

# **FCC Test Report**

## Report No.: AGC01110201112FE02

FCC ID	8	2AOKB-A3127
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Wireless Speaker
BRAND NAME		Soundcore
MODEL NAME	i	A3127
APPLICANT		Anker Innovations Limited
DATE OF ISSUE	© •	Nov. 26, 2020
STANDARD(S)	:	FCC Part 15.247
REPORT VERSION	:	V1.0





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#### **REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0		Nov. 26, 2020	Valid	Initial Release

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## **1. VERIFICATION OF COMPLIANCE**

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	A3127	
Date of test	Nov. 13, 2020 to Nov. 25, 2020	
Deviation	No any deviation from the test method	
Condition of Test Sample	Normal	
Test Result	Pass	
Report Template	AGCRT-US-BLE/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)

Nov. 25, 2020

Max Zhan

(3)

Max Zhang (Reviewer)

Nov. 26, 2020

Approved By

**Reviewed By** 

Jowe

Forrest Lei (Authorized Officer)

Nov. 26, 2020

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## 2. GENERAL INFORMATION

## 2.1. PRODUCT DESCRIPTION

The EUT is designed as a "Wireless Speaker". It is designed by way of utilizing the GFSK technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz	
RF Output Power	7.068dBm (Max)	
Bluetooth Version	V5.0	
Modulation	BR □GFSK, EDR □π /4-DQPSK, □8DPSK BLE ⊠GFSK 1Mbps □GFSK 2Mbps	
Number of channels	40 Channel	
Antenna Designation	PCB Antenna (Comply with requirements of the FCC part 15.203)	
Antenna Gain	0.6dBi	
Hardware Version	V2.0	
Software Version	V1.3	
Power Supply	DC 3.7V by battery or DC 5V by adapter	

## 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	0	2402 MHz
	1	2404 MHz
2400~2483.5MHz	G G C	
	38	2478 MHz
	39	2480 MHz

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

This submittal(s) (test report) is intended for FCC ID: 2AOKB-A3127 filing to comply with the FCC Part 15.247 requirements.

#### 2.4. 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.

#### 2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

#### 2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

#### 2.7. 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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## **3. MEASUREMENT UNCERTAINTY**

The reported uncertainty of measurement y  $\pm U$ , 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,  $Uc = \pm 0.8 dB$
- Uncertainty of RF power density, conducted, Uc = ±2.6 dB
- Uncertainty of spurious emissions, conducted,  $Uc = \pm 2.7 \text{ dB}$
- Uncertainty of Occupied Channel Bandwidth:  $Uc = \pm 2 \%$

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## 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION		
1	Low channel TX (1M)		
2	Middle channel TX (1M)		
3	High channel TX (1M)		

#### 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.

## Software Setting CLUTION ATS283X COM COME 115200 COM BQB Mode RF Channel O COME 115200 COM BQB Mode RF Channel O COME Hopping Mode Normal R Sized COM Packet Type ELE\_1M COM COME RAY BALLED COME TX Gain Index 7 COM COME RX Gain Index O COM Access Code 0x 88888888 AGC Mode Stop Single Tone Packet TX Packet RX Hopping TX IH MCContinue TX Mjif (Chan: 0 Packet: BLE\_1M Payload: PRBS9 TxGain: 7)...

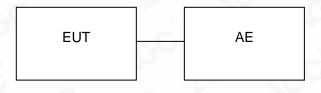
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## **5. SYSTEM TEST CONFIGURATION**

## **5.1. CONFIGURATION OF TESTED SYSTEM**

Radiated Emission Configure:



Conducted Emission Configure:

EUT	AE

## 5.2. EQUIPMENT USED IN TESTED SYSTEM

ltem	Equipment	Model No.	ID or Specification	Remark
1	Wireless Speaker	A3127	2AOKB-A3127	EUT
2	Control Box	N/A	USB-TTL	AE
3	Type-C Cable	N/A	0.6m unshielded	Accessory

#### **5.3. SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT
15.247 (b)(3)	Peak Output Power	Compliant
15.247 (a)(2)	6 dB Bandwidth	Compliant
15.247 (d)	Conducted Spurious Emission	Compliant
15.247 (e)	Maximum Conducted Output Power Density	Compliant
15.209	Radiated Emission	Compliant
15.207	Conducted Emission	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 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	R&S	ES-K1(Ver.V1.71)	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. 12, 2019	Dec. 11, 2020
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. 09, 2019	Jan. 08, 2021
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A

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## 7. PEAK OUTPUT POWER

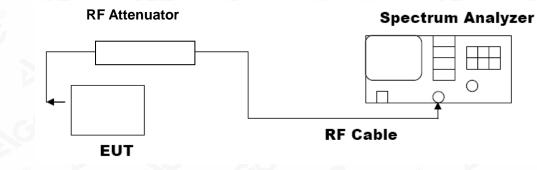
## 7.1. MEASUREMENT PROCEDURE

For peak power test:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. RBW≥DTS bandwidth
- 3. VBW≥3\*RBW.
- 4. SPAN≥VBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. Trace: Max hold.

Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

## 7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) PEAK POWER TEST SETUP

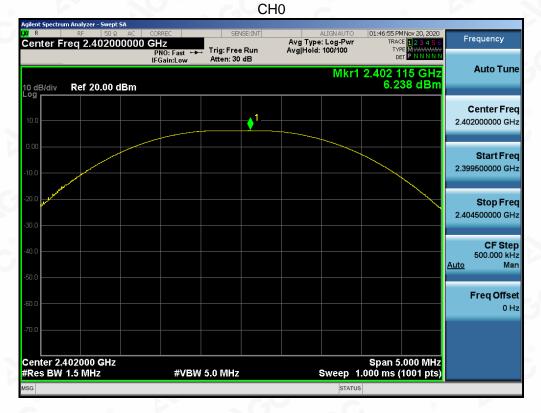


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#### 7.3. LIMITS AND MEASUREMENT RESULT

PEAK OUTPUT POWER MEASUREMENT RESULT						
FOR GFSK MOUDULATION						
Frequency (GHz)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail			
2.402	6.238	30	Pass			
2.440	7.006	30	Pass			
2.480	7.068	30	Pass			



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## 8.6 DB BANDWIDTH

#### **8.1. MEASUREMENT PROCEDURE**

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 kHz, VBW $\ge$ 3×RBW.
- 4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

#### 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

#### 8.3. LIMITS AND MEASUREMENT RESULTS

LIMITS AND MEASUREMENT RESULT					
Applicable Limite	Applicable Limits				
Applicable Limits	Test Data (kHz) Criteria				
	Low Channel	712.2	PASS		
>500KHZ	Middle Channel	714.3	PASS		
	High Channel	707.5	PASS		

#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



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#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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## 9. CONDUCTED SPURIOUS EMISSION

#### 9.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

#### 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

#### 9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

#### 9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT					
Applicable Limite	Measurement Result				
Applicable Limits	Test Data	Criteria			
In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the reference level	PASS			

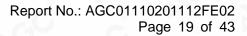
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## TEST RESULT FOR ENTIRE FREQUENCY RANGE GFSK MODULATION IN LOW CHANNEL

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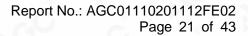
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#### GFSK MODULATION IN MIDDLE CHANNEL

