FCC Test Report

Report No.: AGC04138210305FE04

FCC ID	:	2AAXO-MIC2040
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	MICROPHONE
BRAND NAME	:	N/A
MODEL NAME	:	MIC2040
APPLICANT	:	The Singing Machine Company Inc.
DATE OF ISSUE	:	Jun 2, 2021
STANDARD(S)	:	FCC Part 74 Rules
REPORT VERSION	:	V 1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jun 2, 2021	Valid	Initial Release

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1.VERIFICATION OF COMPLIANCE

Applicant:	The Singing Machine Company Inc.
Address:	6301 NW 5th Way, Suite 2900 Fort Lauderdale, FL, 33309, U.S.A.
Manufacturer:	The Singing Machine Company Inc.
Address:	6301 NW 5th Way, Suite 2900 Fort Lauderdale, FL, 33309, U.S.A.
Factory:	ZHUHAI FULLWING ELECTRONIC CO.,LTD ZHONGSHAN BRANCH
Address:	4/F & 5/F, No 10, Xingye Road, Xinxu, San Xiang, Zhongshan, Guangdong, China
Product Designation:	MICROPHONE
Brand Name:	N/A
Test Model:	MIC2040
Deviation:	No any deviation from the test method
Condition of Test Sample:	Normal
Date of Test:	Mar. 31, 2021 to May 31, 2021
Test Result:	Pass

WE HEREBY CERTIFY THAT:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI/TIA-603-E-2016. The sample tested as described in this report is in compliance with the FCC Rules Part 74. The test results of this report relate only to the tested sample identified in this report

Prepared By	Eddy Liu Eddy Liu (Project Engineer)	May 31, 2021
Reviewed By	Max Zhang Max Zhang (Reviewer)	May 31, 2021
Approved By	Forrest Lei Forrest Lei (Authorized Officer)	May 31, 2021

2.GENERAL INFORMATION

2.1 PRODUCT DESCRIPTION

Communication Type:	Voice / Tone only
Hardware Version:	V02
Software Version:	V02
Operation Frequency:	204.5MHz~208.5MHz
Number of channels:	2
Modulation Type:	FM
Channel Separation:	N/A
Rated Output Power:	1W (It was fixed by the manufacturer , any individual can't arbitrarily change it.)
Maximum Transmitter Power:	7.12dBm
Antenna Designation:	Integrated Antenna
Antenna Gain:	0dBi
Power Supply:	DC 3V Dry battery
Note: Please refer to the user manual for specific technical parameters	

2.2 TEST FREQUENCY LIST

Frequency Band	Channel Number	Frequency
174~216 MHz	1	204.5 MHz
	2	208.5 MHz

2.3 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AAXO-MIC2040**, filing to comply with Part 2, and Part 74 of the Federal Communication Commission rules.

2.4 TEST METHODOLOGY

The tests were performed according to following standards:

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 74	Radio Frequency Devices
3	ANSI/TIA-603-E-2016	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
4	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
4	KDB 206256	KDB 206256 D01 Wireless Microphone Certification v02
5	KDB 971168	KDB 971168 D01 Power Meas License Digital Systems v03r01

2.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. TEST ENVIRONMENT

3.1 ADDRESS OF THE TEST LABORATORY

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd

Address:1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

3.2 TEST FACILITY

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

CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory 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.

FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory 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 with Registration 975832.

IC-Registration No.: 24842

CAB identifier: CN0063

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

3.3 ENVIRONMENTAL CONDITIONS

	NORMAL CONDITIONS	EXTREME CONDITIONS
Temperature range	15~35℃	-20℃~50℃
Humidty range	20 % to 75 %.	20 % to 75 %.
Pressure range	86-106kPa	86-106kPa
Power supply	3V	2.7~3.3V
Note: The Extreme Temperature and Extreme Voltages declared by the manufacturer.		

3.4 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±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%.

Test Items	Measurement Uncertainty
Frequency stability	±0.5%
Transmitter power conducted	±0.8dB
Transmitter power Radiated	±1.3dB
Conducted spurious emission 9kHz-40 GHz	±2.7dB
Conducted Emission	±3.2 dB
Radiated Emission below 1GHz	±3.9 dB
Radiated Emission above 1GHz	±4.8 dB
Occupied Channel Bandwidth	±2 %
FM deviation	±2 %
Audio level	±0.98dB
Modulation Limiting	0.42 %

3.5. LIST OF EQUIPMENTS USED

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	May 15, 2020	May 14, 2021
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep.16, 2019	Sep.15, 2021
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May. 17, 2019	May. 16, 2021
Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-205	Jun. 09, 2020	Jun. 08, 2021
HORN ANTENNA	EM	EM-AH-10180	/	Sep. 03, 2020	Sep. 02, 2021
SIGNAL GENERATOR	AGILENT	E4421B	MY43351603	Jun. 09, 2020	Jun. 08, 2021
SIGNAL GENERATOR	R&S	SMT03	A0304261	Jun. 09, 2020	Jun. 08, 2021
ANTENNA	SCHWARZBECK	VULB9168	VULB9168-494	Sep. 20, 2019	Sep. 19, 2021
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep. 20, 2019	Sep. 19, 2021
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Jun. 11, 2020	Jun. 10, 2021
Modulation Domain Analyzer	HP	53310A	3121A02467	Jun. 09, 2020	Jun. 08, 2021
Small environmental tester	ESPEC	SH-242	--	Feb. 23, 2020	Feb. 22, 2021
RF Communication Test Set	HP	8920B	--	Jun. 09, 2020	Jun. 08, 2021
RF Cable	R&S	1#	--	Each time	N/A
RF Cable	R&S	2#	--	Each time	N/A

4.SYSTEM TEST CONFIGURATION

4.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

4.2 EUT EXERCISE

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

4.3 CONFIGURATION OF TESTED SYSTEM

Fig. 2-1 Configuration of Tested System

Table 2-1 Equipment Used in Tested System

4.4 EQUIPMENT USED IN TESTED SYSTEM

The Following Peripheral Devices And Interface Cables Were Connected During The Measurement:
☐ Test Accessories Come From The Laboratory
☒ Test Accessories Come From The Manufacturer

Item	Equipment	Model No.	Identifier	Note
1	MICROPHONE	MIC2040 UHF	2AAXO-MIC2040	EUT
2	Battery	NANFU	DC 1.5V*2	Accessories

5.SUMMARY OF TEST RESULTS

Item	FCC Rules	Description Of Test	Result
1	FCC 47 CFR PART 74	Antenna Equipment	Pass
2	§74.861(e)(1)	RF Output Power	Pass
3	74.861(e)(3)	Modulation Characteristic	Pass
4	74.861(e)(5)	Occupied Bandwidth	Pass
5	74.861(e)(4)	Frequency Stability	Pass
6	74.861(e)(6)	Emission Mask and Spurious Ratiated Emission	Pass
7	74.861(e)(7)	Necessary Bandwidth and Spurious Ratiated Emission	Pass

6.DESCRIPTION OF TEST MODES

The EUT (MICROPHONE) has been tested under normal operating condition. (The top channel, the middle channel and the bottom channel) are chosen for testing at each channel separation.

NO.	TEST MODE DESCRIPTION
1	Transmission mode operating in 204.5MHz channel
2	Transmission mode operating in 208.5MHz channel

Note:

1. Only the result of the worst case was recorded in the report, if no other cases.
2. The battery is full-charged during the test.
3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
4. For Conducted Test method, a temporary antenna connector is provided by the manufacture.
5. The test prototype will send the corresponding frequency point when it is turned on

7.FREQUENCY STABILITY

7.1 PROVISIONS APPLICABLE

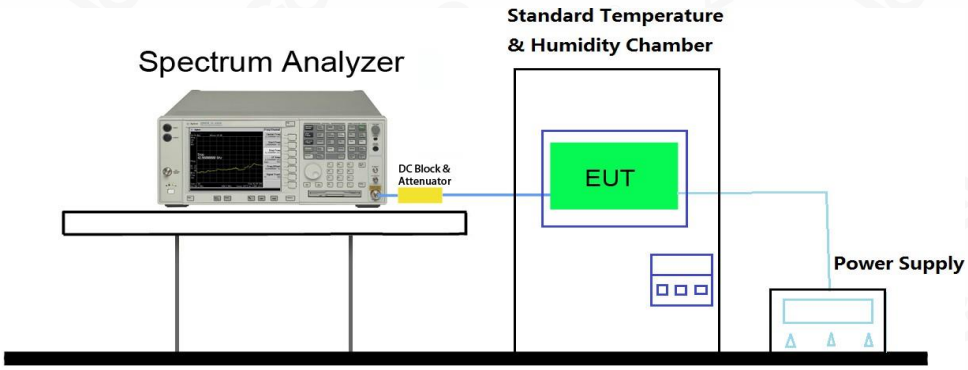
According to FCC §74.861(e)(4), The frequency tolerance of the transmitter shall be 0.005 percent.

7.2 MEASUREMENT PROCEDURE

The EUT was connected to a frequency counter or spectrum analyzer through the antenna output of each transmitter. The EUT was then placed in a temperature chamber.

