FCC PART 15 SUBPART C TEST REPORT

FCC PART 15.236

Report Reference No.....	**: MAX250427015P01-R01**
FCC ID.....	**: 2BPRQ-Z1**
Compiled by (position+printed name+signature)..	: Engineer/ Cindy Zheng
Supervised by (position+printed name+signature)..	: Manager/Haley Wen
Approved by (position+printed name+signature)..	: RF Manager/ Vivian Jiang
Date of issue.....	: May 21, 2025
Testing Laboratory Name.....	**: MAX Testing Co.,Ltd.**
Address.....	: 1/F, Building B, Xinshidai GR Park,Shiyan Street, Bao'an District, Shenzhen,Guangdong, 518052, People's Republic of China
Applicant's name.....	**: Hangzhou Zansheng Digital Co., Ltd.**
Address.....	: 501-2, Building 17, No.1008 Xiangwang Street, Cangqian Street, Yuhang District, Hangzhou City, Zhejiang Province, China
Test specification.....	**:**
Standard.....	: FCC Part 15.236 ANSI C63.10-2020

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Equipment description.....	**: Wireless microphone**
Trade Mark.....	: N/A
Manufacturer.....	: Dongguan Xingnan Digital Technology Co., Ltd.
Model/Type reference.....	: Z1
Listed Models	: N/A
Modulation	: FM
Frequency.....	660.4MHz
Ratings.....	: DC 3.7V from battery
Result.....	: **PASS**

TEST REPORT

Equipment under Test	:	**Wireless microphone**
Model /Type	:	Z1
Listed Models	:	N/A
Model Declaration	:	N/A
Applicant	:	**Hangzhou Zansheng Digital Co., Ltd.**
Address	:	501-2, Building 17, No.1008 Xiangwang Street, Cangqian Street, Yuhang District, Hangzhou City, Zhejiang Province, China
Manufacturer	:	**Dongguan Xingnan Digital Technology Co., Ltd.**
Address	:	Room 803, No.1148 Dalang Section, Guanzhang Road, Dalang Town, Dongguan City, Guangdong Province, China

Test Result:	**PASS**

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.

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.236: Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz, 614-616 MHz and 657-663 MHz.
ANSI C63.10-2020: American National Standard for Testing Unlicensed Wireless Devices

2 SUMMARY

2.1 General Remarks

Date of receipt of test sample	:	May 11, 2025
Testing commenced on	:	May 11, 2025
Testing concluded on	:	May 21, 2025

2.2 Product Description

Product Description:	Wireless microphone
Model/Type reference:	Z1
Power supply:	DC 3.7V from battery
Adapter information:	N/A
Testing sample ID:	MAX250427015P01-R01-1# (Engineer sample), MAX250427015P01-R01-2# (Normal sample)
Hardware Version:	N/A
Software Version:	N/A
Modulation:	FM
Operation frequency:	660.4MHz
Channel number:	1
Antenna type:	PCB antenna
Antenna gain:	0 dBi

2.3 Equipment Under Test

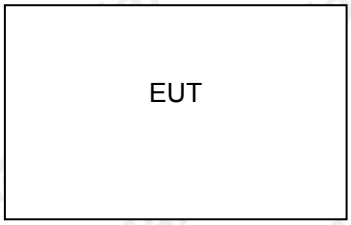
Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	○	120V / 60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below) DC 3.7V from battery		

2.4 Short description of the Equipment under Test (EUT)

This is a Wireless microphone
For more details, refer to the user's manual of the EUT.

2.5 Block Diagram of Test Setup



2.6 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for the device filing to comply with Section 15.236 of the FCC Part 15, Subpart C Rules.

2.7 Modifications

No modifications were implemented to meet testing criteria.

2.8 Operation Frequency

Channel	Frequency (MHz)
1	660.4

3 TEST ENVIRONMENT

3.1 Address of the test laboratory

MAX Testing Co.,Ltd.
1/F, Building B, Xinshidai GR Park,Shiyan Street, Bao'an District, Shenzhen,Guangdong, 518052, People's Republic of China

3.2 Test Facility

FCC-Registration No.: 562200 Designation Number: CN1338
BSL Testing Co.,Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

Industry Canada Registration Number. Is: 11093A CAB identifier: CN0019
The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

A2LA-Lab Cert. No.: 4707.01
BSL Testing Co.,Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

3.3 Environmental conditions

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

Temperature:	23 ° C
Humidity:	44 %
Atmospheric pressure:	950-1050mbar

AC Main Conducted testing：

Temperature:	24 ° C
Humidity:	47 %
Atmospheric pressure:	950-1050mbar

Conducted testing：

Temperature:	24 ° C
Humidity:	46 %
Atmospheric pressure:	950-1050mbar

3.4 Summary of measurement results

FCC Requirements		
FCC Part 15.207	Conducted Emission	PASS
FCC Part 15.203	Antenna requirement	PASS
FCC Part 15.236 (d)1	Conducted Peak Output Power	PASS
FCC Part 15.236 (f)2	Occupied bandwidth Emission	PASS
FCC Part 15.236 (f)3	Frequency Stability	PASS
FCC Part 15.236(g)/ 15.209	Radiated Emissions	PASS

Remark:
1.PASS: Test item meets the requirement.
2.Fail: Test item does not meet the requirement.
3.N/A: Test case does not apply to the test object.
4.The test result judgment is decided by the limit of test standard.

