



RF MEASUREMENT REPORT

FCC ID: 2AEZB-FQD10815001

Applicant: Forcome(Shanghai) Co.,Ltd.

Product: Remote Wireless

Model No.: 10815001-18

FCC Classification: FCC Part 15 Security/Remote Control Transmitter (DSC)

FCC Rule Part(s): Part 15.231

Result: Complies

Received Date: 2024-08-05

Test Date: 2024-08-23 ~ 2024-08-26

Reviewed By:

Denise Zhou

Approved By:

Robin Wu



The test results relate only to the samples tested.

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

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

Revision History

Report No.	Version	Description	Issue Date	Note
2408RSU007-U1	V01	Initial Report	2024-08-30	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	6
2. Test Configuration	7
2.1. Test Mode	7
2.2. Test System Connection Diagram	7
2.3. Applied Standards	7
2.4. Test Environment Condition	7
3. Antenna Requirements	8
4. Measuring Instrument	9
5. Decision Rules and Measurement Uncertainty	10
5.1. Decision Rules	10
5.2. Measurement Uncertainty	10
6. Test Result	11
6.1. Summary	11
6.2. Conducted Emission	12
6.2.1. Test Limit	12
6.2.2. Test Setup	12
6.2.3. Test Result	12
6.3. Radiated Emissions	13
6.3.1. Test Limit	13
6.3.2. Test Setup	15
6.3.3. Test Results	17
6.4. 20dB Bandwidth	21
6.4.1. Test Limit	21
6.4.2. Test Procedure	21
6.4.3. Test Setting	21
6.4.4. Test Setup	22
6.4.5. Test Result	23
6.5. Transmission Time	24
6.5.1. Test Limit	24

6.5.2. Test Procedure	24
6.5.3. Test Setup	24
6.5.4. Test Result	25
Appendix A - Test Setup Photograph	26
Appendix B - EUT Photograph	27

1.1. Applicant

Building 109, No.255, South Sizhuan Road, Shanghai, 201612, China

Forcome(Shanghai)Co.,Ltd.

Building 109, No.255, South Sizhuan Road, Shanghai, 201612, China

☒	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		
	VCCI:	☐ R-20025	☐ G-20034	☐ C-20020	☐ T-20020
		☐ R-20141	☐ G-20134	☐ C-20103	☐ T-20104
☐	Test Site – MRT Shenzhen Laboratory				
	Laboratory Location (Shenzhen)				
	1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China				
	Laboratory Accreditations				
☐	A2LA: 3628.02		CNAS: L10551		
	FCC: CN1284		ISED: CN0105		
☐	Test Site – MRT Taiwan Laboratory				
	Laboratory Location (Taiwan)				
	No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)				
	Laboratory Accreditations				
☐	TAF: 3261				
	FCC: 291082, TW3261		ISED: TW3261		

1.4. Product Information

Product	Remote Wireless
Model No.	10815001-18
Wireless Specification	315MHz
Antenna Information	Refer to Section 1.5
Voltage Type	DC 12V (Dry Battery)
EUT Identification No.	20240821Sample#02
Note: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification

Frequency Range	315MHz
Type of Modulation	OOK
Antenna Type	PCB Antenna
Max. Antenna Gain	3 dBi

