

FCC TEST REPORT

Report No.....: AB25120393FW01

FCC ID.....: **2BSS9-HP008**

Applicant.....: Hangzhou Chenzezhian Maoyiyouxiangongsi

Address.....: Room 443 Building 3, NO.5 Lvtai Road, Zhongtai Street, Yuhang District, Hangzhou

Manufacturer.....: Hangzhou Chenzezhian Maoyiyouxiangongsi

Address.....: Room 443 Building 3, NO.5 Lvtai Road, Zhongtai Street, Yuhang District, Hangzhou

Product Name.....: Wireless Vehicle Exit Wand Sensor

Trade Mark.....: Haupowfo

Test Model.....: HP008

Additional Model(s).....: /

Standard.....: FCC 47 CFR Part 15 Subpart C (Part 15.231)

Date of Receipt.....: 2025.12.30

Date of Test Date.....: 2025.12.30-2026.01.16

Date of Issue.....: 2026.01.16

Test Result.....: Pass

Compiled by:
(Printed Name + Signature) Huaijie Li *Huaijie Li*

Supervised by:
(Printed Name + Signature) David Huang *David Huang*

Approved by:
(Printed Name + Signature) Jay Liu *Jay Liu*

Testing Laboratory Name.....: Aibo Standard Technology (Shenzhen) Co., Ltd.

Address.....: 101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China

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FCC TEST REPORT

EUT.....	: Wireless Vehicle Exit Wand Sensor
Test Model.....	: HP008
Applicant.....	: Hangzhou Chenzezhian Maoyiyouxiangongsi
Address.....	: Room 443 Building 3, NO.5 Lvtai Road, Zhongtai Street, Yuhang District, Hangzhou
Manufacturer.....	: Hangzhou Chenzezhian Maoyiyouxiangongsi
Address.....	: Room 443 Building 3, NO.5 Lvtai Road, Zhongtai Street, Yuhang District, Hangzhou

Test Result	Positive
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

REPORT VERSION

Version No.	Issue Date	Description
01	2026.01.16	Initial Issue

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1. GENERAL INFORMATION

1.1. GENERAL DESCRIPTION OF EUT

Product Name:	Wireless Vehicle Exit Wand Sensor
Trade Mark:	Haupowfo
Test Model:	HP008
Additional Model(s):	/
Model Difference:	/
Hardware Version:	/
Software Version:	/
Battery:	DC 4.5V Powered By Battery(2600mAh)
Test Sample(s) Number:	AB25120393-01 (Engineer Sample)
Radio Specification Subject to this Report	
Operating Frequency:	433.92MHz
Modulation Type:	ASK
Channel Number(s):	1
Antenna Type:	Integral Antenna
Antenna Gain:	3 dBi

Note:1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.

2. The antenna information refers to the manufacturer provide report, applicable only to the tested sample identified in the report. Due to the incorrect antenna information, a series of problems such as the accuracy of the test results will be borne by the customer.

1.2. DESCRIPTION OF SUPPORT EQUIPMENT

Description	Manufacturer	Model	Serial Number	Supplied by
\	\	\	\	\

1.3. DESCRIPTION OF EXTERNAL I/O

I/O Port Description	Quantity	Cable
\	\	\

1.4. GENERAL DESCRIPTION OF APPLIED STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15.231](#)

[IEEE/ANSI/USEMCSC C63.10-2020](#)

1.5. DESCRIPTION OF TEST FACILITY

Test Lab: Aibo Standard Technology (Shenzhen) Co., Ltd.

Address: 101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China

Tel.: +(86) 755 85250797

E-mail: aibo@aibonorm.com

Website: www.aibonorm.com

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

A2LA-Lab Certificate No.: 7514.01

Aibo Standard Technology (Shenzhen) 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 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: CN1411

Test Firm Registration Number: 567066

ISED Wireless Device Testing Laboratories

CAB identifier: CN0185

Company Number: 33924

1.6. MEASUREMENT UNCERTAINTY

The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Items	Measurement Uncertainty
Power Line Conducted Emission (9kHz~150kHz)	±3.62dB
Power Line Conducted Emission (150kHz~30MHz)	±3.38dB
Radiated Emission (9kHz~30MHz)	±3.10dB
Radiated Emission (30MHz~1GHz)	±4.90dB
Radiated Emission (1GHz~18GHz)	±3.88dB
Radiated Emission (8GHz~40GHz)	±5.32dB
RF Conducted Power	±0.57dB
Conducted Spurious Emissions	±1.60dB
RF Frequency	±6.0 x 10 ⁻⁷

Note: All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

1.7. ENVIRONMENTAL CONDITIONS

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	+15°C ~ +35°C
Lative Humidity	20 % ~ 75 %
Air Pressure	98KPa ~ 101KPa

1.8. DESCRIPTION OF TEST MODES

The EUT emits signals by pressing the buttons. When the button is pressed, the signal is emitted; when the button is released, the signal is turned off. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on Y plane for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

FREQUENCY	TEST MODES
433.92MHz	Transmitting

2. SUMMARY OF TEST RESULT

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.231)				
FCC Rule	Description of Test Item(s)	Result	REMARK	Test Engineer
Part 15.203	Antenna Requirement	PASS	No antenna connector is used	Chen He
§15.207 (a)	AC Power Conducted Emission	N/A	Note	/
§15.209 §15.231(b)	Radiated Emission	PASS	Compliant	Chen He
§15.231 (a)	Deactivation time measurement	PASS	Compliant	Chen He
§15.231(c)	Emission Bandwidth Measurement	PASS	Compliant	Chen He

Note : This product Wireless Vehicle Exit Wand Sensor, model:HP008, is powered by battery. So it is no need to test against it.