3.5 Statement of the 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 acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the MAX Testing Co.,Ltd.quality system acc. 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 MAX Testing Co.,Ltd.:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz~30MHz	3.20 dB	(1)
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.9KHz~30MHz	3.12 dB	(1)
Occupied Channel Bandwidth	/	5%	(1)
RF Frequency	/	$0.082*10^{-7}$	(1)
RF output power, conducted	/	0. 73 dB	(1)
Unwanted Emission, conducted	/	1 .6dB	(1)
AC Power Lines Conducted Emissions|	/	2. 72dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6 Equipments Used during the Test

Conducted Emission					
Test Equipment	**Manufacturer**	**Model**	**Serial No.**	**Date of Cal.**	**Due Date**
Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	MAX252	2024-10-27	2025-10-26
EMI Test Receiver	R&S	ESCI 7	MAX552	2024-10-27	2025-10-26
Coaxial Switch	ANRITSU CORP	MP59B	MAX225	2024-10-27	2025-10-26
ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	MAX226	2024-10-27	2025-10-26
Coaxial Cable	MAX	N/A	MAX227	N/A	N/A
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Thermo meter	KTJ	TA328	MAX233	2024-10-27	2025-10-26
Absorbing clamp	Elektronik-Feinmechanik	MDS21	MAX229	2024-10-27	2025-10-26
LISN	R&S	ENV216	308	2024-10-27	2025-10-26
LISN	R&S	ENV216	314	2024-10-27	2025-10-26

Radiation Test equipment					
Test Equipment	**Manufacturer**	**Model**	**Serial No.**	**Date of Cal.**	**Due Date**
3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	MAX250	2024-10-27	2025-10-26
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	MAX251	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESU26	MAX203	2024-10-27	2025-10-26
BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	MAX214	2024-10-27	2025-10-26
Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	MAX208	2024-10-27	2025-10-26
Horn Antenna	ETS-LINDGREN	3160	MAX217	2024-10-27	2025-10-26
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Coaxial Cable	MAX	N/A	MAX213	2024-10-27	2025-10-26
Coaxial Cable	MAX	N/A	MAX211	2024-10-27	2025-10-26
Coaxial cable	MAX	N/A	MAX210	2024-10-27	2025-10-26
Coaxial Cable	MAX	N/A	MAX212	2024-10-27	2025-10-26
Amplifier(100kHz-3GHz)	HP	8347A	MAX204	2024-10-27	2025-10-26
Amplifier(2GHz-20GHz)	HP	84722A	MAX206	2024-10-27	2025-10-26
Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	MAX218	2024-10-27	2025-10-26
Band filter	Amindeon	82346	MAX219	2024-10-27	2025-10-26
Power Meter	Anritsu	ML2495A	MAX540	2024-10-27	2025-10-26
Power Sensor	Anritsu	MA2411B	MAX541	2024-10-27	2025-10-26
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	MAX575	2024-10-27	2025-10-26

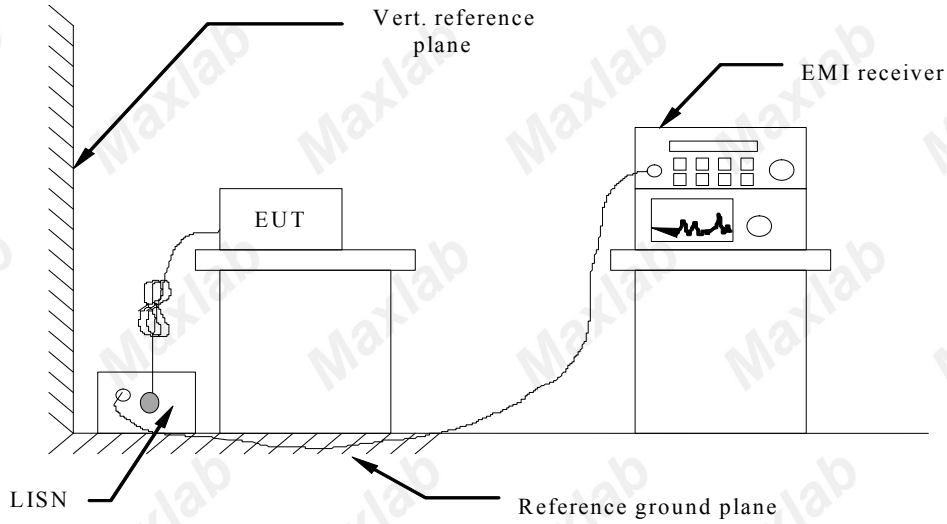
Splitter	Agilent	11636B	MAX237	2024-10-27	2025-10-26
Loop Antenna	ZHINAN	ZN30900A	MAX534	2024-10-27	2025-10-26
Breitband hornantenne	SCHWARZBECK	BBHA 9170	MAX579	2024-10-27	2025-10-26
Amplifier	TDK	PA-02-02	MAX574	2024-10-27	2025-10-26
Amplifier	TDK	PA-02-03	MAX576	2024-10-27	2025-10-26
PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	MAX578	2024-10-27	2025-10-26

RF Conducted Test:					
Test Equipment	**Manufacturer**	**Model**	**Serial No.**	**Date of Cal.**	**Due Date**
MXA Signal Analyzer	Agilent	N9020A	MAX566	2024-10-27	2025-10-26
EMI Test Receiver	R&S	ESCI 7	MAX552	2024-10-27	2025-10-26
Spectrum Analyzer	Agilent	E4440A	MAX533	2024-10-27	2025-10-26
MXG vector Signal Generator	Agilent	N5182A	MAX567	2024-10-27	2025-10-26
ESG Analog Signal Generator	Agilent	E4428C	MAX568	2024-10-27	2025-10-26
USB RF Power Sensor	DARE	RPR3006W	MAX569	2024-10-27	2025-10-26
RF Switch Box	Shongyi	RFSW3003328	MAX571	2024-10-27	2025-10-26
Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	MAX572	2024-10-27	2025-10-26

4 TEST CONDITIONS AND RESULTS

4.1 AC Power Conducted Emission

TEST CONFIGURATION



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 tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2020.
2 Support equipment, if needed, was placed as per ANSI C63.10-2020
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2020
4 The EUT received power from adapter, the adapter received AC120V/60Hz and AC 240V/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.

