

FCC Test Report

Report No.: AGC01110201224FE03A

FCC ID : 2AOKB-A3391V

APPLICATION PURPOSE: Class II Equipment

PRODUCT DESIGNATION: Wireless Speaker

BRAND NAME : Soundcore

MODEL NAME : A3391, A3391J

APPLICANT: Anker Innovations Limited

DATE OF ISSUE : Apr. 29, 2021

STANDARD(S) : FCC Part 15.247

REPORT VERSION: V1.0

Attestation of Globa Con Shenzhen) Co., Ltd

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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	1	Apr. 29, 2021	Valid	Initial Release

Note:

The original test report Ref. No. AGC01110201224FE03 dated Jan. 21, 2021 was modified on Apr. 29, 2021 to include the following changes:

- -Change the hardware version;
- -Change the test photos and of EUT;
- -RCA OUT pass-through increase OP circuit;
- -RCA OUT channel, 8107 analog output increase OP circuit;
- -MIC front circuit adds OP circuit;
- -Increased OP circuit power supply circuit;
- -8107 adds 43 feet, 57 feet, 58 feet circuit;
- -So the Conducted Emission and Radiated Emission had been tested for the Class II device.

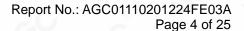
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1. VERIFICATION OF CONFORMITY

Applicant	Anker Innovations Limited			
Address	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong			
Manufacturer	Anker Innovations Limited			
Address	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong			
Factory	GANZHOU DEHUIDA TECHNOLOGY CO., LTD			
Address	Dehuida Science and Technology Park, Huoyanshan Road, Anyuan District, Ganzhou City, Jiangxi Province. P.R China.			
Product Designation	Wireless Speaker			
Brand Name	Soundcore			
Test Model	A3391			
Series Model	A3391J			
Difference Description	All the same except for the model name			
Date of test	Apr. 08, 2021 to Apr. 29, 2021			
Deviation	No any deviation from the test method			
Condition of Test Sample	Normal			
Test Result	Pass			
Report Template	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	John Zerry	
	John Zeng (Project Engineer)	Apr. 29, 2021
Reviewed By	Max Zhang	
GC C	Max Zhang (Reviewer)	Apr. 29, 2021
Approved By	Formercies	
NGC -	Forrest Lei (Authorized Officer)	Apr. 29, 2021

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "Wireless Speaker". 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

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Operation Frequency	2.402GHz to 2.480GHz
RF Output Power	9.662dBm (Max)
Bluetooth Version	V5.0
Modulation	BR ⊠GFSK, EDR ⊠π /4-DQPSK, ⊠8DPSK BLE □GFSK 1Mbps □GFSK 2Mbps
Number of channels	79
Hardware Version	VB.0
Software Version	V1.3
Antenna Designation	FPC Antenna (Comply with requirements of the FCC part 15.203)
Antenna Gain	3.81dBi
Power Supply	DC 14.8V by battery or AC 120V

2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
⊚	0	2402 MHz
	. 1	2403 MHz
		-C
0	38	2440 MHz
2402~2480MHz	39	2441 MHz
	40	2442 MHz
C	. 60	
>GC >CC	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 of 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.

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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-A3391V** filing to comply with the FCC PART 15.247 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.

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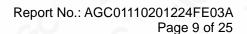
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3. MEASUREMENT UNCERTAINTY

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 Conducted Emission, Uc = ±3.1 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±4.0 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB
- Uncertainty of total RF power, conducted, Uc = ±0.8dB
- Uncertainty of spurious emissions, conducted, Uc = ±2.7dB
- Uncertainty of Occupied Channel Bandwidth: Uc = ±2 %
- Uncertainty of Dwell Time: Uc = ±2 %
- Uncertainty of Frequency: Uc = ±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 π/4-DQPSK			
5	Middle channel π/4-DQPSK			
6	High channel π/4-DQPSK			
7	Low channel 8DPSK			
8	Middle channel 8DPSK			
9	High channel 8DPSK			
10	Hopping mode GFSK			
11	Hopping mode π/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 Radiated Emission, 3axis were chosen for testing for each applicable mode.
- 3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.

