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# FCC Test Report

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Report No.: AGC01110190920FE03B

**FCC ID** : 2AOKB-A3105  
**APPLICATION PURPOSE** : Class II Equipment  
**PRODUCT DESIGNATION** : SoundCore 2  
**BRAND NAME** : ANKER  
**MODEL NAME** : A3105  
**APPLICANT** : Anker Innovations Limited  
**DATE OF ISSUE** : Jun. 14, 2022  
**STANDARD(S)** : FCC Part 15.247  
**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: [agc@agccert.com](mailto:agc@agccert.com) Web: <http://www.agccert.com/>



### REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jun. 14, 2022	Valid	Initial Release

**Note:**

The original test report Ref. No. AGC01110190920FE03 dated Oct. 24, 2019 was modified on Jun. 14, 2022 to include the following changes:

- Change the EUT photos;
- Change the EMC test photos;
- Change the battery;
- Change the Voltage;
- Change the Software Version(Changes in software versions have no effect on RF);
- Delete Factory information;
- The Radiated Emission and Line Conduction Emission tests have been updated.

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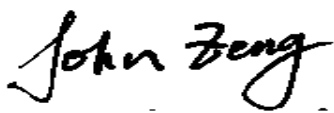

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### 1. VERIFICATION OF CONFORMITY

<b>Applicant</b>	Anker Innovations Limited
<b>Address</b>	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong
<b>Manufacturer</b>	Anker Innovations Limited
<b>Address</b>	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong
<b>Product Designation</b>	SoundCore 2
<b>Brand Name</b>	ANKER
<b>Test Model</b>	A3105
<b>Date of test</b>	May 24,2022 to Jun. 10, 2022
<b>Deviation</b>	None
<b>Condition of Test Sample</b>	Normal
<b>Test Result</b>	Pass
<b>Report Template</b>	AGCRT-US-BR/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 C63.10 (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 15.247.

Prepared By	 <hr/> John Zeng (Project Engineer)	Jun. 14, 2022
Reviewed By	 <hr/> Calvin Liu (Reviewer)	Jun. 14, 2022
Approved By	 <hr/> Max Zhang (Authorized Officer)	Jun. 14, 2022

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## 2. GENERAL INFORMATION

### 2.1. PRODUCT DESCRIPTION

The EUT is designed as “SoundCore 2”. It is designed by way of utilizing the GFSK, Pi/4 DQPSK and 8DPSK technology to achieve the system operation.

A major technical description of EUT is described as following

<b>Operation Frequency</b>	2.402 GHz to 2.480GHz
<b>RF Output Power</b>	3.707dBm(Max)
<b>Bluetooth Version</b>	V5.0
<b>Modulation</b>	BR <input checked="" type="checkbox"/> GFSK, EDR <input checked="" type="checkbox"/> $\pi$ /4-DQPSK, <input checked="" type="checkbox"/> 8DPSK BLE <input type="checkbox"/> GFSK 1Mbps <input type="checkbox"/> GFSK 2Mbps
<b>Number of channels</b>	79 Channels
<b>Hardware Version</b>	V1.0
<b>Software Version</b>	V1.3
<b>Antenna Designation</b>	PCB Antenna(Comply with requirements of the FCC part 15.203)
<b>Antenna Gain</b>	2.61dBi
<b>Power Supply</b>	DC 7.2V by battery or DC 5V by adapter
Note: 1.The USB port only used for charging and can't be used to transfer data with PC. 2.The EUT doesn't support BLE.	

### 2.2. TABLE OF CARRIER FREQUENCIES

Frequency Band	Channel Number	Frequency
2402~2480MHZ	0	2402MHZ
	1	2403MHZ
	:	:
	38	2440 MHZ
	39	2441 MHZ
	40	2442 MHZ
	:	:
	77	2479 MHZ
	78	2480 MHZ

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### 2.3. RECEIVER INPUT BANDWIDTH

The input bandwidth of the receiver is 1.3MHz, in every connection one Bluetooth device is the master and the other one is slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally, the type of connection (e.g. single or multi slot packet) is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also, the slave of the connection will use these settings. Repeating of a packet has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

### 2.4. EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE

Example of a hopping sequence in data mode:

40, 21, 44, 23, 04, 15, 66, 56, 19, 78, 07, 28, 69, 55,  
36, 45, 05, 13, 43, 74, 57, 35, 67, 76, 02, 34, 54, 63,  
42, 11, 30, 06, 64, 25, 75, 48, 17, 33, 58, 01, 29, 14,  
51, 72, 03, 31, 50, 61, 77, 18, 10, 47, 12, 68, 08, 49,  
20, 00, 73, 09, 16, 60, 71, 41, 24, 53, 38, 26, 46, 37,  
65, 32, 70, 52, 27, 59, 22, 62, 39

