



# RF TEST REPORT

Product Name

**Intercom Audio Ski Goggles**

Model Number

**OUNCE R2, OUNCE R1**

Report Number

**LGT22A012RF02**

Issued For

**Dongguan Lucky Sonics Co.,Ltd**

**Room 801&802,Building A1 Everbright We Valley No.2,Road  
2,Songshanlake North Industrial Zone Dongguan,China**

Issued By

**Shenzhen LGT Test Service Co., Ltd.**

**Room 205, Building 13, Zone B, Chen Hsong Industrial Park,  
No.177 Renmin West Road, Jinsha Community, Kengzi Street,  
Pingshan New District, Shenzhen, China**

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Report No.: LGT22A012RF02

**Revision History**

Version	Issue Date	Revisions
00	Jan.11, 2023	Initial Issue

**TEST REPORT CERTIFICATION**

**Applicant** Dongguan Lucky Sonics Co.,Ltd  
**Address** Room 801&802,Building A1 Everbright We Valley No.2,  
Road 2,Songshanlake North Industrial Zone Dongguan,  
China

**Manufacturer** Dongguan Lucky Sonics Co.,Ltd  
**Address** Room 801&802,Building A1 Everbright We Valley No.2,  
Road 2,Songshanlake North Industrial Zone Dongguan,  
China

**Product Name** Intercom Audio Ski Goggles

**Trademark** 318

**Model Name** OUNCE R2, OUNCE R1

**Sample Status:** Normal

**Sample Received Date:** Dec. 28, 2022

**Date of Tested:** Dec. 28, 2022 – Jan. 11, 2022

**Issed Date:** Jan. 11, 2022

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
Article 2 Paragraph 1 of Item 1-11, annex 6	PASS

Prepared by:

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Engineer

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Technical Director



## 1. SUMMARY OF THE TEST RESULTS

Test procedures according to the technical standards: STD-T66 V3.7

Article 2 Paragraph 1 of Item 1-11, annex 6	
Test Item	Judgment
<b>Transmitting equipment</b>	
Output Power	PASS
Output Power Tolerance	PASS
Frequency Tolerance	PASS
Occupied Bandwidth	PASS
Adjacent channel power	PASS
Unwanted Emission Strength	PASS
Secondary Radiated Emission Strength	PASS
Maximum frequency deviation	PASS
Modulation Characteristic	PASS





## 1.1 TEST FACTORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China
Accreditation Certificate	A2LA Certificate No.: 6727.01
	FCC Registration No.: 746540
	CAB ID: CN0136

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

No.	Item	Uncertainty
1	RF output power, conducted	$\pm 0.68\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.988\text{dB}$
3	Frequency tolerance	$\pm 0.02\text{ppm}$



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF THE EUT

Equipment	Intercom Audio Ski Goggles	
Trademark	318	
Model Name	OUNCE R2	
Series Model	OUNCE R1	
Model Difference	Only different in model name	
Product Description	The EUT is a Intercom Audio Ski Goggles	
	Operation Frequency:	450~ 470 MHz
	Modulation Type:	FM
	Channel separation:	12.5kHz
	Antenna Designation:	Please refer to the Note 3.
	Antenna Gain(Peak):	-2.06dBi
Based on the application, features, or specification exhibited in User Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User Manual.		
Channel List	Please refer to the Note 2.	
Rating	5V2A	
Battery	Model: PL 112247 Brand: BPI Capacity: 1250mAh Rated Voltage: 3.7 V	
Hardware Version	V1.0	
Software Version	V1.0	
Connecting I/O Port(s)	Please refer to the Note 1.	

Note

:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.





2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	450.0125	...	...	...	...
02	450.0250	...	...	...	...
03	450.0375	...	...	...	...
...	...	799	459.9875	...	...
...	...	800	460.0000	...	...
...	...	801	460.0125	1597	469.9625
...	...	...	...	1598	469.9750
...	...	...	...	1599	469.9875

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

3.

Ant.	Antenna Brand	Antenna Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	318	OUNCE R2	spring antenna	N/A	-2.06dBi	Antenna

The antenna information refer to the manufacturer provide report, applicable only to the test sample identified in the report.



## 2.2 DESCRIPTION OF THE TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test Mode	Modulation Type	Channel Separation	Frequency
Mode1	FM	12.5kHz	Low channel(450.0125MHz)
			Mid channel(460.0000MHz)
			High channel(469.9875MHz)

## 2.4 TEST CONDITIONS

The EUT was tested while in a continuous transmitter/receiver mode.

The EUT was tuned to a lowest, middle, and highest channel for all tests. For all test case pre/scans were completed in all modes to determine worst case levels.

### Power Supply Voltage Fluctuation Test

Voltage Fluctuation Test	Normal Voltage	High Voltage +10% of Normal Voltage	Low Voltage -10% of Normal Voltage
Input DC Power(V)	3.7	4.07	3.33
RF Chip Input DC Power(V)	3.300	3.329	3.281
Voltage Variation (%)	/	0.88	-0.58

Note: 1. Voltage Variation (%)

= (RF chip Input high or Low Voltage - RF chip Input Normal Voltage) / RF chip Input Normal Voltage \* 100

2. RF chip Input DC power fluctuation is verified at the power input PIN of the RF chip.

When the input supply voltage to the EUT from the external power source is varied by +/- 10%, the output voltage had been confirmed that the fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than +/-1%, and the DC power fluctuation at the power input PIN of the RF chip is equal to or less than +/-1%. Exempt extremely high and low supply voltage condition tests, EUT only operated in normal voltage to test all regulations.



