



RF MEASUREMENT REPORT

FCC ID: TTETSB73

Applicant: Suzhou Sate Auto Electronic Co., Ltd.

Product: Tire pressure sensor

Model No.: TSB73

Trade Mark: 

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

FCC Rule Part(s): Part 15.231

Result: Complies

Received Date: 2025-04-10

Test Date: 2025-04-16 ~ 2025-04-22

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
R25S1026048-U201	V01	Initial Report	2025-05-08	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.....	22
6.4.1. Test Limit.....	22
6.4.2. Test Procedure.....	22
6.4.3. Test Setting	22
6.4.4. Test Setup.....	23
6.4.5. Test Result	24
6.5. Transmission Time.....	25
6.5.1. Test Limit.....	25

6.5.2. Test Procedure.....	25
6.5.3. Test Setup.....	25
6.5.4. Test Result	26
Appendix A - Test Setup Photograph	27
Appendix B - EUT Photograph.....	28

1. General Information

1.1. Applicant

Suzhou Sate Auto Electronic Co., Ltd.

No.35-36 Building, Chuangtou Industry Square, Suzhou Industrial Park, Jiangsu Province, P.R.China, 215122

1.2. Manufacturer

Suzhou Sate Auto Electronic Co., Ltd.

No.35-36 Building, Chuangtou Industry Square, Suzhou Industrial Park, Jiangsu Province, P.R.China, 215122

1.3. Testing Facility

☒	Test Site – MRT Suzhou Laboratory
	Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
	Laboratory Location (Suzhou - SIP) 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China
	Laboratory Accreditations
	A2LA: 3628.01 FCC: CN1166 VCCI:
	CNAS: L10551 ISED: CN0001 ☐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 FCC: CN1284
	CNAS: L10551 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: L3261-190725 FCC: 291082, TW3261
	ISED: TW3261

1.4. Product Information

Product Name	Tire pressure sensor
Model No.	TSB73
EUT Identification No.	20250410Sample#05 (for radiated) 20250418Sample#04 (for transmission time)
Wireless Specification	433.92MHz
Antenna Information	Refer to selection 1.5.
Operating Temp.	-40 ~ 120 °C
Power Voltage	3V (2.1-3.6V)
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	433.92MHz
Type of Modulation	ASK
Antenna Type	PCB Antenna
Antenna Gain	0 dBi

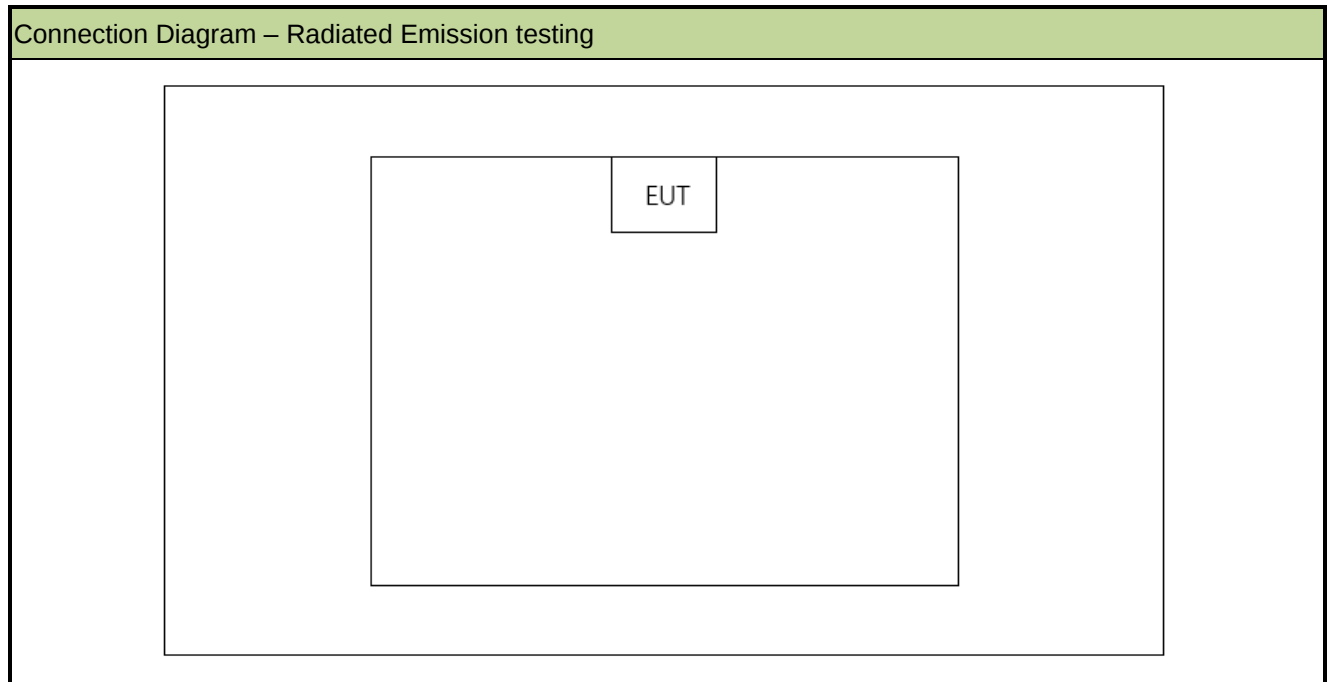
2. Test Configuration

2.1. Test Mode

Mode 1: Transmit at 433.92MHz

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
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2025-12-05	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2025-07-26	WZ-AC1
Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2025-11-08	WZ-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2025-05-15	WZ-AC1
Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2026-04-17	WZ-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2025-10-13	WZ-AC1
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2026-01-04	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE11039	1 year	2025-10-16	WZ-AC1

Software	Version	Function
EMI Software	V3.0.0	EMI Test Software
Controller_MF 7802	2.03C	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 $k = 2$.