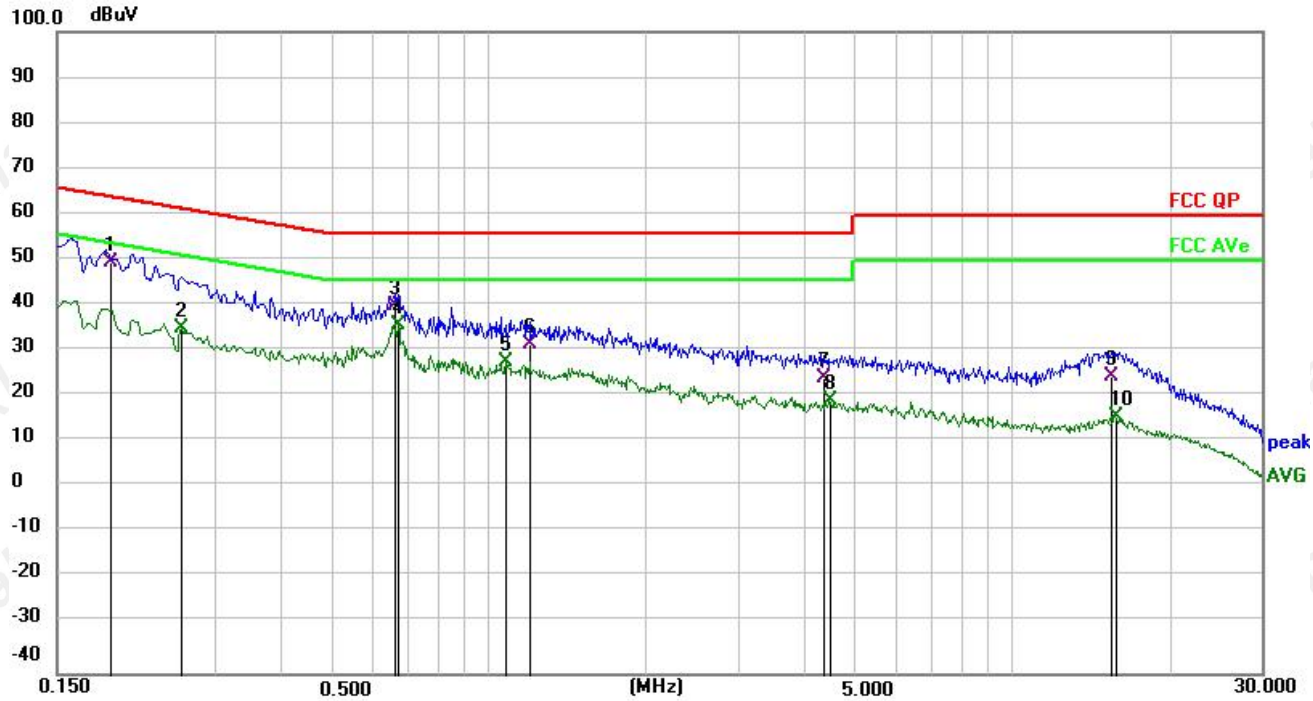
AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

