

# **FCC Test Report**

# Report No.: AGC01110200729FE02

FCC ID	©.	2AOKB-A3930L
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Wireless Headphone
BRAND NAME		Soundcore
MODEL NAME	i	A3930L
APPLICANT		Anker Innovations Limited
DATE OF ISSUE	© •	Aug. 18, 2020
STANDARD(S)	:	FCC Part 15.247
REPORT VERSION	:	V1.0





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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@agc-cert.com

Web: http://cn.agc-cert.com/



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# **REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0		Aug. 18, 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	RISUNTEK INC	
Address	Jiuwei Industrial Zone, Qishi Town, 523000 Dongguan City, Guangdong Province, P.R.China	
Product Designation	Wireless Headphone	
Brand Name	Soundcore	
Test Model	A3930L	
Date of test	Jul. 21, 2020 to Aug. 15, 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.

John Zerry Prepared By John Zeng Aug. 15, 2020 (Project Engineer) Max Zhang **Reviewed By** Max Zhang Aug. 18, 2020 (Reviewer) Forrost R Approved By Forrest Lei Aug. 18, 2020 (Authorized Officer)

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# 2. GENERAL INFORMATION

# **2.1. PRODUCT DESCRIPTION**

The EUT is designed as a "Wireless Headphone". 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	0.835dBm (Max)	
Bluetooth Version	V 5.0	
Modulation	BR	
Number of channels	40 Channel	
Antenna Designation	FPC Antenna (Comply with requirements of the FCC part 15.203)	
Antenna Gain	-3.66dBi	
Hardware Version	C	
Software Version	V1.28	
Power Supply	DC 3.7V by battery	

# 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	0	2402 MHz
	1	2404 MHz
2400~2483.5MHz		
	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-A3930L 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		
2	Middle channel TX		
3	High channel TX		

#### 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.

#### 4. The test software settings:

Traces X Local Device Traces Reset Reset Reciever Test Receive Frequency 0 2402MHz	Non Signaling Test Tool	
Port ID Address Name Address Tyj State Role Authenticatic Encryption Version Four COM3 0xEEEEEEEEE DUT Private IDLE UNDEFI Transmit Frequency 0 2402MHr Payload Size 37 Send Reciever Test Reciever Test Reciever Test Receive Frequency 0 2402MHz	<u>File</u> <u>D</u> evice	
Port ID Address Name Address Tyj State Role Authenticatic Encryption Version Found COM3 0xEEEEEEEEE DUT Private IDLE UNDEFI  Transmitter Test Payload Pattern 0:prbs3 V Payload Size 37 Send  Traces  Keciever Test Receive Test Receive Frequency 0 2402MHz	Devices	STOTEST MOSTOTEST MOD TEST BLE TX TEST SETTING
Traces       ×         Local Device Traces       I         I Reset       I         I	COM3 0xEEEEEEEEEE DUT Private IDLE UNDEFI	rrsion Found Transmitter Test Transmit Frequency 0 2402MHz Payload Pattern 0:prbs9 Payload Size 37
I Reset	۲ اس ا	, x
	Reset +	Receive Frequency 0 2402MHz Send

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# **5. SYSTEM TEST CONFIGURATION**

# 5.1. CONFIGURATION OF TESTED SYSTEM

Radiated Emission Configure:

EUT

Conducted Emission Configure:

EUT	AE	

# 5.2. EQUIPMENT USED IN TESTED SYSTEM

ltem	Equipment	Model No.	ID or Specification	Remark
1	Wireless Headphone	A3930L	2AOKB-A3930L	EUT
2	Control Box	N/A	USB-TTL	AE

# 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	Not applicable

Note: The EUT is powered by battery. The EUT can not use the BT function with charging.

