



TEST REPORT

FCC ID: 2A9HZ-LWM8-5

Product : WIRELESS MICROPHONE
Model Name : LWM8-5, LWM8-6, LWM8-7
Brand : CALIFONE
Report No. : PTC22080106601E-FC01
Sample ID : PTC22080106601E-FC01#

Prepared for

NATIONAL PUBLIC SEATING
149 ENTIN ROAD CLIFTON NJ 07014 New Jersey United States

Prepared by

Precise Testing & Certification Co., Ltd
Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China



Report No.: PTC22080106601E-FC01

1 TEST RESULT CERTIFICATION

Applicant's name : NATIONAL PUBLIC SEATING
Address : 149 ENTIN ROAD CLIFTON NJ 07014 New Jersey United States
Manufacture's name : NINGBO RIXING ELECTRONICS CO.,LTD
Address : No. 495 SHIDAI ROAD, WUXIANG TOWN, NINGBO,CHINA
Product name : WIRELESS MICROPHONE
Model name : LWM8-5,LWM8-6,LWM8-7
Standards : FCC CFR47 Part 15 Section 15.236
Test procedure : ANSI C63.10:2013
Test Date : August 26, 2022 to September 24, 2022
Date of Issue : September 25, 2022
Test Result : Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of PTC, this document may be altered or revised by PTC, personal only, and shall be noted in the revision of the document.

Test Engineer:

A handwritten signature in black ink that reads 'Leo Yang'.

Leo Yang / Engineer

Technical Manager:

A handwritten signature in black ink that appears to read 'Ronnie Liu'.

Ronnie Liu / Manager



Contents

Page

1 TEST RESULT CERTIFICATION	2
2 TEST SUMMARY	5
3 TEST FACILITY	6
4 GENERAL INFORMATION	7
4.1 GENERAL DESCRIPTION OF E.U.T.	7
4.2 TEST MODE	8
5 EQUIPMENT DURING TEST	9
5.1 EQUIPMENTS LIST.....	9
5.2 MEASUREMENT UNCERTAINTY.....	11
5.3 DESCRIPTION OF SUPPORT UNITS.....	12
6 CONDUCTED EMISSION	13
6.1 E.U.T. OPERATION.....	13
6.2 EUT SETUP	13
6.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	14
6.4 MEASUREMENT PROCEDURE:	14
6.5 CONDUCTED EMISSION LIMIT	14
6.6 MEASUREMENT DESCRIPTION.....	14
6.7 CONDUCTED EMISSION TEST RESULT	14
7 RF POWER OUTPUT	15
7.1 TEST PROCEDURE.....	15
7.2 TEST RESULT:	16
8 OCCUPIED BANDWIDTH MEASUREMENT	18
8.1 TEST PROCEDURE.....	18
8.2 TEST RESULT	18
9 NECESSARY BANDWIDTH	21
9.1 TEST PROCEDURE.....	21
9.2 TEST RESULT	22
10 TRANSMITTER SPURIOUS EMISSIONS	27
10.1 TEST PROCEDURE	27



Report No.: PTC22080106601E-FC01

10.2 TEST RESULT	28
11 FREQUENCY STABILITY	30
11.1 TEST PROCEDURE.....	30
11.2 TEST RESULTS	31
12 ANTENNA REQUIREMENT	35
13 TEST PHOTOS.....	36
14 EUT PHOTOS.....	37



2 Test Summary

Test Items	Test Requirement	Result
AC Power Conducted Emission	§15.207	N/A
Radiated Spurious Emissions	§15.236(g)	PASS
Necessary Bandwidth	§15.236(g)	PASS
Occupied Bandwidth	§15.236(f)(2)	PASS
RF Power Output	§15.236(d)	PASS
Frequency Stability	§15.236(f)(3)	PASS
Antenna Requirement	§15.203	PASS

The EUT is power by 2pcs dry battery(1.5V*2).



Report No.: PTC22080106601E-FC01

3 TEST FACILITY

Precise Testing & Certification Co., Ltd

Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A

Designation Number: CN1219



4 General Information

4.1 General Description of E.U.T.

Product Name	:	WIRELESS MICROPHONE
Model Name	:	LWM8-5,LWM8-6,LWM8-7(Note: The samples are the same except different model include model name and looks. So LWM8-5 was selected for full tested.)
Operation Frequency:	:	657.2MHz-662.6MHz
Nominal channel bandwidth	:	200KHz
Antenna installation:	:	Internal Antenna
Antenna Gain:	:	-10.1dBi
Type of Modulation	:	FM
Hardware Version	:	N301-TX00-0
Software Version	:	N301-TX00-0
Power supply	:	DC 3V (1.5V*2)



4.2 Test Mode

The EUT has been tested under its typical operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting. Only the worst case data were reported.

The EUT has been associated with peripherals pursuant to ANSI C63.10-2013 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation (9 KHz to the 10th harmonics of the highest fundamental frequency or to 40 GHz, whichever is lower).

The EUT has been tested under TX operating condition. The EUT has been tested under typical operating condition. The EUT will staying in continuous transmitting when switch to the specific test frequency.

Channel List:

Channel	Frequency(MHz)
1	657.2
2	659.0
3	660.8
4	662.6



5 Equipment During Test

5.1 Equipments List

RF Conducted Test

Name of Equipment	Manufacturer	Model	Serial No.	Last calibration	Calibration Due	Calibration period
MXA Signal Analyzer	Agilent	N9020A	MY56070279	Aug. 20, 2022	Aug. 19, 2023	1 year
Coaxial Cable	CDS	79254	46107086	Aug. 20, 2022	Aug. 19, 2023	1 year
Power Meter	Anritsu	ML2495A	0949003	Aug. 20, 2022	Aug. 19, 2023	1 year
Power Sensor	Anritsu	MA2411B	0917017	Aug. 20, 2022	Aug. 19, 2023	1 year
Spectrum Analyzer	Rohde&Schwarz	FSU26	1166.1660.26	Aug. 20, 2022	Aug. 19, 2023	1 year
Scope	Tektronix	TDS3032B	B014131	Aug. 21, 2022	Aug. 20, 2023	1 year
DC power	eTOMENS	eTM-1560	--	Aug. 21, 2022	Aug. 20, 2023	1 year

Remark: 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.

