

# FCC Test Report

Report No.: AGC10732221101FE02

FCC ID	:	2ASJU-M16DC
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Wireless lavalier microphone
BRAND NAME	:	N/A
MODEL NAME	:	M16DC, M8, M10, M12, M13, M15, M15DC, M18, M19, M20, M21, M22, M23, M25, M26
APPLICANT	:	ShenZhen HIPPO Digital Co., Ltd.
DATE OF ISSUE	:	Dec. 02, 2022
STANDARD(S)	:	FCC Part 15.247
REPORT VERSION	:	V1.0
<u>Attestation of (</u>	<u>alc</u>	oral Compliance (Shenzhen) Co., Ltd

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## **REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes	
V1.0	/	Dec. 02, 2022	Valid	Initial Release	



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

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## **1. VERIFICATION OF COMPLIANCE**

ShenZhen HIPPO Digital Co., Ltd.			
3rd Floor, Building A, Dunfa Industrial Park, Hangcheng Avenue, Gushu, Xixiang, BaoAn District, Shenzhen, China			
ShenZhen HIPPO Digital Co., Ltd.			
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ShenZhen HIPPO Digital Co., Ltd.			
Brd Floor, Building A, Dunfa Industrial Park, Hangcheng Avenue, Gushu, Xixiang, BaoAn District, Shenzhen, China			
Wireless lavalier microphone			
N/A			
M16DC			
M8, M10, M12, M13, M15, M15DC, M18, M19, M20, M21, M22, M23, M25,			
All the same except for the appearance color and model name.			
Nov. 17, 2022			
Nov. 17, 2022 to Dec. 02, 2022			
No any deviation from the test method			
nple Normal			
Pass			
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.

an Duan Prepared By Alan Duan Dec. 02, 2022 (Project Engineer) **Reviewed By** Calvin Liu Dec. 02, 2022 (Reviewer) Max Zhan Approved By

Max Zhang (Authorized Officer)

Dec. 02, 2022

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



## 2. GENERAL INFORMATION

## 2.1. PRODUCT DESCRIPTION

The EUT is designed as a "Wireless lavalier microphone". 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	2.404 GHz to 2.480GHz			
RF Output Power	7.906dBm (Max)			
Modulation	GFSK			
Number of channels	77 Channel			
Antenna Designation	Ceramic antenna (Comply with requirements of the FCC part 15.203)			
Antenna Gain	2.5dBi			
Hardware Version	N1006_TX_V3.1			
Software Version	V1.0			
Power Supply	DC 3.7V by battery			
Note: The EUT comprises two TX prototypes, both are the same, the worst one had been tested and recorded				

in this report as the worst case.

## 2.2. TABLE OF CARRIER FREQUENCYS

Channel	Frequency (GHz)	Channel	Frequency (GHz)		
01	2.404	42	2.445		
02	2.405	43	2.446		
03	2.406	44	2.447		
04	2.407	45	2.448		
05	2.408	46	2.449		
06	2.409	47	2.450		
07	2.410	48	2.451		
08	2.411	49	2.452		
09	2.412	50	2.453		
10	2.413	51	2.454		
11	2.414	52	2.455		
12	2.415	53	2.456		
13	2.416	54	2.457		
14	2.417	2.417 55 2.458			
15	2.418	56 2.459			



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16	2.419	57	2.460	
17	2.420	58	2.461	
18	2.421	59	2.462	
19	2.422	60	2.463	
20	2.423	61	2.464	
21	2.424	62	2.465	
22	2.425	63	2.466	
23	2.426	64	2.467	
24	2.427	65	2.468	
25	2.428	66	2.469	
26	2.429	67	2.470	
27	2.430	68	2.471	
28	2.431	69	2.472	
29	2.432	70	2.473	
30	2.433	71	2.474	
31	2.434	72	2.475	
32	2.435	73	2.476	
33	2.436	74	2.477	
34	2.437	75	2.478	
35	2.438	76	2.479	
36	2.439	77	2.480	
37	2.440			
38	2.441			
39	2.442			
40	2.443			
41	2.444			
k	1	1	J	



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

This submittal(s) (test report) is intended for FCC ID: 2ASJU-M16DC 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.



