

# TEST REPORT

**Product Name** : Tire pressure sensor  
**Brand Name** : JinYunsheng  
**Model** : SNP739D  
**Series Model** : SNP739D51, SNP739D01, SNP739D02  
**FCC ID** : 2BMS2-SNP739D  
**Applicant** : **Huizhou Jinyunsheng Technology Co., Ltd**  
**Address** : 4th Floor, Building 3, Debang Industrial Park, No. 68 Lianfa Avenue, Huicheng District, Huizhou City, Guangdong Province  
**Manufacturer** : **Huizhou Jinyunsheng Technology Co., Ltd**  
**Address** : 4th Floor, Building 3, Debang Industrial Park, No. 68 Lianfa Avenue, Huicheng District, Huizhou City, Guangdong Province  
**Standard(s)** : FCC CFR Title 47 Part 15 Subpart C Section 15.231  
**Date of Receipt** : Dec. 02, 2024  
**Date of Test** : Dec. 02, 2024~ Jan. 09, 2025  
**Issued Date** : Jan. 09, 2025

**Issued By:** **Guangdong Asia Hongke Test Technology Limited**  
B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street,  
Bao'an District, Shenzhen, Guangdong, China  
Tel.: +86 0755-230967639 Fax.: +86 0755-230967639

**Reviewed by:**



Leon.yi

**Approved by:**



Sean She



Note: This device has been tested and found to comply with the standard(s) listed, this 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. This report shall not be reproduced except in full, without the written approval of Guangdong Asia Hongke Test Technology Limited. If there is a need to alter or revise this document, the right belongs to Guangdong Asia Hongke Test Technology Limited, and it should give a prior written notice of the revision document. This test report must not be used by the client to claim product endorsement.

**Guangdong Asia Hongke Test Technology Limited**

B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China.

**Report Revise Record**

Report Version	Issued Date	Notes
M1	Jan. 09, 2025	Initial Release

**Table of Contents****Page**

<b>1. SUMMARY.....</b>	<b>4</b>
1.1. TEST STANDARDS.....	4
1.2. TEST DESCRIPTION.....	4
1.3. TEST FACILITY .....	4
1.4. MEASUREMENT UNCERTAINTY .....	5
<b>2. GENERAL INFORMATION.....</b>	<b>6</b>
2.1. ENVIRONMENTAL CONDITIONS .....	6
2.2. GENERAL DESCRIPTION OF EUT .....	6
2.3. RELATED SUBMITTAL(S) / GRANT (S) .....	6
2.4. MODIFICATIONS.....	6
2.5. EQUIPMENTS USED DURING THE TEST .....	6
<b>3. TEST CONDITIONS AND RESULTS .....</b>	<b>8</b>
3.1. CONDUCTED EMISSION (AC MAIN) .....	8
3.2. RADIATED EMISSION .....	9
3.3. 20DB BANDWIDTH.....	17
3.4. DEACTIVATION TIME .....	18
3.5. ANTENNA REQUIREMENT.....	19
<b>4. TEST SETUP PHOTOS OF THE EUT .....</b>	<b>20</b>
<b>5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT .....</b>	<b>21</b>

## 1. SUMMARY

### 1.1. Test Standards

The tests were performed according to following standards:

[\*\*FCC Rules Part 15.231:\*\*](#) Periodic operation in the band 40.66-40.70 MHz and above 70 MHz.

[\*\*ANSI C63.10:2013 :\*\*](#)American National Standard for Testing Unlicensed Wireless Devices

### 1.2. Test Description

<b>FCC and IC Requirements</b>		
FCC Part 15.207	Conducted Emission	N/A
FCC Part 15.231(e)	Transmission Time	PASS
FCC Part 15.231(e)	Electric Field Strength of Fundamental Emission	PASS
FCC Part 15.205 &15.209& 15.231(e)	Electric Field Strength of Spurious Emission	PASS
FCC Part 15.231(c)	-20dB bandwidth	PASS

Remark: The measurement uncertainty is not included in the test result.

### 1.3. Test Facility

#### Test Laboratory:

**Guangdong Asia Hongke Test Technology Limited**

B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

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

**FCC-Registration No.: 251906 Designation Number: CN1376**

Guangdong Asia Hongke Test Technology Limited has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

**IC —Registration No.: 31737 CAB identifier: CN0165**

The 3m Semi-anechoic chamber of Guangdong Asia Hongke Test Technology Limited has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 31737

**A2LA-Lab Cert. No.: 7133.01**

Guangdong Asia Hongke Test Technology Limited has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

## 1.4. Measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Guangdong Asia Hongke Test Technology Limited's quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Asia Hongke laboratory is reported:

Test	Measurement Uncertainty	Notes
Power Line Conducted Emission	150KHz~30MHz $\pm 1.20$ dB	(1)
Radiated Emission	9KHz~30Hz $\pm 3.10$ dB	(1)
Radiated Emission	9KHz~1GHz $\pm 3.75$ dB	(1)
Radiated Emission	1GHz~18GHz $\pm 3.88$ dB	(1)
Radiated Emission	18GHz-40GHz $\pm 3.88$ dB	(1)
RF power, conducted	30MHz~6GHz $\pm 0.16$ dB	(1)
RF power density, conducted	$\pm 0.24$ dB	(1)
Spurious emissions, conducted	$\pm 0.21$ dB	(1)
Temperature	$\pm 1$ °C	(1)
Humidity	$\pm 3$ %	(1)
DC and low frequency voltages	$\pm 1.5$ %	(1)
Time	$\pm 2$ %	(1)
Duty cycle	$\pm 2$ %	(1)

The report uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty Multiplied by a coverage factor of  $k=2$  , providing a level of confidence of approximately 95%

## 2. GENERAL INFORMATION

### 2.1. Environmental conditions

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

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

### 2.2. General Description of EUT

Product Name:	Tire pressure sensor
Model/Type reference:	SNP739D
Series Model:	SNP739D51, SNP739D01, SNP739D02
Power supply:	DC 3V
Modulation:	ASK
Operation frequency:	433.92MHz
Channel number:	1
Antenna type:	PCB antenna
Antenna gain:	0dBi

Note: For more details, please refer to the user's manual of the EUT.

### 2.3. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with Section 15.231 of the FCC Part 15, Subpart C Rules.

### 2.4. Modifications

No modifications were implemented to meet testing criteria.

