FCC Test Report

Report No.: AGC01924230901FR02

FCC ID	:	2A3JH-BH549
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	WIRELESS FM TRANSMITTER
BRAND NAME	:	LENCENT
MODEL NAME	:	BH549
APPLICANT	:	Dongguan Yuzhenrong Trading Co., Ltd.
DATE OF ISSUE	:	Oct. 18, 2023
STANDARD(S)	:	FCC Part 15.239
REPORT VERSION	:	V1.0

***A**ttestation of **G**lobal **C**ompliance(Shenzhen) Co., Ltd*

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Oct. 18, 2023	Valid	Initial Release

TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY

Applicant	Dongguan Yuzhenrong Trading Co., Ltd.
Address	Room 204, No. 74, Humen Xinlian 9th Street, Humen Village, Humen Town, Dongguan City, Guangdong, China
Manufacturer	Dongguan Yuzhenrong Trading Co., Ltd.
Address	Room 204, No. 74, Humen Xinlian 9th Street, Humen Village, Humen Town, Dongguan City, Guangdong, China
Factory	Dongguan Pinmi Electronic Technology Co., Ltd
Address	2F, E block, Hongda Industrial Park, Shima Community, Tangxia Town, Dongguan City, Guangdong, China
Product Designation	WIRELESS FM TRANSMITTER
Brand Name	LENCENT
Test Model	BH549
Series Model	N/A
Difference Description	N/A
Date of receipt of test item	Sep. 11, 2023
Date of test	Sep. 11, 2023 to Oct. 18, 2023
Deviation	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-US-BR/RF (2013-03-01)

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 C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC part 15.239.

Prepared By	Alan Duan (Project Engineer)	Oct. 18, 2023
Reviewed By	Calvin Liu (Reviewer)	Oct. 18, 2023
Approved By	Max Zhang (Authorized Officer)	Oct. 18, 2023

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	88.1MHz-107.9MHz
Test Frequency	Low: 88.1 MHz; Middle:98.0 MHz; High: 107.9 MHz
Field Strength(3m)	42.83 dB μV/m(PK)@3m
Modulation	FM
Number of channels	199(Channel spacing 100kHz)
Hardware Version	V1.1
Software Version	V1.0
Antenna Designation	PCB Antenna (Met 15.203 Antenna requirement)
Antenna Gain	1.2 dBi
Power Supply	DC 12-24V by battery
Note: The car charger was supplied by DC 12V and DC 24V. Only the worst mode test data (DC 24V) recorded in the test report.	

NOTE: About the EUT, please refer to User's Manual.

2.2 TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
88.1MHz-107.9MHz	1	88.10
	2	88.20
	--	--
	100	98.00
	101	98.10
	--	--
	198	107.80
	199	107.90

3. MEASUREMENT UNCERTAINTY

- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.9 dB

4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Transmitting mode(Low channel)
2	Transmitting mode(Middle channel)
3	Transmitting mode(High channel)

Note: 1. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
2. All the requirements have been tested by modulating the transmitter with a 2.5 kHz tone at a fixed level which set to the manufacturer's maximum rated input to the modulator.
3. Only the result of the worst case was recorded in the report, if no other cases.

5. SYSTEM TEST CONFIGURATION

5.1. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	WIRELESS FM TRANSMITTER	BH549	2A3JH-BH549	EUT
2	Control Box	USB to TTL	--	AE
3	DC12V Battery	FengFan	L2 400-H	AE

5.2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
15.239	Field Strength of Fundamental and Spurious Emission	Compliant
15.215	Bandwidth	Compliant
15.207	Line Conducted Emission	Not applicable

6. TEST FACILITY

TestSite	Attestation of Global Compliance(Shenzhen) Co., Ltd
Location	1-2/F,Building19,JunfengIndustrialPark,ChongqingRoad,HepingCommunity,Fuhai Street,Bao'anDistrict,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	Feb. 18, 2023	Feb. 17, 2024
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Jun. 01, 2023	May 31, 2024
Attenuator	ZHINAN	E-002	N/A	Jun. 01, 2023	May 31, 2024
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Mar. 23, 2023	Mar. 22, 2024
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Aug. 04, 2022	Aug. 03, 2024
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 05, 2023	Jan. 04, 2025
Test software	FARA	EZ-EMC (Ver RA-03A)	N/A	N/A	N/A
RF Communications Test Set	Agilent	8920B	US35010161	Jun. 02, 2023	Jun. 01, 2024

7. RADIATED EMISSION

7.1. 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. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

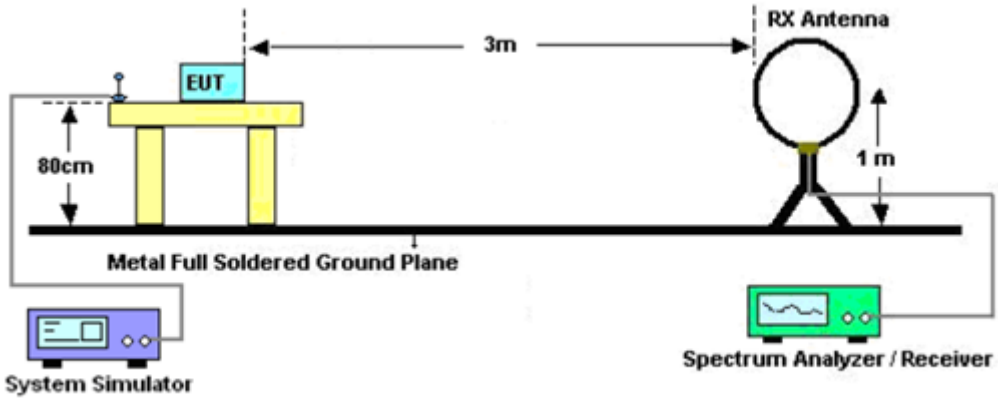
The following table is the setting of spectrum analyzer and receiver.