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# 6. TEST FACILITY

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

# TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	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	Aug. 26, 2019	Aug. 25, 2020
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 09, 2019	Sep. 08, 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	Oct. 15, 2019	Oct. 16, 2020
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 09, 2019	Jan. 08, 2021
Test software	FARA	EZ-EMC (Ver RA-03A)	N/A	N/A	N/A

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# 7. PEAK OUTPUT POWER

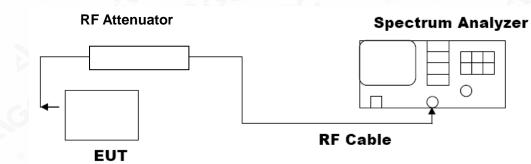
# 7.1. MEASUREMENT PROCEDURE

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									
FrequencyPeak PowerApplicable LimitsPass or Fail(GHz)(dBm)(dBm)									
2.402	0.739	30	Pass						
2.440	0.835	30	Pass						
2.480	0.200	30	Pass						

CH0

		m Analyzer - Swept									_	
Cel		RF 50 Ω req 2.40200		RREC Z		JSE:INT	Avg Type	ALIGNAUTO	TRAC	4 Jul 30, 2020 <sup>3E</sup> <mark>1 2 3 4 5 6</mark>	F	requency
1			F	'NO: Fast 🔸	Trig: Free Atten: 30		Avg Hold:	100/100	TYF DB			
								Mkr1	2.401 7	'55 GHz		Auto Tune
10 c Log	lB/div	Ref 20.00 (	lBm						0.7	39 dBm		
208												Center Freq
10.0	ı—											2000000 GHz
					↓ 1							
0.0												Start Freq
-10.0	,										2.39	9500000 GHz
-20.0												Stop Freq
-30.0											2.40	4500000 GHz
-30.0	'											
-40.0	, <b> </b>											CF Step 500.000 kHz
											<u>Auto</u>	Man
-50.0												
-60.0	,											Freq Offset
												0 Hz
-70.0	ı <b>├</b> ──											
		402000 GHz		40 (DSA					Span 5	.000 MHz		
#R	es BW	1.5 MHz		#VBW	5.0 MHz			Sweep 1		1001 pts)		
Mag								STATUS	,			

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CH39

jilent Spectrum Analyzer - Swept SA R RF 50 Ω AC		SENSE:INT	ALIGN/ Avg Type: Log		M Jul 30, 2020 E <b>1 2 3 4 5 6</b>	Frequency
enter Freq 2.48000000	PNO: Fast ++ IFGain:Low	. Trig: Free Run Atten: 30 dB	Avg Hold: 100/1	00 TY		
0 dB/div Ref 20.00 dBm			N	1kr1 2.480 1 0.2	40 GHz 00 dBm	Auto Tui
10.0		1				<b>Center Fr</b> 2.480000000 G
10.0						<b>Start Fr</b> 2.477500000 G
						<b>Stop Fr</b> 2.482500000 G
10.0						<b>CF St</b> 500.000 k <u>Auto</u> N
30.0						Freq Offs 0
70.0 Senter 2.480000 GHz				Span 5	.000 MHz	
Res BW 1.5 MHz	#VBW	5.0 MHz		ep 1.000 ms ( status	(1001 pts)	

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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**

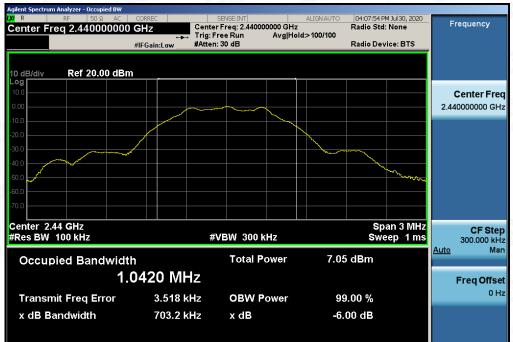
LIMITS AND MEASUREMENT RESULT								
Annliaghta Limita		Applicable Limits						
Applicable Limits Test Data (kHz)								
	Low Channel	698.4	PASS					
>500KHZ	Middle Channel	703.2	PASS					
	High Channel	703.7	PASS					

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL
yzer - Occupied BW
50 0 AC CORREC SENSE:INT ALIGN AUTO 04:03:57 PM 3u/30, 2020