### 2.5. EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR

The generation of the hopping sequence in connection mode depends essentially on two input values:

1. LAP/UAP of the master of the connection.
2. Internal master clock.

The LAP (lower address part) are the 24 LSB's of the 48 BD\_ADDRESS. The BD\_ADDRESS is an unambiguous number of every Bluetooth unit. The UAP (upper address part) are the 24MSB's of the 48BD\_ADDRESS

The internal clock of a Bluetooth unit is derived from a free running clock which is never adjusted and is never turned off. For behavior action with other units only offset is used. It has no relation to the time of the day. Its resolution is at least half the RX/TX slot length of 312.5us. The clock has a cycle of about one day(23h30). In most case it is implemented as 28 bits counter. For the deriving of the hopping sequence the entire. LAP (24 bits),4LSB's(4bits) (Input 1) and the 27MSB's of the clock (Input 2) are used. With this input values different mathematical procedures (permutations, additions, XOR-operations) are performed to generate the Sequence. This will be done at the beginning of every new transmission.

Regarding short transmissions the Bluetooth system has the following behavior:

The first connection between the two devices is established, a hopping sequence was generated. For Transmitting the wanted data the complete hopping sequence was not used. The connection ended.

The second connection will be established. A new hopping sequence is generated. Due to the fact the Bluetooth clock has a different value, because the period between the two transmission is longer (and it cannot be shorter) than the minimum resolution of the clock(312.5us). The hopping sequence will always differ from the first one.

## 2.6. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AOKB-A3105** filing to comply with the RSS-247 requirements.

## 2.7. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

## 2.8. SPECIAL ACCESSORIES

Refer to section 5.2.

## 2.9. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

## 2.10. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

### 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%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 2.9$ dB
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 3.8$ dB
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.9$ dB
Uncertainty of total RF power, conducted	$U_c = \pm 0.8$ dB
Uncertainty of RF power density, conducted	$U_c = \pm 2.6$ dB
Uncertainty of spurious emissions, conducted	$U_c = \pm 2$ %
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2$ %

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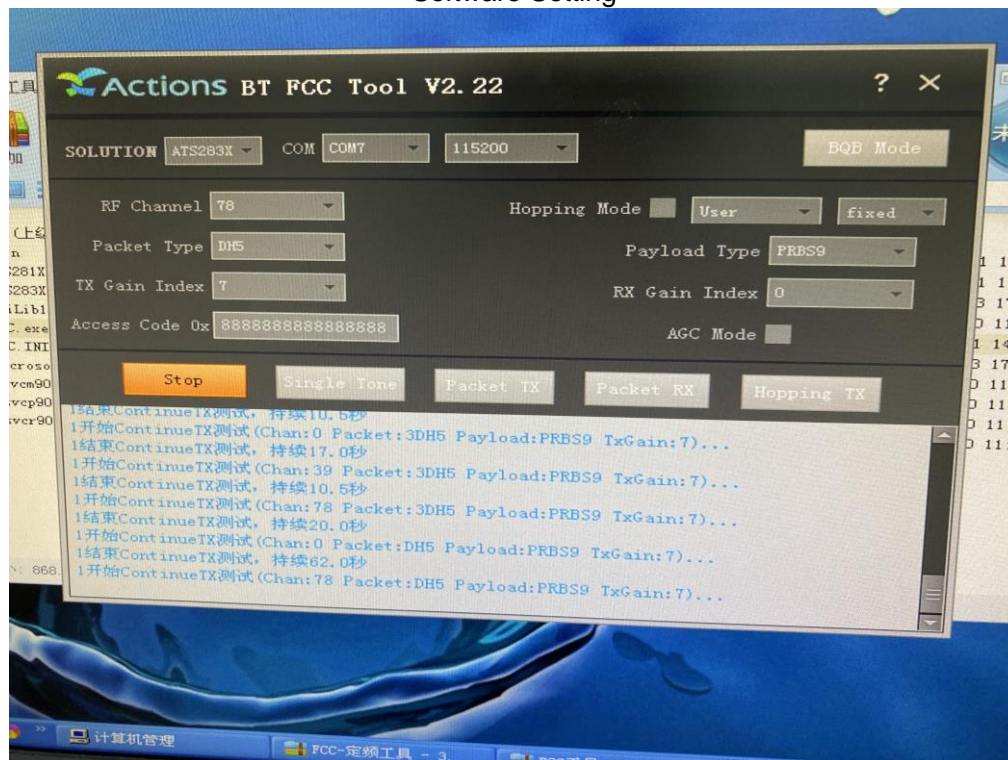