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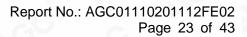
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gilent Spectrum Analyzer - Swe R RF 50 Center Freq 2.4800	Ω AC CORREC 000000 GHz	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	01:35:39 PMNov 20, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N	Frequency
	PNO: Wide + IFGain:Low	<ul> <li>Trig: Free Run Atten: 30 dB</li> </ul>	Avg Hold>10/10	DET PNNNN	
			Mkr1 2	480 238 3 GHz. 6.034 dBm	Auto Tu
10 dB/div Ref 20.00	D dBm		<u>1</u>	0.034 GBII	
10.0					Center Fr 2.480000000 G
10.00					2.480000000
-20.0					Start Fr
30.0					2.478500000 0
40.0				monorman	
60.0					Stop Fi
70.0					2.481500000 0
Center 2.480000 GH	 Iz			Span 3.000 MHz	CF St
Res BW 100 kHz	#VB	W 300 kHz	· · ·	000 ms (30000 pts)	300.000 I Auto M
MKR MODE TRC SCL	× 2.480 238 3 GHz	۲ 6.034 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
2 3					Freq Off
4 5					0
6					
8 9 10					
					1
sg			STATU	s	1
ISG gilent Spectrum Analyzer - Swe				S	·
SG gilent Spectrum Analyzer - Swe R RF 50	Ω AC CORREC 000000 GHz	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	01:35:48 PM Nov 20, 2020	Frequency
sig gilent Spectrum Analyzer - Swe R RF 50	IΩ AC CORREC	Talas Face Dave	ALIGNAUTO Avg Type: Log-Pwr Avg Hold: 10/10	01:35:48 PMNov 20, 2020 TRACE 1 2 3 4 5 6 TYPE MUNICIPAL DET P NUNUU	Frequency
glient Spectrum Analyzer - Swe 7 R RF 50 Center Freq 1.2150	Ω AC CORREC 0000000 GHz PN0: Fast ← IFGain:Low	📕 Trig: Free Run	ALIGNAUTO Avg Type: Log-Pwr Avg Hold: 10/10	01:35:48 PMNov 20, 2020 TRACE 11, 23 45 5 TYPE MUNAWAWA DET PINNIN Kr1 868,14 MHz	Auto Tu
sg jilent Spectrum Analyzer - Swe R RF 50 Center Freq 1.2150 OdB/div Ref 20.00	Ω AC CORREC 0000000 GHz PN0: Fast ← IFGain:Low	📕 Trig: Free Run	ALIGNAUTO Avg Type: Log-Pwr Avg Hold: 10/10	01:35:48 PMNov 20, 2020 TRACE 1 2 3 4 5 6 TYPE MUNICIPAL DET P NUNUU	Auto Tu
glient Spectrum Analyzer - Swe R RF 50 Center Freq 1.215 0 dB/div Ref 20.00 10 0	Ω AC CORREC 0000000 GHz PN0: Fast ← IFGain:Low	📕 Trig: Free Run	ALIGNAUTO Avg Type: Log-Pwr Avg Hold: 10/10	01:35:48 PMNov 20, 2020 TRACE 11, 23 45 5 TYPE MUNAWAWA DET PINNIN Kr1 868,14 MHz	Auto Tu Center F
glient Spectrum Analyzer - Swe R RF 50 Senter Freq 1.215 0 dB/div Ref 20.00	Ω AC CORREC 0000000 GHz PN0: Fast ← IFGain:Low	📕 Trig: Free Run	ALIGNAUTO Avg Type: Log-Pwr Avg Hold: 10/10	01:35:48 PM/Nov 20, 2020 TRACE 12 3 4 5 TYPE MWWWWW DET PNNNN kr1 868.14 MHz -53.627 dBm	Auto Tu Center F
Image: SG         SG           Image: SG         R         RF         SG           Image: SG         SG         SG         SG           Image: SG         SG         SG<	Ω AC CORREC 0000000 GHz PN0: Fast ← IFGain:Low	📕 Trig: Free Run	ALIGNAUTO Avg Type: Log-Pwr Avg Hold: 10/10	01:35:48 PMNov 20, 2020 TRACE 11, 23 45 5 TYPE MUNAWAWA DET PINNIN Kr1 868,14 MHz	Auto Tu Center F 1.215000000 (
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Image: signal spectrum Analyzer - Sweet         Swee         Sweet         Sweet	D dBm	📕 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	S 01:35:49 PM Nov 20, 2020 TRACE 12 3 4 5 TYPE MYMMM Kr1 868.14 MHz -53.627 dBm -1397 064 -1397 064 Stop 2.400 GHz	Start Fi           30.000000 M           Start Fi           30.000000 M           Stop Fi           2.400000000 0
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Image: section of the sectio	D dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	s 01:35:49 PMINov 20, 2020 TRACE 12 3 4 5 TVDE 12 3 4 5 TVDE 14 10 10 10 10 10 10 10 10 10 10 10 10 10	Stop Frequency           Auto TL           Center Fl           1.215000000 f           Start Fl           30.000000 h           Stop Fl           2.40000000 c           CF St           237.000000 h
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#### **GFSK MODULATION IN HIGH CHANNEL**

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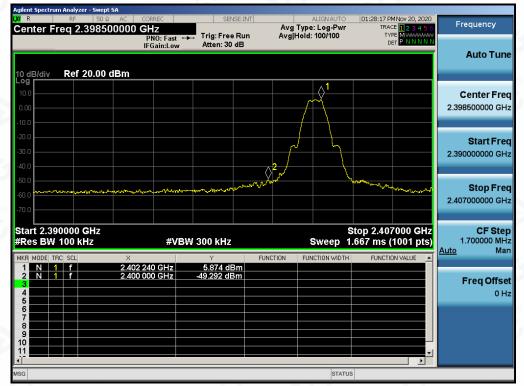


