



FCC TEST REPORT

Test report
On Behalf of

SUPER MEGATRONIX LLC

For
WIRELESS MICROPHONE

**Model No.: M-01B, M-02B, M-03B, M-04B, M-05B, M-06B, M-07B,
M-08B, M-09B, M-10B, M-11B, M-12B, M-13B, M-14B, M-15B,
M-16B, M-17B, M-18B, M-19B, M-20B**

FCC ID: 2AWJA-M01B

Prepared for : SUPER MEGATRONIX LLC
9305 HARWIN DR STE L HOUSTON Texas 77036-1821 United States

Prepared By : Shenzhen HUAKE Testing Technology Co., Ltd.
1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street,
Bao'an District, Shenzhen City, China

Date of Test: Jul. 01, 2020 ~ Jul. 07, 2020

Date of Report: Jul. 07, 2020

Report Number: HK2006031685-E



TEST RESULT CERTIFICATION

Applicant's name : SUPER MEGATRONIX LLC
 Address..... : 9305 HARWIN DR STE L HOUSTON Texas 77036-1821 United States
Manufacture's Name : SUPER MEGATRONIX LLC
 Address..... : 9305 HARWIN DR STE L HOUSTON Texas 77036-1821 United States

Product description

Trade Mark : Musicy Beat
 Product name..... : WIRELESS MICROPHONE
 Model and/or type reference : M-01B, M-02B, M-03B, M-04B, M-05B, M-06B, M-07B, M-08B, M-09B, M-10B, M-11B, M-12B, M-13B, M-14B, M-15B, M-16B, M-17B, M-18B, M-19B, M-20B

Standards : FCC Rules and Regulations Part 15 Subpart C Section 15.236
 ANSI C63.4: 2014

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Date of Test :
 Date (s) of performance of tests..... : Jul. 01, 2020 ~ Jul. 07, 2020
 Date of Issue : Jul. 07, 2020
 Test Result..... : **Pass**

Testing Engineer : Gary Qian
 (Gary Qian)

Technical Manager : Eden Hu
 (Eden Hu)

Authorized Signatory : Jason Zhou
 (Jason Zhou)



TABLE OF CONTENTS

1	TEST SUMMARY	5
	1.1 TEST PROCEDURES AND RESULTS	5
	1.2 TEST FACILITY	5
	1.3 Measurement Uncertainty.....	5
2	GENERAL INFORMATION	6
	2.1 GENERAL DESCRIPTION OF EUT	6
	2.2 Carrier Frequency of Channels	7
	2.3 Operation of EUT during testing	7
	2.4 DESCRIPTION OF TEST SETUP.....	8
	2.5 Description of Support Units	8
3	TEST RESULTS AND MEASUREMENT DATA	10
	3.1 CONDUCTED EMISSIONS TEST	10
	3.2 RADIATED EMISSION TEST	12
	3.4Conducted Output Power.....	17
	3.5OCCUPIED BANDWIDTH MEASUREMENT	18
	3.5Necessary bandwidth.....	20
	3.6 FREQUENCY STABILITY	23
	3.7 ANTENNA REQUIREMENT	25
4	PHOTOGRAPH OF TEST	26
5	PHOTOGRAPH OF EUT	27



**** Modified History ****

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Jul. 07, 2020	Jason Zhou



1 TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

Requirement	CFR 47 Section	Result
Conducted Emission	15.207	N/A
Conducted Peak Output Power	15.236(d)(1)	PASS
Occupied Bandwidth Emission	15.236(f)(2)	PASS
Radiated Spurious Emission	15.236(g)	PASS
Frequency Stability	15.236(f)(3)	PASS
Antenna Requirement	15.203	PASS

Note:

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.

1.2 TEST FACILITY

Test Firm : Shenzhen HUAKE Testing Technology Co., Ltd.

Address 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street, Bao'an District, Shenzhen City, China

1.3 Measurement Uncertainty

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

No.	Item	MU
1	Conducted Emission	$\pm 2.56\text{dB}$
2	RF power, conducted	$\pm 0.12\text{dB}$
3	Spurious emissions, conducted	$\pm 0.11\text{dB}$
4	All emissions, radiated(<1G)	$\pm 3.92\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.28\text{dB}$
6	Temperature	$\pm 0.1^\circ\text{C}$
7	Humidity	$\pm 1.0\%$



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	WIRELESS MICROPHONE
Model Name	M-01B
Serial No.	M-02B, M-03B, M-04B, M-05B, M-06B, M-07B, M-08B, M-09B, M-10B, M-11B, M-12B, M-13B, M-14B, M-15B, M-16B, M-17B, M-18B, M-19B, M-20B
Model Difference	All model's the function, software and electric circuit are the same, only model named different. Test sample model: M-01B
Trade Mark	Musicy Beat
FCC ID	2AWJA-M01B
Hardware Version:	V1.1
Software Version:	V1.0
Operation frequency	208.8MHz –211.5MHz
Number of Channels	2CH
Antenna Type	Internal antenna
Antenna Gain	10dBi
Modulation Type	FM
Power Source	DC 3.0V from Battery