### 2.5. EQUIPMENTS USED DURING THE TEST

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	EMI Measuring Receiver	R&S	ESR	101160	2024.09.25	2025.09.24
2	Spectrum Analyzer	R&S	FSV40	101470	2024.09.23	2025.09.22
3	Low Noise Pre Amplifier	SCHWARZBECK	BBV 9745	00282	2024.09.25	2025.09.24
4	Low Noise Pre Amplifier	CESHENG	CSKJLNA231016A	CSKJLNA231016A	2024.09.25	2025.09.24
5	Passive Loop	ETS	6512	00165355	2024.08.29	2027.08.28
6	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9168	01434	2024.08.29	2027.08.28
7	Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	452	2024.08.29	2027.08.28
8	Horn Antenna 15-40GHz	SCHWARZBECK	BBHA9170	BBHA9170367	2024.08.28	2027.08.27

9	6dB Attenuator	JFW	50FPE-006	4360846-949-1	2024.09.24	2025.09.23
10	EMI Test Receiver	R&S	ESPI	100771	2024.09.25	2025.09.24
11	LISN	R&S	NNLK 8129	8130179	2024.09.24	2025.09.23
12	LISN	R&S	ESH3-Z5	892785/016	2024.09.23	2025.09.22
13	Pulse Limiter	R&S	ESH3-Z2	102789	2024.09.24	2025.09.23
14	RF Automatic Test system	TST	TSTPASS	21033016	2024.09.25	2025.09.24
15	Vector Signal Generator	Agilent	N5182A	MY50143009	2024.09.25	2025.09.24
16	Analog signal generator	Agilent	E8257	MY51554256	2024.09.25	2025.09.24
17	Spectrum Analyzer	Agilent	N9020A	MY51289843	2024.09.25	2025.09.24
18	Spectrum Analyzer	Agilent	N9020A	MY53421570	2024.09.25	2025.09.24
19	Power Sensor	Agilent	8481A	MY41097697	2024.09.25	2025.09.24
20	Wideband Radio communication tester	R&S	CMW500	1201.0002K50	2024.09.24	2025.09.23
21	DC power supply	ZHAOXIN	RXN-305D-2	28070002559	N/A	N/A
22	RE Software	EZ	EZ-EMC_RE	Ver.AIT-03A	N/A	N/A
23	CE Software	EZ	EZ-EMC_CE	Ver.AIT-03A	N/A	N/A
24	RF Software	TST	TSTPASS	Version 2.0	N/A	N/A
25	RF Software	cesheng	WCS-WCN	Version 2024.6.20	N/A	N/A
26	temporary antenna connector(Note)	NTS	R001	N/A	N/A	N/A

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

### 3. TEST CONDITIONS AND RESULTS

#### 3.1. Conducted Emission (AC Main)

##### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

##### TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a flood stand system; a wooden table with a height of 0.1 meters is used and is placed on the ground plane as per ANSI C63.10-2013.
2. Support equipment, if needed, was placed as per ANSI C63.10-2013
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013
4. If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

##### TEST RESULTS

Not applicable for device which is battery supply.

### 3.2. Radiated Emission

#### Limit

For intentional device, according to 15.209(a) the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table.

Frequency (MHz)	Distance (Meters)	Radiated (dB $\mu$ V/m)	Radiated ( $\mu$ V/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

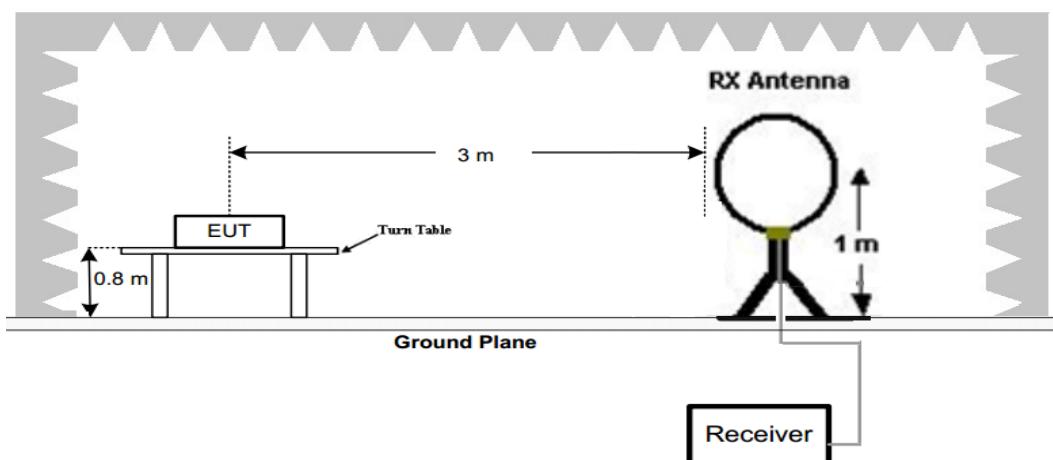
In addition to the provisions of 15.231(e) and RSS 210-A.1.4, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emission (microvolts/meter)
40.66-40.70	1,000	100
70-130	500	50
130-174	500 to 1,500 <sup>1</sup>	50 to 150 <sup>1</sup>
174-260	1,500	150
260-470	1,500 to 5,000 <sup>1</sup>	150 to 500 <sup>1</sup>
Above 470	5,000	500

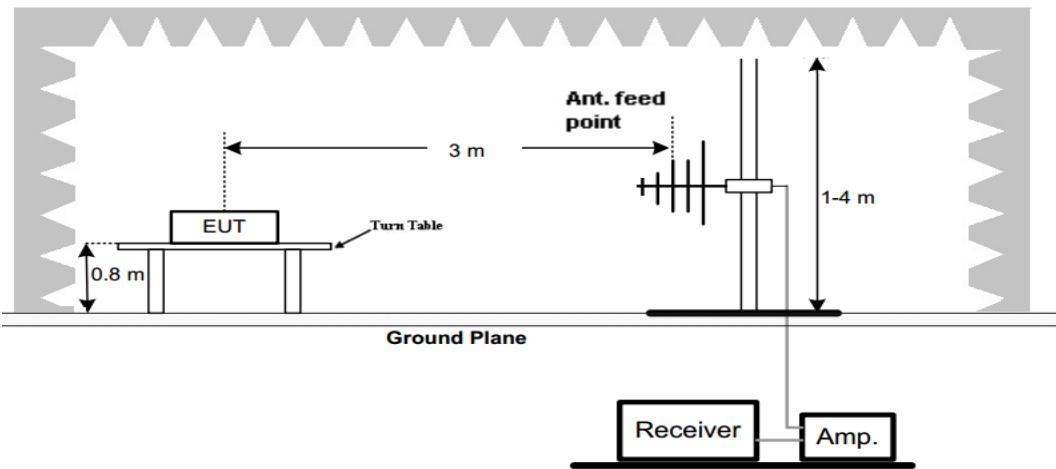
[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 260-470 MHz,  $\mu$ V/m at 3 meters = $16.6667(F) - 2833.3333$ . The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

#### TEST CONFIGURATION

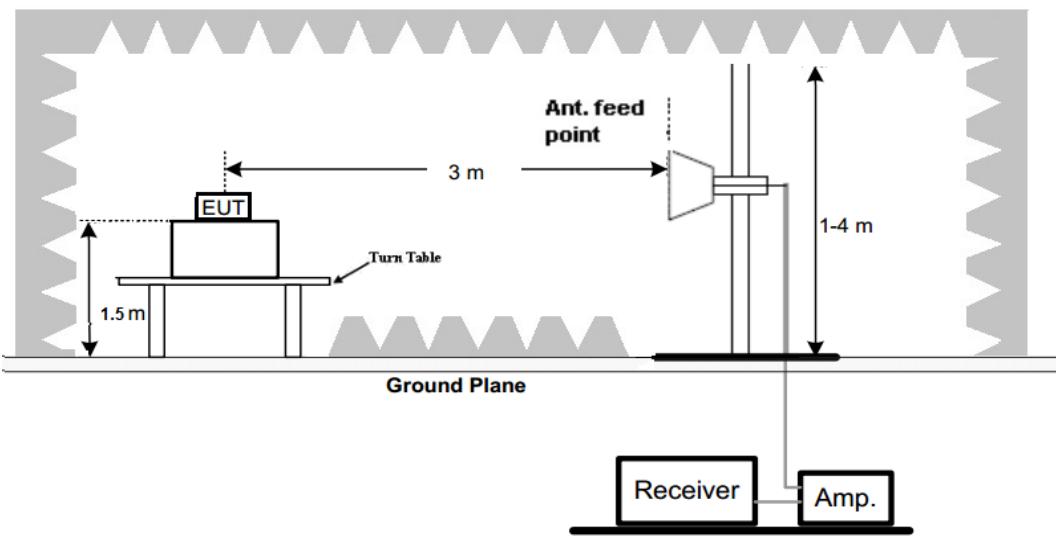
##### (A) Radiated Emission Test Set-Up, Frequency Below 30MHz