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	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average

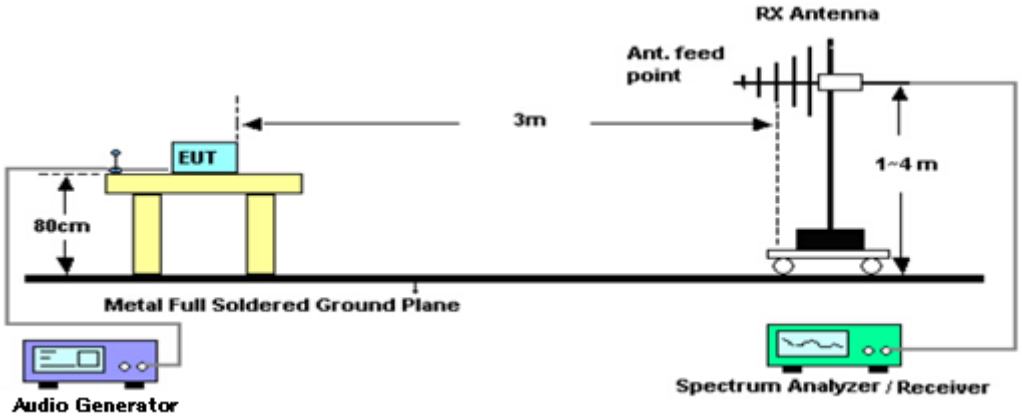
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

7.2.TEST SETUP

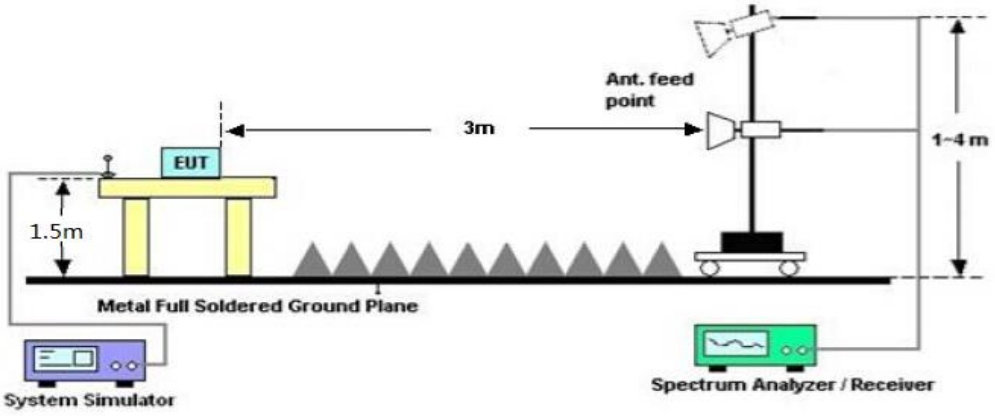
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



7.3. TEST RESULTFOR FIELD STRENGTH OF FUNDAMENTAL

Frequency MHz	Polarization	Level dB(μV/m) PK	Limit dB(μV/m) AV	Margin dB	Pass/Fail	Detector
88.100	H	34.50	47.96	13.46	Pass	PK
88.100	V	42.68	47.96	5.28	Pass	PK
98.000	H	40.33	47.96	7.63	Pass	PK
98.000	V	42.83	47.96	5.13	Pass	PK
107.900	H	40.86	47.96	7.10	Pass	PK
107.900	V	42.64	47.96	5.32	Pass	PK

7.4. TEST RESULT FOR FIELD STRENGTH OF BAND EDGE EMISSION

Frequency MHz	Polarization	Level dB(μV/m) QP	Limit dB(μV/m) QP	Margin dB	Pass/Fail	Detector
88.000	H	23.34	40	16.66	Pass	QP
88.000	V	25.42	40	14.58	Pass	QP
108.000	H	22.54	43.5	20.96	Pass	QP
108.000	V	25.36	43.5	18.14	Pass	QP

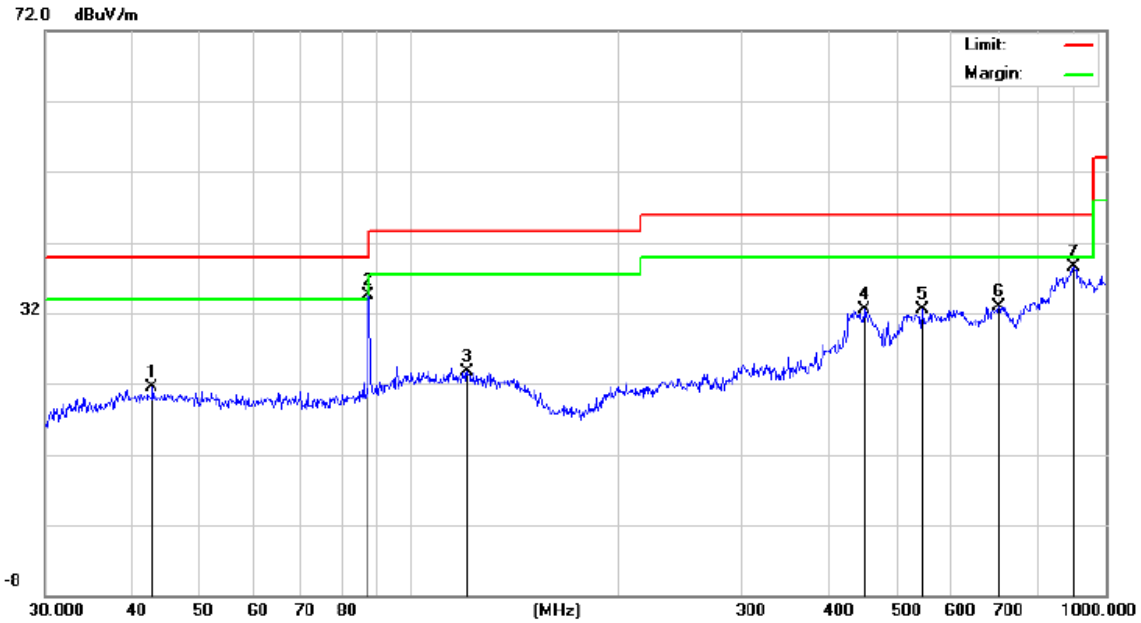
Note: The above two frequencies are the worst case for the band edge emission test.