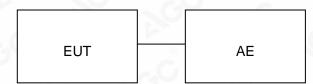


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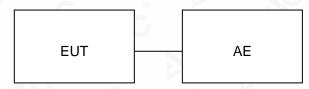
5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Configure:



Conducted Emission Configure:



5.2. EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No. ID or Specification		Remark
1	Wireless Speaker	ter A3391 2AOKB-A3391V		EUT
2	Control Box			AE
3	AC power line			Accessory
4	Load	N/A	2.4ohm	
5	Load	N/A 2.4ohm		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

Test Site	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 CN1259 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 CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	May 15, 2020	May 14, 2021
LISN	R&S	ESH2-Z5	100086	Jul. 03, 2020	Jul. 02, 2021
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	May 15, 2020	May 14, 2021
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 07, 2020	Dec. 06, 2021
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	Mar. 23, 2020	Mar. 22, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 21, 2019	Sep. 20, 2021
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May 17, 2019	May 16, 2021
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2021	Jan. 07, 2023
Test software	FARA	EZ-EMC(Ver.RA-0 3A)	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 emission, 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.
- 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.

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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

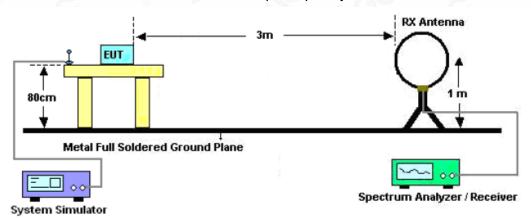
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

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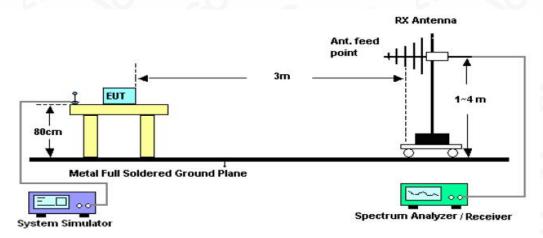


7.2. TEST SETUP

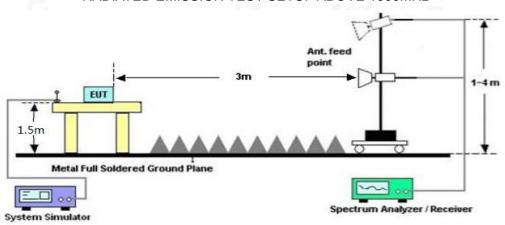
Radiated Emission Test-Setup Frequency Below 30MHz



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 (microvolts/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

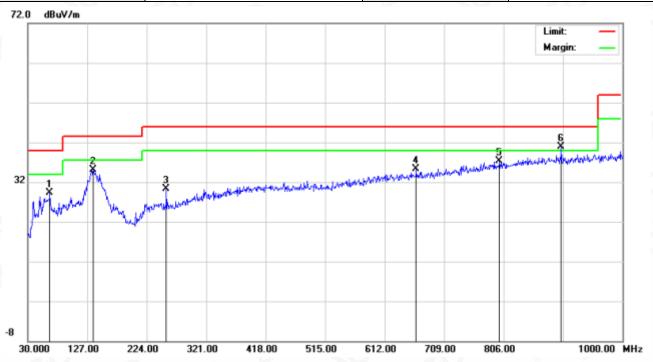
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

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RADIATED EMISSION BELOW 1GHz

EUT	Wireless Speaker	Model Name	A3391
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal



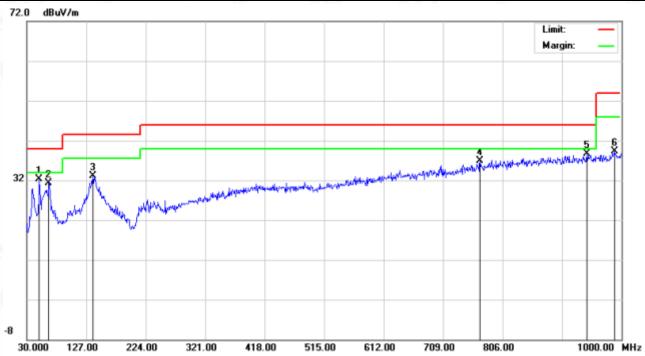
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		65.8900	11.97	17.42	29.39	40.00	-10.61	peak
2		136.7000	14.44	20.69	35.13	43.50	-8.37	peak
3		256.0100	11.94	18.38	30.32	46.00	-15.68	peak
4		663.4099	7.58	27.71	35.29	46.00	-10.71	peak
5		799.2100	6.91	30.39	37.30	46.00	-8.70	peak
6	*	900.0900	9.13	31.70	40.83	46.00	-5.17	peak

RESULT: PASS

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EUT	Wireless Speaker	Model Name	A3391
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		50.3700	18.33	13.88	32.21	40.00	-7.79	peak
2		65.8900	13.84	17.42	31.26	40.00	-8.74	peak
3		137.6700	12.22	20.85	33.07	43.50	-10.43	peak
4		769.1400	7.25	29.71	36.96	46.00	-9.04	peak
5	* (943.7400	6.67	32.08	38.75	46.00	-7.25	peak
6	(988.3600	6.89	32.46	39.35	54.00	-14.65	peak

RESULT: PASS

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

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

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g/Inspection The test results the test report.