1. The nominal frequency of the transmitter was measured and recorded.
2. The temperature chamber was then set to -30ºC.
3. Once the temperature had reached -30ºC the EUT was allowed to soak for 30 minutes.
4. After soaking at -30ºC for thirty minutes the EUT was turned on and the transmit frequency was measured and recorded.
5. Steps (b) through (d) were repeated for each temperature in 10ºC steps from -20ºC to +50ºC.
6. The EUT was then removed from the temperature chamber and allowed to adjust to nominal room temperature (22ºC).
7. The input voltage was checked and adjusted to the nominal level. The frequency was measured and recorded.
8. The input voltage was then varied to 85% of its nominal level. The frequency was measured and recorded.
9. The input voltage was then varied to 115% of its nominal level. The frequency was measured and recorded.

7.3 MEASUREMENT SETUP



7.4 MEASUREMENT RESULTS

Test conditions		Frequency error (ppm)		Limit (ppm)	Result
Voltage (V)	Temp (℃)	Test Frequency (MHz)			
		204.50	208.50		
3	-30	20	22	50	Pass
	-20	22	21		
	-10	20	22		
	0	21	23		
	10	20	21		
	20	23	20		
	30	22	22		
	40	23	23		
	50	20	23		
3.3	20	21	21		
2.7	20	23	22		

8. OCCUPIED BANDWIDTH

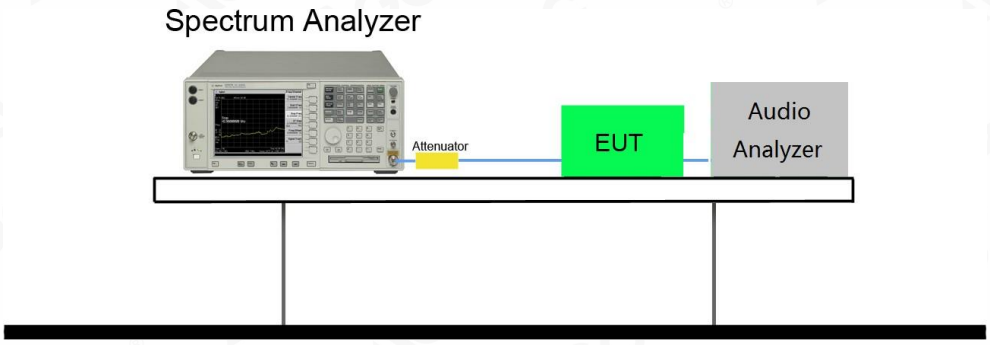
8.1 PROVISIONS APPLICABLE

According to FCC §74.861(e)(5), The operating bandwidth shall not exceed 200 kHz.

8.2 MEASUREMENT PROCEDURE

1. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products.
2. The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
3. Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.
4. Set the detection mode to peak, and the trace mode to max hold.
5. Use the 99 % power bandwidth function of the spectrum analyzer (if available) and report the measured bandwidth.

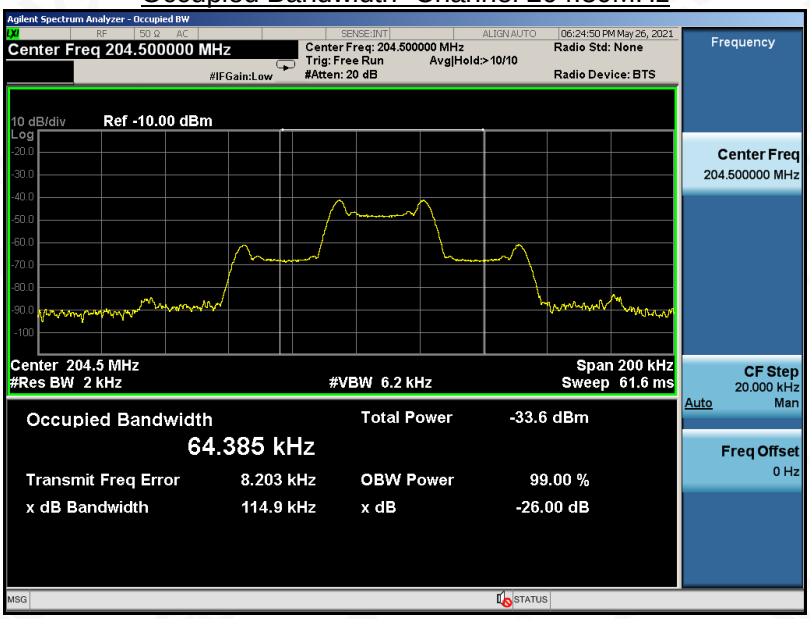
8.3 MEASUREMENT SETUP



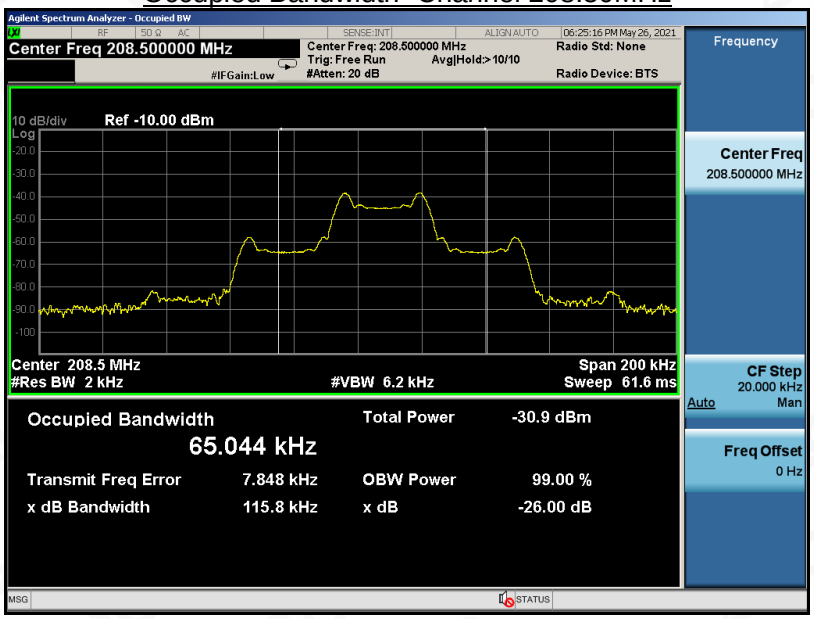
8.4 MEASUREMENT RESULTS

Operating Frequency	Occupied Bandwidth	Emission Bandwidth	Limits	Result
204.50MHz	64.385KHz	114.9KHz	200 KHz	Pass
208.50MHz	65.044KHz	115.8KHz	200 KHz	Pass

Occupied Bandwidth -Channel 204.50MHz



Occupied Bandwidth -Channel 208.50MHz



9.EMISSION MASK AND SPURIOUS RATIATED EMISSION

9.1 PROVISIONS APPLICABLE

According to FCC §2.1053 and §74.861(e)(6), the power of each unwanted emission shall be less than Transmitted Power as specified below for transmitters designed to operate with each channel separation.

(i) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;

(ii) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;

(iii) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least 43+10log10 (mean output power in watts) dB.

9.2 MEASUREMENT PROCEDURE

(1) On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
(2) The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
(3) The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
(4) The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
(5) The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
(6) The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
(7) The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
(8) The maximum signal level detected by the measuring receiver shall be noted.
(9) The measurement shall be repeated with the test antenna set to horizontal polarization.
(10) Replace the antenna with a proper Antenna (substitution antenna).
(11) The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
(12) The substitution antenna shall be connected to a calibrated signal generator.
(13) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
(14) The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
(15) The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
(16) The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
(17) The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1000MHz~6000MHz/RB 1MHz for QP

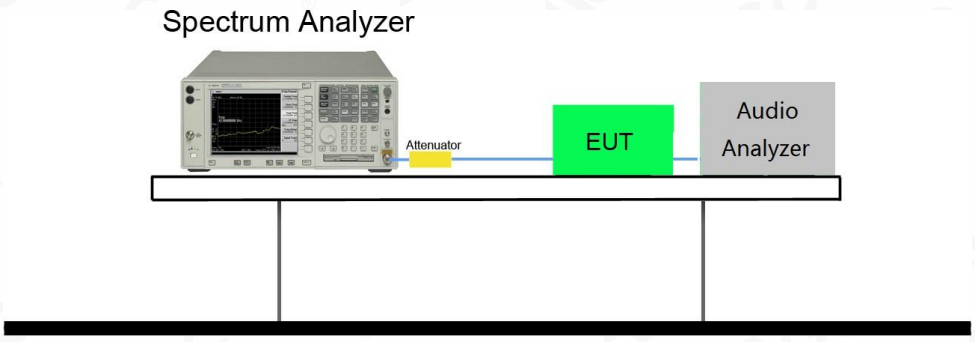
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1000MHz~6000MHz/RB 1MHz for QP

Emission Mask

a) The EUT was connected to a spectrum analyzer. The un-modulated carrier signal level was measured and recorded.
b) The EUT uses typical digital or analog modulation for modulation.
c) The spectrum analyzer center frequency was set to the EUT operating frequency; span was set to 2 MHz; resolution bandwidth was set to 1 MHz; video bandwidth set to 3 MHz; sweep time set to 3 s; after clear/write, max-hold was set; Marker 1 was set to Peak, then Marker 1 was set to reference value.
d) The peak output power was recorded and used to set the reference level on the spectrum analyzer.
e) The spectrum analyzer span was then set to 1.5 MHz; resolution bandwidth set to 2 kHz, video bandwidth set to 5 kHz, sweep time to Auto; trace set to Max Hold.