3. MEASUREMENT INSTRUMENTS LIST

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
1	Loop Antenna	Schwarzbeck	FMZB 1519	1519-025	02/19/2025	02/18/2026
2	Power Amplifier	HZEMC	HPA-9K0133	HYP A23029	02/19/2025	02/18/2026
3	Broadband Antenna	Schwarzbeck	VULB 9168	01763	02/19/2025	02/18/2026
4	Attenuator	PRM	ATT50-6-3	ATT50-6-3	01/20/2025	01/19/2026
5	Spectrum Analyzer	R&S	FSV40-N	101365	01/20/2025	01/19/2026
6	Horn Antenna	Schwarzbeck	BBHA 9120 D	02786	02/19/2025	02/18/2026
7	Horn Antenna	Schwarzbeck	ZLB7-18-40G-77	072410839	02/19/2025	02/18/2026
8	Power Amplifier	HZEMC	PA0118-43	HYP A23030	02/19/2025	02/18/2026
9	Power Amplifier	HZEMC	PA01840-45	HYP A23031	02/19/2025	02/18/2026
10	EMI Test Receiver	R&S	ESCI	101196	01/20/2025	01/19/2026
11	LISN	R&S	ENV216	102374	01/20/2025	01/19/2026
12	Pulse Limiter	Schwarzbeck	ESH3-Z2	0357.8810.54	01/20/2025	01/19/2026
13	MXA Signal Analyzer	Keysight	N9020A	MY52091389	01/20/2025	01/19/2026
14	Power Sensor	Agilent	U2021XA	MY54110007	01/31/2025	01/30/2026
15	Power Sensor	Agilent	U2021XA	MY54110009	01/31/2025	01/30/2026
16	MXG Vector Signal Generator	Agilent	N5182A	MY47070153	01/20/2025	01/19/2026
17	Analog Signal Source	Keysight	N5173B	MY60403029	01/20/2025	01/19/2026
18	Vector Signal Generator	R&S	SMCV100B	106103	01/20/2025	01/19/2026
19	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	118780	01/20/2025	01/19/2026
20	DC POWER SUPPLY	MAISHENG	MT-305DS	2021040016	02/28/2025	02/27/2026
21	Const Temp. & Humidity Chamber	GRT	GR-HWX-150L	GR25010601	01/20/2025	01/19/2026

Test Software		
Software name	Model	Version
Conducted Emission Measurement Software	FASLAB	V4.1
Radiated Emission Measurement Software	FASLAB	V4.1

4. RADIATED EMISSION MEASUREMENT

4.1. LIMIT OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

According to §15.231(b), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emission (microvolts/meter)
40.66–40.70	2,250	225
70–130	1,250	125
130–174	¹ 1,250 to 3,750	¹ 125 to 375
174–260	3,750	375
260–470	¹ 3,750 to 12,500	¹ 375 to 1,250
Above 470	12,500	1,250

NOTES:

- ¹ Linear interpolations.
- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- As shown in 15.35(b), for frequencies above 1000MHz, 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 20dB under any condition of modulation.

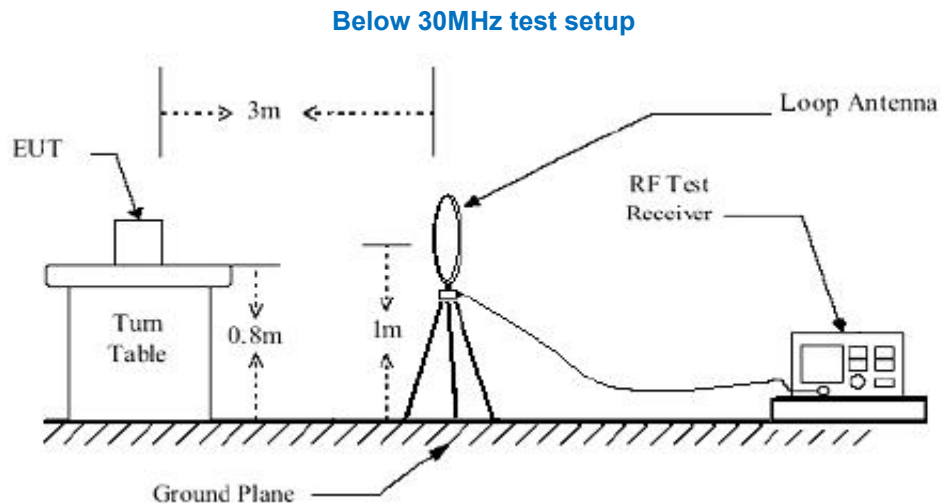
4.2 TEST PROCEDURES

- The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna is a broadband antenna, and its 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.