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 RESULTS

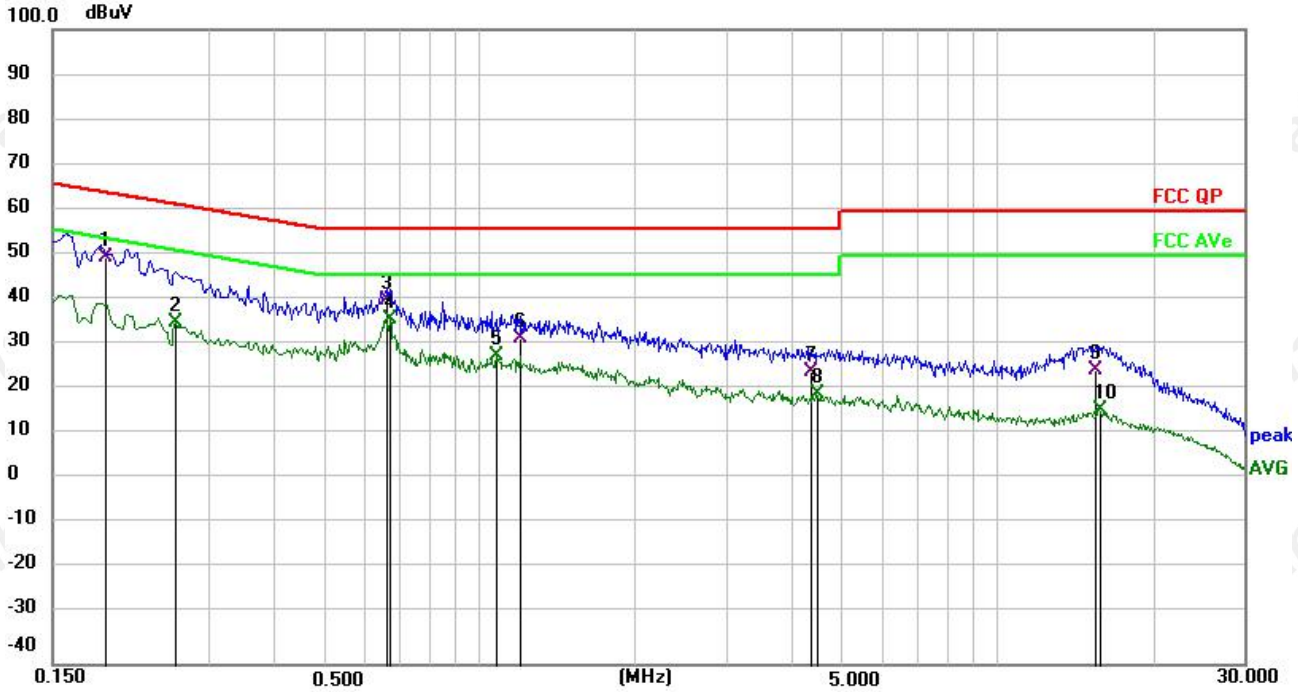
Power supply:	DC 5V from Adapter AC 120V/60Hz	Polarization	L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1609	36.79	17.53	54.32	65.42	-11.10	QP	P
2	0.2355	20.36	17.53	37.89	52.25	-14.36	AVG	P
3	0.5415	16.16	17.51	33.67	46.00	-12.33	AVG	P
4	0.6620	23.72	17.51	41.23	56.00	-14.77	QP	P
5 *	0.6630	18.73	17.51	36.24	46.00	-9.76	AVG	P
6	0.9735	13.00	17.51	30.51	46.00	-15.49	AVG	P
7	1.0772	16.24	17.50	33.74	56.00	-22.26	QP	P
8	1.2930	11.25	17.49	28.74	46.00	-17.26	AVG	P
9	1.3708	15.11	17.49	32.60	56.00	-23.40	QP	P
10	3.4721	11.98	17.42	29.40	56.00	-26.60	QP	P

Note:1).Level (dBμV)= Reading (dBμV)+ Factor (dB)
2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
3). Margin(dB) = Limit (dBμV) - Level (dBμV)

Power supply:	DC 5V from Adapter AC 120V/60Hz	Polarization	N



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1899	32.97	16.73	49.70	64.04	-14.34	QP	P
2	0.2580	18.58	16.72	35.30	51.50	-16.20	AVG	P
3	0.6607	23.69	16.66	40.35	56.00	-15.65	QP	P
4 *	0.6720	19.36	16.66	36.02	46.00	-9.98	AVG	P
5	1.0770	11.64	16.61	28.25	46.00	-17.75	AVG	P
6	1.1960	15.50	16.59	32.09	56.00	-23.91	QP	P
7	4.3496	8.54	16.18	24.72	56.00	-31.28	QP	P
8	4.4970	3.37	16.16	19.53	46.00	-26.47	AVG	P
9	15.4659	10.64	14.40	25.04	60.00	-34.96	QP	P
10	15.7740	1.91	14.36	16.27	50.00	-33.73	AVG	P

Note:1).Level (dBμV)= Reading (dBμV)+ Factor (dB)
2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
3). Margin(dB) = Limit (dBμV) - Level (dBμV)

