FCC Test Report

Report No.: AGC01612201102FE04A

FCC ID	:	2AYOU-X3HH
APPLICATION PURPOSE	:	Class II Equipment
PRODUCT DESIGNATION	:	UHF WIRELESS MICROPHONE
BRAND NAME	:	TAKSTAR
MODEL NAME	:	X3HH
APPLICANT	:	GUANG DONG TAKSTAR ELECTRONIC CO., LTD.
DATE OF ISSUE	:	May 17, 2022
STANDARD(S)	:	FCC Part 74 Subpart H
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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Attestation of Global Compliance(Shenzhen)Co., Ltd
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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	May 17, 2022	Valid	Initial Release

Note:

The original test report Ref.No.AGC01612201102FE04 dated Dec. 25, 2020, was modified on May 17, 2022 to include the following changes:

- Change brand name;
- Change the EUT of microphone;
- Change the hardware Version and the software Version;
- The Spurious emissions, Emission mask and Spurious emissions tests have been updated.

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1. VERIFICATION OF CONFORMITY

Applicant	GUANG DONG TAKSTAR ELECTRONIC CO., LTD.
Address	DINGGANG, NO.5 TEAM, XIALIAO VILLAGE, LONGXI TOWN, BOLUO COUNTY, HUIZHOU CITY, GUANGDONG PROVINCE, CHINA
Manufacturer	GUANG DONG TAKSTAR ELECTRONIC CO., LTD.
Address	DINGGANG, NO.5 TEAM, XIALIAO VILLAGE, LONGXI TOWN, BOLUO COUNTY, HUIZHOU CITY, GUANGDONG PROVINCE, CHINA
Factory	GUANG DONG TAKSTAR ELECTRONIC CO., LTD.
Address	DINGGANG, NO.5 TEAM, XIALIAO VILLAGE, LONGXI TOWN, BOLUO COUNTY, HUIZHOU CITY, GUANGDONG PROVINCE, CHINA
Product Designation	UHF WIRELESS MICROPHONE
Brand Name	TAKSTAR
Test Model	X3HH
Date of test	Apr. 18, 2022 to May 17, 2022
Deviation	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-US-LPAS/RF

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.26 (2015) and EN 300 422-1 V1.4.2 and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Part Subpart 74H.

Prepared By	Eder Zhan (Project Engineer)	May 17, 2022
Reviewed By	Calvin Liu (Reviewer)	May 17, 2022
Approved By	Max Zhang (Authorized Officer)	May 17, 2022

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

Operation Frequency	537MHz, 546.6MHz, 555.9MHz
Maximum Radiated Power	7.12dBm
Modulation	FM
Number of channels	64
Antenna Gain	0dBi
Antenna Designation	Integrated Antenna (Met 15.203 Antenna requirement)
Hardware Version	V1.3
Software Version	V1.3
Power Supply	DC 3V by battery

2.2. TABLE OF CARRIER FREQUENCYS

Channel Number	Frequency（MHz）	Channel Number	Frequency（MHz）	Channel Number	Frequency（MHz）	Channel Number	Frequency（MHz）
1	537	17	541.8	33	546.6	49	551.4
2	537.3	18	542.1	34	546.9	50	551.7
3	537.6	19	542.4	35	547.2	51	552
4	537.9	20	542.7	36	547.5	52	552.3
5	538.2	21	543	37	547.8	53	552.6
6	538.5	22	543.3	38	548.1	54	552.9
7	538.8	23	543.6	39	548.4	55	553.2
8	539.1	24	543.9	40	548.7	56	553.5
9	539.4	25	544.2	41	549	57	553.8
10	539.7	26	544.5	42	549.3	58	554.1
11	540	27	544.8	43	549.6	59	554.4
12	540.3	28	545.1	44	549.9	60	554.7
13	540.6	29	545.4	45	550.2	61	555
14	540.9	30	545.7	46	550.5	62	555.3
15	541.2	31	546	47	550.8	63	555.6
16	541.5	32	546.3	48	551.1	64	555.9

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3. 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%.

- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB
- Uncertainty of Conducted power, Uc = ±1.5dB
- Uncertainty of Frequency error: Uc = ±2 %

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4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	TX mode low channel (channel 1:537MHz)
2	TX mode middle channel (channel 33:546.6MHz)
3	TX mode high channel(channel 64:555.9MHz)

Note:

1. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
2. For Conducted Test method, a temporary antenna connector is provided by the manufacture.

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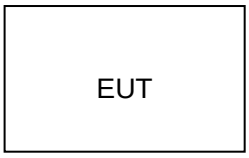
5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Con figure :



5.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	UHF WIRELESS MICROPHONE	X3HH UHF	2AYOU-X3HH	EUT

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	TEST METHOD	RESULT
§74.861(e)(6)	Spurious emissions	ANSI C63.26	Compliant
§74.861(e)(7)	Emission mask and Spurious emissions	EN 300 422-1	Compliant

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6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Mar. 28, 2022	Mar. 27, 2023
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Nov. 17, 2021	Nov. 16, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBEC	BBHA9170	768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2020	Jan. 07, 2023
Wireless communication tester	HP	8920B	US35010161	Sep. 02, 2021	Sep. 01, 2022
Test software	Tonscend	JS32-RE (Ver. 2.5)	N/A	N/A	N/A