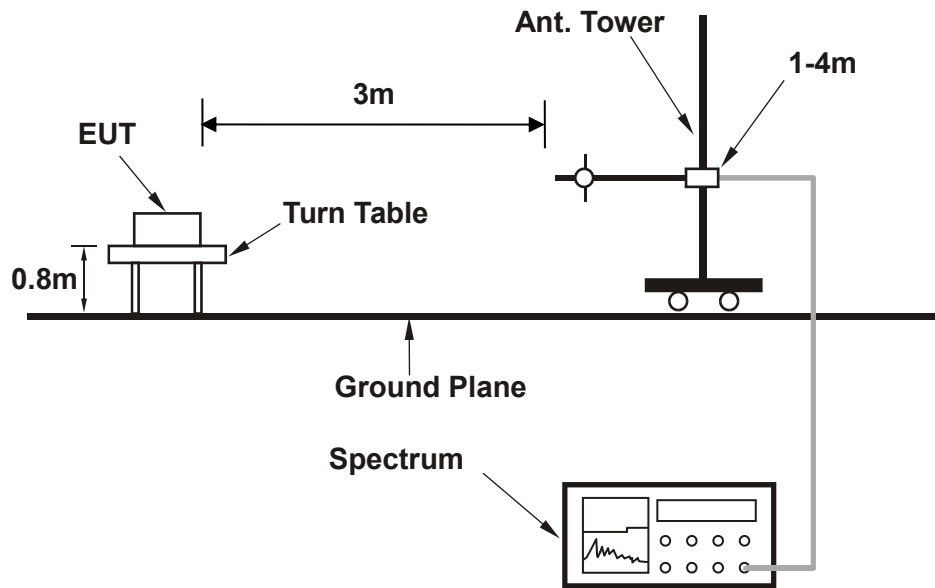
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position Y, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level.
- h. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

NOTES:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. $\text{Emission level (dBuV/m)} = \text{Raw Value (dBuV)} + \text{Correction Factor (dB/m)}$
4. $\text{Correction Factor (dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Factor (dB)}$
5. $\text{Margin value} = \text{Emission level} - \text{Limit value}$.
6. $\text{Fundamental AV value} = \text{PK Emission} + \text{AV Factor}$.

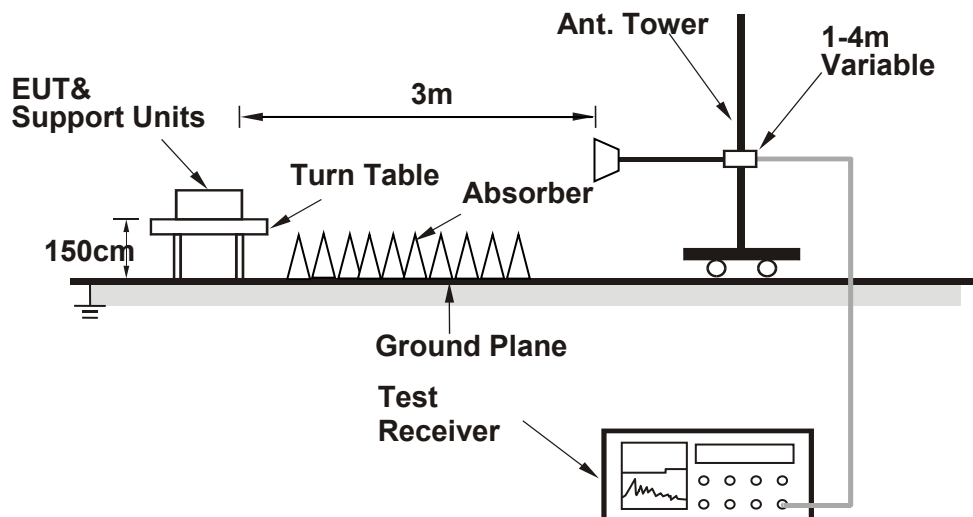
4.3 TEST SETUP


Below 1GHz test setup



Note: For the actual test configuration, please refer to the attached file (Test Setup Photo).

Above 1GHz test setup



Note: For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.4 DEVIATION FROM TEST STANDARD

No deviation.