7.5. TEST RESULT FOR SPURIOUS EMISSION

RADIATED EMISSION BELOW 30MHz

No emission found between lowest internal used/generated frequencies to 30MHz.

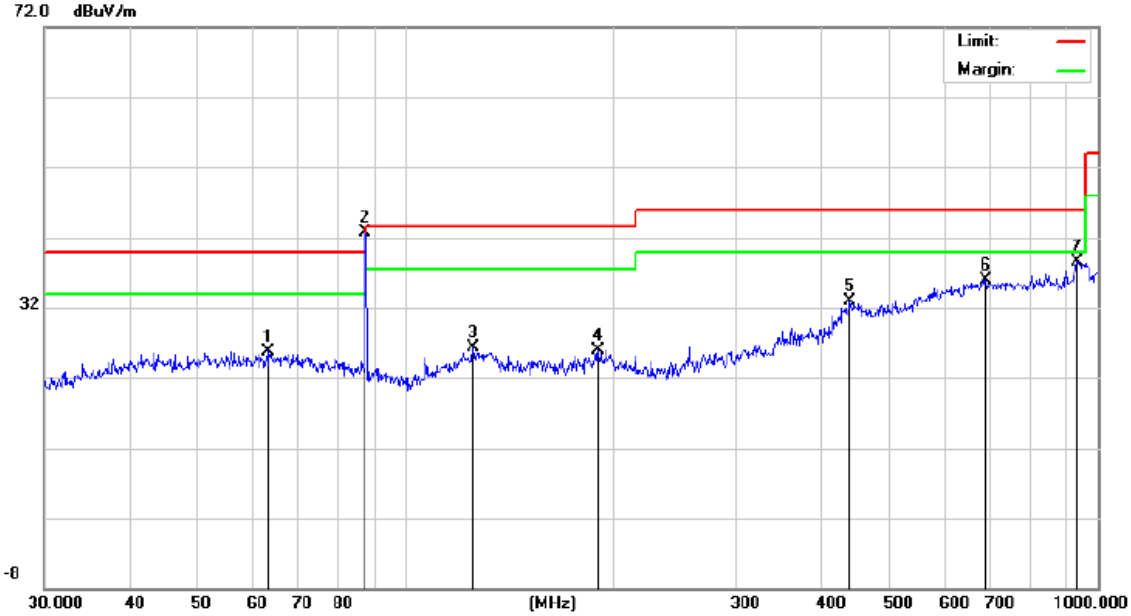
RADIATED EMISSION BELOW 1GHZ-Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		42.7496	7.87	13.71	21.58	40.00	-18.42	peak
2	*	87.4175	20.25	14.25	34.50	40.00	-5.50	peak
3		121.1230	7.40	16.33	23.73	43.50	-19.77	peak
4		449.5557	7.68	24.77	32.45	46.00	-13.55	peak
5		545.1825	8.57	23.98	32.55	46.00	-13.45	peak
6		701.7607	8.76	24.16	32.92	46.00	-13.08	peak
7		900.1471	6.78	31.78	38.56	46.00	-7.44	peak

RESULT: PASS

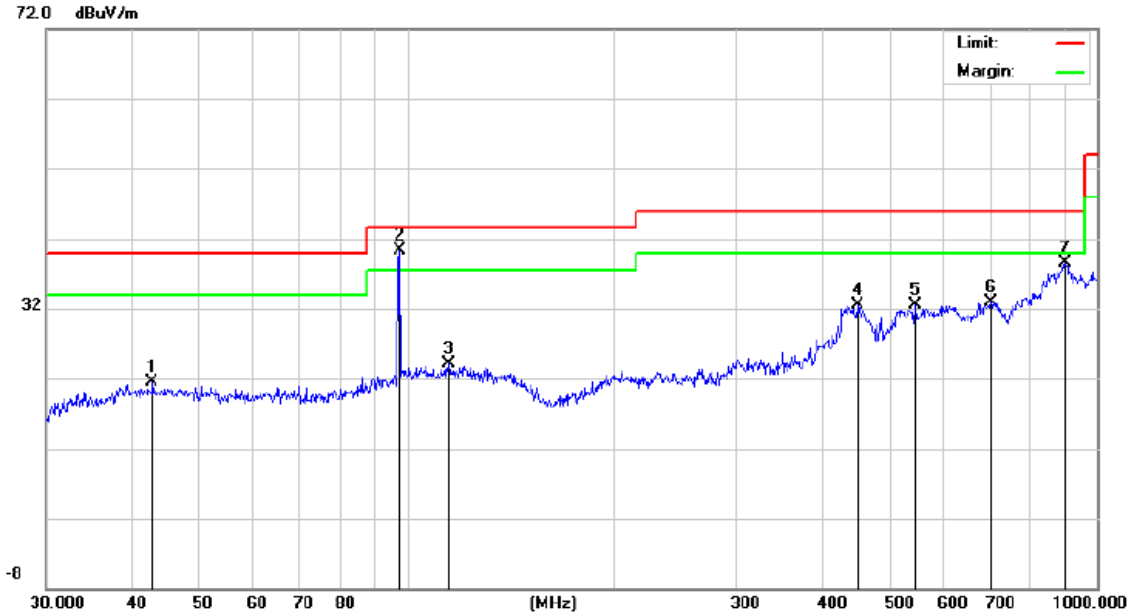
RADIATED EMISSION BELOW 1GHZ-Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		63.3132	8.73	17.07	25.80	40.00	-14.20	peak
2	*	87.4175	26.78	15.90	42.68	40.00	2.68	peak
3		125.0066	8.44	17.82	26.26	43.50	-17.24	peak
4		189.7384	7.75	18.21	25.96	43.50	-17.54	peak
5		438.6553	7.03	25.88	32.91	46.00	-13.09	peak
6		689.5643	8.04	27.89	35.93	46.00	-10.07	peak
7		935.5461	8.15	30.40	38.55	46.00	-7.45	peak