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7. SPURIOUS EMISSIONS

7.1. TEST LIMIT

- According to CFR 47 section 74.861 e (6), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(1) 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;

(2) 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;

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

7.2. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 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

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

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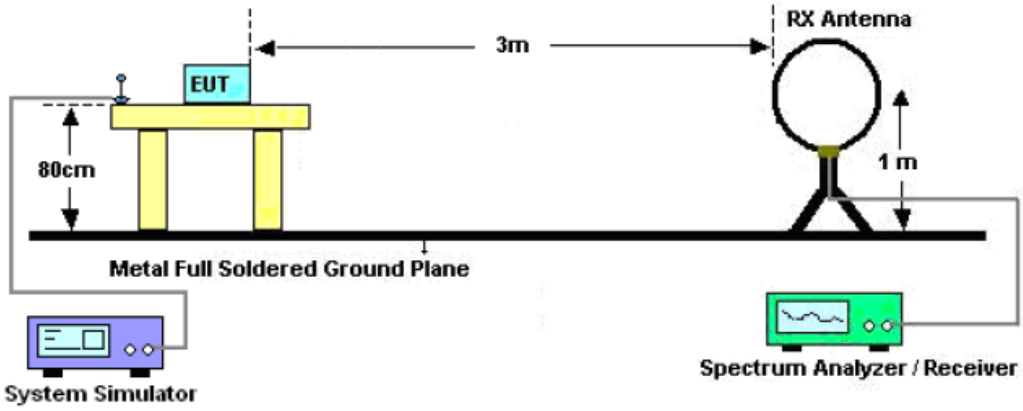
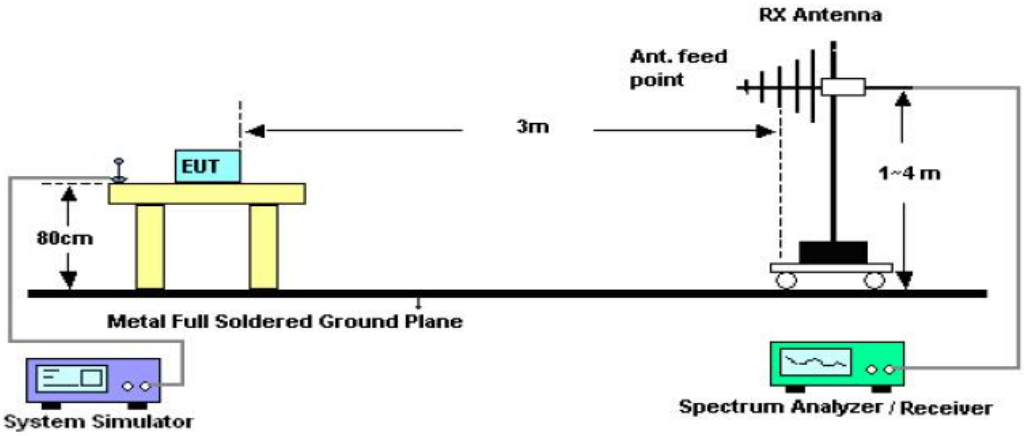
7.3. TEST SETUP