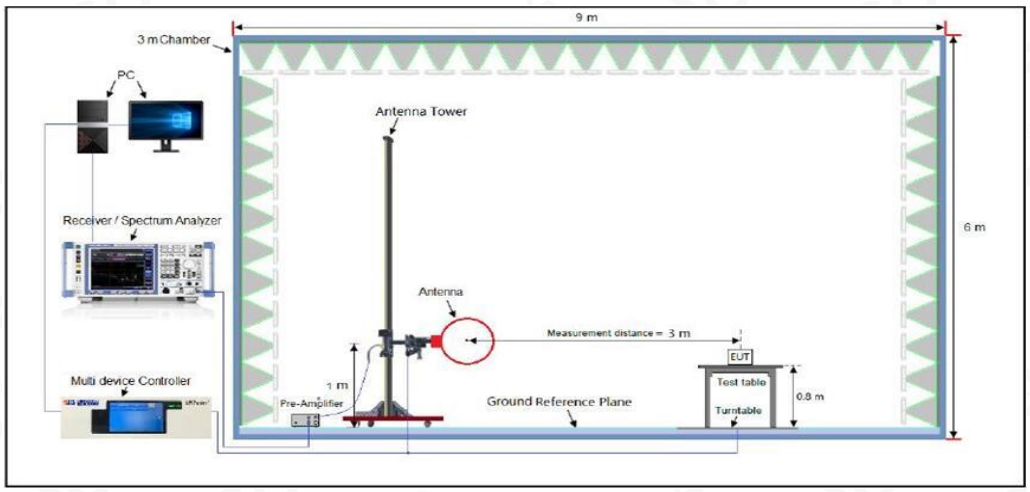
9.3 MEASUREMENT SETUP

☒Conducted Test Setup

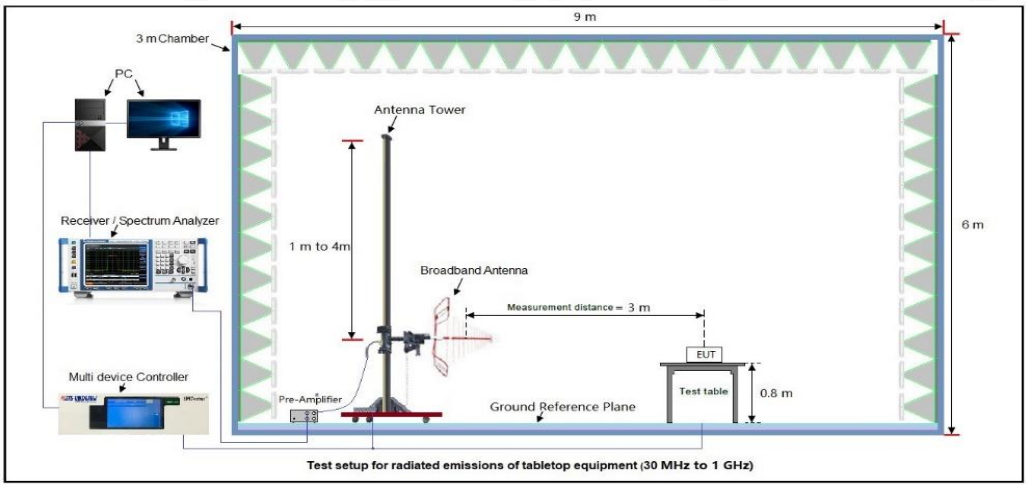


☒ **Radiated** Test Setup

Radiated Emissions Below 30MHz Test Setup

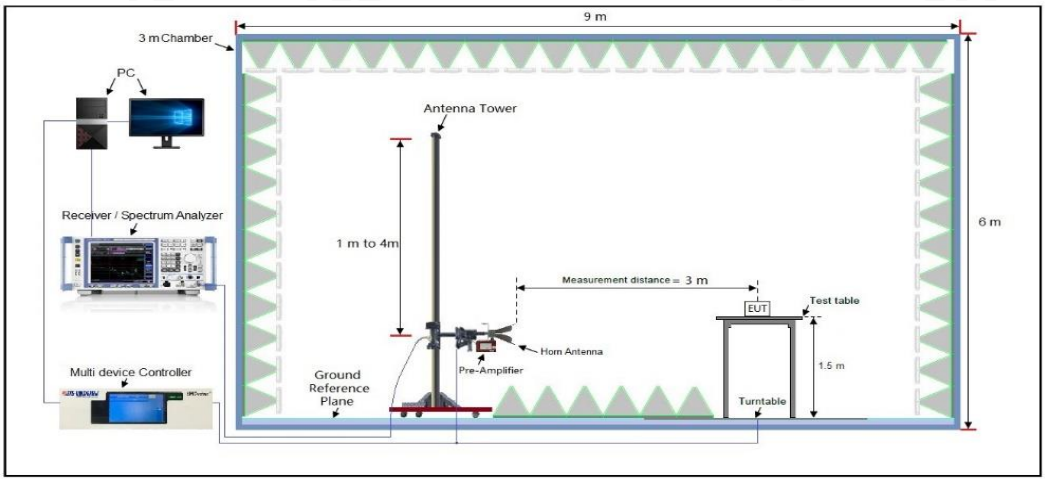


Radiated Emissions Below 30MHz-1GHz Test Setup



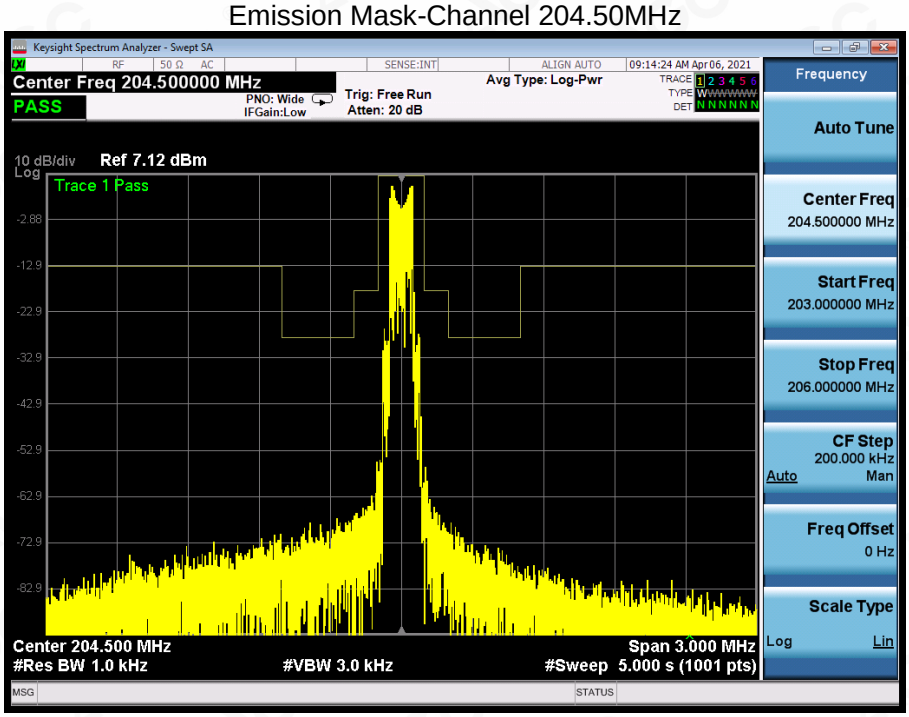
Test setup for radiated emissions of tabletop equipment (30 MHz to 1 GHz)

Radiated Emissions Above 1GHz Test Setup

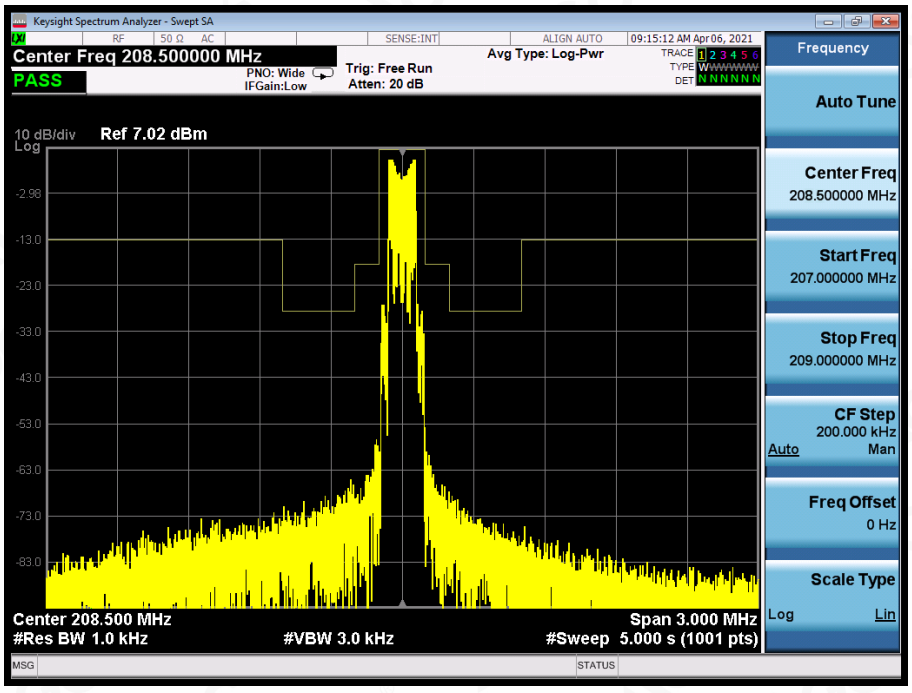


9.4 MEASUREMENT RESULTS

Emission Mask-Channel 204.50MHz



Emission Mask-Channel 208.50MHz



Note:
The limit of other emissions on frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth is -13dbm.
The amplitude of spurious emissions are attenuated more than 20 dB below the permissible value need not be reported.