## **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%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 3.1 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 4.0 \text{ dB}$
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.8 \text{ dB}$
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$
Uncertainty of spurious emissions, conducted	$U_{c} = \pm 2.7 \%$
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2 \%$



## **4. DESCRIPTION OF TEST MODES**

NO.	TEST MODE DESCRIPTION			
1	Low channel TX_CH01			
2	Middle channel TX_CH41			
3	High channel TX_CH78			

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.

			S	Softv	vare Se	tting				
<b>2</b>			CX62	2 升	级工具 V1	. 26				— ×
升级组件		🗌 DS	Р		i en	1V				
MIC参数修改 模拟增益: 24.0	dB 🗕	数字增益:	-1dB	•	充电电流:	30mA	•	读取		写入
测试模式 测试模式: 低频	定频			-	天线选择:	天线1	•			开始测试
升级文件									^ >	选择
										开始



## **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**

Item	Equipment	Model No.	ID or Specification	Remark
1	Wireless lavalier	M16DC	2ASJU-M16DC	EUT
2	Control Box	N/A	USB-TTL	AE
3	Cable	N/A	N/A	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	Compliant



## 6. TEST FACILITY

Test software

Test Site	Attestation of G	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 G	Blobal Compliance (S	Shenzhen) Co., L	td is accredited t	by A2LA					
TEST EQUIPMENT OF	CONDUCTED E	MISSION TEST								
Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due					
TEST RECEIVER	R&S	ESPI	101206	Mar. 28, 2022	Mar. 27, 2023					
LISN	R&S	ESH2-Z5	100086	Jun. 08, 2022	Jun. 07, 2023					

ES-K1(Ver.V1.71)

N/A

N/A

N/A

## TEST EQUIPMENT OF RADIATED EMISSION TEST

R&S

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Mar. 28, 2022	Mar. 27, 2023
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Aug. 04, 2022	Aug. 03, 2023
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	Mar. 22, 2022	Mar. 21, 2024
Attenuator	ZHINAN	E-002	N/A	Aug. 04, 2022	Aug. 03, 2024
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 02, 2022	Sep. 01, 2024
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2021	Jan. 07, 2023
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A



## 7. PEAK OUTPUT POWER

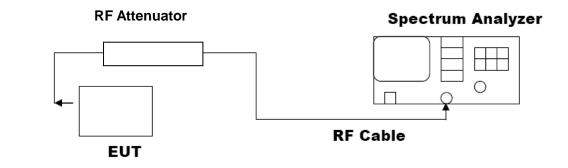
## 7.1. MEASUREMENT PROCEDURE

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





## 7.3. LIMITS AND MEASUREMENT RESULT

	Test Data of Conducted Output Power								
Test Mode	Test Channel (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail					
	2404	7.048	≪30	Pass					
GFSK	2444	7.494	≪30	Pass					
	2480	7.906	≤30	Pass					



#### **Test Graphs of Conducted Output Power**







## 8. BANDWIDTH

## 8.1. MEASUREMENT PROCEDURE

6dB bandwidth:

- 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.

Occupied bandwidth:

- 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 Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hoping channel The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak

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.

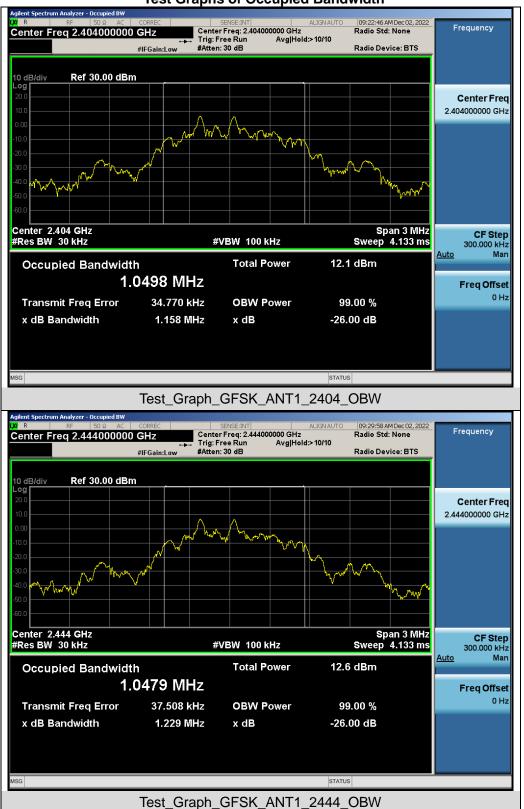
## 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