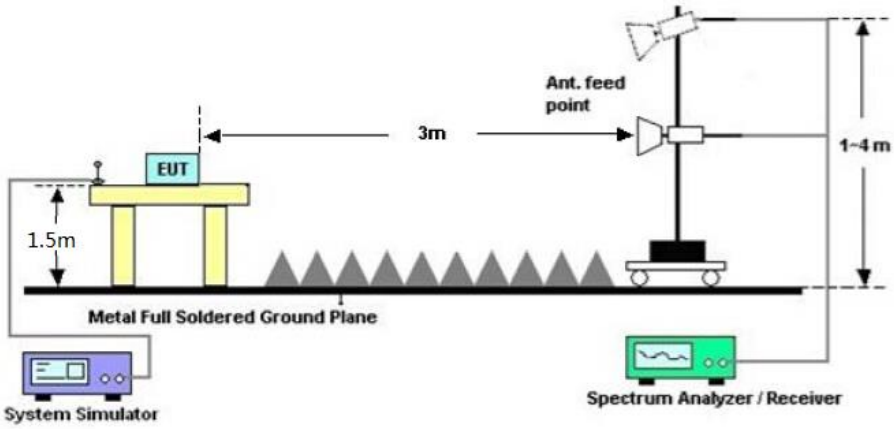
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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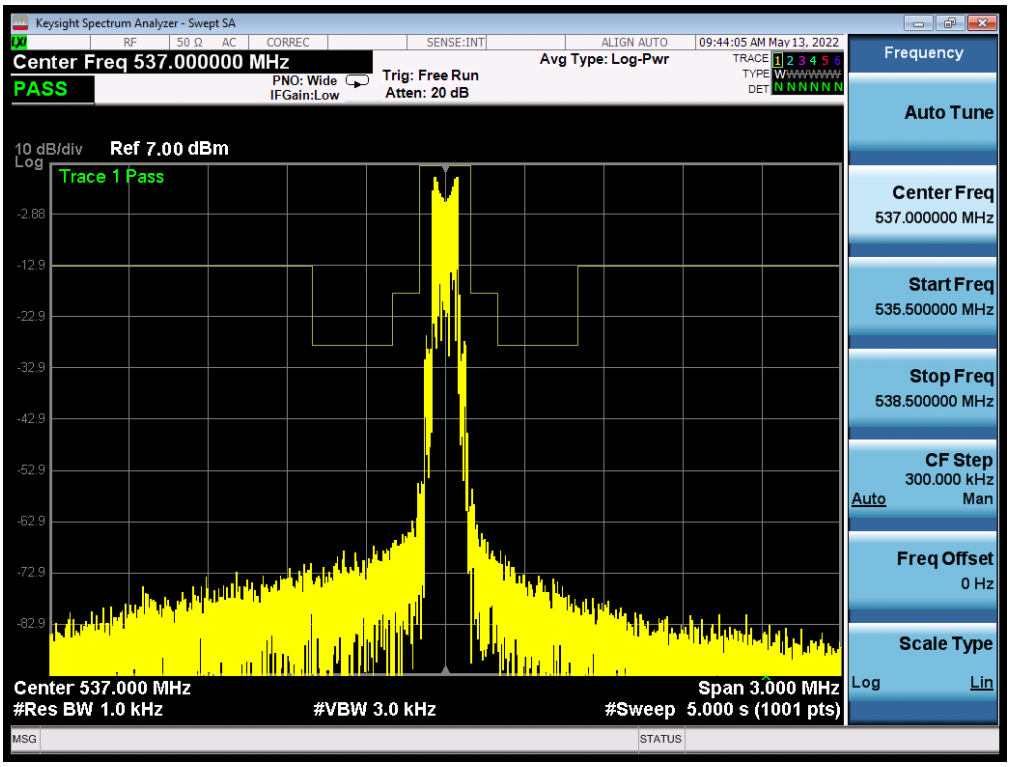
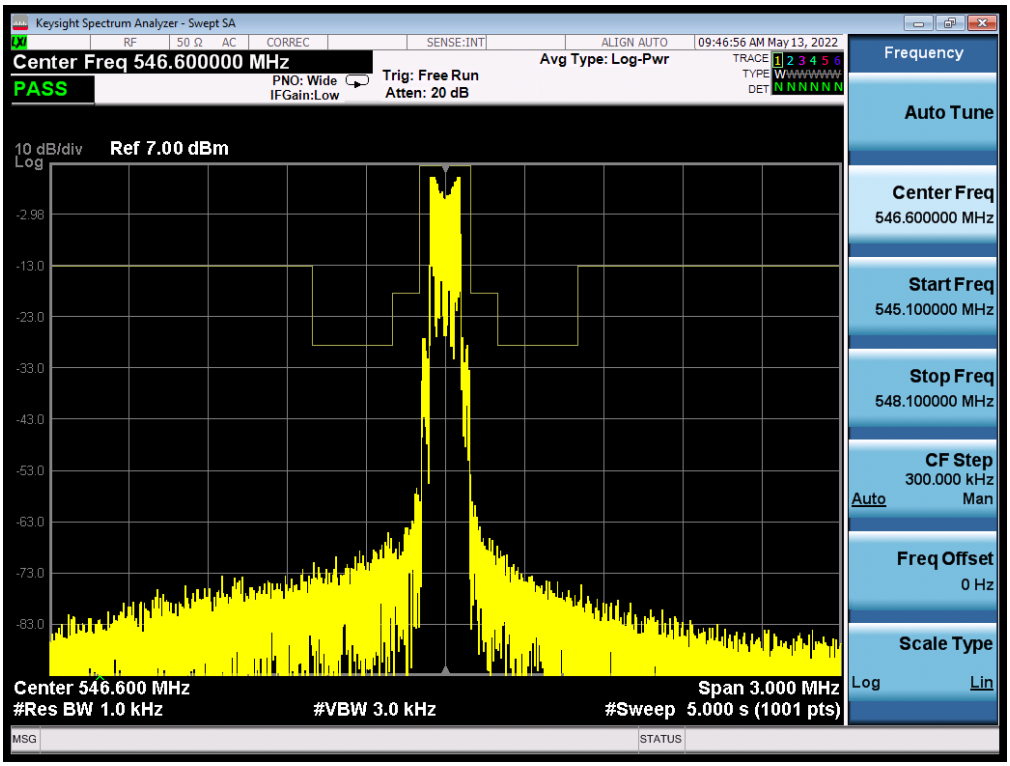
7.4. TEST RESULT