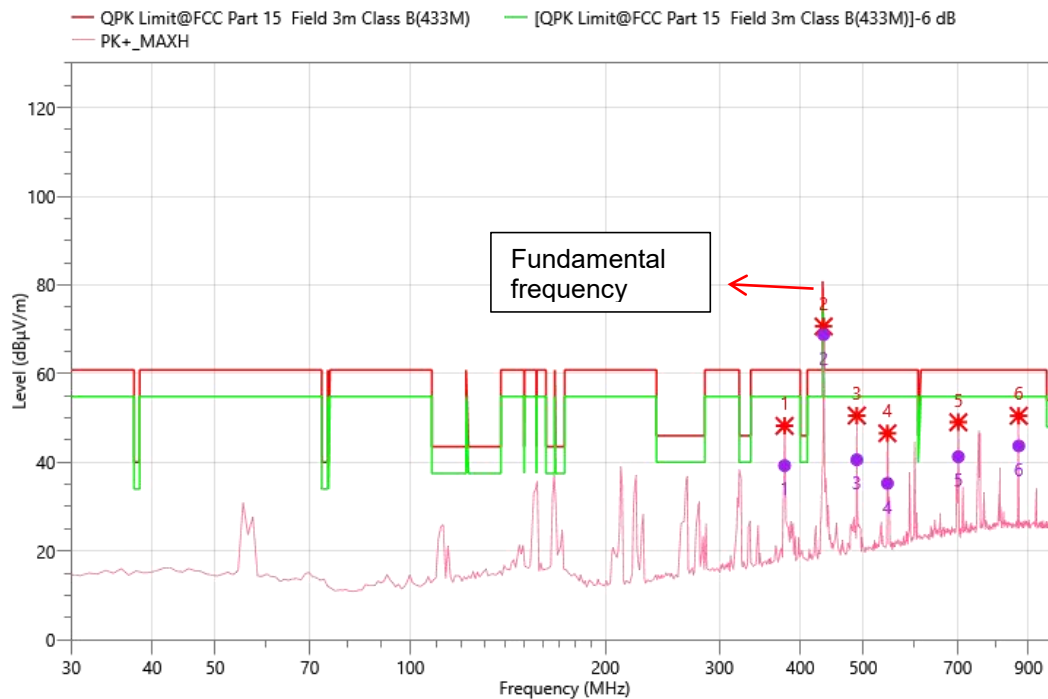
4.5 EUT OPERATING CONDITIONS

- Placed the EUT on the testing table.
- Enable EUT under transmission condition continuously at specific channel frequency.

4.5. TEST RESULT

30MHz-1GHz

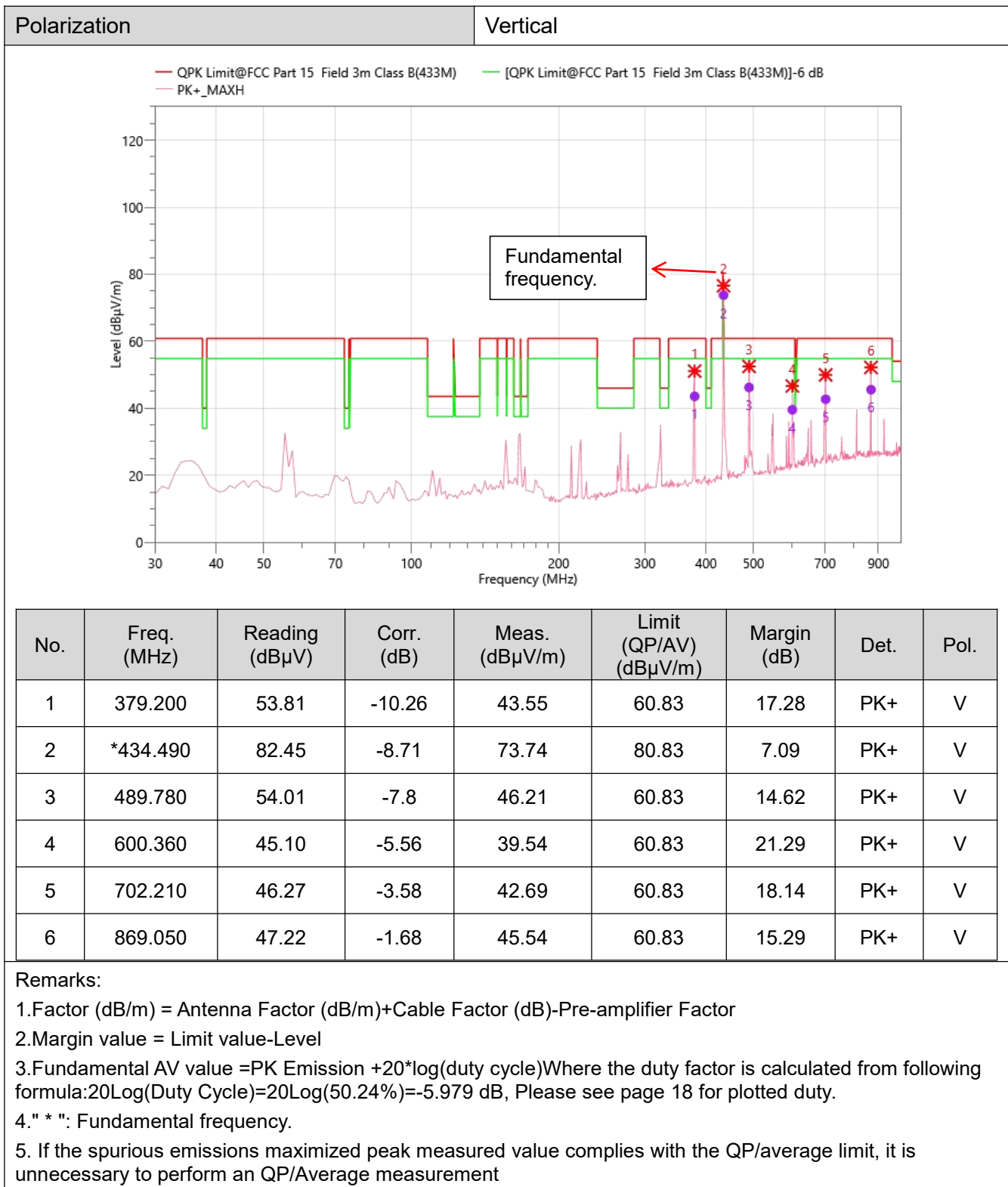
Polarization	Horizontal
--------------	------------