## 2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

### Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
N/A	N/A	N/A	N/A	N/A	N/A

### Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
N/A	N/A	N/A	N/A	N/A	N/A

Note:

- (1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

**2.7 EQUIPMENTS LIST FOR ALL TEST ITEMS**

Conducted Test equipment					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
Signal Analyzer	Keysight	N9010B	MY60242508	2022.04.29	2023.04.28
RF Automatic Test system	MW	MW200-RFCB	MW220322LG	2022.04.29	2023.04.28
MXG Vector Signal Generator	Keysight	N5182B	MY59100717	2022.06.02	2023.06.01
Temperature & Humidity	KTJ	TA218B	N.A	2022.05.05	2023.05.04
Temperature& Humidity test chamber	AISRY	LX-1000L	171200018	2022.05.10	2023.05.09
Attenuator	eastsheep	90db	N.A	2022.04.29	2023.04.28
Testing Software	MTS8310_V2.0.0.0_MW				



### 3. CONSTRUCTION PROTECTION CONFIRMATION

*Our products apply for Japanese radio frequency (rf) certification. The RF IC is shielded by the shielding cover which is welded on the PCB, it can't be removed easily.*



## 4. FREQUENCY TOLERANCE

### 4.1 LIMIT

Item	Frequency Range(MHz)	Max output power	Limits
Frequency Tolerance	54-70	Over 1W	10ppm
		1W or less	20ppm
	142-162.0375	Over 1W	10ppm
		1W or less	15ppm
	450-470	Over 1W	3ppm
		1W or less	4ppm

### 4.2 MEASURING INSTRUMENTS AND SETTING

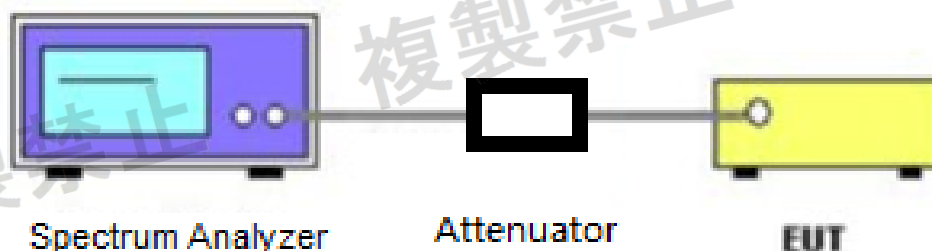
The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	100Hz/300Hz
Detector	Peak
Span	10 KHz
Trace	Max Hold
Sweep Time	Auto

### 4.3 TEST PROCEDURES

1. The antenna port of the EUT is connected on the input port of the spectrum analyzer through an appropriate attenuator.
2. EUT turn to test frequency channel and keep continuous unmodulation transmitting.
3. Reading the peak point from the spectrum analyzer as  $f_M$  (MHz).
4. The test frequency is recorded as  $f_C$  (MHz).
5. The test result of  $\text{ppm} = (f_M - f_C) / f_C * 1000000$

### 4.4 TEST SETUP





**4.5 TEST RESULT**

TEST CONDITIONS		Frequency	Result	Tolerance	Limit
		MHz	MHz	ppm	(ppm)
V nom (V)	3.7	450.0125	450.0134	2.044	±3
		460.0000	460.0010	2.065	±3
		469.9875	469.9885	2.064	±3



## 5. OUTPUT POWER

### 5.1 LIMIT

Item	Limits
Output Power	$\leq 50W$
Output Power Tolerance	+20%, -50% (Base on manufacturer declare power)

### 5.2 TEST PROCEDURE

1. The antenna port of the EUT is connected on the input port of the power meter through an appropriate attenuator.
2. EUT turn to test frequency channel and keep continuous transmitting
3. Reading the output power from the power meter as P
4. The output power of EUT is "P".

### 5.3 TEST SETUP



**5.4 TEST RESULT**

Temperature:	25°C	Pressure:	1012 hPa
Humidity:	55 % RH		

TEST CONDITIONS		Channel	Average Power (W)	Declared Antenna Power (W)	Tolerance (%)
Vnom(V)	3.7	Low	0.634	0.7000	-9.44
		Middle	0.676	0.7000	-3.43
		High	0.726	0.7000	3.71
Limit : (1) Antenna Power Density Limit (≤50W) (2) Tolerance +20%, -50%					



## 6. ADJACENT CHANNEL POWER

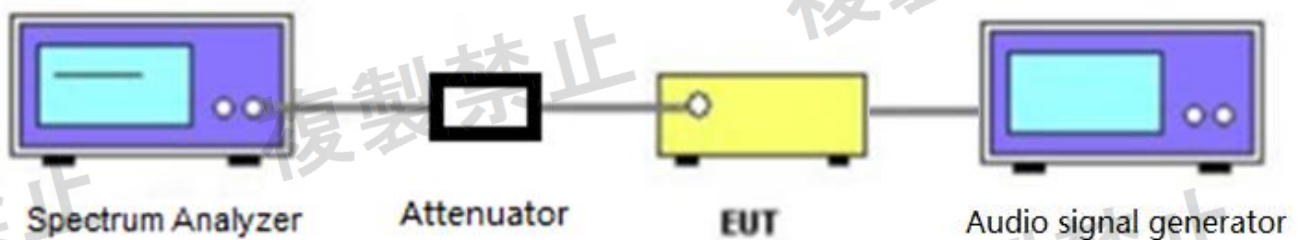
### 6.1 LIMIT

Item	Limits
Adjacent Channel Power	-60dBc: in the band of $\pm 4.25\text{kHz}$ at 12.5kHz detuning from carrier frequency

### 6.2 MEASURING INSTRUMENTS AND SETTING

1. The EUT was modulated by frequency of  $1,250 \pm 2$  Hz sine wave audio signal; the level of the audio signal employed is 10dB greater than the input voltage required of rated system deviation.
2. Setting of SA is following as: RBW=VBW=300Hz, SPAN:37.5KHz  
Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: average  
Trace mode: Max hold, Sweep Time Auto
3. EUT is connected on SA through an appropriate attenuator.