LOW CHANNEL



MIDDLE CHANNEL



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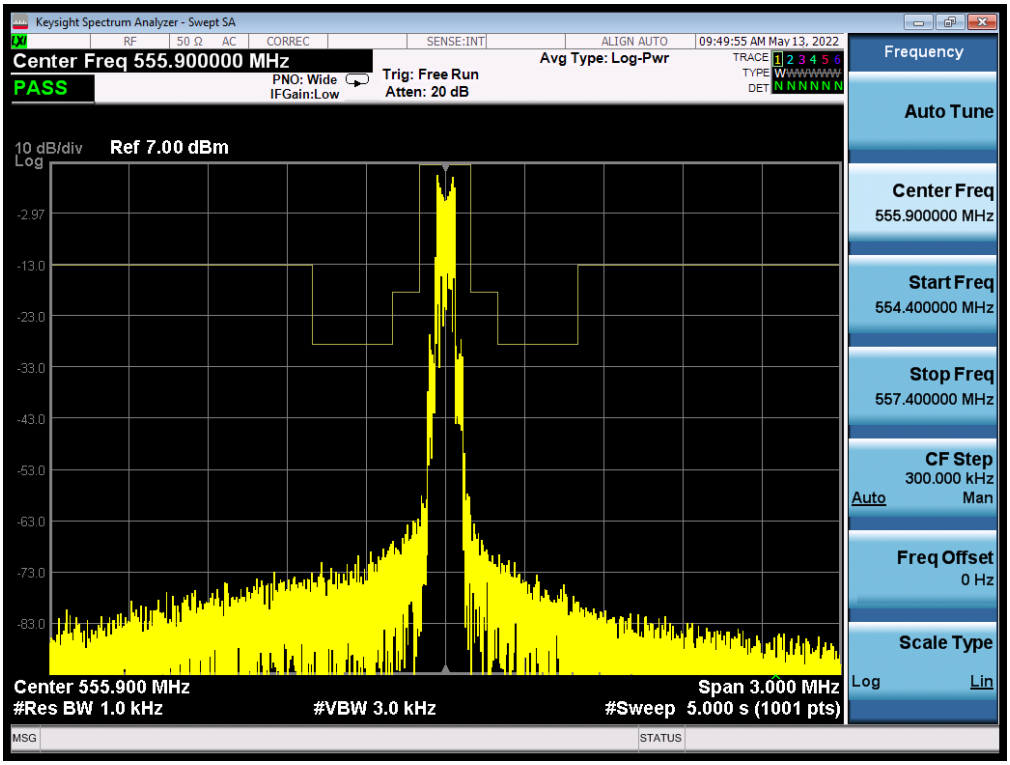
HIGH CHANNEL



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.

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8. EMISSIONS MASK AND SPURIOUS EMISSIONS

8.1. 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).

8.2. MEASUREMENT PROCEDURE

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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.
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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

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

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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

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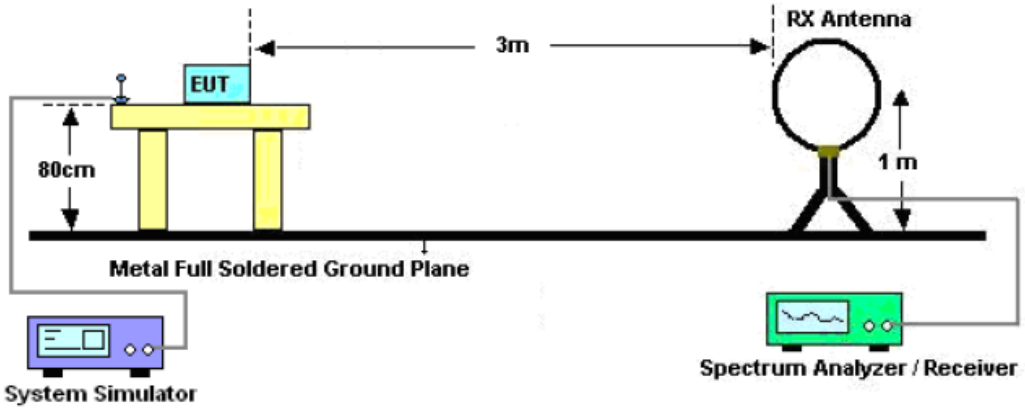
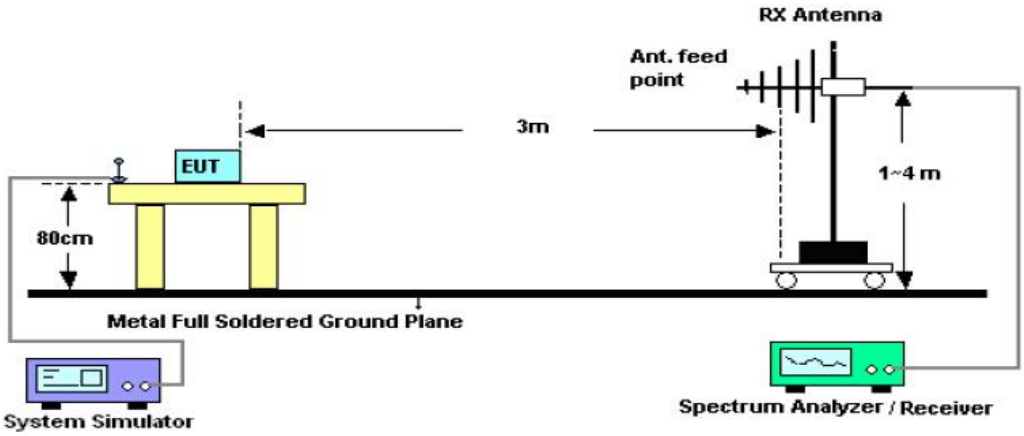
8.3. TEST SETUP