##### (B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz

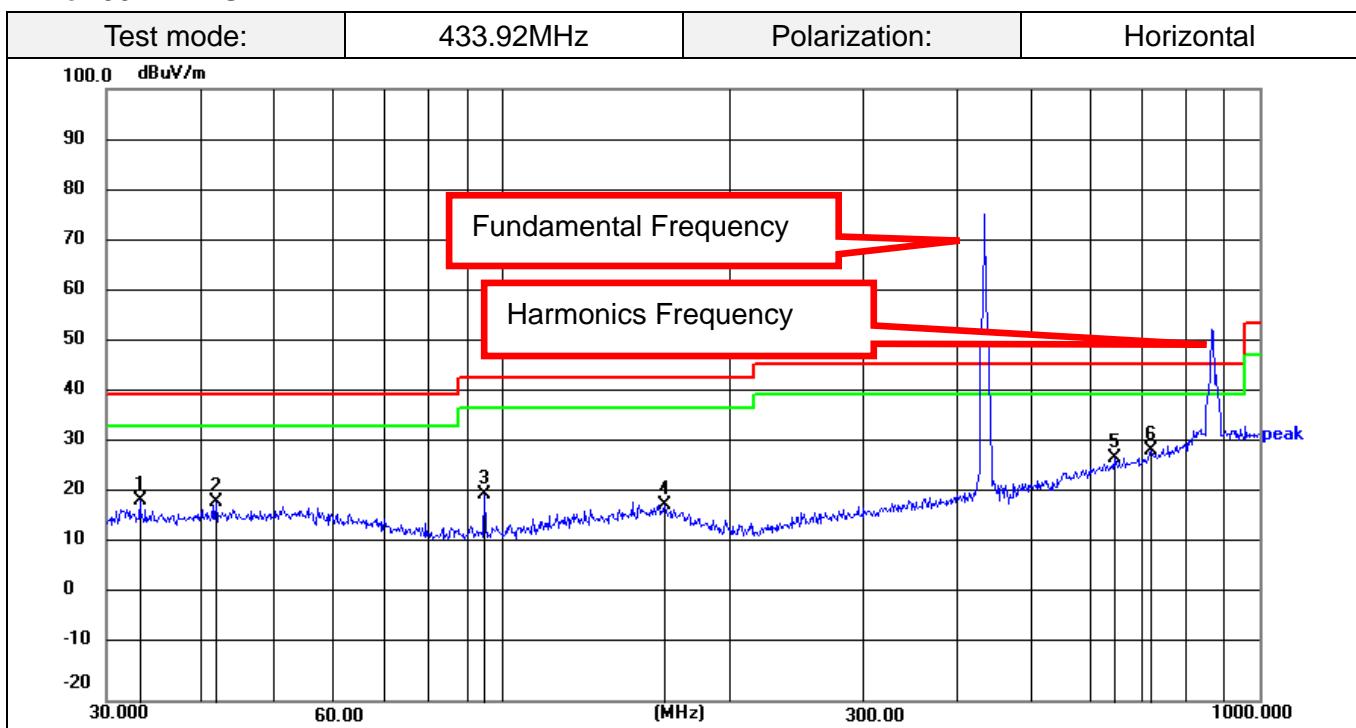


### **Test Procedure**

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 9KHz to 5GHz.

## TEST RESULTS

For 30MHz-1GHz



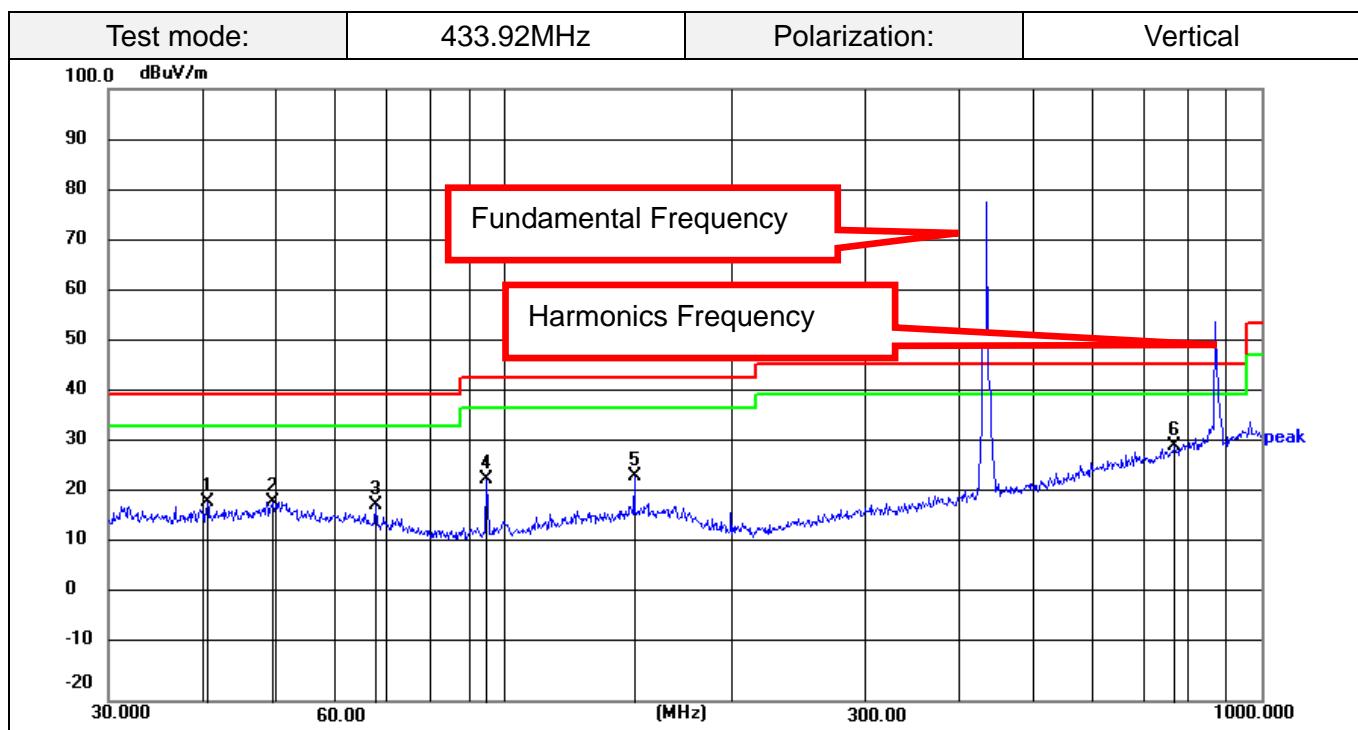
Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Emission Level - Limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	33.2112	36.62	-17.35	19.27	40.00	-20.73	QP
2	41.8595	35.55	-16.54	19.01	40.00	-20.99	QP
3	94.7600	41.23	-20.67	20.56	43.50	-22.94	QP
4	163.7550	35.16	-16.65	18.51	43.50	-24.99	QP
5	642.8612	36.67	-8.95	27.72	46.00	-18.28	QP
6 *	719.1995	36.74	-7.71	29.03	46.00	-16.97	QP