2.2 Carrier Frequency of Channels

Channel	Frequency
0	208.8
1	211.5

2.3 Operation of EUT during testing

Operating Mode

The mode is used: **Transmitting mode**

CH0: 208.8MHz

CH1: 211.5MHz



2.4 DESCRIPTION OF TEST SETUP

Operation of EUT during testing:



2.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Description	Model No.	Manufacturer	Remark	Certificate
/	/	/	/	/
/	/	/	/	/

Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*
- 3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.*



2.6 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Dec. 26, 2019	1 Year
2.	Receiver	R&S	ESCI 7	HKE-010	Dec. 26, 2019	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 26, 2019	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Dec. 26, 2019	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 26, 2019	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 26, 2019	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 26, 2019	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 26, 2019	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519B	HKE-014	Dec. 26, 2019	1 Year
10.	Horn Antenna	Schwarzbeck	9120D	HKE-013	Dec. 26, 2019	1 Year
11.	Pre-amplifier	EMCI	EMC051845SE	HKE-015	Dec. 26, 2019	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Dec. 26, 2019	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	Dec. 26, 2019	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Dec. 26, 2019	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 26, 2019	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Dec. 26, 2019	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Dec. 26, 2019	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 26, 2019	1 Year
19.	Power Meter	R&S	NRVD	SEL0069	Dec. 26, 2019	1 Year
20.	High Gain Antenna	Schwarzbeck	LB-180400KF	HKE-054	Dec. 26, 2019	1 Year



3 TEST RESULTS AND MEASUREMENT DATA

3.1 CONDUCTED EMISSIONS TEST

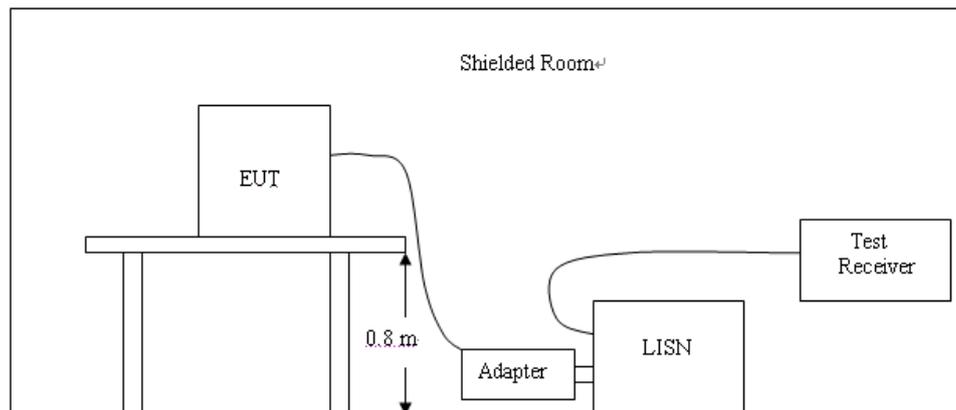
LIMIT

According to FCC CFR Title 47 Part 15 Subpart C Section 15.207 and RSS Gen 8.8, AC Power Line Conducted Emissions Limits for Licence-Exempt Radio Apparatus as below:

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 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 C63.10:2013.
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. The 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 DC Power supply

3.2 RADIATED EMISSION TEST

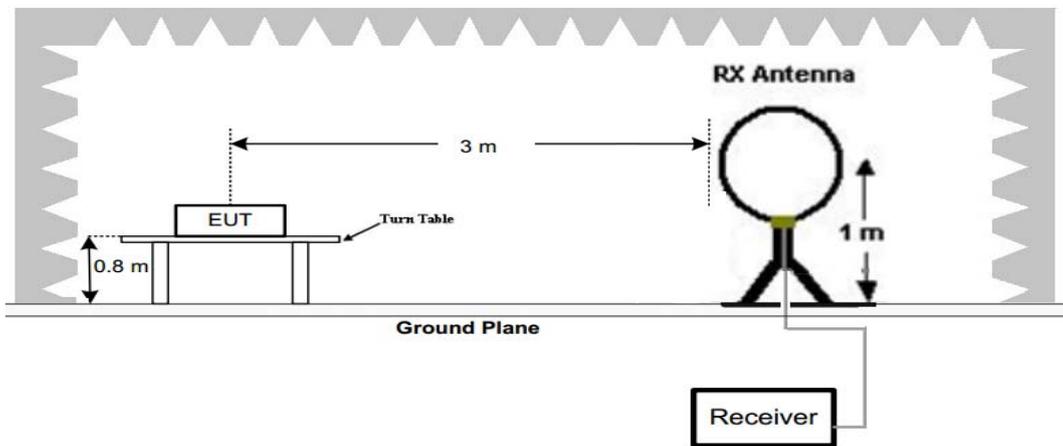
Limit

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).