RESULT: PASS

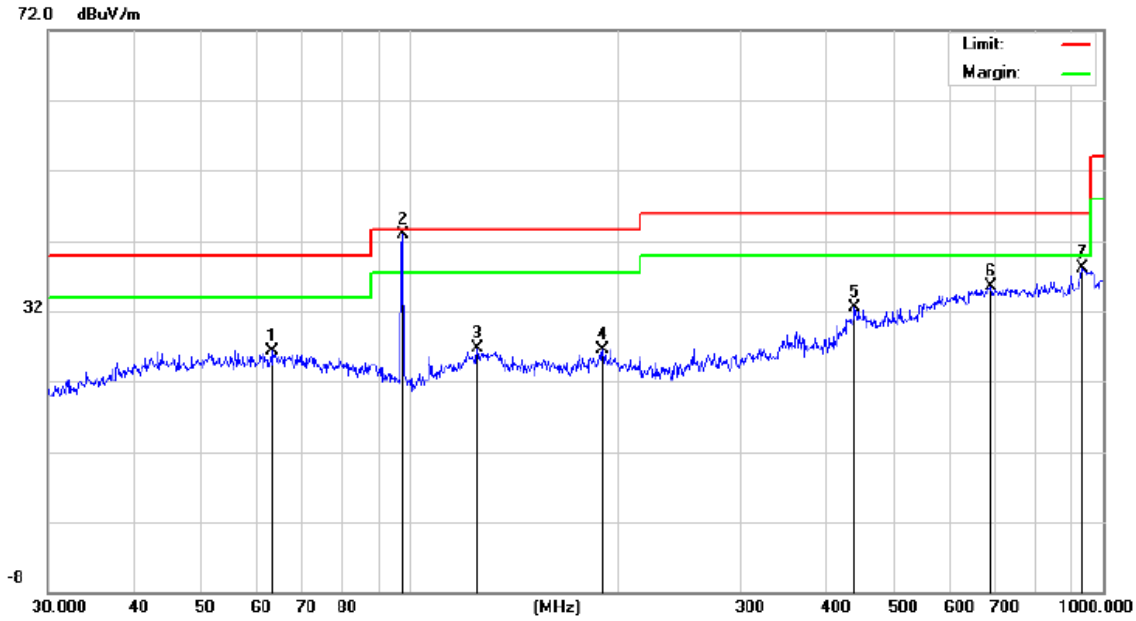
RADIATED EMISSION BELOW 1GHZ-Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		42.7496	7.87	13.71	21.58	40.00	-18.42	peak
2	*	97.7980	24.47	15.86	40.33	43.50	-3.17	peak
3		114.9167	7.76	16.35	24.11	43.50	-19.39	peak
4		449.5557	7.68	24.77	32.45	46.00	-13.55	peak
5		545.1825	8.57	23.98	32.55	46.00	-13.45	peak
6		701.7607	8.76	24.16	32.92	46.00	-13.08	peak
7		900.1471	6.78	31.78	38.56	46.00	-7.44	peak

RESULT: PASS

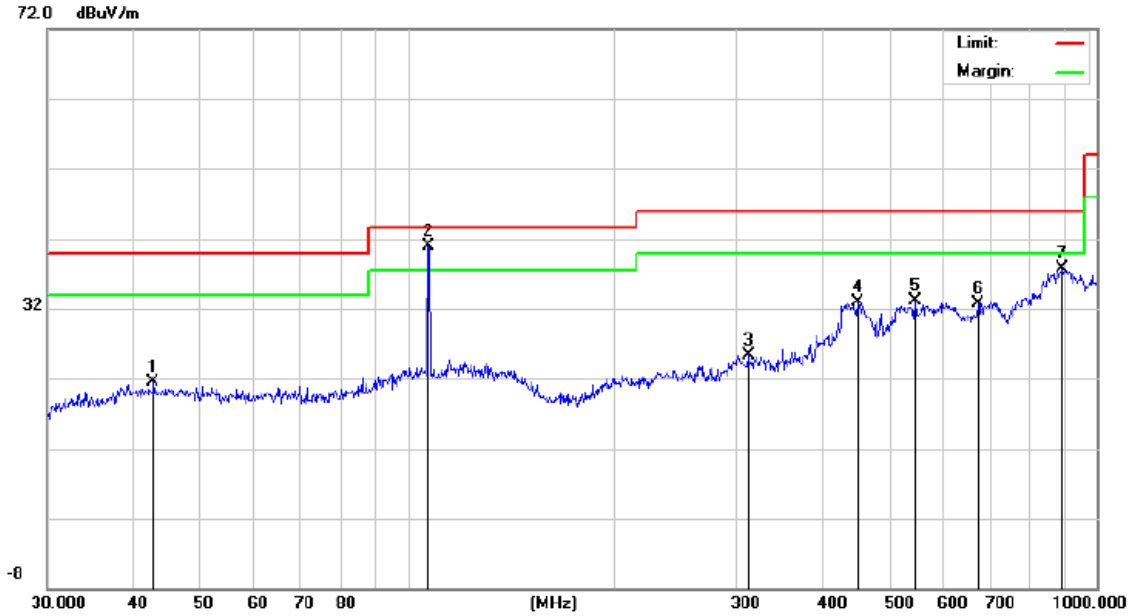
RADIATED EMISSION BELOW 1GHZ-Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		63.3132	9.23	17.07	26.30	40.00	-13.70	peak
2	*	97.7980	28.33	14.50	42.83	43.50	-0.67	peak
3		125.0066	8.94	17.82	26.76	43.50	-16.74	peak
4		189.7384	8.25	18.21	26.46	43.50	-17.04	peak
5		438.6553	6.53	25.88	32.41	46.00	-13.59	peak
6		689.5643	7.54	27.89	35.43	46.00	-10.57	peak
7		935.5461	7.65	30.40	38.05	46.00	-7.95	peak