**Remark:**

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Emission Level - Limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	40.5591	35.65	-16.46	19.19	40.00	-20.81	QP
2	49.5328	35.74	-16.60	19.14	40.00	-20.86	QP
3	67.6751	37.01	-18.53	18.48	40.00	-21.52	QP
4	94.7600	44.20	-20.67	23.53	43.50	-19.97	QP
5	148.4410	40.61	-16.63	23.98	43.50	-19.52	QP
6 *	768.7481	36.54	-6.54	30.00	46.00	-16.00	QP

The emissions from 30MHz to 5GHz are measured peak and average level, below 1 GHz measured QP level, detailed test data please see below. Besides, we tested 3 directions and recorded the worst data.

Emission Styles	Frequency (MHz)	Reading Level(dBuV)	Correct Factor(dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Direction (H/V)
Fundamental	433.92	84.75	-9.34	75.41	92.87	-17.46	PK	H
Fundamental	433.92	--	--	68.14	72.87	-4.73	AV	H
Harmonics	867.84	56.62	-2.81	53.81	72.87	-19.33	PK	H
Harmonics	867.84	--	--	46.54	72.87	-26.33	AV	H
Harmonics	1735.68	49.53	-11.62	49.53	74.00	-24.47	PK	H
Harmonics	1735.68	--	--	42.26	54.00	-11.74	AV	H
--	--	--	--	--	--	--	--	--
Fundamental	433.92	86.95	-9.34	77.61	92.87	-15.26	PK	V
Fundamental	433.92	--	--	69.34	72.87	-3.53	AV	V
Harmonics	867.84	56.34	-2.81	53.53	72.87	-19.34	PK	V
Harmonics	867.84	--	--	46.26	72.87	-26.61	AV	V
Harmonics	1735.68	51.13	-11.62	39.51	74.00	-34.49	PK	V
Harmonics	1735.68	--	--	32.24	54.00	-21.76	AV	V
--	--	--	--	--	--	--	--	--

Note:

1. All Readings are Peak Value
2. Correct Factor= Antenna Factor +Cable Loss- Amplifier Gain
3. Emission Level= Reading Level+Probe Factor +Cable Loss
4. AV Level (dBuV/m)= PK Level (dBuV/m)+ AV Factor(dB)
5. Margin = TrueValue – limit(if margin is minus means under limit)
6. In a transmit cycle 46.60 ms period found 1.085 ms burst 14 pcs, 0.355 ms burs 11 pcs, the Duty Cycle can calculate as below:

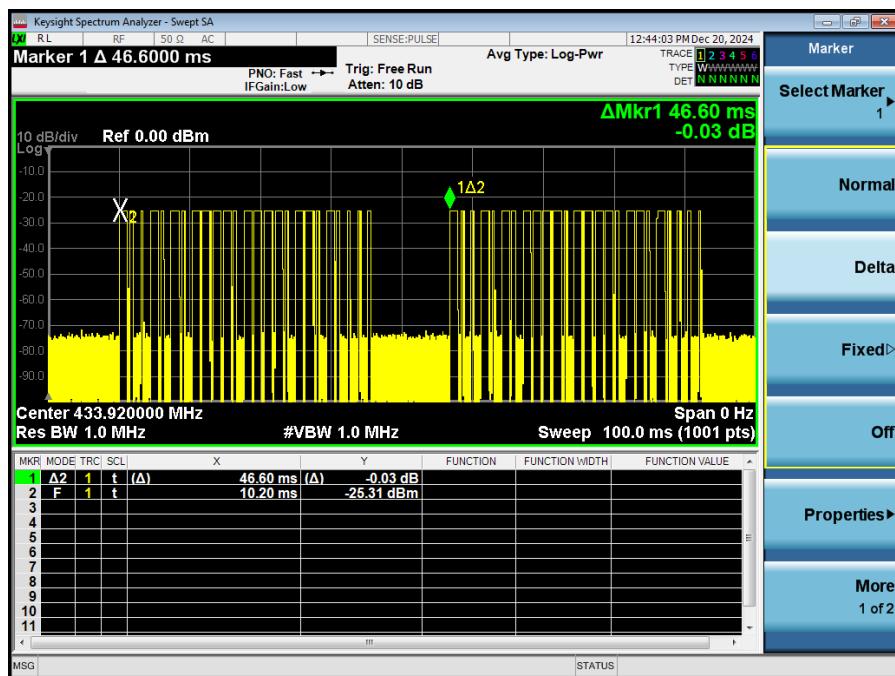
$$\text{Duty Cycle} = (1.085 * 14 + 0.355 * 11) / 46.60 = 0.433$$

$$\text{AV Factor} = 20 * \log(\text{Duty Cycle}) = 20 * \log(0.433) = -7.270$$

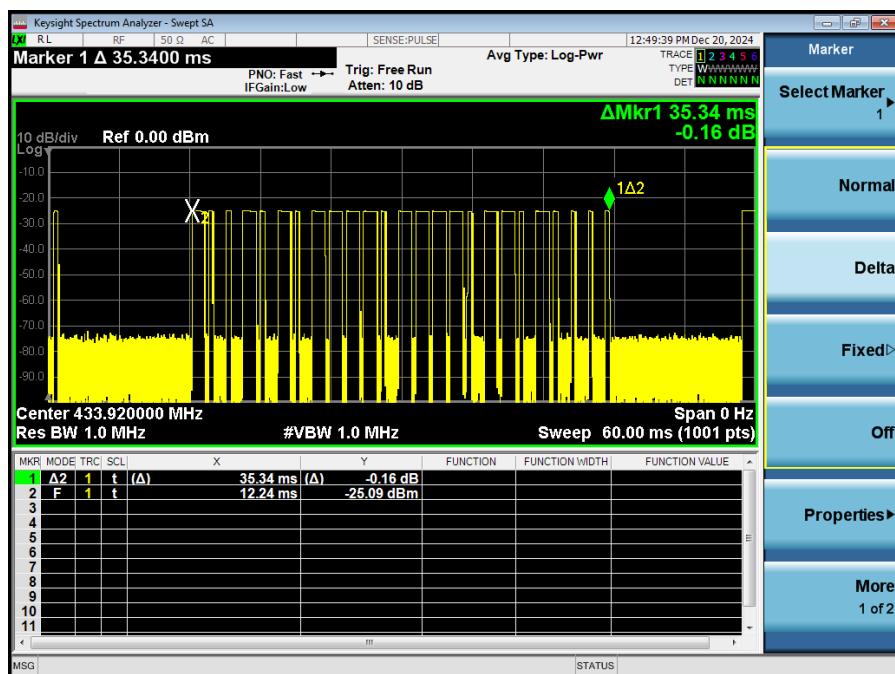
(The plot of Duty Cycle See the follow page)