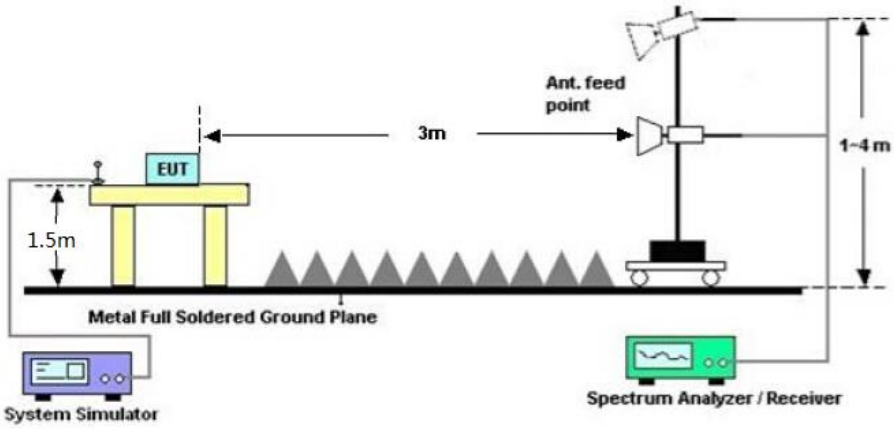
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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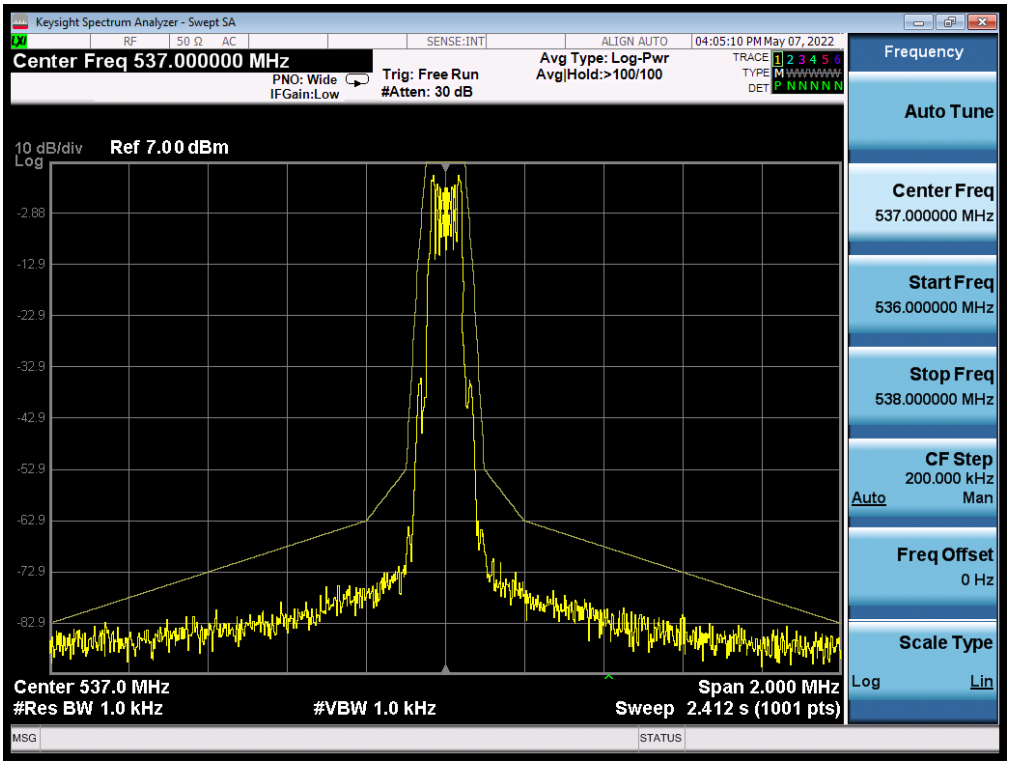
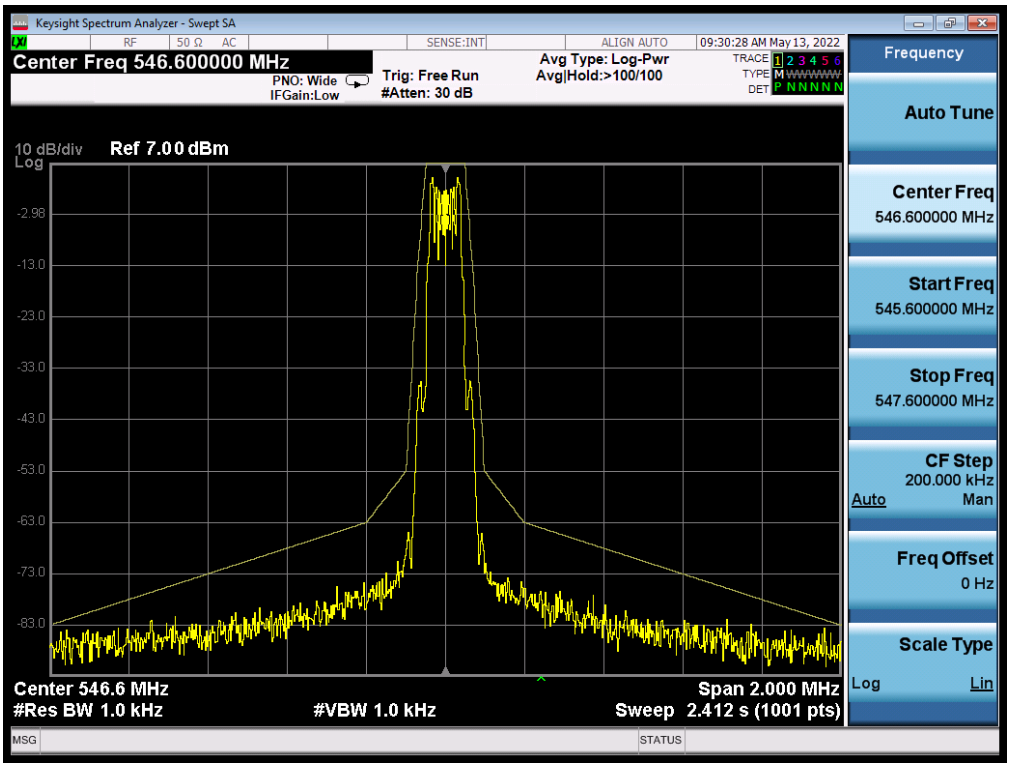
8.4. TEST RESULT