RESULT: PASS

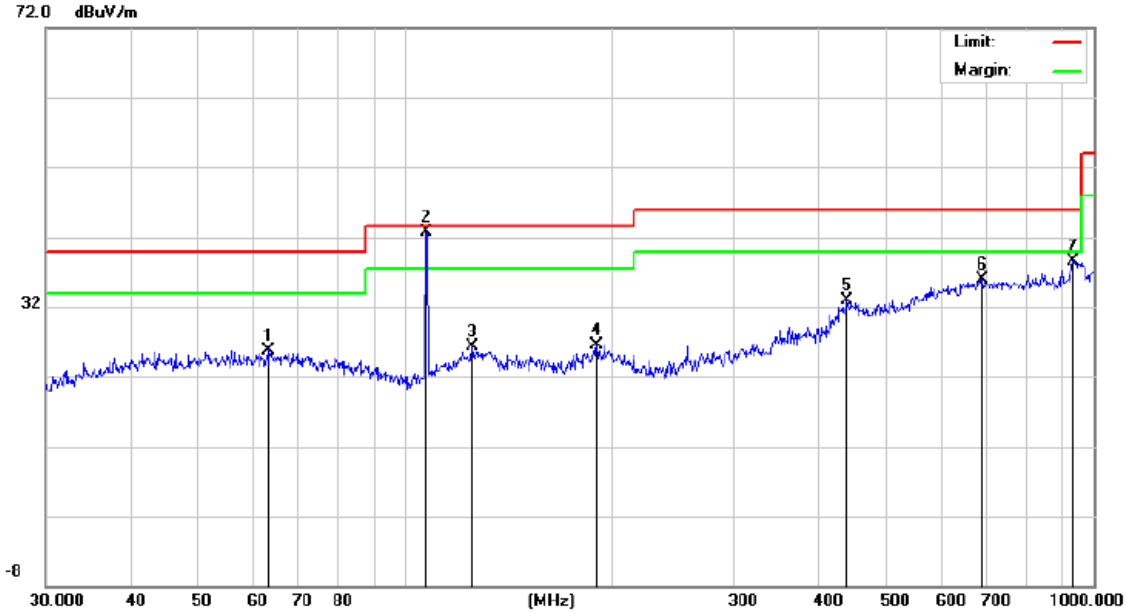
RADIATED EMISSION BELOW 1GHZ-Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		42.7496	7.87	13.71	21.58	40.00	-18.42	peak
2	*	107.1337	24.59	16.27	40.86	43.50	-2.64	peak
3		312.1792	8.90	16.50	25.40	46.00	-20.60	peak
4		449.5557	8.18	24.77	32.95	46.00	-13.05	peak
5		545.1825	9.07	23.98	33.05	46.00	-12.95	peak
6		672.8444	8.46	24.27	32.73	46.00	-13.27	peak
7		890.7278	7.11	30.64	37.75	46.00	-8.25	peak

RESULT: PASS

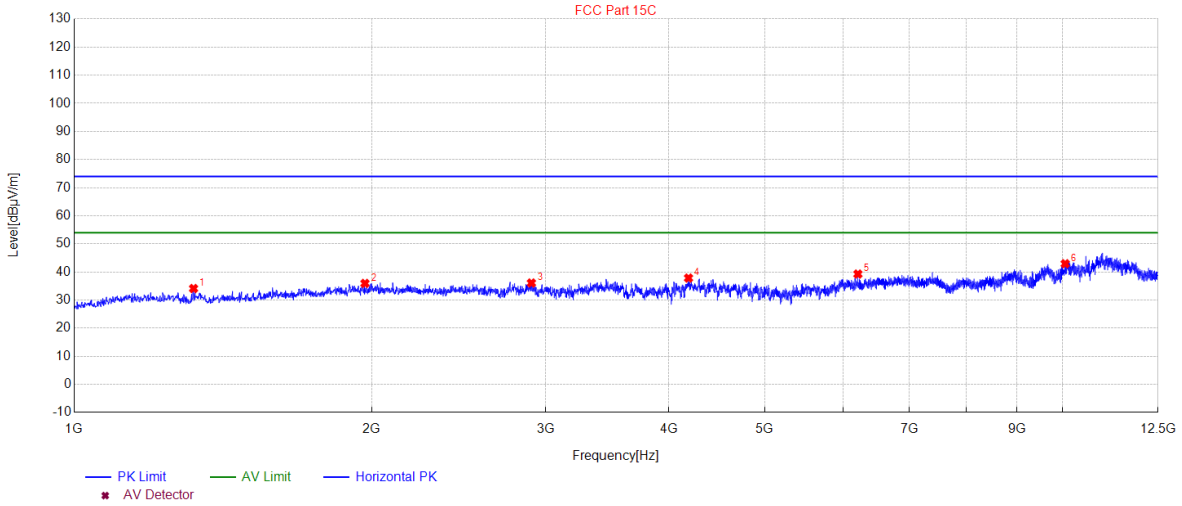
RADIATED EMISSION BELOW 1GHZ-Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		63.3132	8.73	17.07	25.80	40.00	-14.20	peak
2	*	107.1337	27.19	15.45	42.64	43.50	-0.86	peak
3		125.0066	8.44	17.82	26.26	43.50	-17.24	peak
4		189.7384	8.25	18.21	26.46	43.50	-17.04	peak
5		438.6553	7.03	25.88	32.91	46.00	-13.09	peak
6		689.5643	8.04	27.89	35.93	46.00	-10.07	peak
7		935.5461	8.15	30.40	38.55	46.00	-7.45	peak