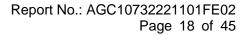
## 8.3. LIMITS AND MEASUREMENT RESULTS

	Test Data of Occupied Bandwidth and DTS Bandwidth									
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-6dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail					
	2404	1.050	0.628	≥0.5	Pass					
GFSK	2444	1.048	0.652	≥0.5	Pass					
	2480	1.043	0.628	≥0.5	Pass					





#### **Test Graphs of Occupied Bandwidth**

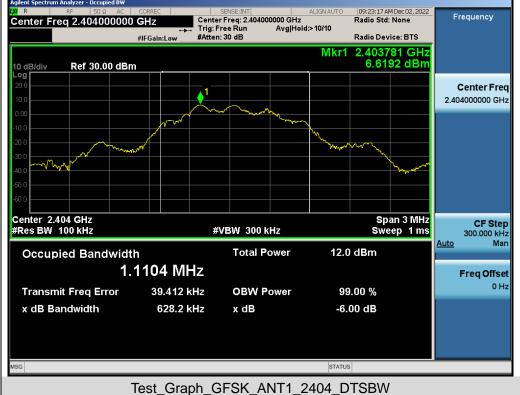




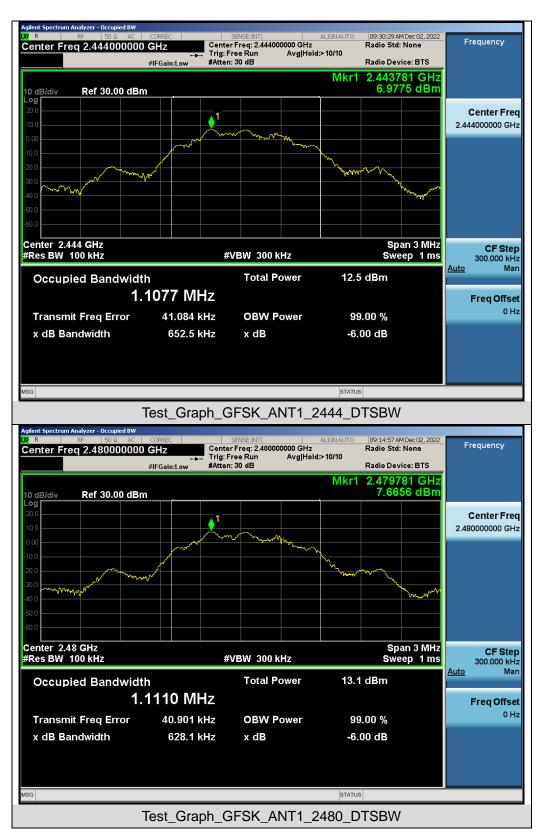


Test\_Graph\_GFSK\_ANT1\_2480\_OBW











## 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

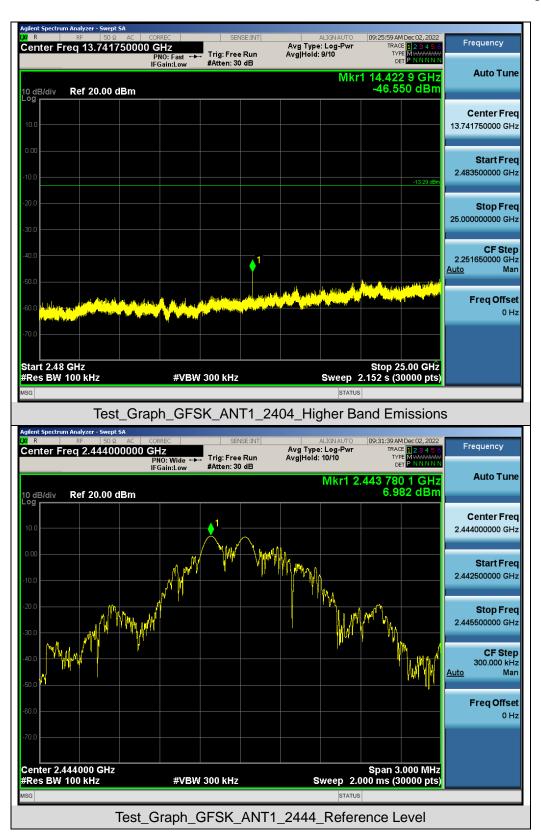
LIMITS AND MEASUREMENT RESULT							
Applieghte Limite	Measurement Result						
Applicable Limits	Test Data	Criteria					
In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator 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					