7. All the x/y/z orientation has been investigated, and only worst case is presented in this report,

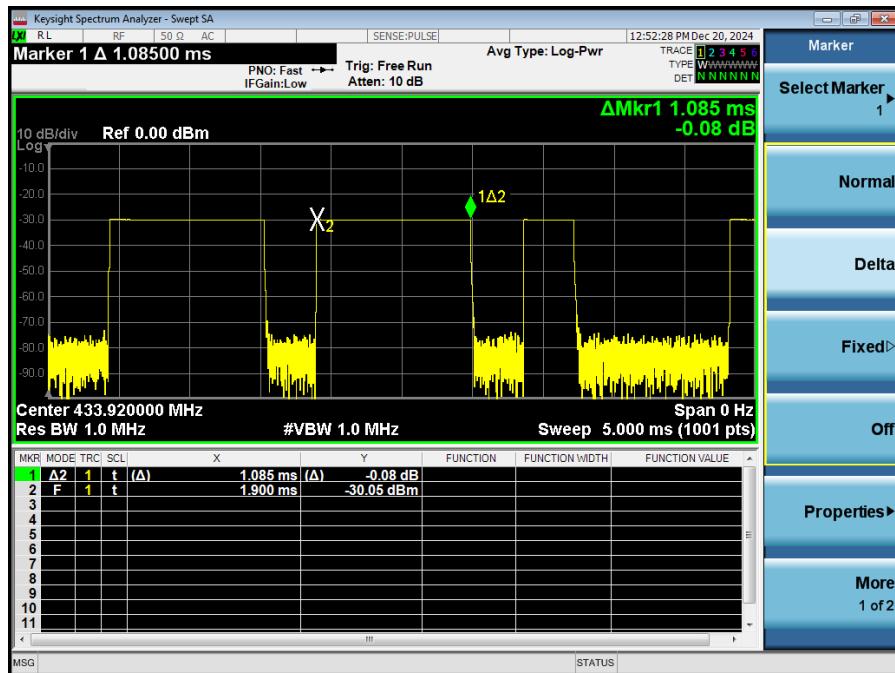
New battery is used during all test.



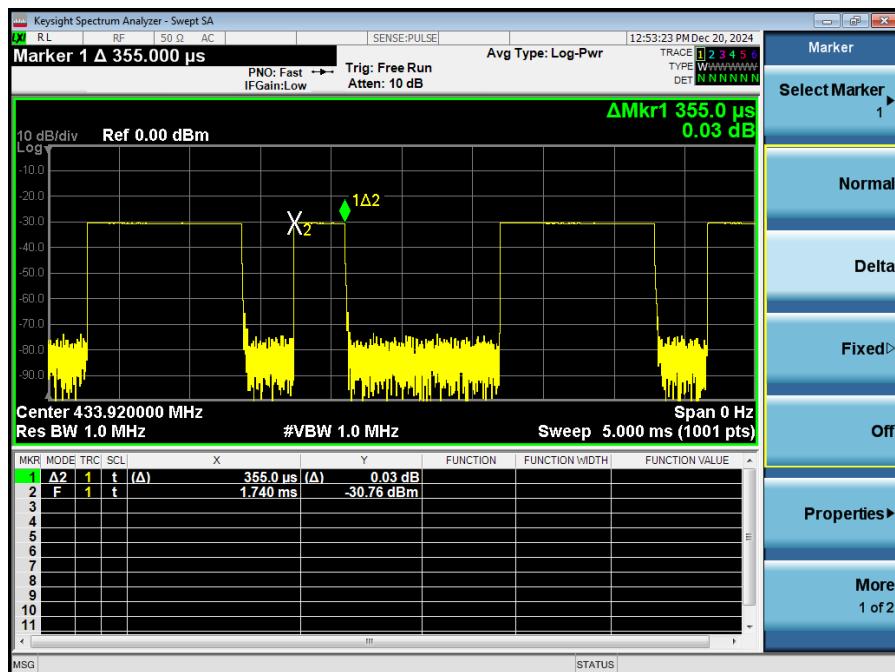
(Transmit cycle 45.00ms)



(Total Bursts in a transmit cycle 25pcs)



(1.085ms burst 14pcs)



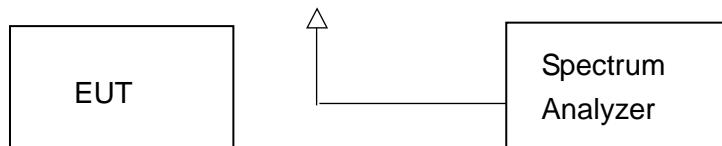
(0.355ms burst 11pcs)

### 3.3. 20dB Bandwidth

#### Limit

According to 47 CFR 15.231(c) The bandwidth of the emission shall be no wider than 0.25% of the centre frequency for devices operating above 70MHz and below 900MHz. Bandwidth is determined at the points 20dB down from the modulated carrier.

#### Test Configuration



#### Test Procedure

The 20dB bandwidth and 99% bandwidth is measured with a spectrum analyzer connected via a receive antenna placed near the EUT while the EUT is operating in transmission mode.

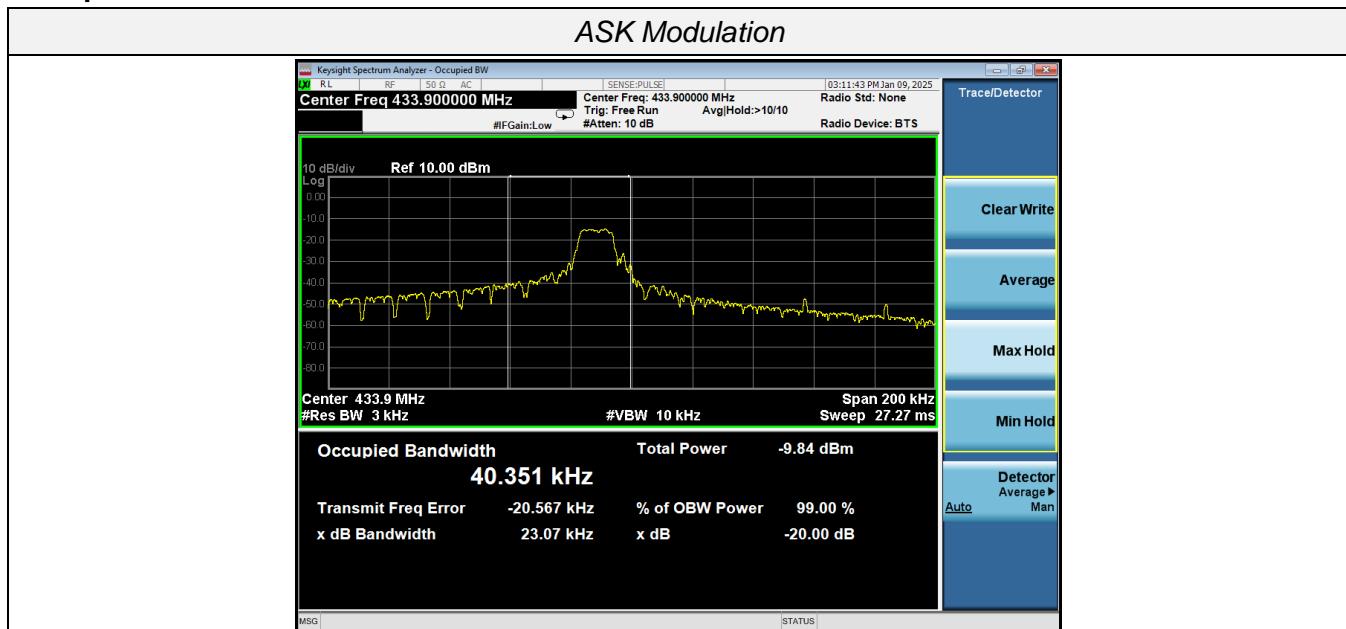
The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

