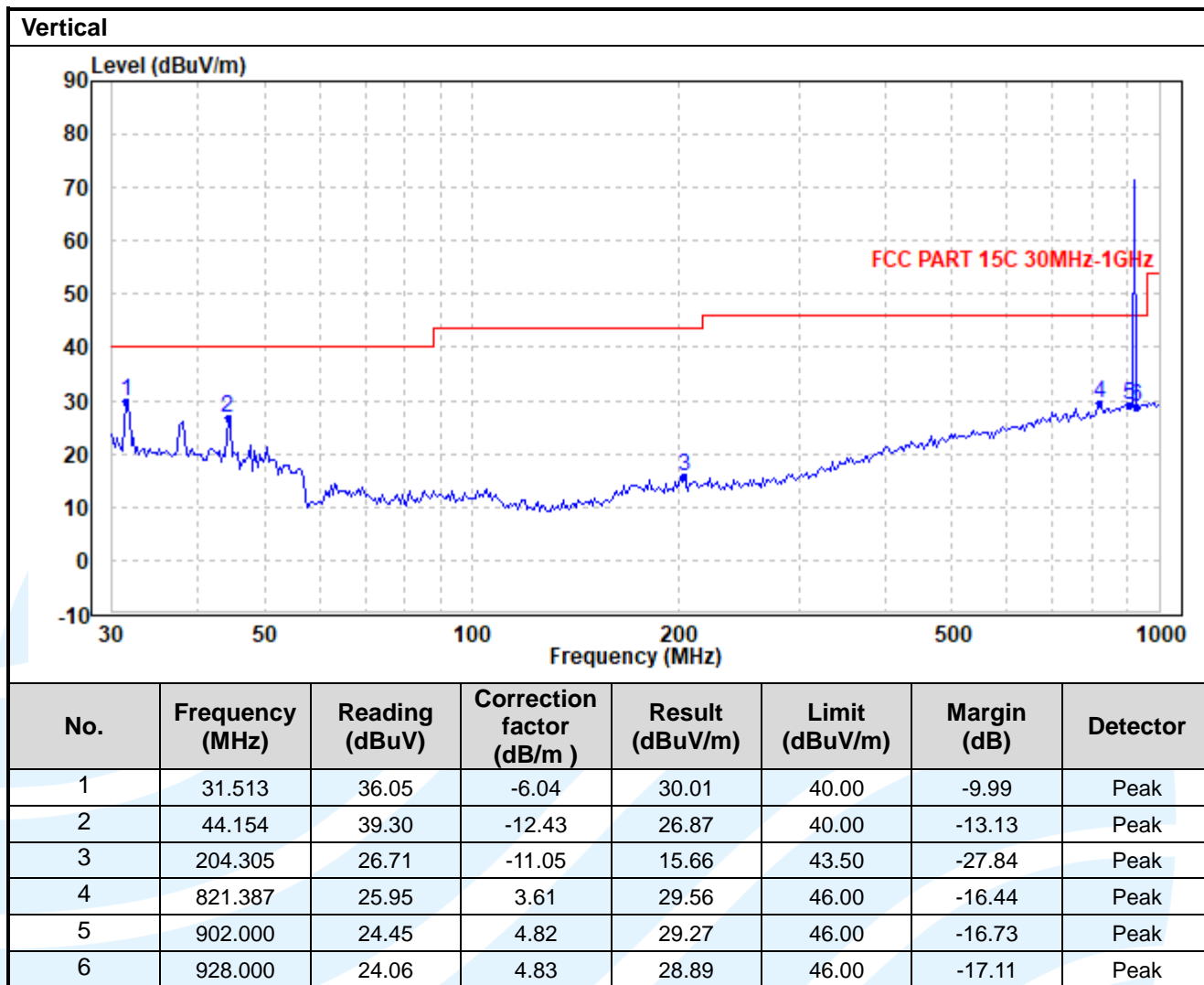
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Radiated Emission Test Data (Above 1 GHz):							
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Horizontal							
1	1830.55	46.95	-10.79	36.16	74.00	-37.84	Peak
2	1830.55	--	--	12.92	54.00	-41.08	AVG
3	2745.825	45.02	-7.19	37.83	74.00	-36.17	Peak
4	2745.825	--	--	14.59	54.00	-39.41	AVG
Vertical							
1	1830.55	47.34	-10.79	36.55	74.00	-37.45	Peak
2	1830.55	--	--	13.31	54.00	-40.69	AVG
3	2745.825	46.15	-7.19	38.96	74.00	-35.04	Peak
4	2745.825	--	--	15.72	54.00	-38.28	AVG

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5.4 RESTRICTED BANDS AROUND FUNDAMENTAL FREQUENCY

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.249(a)
RSS-210 Issue 11, Annex B.10

Test Method: ANSI C63.10-2013

Limits:

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Frequency	Limit (dBμV/m @3m)	Remark
30 MHz-88 MHz	40.0	Quasi-peak Value
88 MHz-216 MHz	43.5	Quasi-peak Value
216 MHz-960 MHz	46.0	Quasi-peak Value
960 MHz-1 GHz	54.0	Quasi-peak Value
Above 1 GHz	54.0	Average Value
	74.0	Peak Value

Test Setup: Refer to section 4.4.1 for details.