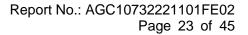




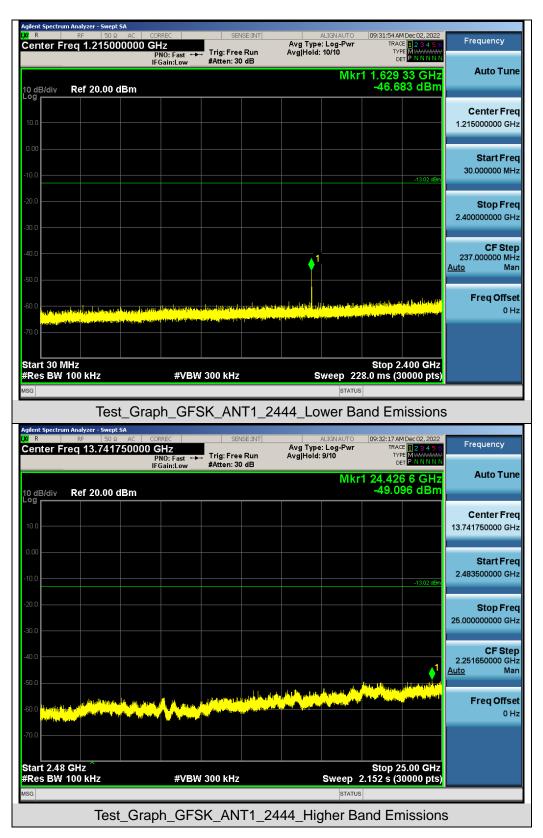
## Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands







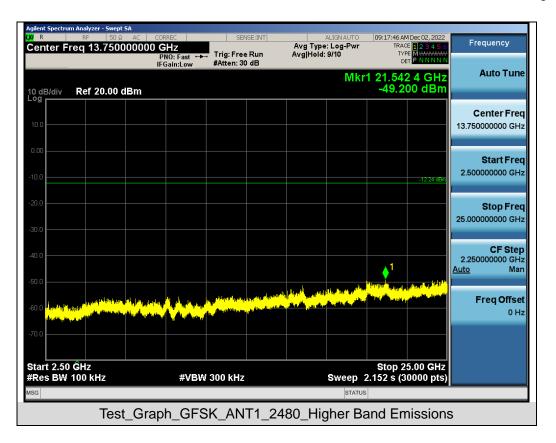




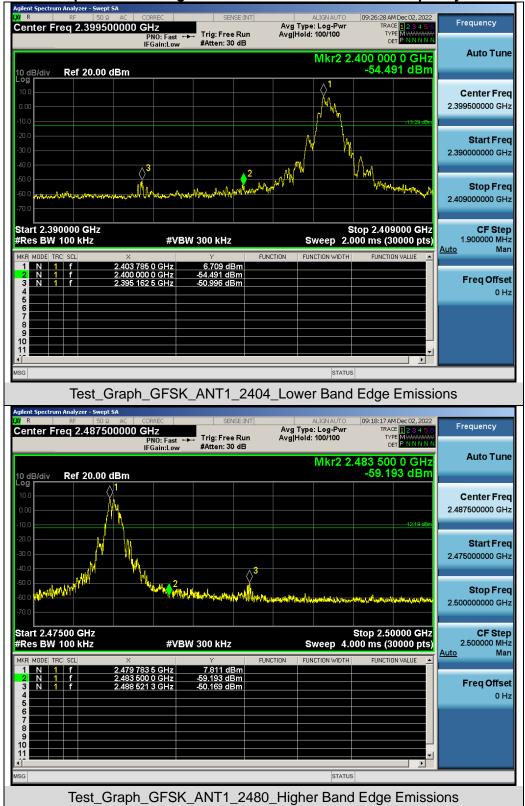












## Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands



## **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 8.4 was used in this testing.

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

Refer to Section 7.2.