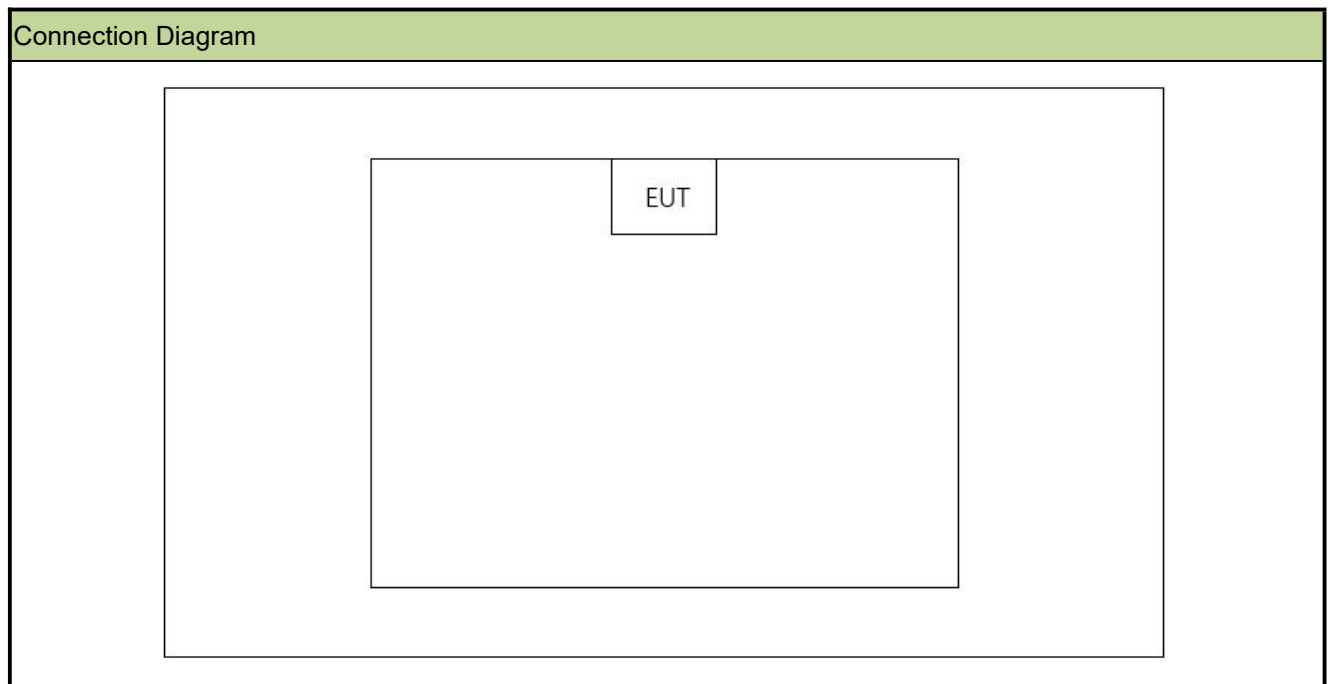
2. Test Configuration

2.1. Test Mode

Mode 1: Transmit at 315MHz

2.2. Test System Connection Diagram

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



2.3. Applied Standards

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

- FCC Part 15.231
- ANSI C63.10-2013

2.4. 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
TRILOG Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2025-04-17	WZ-AC2
EMI Test Receiver	Agilent	N9038A	MRTSUE06125	1 year	2025-05-08	WZ-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06171	1 year	2024-10-11	WZ-AC2
Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2025-05-06	WZ-AC2
Anechoic Chamber	RIKEN	WZ-AC2	MRTSUE06213	1 year	2025-04-18	WZ-AC2
Thermohygrometer	testo	608-H1	MRTSUE11263	1 year	2024-11-07	WZ-AC2
Active Loop Antenna	Schwarzbeck	FMZB 1519-60 D	MRTSUE07076	1 year	2024-12-04	WZ-AC2

Software	Version	Function
e3	230711	RE & CE
Controller_MF 7802	1.02	RE Antenna & Turntable

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: 9kHz~30MHz: 2.61dB

Coplanar: 9kHz~30MHz: 2.62dB

Horizontal: 30MHz~200MHz: 3.79dB

200MHz~1GHz: 3.91dB

1GHz~40GHz: 4.99dB

Vertical: 30MHz~200MHz: 4.06dB

200MHz~1GHz: 5.21dB

1GHz~40GHz: 4.90dB

6. Test Result

6.1. Summary

FCC Part Section(s)	Test Description	Test Condition	Verdict
15.207	AC Conducted Emissions 150kHz - 30MHz	Line Conducted	N/A
15.205,15.231(b)	Radiated Spurious Emissions	Radiated	Pass
15.231(c)	20dB Bandwidth		Pass
15.231(a)	Transmission Time		Pass

Notes:

- 1) For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.
- 2) "N/A" means this item is not applicable, and the details refer to relevant section.

6.2. Conducted Emission

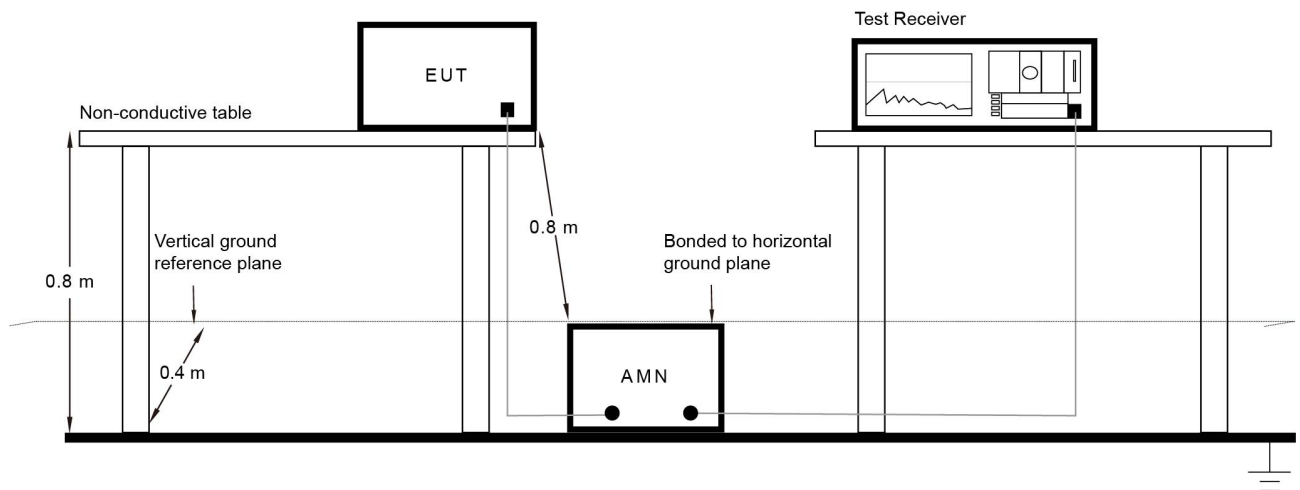
6.2.1. Test Limit

FCC Part 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 0.15MHz to 0.5MHz.

6.2.2. Test Setup



6.2.3. Test Result

The device is powered by internal battery, so this requirement is not applicable.