Conducted Emission Measurement	
The maximum measurement uncertainty is evaluated as:	
9kHz~150kHz: 3.58dB	
150kHz~30MHz: 3.20dB	
Radiated Emission Measurement	
The maximum measurement uncertainty is evaluated as:	
Coaxial:	9kHz~30MHz: 2.35dB
Coplanar:	9kHz~30MHz: 2.37dB
Horizontal:	30MHz~200MHz: 3.47dB
	200MHz~1GHz: 4.17dB
	1GHz~40GHz: 4.97dB
Vertical:	30MHz~200MHz: 4.07dB
	200MHz~1GHz: 5.28dB
	1GHz~40GHz: 4.84dB

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(e)	Radiated Spurious Emissions	Radiated	Pass
15.231(c)	20dB Bandwidth		Pass
15.231(e)	Transmission Time		Pass

Notes:

- 1) The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
- 2) "N/A" means this item is not applicable, and the details refer to relevant section.

6.2. Conducted Emission

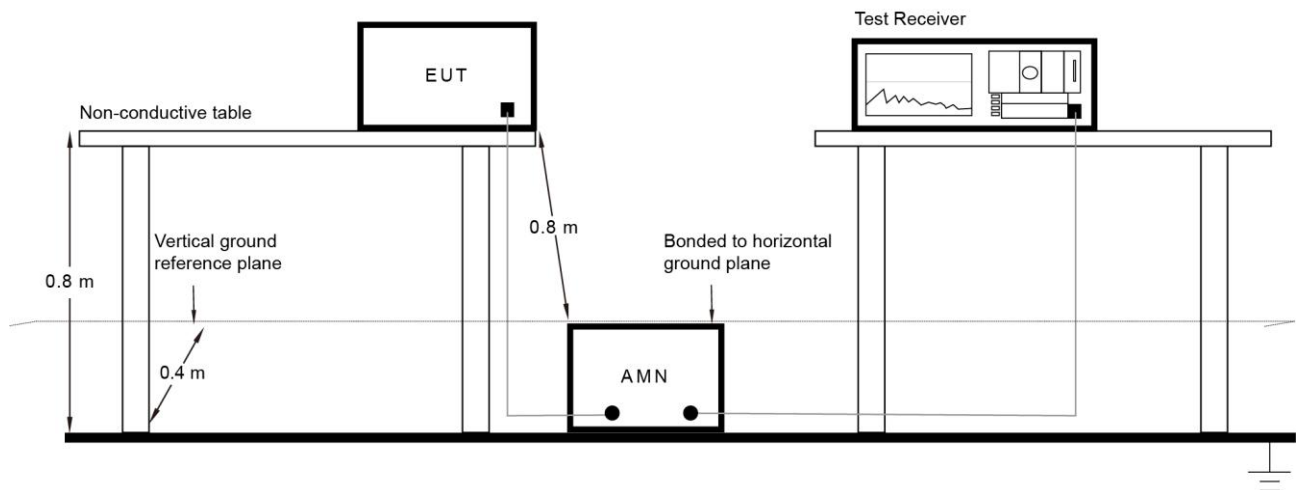
6.2.1. Test Limit

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(e), 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	1000	100
70 - 130	500	50
130 - 174	500 to 1500	50 to 150
174 - 260	1500	150
260 - 470	1500 to 5000	150 to 500
Above 470	5000	500

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.

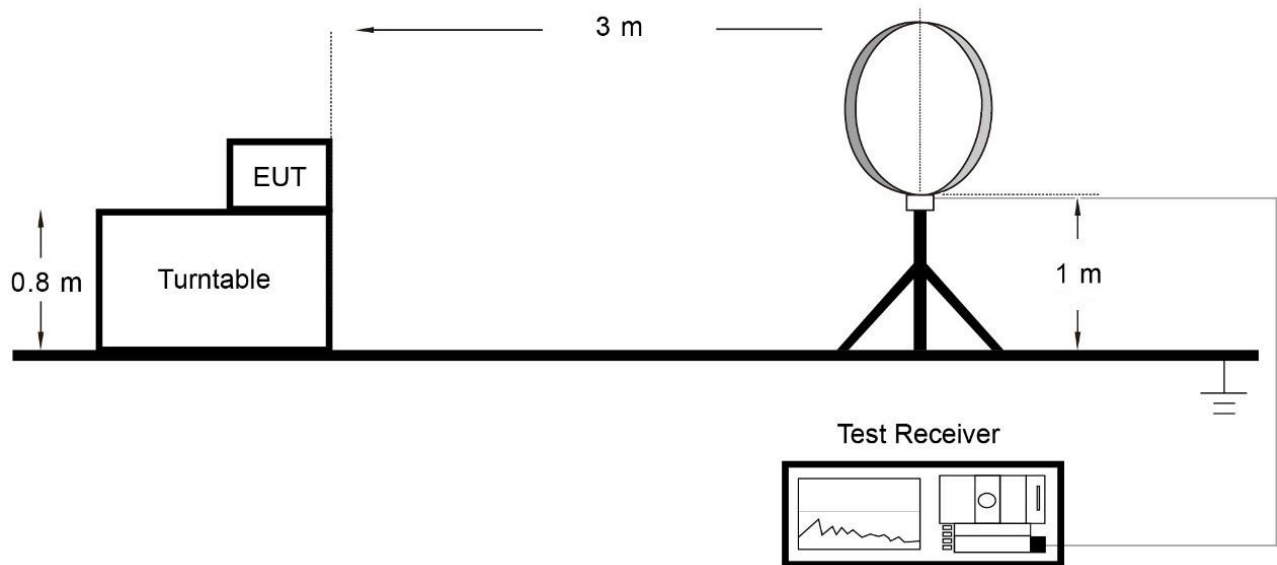
For 15.205 requirement:

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).