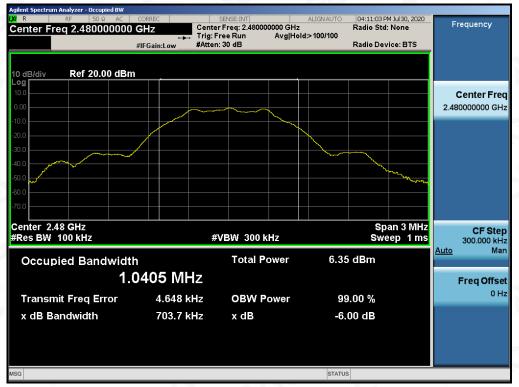
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#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

#### 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							
Annlinghla Linsita	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					

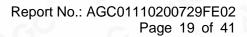
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# TEST RESULT FOR ENTIRE FREQUENCY RANGE GFSK MODULATION IN LOW CHANNEL

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	ım Analyzer - Swep	ot SA								
IXI R	RF 50 :		ORREC	SENS	SE:INT		ALIGN AUTO		M Jul 30, 2020	Frequency
Center F	req 13.741	750000	GHz	Trig: Free	Dun	Avg Type Avg Hold:	≘:Log-Pwr ∙10/10	IRAC TY	CE 123456	Trequency
			PNO: Fast 🔸 FGain:Low	Atten: 30 d		Arginola	10/10	D	PE MWWWWW ET P N N N N N	
			Gameow			_	DAL.			Auto Tune
							IVIKI	1 24.82	8 9 GHz	
10 dB/div	Ref 20.00	dBm						-48.5	82 dBm	
Log										
10.0										Center Freq
0.00										13.741750000 GHz
-10.0										
									-19.70 dBm	
-20.0										Start Freq
-30.0										2.483500000 GHz
-40.0									1	2.400000000012
-50.0							And white state of the second	THE R. P. LEWIS		Oton Eron
-60.0 dute-at	a second a second second		A stratig		All and a state of the second s	and a star	No. and the second s			Stop Freq
Mark Barry	Service of the servic									25.00000000 GHz
-70.0										
Otort 2.40								Oton 0	5 00 CH-	CE Oton
Start 2.48			49 (D) (	1 000 KU-			0		5.00 GHz	CF Step 2.251650000 GHz
#Res BW	100 KHZ		#VDW	V 300 kHz			Sweep	2.152 S (J	0000 pts)	Auto Man
MKR MODE T	RC SCL	×		Y	FUNC	TION FUN	NCTION WIDTH	FUNCTIO	ON VALUE	Auto
1 N *	1 f	24.82	8 9 GHz	-48.582 dBi	m					
2										Freq Offset
3										0 Hz
5										0112
6										
8										
9										
10										
11			ک کھک		<u>م مع</u>				•	
•										
MSG							STATUS	3		

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 E-mail: agc@agc-cert.com



Agilent Spectrum Analyzer - Swe	ot SA					
Center Freq 2.4400	Ω AC CORREC 000000 GHz PNO: Wide ↔	SENSE:INT	Avg	ALIGN AUTO Type: Log-Pwr Hold: 10/10	04:08:44 PM Jul 30, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P. N.N.N.N.	Frequency
10 dB/div Ref 20.00	IFGain:Low	Atten: 30 dB		Mkr1 2	.440 000 7 GHz 0.293 dBm	Auto Tune
Log 10.0 0.00		1-	-~~			Center Freq 2.440000000 GHz
-20.0						Start Freq 2.438500000 GHz
-50.0						<b>Stop Freq</b> 2.441500000 GHz
Center 2.440000 GH #Res BW 100 kHz		V 300 kHz		Sweep 2.0	Span 3.000 MHz 000 ms (30000 pts)	CF Step 300.000 kHz
MKR MODE TRC SCL 1 N 1 f 2 3 4 4 5	× 2.440 000 7 GHz	ү 0.293 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man Freq Offset 0 Hz
6 7 8 9 10 11						
				· · · · ·		
MSG				STATUS		
	Ω AC CORREC	SENSE:INT		ALIGN AUTO	04:08:53 PM Jul 30, 2020	Frequency
Center Freq 1.2150	JUUUUU GHZ PNO: Fast ↔ IFGain:Low	Trig: Free Run Atten: 30 dB	Avg I	Type: Log-Pwr Hold: 10/10	TRACE 123456 TYPE MWWWW DET PNNNN	
10 dB/div Ref 20.00	dBm			Mkr	1 2.388 07 GHz -57.221 dBm	Auto Tune
10.0 0.00						Center Freq 1.215000000 GHz
-20.0					-19.71 dBm	Start Freq 30.000000 MHz
-50.0	av a fissaget gapes and agent and agent and a solution for the solution of the	in a fra transportany constitution (a transfer (a transfer (a transfer (a transfer (a transfer (a transfer (a t		ng bintong kang penganti dan tingka kata La panakatan penganti penganakan kata		<b>Stop Freq</b> 2.400000000 GHz
Start 30 MHz #Res BW 100 kHz	#VBV	V 300 kHz		Sweep 22	Stop 2.400 GHz 8.0 ms (30000 pts)	CF Step 237.000000 MHz
MKR MODE TRC SCL	× 2.388 07 GHz	۲ -57.221 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	A <u>uto</u> Man
2 3 4 5						<b>Freq Offset</b> 0 Hz
6 7 8 9 10						
11						
MSG				STATUS		