Radiated Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Last calibration	Calibration Due	Calibration period
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	Aug. 20, 2022	Aug. 19, 2023	1 year
Loop Antenna	Schwarzbeck	FMZB 1519	012	Aug. 20, 2022	Aug. 19, 2023	1 year
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	Aug. 20, 2022	Aug. 19, 2023	1 year
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	Aug. 20, 2022	Aug. 19, 2023	1 year
Cable	Schwarzbeck	PLF-100	549489	Aug. 20, 2022	Aug. 19, 2023	1 year
Spectrum Analyzer	Agilent	E4407B	MY45109572	Aug. 20, 2022	Aug. 19, 2023	1 year
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	Aug. 20, 2022	Aug. 19, 2023	1 year
Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	Aug. 20, 2022	Aug. 19, 2023	1 year
Horn Antenna	SCHWARZBECK	BBHA 9170	9170-181	Aug. 20, 2022	Aug. 19, 2023	1 year
Amplifier	SCHWARZBECK	BBV 9721	9721-205	Aug. 20, 2022	Aug. 19, 2023	1 year



Report No.: PTC22080106601E-FC01

Cable	H+S	CBL-26	N/A	Aug. 20, 2022	Aug. 19, 2023	1 year
RF Cable	R&S	R204	R21X	Aug. 20, 2022	Aug. 19, 2023	1 year

Conducted Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Last calibration	Calibration Due	Calibration period
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	Aug. 20, 2022	Aug. 19, 2023	1 year
Artificial Mains Network	Rohde&Schwarz	L2-16B	000WX31025	Aug. 20, 2022	Aug. 19, 2023	1 year
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	Aug. 20, 2022	Aug. 19, 2023	1 year



5.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	$\pm 1.0\text{dB}$
Power Spectral Density, conducted	$\pm 2.2\text{dB}$
Radio Frequency	$\pm 1 \times 10^{-6}$
Bandwidth	$\pm 1.5 \times 10^{-6}$
Time	$\pm 2\%$
Duty Cycle	$\pm 2\%$
Temperature	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 3\%$
Conducted Emissions (150kHz~30MHz)	$\pm 3.64\text{dB}$
Radiated Emission(9kHz~30MHz)	$\pm 2.54\text{dB}$
Radiated Emission(30MHz~1GHz)	$\pm 5.03\text{dB}$
Radiated Emission(1GHz~25GHz)	$\pm 4.74\text{dB}$
Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%	



Report No.: PTC22080106601E-FC01

5.3 Description of Support Units

Equipment	Model No.	Series No.
TONE CONTROL	SERIES 10	N/A
N/A	N/A	N/A

6 Conducted Emission

Test Requirement:	: FCC CFR 47 Part 15 Section 15.207
Test Method:	: ANSI C63.10:2013
Test Result:	: PASS
Frequency Range:	: 150kHz to 30MHz
Class/Severity:	: Class B
Detector:	: Peak for pre-scan (9kHz Resolution Bandwidth)

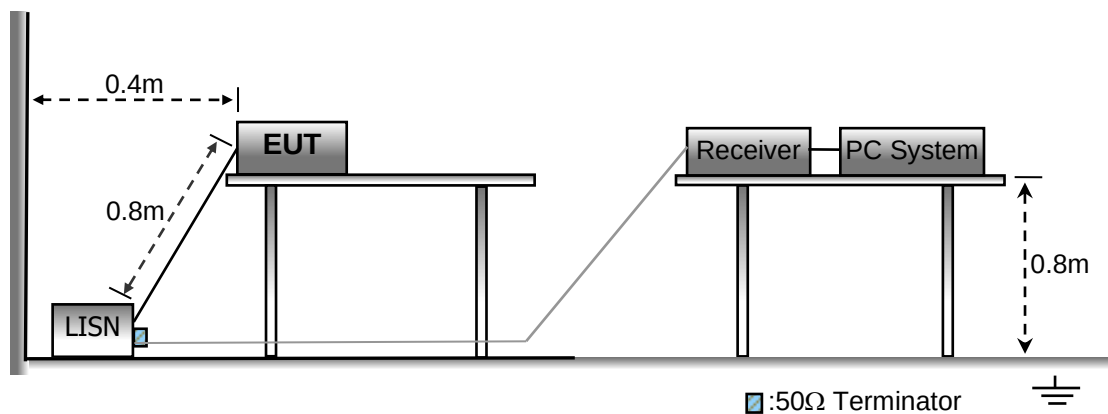
6.1 E.U.T. Operation

Operating Environment :

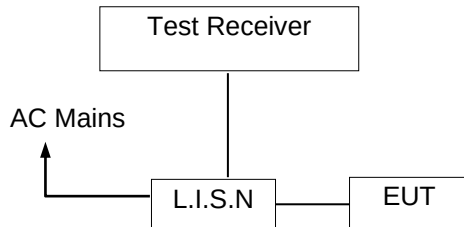
Temperature:	: 23.8 °C
Humidity:	: 50% RH
Atmospheric Pressure:	: 101.12kPa

6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10: 2013.



6.3 Test SET-UP (Block Diagram of Configuration)



6.4 Measurement Procedure:

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

6.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

6.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.7 Conducted Emission Test Result

The EUT is power with dry battery, so it is not need test.
N/A



7 RF Power Output

Test Requirement:	FCC Part 15 C section 15.236(d) The maximum radiated power shall not exceed the following values:(1) In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP (2) In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW EIRP.
Test Method:	ANSI C63.10: Clause 6.10
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports(if EUT with antenna diversity architecture). The lowest, middle and highest channels were selected for the final test as listed below.

7.1 Test Procedure

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m . Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all test transmit frequencies were measured with peak detector.

2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT . The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, And the maximum value of the receiver should be recorded as (P_r).

4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

5. An amplifier may be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}), the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.

The measurement results are obtained as described below:

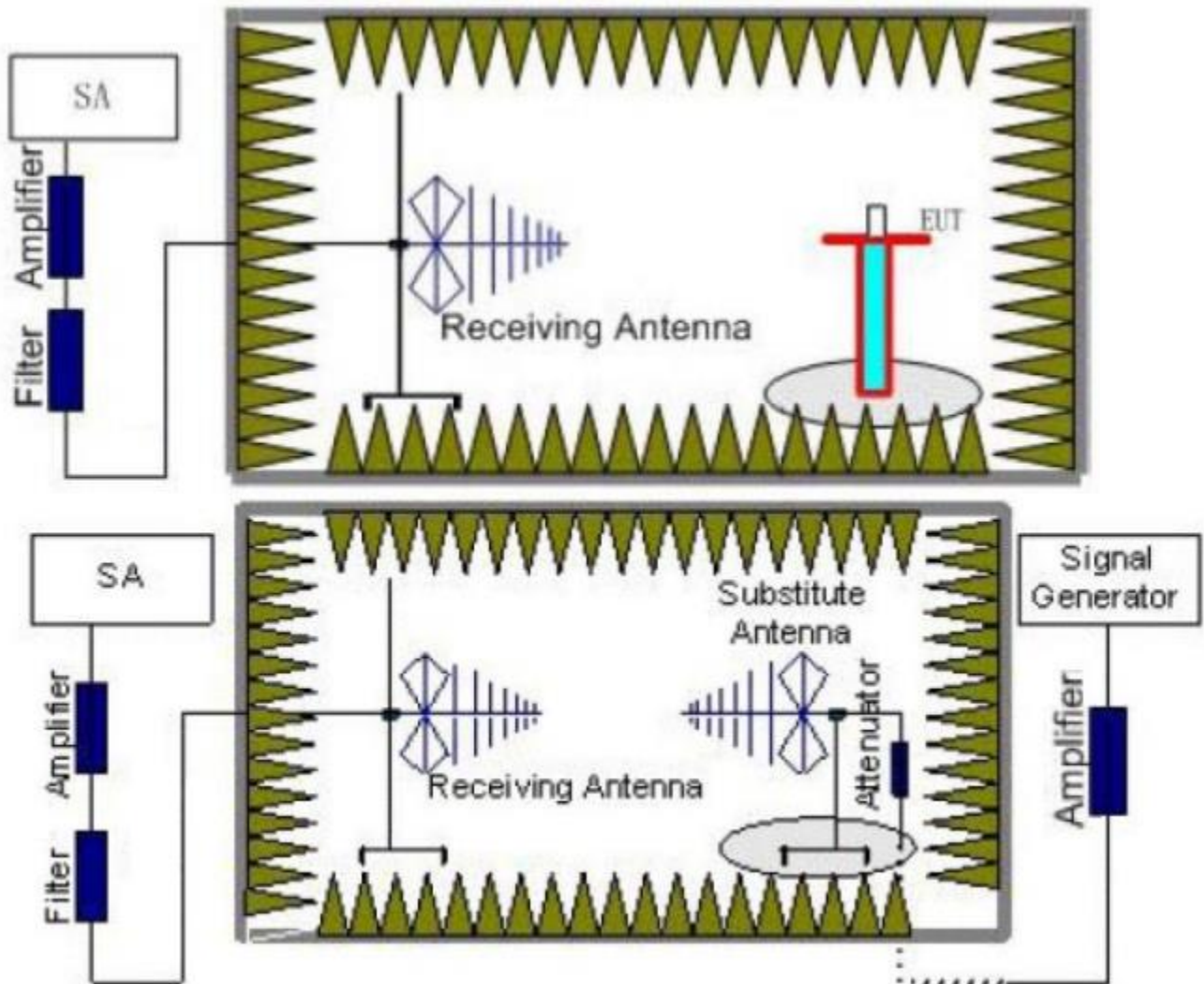
$$\text{Power(EIRP)} = P_{Mea} + P_{Ag} - P_{cl} + G_a$$

6. This value is EIRP since the measurement is calibrated using an antenna of known gain

(2.15 dBi) and known input power.

7. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dBi}$.

8. Test Configuration



7.2 Test Result:

Remark;

The field strength of radiation emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The data show in this report only with the worst case setup. After exploratory measurement the worst case of H axis and receiver antenna at vertical polarization was reported.



Test Frequency (MHz)	PMea (dBm)	Pcl (dB)	Ga Antenna Gain(dBi)	PAg (dB)	EIRP (dBm)	EIRP (mW)	FCC Limit (mW)	Polarization
657.2	-28.46	1.59	9.65	26.9	6.5	4.47	20mW	H
659.0	-28.87	1.59	9.65	26.9	6.09	4.06	20mW	H
660.8	-29.12	1.59	9.65	26.9	5.84	3.84	20mW	H
662.6	-29.32	1.59	9.65	26.9	5.64	3.64	20mW	H

Remark: $EIRP = PMea \text{ (dBm)} + PAg \text{ (dB)} - Pcl \text{ (dB)} + Ga \text{ (dBi)}$



8 Occupied Bandwidth Measurement

Test Method : ANSI C63.10: 2013

Limit : One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200kHz.

8.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 2kHz, VBW = 6.2kHz
3. Test set-up:

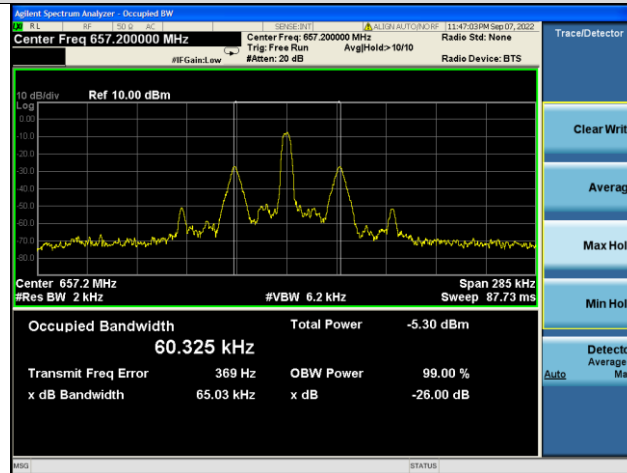


8.2 Test Result

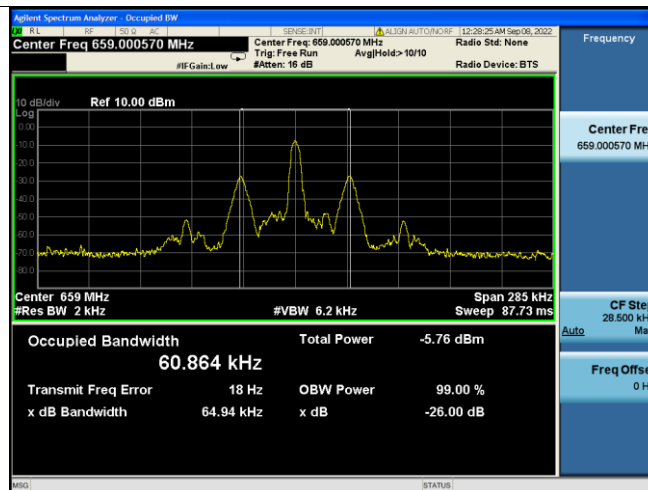
Channel frequency (MHz)	Occupied BW(KHz)
657.2	60.325
659	60.864
660.8	60.030
662.6	61.671