#### 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel GFSK
2	Middle channel GFSK
3	High channel GFSK
4	Low channel $\pi/4$ -DQPSK
5	Middle channel $\pi/4$ -DQPSK
6	High channel $\pi/4$ -DQPSK
7	Low channel 8DPSK
8	Middle channel 8DPSK
9	High channel 8DPSK
10	Hopping mode GFSK
11	Hopping mode $\pi/4$ -DQPSK
12	Hopping mode 8DPSK

Note: 1. Only the result of the worst case was recorded in the report, if no other cases.  
2. For Conducted Test method, a temporary antenna connector is provided by the manufacture.

#### Software Setting

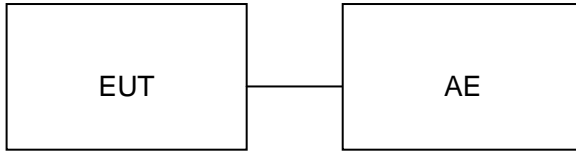


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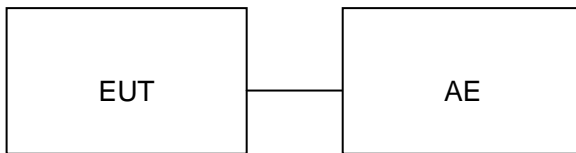
## 5. SYSTEM TEST CONFIGURATION

### 5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Configure :



Conducted Emission Configure :



### 5.2. EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	SoundCore 2	A3105	2AOKB-A3105	EUT
2	Control Box	USB-TTL	N/A	AE
3	Adapter 1	XCMS03-0510	DC 5V	AE
4	Adapter 2	LSD-D051100S	DC 5V	AE
5	Charger line	N/A	0.6m unshielded	AE

### 5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
15.209	Radiated Emission	Compliant
15.207	Conducted Emission	Compliant

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## 6. TEST FACILITY

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

### TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESPI	101206	Mar. 28, 2022	Mar. 27, 2023
Artificial power network	R&S	ESH2-Z5	100086	Jun. 09, 2021	Jun. 08, 2022
Artificial power network	R&S	ESH2-Z5	100086	Jun. 07, 2022	Jun. 08, 2023
Test Software	FARA	EZ-EMC(Ver. AGC-CON03A1)	N/A	N/A	N/A

### 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
Signal Analyzer	Aglient	N9020A	MY52090123	Sep. 06, 2021	Sep. 05, 2022
2.4GHz Filter	EM Electronics	N/A	N/A	Mar. 18, 2022	Mar. 19, 2024
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	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Preamplifier Assembly	ETS	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
Wideband Antenna	SCHWARZBECK	VULB9168	VULB9168-494	Jan. 08, 2021	Jan. 07, 2023
Test Software	FARA	EZ-EMC(Ver.RA-03A)	N/A	N/A	N/A

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## 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

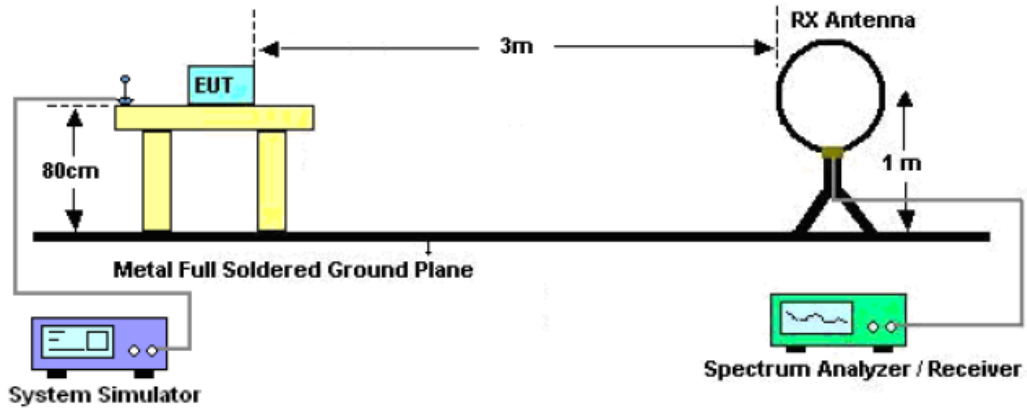
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