#### GFSK MODULATION IN MIDDLE CHANNEL

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Agilent Spectrum Anal								
Center Freq	00 11 110		SENSE:INT		ALIGNAUTO	04:09:18 PM TRACE	Jul 30, 2020	Frequency
Genter Froq	10.7411-0000	PNO: Fast 🔸	Trig: Free Run Atten: 30 dB		id: 10/10	TYPE	PNNNN	
		IFGain:Low	Atten: 30 dB		Miles			Auto Tune
	6 00 00 JB				WIKT	1 23.656	9 dBm	
10 dB/div Re	f 20.00 dBm					-40.00	S CIER	
10.0								Center Freq
0.00								13.741750000 GHz
-10.0								
-20.0							-19.71 dBm	
-30.0								Start Freq
								2.483500000 GHz
-40.0								
-50.0	to all the state			and the second second second				Stop Freq
-60.0 distribution				and the second	les)			25.00000000 GHz
-70.0								
Start 2.48 GH						Stop 24	5.00 GHz	CF Step
#Res BW 100		#VBW	300 kHz		Sweep 2	5.0p 25 2.152 s (30	1000 pts)	2.251650000 GHz
MKR MODE TRC SCL			Y	FUNCTION F	UNCTION WIDTH	FUNCTION		<u>Auto</u> Man
1 N 1 f		3.656 5 GHz	-48.889 dBm	FUNCTION	UNCTION WIDTH	Fonction	VALUE	
2		وينتقق	ويصنفنه					Freq Offset
4								0 Hz
5								
7								
8								
10		<u>د محمد</u>	راعدهم					
MSG					STATUS	5		