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (QP/AV) (dBμV/m)	Margin (dB)	Det.	Pol.
1	378.230	49.54	-10.29	39.25	60.83	21.58	PK+	H
2	*434.490	77.49	-8.71	68.78	80.83	12.05	PK+	H
3	488.810	48.40	-7.82	40.58	60.83	20.25	PK+	H
4	545.070	41.85	-6.6	35.25	60.83	25.58	PK+	H
5	701.240	44.86	-3.6	41.26	60.83	19.57	PK+	H
6	869.050	45.37	-1.68	43.69	60.83	17.14	PK+	H

Remarks:

- Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- Margin value = Limit value-Level
- Fundamental AV value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20Log(Duty Cycle)=20Log(50.24%)=-5.979 dB, Please see page 18 for plotted duty.
- " * ": Fundamental frequency.
- If the spurious emissions maximized peak measured value complies with the QP/average limit, it is unnecessary to perform an QP/Average measurement



ABOVE 1GHz WORST-CASE DATA:

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M											
No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	1356	83.34	-24.87	58.47	74	15.53	PK+	100	H	325.9	PASS
2	1356	-	-	52.491	54	1.509	AVG	100	H	325.9	PASS
3	1736	83.69	-24.64	59.05	80.83	21.78	PK+	100	H	122	PASS
4	1736	-	-	53.071	60.83	7.759	AVG	100	H	122	PASS
5	2224	80.5	-21.38	59.12	74	14.88	PK+	100	H	269.5	PASS
6	2224	-	-	53.141	54	0.859	AVG	100	H	269.5	PASS
7	2604	79.29	-21.02	58.27	80.83	22.56	PK+	100	H	112.6	PASS
8	2604	-	-	52.291	60.83	8.539	AVG	100	H	112.6	PASS
9	3528	78.01	-18.86	59.15	80.83	21.68	PK+	100	H	110.3	PASS
10	3528	-	-	53.171	60.83	7.659	AVG	100	H	110.3	PASS
11	3908	76.54	-17.46	59.08	74	14.92	PK+	100	H	110.3	PASS
12	3908	-	-	53.101	54	0.899	AVG	100	H	110.3	PASS
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M											
No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	1412	83.78	-24.76	59.02	74	14.98	PK+	100	V	359.1	PASS
2	1412	-	-	53.041	54	0.959	AVG	100	V	359.1	PASS
3	1736	81.91	-24.64	57.27	80.83	23.56	PK+	100	V	59.7	PASS
4	1736	-	-	51.291	60.83	9.539	AVG	100	V	59.7	PASS
5	2224	80.71	-21.38	59.33	74	14.67	PK+	100	V	311	PASS
6	2224	-	-	53.351	54	0.649	AVG	100	V	311	PASS
7	2660	78.96	-20.75	58.21	80.83	22.62	PK+	100	V	87.9	PASS
8	2660	-	-	52.231	60.83	8.599	AVG	100	V	87.9	PASS
9	3472	77.63	-19.02	58.61	80.83	22.22	PK+	100	V	179.5	PASS
10	3472	-	-	52.631	60.83	8.199	AVG	100	V	179.5	PASS
11	4340	72.67	-16	56.67	74	17.33	PK+	100	V	14.2	PASS
12	4340	-	-	50.691	54	3.309	AVG	100	V	14.2	PASS

NOTES:

- 1 The resolution bandwidth of test receiver/spectrum analyzer is 1MHz for Peak detection (PK) at frequency above 1GHz.
- 2 Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
- 3 Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- 4 Margin value = Limit value - Emission level.
- 5 The emission levels of other frequencies were less than 20dB margin against the limit.
- 6 " # ": Harmonic frequency
- 7 Fundamental AV value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20Log(Duty Cycle)=20Log(50.24%)=-5.979 dB, Please see page 18 for plotted duty.