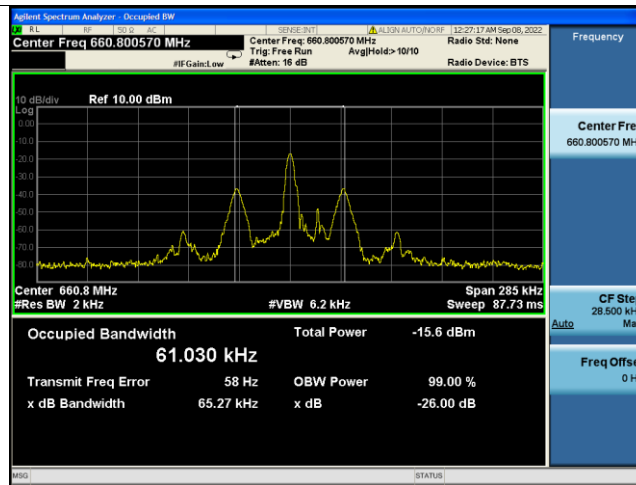
Plots of Occupied Bandwidth



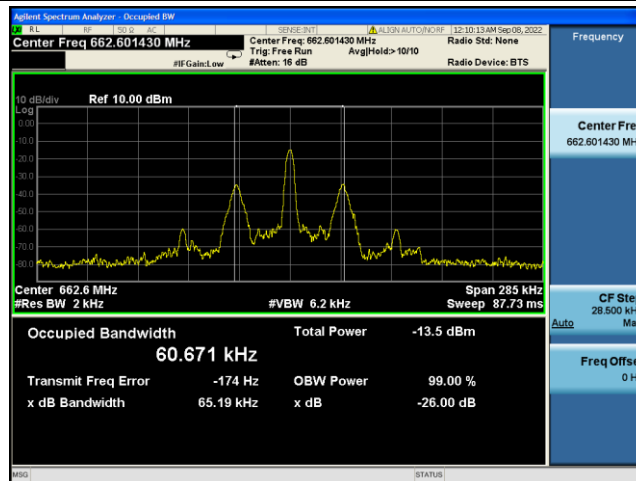
657.20MHz



659MHz



660.800MHz



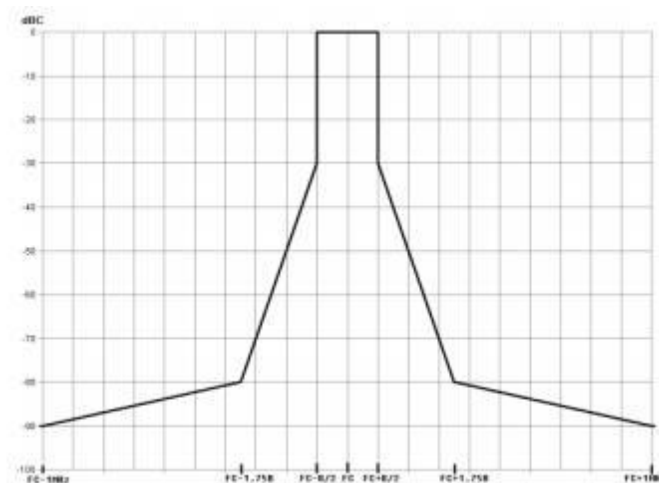
662.6MHz

9 Necessary Bandwidth

Test Method : ANSI C63.10: 2013

Limit : Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in §8.3 of ETSI EN 300 422- 1 V1.4.2 (2011-08) as below:

The transmitter output spectrum shall be within the mask defined in figure below where B is the declared channel bandwidth



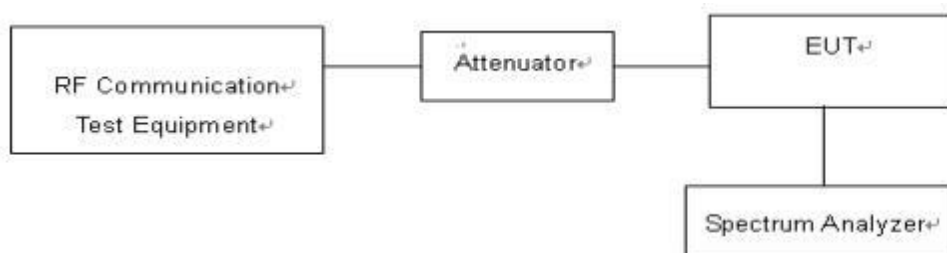
9.1 TEST PROCEDURE

1. With the Low Frequency (LF) audio signal generator set to 500 Hz, the audio input level to the EUT shall be Adjusted to 8 dB below the limiting threshold (-8dB limit) as declared by the manufacturer.
2. The corresponding audio output level from the demodulator shall be measured and recorded.
3. The input impedance of the noise meter shall be sufficiently high to avoid more than 0.1 dB changes in input level when the meter is switched between input and output.
4. The audio input level shall be increased by 20 dB, i.e. to 12 dB (lim), and the corresponding change in output level shall be measured.
5. It shall be checked that the audio output level has increased by ≤ 10 dB.
6. If the step 5 is not met, the initial audio input level shall be increased from -8 dB (lim) in 1 dB steps until the above condition is fulfilled, and the input level recorded in the test report. This level replaces the value derived from the manufacturer's declaration and is defined as -8dB (lim).
7. Measure the input level at the transmitter required to give +12 dB (lim) and record the EUT output level test plots by the spectrum analyzer.
8. The transmitter RF output spectrum shall be measured, using a spectrum analyser with the following settings:
 - centre frequency: fc: Transmitter (Tx) nominal frequency;



- dispersion (Span): $f_c - 1 \text{ MHz}$ to $f_c + 1 \text{ MHz}$;
- Resolution BandWidth (RBW): 1 kHz;
- Video BandWidth (VBW): 1 kHz;
- detector: Peak hold.