EMISSION MASK (LOW CHANNEL)



EMISSION MASK (MIDDLE CHANNEL)



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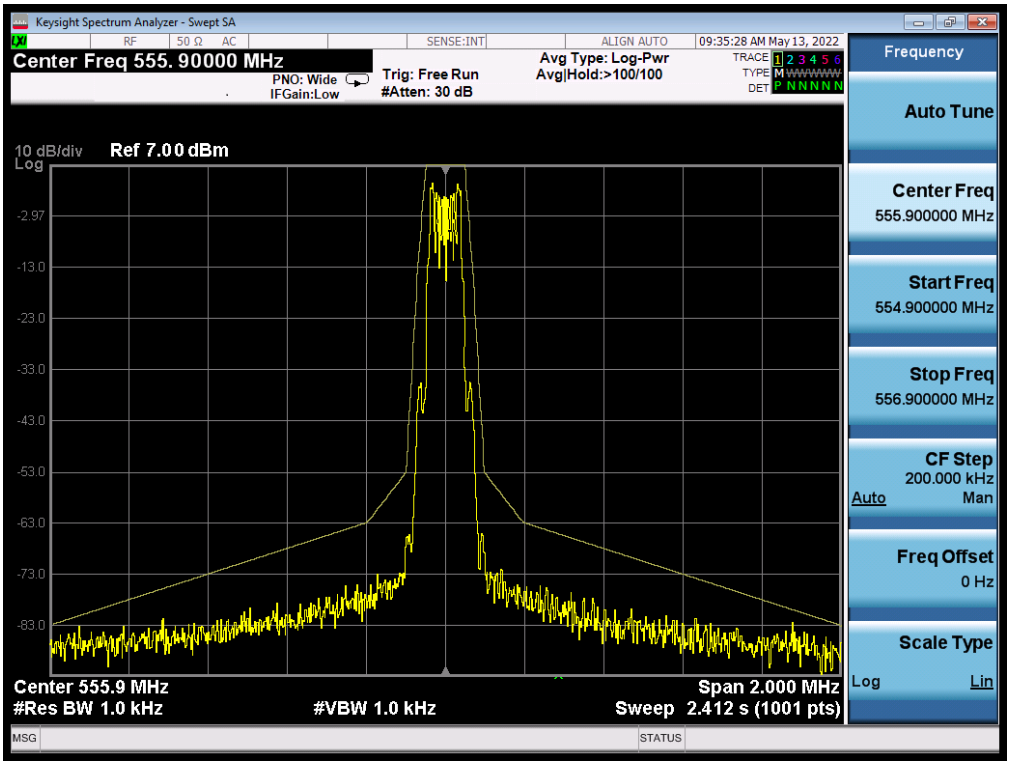
EMISSION MASK (HIGH CHANNEL)



Note:

1.The manufacturer declared that the channel bandwidth is 200KHz.

2.The carrier power is the ref level, and The factor had been edited in the “Input Correction” of the Spectrum Analyzer.

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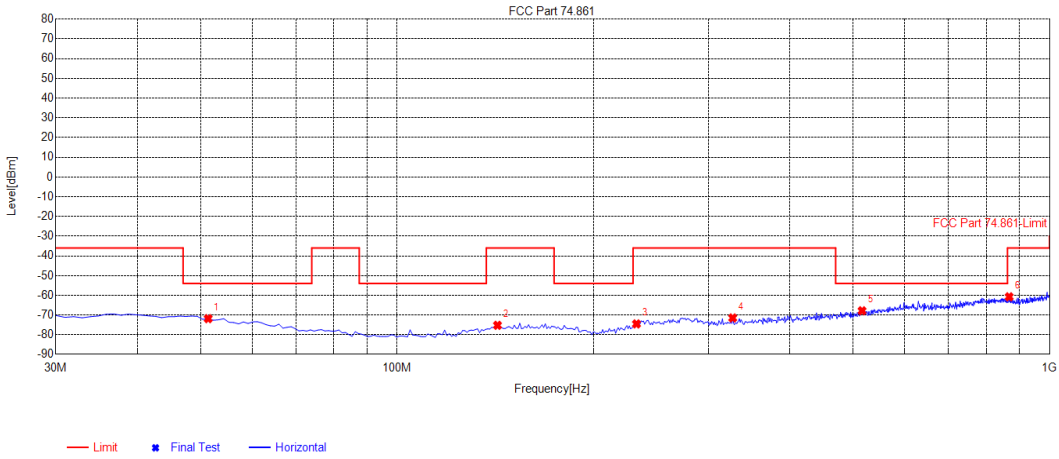
RADIATED EMISSION BELOW 30MHZ

Note: No other emissions found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION 30MHz- 3GHZ