RADIATED EMISSION ABOVE 1GHz

EUT	Wireless Speaker	Model Name	A3391
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	\/- bas Tara
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4804.000	43.25	0.08	43.33	74	-30.67	peak 🏻
4804.000	36.57	0.08	36.65	54	-17.35	AVG
7206.000	38.91	2.21	41.12	74	-32.88	peak
7206.000	31.08	2.21	33.29	54	-20.71	AVG
	20			100	20	
emark:			<u> </u>			

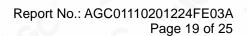
AGC

EUT	Wireless Speaker	Model Name	A3391
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

						(2)
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4804.000	44.65	0.08	44.73	74	-29.27	peak
4804.000	36.75	0.08	36.83	54	-17.17	AVG
7206.000	39.61	2.21	41.82	74	-32.18	peak
7206.000	31.78	2.21	33.99	54	-20.01	AVG
	3		-0			
emark:						8
actor = Anter	nna Factor + Cable	Loss - Pre-	-amplifier.			

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g/Inspection The test results he test report.



EUT	Wireless Speaker	Model Name	A3391
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

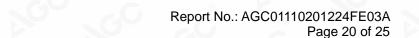
	Factor	Emission Level	Limits	Margin	Value Trees
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
44.33	0.14	44.47	74	-29.53	peak
36.79	0.14	36.93	54	-17.07	AVG
40.17	2.36	42.53	74	-31.47	peak
30.94	2.36	33.3	54	-20.7	AVG
©			8	<u> </u>	
- C1	8			- 0	@
	44.33 36.79 40.17 30.94	44.33 0.14 36.79 0.14 40.17 2.36 30.94 2.36	44.33 0.14 44.47 36.79 0.14 36.93 40.17 2.36 42.53	44.33 0.14 44.47 74 36.79 0.14 36.93 54 40.17 2.36 42.53 74 30.94 2.36 33.3 54	44.33 0.14 44.47 74 -29.53 36.79 0.14 36.93 54 -17.07 40.17 2.36 42.53 74 -31.47 30.94 2.36 33.3 54 -20.7

EUT	Wireless Speaker	Model Name	A3391
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Full and harden	Mata Danilla	F	Emilian to a Lauret	1 1 11 -	N 4		
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
4882.000	45.79	0.14	45.93	74	-28.07	peak	
4882.000	37.16	0.14	37.3	54	-16.7	AVG	
7323.000	41.73	2.36	44.09	74	-29.91	peak	
7323.000	32.01	2.36	34.37	54	-19.63	AVG	
		a.C	@				
				(8)			

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

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EUT	Wireless Speaker	Model Name	A3391
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	\/alua Tima	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type	
4960.000	46.27	0.22	46.49	74	-27.51	peak	
4960.000	38.91	0.22	39.13	54	-14.87	AVG	
7440.000	42.74	2.64	45.38	74	-28.62	peak	
7440.000	33.42	2.64	36.06	54	-17.94	AVG	
(8)	0		9 70	8	8		
emark:	- 0	8		~6~	-6	8	
ctor = Anter	na Factor + Cable	Loss - Pre-	amplifier.			- G	

Factor =	Antenna Fa	ctor + Cable	Loss -	- Pre-amplifier.

EUT	Wireless Speaker	Model Name	A3391
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	\/alua Tima	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type	
4960.000	47.12	0.22	47.34	74	-26.66	peak	
4960.000	38.46	0.22	38.68	54	-15.32	AVG	
7440.000	43.55	2.64	46.19	74	-27.81	peak	
7440.000	34.97	2.64	37.61	54	-16.39	AVG	
		100	8	®			
emark:	<u> </u>			C	©		
actor = Anter	na Factor + Cable	e Loss – Pre-	amplifier.			3	

RESULT: PASS

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-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.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by t Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written he test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15dq he test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.