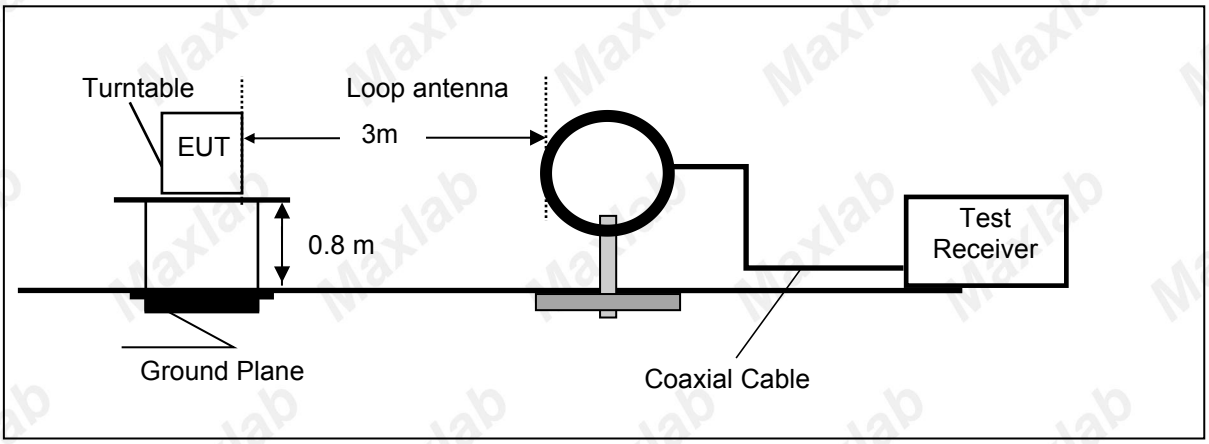
4.2 Radiated Emissions Test

Limit

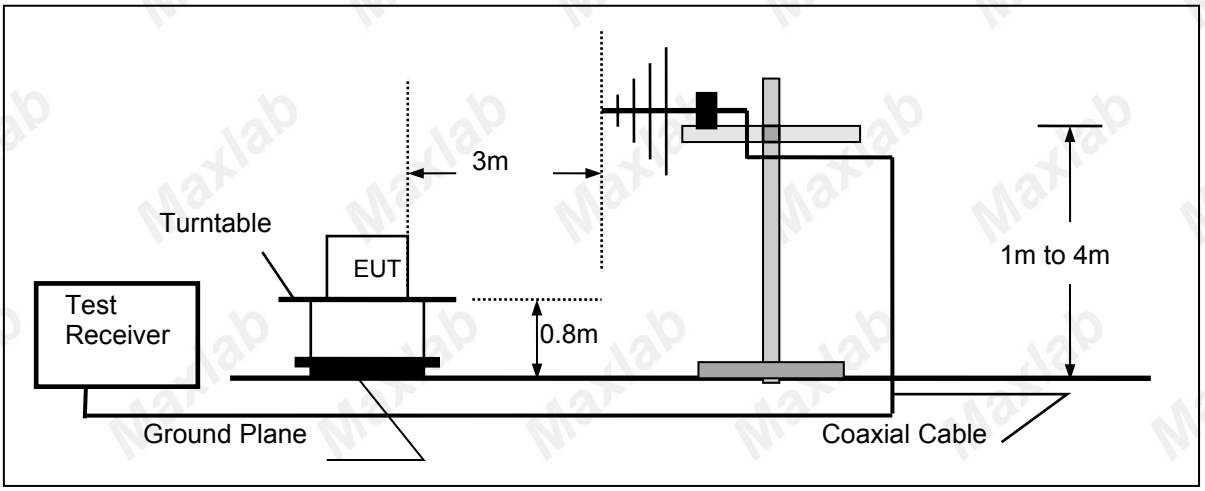
Emissions within the band from one mecahertz below to one mecahertz above the carrier frequencshall comply with the emission mask in S8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08).Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300422-1 V1.4.2(2011-08)FCC Part15 (15.236), Subpart C

Test Configuration

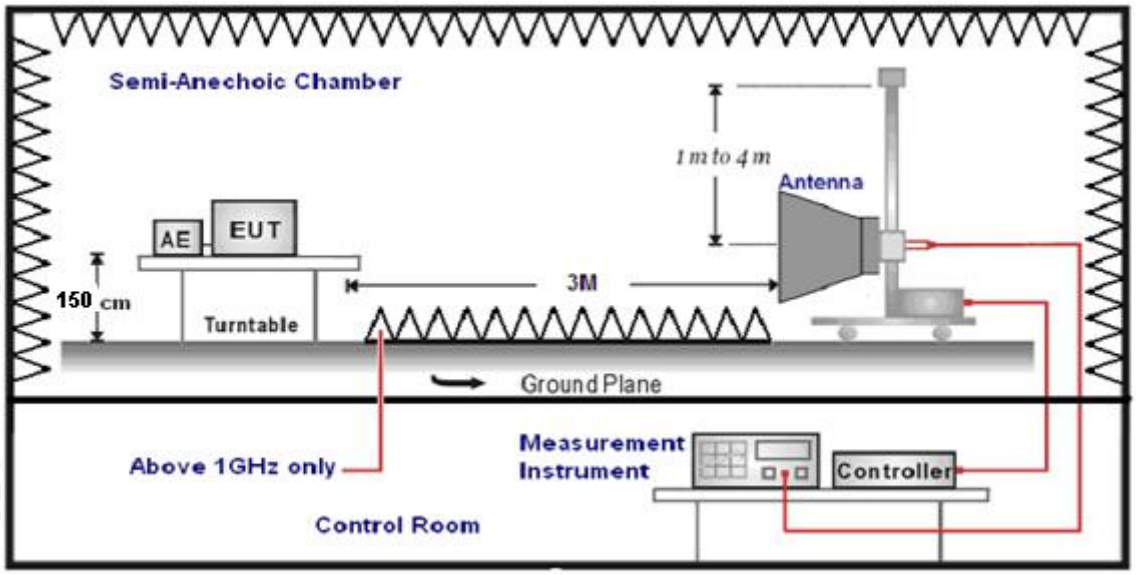
Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 9 KHz –1GHz;the EUT was placed on a turn table which is 1.5m above ground plane when testing frequency range 1GHz – 25GHz.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° 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 25GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

Below 1GHz Test Results: (Show only the worst test results)