Duty Cycle:

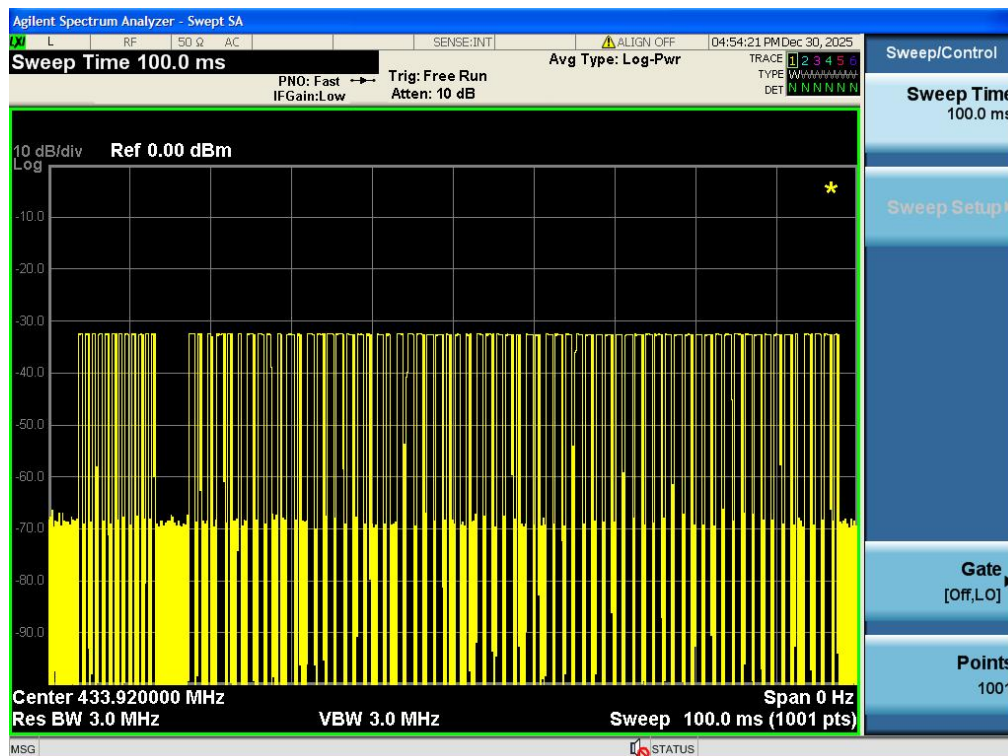
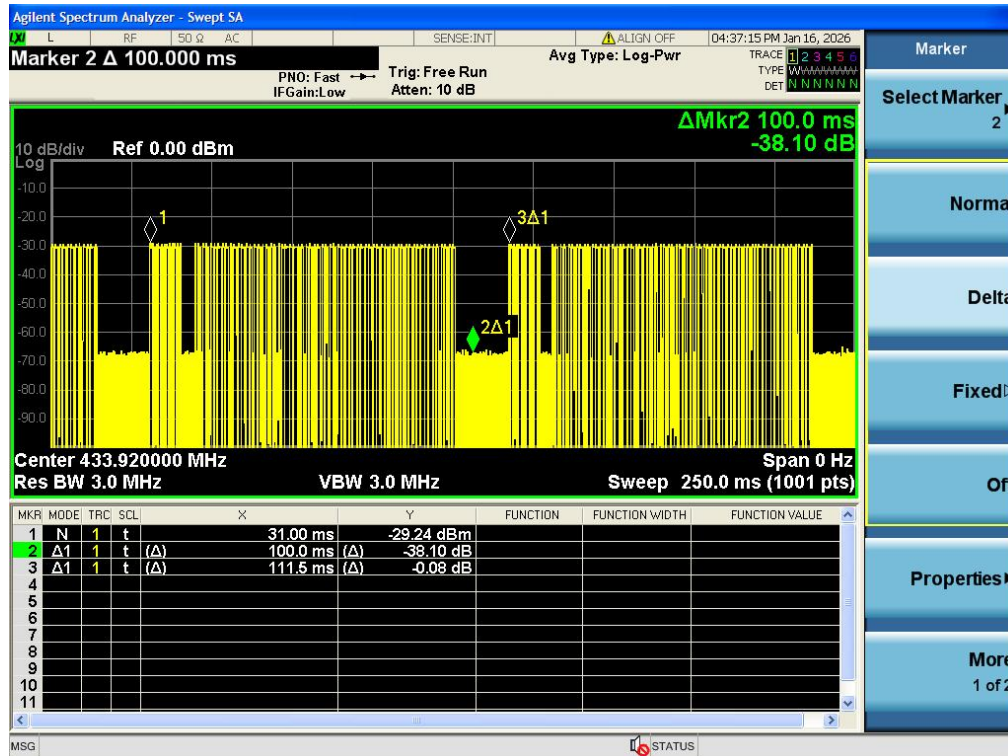
$T_p = 100\text{ms}$

$T_{on} = T_{on1} * \text{Number} + T_{on2} * \text{Number} = 0.792 * 50 + 0.38 * 28 = 50.24 \text{ ms}$