TEST CONFIGURATION

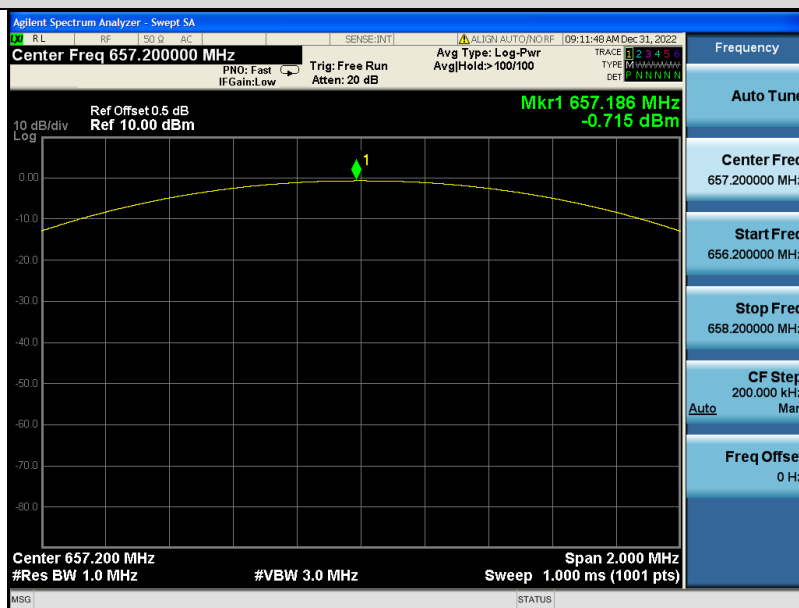


9.2 Test Result

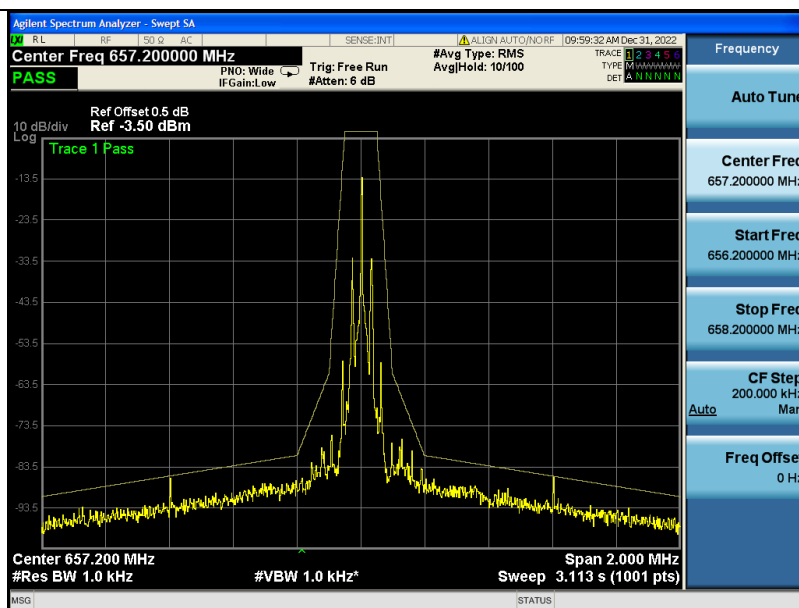
	Bandwidth(B)	B/2	0.35B
Manufacturer declare	200 KHz	100KHz	70KHz