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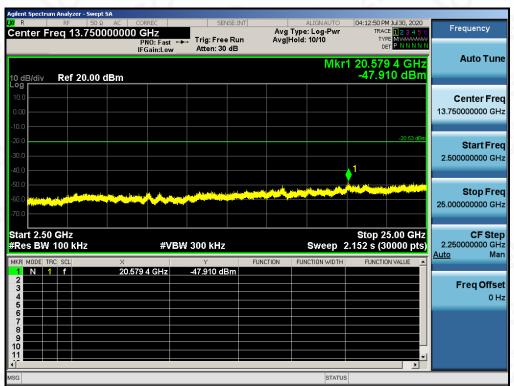
Agilent Spectrum Analyzer - Swep	ot SA				
X         R         RF         50           Center Freq 2.4800	Ω AC CORREC   000000 GHz PNO: Wide ↔	SENSE:INT	ALIGN AUTO Avg Type: Log-Pw Avg Hold: 10/10		Frequency
10 dB/div Ref 20.00	IFGain:Low	Atten: 30 dB	Mkr1	2.479 998 8 GHz -0.528 dBm	Auto Tune
Log 10.0 0.00		1-			Center Freq 2.480000000 GHz
-20.0 -30.0 -40.0					<b>Start Freq</b> 2.478500000 GHz
-50.0					<b>Stop Freq</b> 2.481500000 GHz
Center 2.480000 GH: #Res BW 100 kHz		N 300 kHz	Sweep 2	Span 3.000 MHz 2.000 ms (30000 pts)	CF Step 300.000 kHz Auto Man
MKR MODE TRC SCL 1 N 1 F 2 3 4 5	× 2.479 998 8 GHz	Y -0.528 dBm	FUNCTION FUNCTION WID	TH FUNCTION VALUE	Auto Man Freq Offset 0 Hz
6 7 8 9 10 11					
MSG			STA	TUS	
Agilent Spectrum Analyzer - Swep					
Agilent Spectrum Analyzer - Swep LXI R RF 50 :	Ω AC CORREC	SENSE:INT	ALIGN AUTO Avg Type: Log-Pw	04:12:25 PM Jul 30, 2020 r TRACE 123456	Frequency
Agilent Spectrum Analyzer - Swep	Ω AC CORREC	Tala Fara Dara	ALIGN AUTO	04:12:25 PM Jul 30, 2020	
Agilent Spectrum Analyzer - Swep (M R RF 50 Center Freq 1.2150	Ω AC CORREC 000000 GHz PN0: Fast ↔ IFGain:Low	Trig: Free Run	ALIGNAUTO Avg Type: Log-Pw Avg Hold: 10/10	04:12:25 PM Jul 30, 2020 r TRACE 12 3 4 5 6 TYPE MMAAAAAAA	
Agilent Spectrum Analyzer - Swep X R RF 50 Center Freq 1.2150	Ω AC CORREC 000000 GHz PN0: Fast ↔ IFGain:Low	Trig: Free Run	ALIGNAUTO Avg Type: Log-Pw Avg Hold: 10/10	04:12:25 PM Jul 30, 2020 r TRACE 10:23 4 5 6 TYPE MWWWWW DET PILNIN N (r1 2.208 50 GHz	Auto Tune Center Freq
Agilent Spectrum Analyzer - Swer Agilent Spectrum Analyzer - Swer Center Freq 1.2150	Ω AC CORREC 000000 GHz PN0: Fast ↔ IFGain:Low	Trig: Free Run	ALIGNAUTO Avg Type: Log-Pw Avg Hold: 10/10	04:12:25 PM Jul 30, 2020 r TRACE 10:23 4 5 6 TYPE MWWWWW DET PILNIN N (r1 2.208 50 GHz	Frequency Auto Tune Center Freq 1.21500000 GHz Start Freq 30.000000 MHz
Aglent Spectrum Analyzer - Swep Aglent Spectrum Analyzer - Swep Center Freq 1.2150 10 dB/div Ref 20.00 10.0 0.00 -10.0 -30.0	Ω AC CORREC 000000 GHz PN0: Fast ↔ IFGain:Low	Trig: Free Run	ALIGNAUTO Avg Type: Log-Pw Avg Hold: 10/10	04:12:25 PM Jul 30, 2020 TRACE 12:34 56 6 TYPE MUNITOR DET DINNINN (r1 2.208 50 GHz -56.738 dBm	Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq
Aglent Spectrum Analyzer - Swer Aglent Spectrum Analyzer - Swer Center Freq 1.2150 10 dB/div Ref 20.00 10.0 0.00 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0	2 AC CORREC 100000 GHz PRO: Fast → IFGain:Low 0 dBm	Trig: Free Run	ALIGN AUT Avg Type: Log-Pw Avg Hold: 10/10 MI	04:12:25 PM Jul 30, 2020 TRACE 12:34 56 6 TYPE MUNITOR DET DINNINN (r1 2.208 50 GHz -56.738 dBm	Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz CF Step 237.000000 MHz
Agilent Spectrum Analyzer - Swer           Agilent Spectrum Analyzer - Swer           Center Freq 1.2150           Center Freq 1.2150           Comparison           Comparison           Ref 20.00           Comparison	2 AC CORREC 100000 GHz PRO: Fast → IFGain:Low 0 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUT Avg Type: Log-Pw Avg Hold: 10/10 MI	Contraction of the second seco	Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz 2.40000000 MHz 2.40000000 MHz Auto Man
Agilent Spectrum Analyzer - Swer           Agilent Spectrum Analyzer - Swer           Center Freq 1.2150           Center Freq 1.2150           Conter Freq 1.2	2 AC CORREC 100000 GHz PRO: Fast → IFGain:Low IGBM IGB	Trig: Free Run Atten: 30 dB	ALIGNAUT Avg Type: Log-Pw Avg Hold: 10/10 MI	Contraction of the second seco	Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz CF Step 237.000000 MHz

#### **GFSK MODULATION IN HIGH CHANNEL**

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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.