Agilent Spectrum Analyzer - Swept SA					
<b>(X)</b> R RF 50 Ω AC	CORREC	SENSE:INT	ALIGN AUTO	01:36:13 PM Nov 20, 2020	Frequency
Center Freq 13.7500000	00 GHz	Trig: Free Run	Avg Type: Log-Pwr Avg Hold: 10/10	TRACE 123456	rioquonoy
		Atten: 30 dB	inglitera. terte	TYPE MWWWWW DET P N N N N N	
			Mkr	1 24.664 7 GHz	Auto Tune
			IVINI	-48.272 dBm	
10 dB/div Ref 20.00 dBm				-40.272 ubm	
10.0					Center Freq
0.00					13.750000000 GHz
0.00					13.75000000 GHz
-10.0				-13.97 dBm	
-20.0					Start Freq
-30.0					2.500000000 GHz
				4	2.50000000 GH2
-40.0					
-50.0			denotes and a little choose beneficial		Stop Freq
-60.0 Hotelson and the second second	and a sub-	and the second	and a state of the second s		25.000000000 GHz
-70.0					25.00000000 GH2
Start 2.50 GHz				Stop 25.00 GHz	CF Step
#Res BW 100 kHz	#VBW 3	00 kHz	Sweep 2	2.152 s (30000 pts)	2.250000000 GHz
MKR MODE TRC SCL X		Y EUN	CTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
		8.272 dBm			
2					Freq Offset
3					0 Hz
5					0112
6					
8					
9					
10					
I I					
MSG			STATUS	; 	

Note: The peak emissions without marker on the above plots are fundamental wave and need not to compare with the limit.

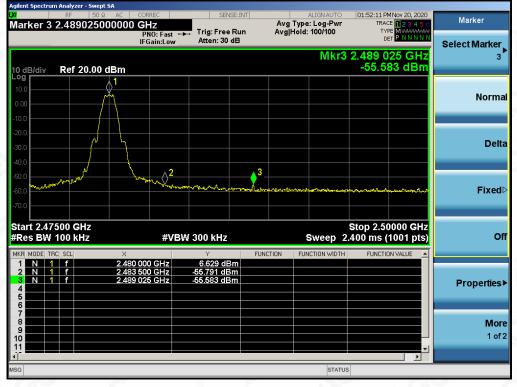
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## TEST RESULT FOR BAND EDGE GFSK MODULATION IN LOW CHANNEL

#### GFSK MODULATION IN HIGH CHANNEL



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## **10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY**

#### **10.1. MEASUREMENT PROCEDURE**

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set the SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the KDB 558074 item 10.2 was used in this testing.

#### **10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)**

Refer to Section 7.2.

#### **10.3. MEASUREMENT EQUIPMENT USED**

Refer to Section 6.

#### **10.4. LIMITS AND MEASUREMENT RESULT**

Channel No.	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Low Channel	-8.916	8	Pass
Middle Channel	-8.485	8	Pass
High Channel	-8.378	8	Pass

#### Frequency Center Freq 2.402000000 GHz Avg Type: Log-Pw Avg|Hold: 100/100 Trig: Free Run PNO: Wide IFGain:Low Auto Tune Mkr1 2.402 080 1 GHz -8.916 dBm Ref 20.00 dBm 0 dB/div **Center Freq** 2.402000000 GHz Start Fred 2.401465862 GHz Ann Stop Freq 2.402534138 GHz CF Step 106.828 kHz <u>Auto</u> Ма Freq Offset 0 Hz Center 2.4020000 GHz #Res BW 3.0 kHz Span 1.068 MHz 112.7 ms (1001 pts) #VBW 10 kHz

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#### TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



#### TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

#### 07 PM Nov 20, 2020 Frequency Avg Type: Log-Pw Avg|Hold: 100/100 Center Freg 2.480000000 GHz Trig: Free Run Atten: 30 dB PNO: Wide +++ IFGain:Low Auto Tune Mkr1 2.480 079 6 GHz -8.378 dBm I0 dB/div Ref 20.00 dBm **Center Freq** 2.480000000 GHz Ø Start Freq 2.479469346 GHz www.www.www. Mapali whom NA Stop Freq 2.480530654 GHz **CF** Step 106.131 kH Auto Mar **Freq Offset** 0 H; Center 2.4800000 GHz #Res BW 3.0 kHz Span 1.061 MHz Sweep 111.9 ms (1001 pts) #VBW 10 kHz

#### TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

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## **11. RADIATED EMISSION**