6.3. Radiated Emissions

6.3.1. Test Limit

According to §15.231(b), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental Frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emission (microvolts/meter)
40.66 - 40.70	2250	225
70 - 130	1250	125
130 - 174	1250 to 3750	125 to 375
174 - 260	3750	375
260 - 470	3750 to 12500	375 to 1250
Above 470	12500	1250

The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements start below or at the lowest crystal frequency.

Compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

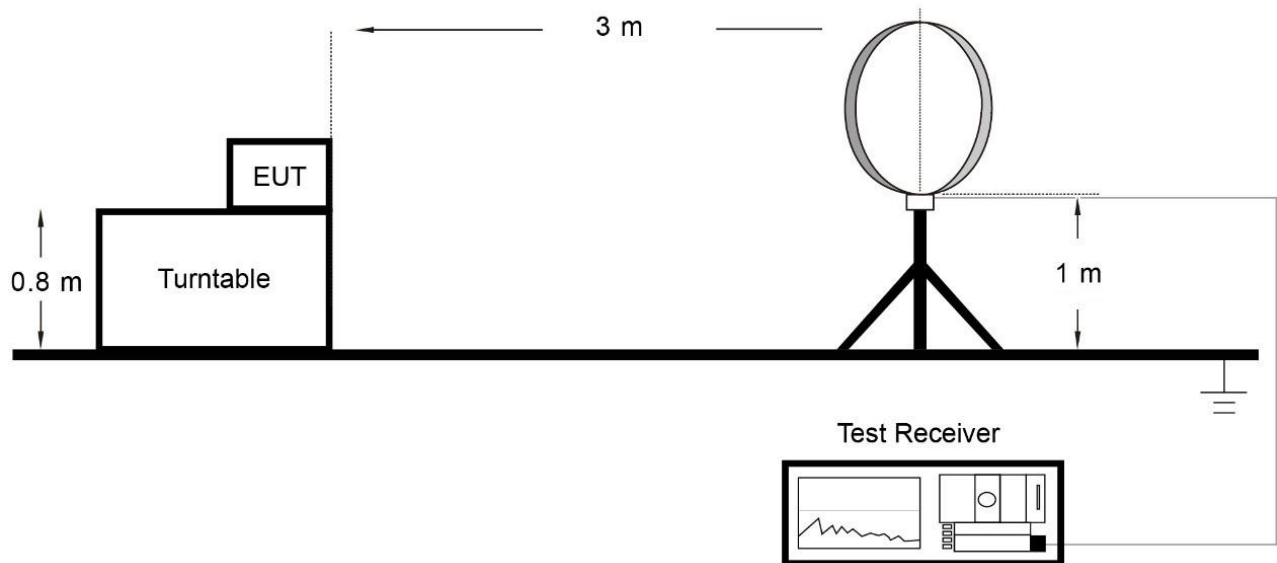
For 15.205 requirement:

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).

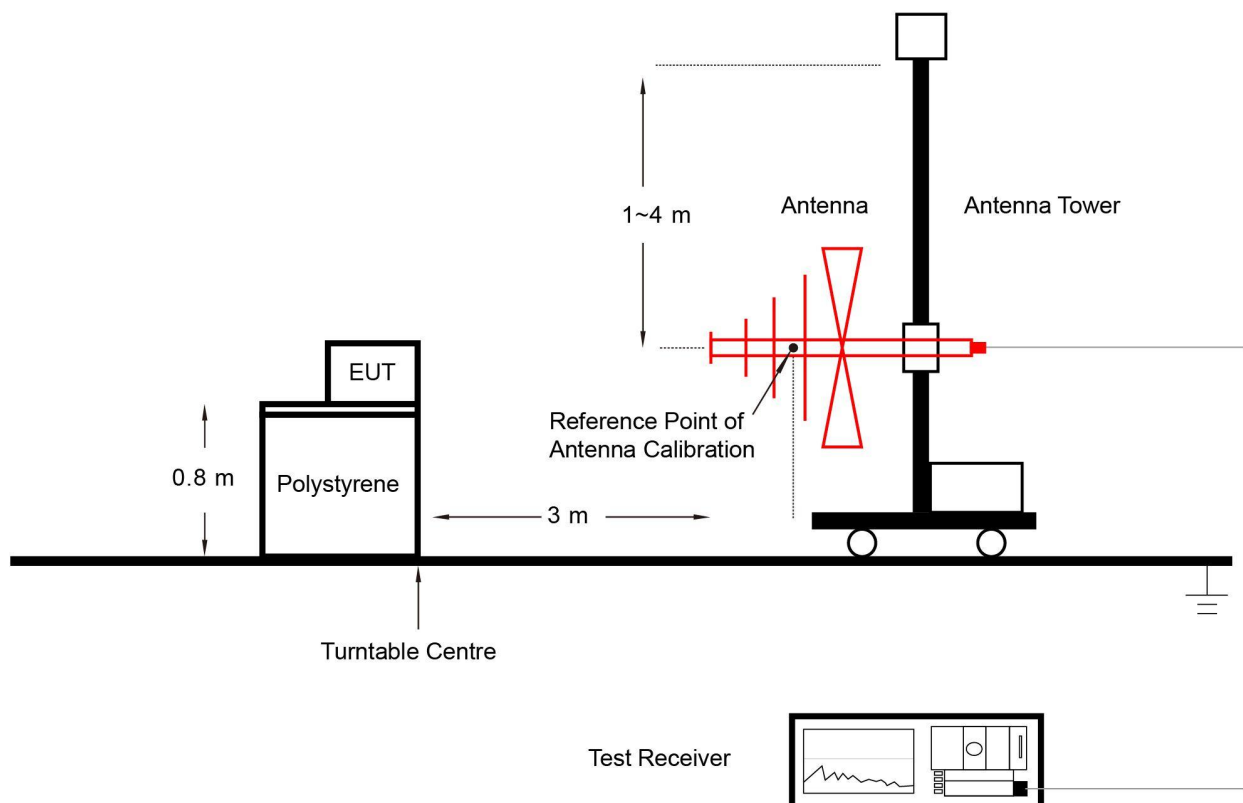
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	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	--	--	--