Plots of Necessary Bandwidth



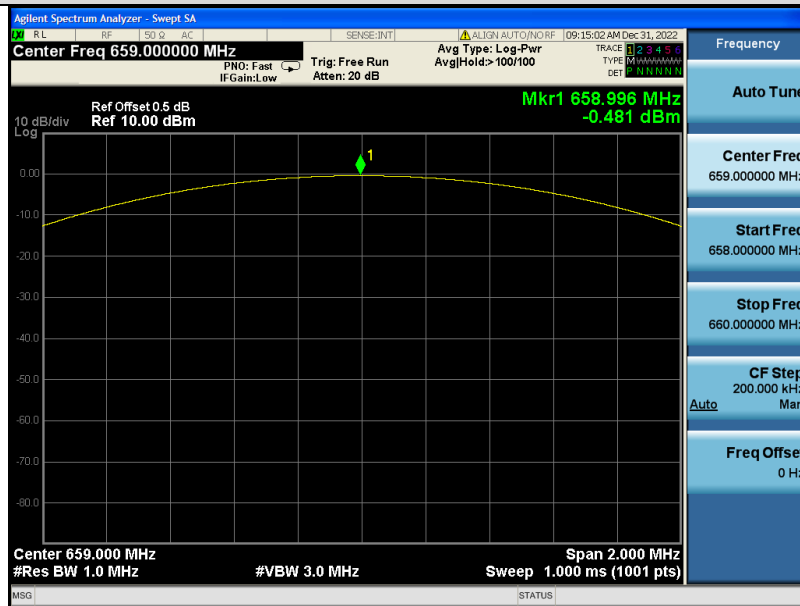
657.2MHz Reference



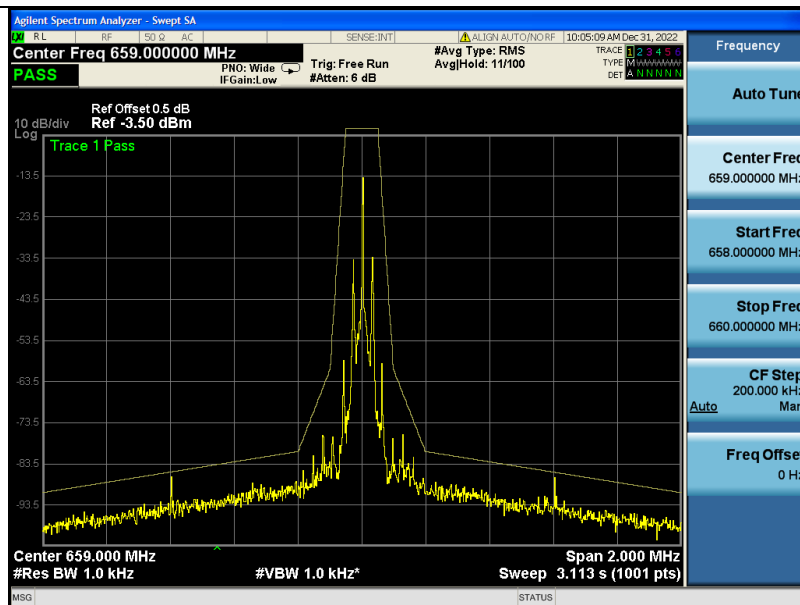
657.2MHz Emission Mask



Plots of Necessary Bandwidth



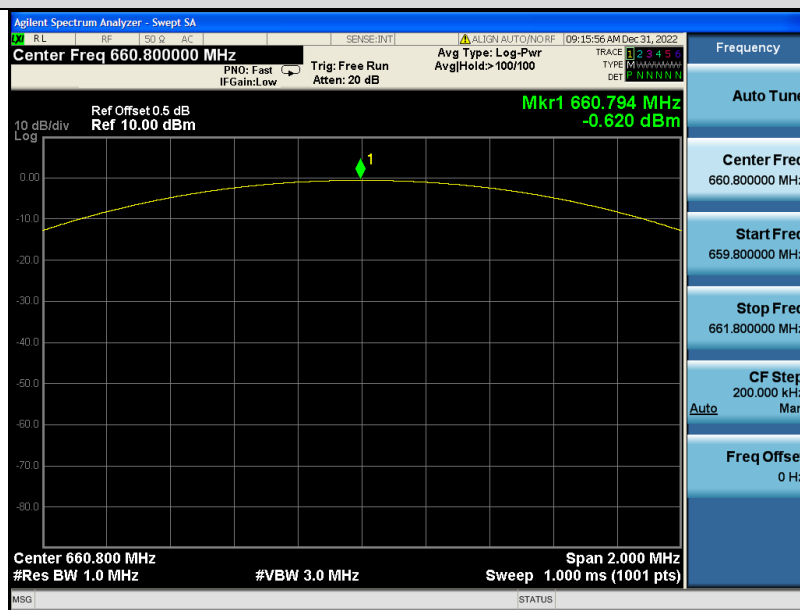
659.0MHz Reference



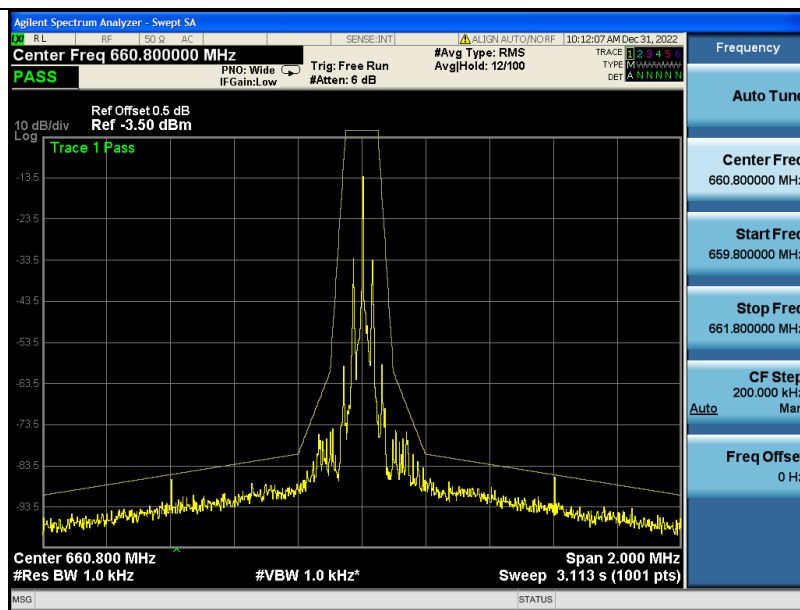
659.0MHz Emission Mask



Plots of Necessary Bandwidth



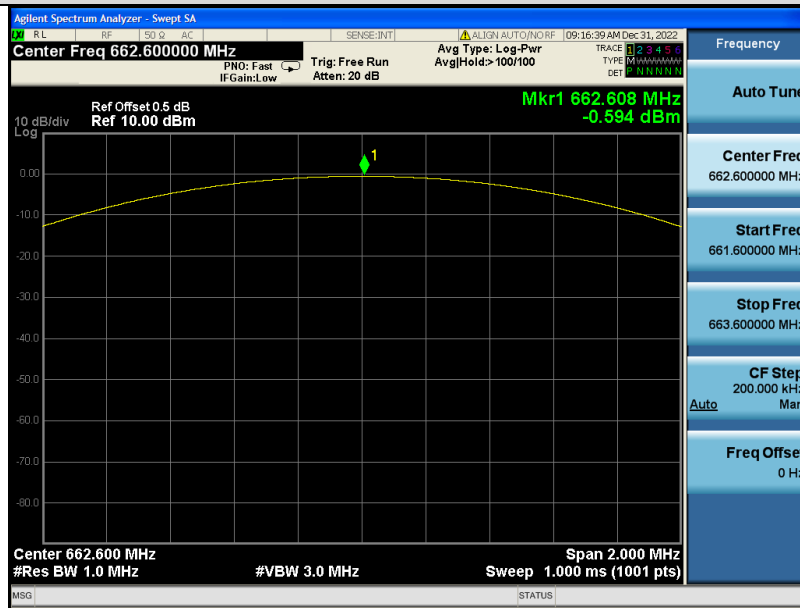
660.8MHz Reference



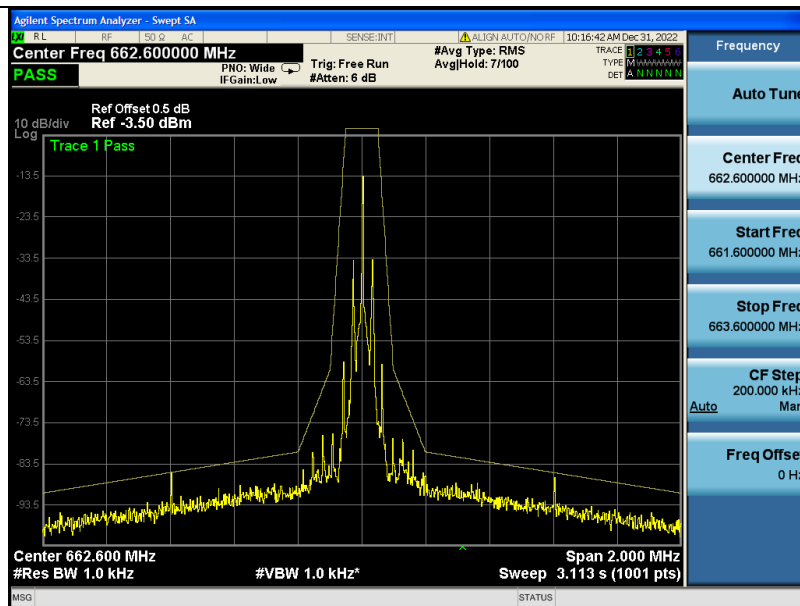
660.8MHz Emission Mask



Plots of Necessary Bandwidth



662.6MHz Reference



662.6MHz Emission Mask

10 Transmitter spurious emissions

Test Method : ANSI C63.10: 2013

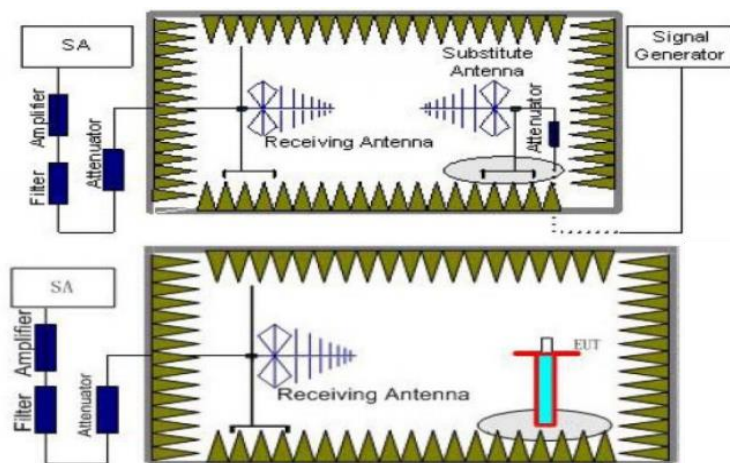
Limit : Spurious emissions are emissions outside the frequency range(s) of the equipment. The power of the spurious emissions shall not exceed the limits of table as below:

State	Frequency		
	47 MHz to 74 MHz 87,5 MHz to 137 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other Frequencies below 1 000 MHz	Frequencies above 1 000 MHz
Operation	4 nW	250 nW	1 μ W
Standby	2 nW	2 nW	20 nW

10.1 TEST PROCEDURE

1. The EUT was placed on a turntable with 1.5m height.
2. The test distance between the receiving antenna and the EUT is 3 meter, while the receiving (test) antenna is kept at 1.5 meter height.
3. Set EUT in continuous transmitting with maximum output power at test frequency.
4. The table was rotated from 0 to 360 degree to search the highest radiated emission.
5. Repeat step 3 to 4 for each polarization and test channel to find the worst emission level.
6. The results obtained are compared to the limits in order to prove compliance with the requirement.
7. Test Configuration

Effective Radiated Power measurement (30 MHz to 12.75 GHz)





10.2 Test Result

The test frequency range from 25MHz to 4GHz and recorded worst at below:

Test mode: Tx (657.2MHz)					
Frequency (MHz)	Pol./Ant	Measurement EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
955.40	V	-51.47	-36	15.47	PASS
1314.40	V	-40.10	-30	10.10	
1971.60	V	-43.01	-30	13.01	
--	V	--	--	--	
955.40	H	-53.55	-36	17.55	
1314.45	H	-40.75	-30	10.75	
1971.25	H	-43.03	-30	13.03	
--	H	--	--	--	
Test mode: Tx (659MHz)					
Frequency (MHz)	Pol./Ant	Measurement EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
955.40	V	-51.36	-36	15.36	PASS
1318.01	V	-39.97	-30	9.97	
1977.05	V	-42.79	-30	12.79	
--	V	--	--	--	
955.40	H	-53.55	-36	17.55	
1318.05	H	-41.29	-30	11.29	
1977.25	H	-43.39	-30	13.39	
--	H	--	--	--	



Test mode: Tx (660.8MHz)					
Frequency (MHz)	Pol./Ant	Measurement EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
980.00	V	-51.36	-36	15.36	PASS
1321.60	V	-41.40	-30	11.40	
1982.39	V	-44.16	-30	14.16	
--	V	--	--	--	
980.00	H	-54.30	-36	18.30	
1321.60	H	-41.98	-30	11.98	
1982.40	H	-43.95	-30	13.95	
--	H	--	--	--	
Test mode: Tx (662.6MHz)					
Frequency (MHz)	Pol./Ant	Measurement EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
980.00	V	-51.86	-36	15.86	PASS
1325.20	V	-41.10	-30	11.10	
1987.77	V	-45.26	-30	15.26	
--	V	--	--	--	
980.00	H	-55.35	-36	19.35	
1325.20	H	-43.98	-30	13.98	
1987.76	H	-45.95	-30	15.95	
--	H	--	--	--	

Remark: 1. The test frequency range from 25MHz to 4GHz, RBW/VBW: 100 KHz/300KHz below 1GHz, RBW/VBW:1000 KHz/3000KHz above 1GHz.

2. "-- "Other emission levels were very low against the limit and not reported.



11 Frequency Stability

Test Method : ANSI C63.10: 2013

Limit : The frequency tolerance of the carrier signal shall be maintained within $\pm 0.005\%$ of the operating frequency over a temperature variation of -20 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.

11.1 Test Procedure

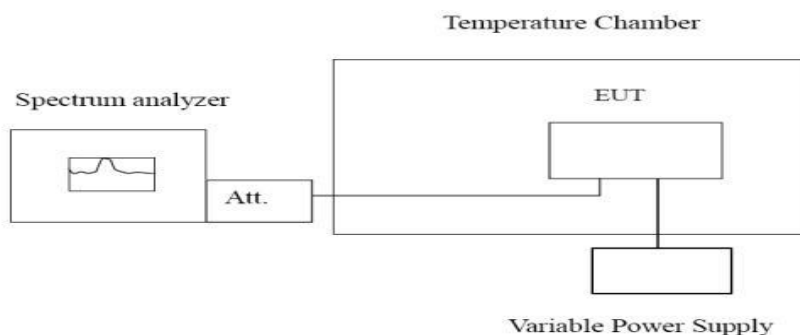
a) Frequency stability versus environmental temperature

1. Setup as Test Configuration for frequencies measured at ambient temperature if it is within 15°C to 25°C . Otherwise, an environmental chamber set for a temperature of 20°C shall be used.
2. Turn on EUT and set SA center frequency to the right frequency needs to be measured. Then set SA RBW to 3 kHz, VBW to 10 kHz and frequency span to 500 kHz. Record this frequency to be a reference.
3. Set the temperature of chamber to 50°C . Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10°C decreased per stage until the lowest temperature -20°C is measured, record all measurement frequencies.

b) Frequency stability versus input voltage

1. Setup as Test Configuration for frequencies measured at ambient temperature if it is within 15°C to 25°C . Otherwise, an environmental chamber set for a temperature of 20°C shall be used. Install new batteries in the EUT.
2. Set SA center frequency to the right frequency needs to be measured. Then set SA RBW to 3 kHz, VBW to 10 kHz and frequency span to 500 kHz. Record this frequency to be a reference.
3. For non hand carried, battery operated device, supply the EUT primary voltage with 85 and 115 percent of the nominal value and record the frequency.

c) Test Configuration





11.2 Test Results

Reference Frequency: 657.2MHz					
Voltage (V)	Temperature (C)	Frequency error (MHz)	Frequency Tolerance (%)	Limit (%)	Result
3.70	-20	0.00947	0.001441%	±0.005	PASS
	-10	0.00870	0.001332%		
	0	0.01121	0.001706%		
	10	0.00422	0.000642%		
	20	0.00261	0.000397%		
	30	0.00442	0.000673%		
	40	-0.00083	-0.000126%		
	50	-0.00274	-0.000416%		
2.55	20	-0.00083	-0.000126%		
3.45	20	-0.00757	-0.001151%		