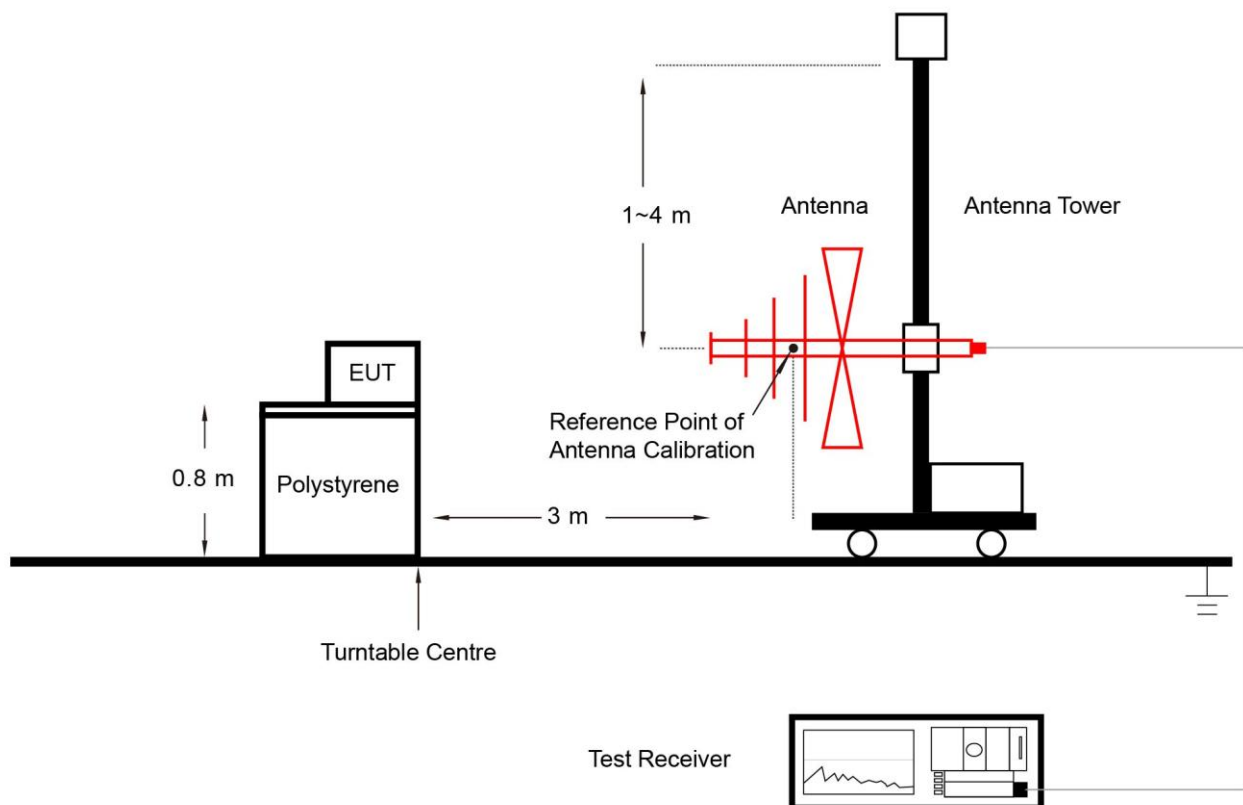
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775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

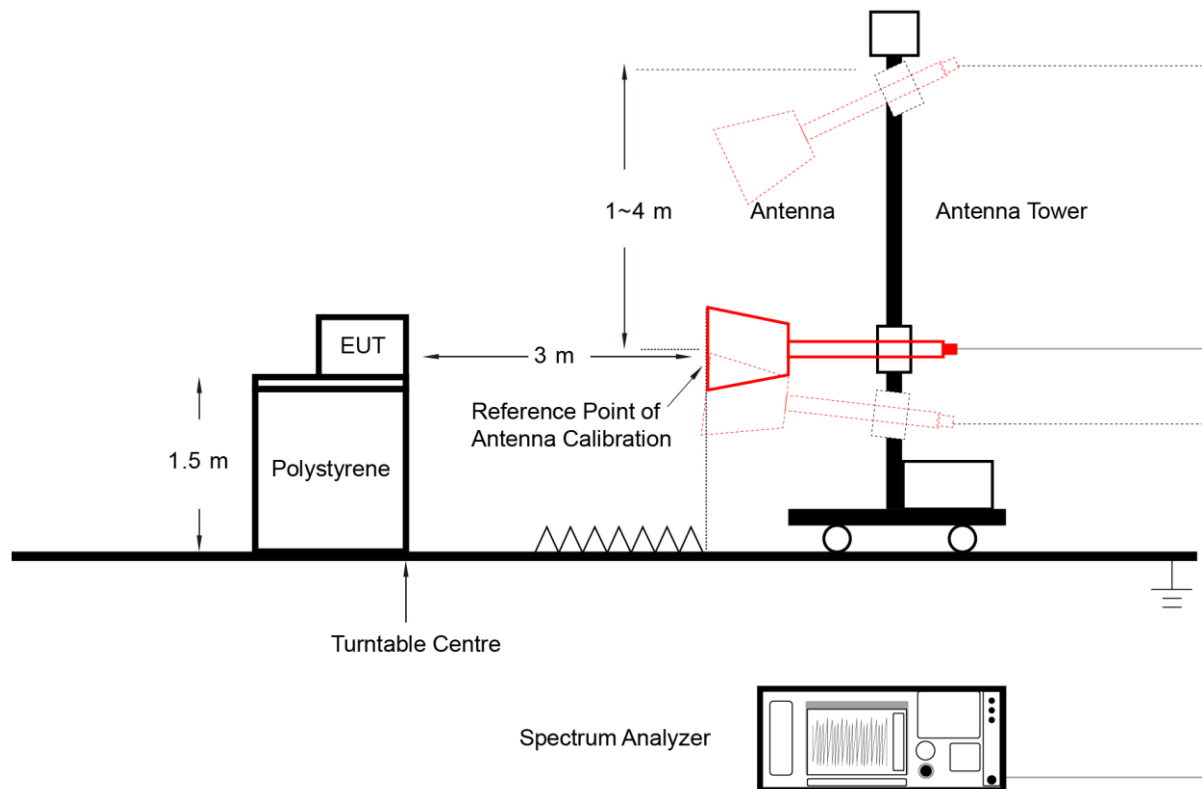
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:

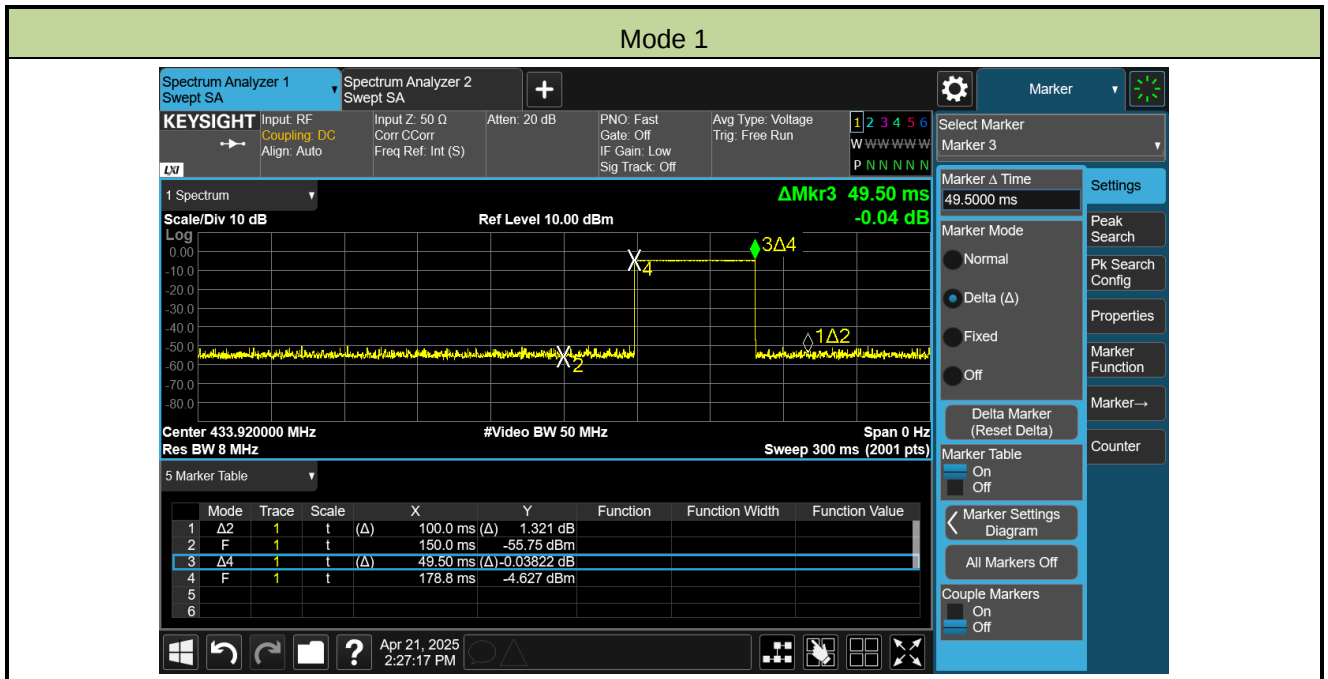


6.3.3. Test Results

Test Site	WZ-AC1	Test Engineer	Lucas Wang
Test Date	2025-04-21		

Test Mode	Time On (ms)	One Period (ms)	Duty Cycle (%)	Duty Cycle Factor (dB)
Mode 1	49.50	100	49.50	-6.11

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



Test Site	WZ-AC1	Test Engineer	Lucas Wang
Test Date	2025-04-22	Remark	Fundamental Radiated Emission