EUT：	UHF WIRELESS MICROPHONE	Model Name. ：	X3HH
Temperature：	25℃	Relative Humidtity：	60%
Pressure：	1010 hPa	Test Voltage ：	Normal
Test Mode ：	Transmitting at 537MHz	Polarization :	Horizontal



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	51.34	-102.10	-71.83	-54.00	17.83	30.27	170	Horizontal
2	142.52	-101.58	-75.21	-36.00	39.21	26.37	240	Horizontal
3	232.73	-102.30	-74.51	-36.00	38.51	27.79	130	Horizontal
4	326.82	-101.10	-71.48	-36.00	35.48	29.62	290	Horizontal
5	515.97	-101.74	-67.85	-54.00	13.85	33.89	80	Horizontal
6	867.11	-100.86	-60.76	-36.00	24.76	40.10	280	Horizontal

RESULT: PASS

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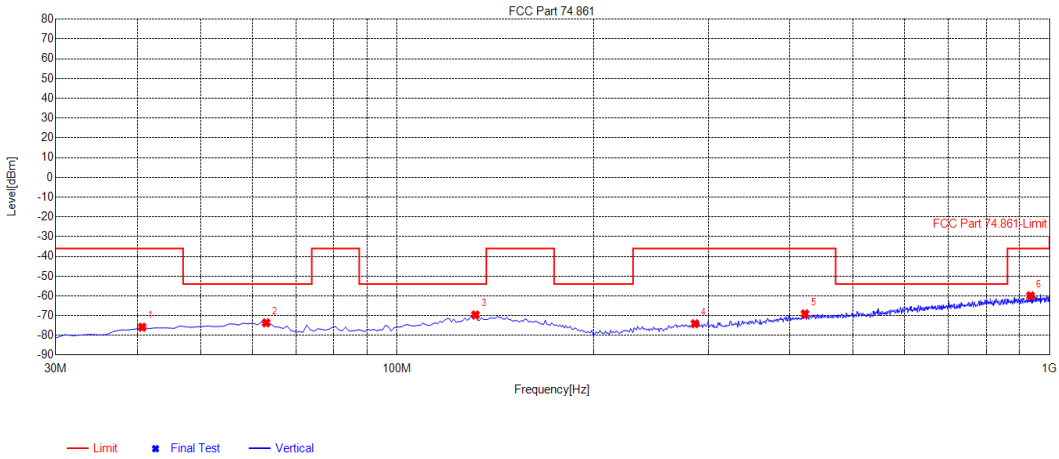
EUT：	UHF WIRELESS MICROPHONE	Model Name. ：	X3HH
Temperature：	25℃	Relative Humidtity：	60%
Pressure：	1010 hPa	Test Voltage ：	Normal
Test Mode ：	Transmitting at 537MHz	Polarization :	Vertical



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	40.67	-101.10	-75.85	-36.00	39.85	25.25	20	Vertical
2	62.98	-100.99	-73.65	-54.00	19.65	27.34	300	Vertical
3	131.85	-100.47	-69.63	-54.00	15.63	30.84	270	Vertical
4	286.08	-101.87	-74.08	-36.00	38.08	27.79	220	Vertical
5	421.88	-101.38	-69.08	-36.00	33.08	32.30	130	Vertical
6	935.01	-100.58	-59.91	-36.00	23.91	40.67	160	Vertical

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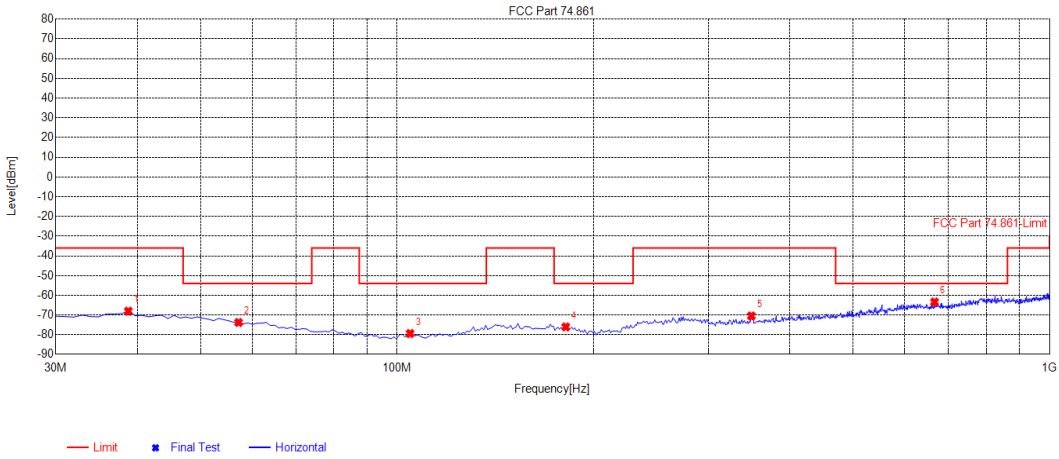
RADIATED EMISSION 30MHz- 3GHZ

EUT：	UHF WIRELESS MICROPHONE	Model Name. ：	X3HH
Temperature：	25℃	Relative Humidtity：	60%
Pressure：	1010 hPa	Test Voltage ：	Normal
Test Mode ：	Transmitting at 555.9MHz	Polarization :	Horizontal