Report No.: PTC22080106601E-FC01

Reference Frequency: 659MHz					
Voltage (V)	Temperature (°C)	Frequency error (MHz)	Frequency Tolerance (%)	Limit (%)	Result
3.70	-20	0.00982	0.001490%	±0.005	PASS
	-10	0.00858	0.001301%		
	0	0.01214	0.001842%		
	10	0.00529	0.000803%		
	20	0.00369	0.000559%		
	30	0.00615	0.000933%		
	40	-0.00050	-0.000076%		
	50	-0.00061	-0.000093%		
3.15	20	0.00058	0.000088%		
4.26	20	-0.00520	-0.000789%		



Reference Frequency: 660.8MHz					
Voltage (V)	Temperature (°C)	Frequency error (MHz)	Frequency Tolerance (%)	Limit (%)	Result
3.70	-20	0.00982	0.001392%	±0.005	PASS
	-10	0.00858	0.001298%		
	0	0.01214	0.001837%		
	10	0.00529	0.000801%		
	20	0.00369	0.000558%		
	30	0.00615	0.000931%		
	40	-0.00050	-0.000076%		
	50	-0.00061	-0.000093%		
3.15	20	0.00058	0.000088%		
4.26	20	-0.00520	-0.000787%		

Reference Frequency: 662.6MHz					
Voltage (V)	Temperature (°C)	Frequency error (MHz)	Frequency Tolerance (%)	Limit (%)	Result
3.70	-20	0.00978	0.001476%		
	-10	0.00891	0.001345%		
	0	0.01105	0.001668%		
	10	0.00466	0.000703%		
	20	0.00359	0.000542%		



Report No.: PTC22080106601E-FC01

	30	0.00578	0.000872%	±0.005	PASS
	40	0.00053	-0.000080%		
	50	-0.00024	-0.000038%		
3.15	20	0.00053	0.000080%	±0.005	PASS
4.26	20	-0.00658	-0.000993%		

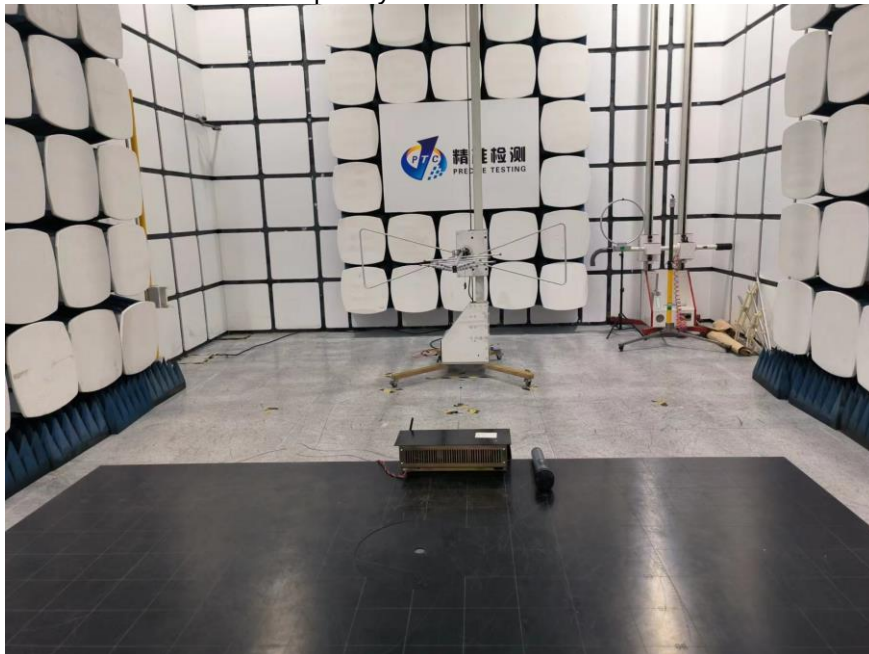


12 Antenna Requirement

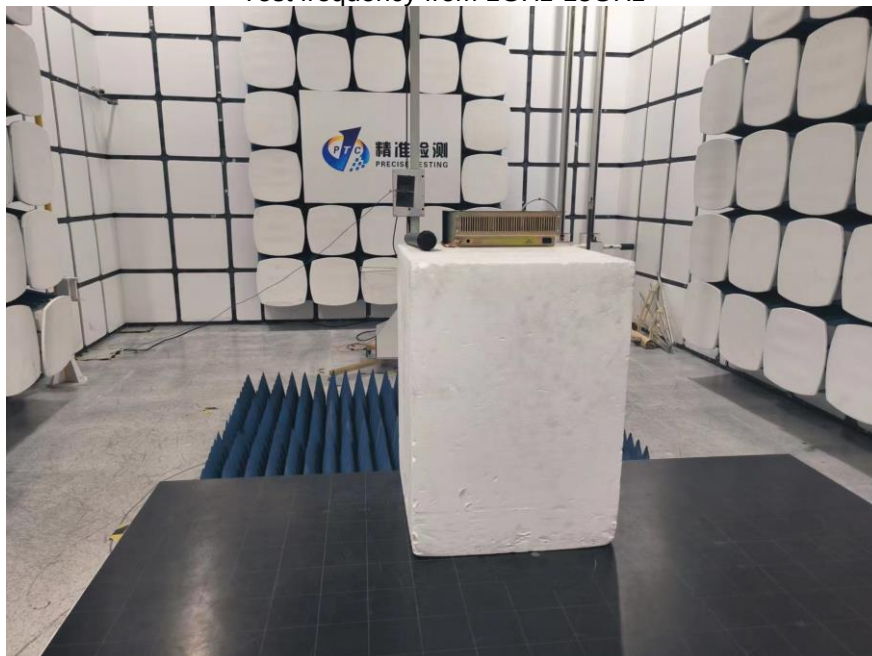
According to the FCC part15.203, a transmitter can only be sold or operated with antennas with which it was approved. This product has an Internal Antenna which meets the requirement of this section.

13 TEST PHOTOS

Radiated Spurious Emissions
Test Frequency From 30MHz-1000MHz



Test frequency from 1GHz-18GHz





Report No.: PTC22080106601E-FC01

14 EUT PHOTOS

Please reference file : Ext photos and Int photos

*****THE END REPORT*****