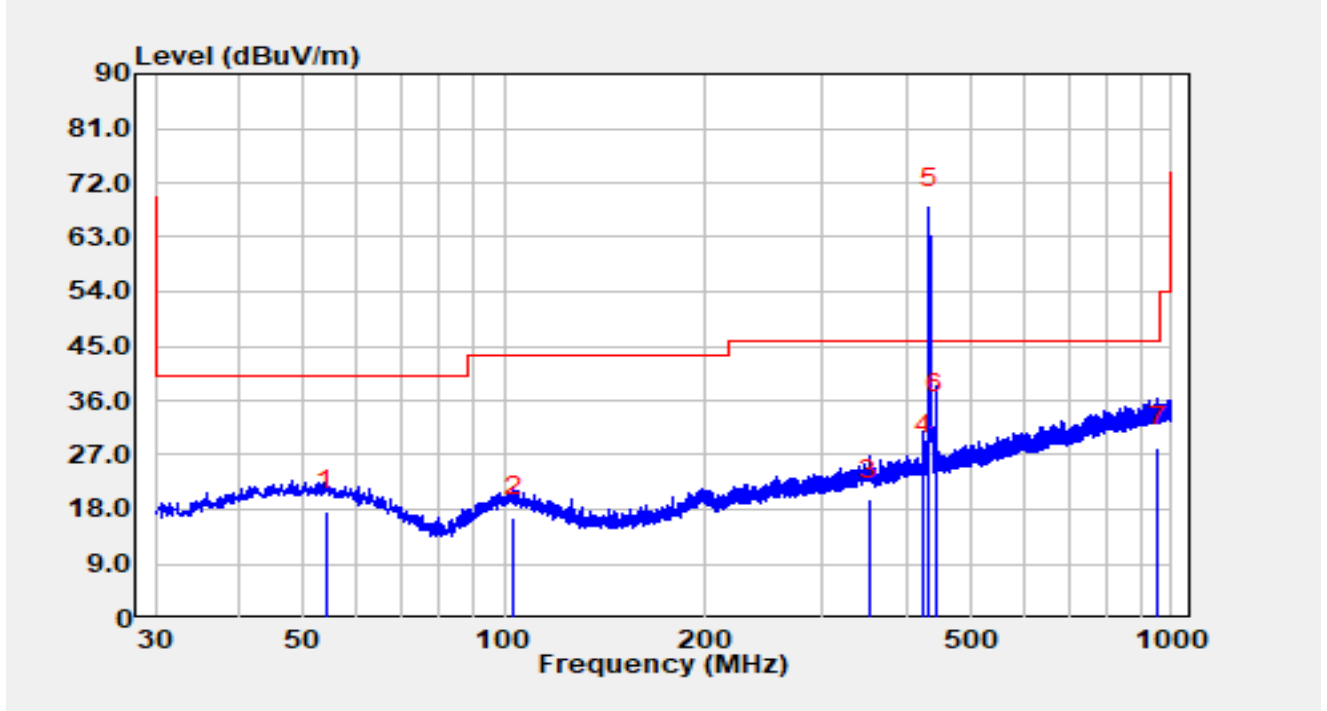
Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Duty Cycle Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Mode 1								
433.92	44.17	23.66	N/A	67.83	92.87	-25.04	Peak	Horizontal
	44.17	23.66	-6.11	61.72	72.87	-11.15	Average	Horizontal
	48.26	23.66	N/A	71.91	92.87	-20.96	Peak	Vertical
	48.26	23.66	-6.11	65.81	72.87	-7.06	Average	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-AC1	Test Engineer	Lucas Wang
Test Date	2025-04-22	Remark	Radiated Spurious Emissions

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								
1554.80	42.66	-6.17	N/A	36.49	74.00	-37.51	Peak	Horizontal
1554.80	42.66	-6.17	-6.11	30.38	54.00	-23.62	Average	Horizontal
1901.20	48.68	-4.76	N/A	43.92	72.87	-28.95	Peak	Horizontal
1901.20	48.68	-4.76	-6.11	37.81	52.87	-15.06	Average	Horizontal
2603.60	56.74	-2.34	N/A	54.40	72.87	-18.47	Peak	Horizontal
2603.60	56.74	-2.34	-6.11	48.29	52.87	-4.58	Average	Horizontal
3037.20	57.78	-0.71	N/A	57.07	72.87	-15.80	Peak	Horizontal
3037.20	57.78	-0.71	-6.11	50.96	52.87	-1.91	Average	Horizontal
4000.80	37.52	1.46	N/A	38.98	74.00	-35.02	Peak	Horizontal
4000.80	37.52	1.46	-6.11	32.87	54.00	-21.13	Average	Horizontal
4806.80	37.78	3.39	N/A	41.17	74.00	-32.83	Peak	Horizontal
4806.80	37.78	3.39	-6.11	35.06	54.00	-18.94	Average	Horizontal
1683.60	42.91	-5.78	N/A	37.13	74.00	-36.87	Peak	Vertical
1683.60	42.91	-5.78	-6.11	31.02	54.00	-22.98	Average	Vertical
1890.00	48.82	-4.83	N/A	43.99	72.87	-28.88	Peak	Vertical
1890.00	48.82	-4.83	-6.11	37.88	52.87	-14.99	Average	Vertical
2022.00	48.80	-3.89	N/A	44.91	72.87	-27.96	Peak	Vertical
2022.00	48.80	-3.89	-6.11	38.80	52.87	-14.07	Average	Vertical
3037.60	44.56	-0.71	N/A	43.86	72.87	-29.01	Peak	Vertical
3037.60	44.56	-0.71	-6.11	37.74	52.87	-15.13	Average	Vertical
4104.80	38.29	1.71	N/A	39.99	74.00	-34.01	Peak	Vertical
4104.80	38.29	1.71	-6.11	33.89	54.00	-20.11	Average	Vertical
4794.40	37.33	3.33	N/A	40.66	74.00	-33.34	Peak	Vertical
4794.40	37.33	3.33	-6.11	34.55	54.00	-19.45	Average	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								

The Result of Radiated Emission below 1GHz:

Site	WZ-AC1	Test Date	2025-04-22
Temperature	25.8 °C	Humidity	46.7 %
Limit	FCC_Part 15.209_RSE (3m)	Test Engineer	Lucas Wang
Factor	VULB 9162_00047	Polarity	Horizontal
EUT	Tire pressure sensor	Test Voltage	By Battery
Test Mode	Mode 1		