#### **11.1. MEASUREMENT PROCEDURE**

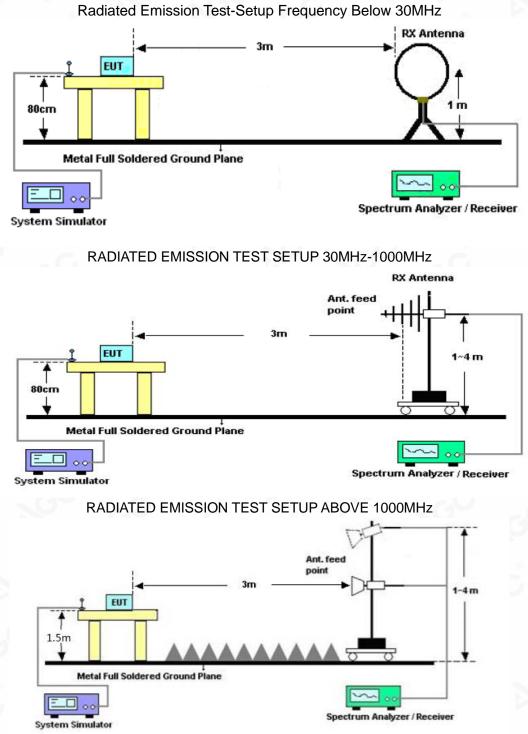
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated 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.
- 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.

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#### 11.2. TEST SETUP



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## **11.3. 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.

## 11.4. 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.

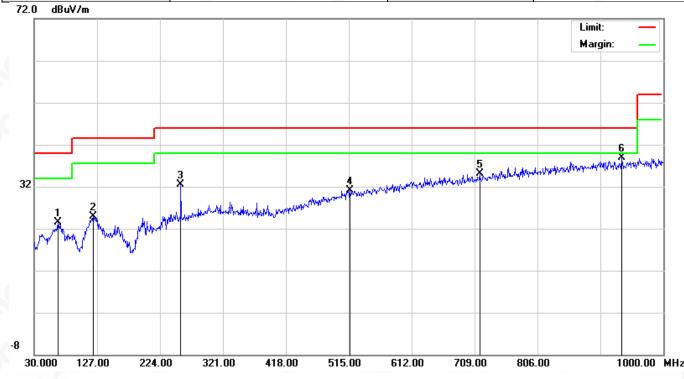
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#### **RADIATED EMISSION BELOW 1GHZ**

EUT	Wireless Speaker	Model Name	A3127
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		66.8600	6.77	16.72	23.49	40.00	-16.51	peak
2		121.1800	7.20	17.75	24.95	43.50	-18.55	peak
3		256.0100	14.13	18.38	32.51	46.00	-13.49	peak
4		516.9400	5.73	25.32	31.05	46.00	-14.95	peak
5		716.7600	6.55	28.53	35.08	46.00	-10.92	peak
6	*	935.9800	6.82	32.01	38.83	46.00	-7.17	peak

## **RESULT: PASS**

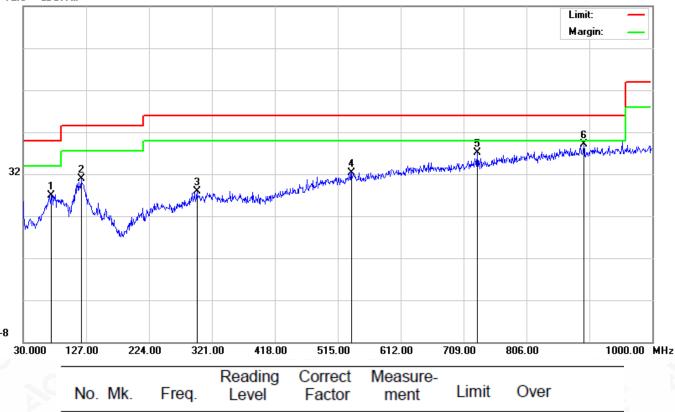
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EUT	Wireless Speaker	Model Name	A3127
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical





	No.	Mk	. Freq.	Level	Factor	ment	Limit	Over	
6			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
C	1		72.6800	10.71	16.26	26.97	40.00	-13.03	peak
-	2		119.2400	13.22	17.71	30.93	43.50	-12.57	peak
-	3		297.7200	6.58	21.30	27.88	46.00	-18.12	peak
	4		536.3400	6.60	25.70	32.30	46.00	-13.70	peak
	5		730.3400	8.24	28.84	37.08	46.00	-8.92	peak
	6	*	894.2700	7.53	31.63	39.16	46.00	-6.84	peak

#### RESULT: PASS Note:

- 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.
- 2. All test modes had been tested. The mode 1 is the worst case and recorded in the report.