The occupied bandwidth (OBW), that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

#### Test Results

Modulation	Channel Frequency (MHz)	99% OBW (KHz)	20dB bandwidth (KHz)	Limit (KHz)	Result
ASK	433.92	40.351	23.07	0.25%*433.92=1084.8	Pass

**Test plot as follows:**

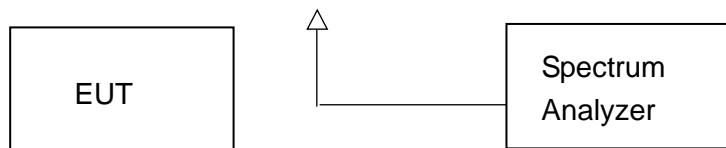


### 3.4. Deactivation Time

#### 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.

#### Test Configuration



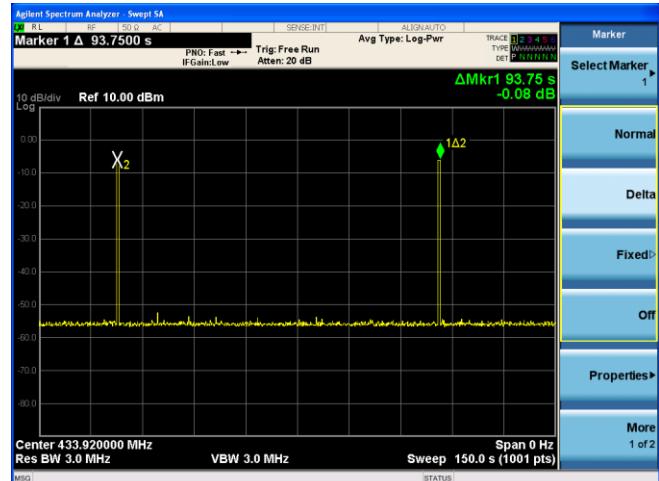
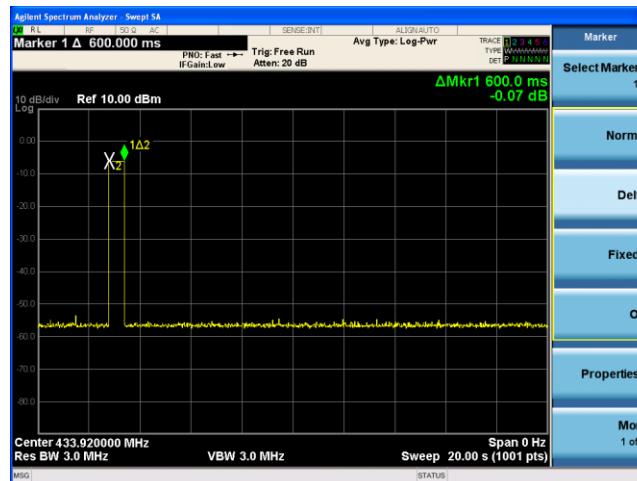
#### Test Procedure

1. The EUT was placed on a wooden table which is 0.8m height and close to receiver antenna of spectrum analyzer.
2. The spectrum analyzer resolution bandwidth was set to 3 MHz and video bandwidth was set to 3 MHz to encompass all significant spectral components during the test. The spectrum analyzer was operated in linear scale and zero span mode after tuning to the transmitter carrier frequency.

#### TEST RESULTS

Note: The transmitter was automatically activated, and the carrier frequency 433.92MHz:

Frequency (MHz)	Transmission time (S)	Limit (S)	Silent time (S)	Limit (S)	Result
433.92	0.600	1	93.75	30 times Transmission time; no less than 10s	Pass



### 3.5. Antenna Requirement

#### Standard Applicable

According to FCC Part 15C 15.203

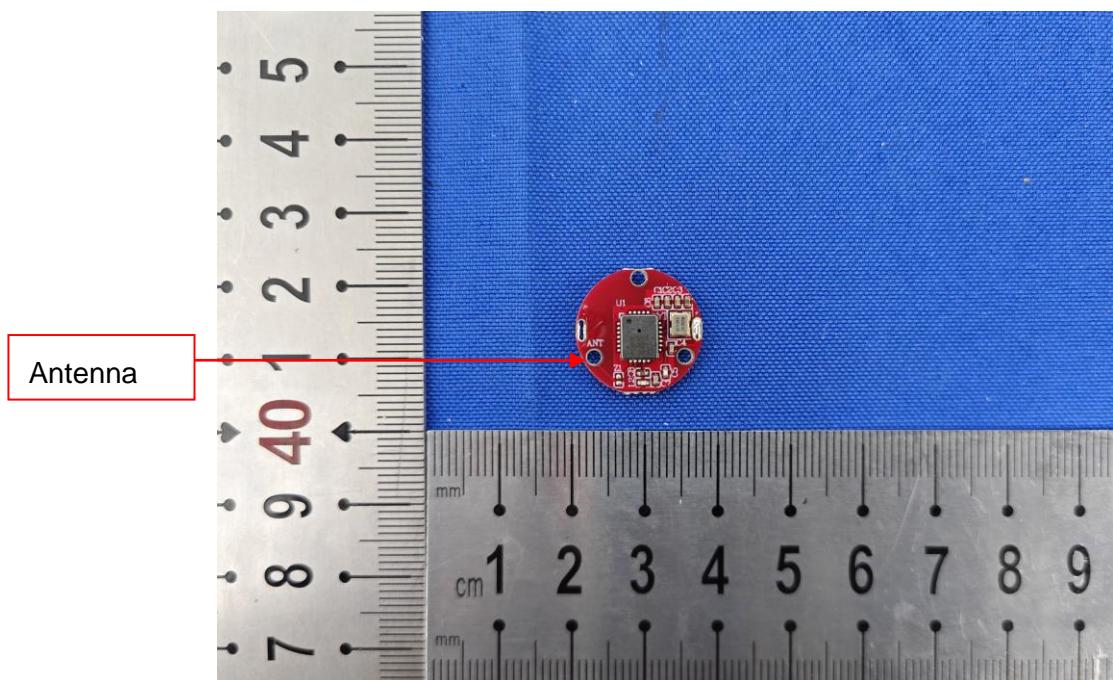
- a) An intentional radiator shall be de-signed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
- b) The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### **Refer to statement below for compliance.**