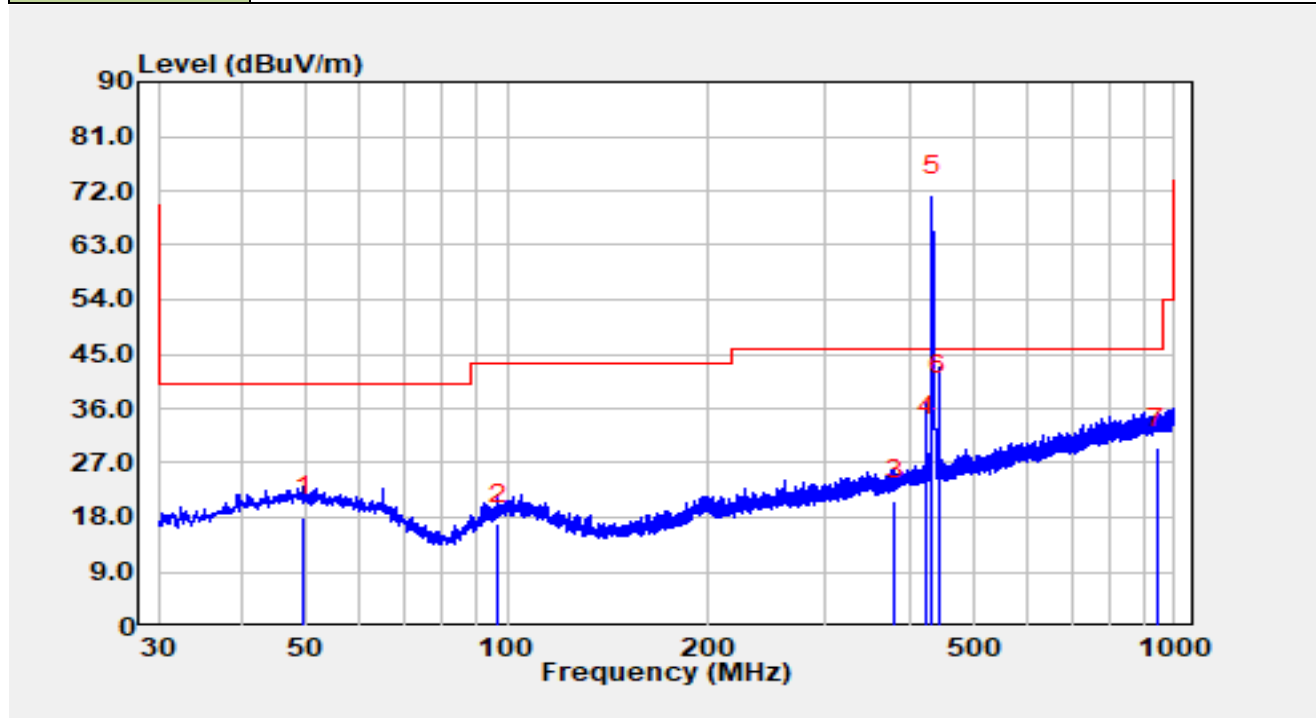


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		54.06	-2.44	20.21	17.77	-22.23	40.00	QP
2		103.43	-2.01	18.72	16.71	-26.79	43.50	QP
3		352.91	-3.03	22.69	19.67	-26.33	46.00	QP
4		425.28	3.60	23.57	27.17	-18.83	46.00	QP
5		434.01	44.19	23.66	67.85	N/A	N/A	QP
6	*	442.54	10.10	23.84	33.94	-12.06	46.00	QP
7		954.90	-3.07	31.40	28.34	-17.66	46.00	QP

Notes:

1. " * ", means this data is the worst emission level.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).
4. Point (5) is the fundamental frequency.
5. The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Site	WZ-AC1	Test Date	2025-04-22
Temperature	25.8 °C	Humidity	46.7 %
Limit	FCC_Part 15.209_RSE (3m)	Test Engineer	Lucas Wang
Factor	VULB 9162_00047	Polarity	Vertical
EUT	Tire pressure sensor	Test Voltage	By Battery
Test Mode	Mode 1		



No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		49.50	-2.34	20.45	18.12	-21.88	40.00	QP
2		97.03	-1.42	18.25	16.82	-26.68	43.50	QP
3		380.75	-1.96	22.73	20.77	-25.23	46.00	QP
4		425.28	7.90	23.57	31.47	-14.53	46.00	QP
5		433.91	47.39	23.66	71.05	N/A	N/A	QP
6	*	442.58	14.30	23.84	38.14	-7.86	46.00	QP
7		940.93	-2.12	31.54	29.42	-16.58	46.00	QP

Notes:

1. " * ", means this data is the worst emission level.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).
4. Point (5) is the fundamental frequency.
5. The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