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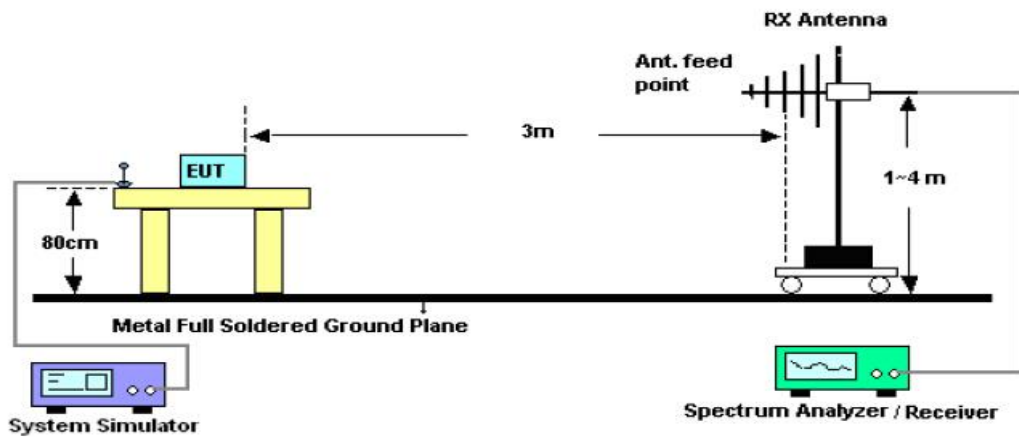


## 7.2. TEST SETUP

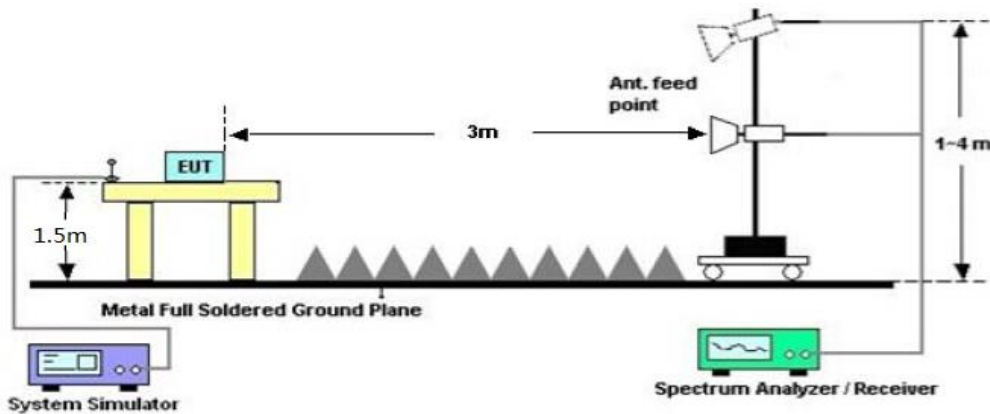
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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### 7.3. LIMITS AND MEASUREMENT RESULT

15.209 Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested For restricted band radiated emission, the test records reported below are the worst result compared to other modes.