RESULT: PASS

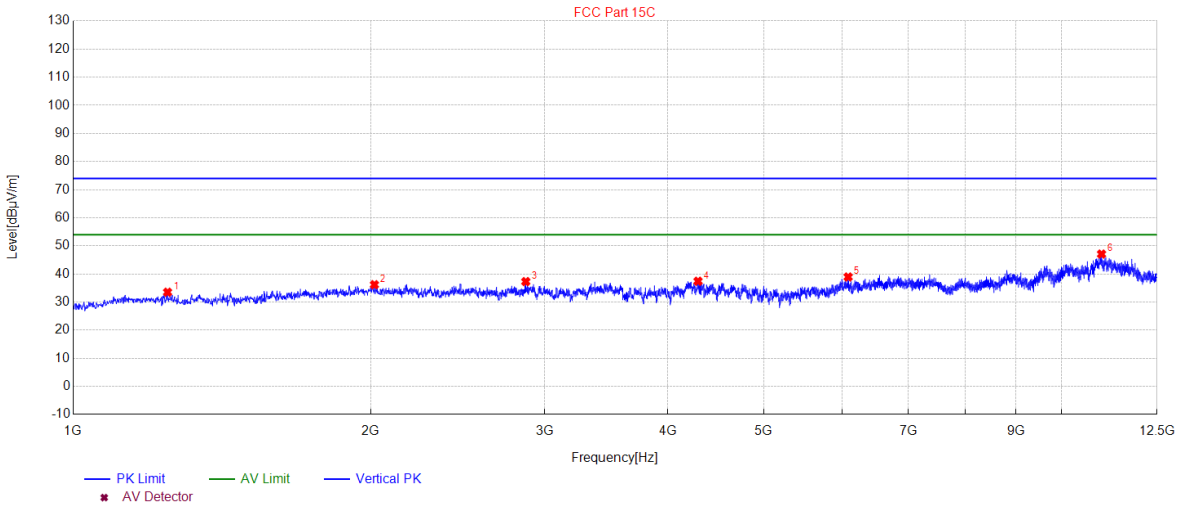
RADIATED EMISSION ABOVE 1GHZ-Horizontal



PK Data List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1320.8821	34.11	-17.83	74.00	39.89	150	60	Horizontal
2	1969.547	35.93	-13.66	74.00	38.07	150	220	Horizontal
3	2902.2902	36.07	-12.01	74.00	37.93	150	60	Horizontal
4	4185.8186	37.84	-9.19	74.00	36.16	150	240	Horizontal
5	6211.1711	39.26	-5.02	74.00	34.74	150	240	Horizontal
6	10068.656	42.93	0.26	74.00	31.07	150	200	Horizontal

RESULT: PASS

RADIATED EMISSION ABOVE 1GHZ-Vertical



PK Data List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1246.1246	33.51	-17.95	74.00	40.49	150	120	Vertical
2	2017.8518	36.18	-13.37	74.00	37.82	150	340	Vertical
3	2871.2371	37.28	-12.03	74.00	36.72	150	260	Vertical
4	4289.3289	37.41	-8.76	74.00	36.59	150	270	Vertical
5	6085.8086	38.93	-5.24	74.00	35.07	150	210	Vertical
6	10982.998	47.08	2.60	74.00	26.92	150	140	Vertical

RESULT: PASS

Note: 1. Factor=Antenna Factor+ Cable loss-Amplifier gain, Margin= Level-Limit.

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

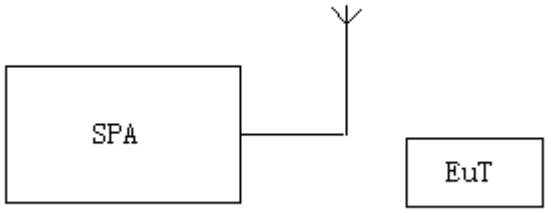
3. Which above 1GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

8. BANDWIDTH

8.1. MEASUREMENT PROCEDURE

1. Set the parameters of SPA as below:
   Centre frequency = Operation Frequency
   RBW=3KHz
   VBW=10KHz
   Span: 300kHz
   Sweep time: Auto
   For the occupied bandwidth measurements, the input signal shall be a 2.5 kHz tone.
   ☐The level of the tone shall be 16 dB higher than that required to produce a frequency deviation of 75 kHz, or 50% of the manufacturer's rated deviation, whichever is less.
   ☒Alternatively, in the event that a 16 dB increase cannot be achieved, the level of the tone shall be set to the manufacturer's maximum rated input to the modulator.
2. Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the "N dB down" function of SPA to define the bandwidth.
3. Record the plots and Reported.