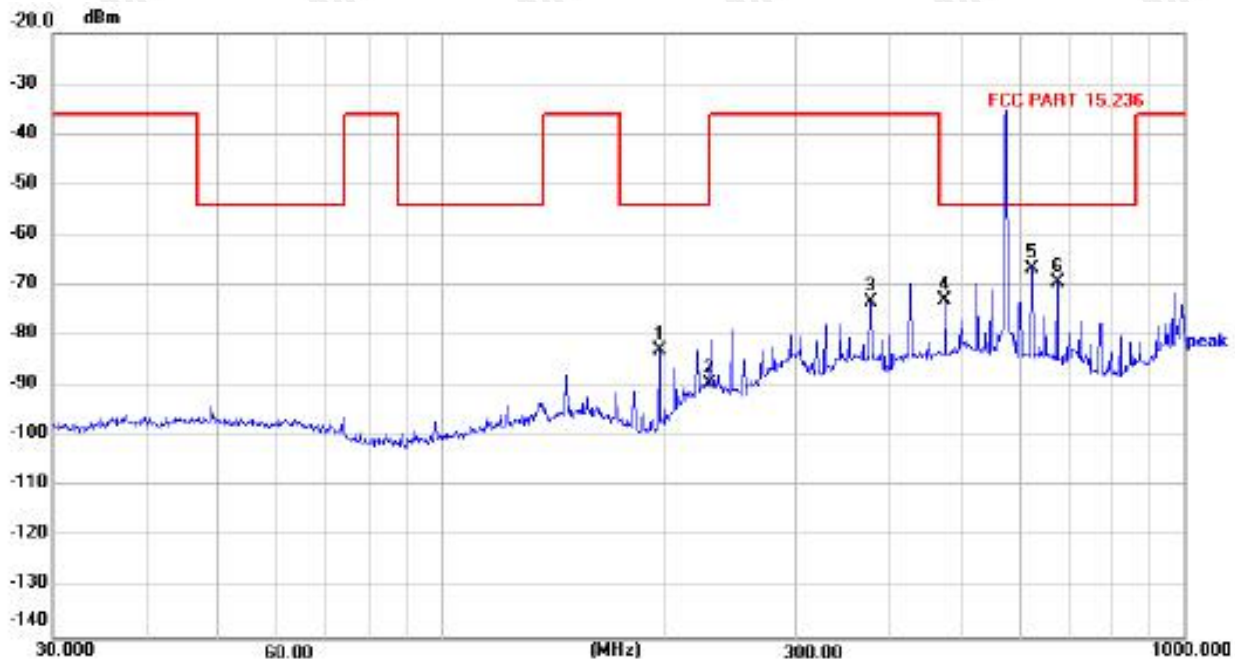
All modes have been tested, and only the worst mode is recorded

Test result

Temperature	24.1℃	Humidity	55.8%
Test Engineer	/	Configurations	TX

Measurement data:

Horizontal



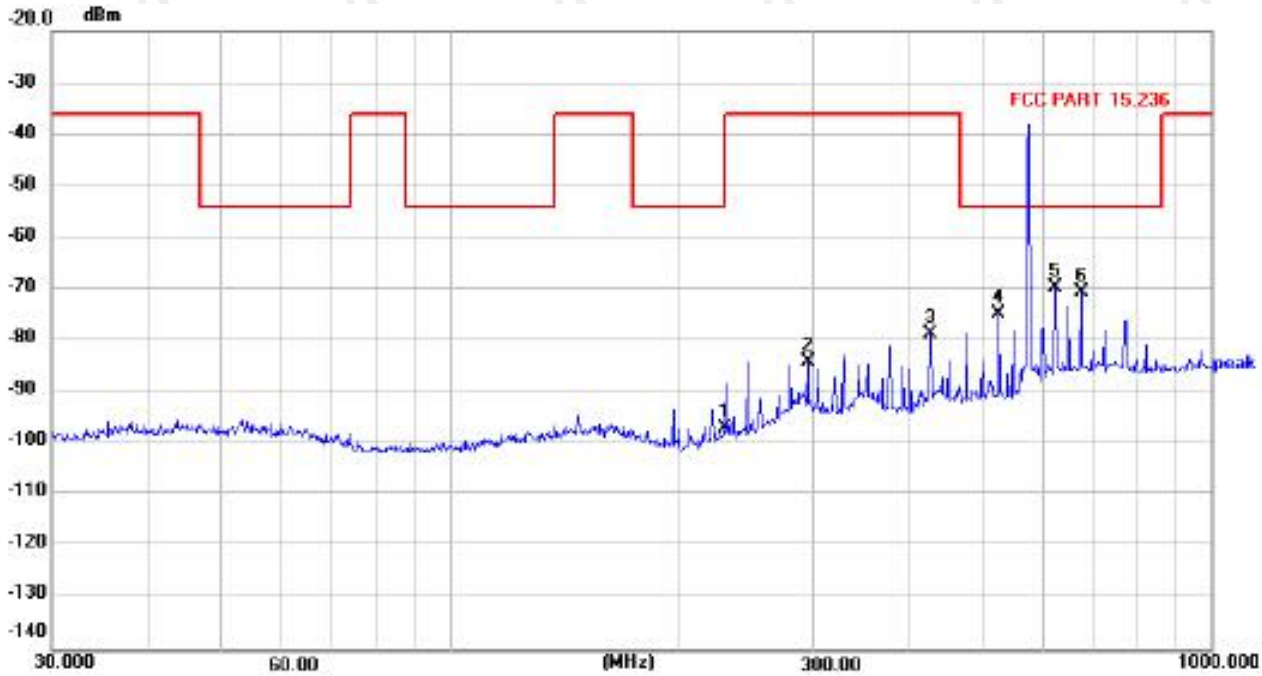
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	196.5098	-63.70	-19.12	-82.82	-54.00	-28.82	peak
2	229.2930	-70.89	-18.60	-89.49	-54.00	-35.49	peak
3	378.5842	-59.76	-13.63	-73.39	-36.00	-37.39	peak
4	477.1693	-61.96	-11.13	-73.09	-54.00	-19.09	peak
5 *	625.0778	-59.05	-7.45	-66.50	-54.00	-12.50	peak
6	675.2078	-62.71	-6.78	-69.49	-54.00	-15.49	peak

Note:1).Level (dBμV/m)= Reading (dBμV/m)+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

Vertical



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	229.2930	-78.28	-18.60	-96.88	-54.00	-42.88	peak
2	295.1467	-68.17	-15.73	-83.90	-36.00	-47.90	peak
3	428.0192	-66.41	-12.29	-78.70	-36.00	-42.70	peak
4	526.3967	-64.68	-9.94	-74.62	-54.00	-20.62	peak
5 *	625.0778	-62.35	-7.45	-69.80	-54.00	-15.80	peak
6	675.2078	-63.66	-6.78	-70.44	-54.00	-16.44	peak

Note:1).Level (dBμV/m)= Reading (dBμV/m)+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

Harmonics and Spurious Emissions Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
--	--	--
--	--	--
--	--	--

Note:*1. Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor.*
2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with therequirement.