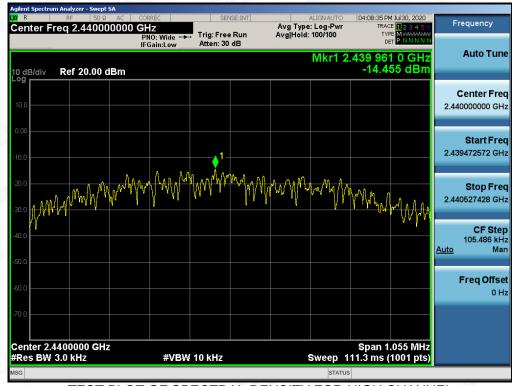
#### **10.4. LIMITS AND MEASUREMENT RESULT**

Channel No.	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Low Channel	-14.565	8	Pass
Middle Channel	-14.455	8	Pass
High Channel	-15.219	8	Pass

TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



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# TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

# TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



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# **11. RADIATED EMISSION**

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

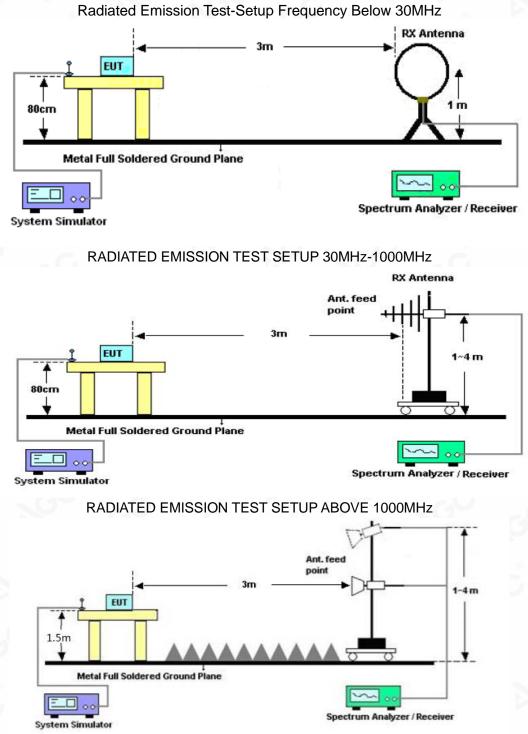
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated 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 Headphone	Model Name	A3930L
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal
66.9 dBuV/m	·		-



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	
	•	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		65.5667	0.51	16.56	17.07	40.00	-22.93	peak	
2		143.1667	1.35	19.22	20.57	43.50	-22.93	peak	
3		277.3500	1.81	19.72	21.53	46.00	-24.47	peak	
4		468.1167	1.71	24.35	26.06	46.00	-19.94	peak	ľ
5		707.3832	2.23	28.32	30.55	46.00	-15.45	peak	
6	*	912.7000	3.01	31.81	34.82	46.00	-11.18	peak	

# **RESULT: PASS**

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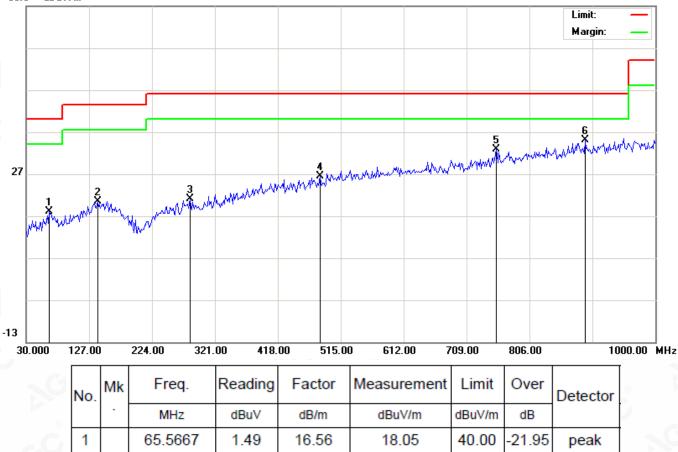
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#### Report No.: AGC01110200729FE02 Page 31 of 41