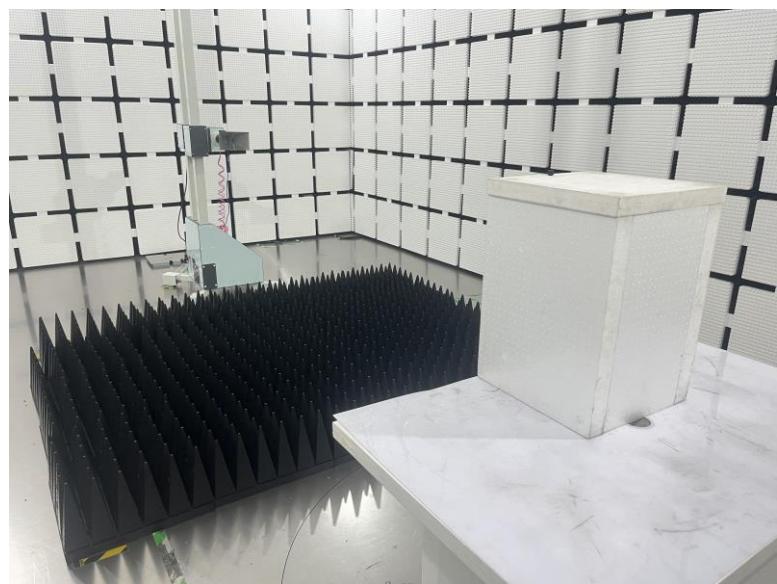
The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

#### Antenna Connected Construction

The antenna used in this product is an internal Antenna, The directional gains of antenna used for transmitting is 0 dBi.



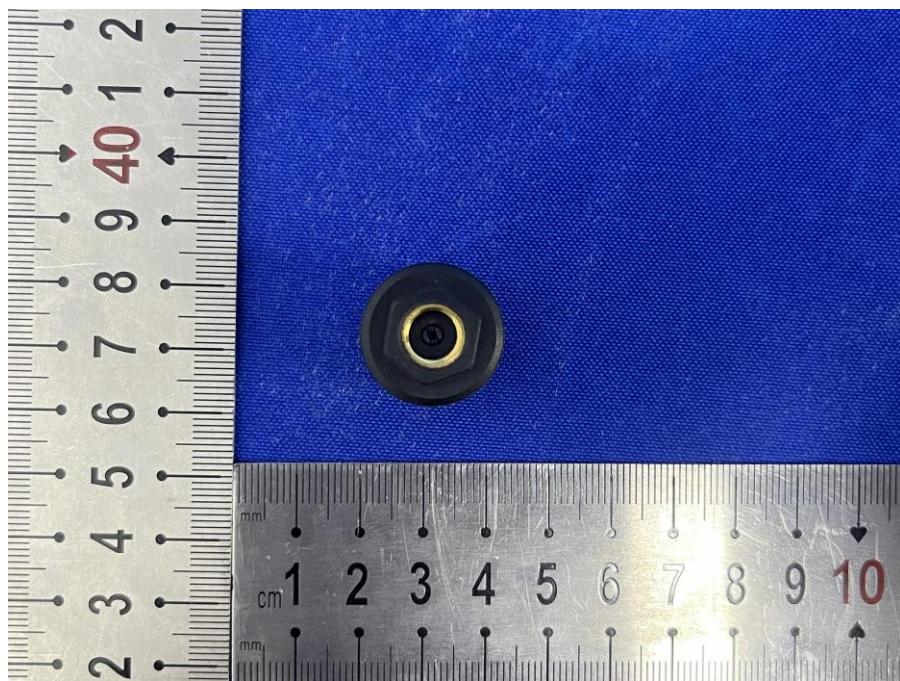
## 4. Test Setup Photos of the EUT

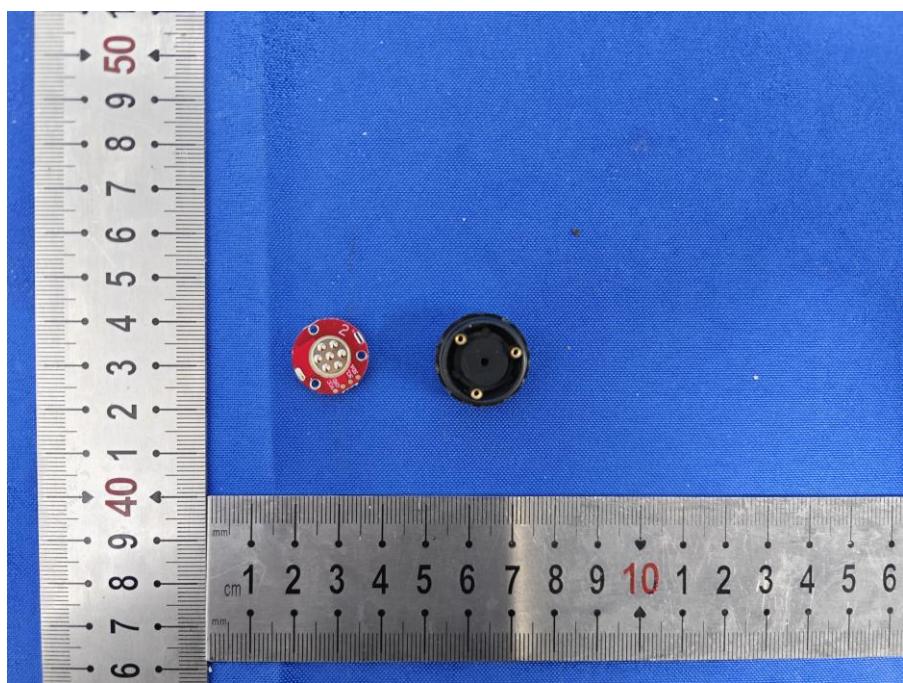
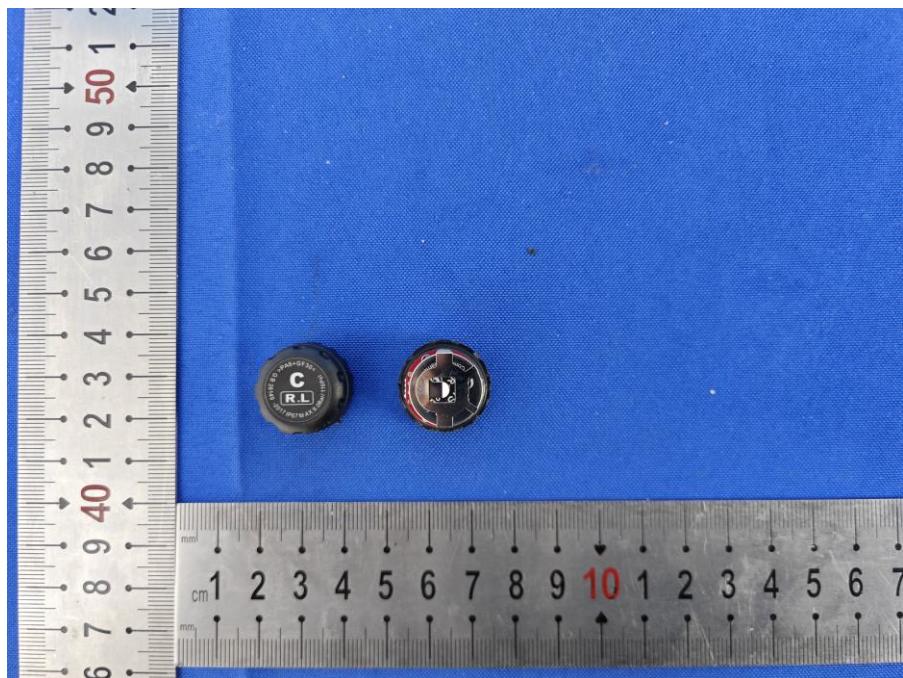