Test Procedures:

Radiated band edge measurements at 902 MHz and 928 MHz were made with the unit transmitting in the low end of the channel range and the high end closest to the restricted bands respectively. The emissions were made on the 966 Semi-Chamber. Use (resolution bandwidth (RBW) = 100 kHz, video bandwidth (VBW) = 300 kHz for peak levels.

1. Use radiated spurious emission test procedure described in clause 5.3. The transmitter output (antenna port) was connected to the test receiver.
2. Set the QP limit line.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement data as follows:

Freq. (MHz)	Read Value (dBuV)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	EUT Axis	Detector	Antenna polarization
915.275	69.00	4.92	73.92	94	-20.08	X Axis	Quasi-peak	Vertical
915.275	81.35	4.92	86.27	94	-7.73	X Axis	Quasi-peak	Horizontal

5.5 20DB OCCUPIED BANDWIDTH & OCCUPIED BANDWIDTH

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.215 (c)
RSS-Gen Issue 5, Section 6.7

Test Method: ANSI C63.10-2013

Test Setup: Refer to section 4.4.3 for details.

Limits: N/A

Equipment Used: Refer to section 3 for details.

The measurement procedure shall be as follows:

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Use the following spectrum analyzer settings:

- Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
- RBW \geq 1% of the 20 dB bandwidth
- VBW \geq RBW
- Sweep = auto;
- Detector function = peak
- Trace = max hold
- All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down bandwidth of the emission.

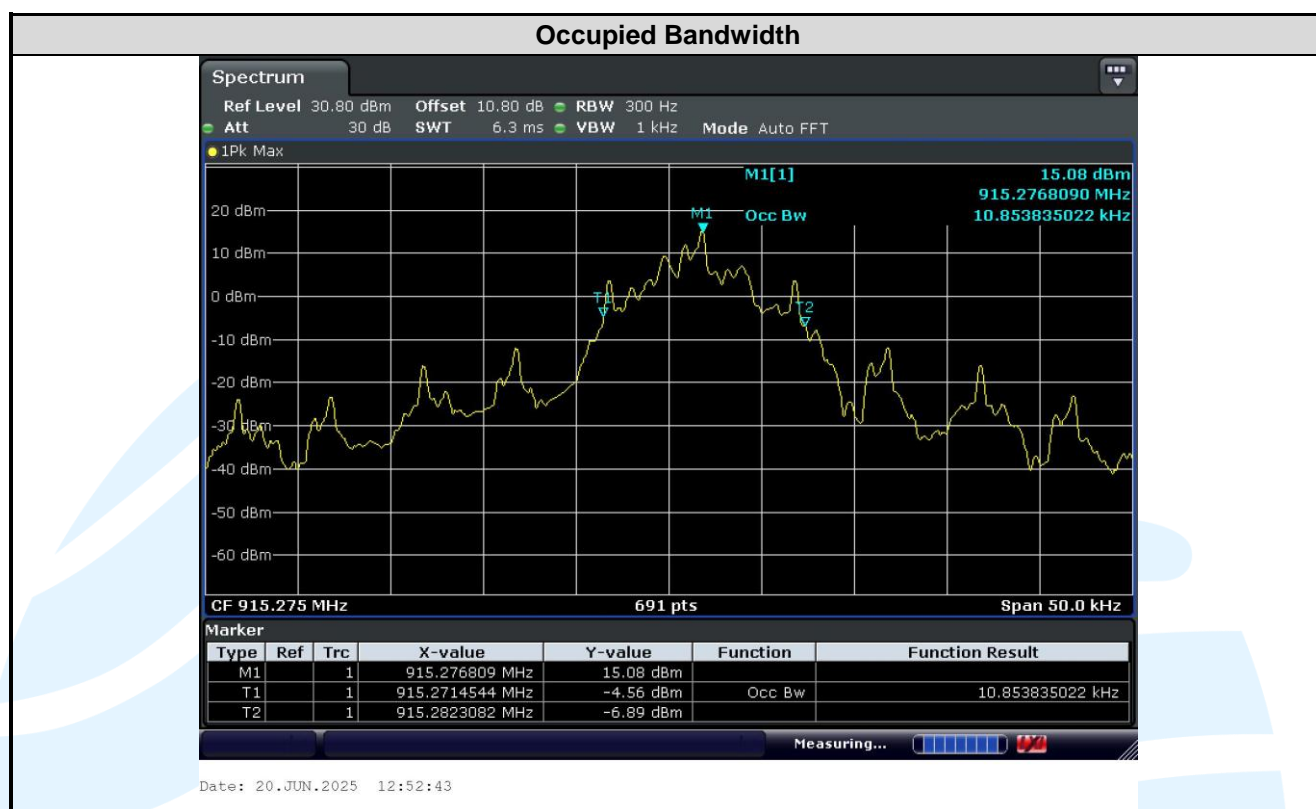
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Result: Pass

The measurement data as follows:

Test Channel	Occupied Bandwidth(kHz)	20 dB Bandwidth (kHz)
915.275 MHz	10.854	10.637

The test plot as follows:



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UTTR-RF-RSS210-V1.1

APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

*** End of Report ***

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.