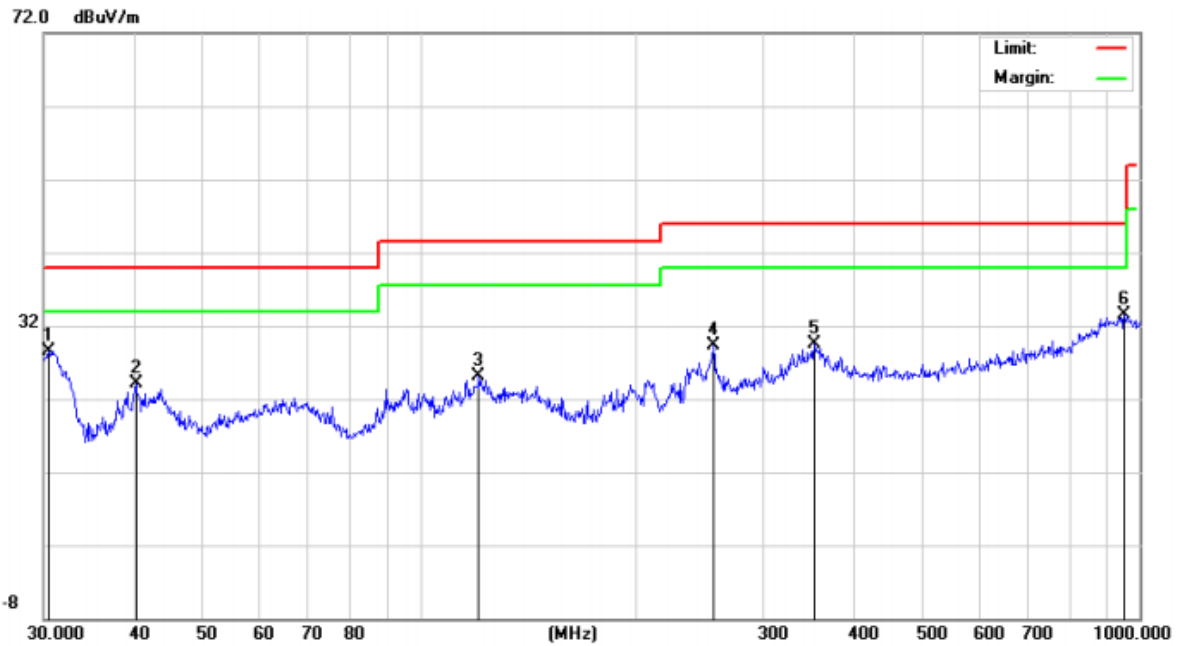
### 7.4. TEST RESULT

#### RADIATED EMISSION BELOW 30MHZ

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 BELOW 1GHZ**

<b>EUT</b>	SoundCore 2	<b>Model Name</b>	A3105
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55%
<b>Pressure</b>	985hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 1	<b>Antenna</b>	Horizontal



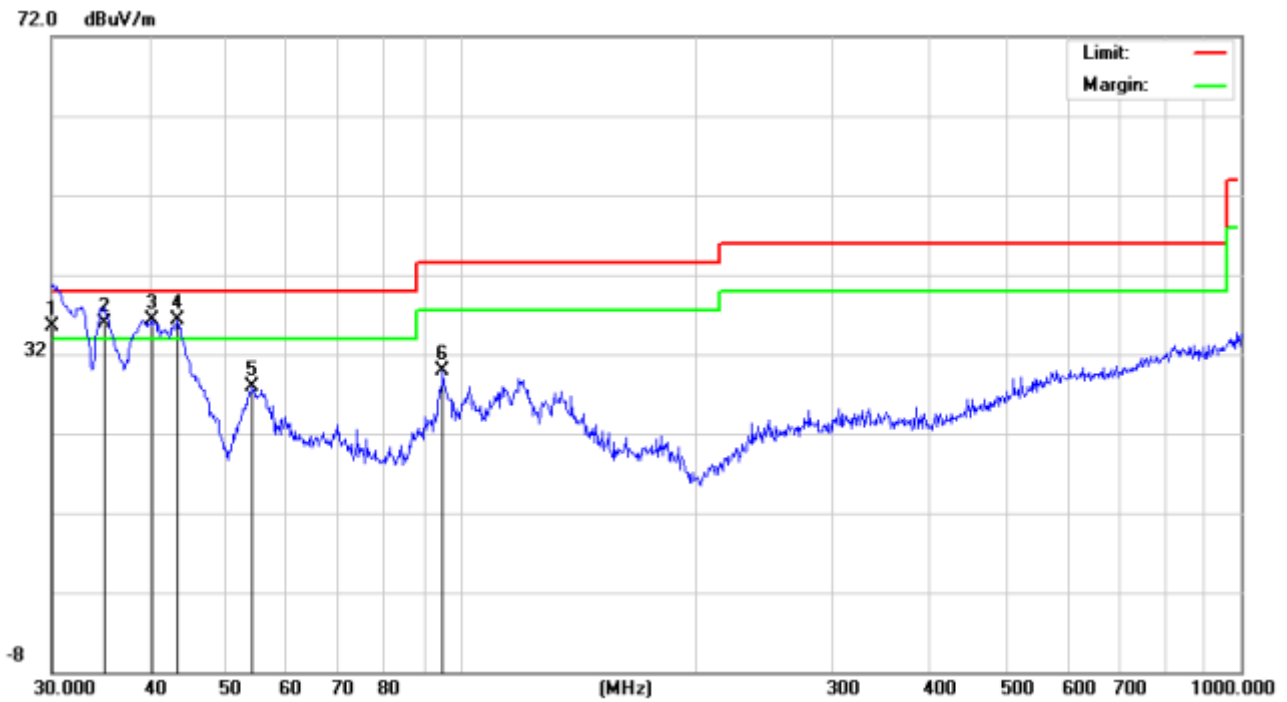
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	30.4238	16.32	12.18	28.50	40.00	-11.50	peak
2		40.2757	9.00	15.05	24.05	40.00	-15.95	peak
3		120.6991	7.12	17.96	25.08	43.50	-18.42	peak
4		255.6231	12.83	16.39	29.22	46.00	-16.78	peak
5		352.9433	8.90	20.57	29.47	46.00	-16.53	peak
6		952.0937	5.58	27.92	33.50	46.00	-12.50	peak