6.3.2. Test Setup

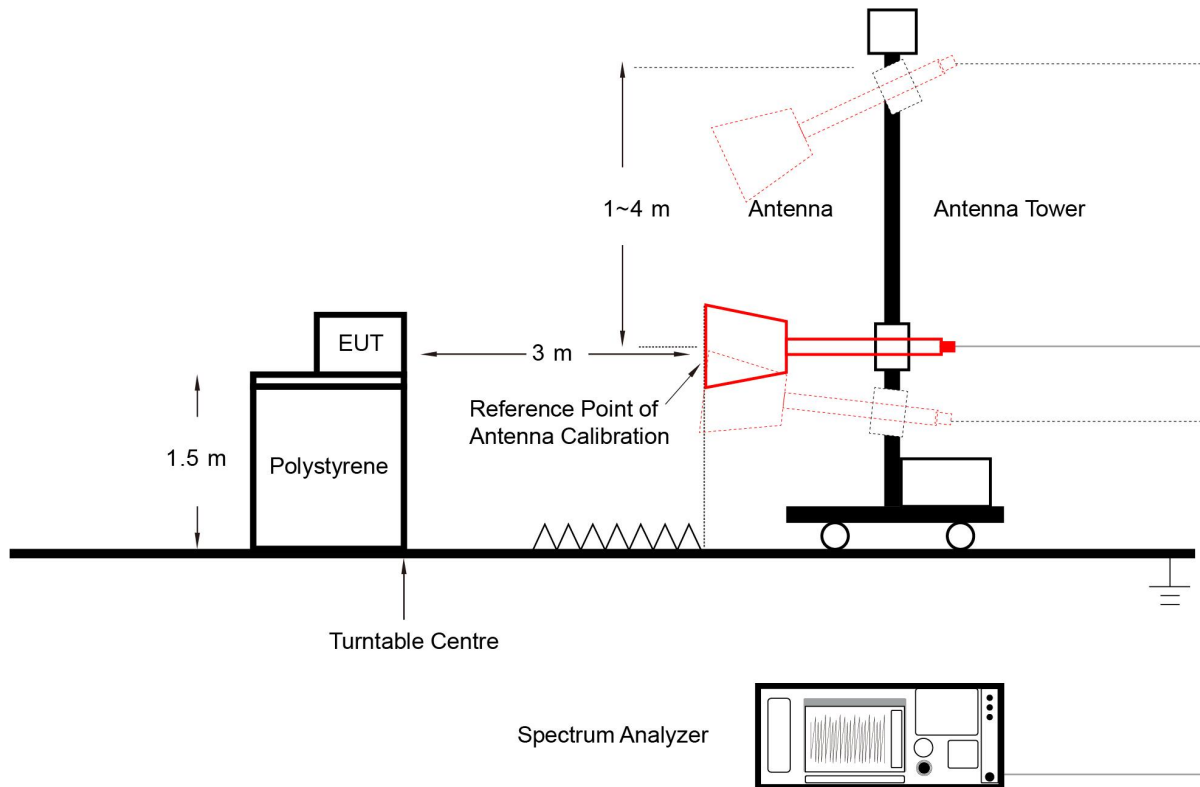
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:

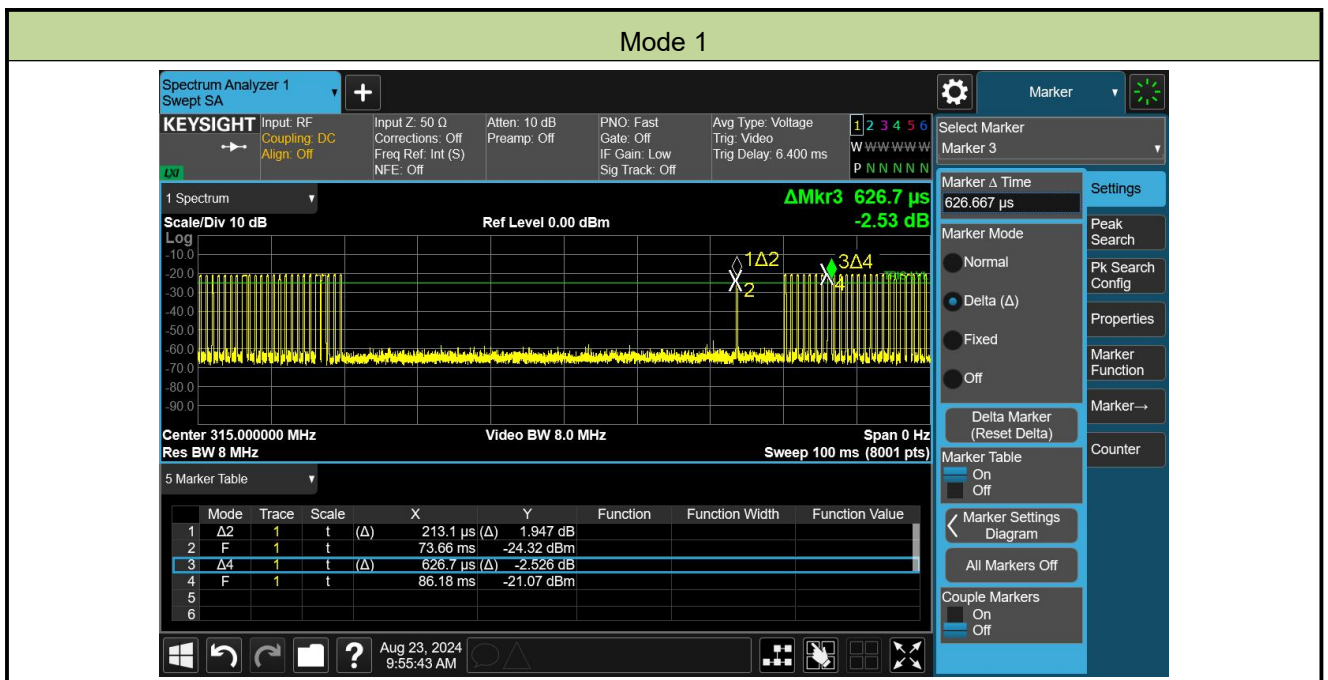


6.3.3. Test Results

Test Site	WZ-AC2	Test Engineer	Dick Shen
Test Date	2024-08-23		

Test Mode	Time On (ms)	One Period (ms)	Duty Cycle (%)	Duty Cycle Factor (dB)
Mode 1	12.9235	100	12.9235	-17.77

Note: Duty Cycle Factor (dB) = $20 \cdot \log_{10}(\text{Duty Cycle})$ (dB).



Note: Time On (ms) = $(\Delta 2 \text{ time } (\mu\text{s}) \cdot 43 + \Delta 4 \text{ time } (\mu\text{s}) \cdot 6) / 1000$.

Test Site	WZ-AC2	Test Engineer	Dick Shen
Test Date	2024-08-23	Remark	Fundamental Radiated Emission

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Duty Cycle Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Mode 1								
315.0	60.63	21.47	N/A	82.10	95.62	-13.52	PK	Horizontal
	60.63	21.47	-17.77	64.33	75.62	-11.29	AV	Horizontal
	47.72	21.47	N/A	69.19	95.62	-26.43	PK	Vertical
	47.72	21.47	-17.77	51.42	75.62	-24.20	AV	Vertical

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

Average Measure Level = Peak Measure Level + Duty Cycle Factor

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Test Site	WZ-AC2	Test Engineer	Dick Shen
Test Date	2024-08-23	Remark	Radiated Spurious Emissions

Above 1GHz:

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Duty Cycle Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Mode 1								
1575.10	66.05	-4.36	N/A	61.69	75.62	-13.93	PK	Horizontal
1575.10	66.05	-4.36	-17.77	43.92	55.62	-11.70	AV	Horizontal
2204.80	70.44	-1.10	N/A	69.34	75.62	-6.28	PK	Horizontal
2204.80	70.44	-1.10	-17.77	51.57	55.62	-4.05	AV	Horizontal
2520.10	62.89	-2.02	N/A	60.87	75.62	-14.75	PK	Horizontal
2520.10	62.89	-2.02	-17.77	43.10	55.62	-12.52	AV	Horizontal
2834.80	67.45	-1.95	N/A	65.50	75.62	-10.12	PK	Horizontal
2834.80	67.45	-1.95	-17.77	47.73	55.62	-7.89	AV	Horizontal
3150.10	60.14	-1.66	N/A	58.48	75.62	-17.14	PK	Horizontal
3150.10	60.14	-1.66	-17.77	40.71	55.62	-14.91	AV	Horizontal
1575.10	63.23	-4.36	N/A	58.87	75.62	-16.75	PK	Vertical
1575.10	63.23	-4.36	-17.77	41.10	55.62	-14.52	AV	Vertical
2205.10	71.15	-1.09	N/A	70.06	75.62	-5.56	PK	Vertical
2205.10	71.15	-1.09	-17.77	52.29	55.62	-3.33	AV	Vertical
2519.80	66.54	-2.02	N/A	64.52	75.62	-11.10	PK	Vertical
2519.80	66.54	-2.02	-17.77	46.75	55.62	-8.87	AV	Vertical
2834.80	59.56	-1.95	N/A	57.61	75.62	-18.01	PK	Vertical
2834.80	59.56	-1.95	-17.77	39.84	55.62	-15.78	AV	Vertical
3464.80	58.02	-0.83	N/A	57.19	75.62	-18.43	PK	Vertical
3464.80	58.02	-0.83	-17.77	39.42	55.62	-16.20	AV	Vertical
Note: Peak Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)								
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)								
Average Measure Level = Peak Measure Level + Duty Cycle Factor								