10. NECESSARY BANDWIDTH AND SPURIOUS RATIATED EMISSION

10.1 PROVISIONS APPLICABLE

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).

10.2 MEASUREMENT PROCEDURE

(1) On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
(2) The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
(3) The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
(4) The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
(5) The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
(6) The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
(7) The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
(8) The maximum signal level detected by the measuring receiver shall be noted.
(9) The measurement shall be repeated with the test antenna set to horizontal polarization.
(10) Replace the antenna with a proper Antenna (substitution antenna).
(11) The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
(12) The substitution antenna shall be connected to a calibrated signal generator.
(13) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
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(15) The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
(16) The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
(17) The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

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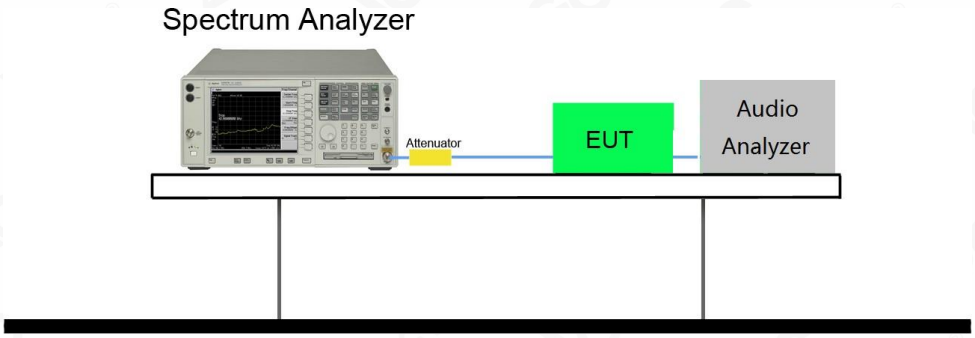
Start ~Stop Frequency	1000MHz~6000MHz/RB 1MHz for QP

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1000MHz~6000MHz/RB 1MHz for QP

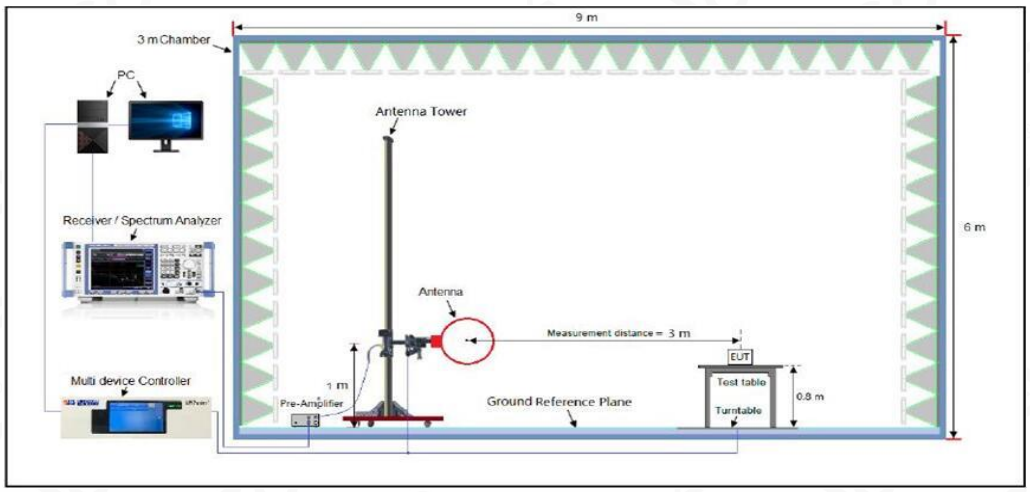
10.3 MEASUREMENT SETUP

☒Conducted Test Setup

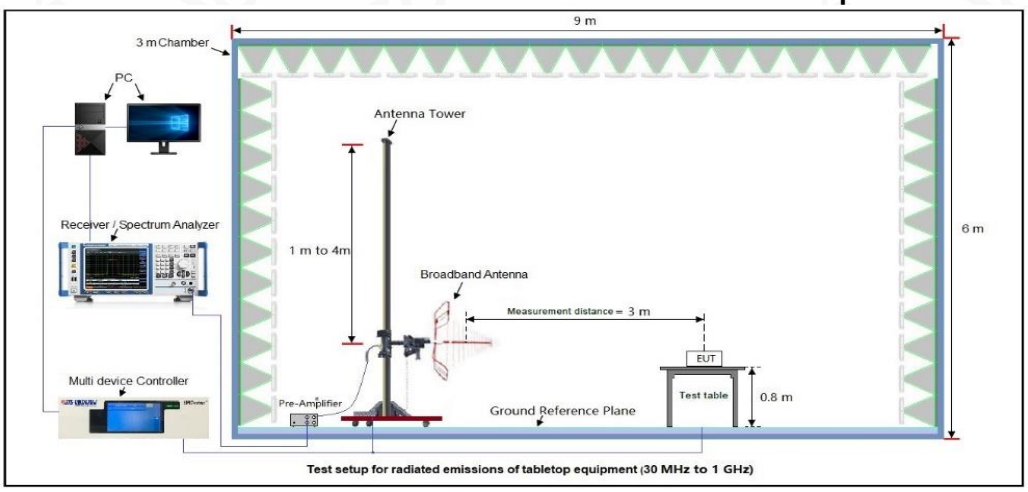


☒ Radiated Test Setup

Radiated Emissions Below 30MHz Test Setup

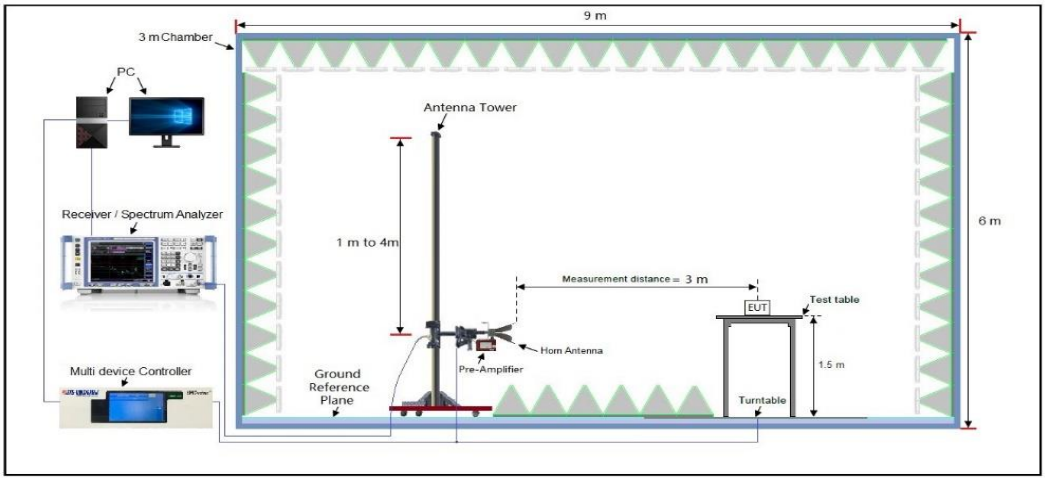


Radiated Emissions Below 30MHz-1GHz Test Setup



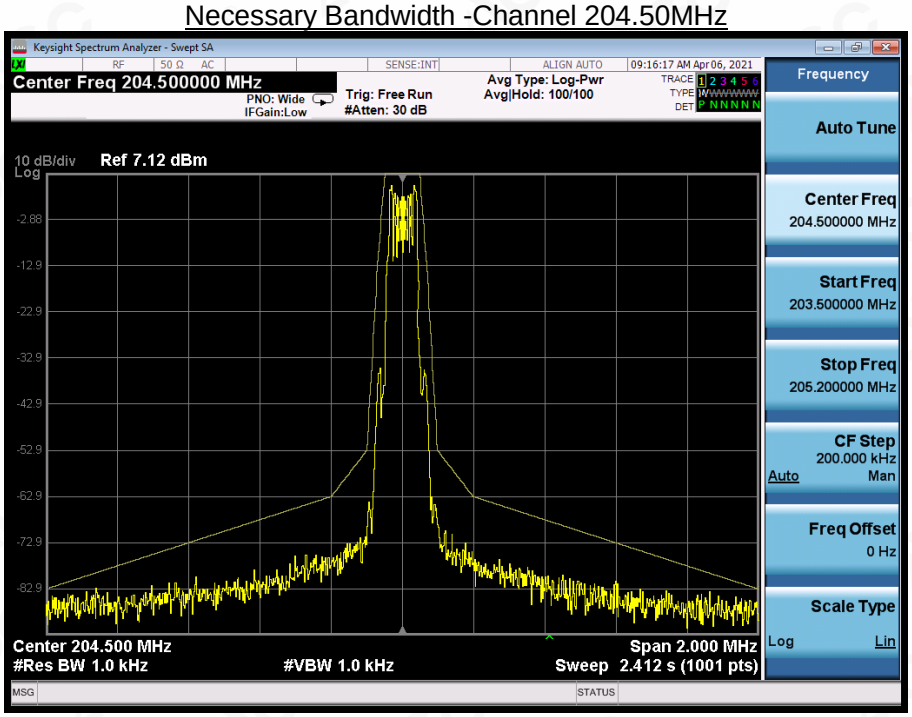
Test setup for radiated emissions of tabletop equipment (30 MHz to 1 GHz)