**RESULT: PASS**

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EUT	SoundCore 2	Model Name	A3105
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	!	30.1054	23.43	12.17	35.60	40.00	-4.40	QP
2	!	35.0048	23.52	12.32	35.84	40.00	-4.16	QP
3	*	40.2757	21.33	15.04	36.37	40.00	-3.63	peak
4	!	43.5057	21.79	14.49	36.28	40.00	-3.72	peak
5		54.2610	13.04	14.86	27.90	40.00	-12.10	peak
6		95.0930	15.92	13.98	29.90	43.50	-13.60	peak

**RESULT: PASS**

**Note:** 1. Factor=Antenna Factor + Cable loss, Over=Measurement-Limit.

2. All test modes had been pre-tested. The mode 1 is the worst case and recorded in the report.

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**RADIATED EMISSION ABOVE 1GHZ**

<b>EUT</b>	SoundCore 2	<b>Model Name</b>	A3105
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55%
<b>Pressure</b>	985hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 1	<b>Antenna</b>	Horizontal

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Value Type
4804.000	51.34	0.08	51.42	74	-22.58	peak
4804.000	47.34	0.08	47.42	54	-6.58	AVG
7206.000	46.21	2.21	48.42	74	-25.58	peak
7206.000	43.71	2.21	45.92	54	-8.08	AVG

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

<b>EUT</b>	SoundCore 2	<b>Model Name</b>	A3105
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55%
<b>Pressure</b>	985hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 1	<b>Antenna</b>	Vertical

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Value Type
4804.000	52.37	0.08	52.45	74	-21.55	peak
4804.000	48.24	0.08	48.32	54	-5.68	AVG
7206.000	47.53	2.21	49.74	74	-24.26	peak
7206.000	44.17	2.21	46.38	54	-7.62	AVG

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

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<b>EUT</b>	SoundCore 2	<b>Model Name</b>	A3105
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55%
<b>Pressure</b>	985hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 2	<b>Antenna</b>	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4882.000	51.73	0.14	51.87	74	-22.13	peak
4882.000	45.82	0.14	45.96	54	-8.04	AVG
7323.000	46.27	2.36	48.63	74	-25.37	peak
7323.000	41.65	2.36	44.01	54	-9.99	AVG

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

<b>EUT</b>	SoundCore 2	<b>Model Name</b>	A3105
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55%
<b>Pressure</b>	985hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 2	<b>Antenna</b>	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4882.000	51.85	0.14	51.99	74	-22.01	peak
4882.000	47.34	0.14	47.48	54	-6.52	AVG
7323.000	46.41	2.36	48.77	74	-25.23	peak
7323.000	43.25	2.36	45.61	54	-8.39	AVG

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

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<b>EUT</b>	SoundCore 2	<b>Model Name</b>	A3105
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55%
<b>Pressure</b>	985hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 3	<b>Antenna</b>	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960.000	52.64	0.22	52.86	74	-21.14	peak
4960.000	46.37	0.22	46.59	54	-7.41	AVG
7440.000	47.12	2.64	49.76	74	-24.24	peak
7440.000	42.57	2.64	45.21	54	-8.79	AVG

Remark:

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

<b>EUT</b>	SoundCore 2	<b>Model Name</b>	A3105
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55%
<b>Pressure</b>	985hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 3	<b>Antenna</b>	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960.000	53.12	0.22	53.34	74	-20.66	peak
4960.000	46.95	0.22	47.17	54	-6.83	AVG
7440.000	47.82	2.64	50.46	74	-23.54	peak
7440.000	43.34	2.64	45.98	54	-8.02	AVG

Remark:

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

**RESULT: PASS**

**Note:** Other emissions from 1G to 25 GHz are considered as ambient noise. No recording in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin=Emission Level-Limit.

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

All test modes had been tested. The GFSK modulation is the worst case and recorded in the report.