### 6.3 TEST SETUP

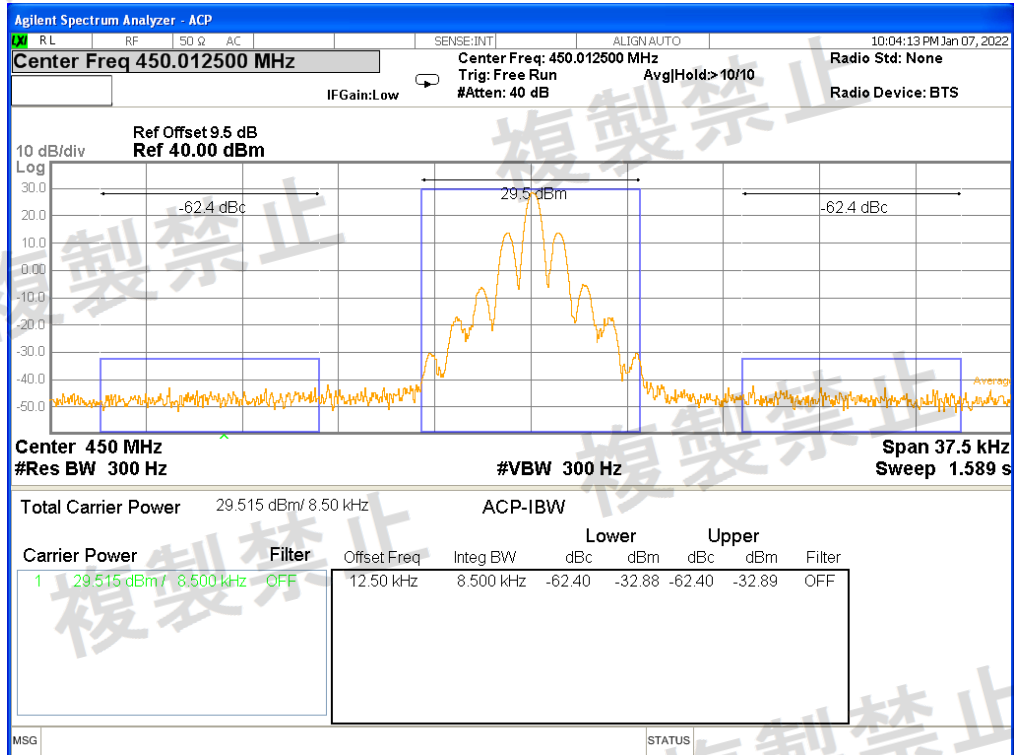




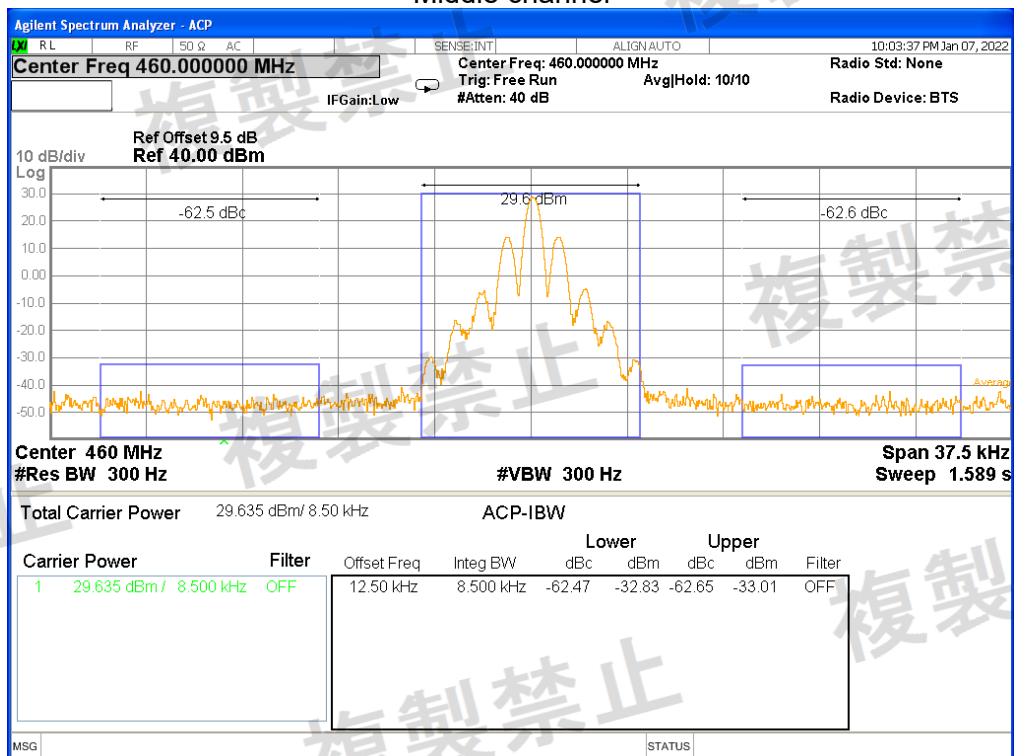
## 6.4 TEST RESULT

Mode 1

Low channel



Middle channel





## High channel







## 7. OCCUPIED BANDWIDTH (99%)

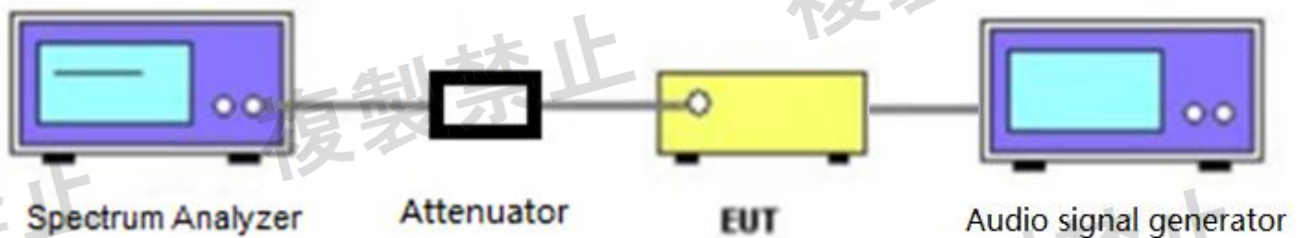
### 7.1 LIMIT

Item	Frequency Range(MHz)	Limits
Occupied Bandwidth:	54-70 142-162.0375	≤16kHz
	450-470	≤8.5kHz

### 7.2 MEASURING INSTRUMENTS AND SETTING

1. EUT is connected on SA through an appropriate attenuator.
2. Setting of SA is following as: RBW=VBW=150Hz, SPAN: 20KHz  
Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: average  