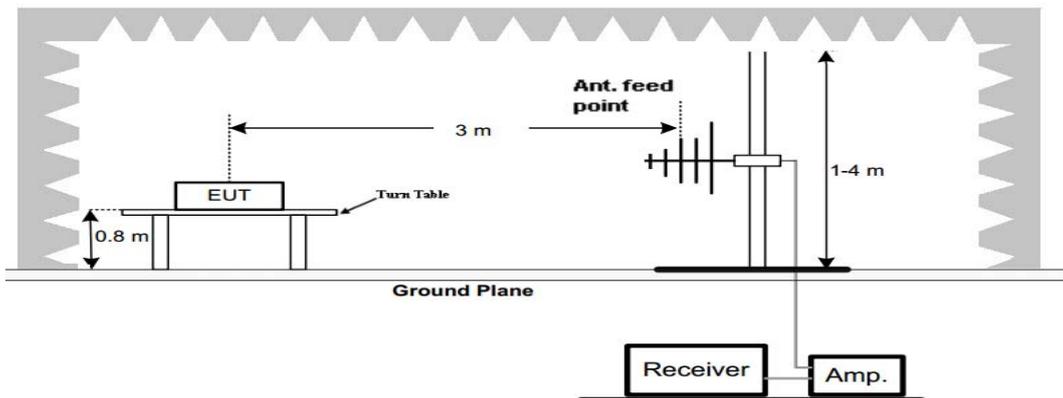
Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

TEST CONFIGURATION

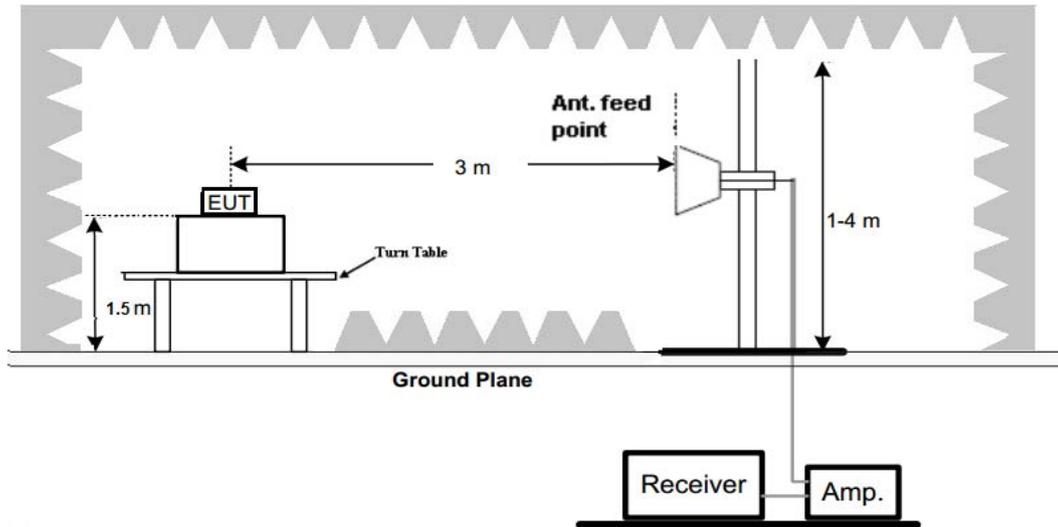
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



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



Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak	Detector function = peak

Test Procedure

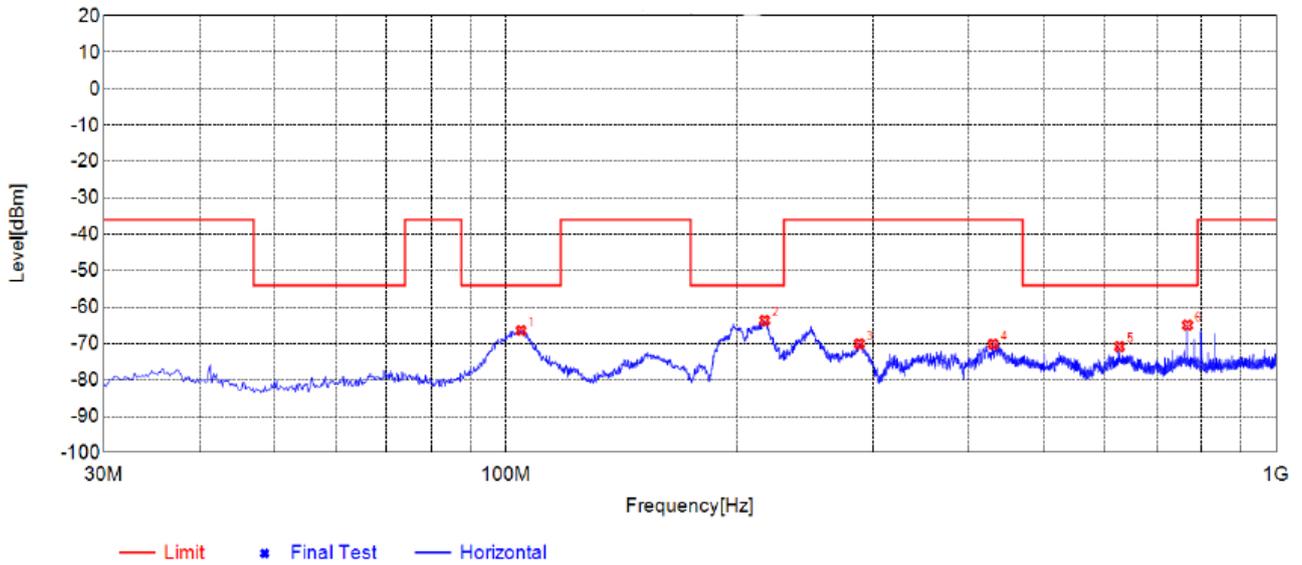
- 1.The setup of EUT is according with per TIA/EIA Standard 603 and ANSI C63.4-2014 measurement procedure.
- 2.The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
- 3.The frequency range up to tenth harmonic of the fundamental frequency was investigated.
- 4.Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable.