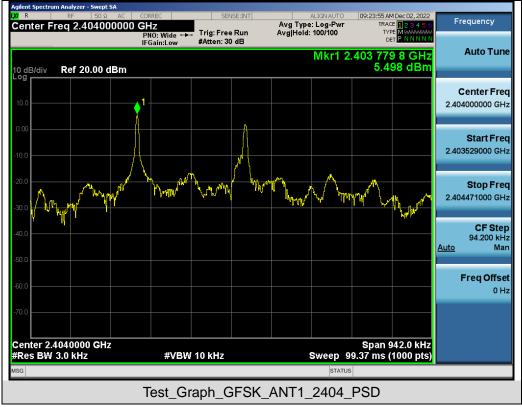
## **10.3. MEASUREMENT EQUIPMENT USED**

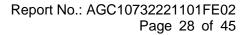
Refer to Section 6.

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

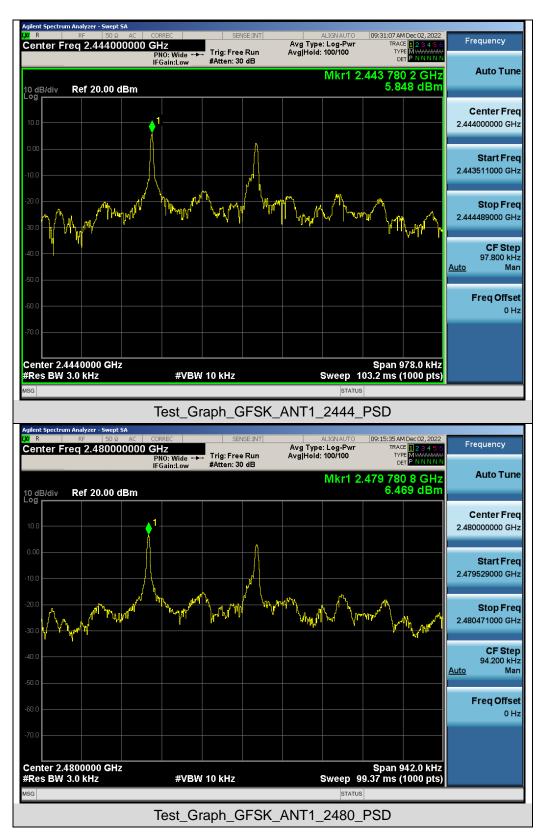
	Test Data of Conducted Output Power Spectral Density									
Test Mode	Test Channel (MHz)	Power density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail						
	2404	5.498	<b>≤8</b>	Pass						
GFSK	2444	5.848	≪8	Pass						
	2480	6.469	≪8	Pass						

## Test Graphs of Conducted Output Power Spectral Density











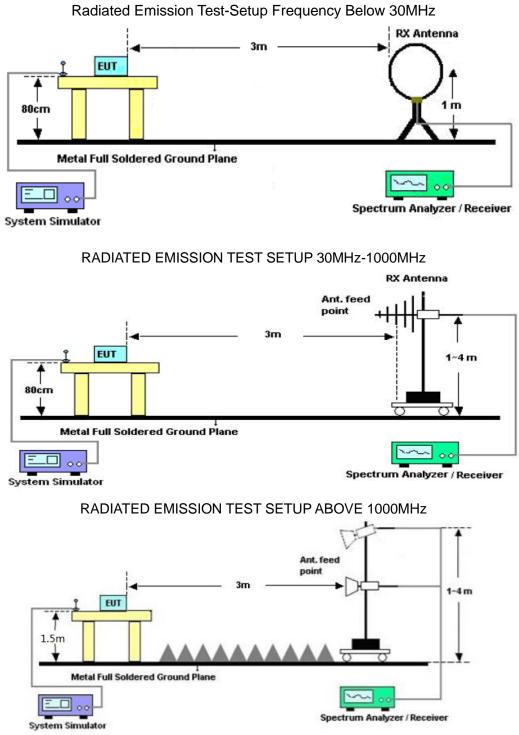
## **11. RADIATED EMISSION**

## **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.



## 11.2. TEST SETUP





## **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.



EUT	Wireless lavalier microphone	Model Name	M16DC					
Temperature	25° C	Relative Humidity	55.4%					
Pressure	960hPa	Test Voltage	Normal Voltage					
Test Mode	Mode 3	Antenna	Horizontal					