Trace mode: Sample, Sweep Time Auto
3. The EUT was modulated by frequency of  $1,250 \pm 2$  Hz sine wave audio signal; the level of the audio signal employed is 10dB greater than the input voltage required of rated system deviation.
4. EUT have transmitted the maximum modulation signal and fixed channelize. SA set to 99% of occupied bandwidth to measure occupied bandwidth.

### 7.3 TEST SETUP



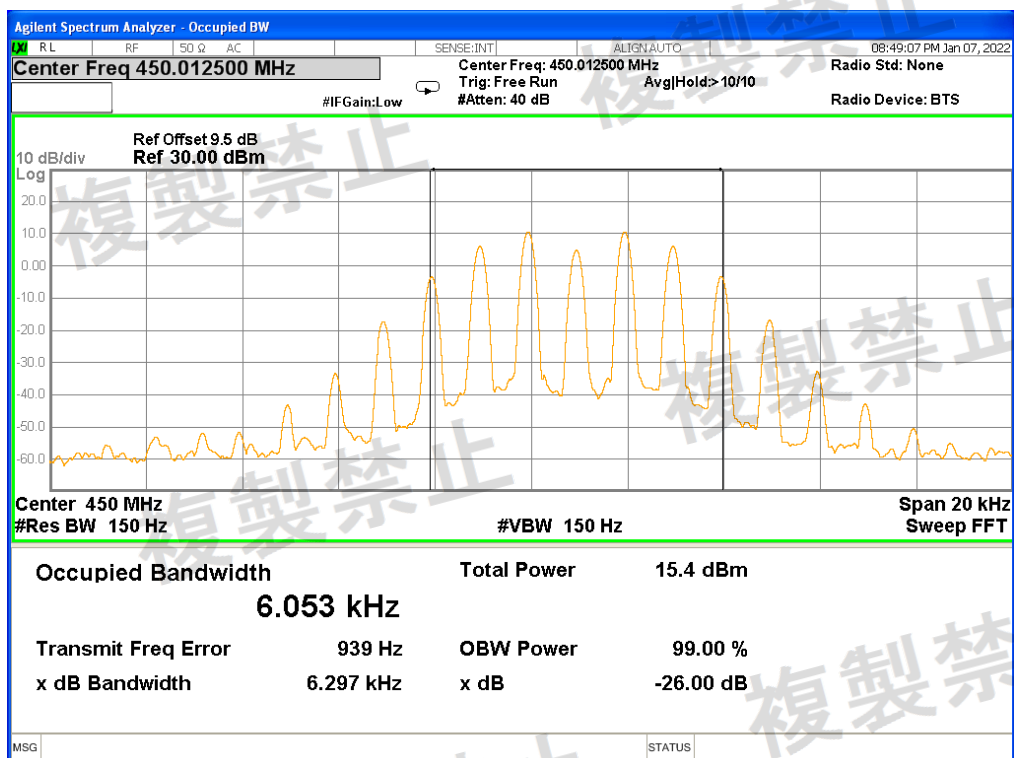
**7.4 TEST RESULT**

Mode 1

DC Voltage		Channel (MHz)	Occupied Bandwidth (KHz)	Limit (KHz)
Vnom(V)	3.7	Low	6.053	≤8.5
		Mid	6.022	
		High	6.037	