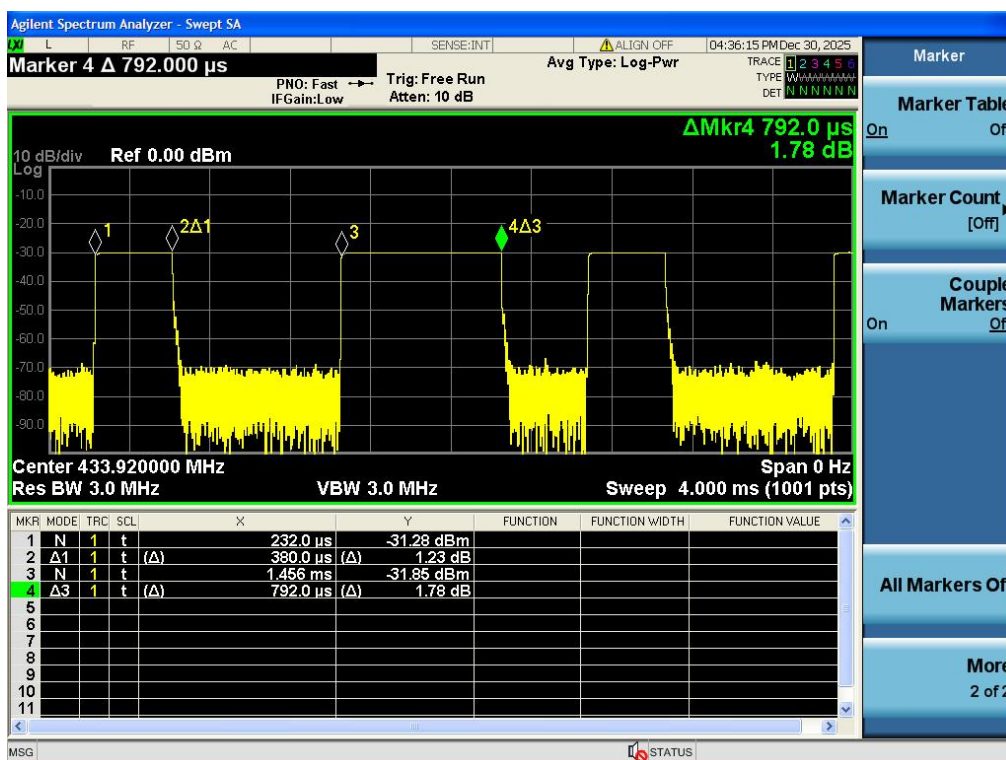
$\text{Duty Cycle} = T_{on} / T_p * 100\% = 50.24 / 100 * 100\% = 50.24 \%$

$\text{Factor} = 20\text{Log}(\text{Duty Cycle}) = 20\text{Log}(50.24\%) = -5.979 \text{ dB}$

$T_p = 100\text{ms}$



Ton = Ton1 * Number+ Ton2 * Number =0.792*50+0.38*28=50.24 ms



5. 20dB BANDWIDTH MEASUREMENT

5.1. LIMIT OF 20dB BANDWIDTH MEASUREMENT

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

$$\text{Limit} = \text{Fundamental Frequency} \times 0.25\% = 433.92\text{MHz} \times 0.25\% = 1084.8 \text{ kHz}$$

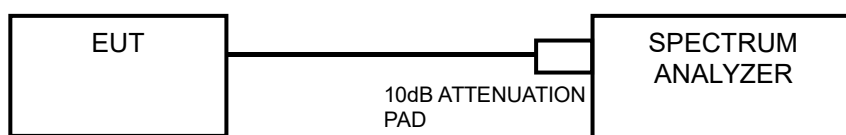
5.2. TEST PROCEDURE

The spectrum analyzer was receiving the maximum emission level. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

5.3. DEVIATION FROM TEST STANDARD

No deviation.

5.4. TEST SETUP



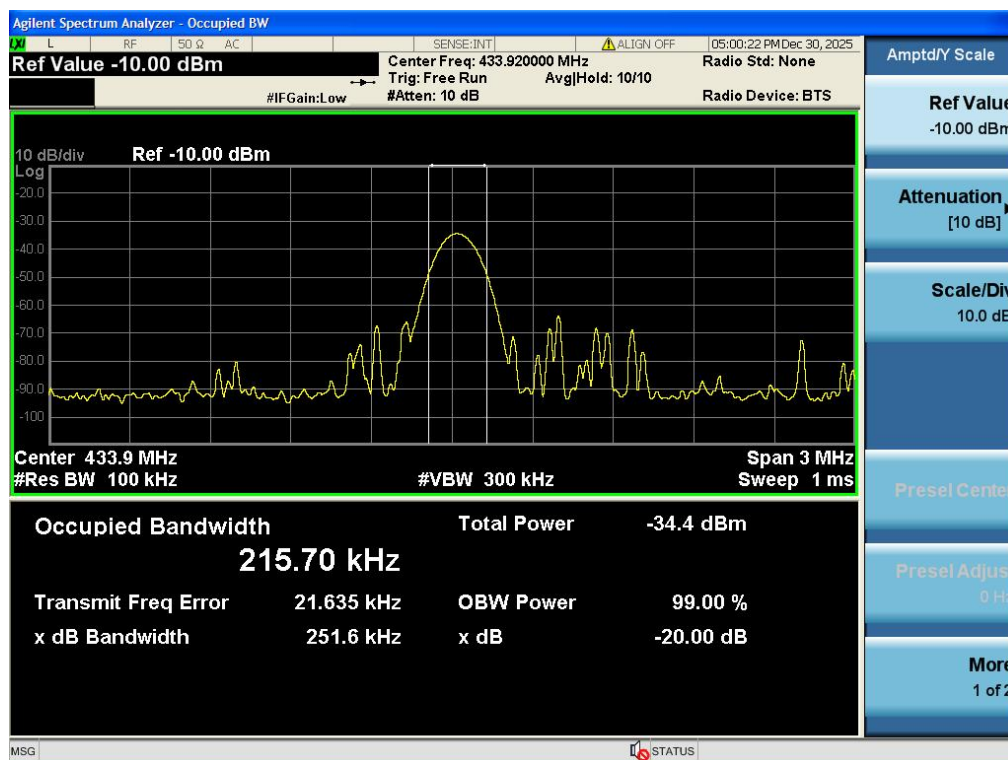
5.5. EUT OPERATING CONDITIONS

- Turned on the power of all equipment.
- EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