#### Radiated emission from 30MHz to 1000MHz

														Lin	nit: Irgin:	-	-
														Ma	irgin:		
														_	_		-
																5.c	
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26.16

23.66

27.12

25.95

27.67

31.54

31.28

32.47

34.07

37.54

39.27

37.66

46.00

46.00

46.00

46.00

46.00

46.00

-14.72

-13.53

-11.93

-8.46

-6.73

-8.34

peak

peak

peak

peak

peak

peak

#### **RESULT: PASS**

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316.5889

393.4723

618.5368

787.8513

836.2441

875.2469

5.12

8.81

6.95

11.59

11.60

6.12

1

2

3

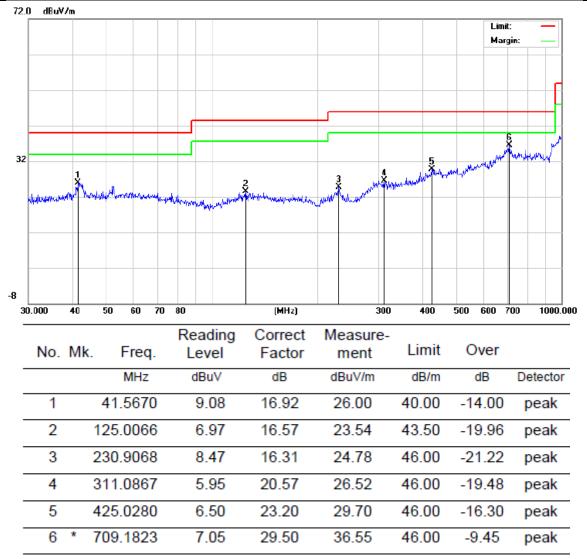
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5 \*



EUT	Wireless lavalier microphone	Model Name	M16DC
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical



## **RESULT: PASS**

Note:

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

2. All test modes had been tested. The mode 3 is the worst case and recorded in the report.



## Radiated emission above 1GHz

EUT	Wireless lavalier microphone	Model Name	M16DC
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	43.69	0.08	43.77	74	-30.23	peak
4804.000	35.37	0.08	35.45	54	-18.55	AVG
7206.000	38.76	2.21	40.97	74	-33.03	peak
7206.000	31.42	2.21	33.63	54	-20.37	AVG
Remark:						
Factor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.			

EUT	Wireless lavalier microphone	Model Name	M16DC
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)	
4804.000	44.47	0.08	44.55	74	-29.45	peak
4804.000	34.96	0.08	35.04	54	-18.96	AVG
7206.000	38.37	2.21	40.58	74	-33.42	peak
7206.000	30.69	2.21	32.9	54	-21.1	AVG
Remark:						
actor = Anter	nna Factor + Cable	e Loss – Pre-	amplifier.			



EUT	Wireless lavalier microphone	Model Name	M16DC
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	44.79	0.14	44.93	74	-29.07	peak
4880.000	35.63	0.14	35.77	54	-18.23	AVG
7320.000	39.91	2.36	42.27	74	-31.73	peak
7320.000	31.82	2.36	34.18	54	-19.82	AVG
Remark:						
actor = Anter	na Factor + Cabl	e Loss – Pre-a	amplifier.			

EUT	Wireless lavalier microphone	Model Name	M16DC
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
45.76	0.14	45.9	74	-28.1	peak
38.63	0.14	38.77	54	-15.23	AVG
40.91	2.36	43.27	74	-30.73	peak
32.77	2.36	35.13	54	-18.87	AVG
na Factor + Cabl					
	(dBµV) 45.76 38.63 40.91 32.77	(dBµV)         (dB)           45.76         0.14           38.63         0.14           40.91         2.36           32.77         2.36	(dBµV)         (dB)         (dBµV/m)           45.76         0.14         45.9           38.63         0.14         38.77           40.91         2.36         43.27           32.77         2.36         35.13	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)           45.76         0.14         45.9         74           38.63         0.14         38.77         54           40.91         2.36         43.27         74           32.77         2.36         35.13         54	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)         (dB)           45.76         0.14         45.9         74         -28.1           38.63         0.14         38.77         54         -15.23           40.91         2.36         43.27         74         -30.73           32.77         2.36         35.13         54         -18.87