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## 8. FCC LINE CONDUCTED EMISSION TEST

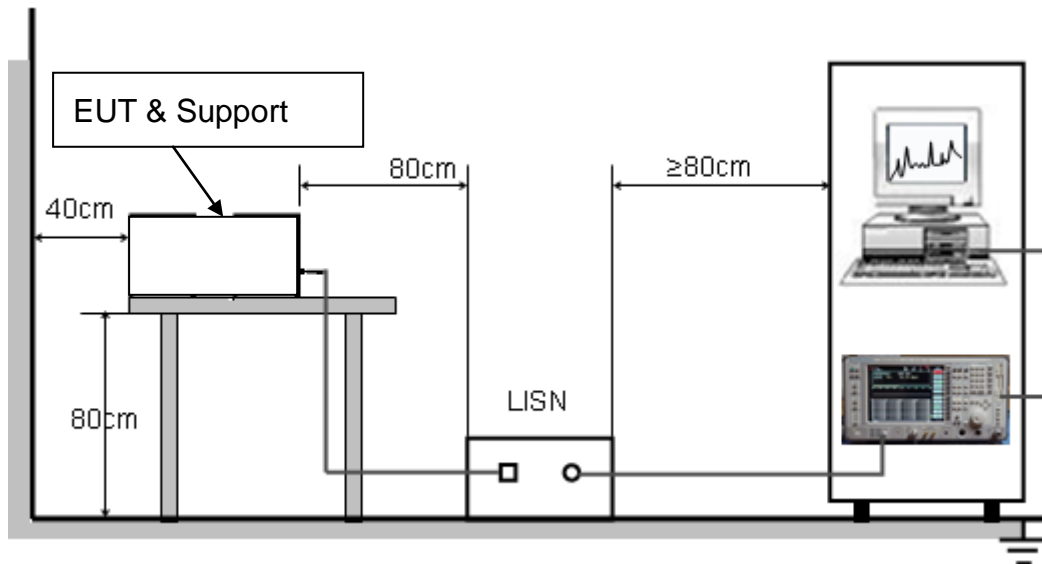
### 8.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
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.

### 8.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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### 8.3. 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 equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC charging voltage by adapter which received AC120V/60Hz power by 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.

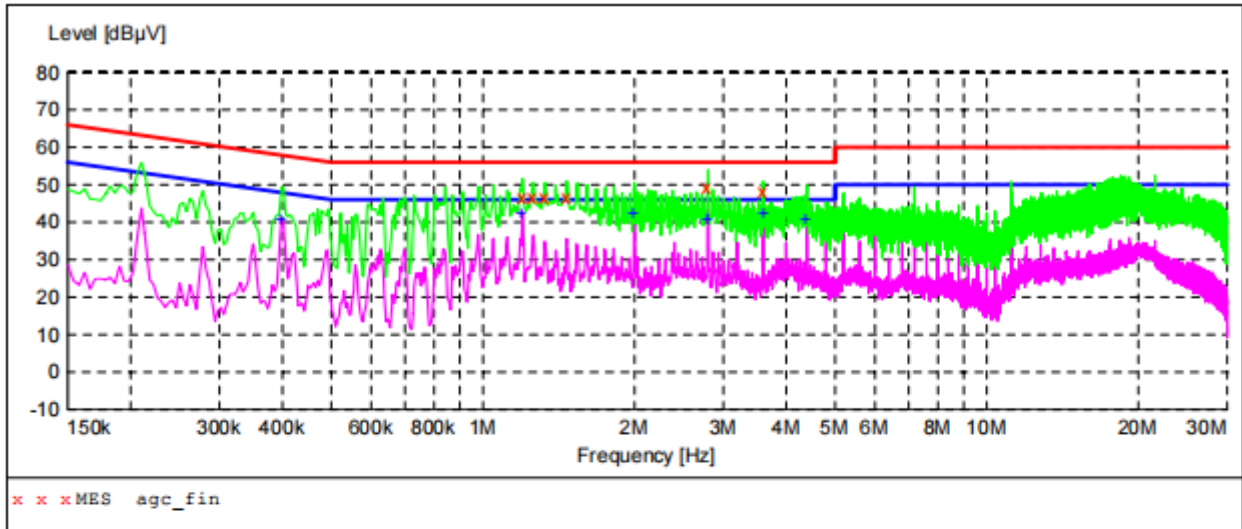
### 8.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

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.