Radiated Emissions Above 1GHz Test Setup

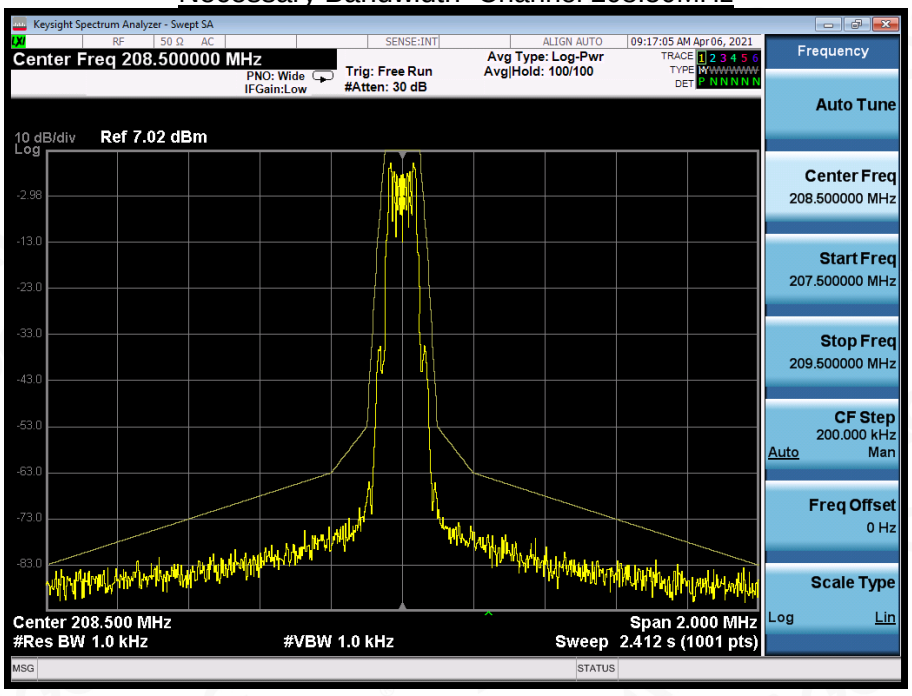


10.4 MEASUREMENT RESULTS

Necessary Bandwidth -Channel 204.50MHz

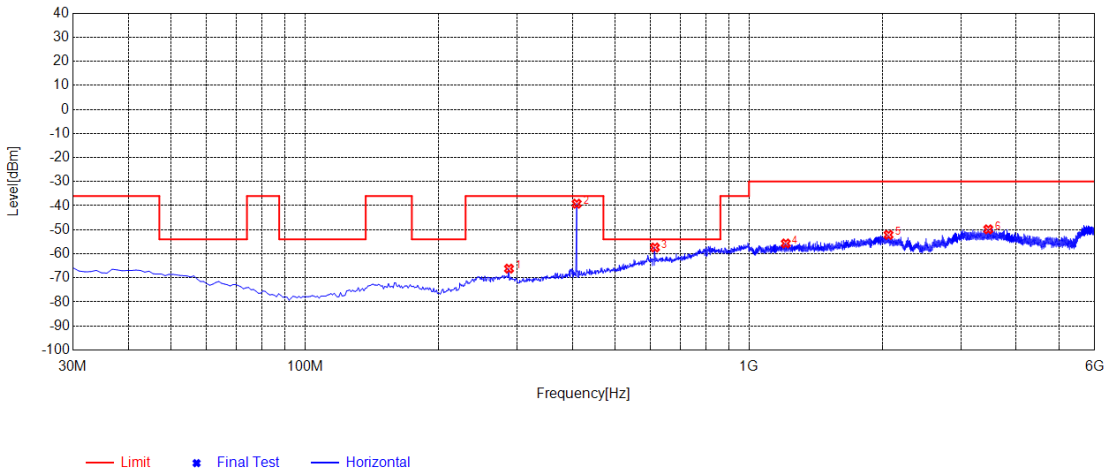


Necessary Bandwidth -Channel 208.50MHz



Radiated Emission Below 30MHz			
Test Mode	Mode 1&Mode2	**Antenna**	Horizontal & Vertical
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.			

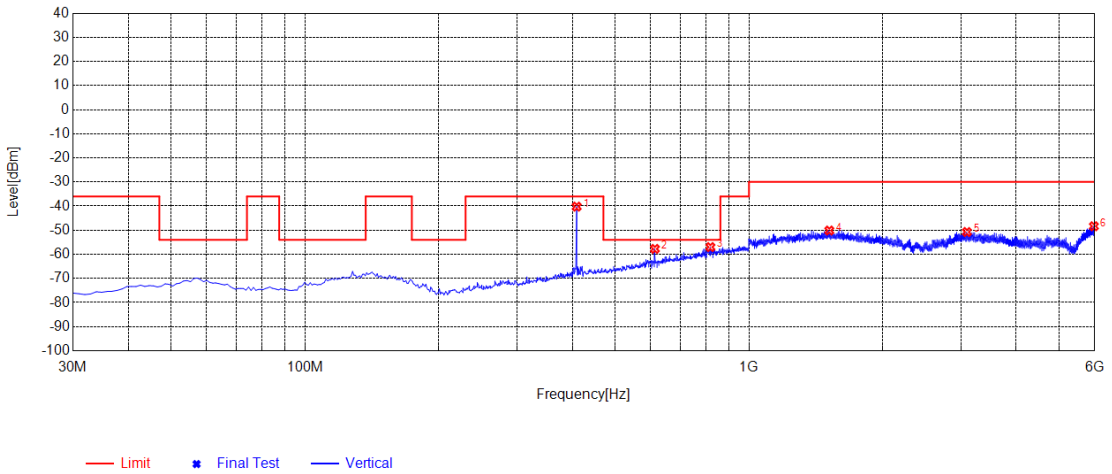
Radiated Emission from 30MHz to 6000MHz			
Test Mode	Mode 1	**Antenna**	Horizontal



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	288.0200	-99.08	-66.17	-36.00	30.17	32.91	196	Horizontal
2	409.2700	-73.78	-39.18	-36.00	3.18	34.60	206	Horizontal
3	613.9400	-97.28	-57.39	-54.00	3.39	39.89	28	Horizontal
4	1210.0210	-51.89	-55.71	-30.00	25.71	-3.82	272	Horizontal
5	2062.1062	-52.42	-52.13	-30.00	22.13	0.29	56	Horizontal
6	3459.2459	-53.95	-49.84	-30.00	19.84	4.11	234	Horizontal

RESULT: PASS

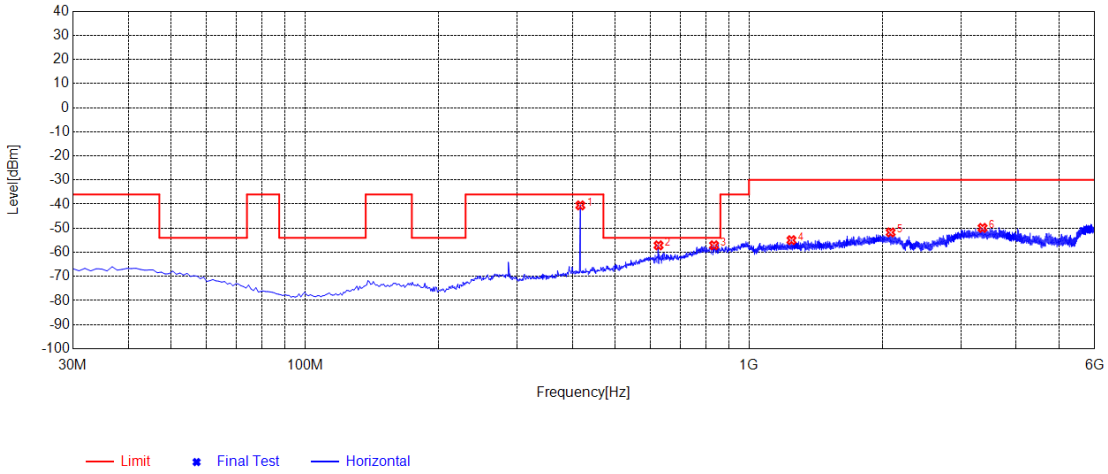
Radiated Emission from 30MHz to 6000MHz			
Test Mode	Mode 1	**Antenna**	Vertical