EUT	Wireless Headphone	Model Name	A3930L
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

66.9 dBuV/m



# RESULT: PASS Note:

2

3

4

5

6

\*

1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

1.12

1.07

1.77

3.51

3.50

19.23

19.89

24.64

29.38

31.59

20.35

20.96

26.41

32.89

35.09

43.50

46.00

46.00

46.00

46.00

-23.15

-25.04

-19.59

-13.11

-10.91

peak

peak

peak

peak

peak

139.9333

282.2000

482.6667

754.2667

891.6833

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

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# **RADIATED EMISSION ABOVE 1GHZ**

EUT	Wireless Headphone	Model Name	A3930L
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	<sup>©</sup> Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4804.000	44.53	0.08	44.61	74	-29.39	peak
4804.000	35.84	0.08	35.92	54	-18.08	AVG
7206.000	38.91	2.21	41.12	74	-32.88	peak
7206.000	31.67	2.21	33.88	54 💿	-20.12	AVG
<u> </u>	3				0	8
emark:	G	G	6			-0
	na Factor + Cable	e Loss – Pre-	amplifier.			G

EUT	Wireless Headphone	Model Name	A3930L
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4804.000	45.89	0.08	45.97	74	-28.03	peak
4804.000	35.47	0.08	35.55	54	-18.45	AVG
7206.000	39.34	2.21	41.55	74	-32.45	peak
7206.000	30.11	2.21	32.32	54	-21.68	AVG
emark:		20 <sup>C</sup>			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	

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

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EUT	Wireless Headphone	Model Name	A3930L
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	44.82	0.14	44.96	74	-29.04	peak
4880.000	35.19	0.14	35.33	54	-18.67	AVG
7320.000	39.66	2.36	42.02	74	-31.98	peak
7320.000	30.58	2.36	32.94	54	-21.06	AVG
8						
emark:	- Ci	0		- 6	- C.	8
ctor = Anter	nna Factor + Cable	Loss – Pre-	amplifier.			- 6

6.0			
EUT	Wireless Headphone	Model Name	A3930L
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	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	- Value Type
4880.000	46.82	0.14	46.96	74	-27.04	peak
4880.000	39.77	0.14	39.91	54	-14.09	AVG
7320.000	40.59	2.36	42.95	74	-31.05	peak
7320.000	32.15	2.36	34.51	54	-19.49	AVG
8		- 60-				

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

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#### Report No.: AGC01110200729FE02 Page 34 of 41

EUT	Wireless Headphone	Model Name	A3930L
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	43.69	0.22	43.91	74	-30.09	peak
4960.000	35.47	0.22	35.69	54	-18.31	AVG
7440.000	38.55	2.64	41.19	74	-32.81	peak
7440.000	29.73	2.64	32.37	54	-21.63	AVG
8					(2)	
emark:		8		- 69	C.	8
actor = Anter	nna Factor + Cable	Loss – Pre-	amplifier.			- 6

EUT	Wireless Headphone	Model Name	A3930L
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	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.000	41.36	0.22	41.58	74	-32.42	peak
4960.000	34.96	0.22	35.18	54	-18.82	AVG
7440.000	39.55	2.64	42.19	74	-31.81	peak
7440.000	28.47	2.64	31.11	54	-22.89	AVG
mark:		- GC				G

# **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.

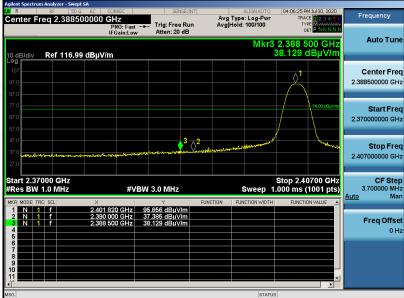
Compliance Dedicated Fe Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written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