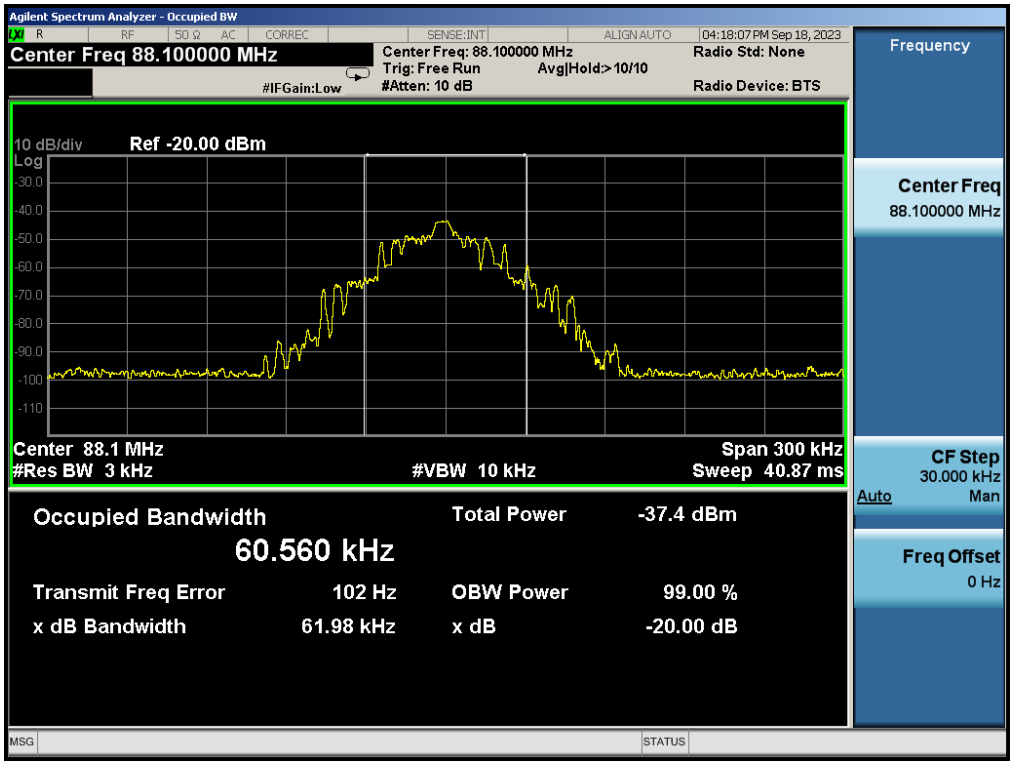
8.2. TEST SETUP



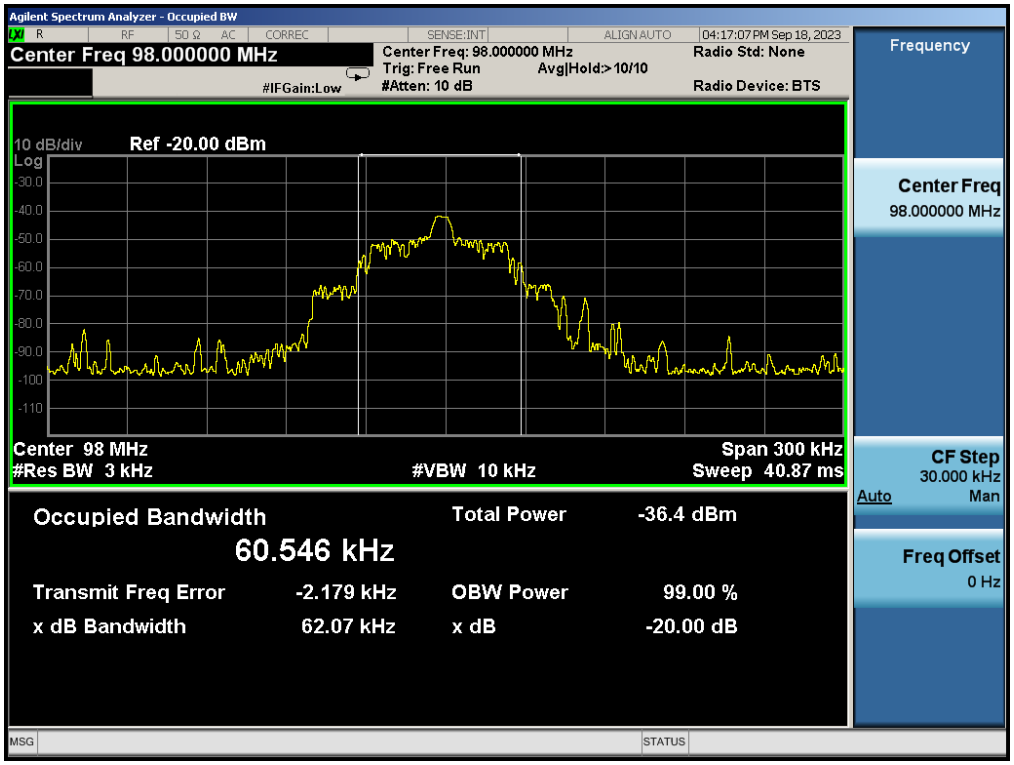
8.3. TEST RESULT

Channel	Channel Frequency(MHz)	-20dB bandwidth (kHz)	Limit(kHz)
Low	88.1	61.98	200
Middle	98.0	62.07	200
High	107.9	60.88	200

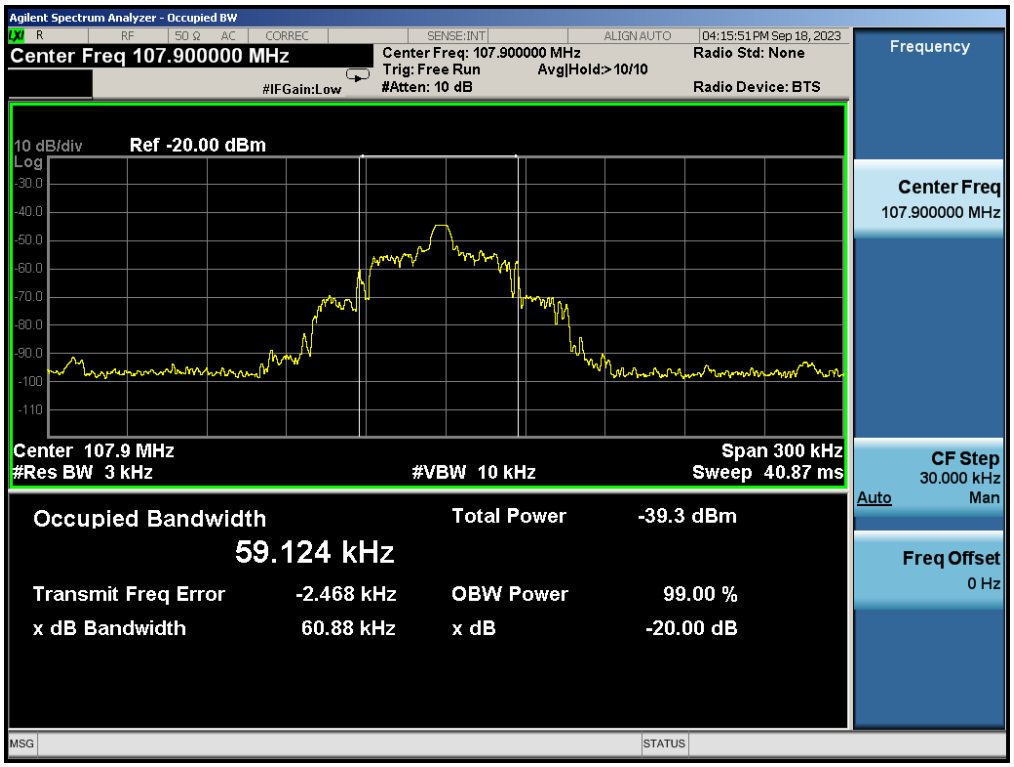
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