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	409.2700	-75.35	-40.23	-36.00	4.23	35.12	114	Vertical
2	613.9400	-96.71	-57.75	-54.00	3.75	38.96	114	Vertical
3	818.6100	-99.54	-57.00	-54.00	3.00	42.54	87	Vertical
4	1516.5517	-52.24	-50.14	-30.00	20.14	2.10	49	Vertical
5	3095.7096	-53.93	-50.75	-30.00	20.75	3.18	229	Vertical
6	5980.4981	-59.10	-48.36	-30.00	18.36	10.74	201	Vertical

RESULT: PASS

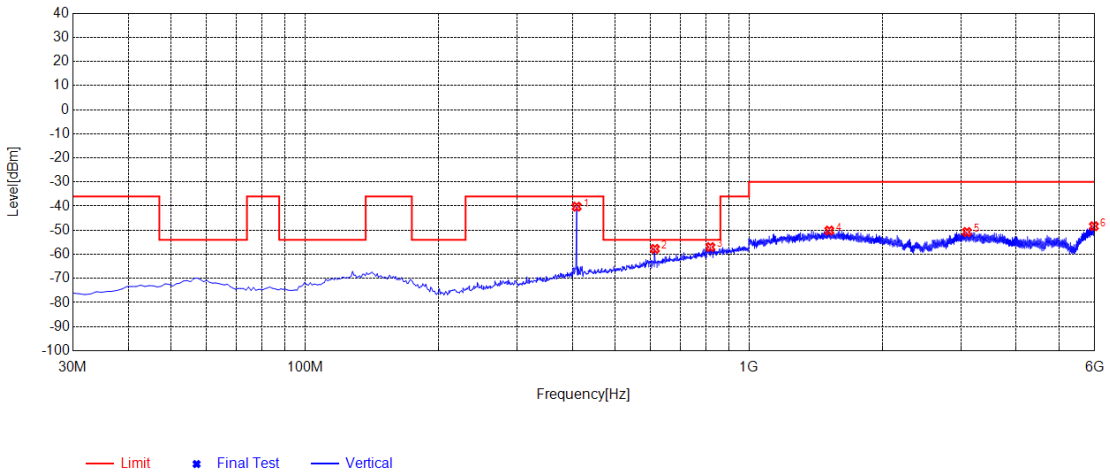
Radiated Emission from 30MHz to 6000MHz			
Test Mode	Mode 2	**Antenna**	Horizontal



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	417.0300	-75.29	-40.54	-36.00	4.54	34.75	194	Horizontal
2	625.5800	-97.03	-57.11	-54.00	3.11	39.92	35	Horizontal
3	834.1300	-100.35	-57.09	-54.00	3.09	43.26	175	Horizontal
4	1246.5247	-51.22	-54.96	-30.00	24.96	-3.74	203	Horizontal
5	2084.6085	-51.95	-51.75	-30.00	21.75	0.20	315	Horizontal
6	3356.7357	-53.79	-49.87	-30.00	19.87	3.92	334	Horizontal

RESULT: PASS

Radiated Emission from 30MHz to 6000MHz			
Test Mode	Mode 2	**Antenna**	Vertical



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	417.0300	-76.65	-41.42	-36.00	5.42	35.23	126	Vertical
2	625.5800	-96.25	-57.09	-54.00	3.09	39.16	98	Vertical
3	896.2100	-89.90	-46.63	-36.00	10.63	43.27	359	Vertical
4	1300.5301	-51.75	-50.91	-30.00	20.91	0.84	88	Vertical
5	3080.7081	-54.13	-50.94	-30.00	20.94	3.19	14	Vertical
6	5959.9960	-58.90	-48.36	-30.00	18.36	10.54	0	Vertical

RESULT: PASS

Note：1.Factor=Antenna Factor + Cable loss, Margin=Limit-Level.
2.The “Factor” value can be calculated automatically by software of measurement system.

11. RF OUTPUT POWER

11.1 PROVISIONS APPLICABLE

According to FCC §2.1046 and §74.861(e)(1) to the power may not exceed the following values.
(i) 54-72, 76-88, and 174-216 MHz bands: 50 mW EIRP

(ii) 470-608 and 614-698: 250 mW conducted power

(iii) 600 MHz duplex gap: 20 mW EIRP

11.2 MEASUREMENT METHOD

☐EIRP Test Method (ANSI C63.26 Section 5.2.7)

1. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. EIRP [dBm] = E[dB(μV)/m]− 95.2

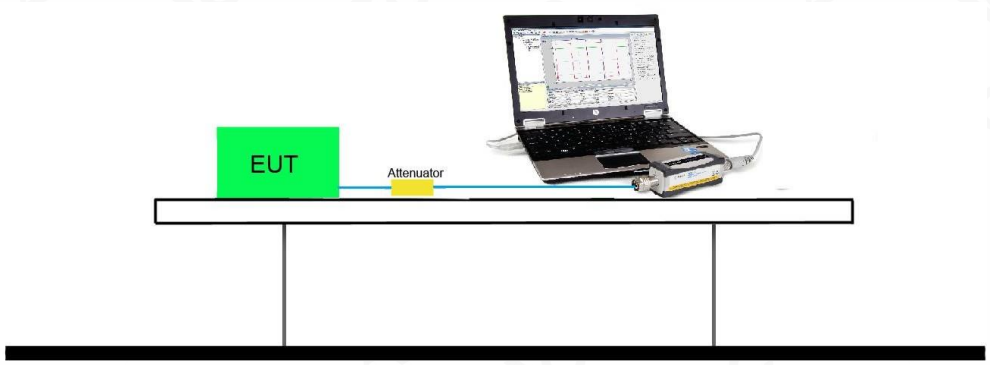
☐Conducted Power Test Method (ANSI C63.26 Section 5.2.3.3)

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. RBW ⩾ OBW.
3. VBW ⩾3 x RBW.
4. Span ⩾2 x OBW.
5. Sweep time ⩾ 10 x (number of points in sweep) x (transmission symbol period)
6. Detector function: Peak.
7. Trace: Max hold.
8. Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

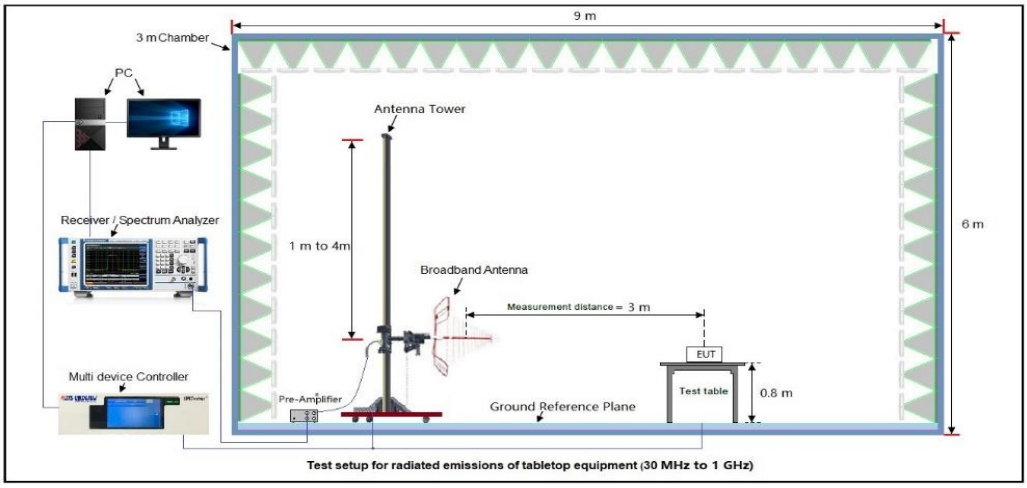
☒Conducted Power Test Method
Average power measurement with average power meter
If the EUT can be configured to transmit continuously and at all times the EUT is transmitting at is maximum output power level, then a conventional wide-band RF power meter can be used.

11.3 MEASUREMENT METHOD

☒Conducted Test Setup



☒EIRP Test Setup



Test setup for radiated emissions of tabletop equipment (30 MHz to 1 GHz)

11.4 MEASUREMENT RESULTS

Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	E.I.R.P (dBm)	Limit (dBm)	Result
204.5	7.12	≤17	7.12	≤17	Pass
208.5	7.02	≤17	7.02	≤17	Pass

Note: E.I.R.P (dBm) = Average Output Power (dBm) + Antenna Gain (dBi).

12.MODULATION CHARACTERISTICS

12.1 PROVISIONS APPLICABLE

According to FCC§2.1047 and §74.861(e)(, for Voice Modulation Communication Equipment, the frequency response of the audio modulation circuit over a range of 100 to 5000Hz shall be measured.