Test Site	WZ-AC2	Test Engineer	Dick Shen
Test Date	2024-08-23	Remark	Radiated Spurious Emissions

Below 1GHz:

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Duty Cycle Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Mode 1								
629.95	35.63	27.69	0.00	63.32	75.62	-12.30	PK	Horizontal
629.95	35.63	27.69	-17.77	45.55	55.62	-10.07	AV	Horizontal
945.00	25.81	31.92	0.00	57.73	75.62	-17.89	PK	Horizontal
945.00	25.81	31.92	-17.77	39.96	55.62	-15.66	AV	Horizontal
629.95	36.58	27.69	0.00	64.27	75.62	-11.35	PK	Vertical
629.95	36.58	27.69	-17.77	46.50	55.62	-9.12	AV	Vertical
945.00	15.49	31.92	0.00	47.41	75.62	-28.21	PK	Vertical
945.00	15.49	31.92	-17.77	29.64	55.62	-25.98	AV	Vertical
Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)								
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)								
Average Measure Level = Peak Measure Level + Duty Cycle Factor								

6.4. 20dB Bandwidth

6.4.1. Test Limit

According to FCC Part 15.231(c), the bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

6.4.2. Test Procedure

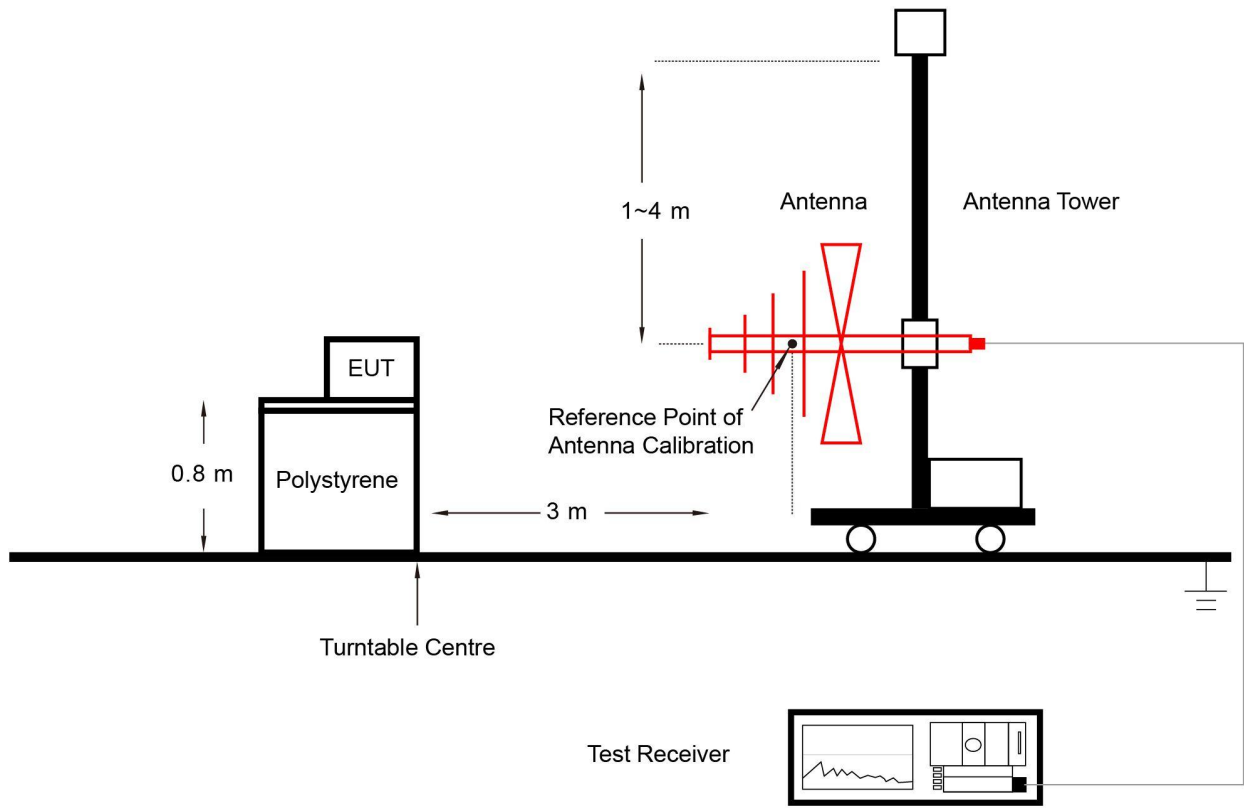
ANSI C63.10-2013 Clause 6.9.2

6.4.3. Test Setting

20dB Bandwidth:

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 20dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 20$. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set the spectrum span shall be between 2 times and 5 times the OBW
3. Set RBW = 1% to 5% of the OBW
4. $VBW \geq 3 \times RBW$
5. Detector = Peak
6. Trace mode = Max hold
7. Sweep = Auto couple