### 8.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

#### Line Conducted Emission Test Line 1-L



**MEASUREMENT RESULT: "agc\_fin"**

2022/6/2 20:29

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
1.198000	46.50	5.7	56	9.5	QP	L1	GND
1.258000	46.40	5.8	56	9.6	QP	L1	GND
1.330000	46.50	5.9	56	9.5	QP	L1	GND
1.466000	46.40	6.0	56	9.6	QP	L1	GND
2.798000	49.30	6.5	56	6.7	QP	L1	GND
3.598000	48.30	6.5	56	7.7	QP	L1	GND

**MEASUREMENT RESULT: "agc\_fin2"**

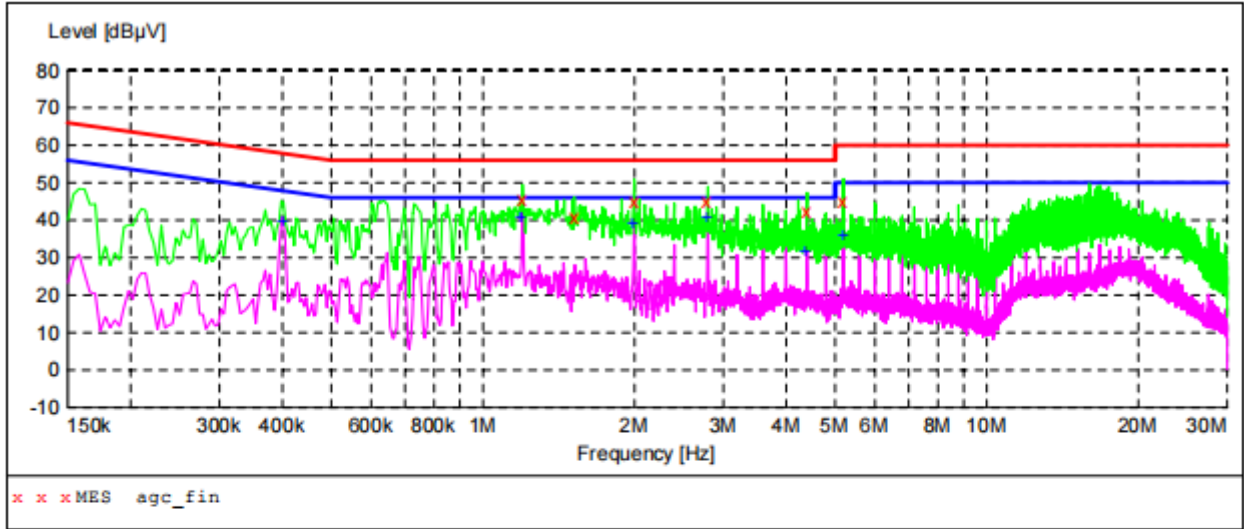
2022/6/2 20:29

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.398000	40.70	5.7	48	7.2	AV	L1	GND
1.198000	42.30	5.7	46	3.7	AV	L1	GND
1.998000	42.50	6.5	46	3.5	AV	L1	GND
2.798000	40.80	6.5	46	5.2	AV	L1	GND
3.598000	42.50	6.5	46	3.5	AV	L1	GND
4.394000	40.70	6.5	46	5.3	AV	L1	GND

**RESULT: PASS**

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Line Conducted Emission Test Line 2-N



**MEASUREMENT RESULT: "agc\_fin"**

2022/6/2 20:38

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
1.198000	45.30	5.7	56	10.7	QP	N	GND
1.518000	40.80	6.1	56	15.2	QP	N	GND
1.998000	45.00	6.5	56	11.0	QP	N	GND
2.798000	44.80	6.5	56	11.2	QP	N	GND
4.398000	42.60	6.5	56	13.4	QP	N	GND
5.194000	45.00	6.6	60	15.0	QP	N	GND

**MEASUREMENT RESULT: "agc\_fin2"**

2022/6/2 20:38

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.402000	39.50	5.7	48	8.3	AV	N	GND
1.198000	40.60	5.7	46	5.4	AV	N	GND
1.998000	39.20	6.5	46	6.8	AV	N	GND
2.794000	40.80	6.5	46	5.2	AV	N	GND
4.398000	31.70	6.5	46	14.3	AV	N	GND
5.194000	35.70	6.6	50	14.3	AV	N	GND

**RESULT: PASS**

Note: All the test modes had been tested, the mode 1 was the worst case. Only the data of the worst case would be record in this test report.

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**APPENDIX A: PHOTOGRAPHS OF TEST SETUP**

Refer to the Report No.: AGC01110190920AP01B

**APPENDIX B: PHOTOGRAPHS OF EUT**

Refer to the Report No.: AGC01110190920AP02B

**----END OF REPORT----**

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Attestation of Global Compliance(Shenzhen)Co., Ltd

Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

Tel: +86-755 2523 4088 E-mail: [agc@agccert.com](mailto:agc@agccert.com) Web: <http://www.agccert.com/>



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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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