Any form of modulation may be used. A maximum deviation of ±75 kHz is permitted when frequency modulation is employed.

12.2 MEASUREMENT METHOD

12.2.1 Modulation Limit

(1). Configure the EUT as shown in figure 1, adjust the audio input for 60% of rated system deviation at 1KHz using this level as a reference (0dB) and vary the input level from –20 to +20dB. Record the frequency deviation obtained as a function of the input level.

(2). Repeat step 1 with input frequency changing to 300, 1000, 1500 and 5000Hz in sequence.

12.2.2 Audio Frequency Response

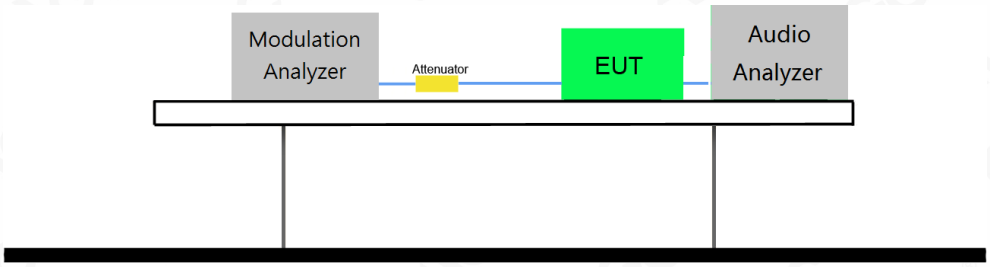
(1). Configure the EUT as shown in figure 1.

(2). Adjust the audio input for 20% of rated system deviation at 1 KHz using this level as a reference (0 dB).

(3). Vary the Audio frequency from 100 Hz to 10 KHz and record the frequency deviation.

(4). Audio Frequency Response = 20log10 (Deviation of test frequency/Deviation of 1 KHz reference).

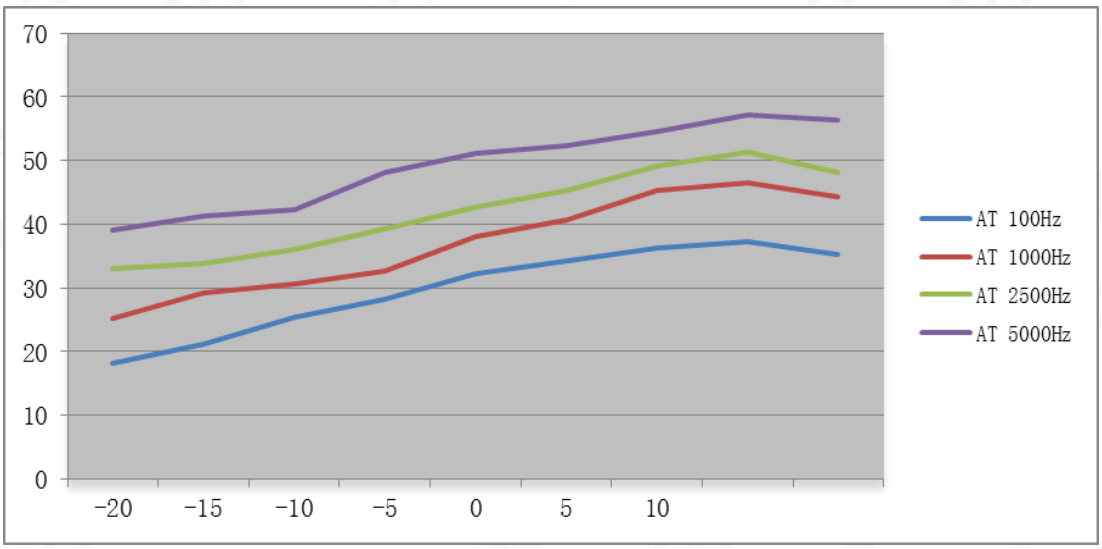
12.3 MEASUREMENT SETUP



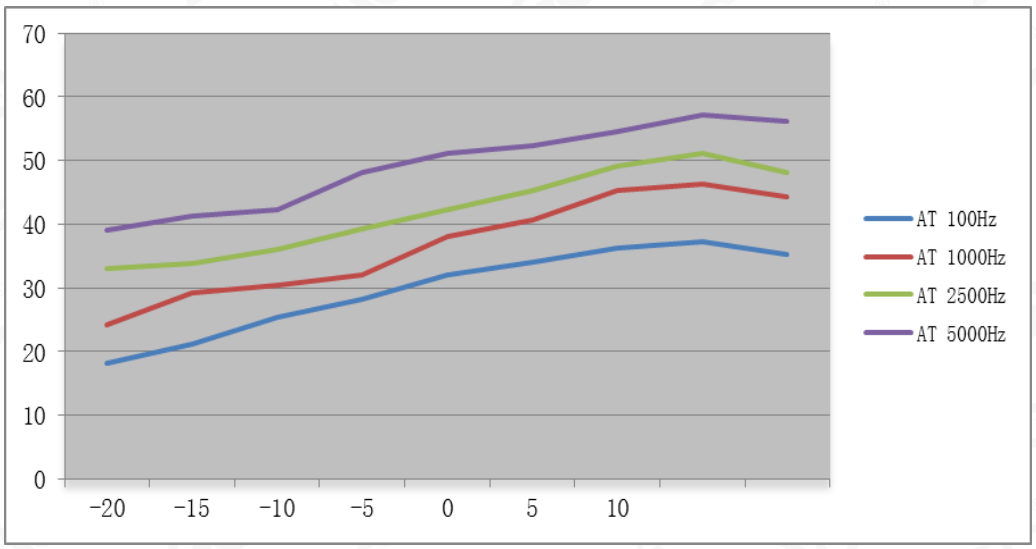
12.4 MEASUREMENT RESULTS

(A). MODULATION LIMIT:

Analog modulation, Assigned Frequency:204.50MHz				
Modulation Level (dB)	Peak Freq. Deviation At 300 Hz (KHz)	Peak Freq. Deviation At 1000 Hz (KHz)	Peak Freq. Deviation At 2500 Hz (KHz)	Peak Freq. Deviation At 5000 Hz (KHz)
-20	18.21	25.14	33.15	39.18
-15	21.25	29.15	33.88	41.25
-10	25.35	30.55	36.15	42.36
-5	28.25	32.74	39.22	48.15
0	32.15	38.11	42.63	51.23
5	34.19	40.77	45.36	52.36
10	36.21	45.31	49.18	54.66
15	37.19	46.45	51.29	57.26
20	35.27	44.29	48.12	56.32



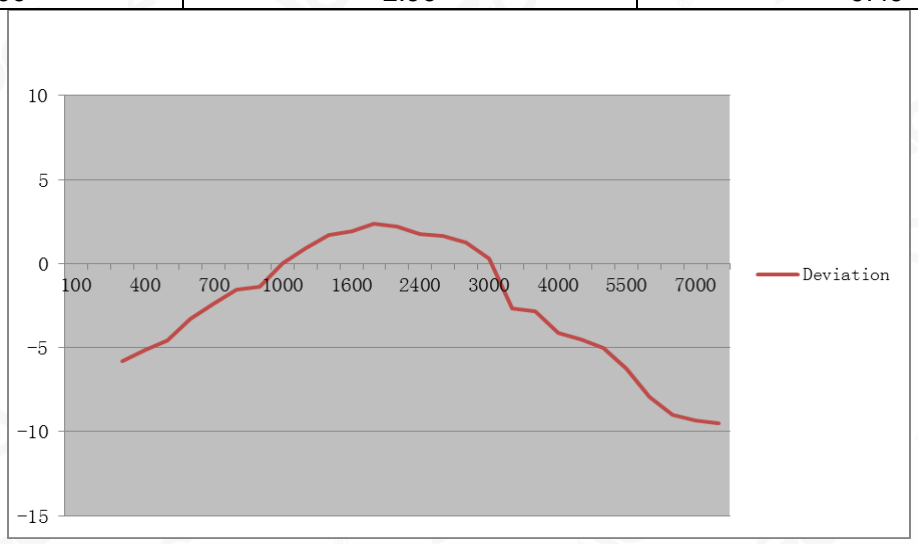
Analog modulation, Assigned Frequency:208.50MHz				
Modulation Level (dB)	Peak Freq. Deviation At 300 Hz (KHz)	Peak Freq. Deviation At 1000 Hz (KHz)	Peak Freq. Deviation At 2500 Hz (KHz)	Peak Freq. Deviation At 5000 Hz (KHz)
-20	18.19	24.11	33.12	39.09
-15	21.22	29.14	33.77	41.21
-10	25.33	30.41	36.09	42.32
-5	28.26	32.05	39.21	48.23
0	32.14	38.09	42.33	51.22
5	34.08	40.67	45.33	52.28
10	36.19	45.25	49.09	54.66
15	37.18	46.25	51.18	57.22
20	35.26	44.28	48.1	56.11