TEST RESULTS

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

Antenna polarity: H

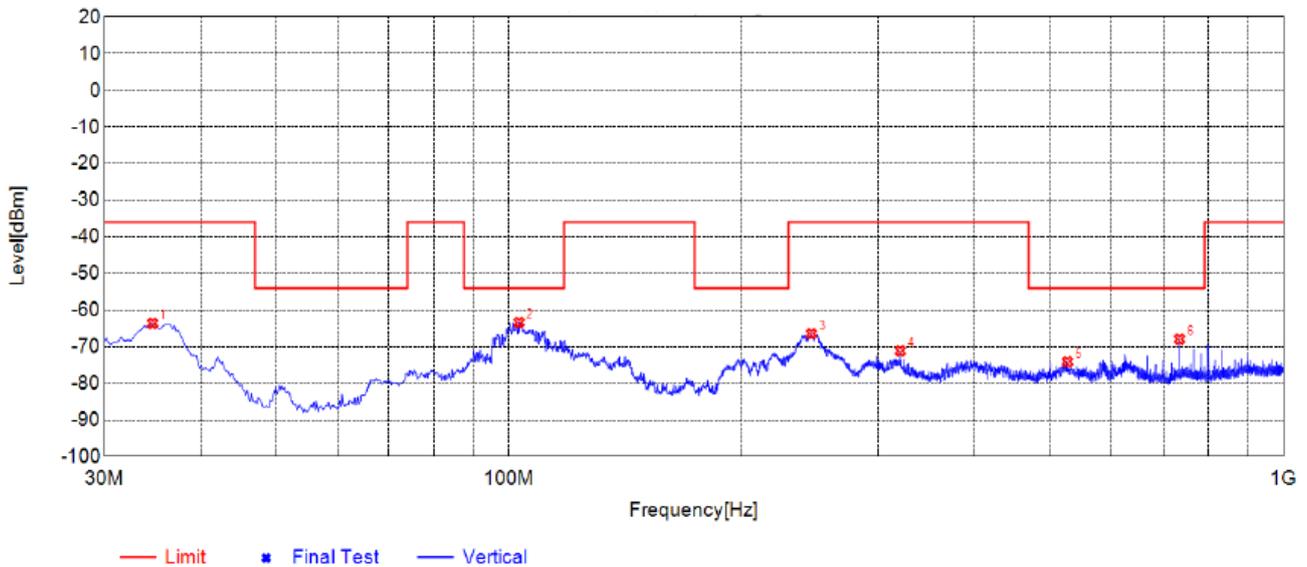


NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	104.704	-68.55	-66.42	-54.00	12.42	2.13	Horizontal
2	217.053	-67.03	-63.66	-54.00	9.66	3.37	Horizontal
3	288.071	-73.08	-70.03	-36.00	34.03	3.05	Horizontal
4	430.108	-74.15	-70.14	-36.00	34.14	4.01	Horizontal
5	624.923	-78.85	-70.83	-54.00	16.83	8.02	Horizontal
6	766.765	-73.14	-64.95	-54.00	10.95	8.19	Horizontal

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;



Antenna polarity: V



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	34.6569	-64.89	-63.60	-36.00	27.60	1.29	Vertical
2	103.152	-72.02	-63.35	-54.00	9.35	8.67	Vertical
3	246.353	-65.27	-66.42	-36.00	30.42	-1.15	Vertical
4	320.864	-72.34	-71.11	-36.00	35.11	1.23	Vertical
5	525.575	-77.69	-74.10	-54.00	20.10	3.59	Vertical
6	733.390	-75.40	-67.93	-54.00	13.93	7.47	Vertical

Remark: Factor = Cable loss + Antenna factor – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level;

Remark:

- (1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHz was verified, and no any emission was found except system noise floor.
- (2) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

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 the requirement



ABOVE 1GHz Test Results:
Transmitting at 208.8MHz

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
1044.00	-35.66	-5.81	-41.47	-30	-11.47	Horizontal
1044.00	-36.26	-5.81	-42.07	-30	-12.07	Vertical
1252.80	-33.25	-6.03	-39.28	-30	-9.28	Horizontal
1252.80	-34.14	-6.03	-40.17	-30	-10.17	Vertical