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## Report No.: AGC01110201112FE02 Page 32 of 43

## **RADIATED EMISSION ABOVE 1GHZ**

EUT	Wireless Speaker	Model Name	A3127
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	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4804.000	43.74	0.08	43.82	74	-30.18	peak
4804.000	35.61	0.08	35.69	54	-18.31	AVG
7206.000	38.95	2.21	41.16	74	-32.84	peak
7206.000	32.46	2.21	34.67	54	-19.33	AVG
<u> </u>		8		<u> </u>	- Ci	8
emark:		G .	0			a.C
actor = Anter	na Factor + Cable	Loss – Pre-	amplifier.			

EUT	Wireless Speaker	Model Name	A3127
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(dBµV)	(dB)	<sup>⊙</sup> (dBµV/m)	(dBµV/m)	(dB)	value Type	
44.25	0.08	44.33	74	-29.67	peak	
36.17	0.08	36.25	54	-17.75	AVG	
39.53	2.21	41.74	74	-32.26	peak	
33.48	2.21 💿	35.69	54	-18.31	AVG	
	C.					
8				0		
	(dBµV) 44.25 36.17 39.53	(dBµV)         (dB)           44.25         0.08           36.17         0.08           39.53         2.21	(dBµV)         (dB)         (dBµV/m)           44.25         0.08         44.33           36.17         0.08         36.25           39.53         2.21         41.74	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)           44.25         0.08         44.33         74           36.17         0.08         36.25         54           39.53         2.21         41.74         74	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)         (dB)           44.25         0.08         44.33         74         -29.67           36.17         0.08         36.25         54         -17.75           39.53         2.21         41.74         74         -32.26	

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

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EUT	Wireless Speaker	Model Name	A3127
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4880.000	45.13	0.14	45.27	74	-28.73	peak
4880.000	36.21	0.14	36.35	54	-17.65	AVG
7320.000	40.05	2.36	42.41	74	-31.59	peak
7320.000	32.69	2.36	35.05	54	-18.95	AVG
8				8		
emark:		0		- 66	0	8
ctor = Anter	nna Factor + Cable	Loss – Pre-	amplifier.			- 6

			8
EUT	Wireless Speaker	Model Name	A3127
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
4880.000	46.77	0.14	46.91	74	-27.09	peak	
4880.000	38.82	0.14	38.96	54	-15.04	AVG	
7320.000	41.56	2.36	43.92	74	-30.08	peak	
7320.000	33.28	2.36	35.64	54	-18.36	AVG	
		G					
				0			

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

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#### Report No.: AGC01110201112FE02 Page 34 of 43

EUT	Wireless Speaker	Model Name	A3127
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	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.000	45.19	0.22	45.41	74	-28.59	peak
4960.000	36.35	0.22	36.57	54	-17.43	AVG
7440.000	39.64	2.64	42.28	74	-31.72	peak
7440.000	30.48	2.64	33.12	54	-20.88	AVG
®				(8)		
	8				3	
mark:						

EUT	Wireless Speaker	Model Name	A3127
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	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type Peak AVG peak AVG AVG
4960.000	43.29	0.22	43.51	74	-30.49	peak
4960.000	35.31	0.22	35.53	54	-18.47	AVG
7440.000	38.12	2.64	40.76	74	-33.24	peak
7440.000	29.45	2.64	32.09	54	-21.91	AVG
mark:	6					0

Factor = Antenna Factor + Cable Loss – Pre-amplifie

## **RESULT: PASS**

#### Note:

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.

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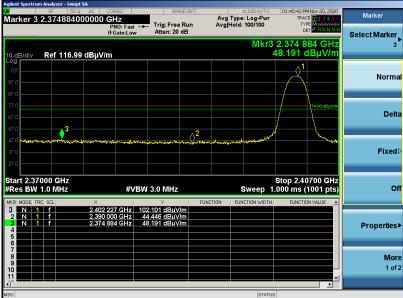


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EUT	Wireless Speaker	Model Name	A3127
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