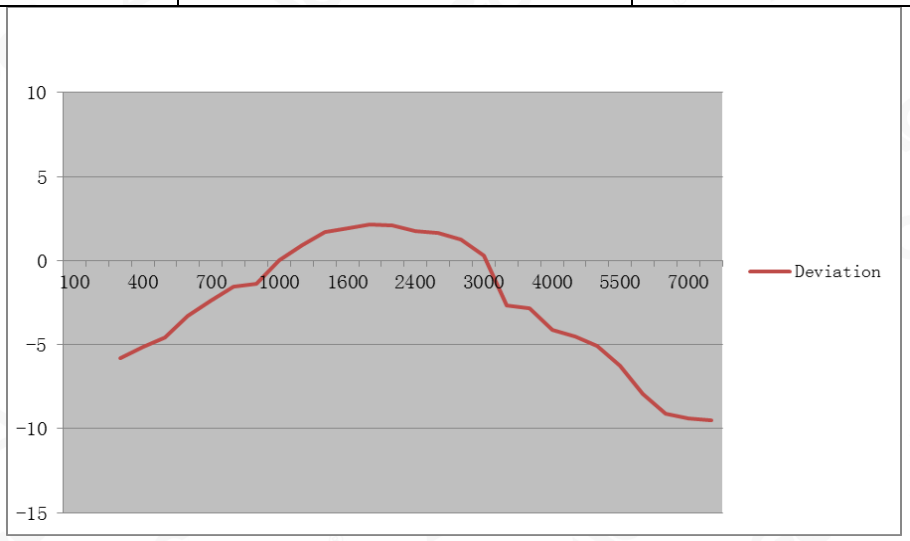
Note: All the modes had been tested, but only the worst data recorded in the report.

(B). AUDIO FREQUENCY RESPONSE:

Analog modulation, Assigned Frequency:204.50MHz		
Frequency (Hz)	Deviation (KHz)	Audio Frequency Response(dB)
100	--	--
200	--	--
300	6.89	-5.83
400	8.11	-5.12
500	9.16	-4.59
600	12.36	-3.29
700	15.26	-2.37
800	18.36	-1.57
900	19.15	-1.39
1000	26.35	0.00
1200	32.54	0.92
1400	39.14	1.72
1600	41.26	1.95
1800	45.29	2.35
2000	43.66	2.19
2400	39.25	1.73
2500	38.45	1.64
2800	35.26	1.27
3000	28.17	0.29
3200	14.23	-2.68
3600	13.69	-2.84
4000	10.25	-4.10
4500	9.36	-4.50
5000	8.25	-5.04
5500	6.25	-6.25
6000	4.26	-7.91
6500	3.33	-8.98
7000	3.05	-9.36
7500	2.96	-9.49



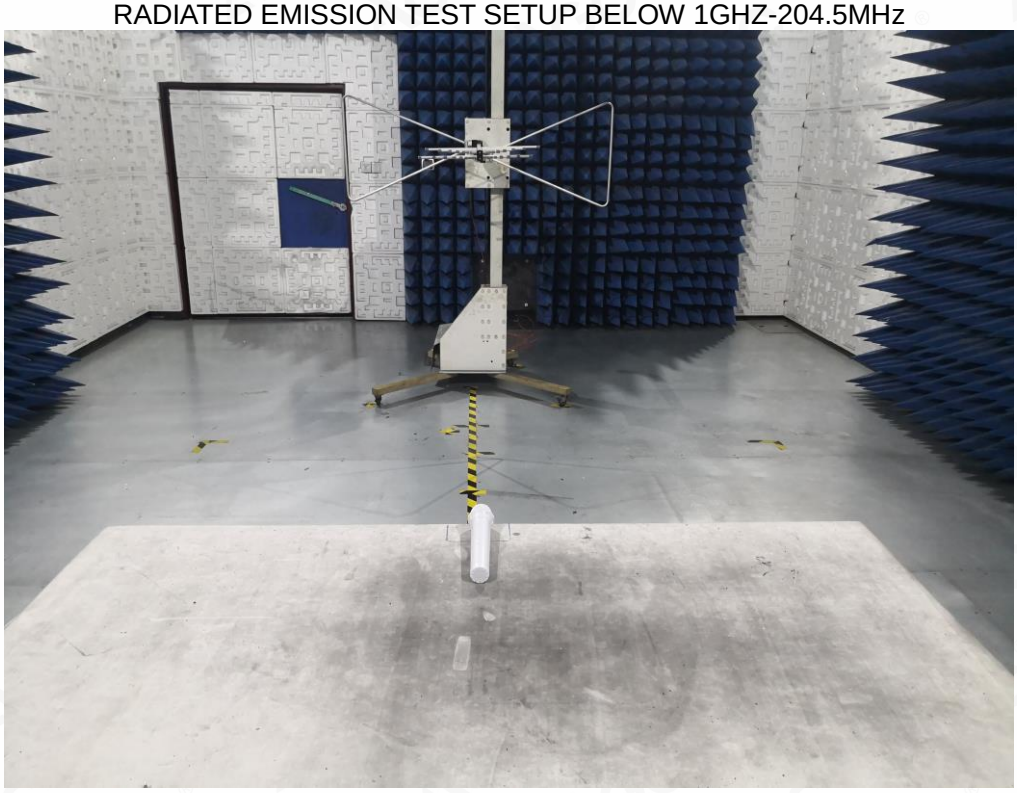
Analog modulation, Assigned Frequency:208.50MHz		
Frequency (Hz)	Deviation (KHz)	Audio Frequency Response(dB)
100	--	--
200	--	--
300	6.88	-5.83
400	8.05	-5.14
500	9.15	-4.59
600	12.33	-3.29
700	15.22	-2.38
800	18.33	-1.57
900	19.14	-1.38
1000	26.32	0.00
1200	32.52	0.92
1400	39.09	1.72
1600	41.21	1.95
1800	43.22	2.15
2000	42.66	2.10
2400	39.21	1.73
2500	38.44	1.64
2800	35.24	1.27
3000	28.14	0.29
3200	14.21	-2.68
3600	13.68	-2.84
4000	10.22	-4.11
4500	9.35	-4.49
5000	8.21	-5.06
5500	6.24	-6.25
6000	4.23	-7.94
6500	3.23	-9.11
7000	3.04	-9.37
7500	2.96	-9.49



Note: All the modes had been tested, but only the worst data recorded in the report.

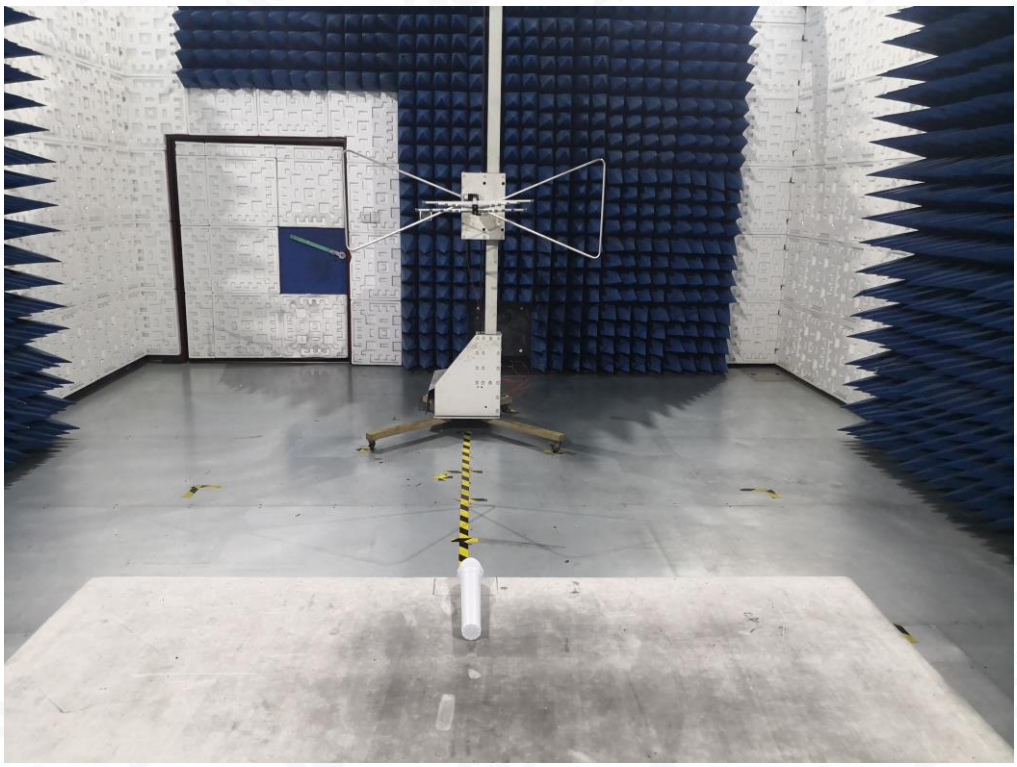
APPENDIX I: PHOTOGRAPHS OF SETUP

RADIATED EMISSION TEST SETUP BELOW 1GHZ-204.5MHz



RADIATED EMISSION TEST SETUP ABOVE 1GHZ-204.5MHz

RADIATED EMISSION TEST SETUP BELOW 1GHZ-208.5MHz



RADIATED EMISSION TEST SETUP ABOVE 1GHZ-208.5MHz

CONDUCTED TEST SETUP-204.5MHz

CONDUCTED TEST SETUP-208.5MHz