6.4.4. Test Setup

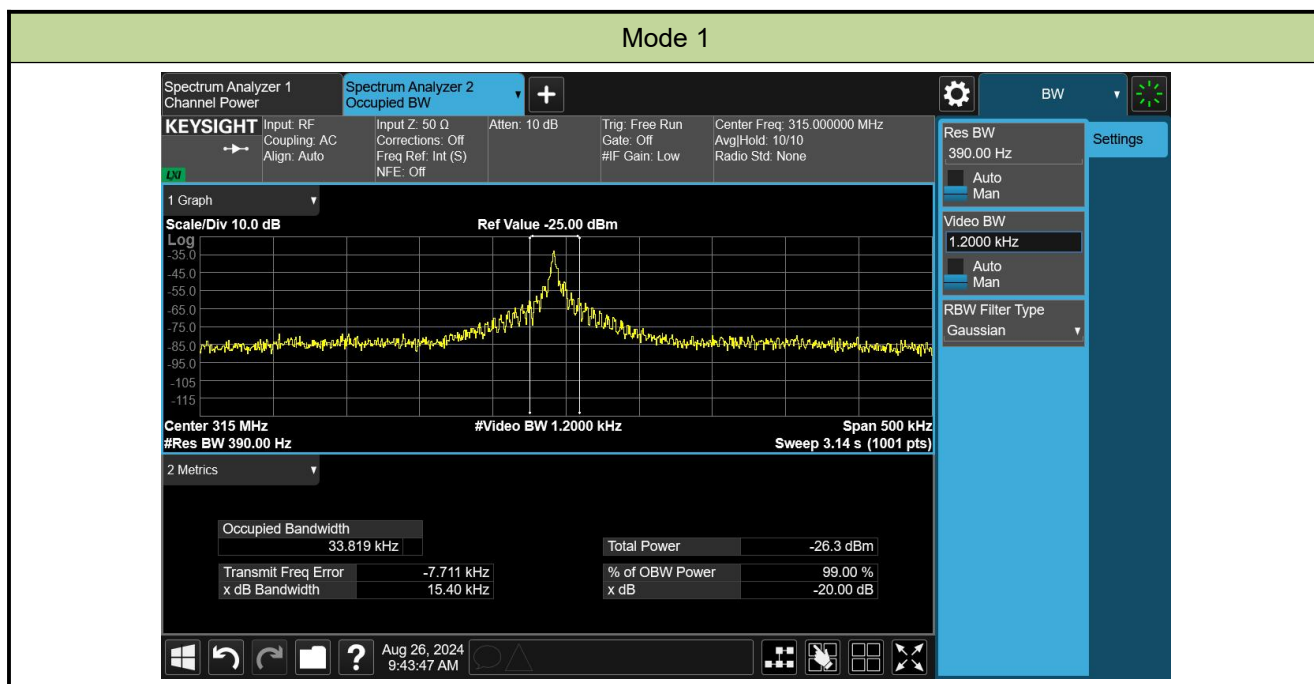


6.4.5. Test Result

Test Site	WZ-AC2	Test Engineer	Dick Shen
Test Date	2024-08-26		

Test Mode	20dB Bandwidth (kHz)	Limit (kHz)	Result
Mode 1	15.40	≤ 787.5	Pass

Note: Limit = Fundamental Frequency * 0.25% = 315MHz * 0.25% = 787.5 kHz



6.5. Transmission Time

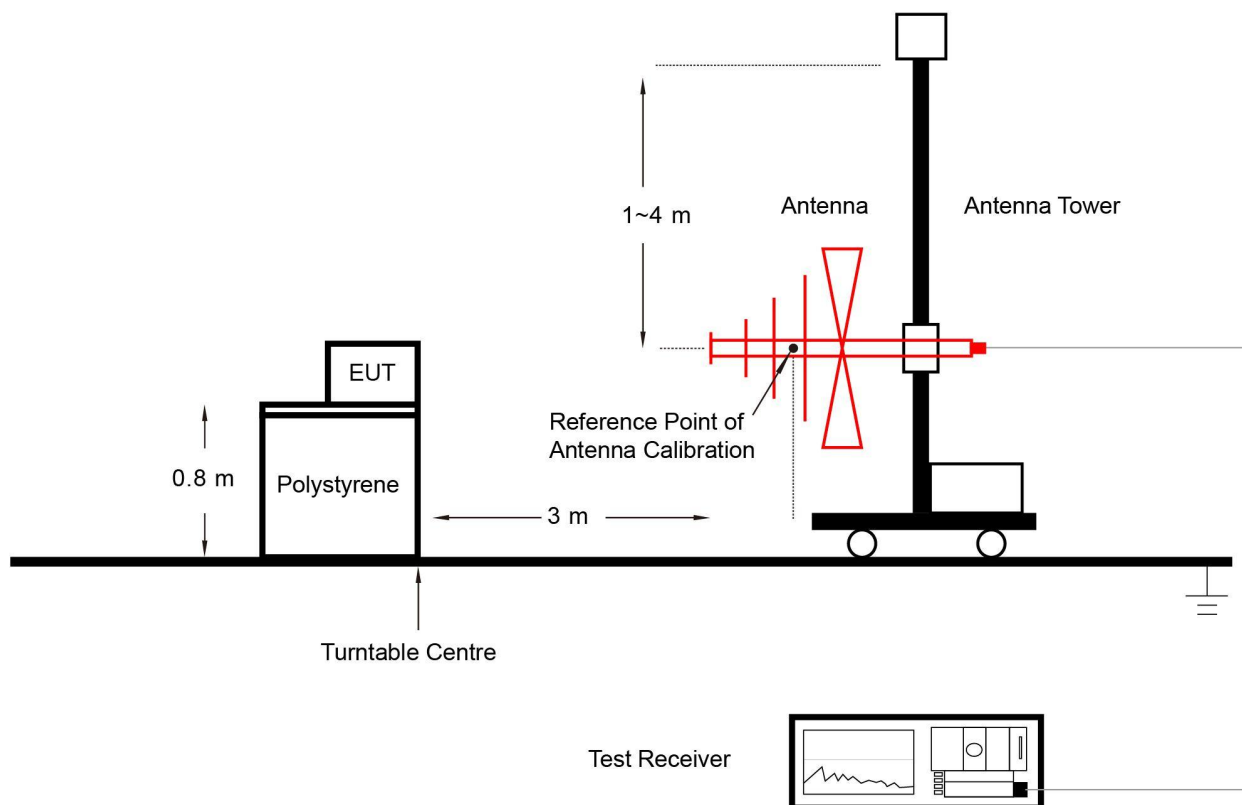
6.5.1. Test Limit

According to FCC 15.231(a), a manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

6.5.2. Test Procedure

With the EUT's antenna attached, the EUT's output signal was received by the test antenna, which was connected to