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Transmitting at 211.5MHz

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
1057.50	-38.33	-6.35	-44.68	-30	-14.68	Horizontal
1057.50	-37.46	-6.35	-43.81	-30	-13.81	Vertical
1269.00	-36.18	-6.48	-42.66	-30	-12.66	Horizontal
1269.00	-34.34	-6.48	-40.82	-30	-10.82	Vertical

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 18 GHz.
- (2) All modes of operation were investigated and the worst-case emissions are reported.
- (3) The emissions are attenuated more than 20dB below the permissible limits are not record in the report.

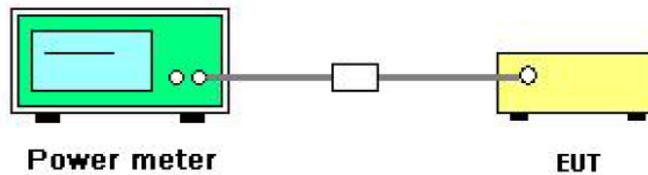


3.4 Conducted Output Power

Limit

According to FCC 15.236(d)(1), for low power auxiliary station operating in the 470-608, and 614-698 MHz bands, in the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP

TEST CONFIGURATION

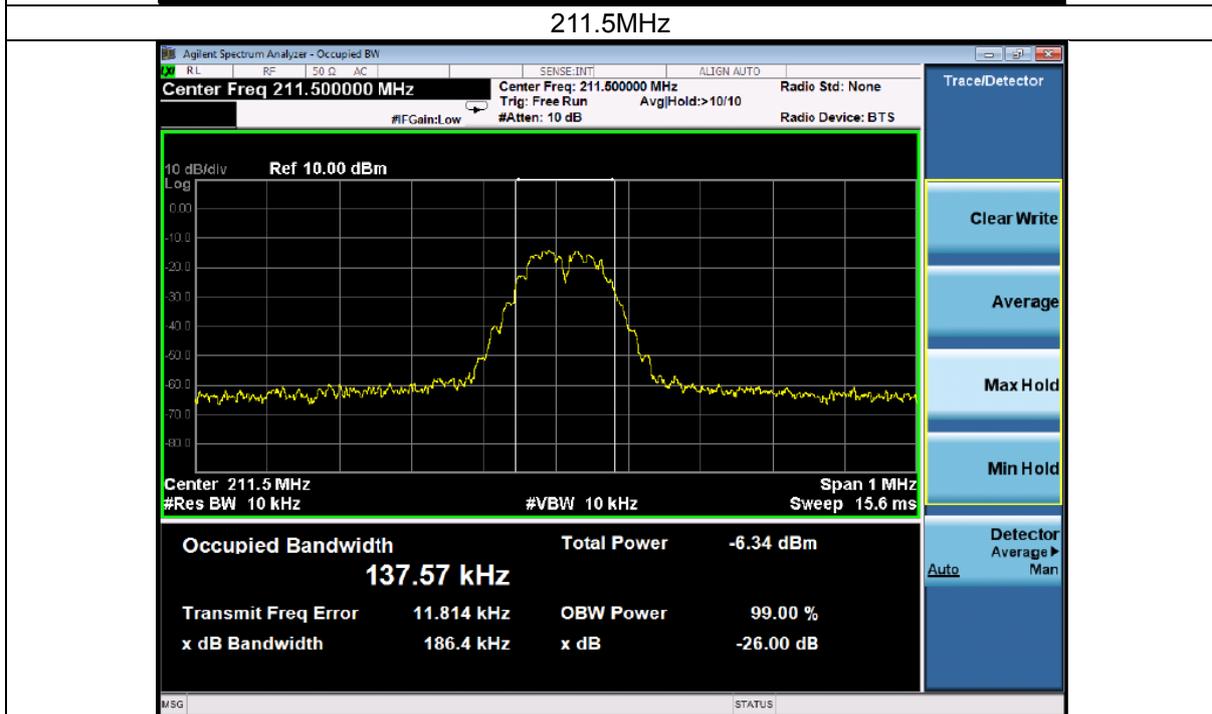
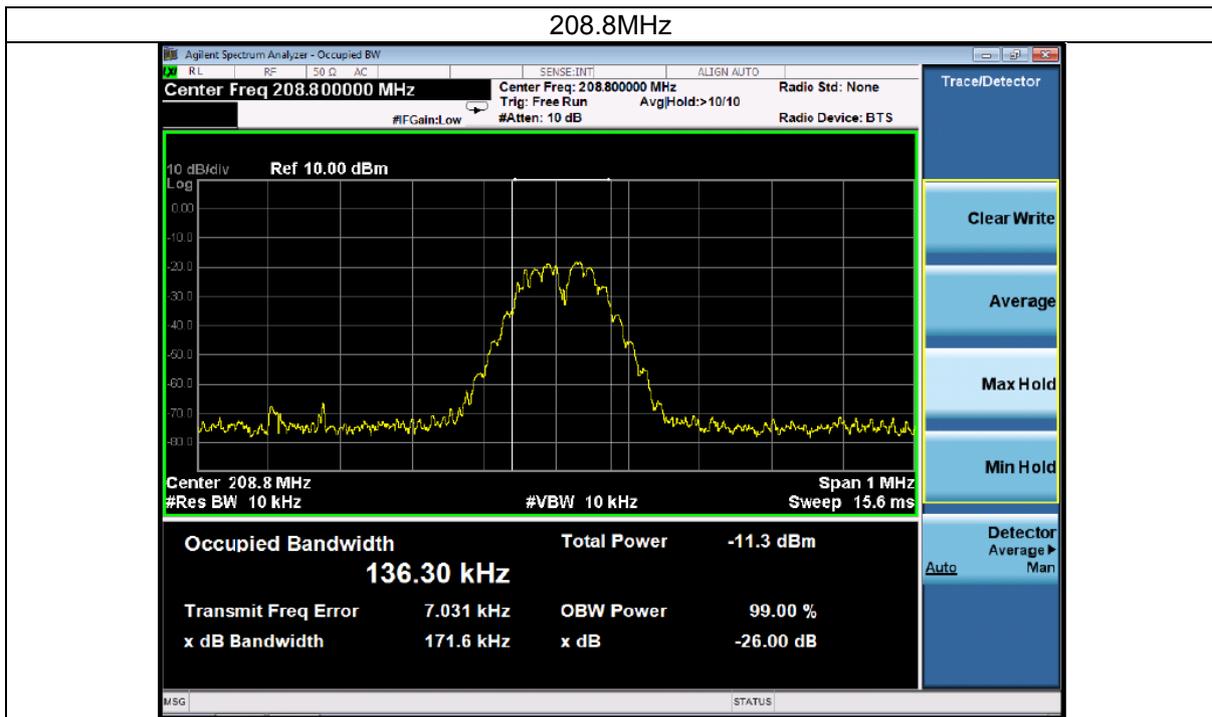