#### TEST RESULT FOR RESTRICTED BANDS REQUIREMENTS

PK



AV

		~ ~	V ()		
gilent Spectrum Analyzer -			4170141170		
larker 3 2.3744		SENSE:INT	ALIGNAUTO Avg Type: RMS AvglHold: 100/100	01:41:46 PMNov 20, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWWWW	Marker
	IFGain:Lov			DETANNNN	Select Marker
0 dB/div Ref 11	6.99 dBµV/m			2.374 440 GHz 37.939 dBµV/m	3
og 107				1	
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37.0					
77.0				/ \	
37.0					Delt
57.0				At 00 (Buy/m	
47.0					
37.0					Fixed
27.0					
tart 2.37000 GHz Res BW 1.0 MHz		'BW 3.0 MHz*	Sween 1	Stop 2.40700 GHz .000 ms (1001 pts)	O
IKR MODE TRC SCL	×		JNCTION FUNCTION WIDTH	FUNCTION VALUE	
1 N 1 f	2.402 042 GHz	100.782 dBµV/m			
2 N 1 f 3 N 1 f	2.390 000 GHz 2.374 440 GHz	35.194 dBµV/m 37.939 dBµV/m			Properties
4					Properaces
6					
8					Мо
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sg			STATUS		
			STATUS		

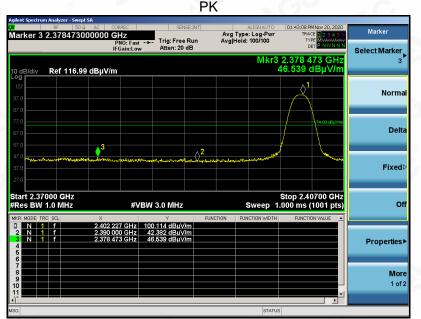
**RESULT: PASS** 

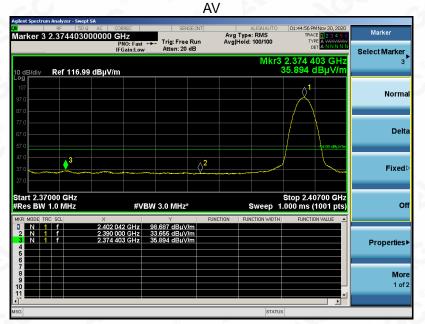
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#### Report No.: AGC01110201112FE02 Page 36 of 43

EUT	Wireless Speaker	Model Name	A3127
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical
		DI	





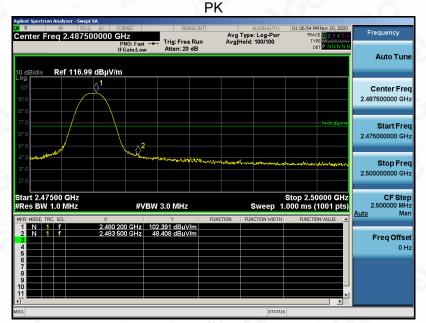
**RESULT: PASS** 

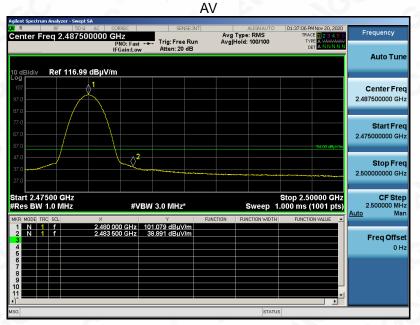
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EUT	Wireless Speaker	Model Name	A3127
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal





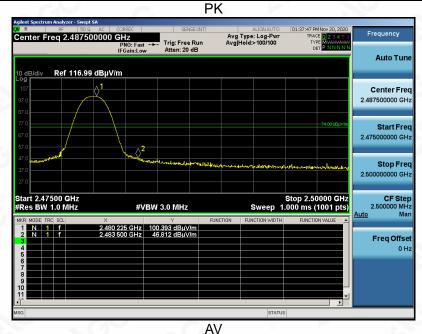
**RESULT: PASS** 

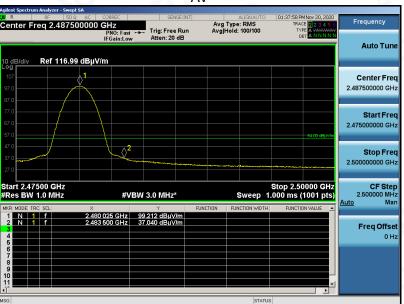
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EUT	Wireless Speaker	Model Name	A3127
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical





## **RESULT: PASS Note**: The factor had been edited in the "Input Correction" of the Spectrum Analyzer.

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## **12. FCC LINE CONDUCTED EMISSION TEST**