9. FCC LINE CONDUCTED EMISSION TEST

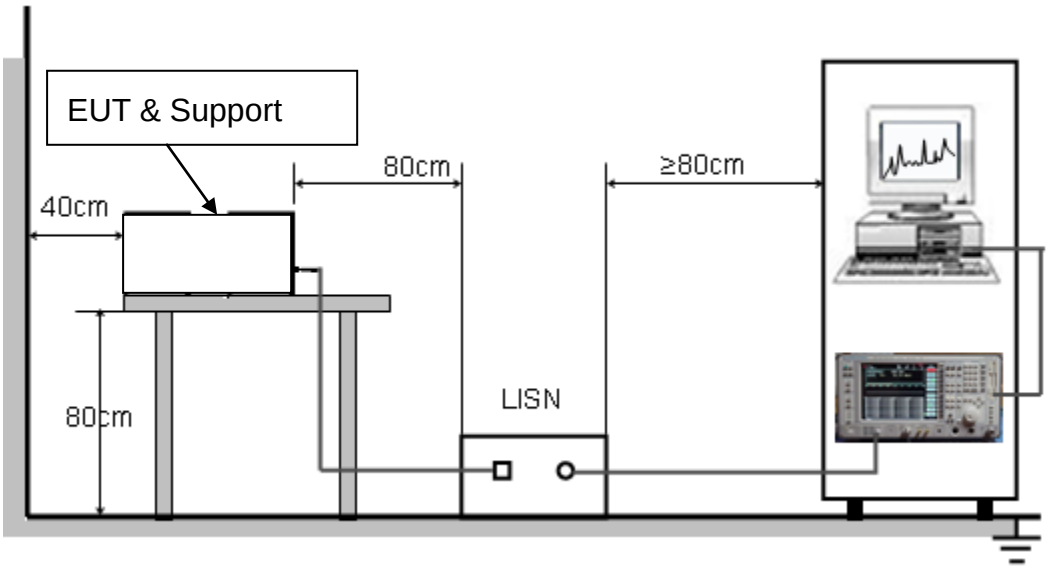
9.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P. (dBμV)	Average (dBμV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

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

9.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



9.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When 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 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipment received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC 5V power from adapter which received AC120V/60Hz power from a LISN.
6. The 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.
9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

9.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

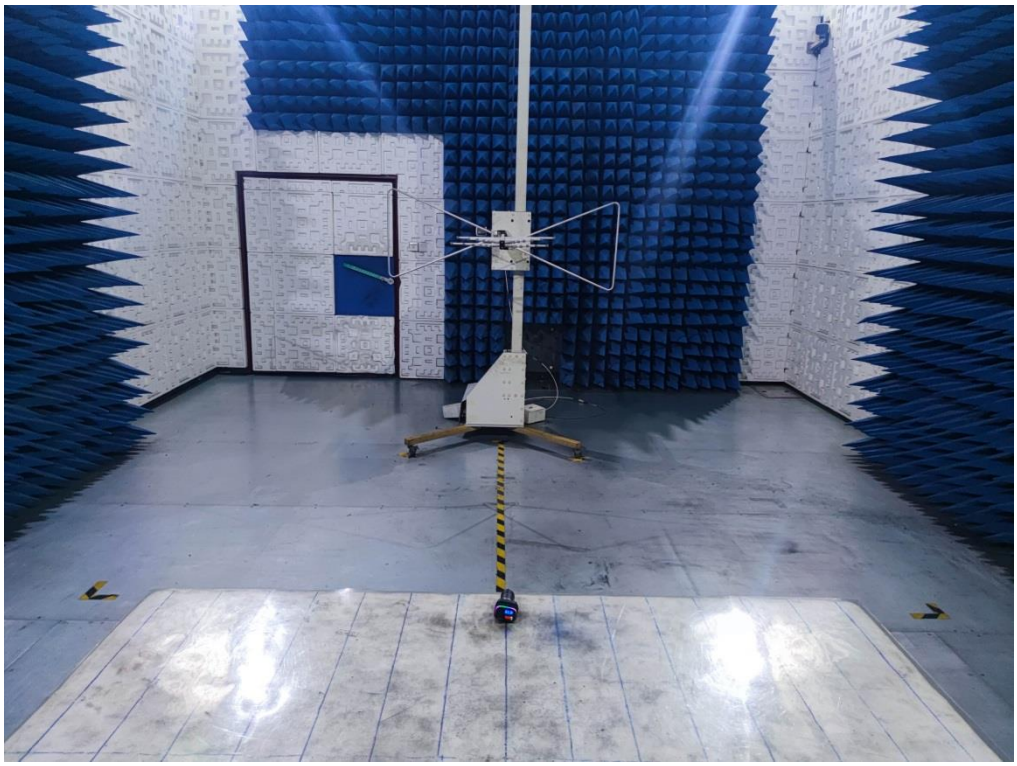
9.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

N/A

Note: The conducted emission tests at AC port are not required for devices which only employ battery power for operation.

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST SETUP BELOW 1G



RADIATED EMISSION TEST SETUP ABOVE 1G

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC01924230901AP03

----END OF REPORT----

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.