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	38.73	-99.98	-68.04	-36.00	32.04	31.94	130	Horizontal
2	57.16	-102.38	-73.78	-54.00	19.78	28.60	230	Horizontal
3	104.69	-101.22	-79.39	-54.00	25.39	21.83	330	Horizontal
4	181.32	-102.40	-76.03	-54.00	22.03	26.37	300	Horizontal
5	349.13	-100.64	-70.47	-36.00	34.47	30.17	310	Horizontal
6	666.32	-100.42	-63.39	-54.00	9.39	37.03	160	Horizontal

RESULT: PASS

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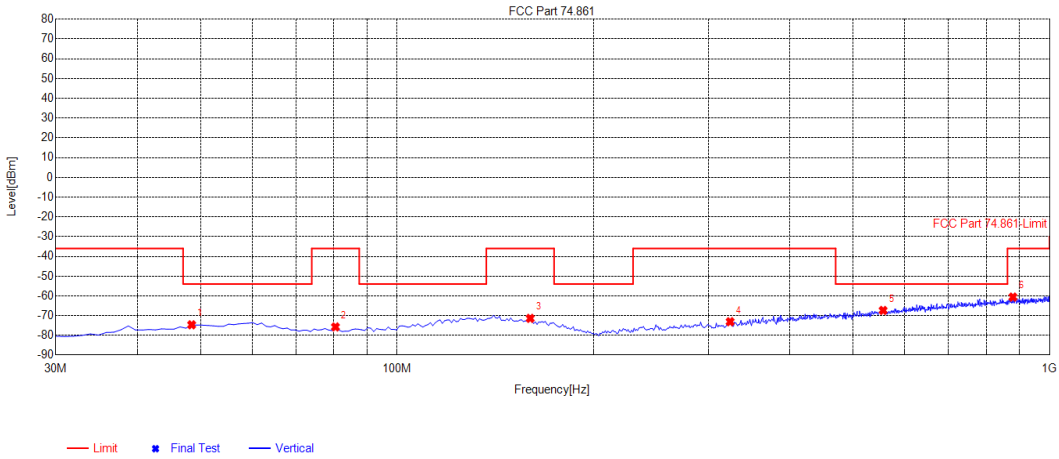
EUT：	UHF WIRELESS MICROPHONE	Model Name. ：	X3HH
Temperature：	25℃	Relative Humidtity：	60%
Pressure：	1010 hPa	Test Voltage ：	Normal
Test Mode ：	Transmitting at 555.9MHz	Polarization :	Vertical



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	48.43	-101.18	-74.63	-54.00	20.63	26.55	140	Vertical
2	80.44	-101.33	-75.71	-36.00	39.71	25.62	10	Vertical
3	159.98	-101.38	-71.37	-36.00	35.37	30.01	250	Vertical
4	323.91	-101.96	-73.06	-36.00	37.06	28.90	180	Vertical
5	555.74	-102.04	-67.36	-54.00	13.36	34.68	80	Vertical
6	878.75	-100.71	-60.60	-36.00	24.60	40.11	290	Vertical

RESULT: PASS

Note:

Factor=Antenna Factor + Cable loss, Margin=Limit−Level.

The “Factor” value can be calculated automatically by software of measurement system.

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RADIATED EMISSION ABOVE 1GHz

EUT	UHF WIRELESS MICROPHONE	Model Name. :	X3HH
Temperature	25°C	**Relative Humidity**	60%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Transmitting at 537MHz	**Antenna**	Horizontal/Vertical

Frequency (MHz)	Meter Reading (dBm)	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Value Type
1074.000	-35.16	-4.02	-39.18	-30	-9.18	Horizontal
1074.000	-40.29	-4.02	-44.31	-30	-14.31	Vertical
1611.000	-39.74	-1.95	-41.69	-30	-11.69	Horizontal
1611.000	-40.25	-1.95	-42.2	-30	-12.2	Vertical
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	UHF WIRELESS MICROPHONE	Model Name. :	X3HH
Temperature	25°C	**Relative Humidity**	60%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Transmitting at 546.6MHz	**Antenna**	Horizontal/Vertical

Frequency (MHz)	Meter Reading (dBm)	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Value Type
1093.200	-37.46	-4.01	-41.47	-30	-11.47	Horizontal
1093.200	-40.81	-4.01	-44.82	-30	-14.82	Vertical
1639.800	-39.66	-1.94	-41.6	-30	-11.6	Horizontal
1639.800	-40.51	-1.94	-42.45	-30	-12.45	Vertical
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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EUT	UHF WIRELESS MICROPHONE	Model Name. :	X3HH
Temperature	25°C	**Relative Humidity**	60%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Transmitting at 555.9MHz	**Antenna**	Horizontal/Vertical

Frequency (MHz)	Meter Reading (dBm)	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Value Type
1111.800	-35.26	-4.03	-39.29	-30	-9.29	Horizontal
1111.800	-40.15	-4.03	-44.18	-30	-14.18	Vertical
1667.700	-39.65	-1.93	-41.58	-30	-11.58	Horizontal
1667.700	-40.18	-1.93	-42.11	-30	-12.11	Vertical
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RESULT: PASS

Note:

Other emissions from 1G to 6 GHz are considered as ambient noise. No recording in the test report.

The “Factor” value can be calculated automatically by software of measurement system.

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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC01612201102AP02

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC01612201102AP03

----END OF REPORT----

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Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3.The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

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