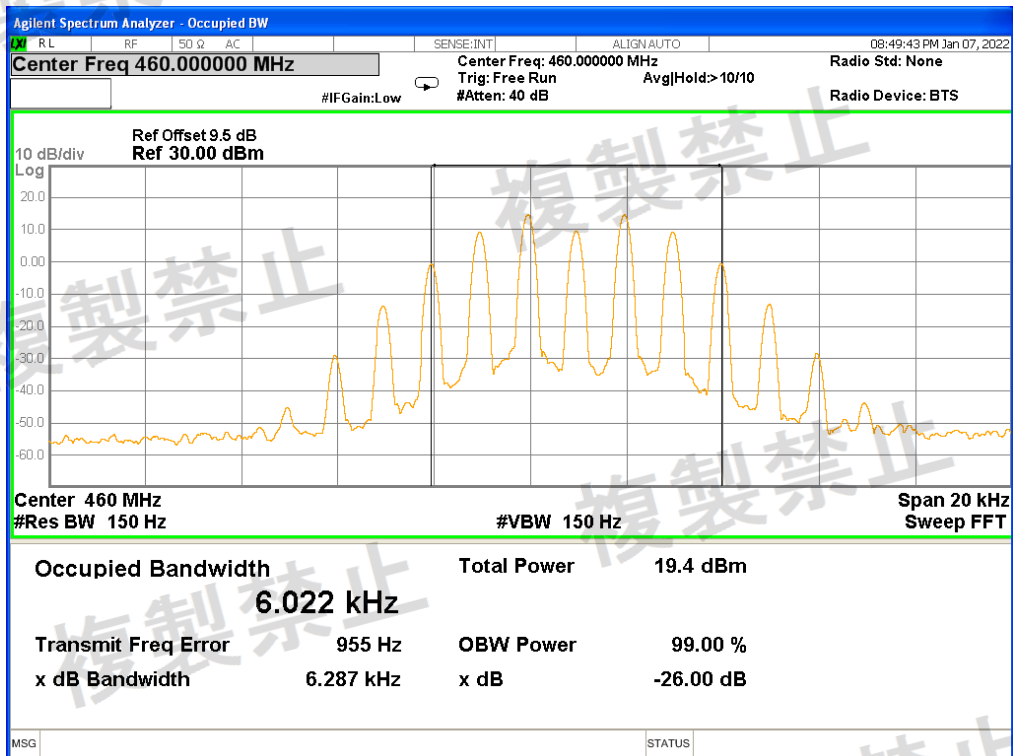
Test Plot

Low channel

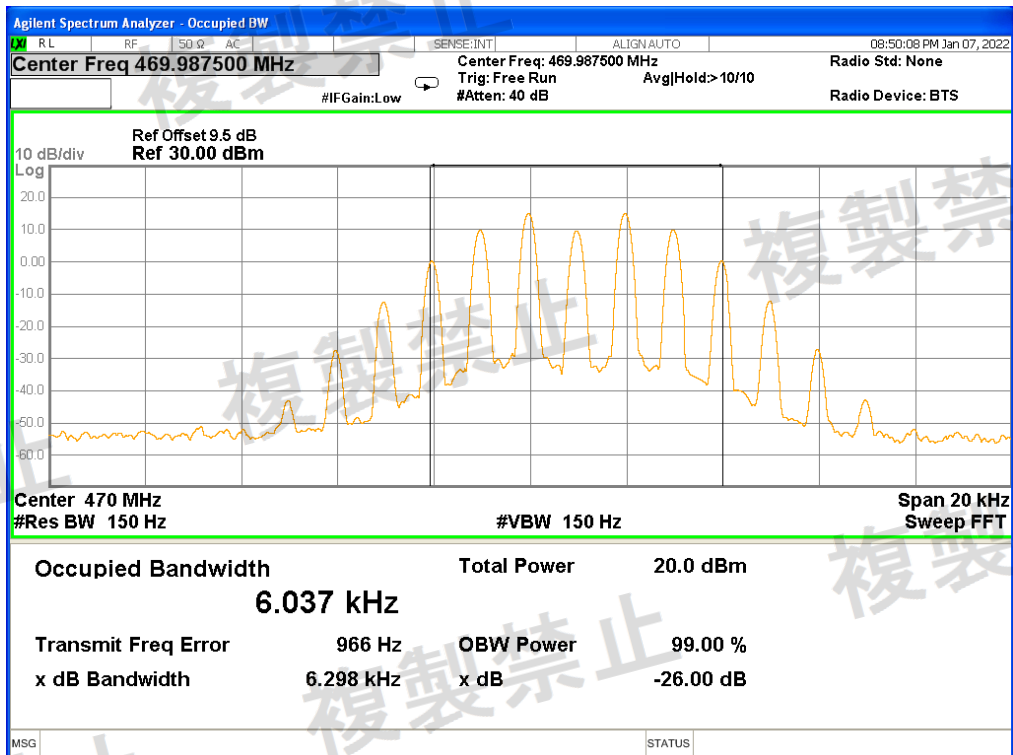




## Middle channel



## High channel





## 8. UNWANTED EMISSION STRENGTH

### 8.1 LIMIT

Item	Max output power	Limits
Unwanted Emission Strength	Over 25W	1mW or less, and -70dBc
	1-25W	2.5μW or less
	1W or less	25μW or less

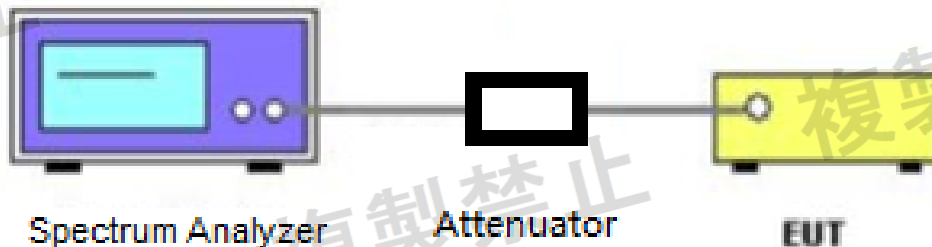
### 8.2 MEASURING INSTRUMENTS AND SETTING

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	0.009-30MHz: 10KHz/10KHz
	30-1000MHz: 100KHz/100KHz
	Above 1GHz: 1 MHz/1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

### 8.3 TEST PROCEDURES

1. EUT have transmitted the maximum modulation signal and fixed channelize.
2. SA adjusted to start frequency 9KHz and stop frequency 12750MHz Then to mark peak reading value + cable loss shall be less than 25μW.
3. If the Result\_Value is over the requirement, take total sum of 100MHz or 10MHz or 1MHz band centered at the spur frequency like ACLP measurement as Result\_Value.