ABOVE 1GHz test results:

All modes have been tested, and only the worst mode is recorded.

Transmitting at 660.40MHz						
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
1320.80	-40.26	-5.81	-46.07	-30	-16.07	Horizontal
1320.80	-37.25	-5.81	-43.06	-30	-13.06	Vertical
1981.20	-34.52	-5.81	-40.33	-30	-10.33	Horizontal
1981.20	-30.26	-5.81	-36.07	-30	-6.07	Vertical
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier; Level = Reading + Factor; Margin = Level-Limit.						

Remark：
(1) Measuring frequencies from 1 GHz to the 18 GHz.
(2) “F” denotes fundamental frequency; “H” denotes spurious frequency; “E” denotes band edge frequency.
(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(4)The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

4.3 Conducted Output Power

Limit

According to FCC 15.236(d)(2), In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW EIRP.

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor.

Test Configuration

Test Results

Test Channel	frequency (MHz)	Conducted Output Power (dBm)	ANT Gain (dBi)	EIRP (dBm)	Limit (dBm)	Result
CH01	660.4	1.245	0	1.245	13	PASS

Eirp=Conducted Output Power+ANT Gain

4.4 Occupied Bandwidth Measurement

Limit

According to FCC 15.236(f)(2), The operating frequency within a permissible band of operation as defined in paragraph (c) must comply with the following requirements.
(1)The frequency selection shall be offset from the upper or lower band limits by 25 kHz or an integral multiple thereof.
(2)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.
Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in Section 8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08) (incorporated by reference, see § 15.38). Emissions outside this band shall comply with the limit specified at the edges of the ETSI mask.

Test Procedure

According to TIA-603 for additional Test Set-Up procedures, the occupied bandwidth of emission was measured with a Spectrum Analyzer connected to the antenna terminal while EUT was operating in 2.5kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation. Then mark the -26dB Bandwidth and record it.

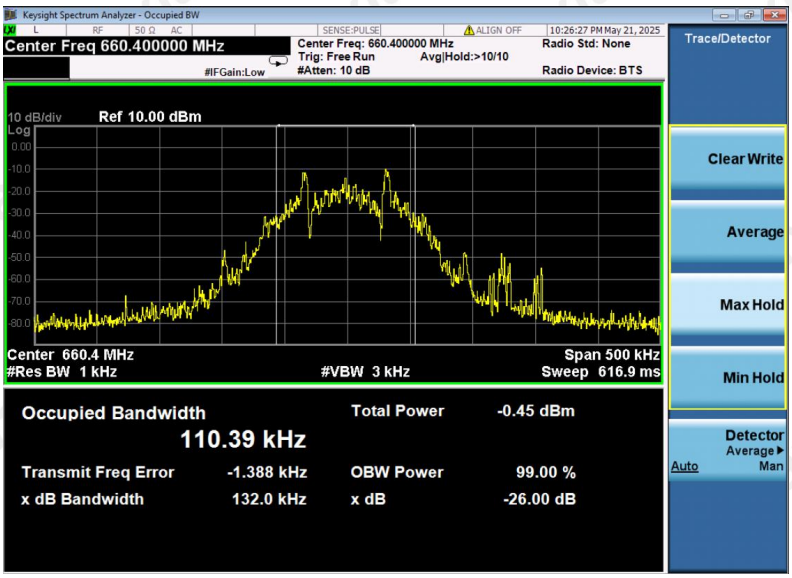
Test Configuration

Test Results

Test Channel	frequency (MHz)	-20Bandwidth (kHz)	99%Bandwidth (kHz)	Limit -20Bandwidth (kHz)	Result
CH01	660.4	132.0	110.39	200	PASS

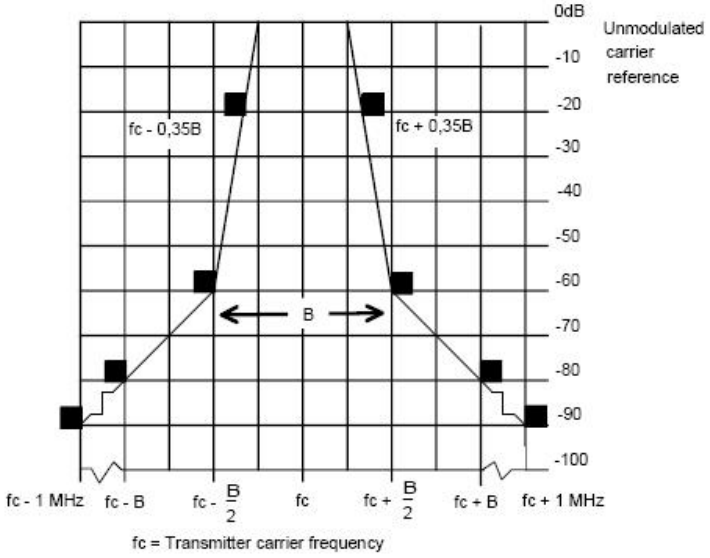
Test plot as follows:

660.4 MHz


Keysight Spectrum Analyzer - Occupied BW
Center Freq 660.400000 MHz
Center Freq: 660.400000 MHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 10 dB
Radio Std: None
Radio Device: BTS
10:26:27 PM May 21, 2025
#IFGain:Low
Trace/Detector
10 dB/div
Ref 10.00 dBm
Log
Clear Write
Average
Max Hold
Min Hold
Center 660.4 MHz
#Res BW 1 kHz
#VBW 3 kHz
Span 500 kHz
Sweep 616.9 ms
Occupied Bandwidth
110.39 kHz
Total Power -0.45 dBm
Transmit Freq Error -1.388 kHz
OBW Power 99.00 %
x dB Bandwidth 132.0 kHz
x dB -26.00 dB
Detector
Average
Auto
Man

4.5 Necessary Bandwidth

Limit



Standard Applicable

According to § 15.236 (g) 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),Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless UHF Microphone s in the 25 MHz to 3GHz frequency range; Part 1: Technical characteristics and methods of measurement. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

According to ETSI EN 300 422-2 V2.1.1 section 8.3, the transmitter output spectrum shall be within the mask defined in the following figure.

Test Configuration

Test Procedure

The arrangement of test equipment as shown in figure B.1 shall be used. Note that the noise meter conforms to (quasi peak) without weighting filter (flat).

With the Low Frequency (LF) audio signal generator set to 500 Hz, the audio input level to the DUT shall be adjusted to 8 dB below the limiting threshold (-8 dB (lim)) as declared by the manufacturer.

The corresponding audio output level from the demodulator shall be measured and recorded.

The input impedance of the noise meter shall be sufficiently high to avoid more than 0.1 dB change in input level when the meter is switched between input and output.

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.

It shall be checked that the audio output level has increased by ≤ 10 dB.

If this condition 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 -8 dB (lim).

Measure the input level at the transmitter required to give +12 dB (lim).

The LF generator shall be replaced with the weighted noise source to Recommendation ITU-R BS.559-2 [i.3], band-limited to 15 kHz as described in IEC 60244-13 [2], and the level shall be adjusted such that the measured input to the transmitter corresponds to +12 dB (lim).

If the transmitter incorporates any ancillary coding or signalling channels (e.g. pilot-tones), these shall be enabled prior to any spectral measurements.

If the transmitter incorporates more than one audio input, e.g. stereo systems, the second and subsequent channels shall be simultaneously driven from the same noise source, attenuated to a level of -6 dB (lim).

-centre frequency: fc: Transmitter (Tx) nominal frequency;

-dispersion (Span): fc - 1 MHz to fc + 1 MHz;

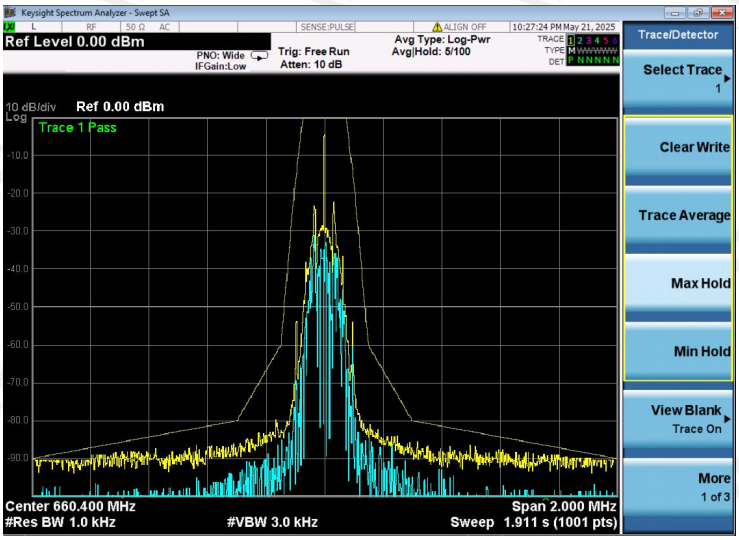
-Resolution Bandwidth (RBW):1 kHz;

-Video Bandwidth (VBW): 3 kHz;

-detector: Peak hold.

Test Results

660.4MHz



4.6 Frequency Stability

Limit

±50ppm

Standard Applicable

According to FCC 15.236(f)(3), The frequency tolerance of the carrier signal shall be maintained within ± 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.

Test Configuration

Test Procedure

1.Setup the configuration of the ambient temperature form -20° C to 50° C with sufficient time. And measure the different power of the EUT with an artificial power from highest to end point voltage.

2.Set frequency counter center frequency to the right frequency needs to be measured band.

Test Results

Note: All modes have been tested, and only the worst mode is recorded.

Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature (°C)	(MHz)	(MHz)	ppm	ppm	
660.40MHz	N	N	660.3975	-0.0025	-3.8	±50ppm	PASS
		L	660.3979	-0.0021	-3.2		
		H	660.3981	-0.0019	-2.9		
	L	N	660.3969	-0.0031	-4.7		
		L	660.3971	-0.0029	-4.4		
		H	660.3968	-0.0032	-4.8		
	H	N	660.3971	-0.0029	-4.4		
		L	660.3975	-0.0025	-3.8		
		H	660.3966	-0.0034	-5.1		

4.7 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 maximum gain of antenna was 0 dBi.

Remark:The antenna gain is provided by the customer , if the data provided by the customer is not accurate, MAX Testing Co.,Ltd. does not assume any responsibility.

5 Test Setup Photos of the EUT

Reference to the appendix I for details.

6 Photos of the EUT

Reference to the appendix II for details.

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