5.6. TEST RESULTS

FREQUENCY (MHz)	20dB BANDWIDTH (kHz)	MAXIMUM LIMIT (kHz)	PASS/FAIL
433.92	251.6	1084.8	PASS

Test Data:



NOTES: Because the measured signal is CW-like, adjusting the RBW per C63.10 would not be practical since measurement bandwidth will always follow the RBW. The RBW is set to 100 kHz to perform the 20dB bandwidth test.

6.DEACTIVATION TIME MEASUREMENT

6.1. LIMIT OF DEACTIVATION TIME MEASUREMENT

15.231 (a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

15.231 (a)(2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

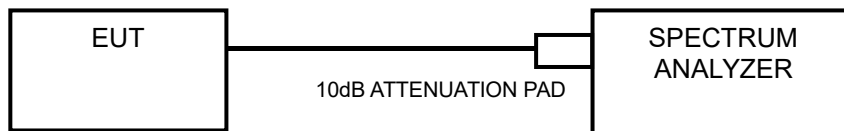
6.2. TEST PROCEDURE

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, than set the spectrum analyzer to Zero Span for the release time reading. During the testing, the transmission duration was measured and recorded.

6.3. DEVIATION FROM TEST STANDARD

No deviation.

6.4. TEST SETUP



6.5. EUT OPERATING CONDITIONS

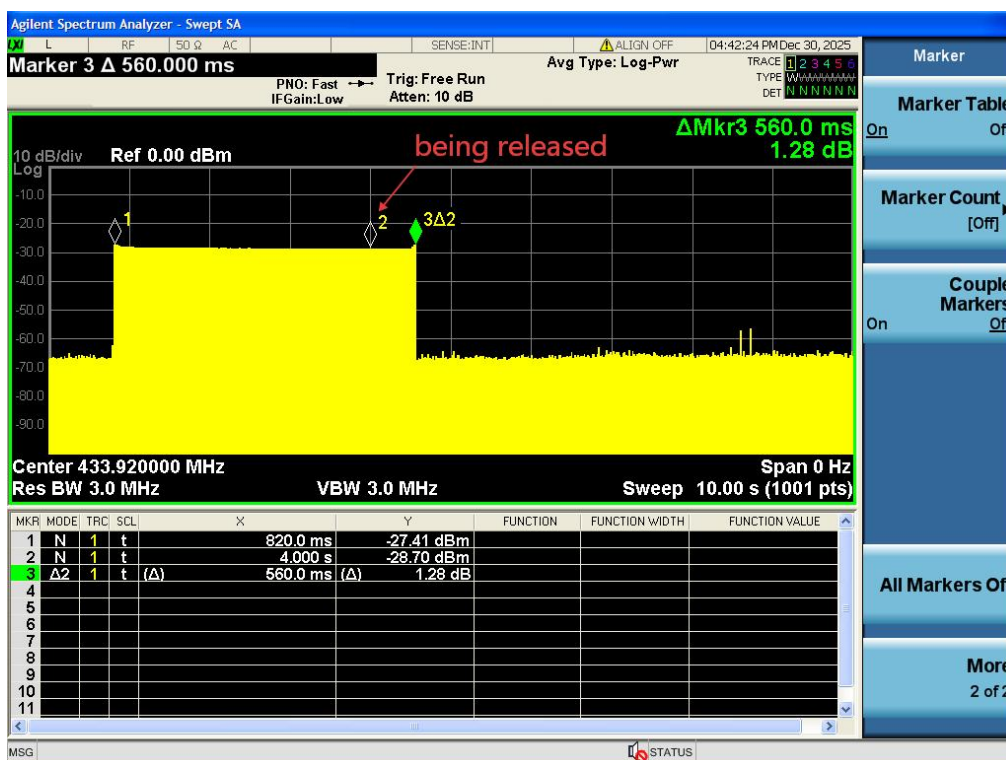
Pass.

- c) Turned on the power of all equipment.
- d) EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

6.6 TEST RESULTS

FREQUENCY (MHz)	MEASUREMENT RESULT (sec)	MAXIMUM LIMIT (sec)	PASS/FAIL
433.92	0.56	5	PASS

The plots of test results are attached as below.



7. PHOTOGRAPHS OF TEST SETUP

Please refer to Appendix A for Test Setup Photos of the EUT.

8. EUT PHOTOGRAPHS OF THE EUT

Please refer to Appendix B and Appendix C for EUT Photos of the EUT

*****THE END*****