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8. FCC LINE CONDUCTED EMISSION TEST

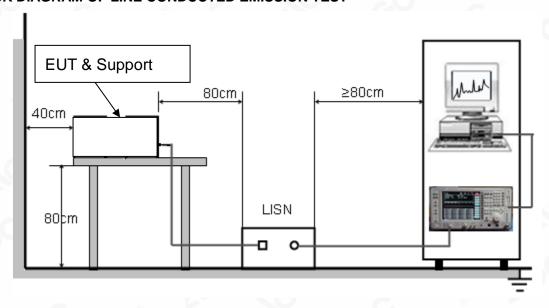
8.1. LIMITS OF LINE CONDUCTED EMISSION TEST

F	Maximum R	F Line Voltage
Frequency	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.

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 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.

8.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

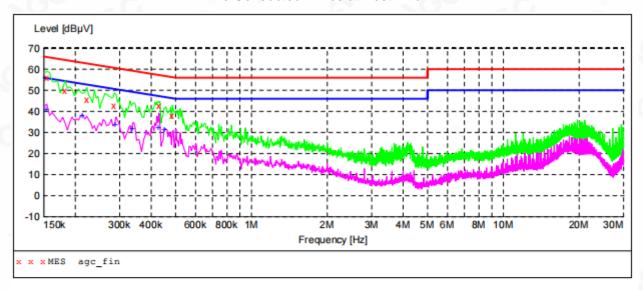
- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were 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.

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8.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Line Conducted Emission Test Line 1-L



MEASUREMENT RESULT: "agc_fin"

2021/4/13 16:	35						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.154000	55.90	12.4	66	9.9	QP	L1	GND
0.182000	50.10	12.4	64	14.3	QP	L1	GND
0.222000	45.80	12.4	63	16.9	QP	L1	GND
0.286000	42.70	12.4	61	17.9	QP	L1	GND
0.430000	42.60	12.4	57	14.7	QP	L1	GND
0.486000	37.90	12.4	56	18.3	OP	L1	GND

MEASUREMENT RESULT: "agc_fin2"

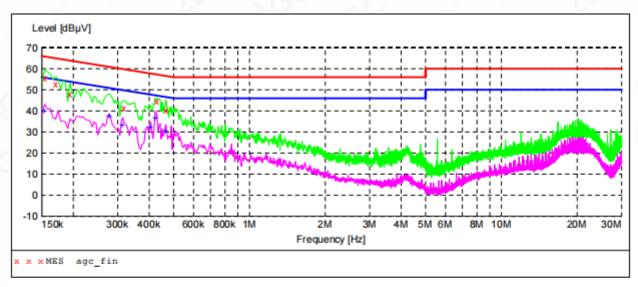
2021/4/13	16:35						
Frequen	cy Level	Transd	Limit	Margin	Detector	Line	PE
M	Hz dBuV	/ dB	dΒμV	dB			
0.1540	00 40.70	12.4	56	15.1	AV	L1	GND
0.2140	00 38.10	12.4	53	14.9	AV	L1	GND
0.2900	00 33.90	12.4	51	16.6	AV	L1	GND
0.3380	00 31.60	12.4	49	17.7	AV	L1	GND
0.4300	00 32.20	12.4	47	15.1	AV	L1	GND
0.4540	00 31.30	12.4	47	15.5	AV	L1	GND

RESULT: PASS

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Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT: "agc_fin"

2021/4/13 16	:38						
Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
MHz	dΒμV	dB	dΒμV	dB			
0.154000	55.50	12.4	66	10.3	QP	N	GND
0.170000	52.90	12.4	65	12.1	QP	N	GND
0.194000	48.00	12.4	64	15.9	QP	N	GND
0.318000	41.30	12.4	60	18.5	QP	N	GND
0.430000	44.50	12.4	57	12.8	QP	N	GND
0.466000	40.40	12.4	57	16.2	QP	N	GND

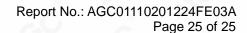
MEASUREMENT RESULT: "agc_fin2"

2021/4/13 16:39							
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin	Detector	Line	PE
MHZ	αвμν	ŒВ	αвμν	dB			
0.154000	40.00	12.4	56	15.8	AV	N	GND
0.278000	37.70	12.4	51	13.2	AV	N	GND
0.314000	33.20	12.4	50	16.7	AV	N	GND
0.406000	32.30	12.4	48	15.4	AV	N	GND
0.426000	36.70	12.4	47	10.6	AV	N	GND
0.466000	30.40	12.4	47	16.2	AV	N	GND

RESULT: PASS

Note: All the test modes had been tested, the mode 2 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.: AGC01110201224AP01A

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC01110201224AP01A

----END OF REPORT----

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- 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. The non-CMA report issued by AGC is only permitted to be used by the client as internal reference use and shall not be used for public demonstration purpose.
- 5. 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.
- 6. 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.
- 7. 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.
- 8. 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.
- 9. 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.
- 10. 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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