Test Procedure:

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

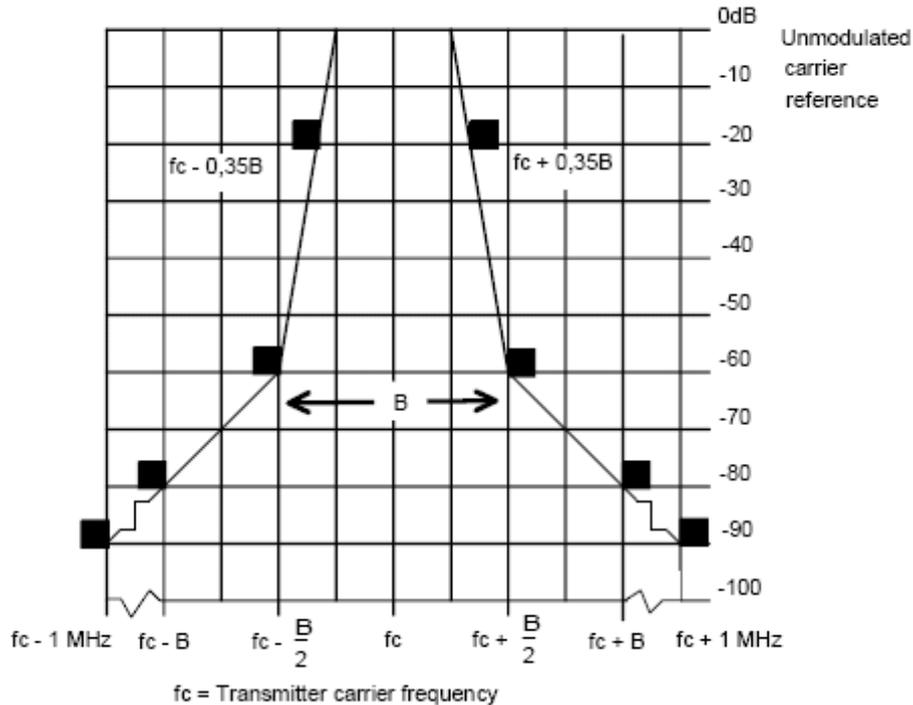
Test Results:

Test Channel	frequency (MHz)	Conducted Output Power (dBm)	ANT Gain (dBi)	EIRP (dBm)	Limit (dBm)	Result
CH0	208.8	-25.36	10	-15.36	17	PASS
CH1	211.5	-23.24	10	-13.24		PASS



3.5 Necessary bandwidth

Limit

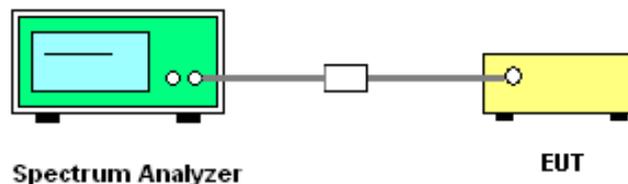


Standard Applicable

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 MICROPHONES 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).