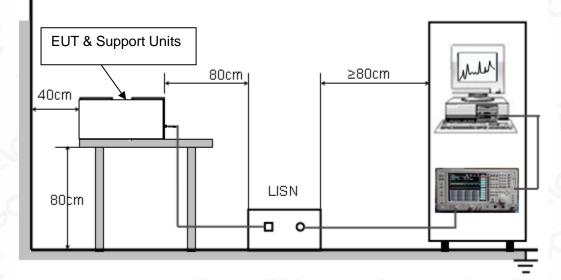
## **12.1. LIMITS OF LINE CONDUCTED EMISSION TEST**

Frequency	Maximum RF Line Voltage					
Frequency	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.

## 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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## 12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 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.

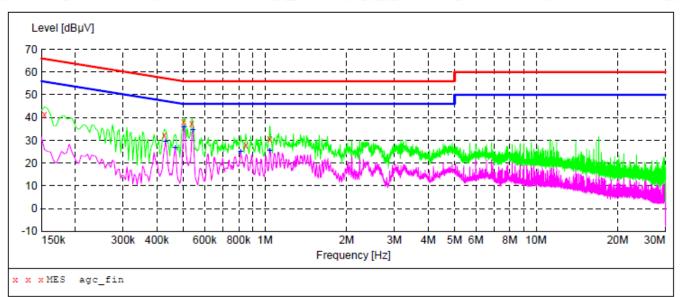
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

#### 12.4. 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.
- 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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#### 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Line Conducted Emission Test Line 1-L

#### MEASUREMENT RESULT: "agc\_fin"

2020/11/20 0:08

020/11/20 0:	00						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	
0.154000	41.30	11.3	66	24.5	QP	L1	
0.426000	32.00	11.3	57	25.3	QP	L1	
0.502000	38.00	11.3	56	18.0	QP	L1	
0.538000	37.40	11.3	56	18.6	QP	L1	
0.850000	27.90	11.3	56	28.1	QP	ь1	
1.042000	30.40	11.3	56	25.6	QP	ь1	

#### MEASUREMENT RESULT: "agc fin2"

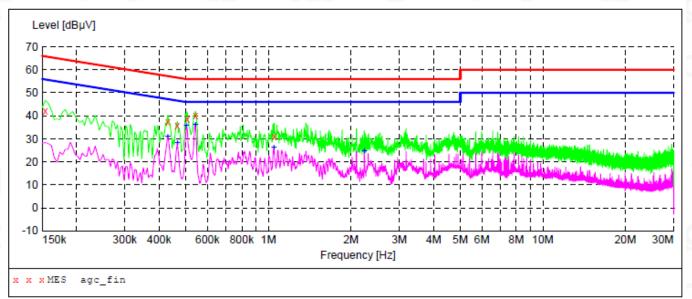
2020/11/20 0:	08					
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.430000	29.40	11.3	47	17.9	AV	L1
0.466000	26.80	11.3	47	19.8		L1
0.502000	35.60	11.3	46	10.4		L1
0.542000	34.40	11.3	46	11.6	AV	L1
0.814000	24.90	11.3	46	21.1		L1
1.042000	25.50	11.3	46	20.5		L1

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Line Conducted Emission Test Line 2-N



#### MEASUREMENT RESULT: "agc\_fin"

2020/11/20 0:04

020/11/20 0:	04					
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.154000	41.90	11.3	66	23.9	OP	N
0.430000	37.20	11.3	57	20.1	QP	N
0.466000	35.60 38.40	11.3 11.3	57 56	21.0 17.6	-	N N
0.542000	40.00	11.3	56	16.0	QP	N
1.050000	31.10	11.3	56	24.9	QP	N

#### MEASUREMENT RESULT: "agc fin2"

2020/11/20 0:	04					
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line
	αDμ γ		abuv	ч		
0.430000	30.90	11.3	47	16.4	AV	N
0.466000	28.10	11.3	47	18.5	AV	N
0.502000	35.60	11.3	46	10.4	AV	N
0.542000	36.00	11.3	46	10.0	AV	N
1.046000	26.20	11.3	46	19.8	AV	N
2.238000	24.70	11.3	46	21.3	AV	N

#### **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.: AGC01110201112AP01

APPENDIX B: PHOTOGRAPHS OF EUT Refer to the Report No.: AGC01110201112AP01

----END OF REPORT----

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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. 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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