the spectrum analyzer. Set the center frequency to fundamental frequency, then set the spectrum analyzer to Zero Span for the release time reading. During the testing, the switch was released then the EUT automatically deactivated.

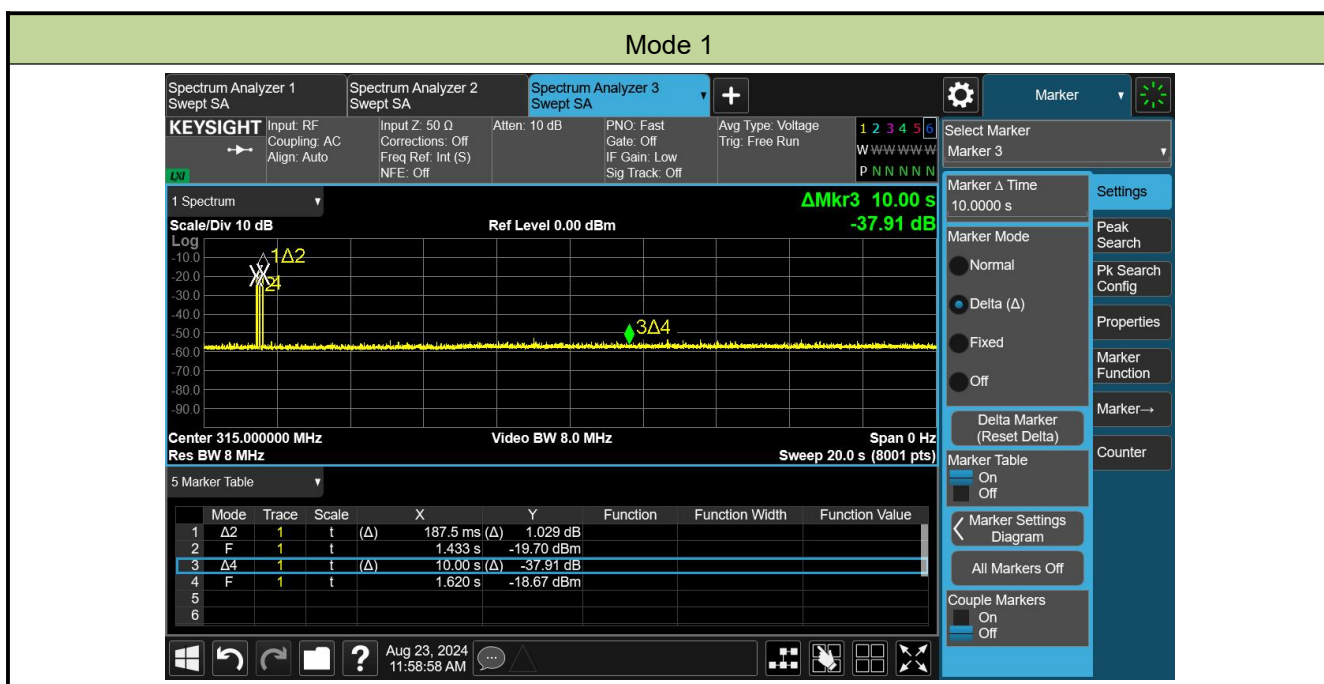
6.5.3. Test Setup



6.5.4. Test Result

Test Site	WZ-AC2	Test Engineer	Dick Shen
Test Date	2024-08-23		

Test Mode	Item	Measured Value	Limit	Result
Mode 1	Transmission Time (T _{on})	187.5 ms	≤ 5 s	Pass



Appendix A - Test Setup Photograph

Refer to “2408RSU007-UT” file.

Appendix B - EUT Photograph

Refer to "2408RSU007-UE" file.