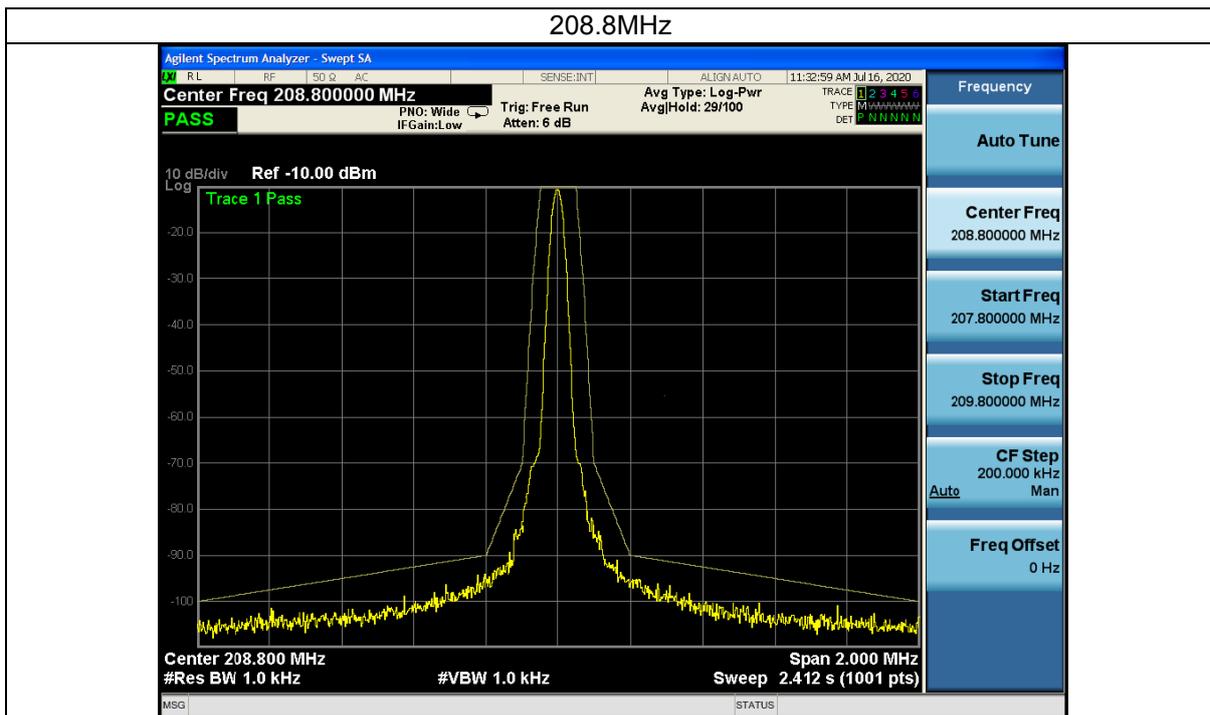
The LF generator shall be replaced with the weighted noise source to Recommendation ITU-R BS.559-2 [i.3], band-limited to 15 kHz as described in IEC 60244-13 [2], and the level shall be adjusted such that the measured input to the transmitter corresponds to +12 dB (lim).

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: f_c : Transmitter (Tx) nominal frequency;
- dispersion (Span): $f_c - 1$ MHz to $f_c + 1$ MHz;
- Resolution BandWidth (RBW): 1 kHz;
- Video BandWidth (VBW): 1 kHz;
- detector: Peak hold.

Test Result





3.6 FREQUENCY STABILITY

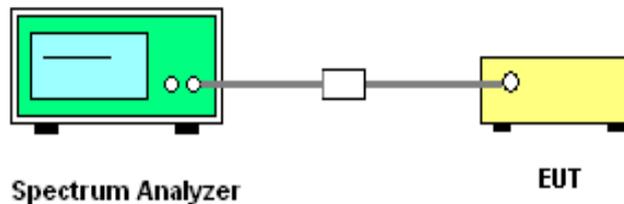
Limit

±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 from -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 Result

Test frequency (MHz)	Test Conditions		Measure Frequency (MHz)	Frequency Error		Limit ppm	Result
	Voltage (V)	Temperature (°C)		(MHz)	ppm		
208.8MHz	N	N	208.8024	0.0024	11.49	±50ppm	PASS
		L	208.8013	0.0013	6.23		
		H	208.8055	0.0055	26.34		
	L	N	208.8004	0.0004	1.92		
		L	208.8032	0.0032	15.33		
		H	208.8064	0.0072	30.65		
	H	N	208.7968	-0.0032	-15.33		
		L	208.8032	0.0032	15.33		
		H	208.7953	-0.0047	-22.51		



Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature (°C)	(MHz)	(MHz)	ppm	ppm	
211.5MHz	N	N	211.5023	0.0023	10.87	±50ppm	PASS
		L	211.5047	0.0047	22.22		
		H	211.5036	0.0036	17.02		
	L	N	211.4977	-0.0023	-10.87		
		L	211.5021	0.0021	9.93		
		H	211.4988	-0.0012	-5.67		
	H	N	211.5022	0.0022	10.40		
		L	211.4978	-0.0022	-10.40		
		H	211.5027	0.0027	12.77		



3.7 ANTENNA REQUIREMENT

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

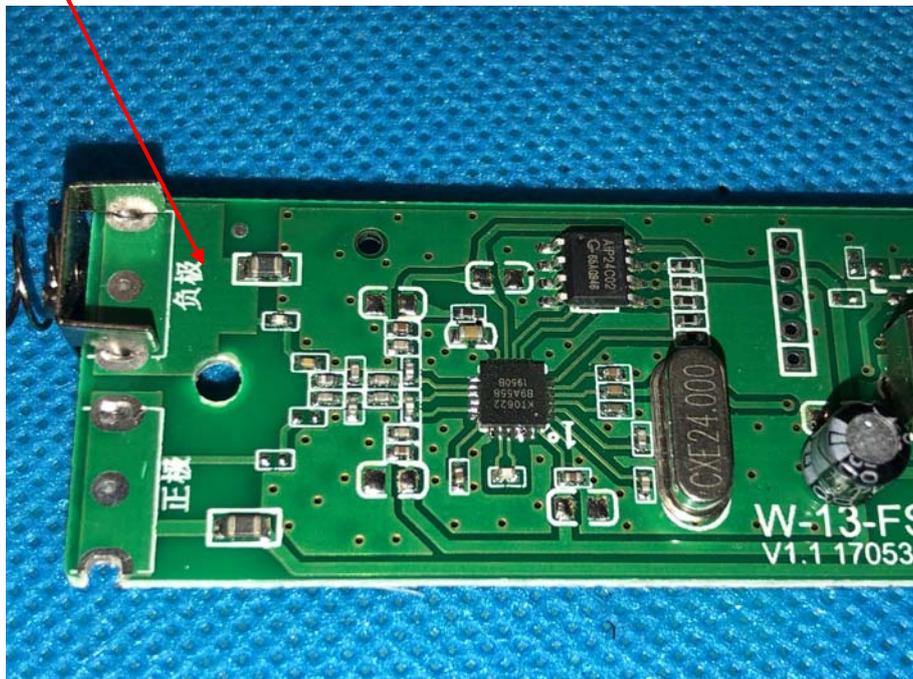
Refer to statement below for compliance.

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

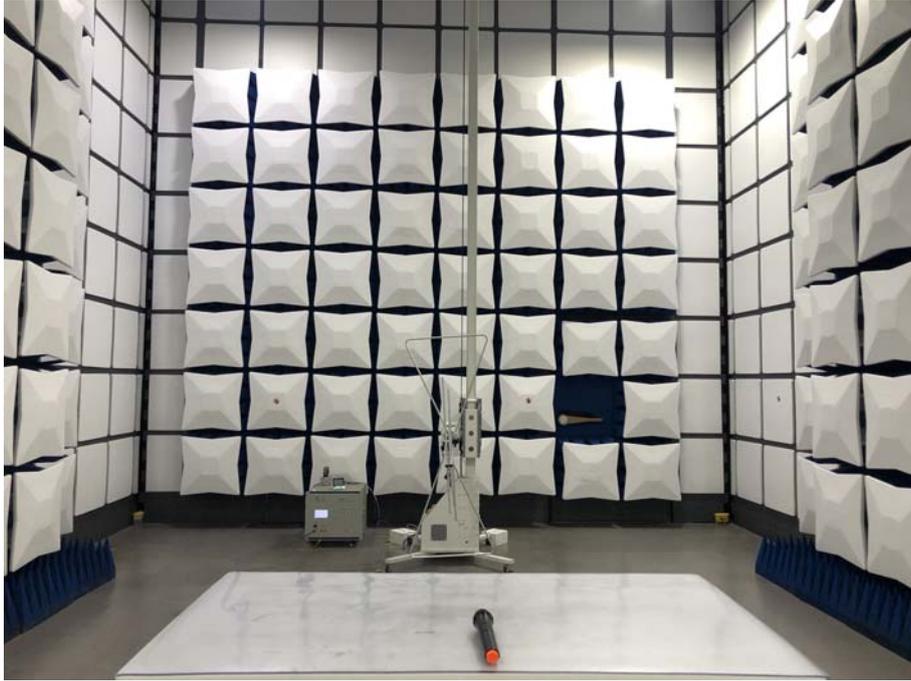
The antenna used in this product is a Internal Antenna, is a permanently attached antenna on the PCB. It conforms to the standard requirements. The directional gains of antenna used for transmitting is 10dBi.

ANTENNA



4 PHOTOGRAPH OF TEST

Radiated Emission





5 PHOTOGRAPH OF EUT

Reference to the reporter : ANNEX A of external photos and ANNEX B of internal photos

-----End of test report-----