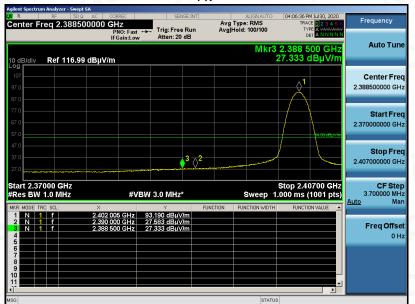
EUT	Wireless Headphone	Model Name	A3930L
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

# TEST RESULT FOR RESTRICTED BANDS REQUIREMENTS

PK



AV



**RESULT: PASS** 

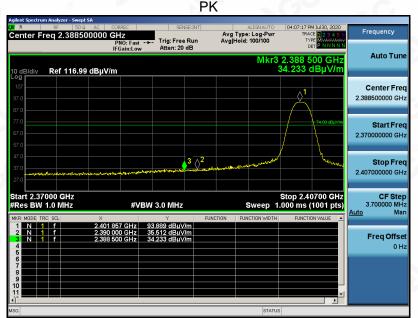
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EUT	Wireless Headphone	Model Name	A3930L
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical







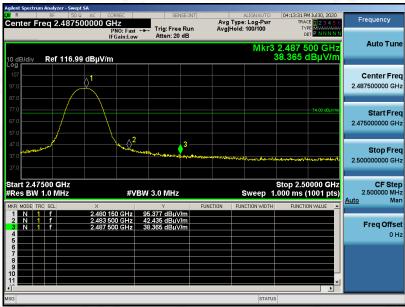
**RESULT: PASS** 

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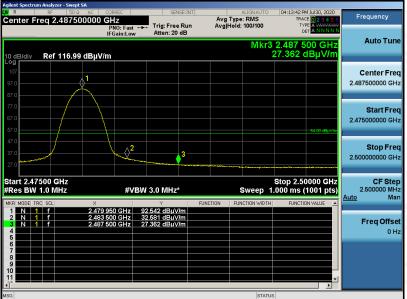


# Report No.: AGC01110200729FE02 Page 37 of 41

EUT	Wireless Headphone	Model Name	A3930L
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal
	PK		







# **RESULT: PASS**

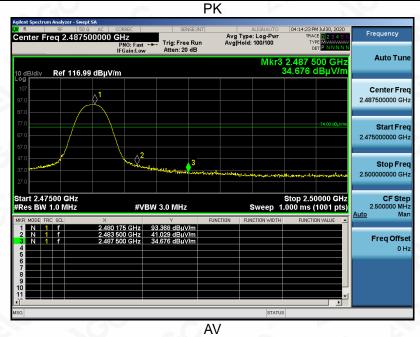
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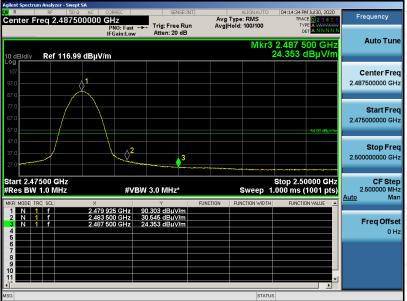
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EUT	Wireless Headphone	Model Name	A3930L
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical





# **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**

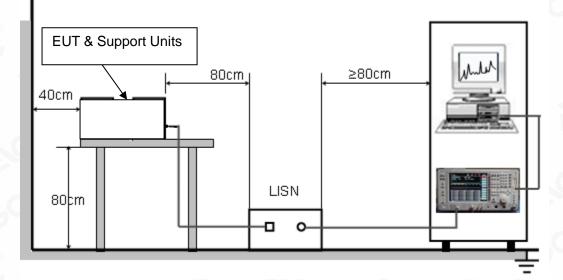
# **12.1. LIMITS OF LINE CONDUCTED EMISSION TEST**

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 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.

# 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Note: The EUT is powered by battery. The EUT can not use the BT function with charging.

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# APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC01110200729AP02

APPENDIX B: PHOTOGRAPHS OF EUT Refer to the Report No.: AGC01110200729AP02

----END OF REPORT----

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 Tel: +86-755 2523 4088
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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.

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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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