EUT	Wireless lavalier microphone	Model Name	M16DC
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	44.72	0.22	44.94	74	-29.06	peak	
4960.000	35.39	0.22	35.61	54	-18.39	AVG	
7440.000	38.89	2.64	41.53	74	-32.47	peak	
7440.000	29.66	2.64	32.3	54	-21.7	AVG	
Remark:							
-actor = Anter	na Factor + Cabl	e Loss – Pre-	amplifier.				

EUT	Wireless lavalier microphone	Model Name	M16DC
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)	
4960.000	42.93	0.22	43.15	74	-30.85	peak
4960.000	34.09	0.22	34.31	54	-19.69	AVG
7440.000	38.42	2.64	41.06	74	-32.94	peak
7440.000	29.63	2.64	32.27	54	-21.73	AVG
emark:						
actor = Anter	nna Factor + Cable	Loss – Pre-	amplifier.			

#### **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.

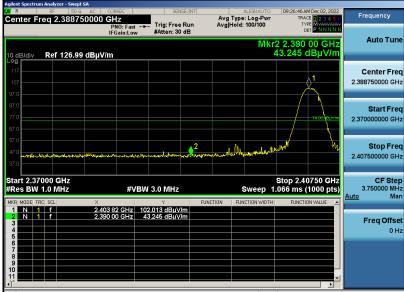
The "Factor" value can be calculated automatically by software of measurement system.



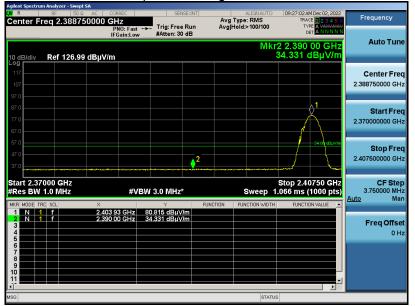
EUT	Wireless lavalier microphone	Model Name	M16DC
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

## Test result for band edge emission at restricted bands

Test Graph for Peak Measurement



Test Graph for Average Measurement

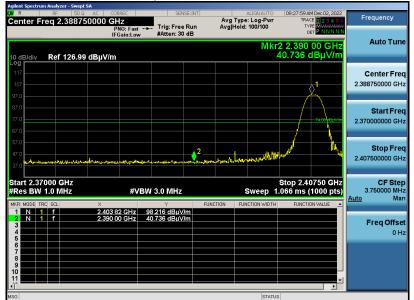


**RESULT: PASS** 

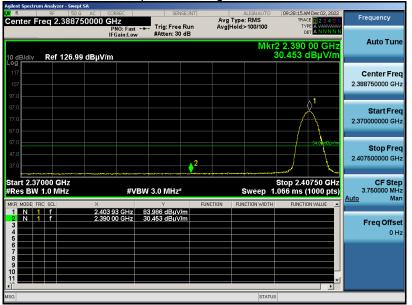


EUT	Wireless lavalier microphone	Model Name	M16DC
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement

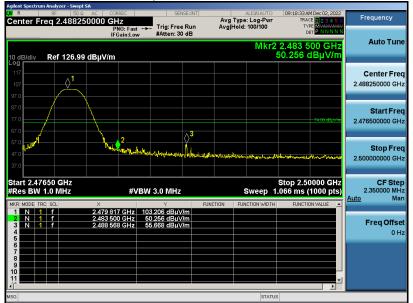


**RESULT: PASS** 



EUT	Wireless lavalier microphone	Model Name	M16DC
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement

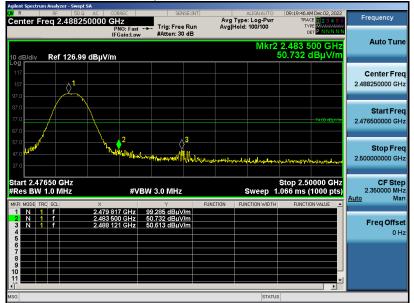


**RESULT: PASS** 

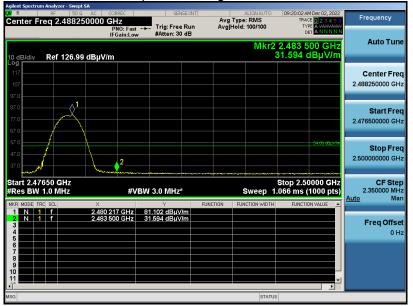


EUT	Wireless lavalier microphone	Model Name	M16DC
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