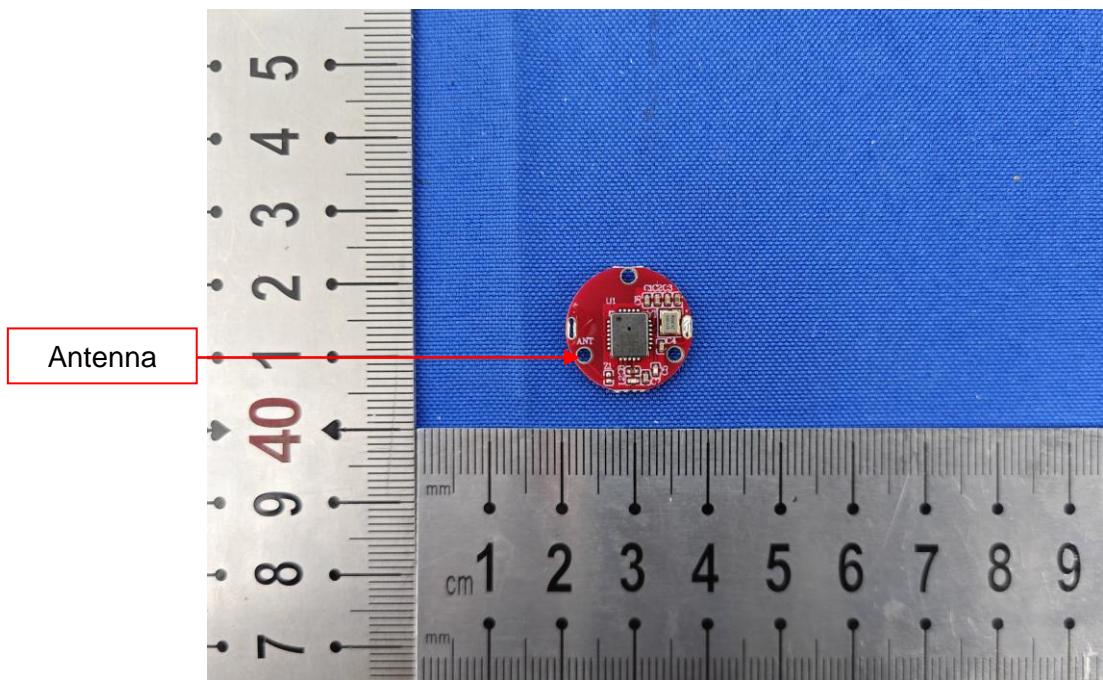
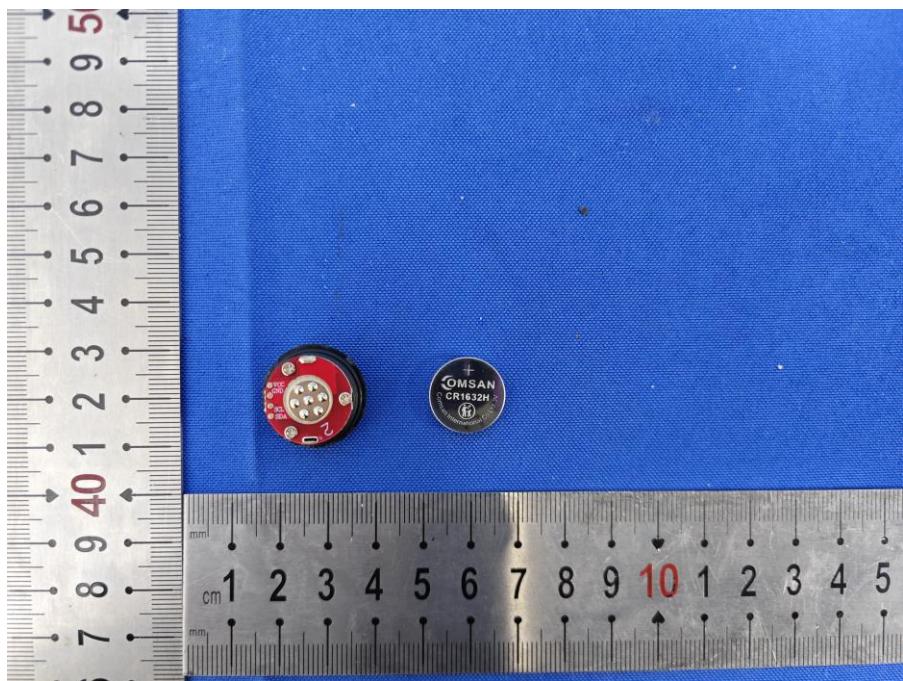
## 5. External and Internal Photos of the EUT

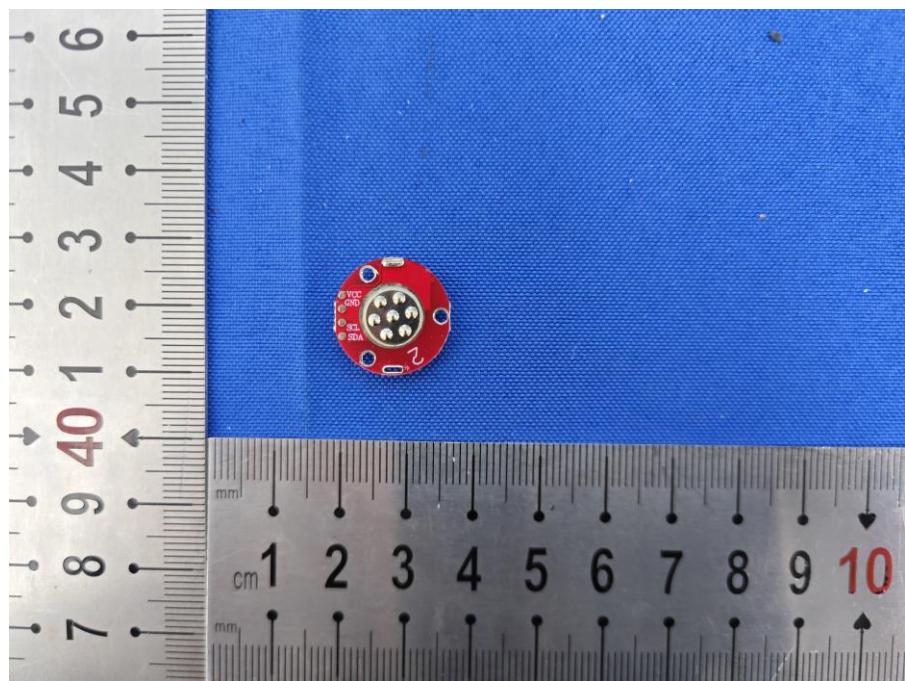
External Photos of EUT





**Internal Photos of EUT**





\*\*\*\*\* End of Report \*\*\*\*\*