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

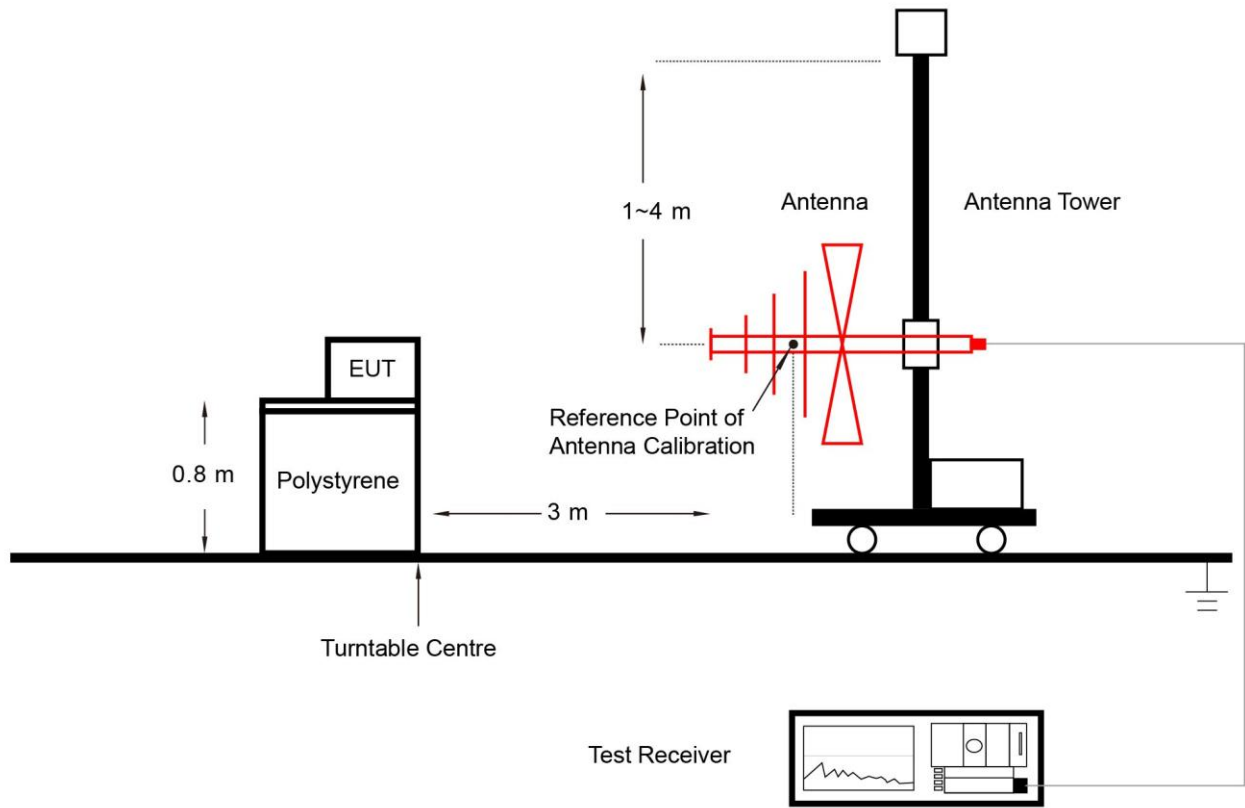
ANSI C63.10-2013 Clause 6.9.2

6.4.3. Test Setting

20dB Bandwidth:

1. Set the spectrum span shall be between 2 times and 5 times the OBW
2. Set RBW = 1% to 5% of the OBW
3. $VBW \geq 3 \times RBW$
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple

6.4.4. Test Setup

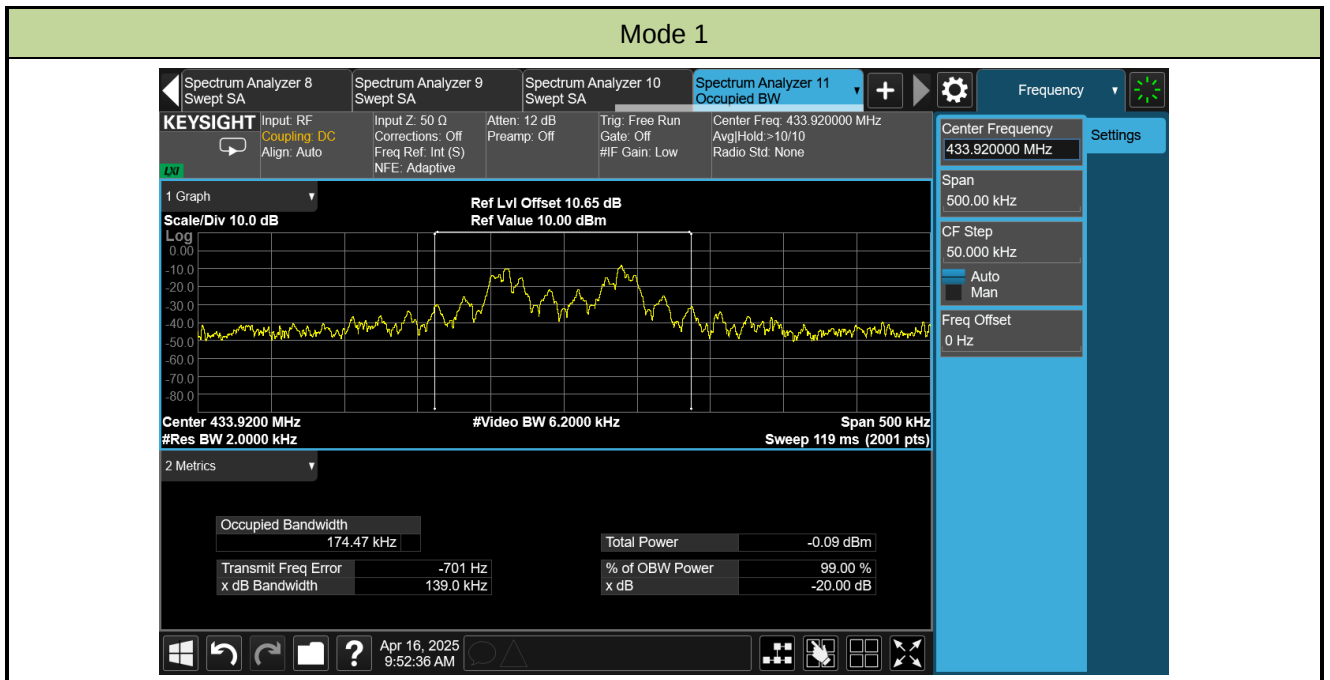


6.4.5. Test Result

Test Site	WZ-AC1	Test Engineer	Lucas Wang
Test Date	2025-04-16		

Test Mode	20dB Bandwidth (kHz)	Limit (kHz)	Result
Mode 1	139.0	≤ 1084.8	Pass

Note: Limit = Fundamental Frequency * 0.25% = 433.92MHz * 0.25% = 1084.8 kHz



6.5. Transmission Time

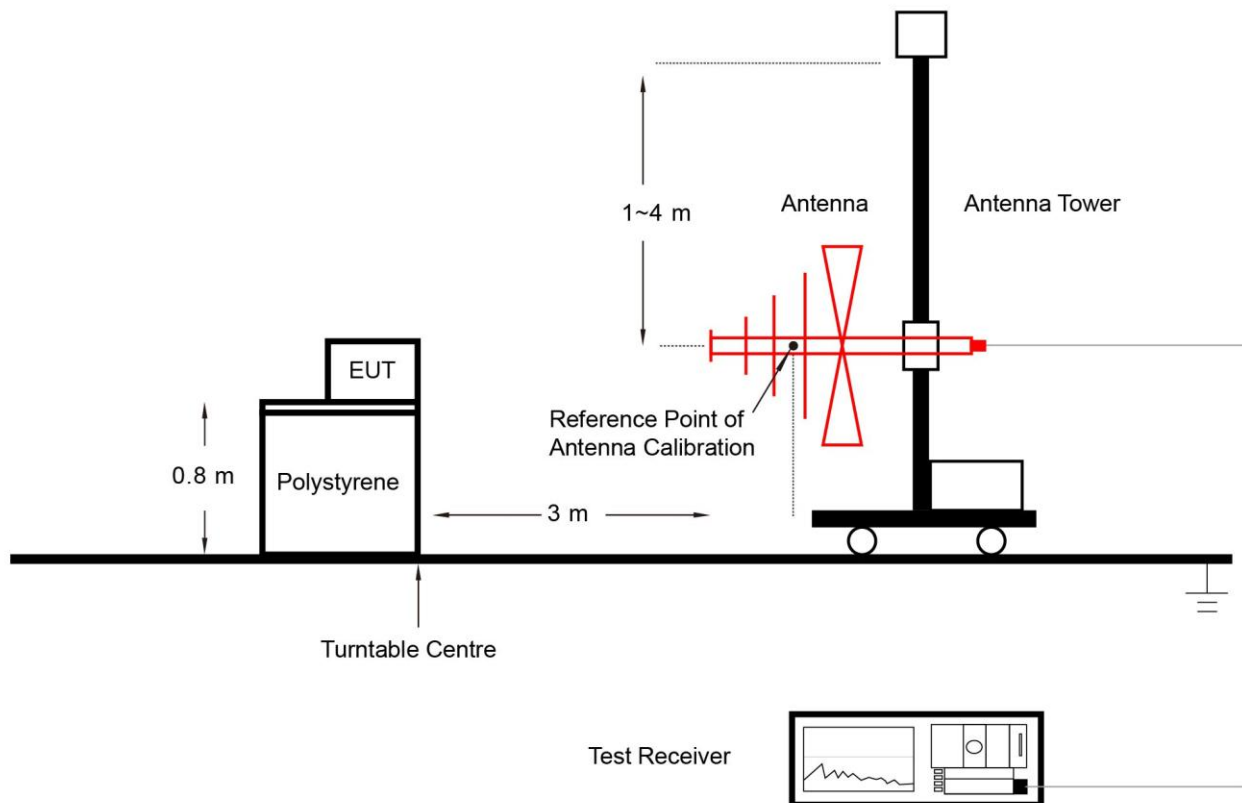
6.5.1. Test Limit

According to FCC 15.231(e), devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

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.

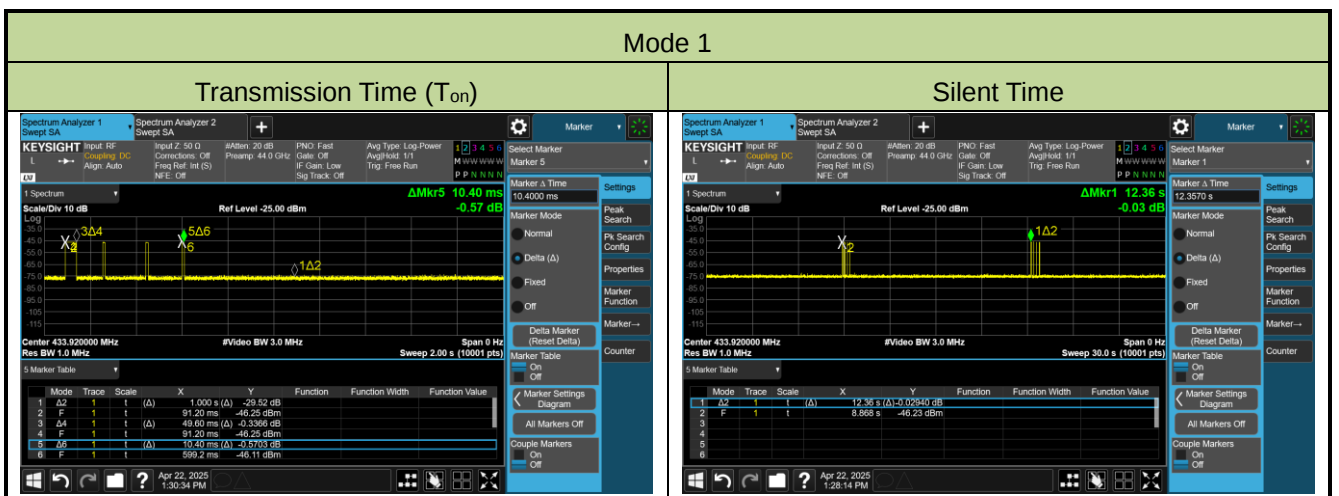
6.5.3. Test Setup



6.5.4. Test Result

Test Site	WZ-AC1	Test Engineer	Lucas Wang
Test Date	2025-04-22		

Test Mode	Item	Measured Value	Limit	Result
Mode 1	Transmission Time (T_{on})	80.8 ms	≤ 1 s	Pass
	Silent Time	12.36 s	≥ 10 s	Pass
	Silent Time/Transmission Time	152.97	≥ 30 times	Pass



Appendix A - Test Setup Photograph

Refer to "R25S1026048-UT" file.

Appendix B - EUT Photograph

Refer to "R25S1026048-UE" file.