## RESULT: PASS

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

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

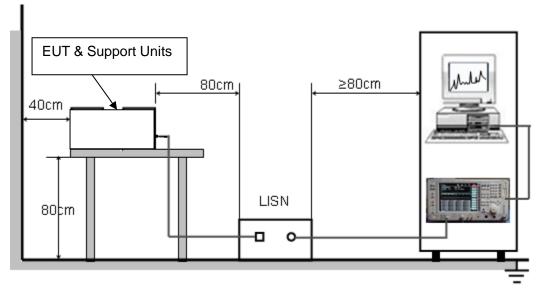
## **12.1. LIMITS OF LINE CONDUCTED EMISSION TEST**

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





## 12.3. 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.

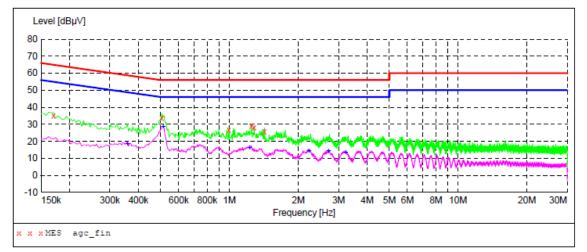
## 12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 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

Line Conducted Emission Test Line 1-L



## MEASUREMENT RESULT: "agc\_fin"

2022/11/22 21:28

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.170000 0.506000 0.994000 1.246000 1.282000 1.422000	35.00 33.60 26.60 29.00 27.90 25.70	6.8 5.4 5.8 5.8 6.0	65 56 56 56 56 56	30.0 22.4 29.4 27.0 28.1 30.3	QP QP QP QP	L1 L1 L1 L1 L1 L1

#### MEASUREMENT RESULT: "agc fin2"

2022/11/22 2	1:27					
Frequency	Level	Transd	Limit	Margin	Detector	Line
MHz	dBµV	dB	dBµV	dB		
0.358000	18.30	5.8	49	30.5	AV	ь1
0.514000	28.40	5.4	46	17.6	AV	ь1
1.226000	16.30	5.7	46	29.7	AV	ь1
2.222000	14.40	6.5	46	31.6	AV	ь1
2.710000	14.10	6.5	46	31.9	AV	ь1
3.226000	13.40	6.5	46	32.6	AV	ь1

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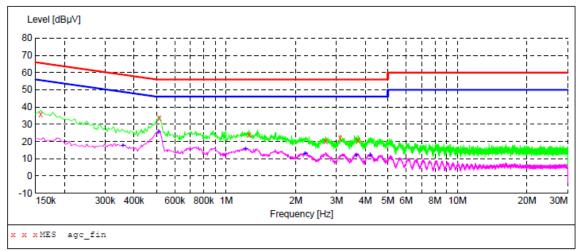
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#### MEASUREMENT RESULT: "agc fin"

2022/11/22 21:32

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.158000	36.00	6.8	66	29.6	QP	N
0.514000	33.40	5.4	56	22.6	QP	N
1.258000	23.80	5.8	56	32.2	QP	N
2.694000	20.30	6.5	56	35.7	QP	N
3.114000	22.10	6.5	56	33.9	QP	N
3.722000	20.50	6.5	56	35.5	QP	Ν

#### MEASUREMENT RESULT: "agc\_fin2"

2022/11/22	21:31					
Frequency MHz		Transd dB	Limit dBµV	Margin dB	Detector	Line
0.358000	17.60	5.8	49	31.2	AV	N
0.510000	25.50	5.4	46	20.5	AV	N
1.214000	15.40	5.7	46	30.6	AV	N
2.190000	12.90	6.5	46	33.1	VA	N
3.654000	12.10	6.5	46	33.9	VA	N
4.198000	12.10	6.5	46	33.9	AV	N

## **RESULT: PASS**

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## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC10732221101AP02 APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC10732221101AP03

----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. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.