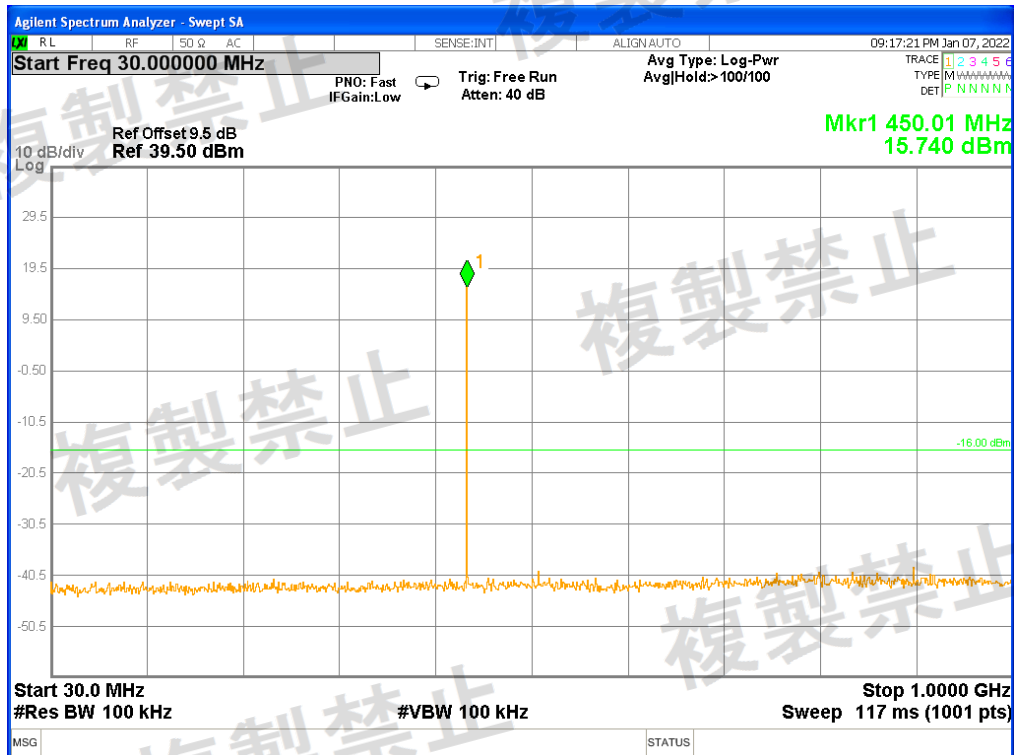
### 8.4 TEST SETUP



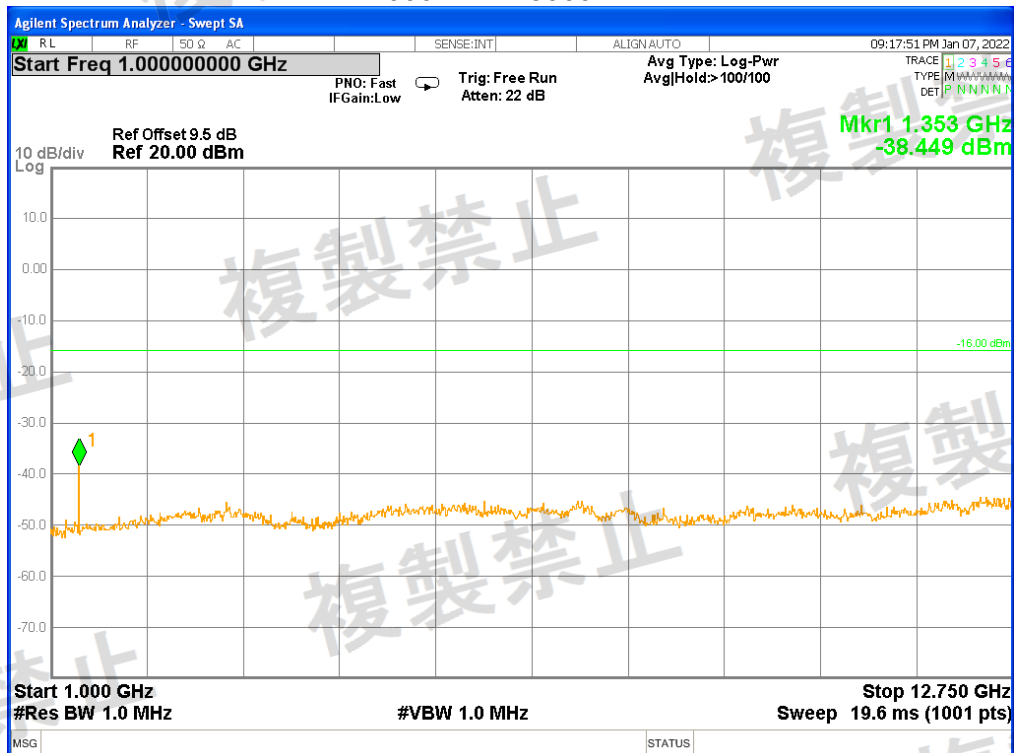


## 8.5 TEST RESULT

TX

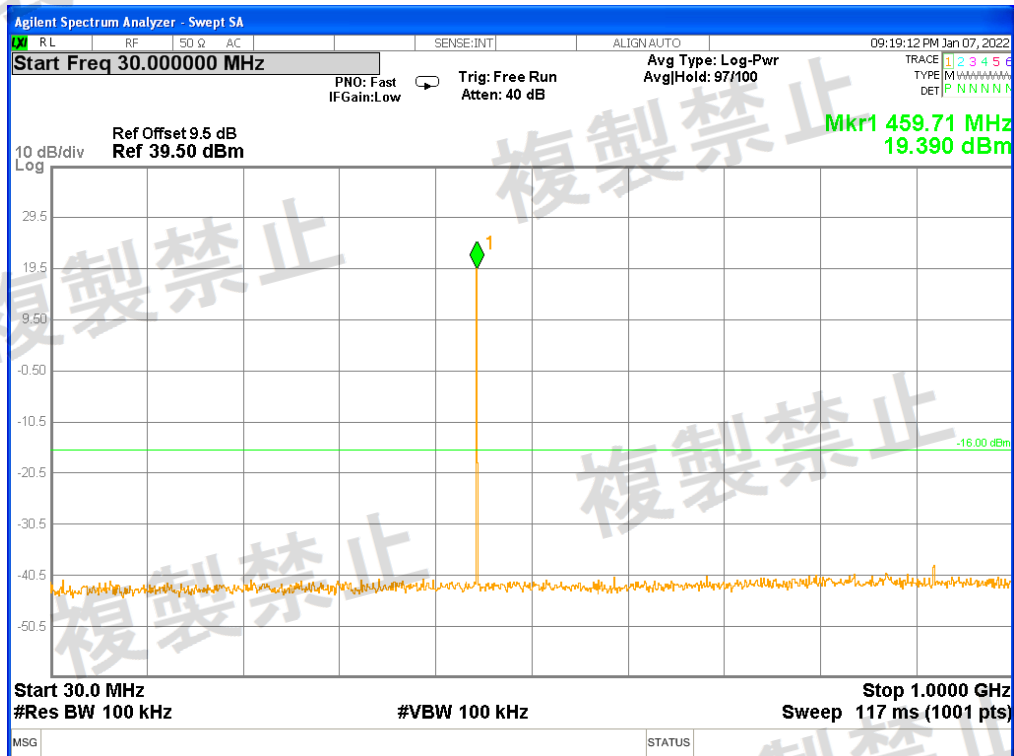
Low channel  
30MHz~1000MHz

1000MHz~13000MHz

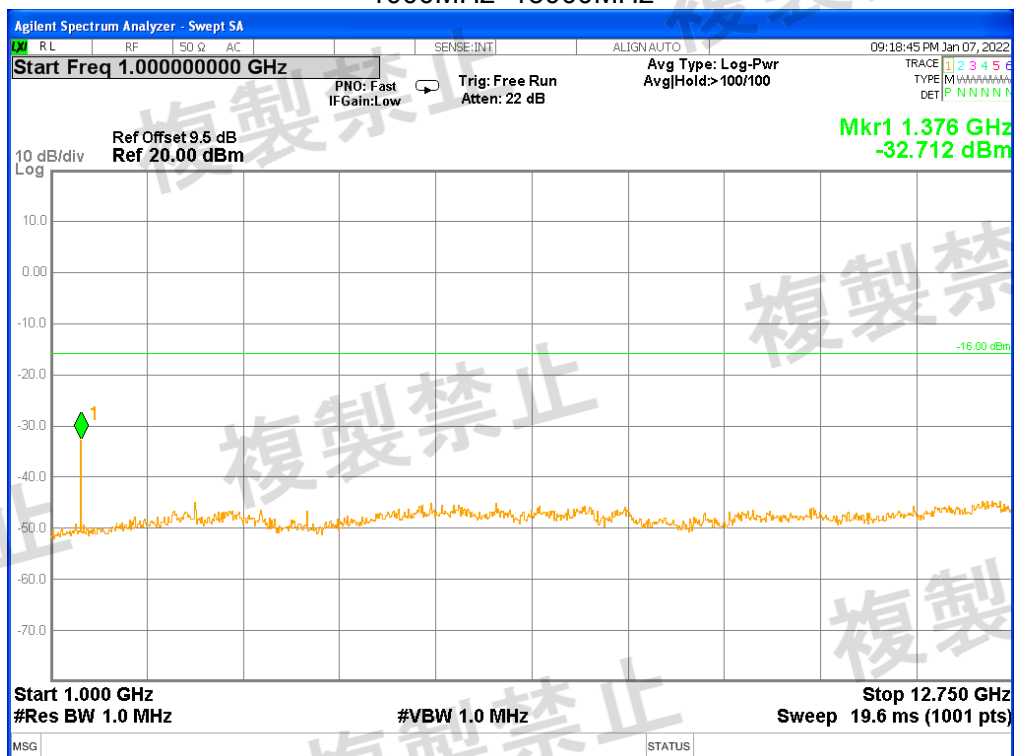




Middle channel  
30MHz~1000MHz



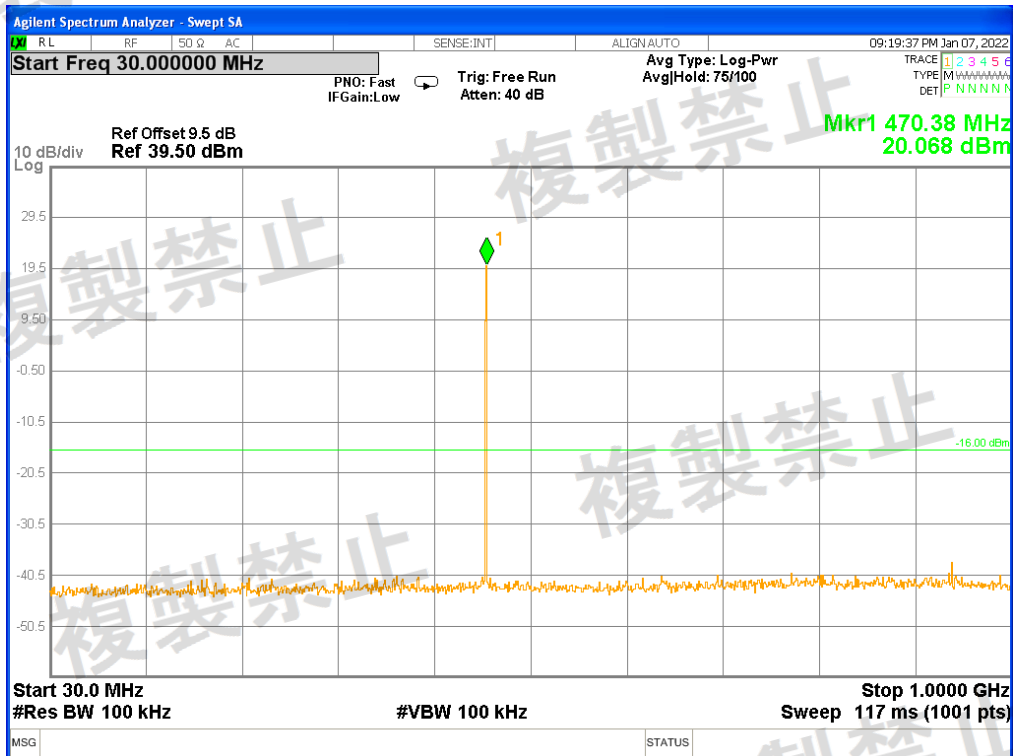
1000MHz~13000MHz



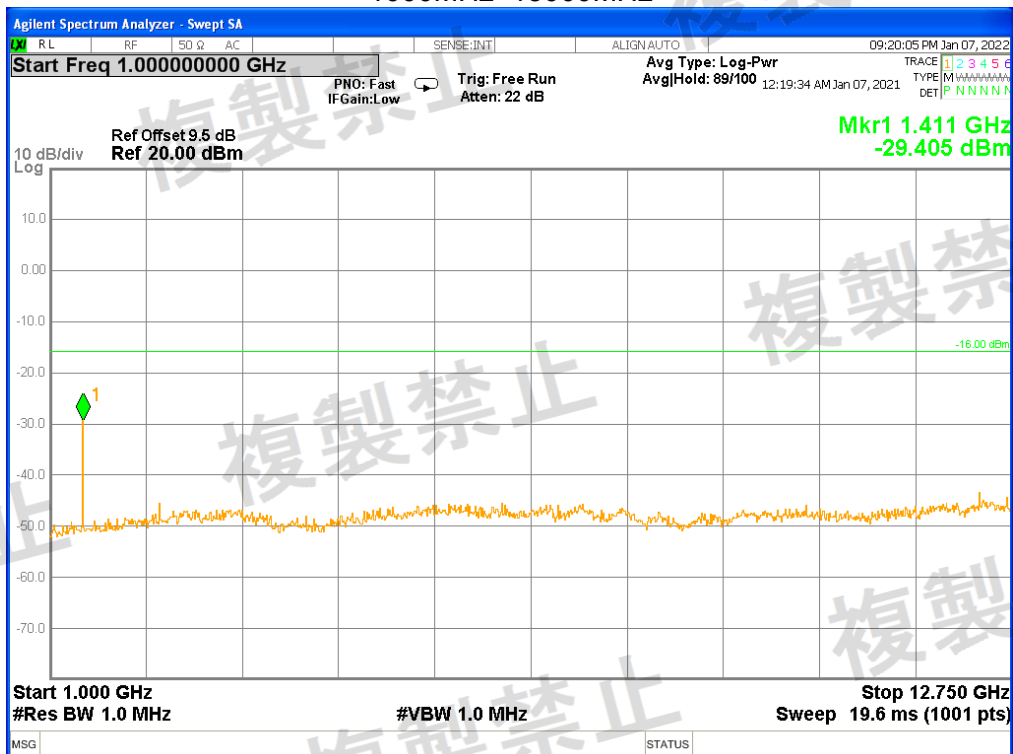




High channel  
30MHz~1000MHz



1000MHz~13000MHz





## 9. SECONDARY RADIATED EMISSION STRENGTH

### 9.1 LIMIT

Item	Limits
Secondary Radiated Emission Strength	$\leq 4\text{nW}$

### 9.2 MEASURING INSTRUMENTS AND SETTING

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	0.009-30MHz: 10KHz/10KHz
	30-1000MHz: 100KHz/100KHz
	Above 1GHz: 1 MHz/1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

### 9.3 TEST PROCEDURES

1. EUT Set to the specified frequency and stop sending and receiving status.
2. SA adjusted to start frequency 9KHz and stop frequency 12750MHz Then to mark peak reading value + cable loss shall be less than 4nW.
3. If the Result\_Value is over the requirement, take total sum of 100MHz or 10MHz or 1MHz band centered at the spur frequency like ACLP measurement as Result\_Value.

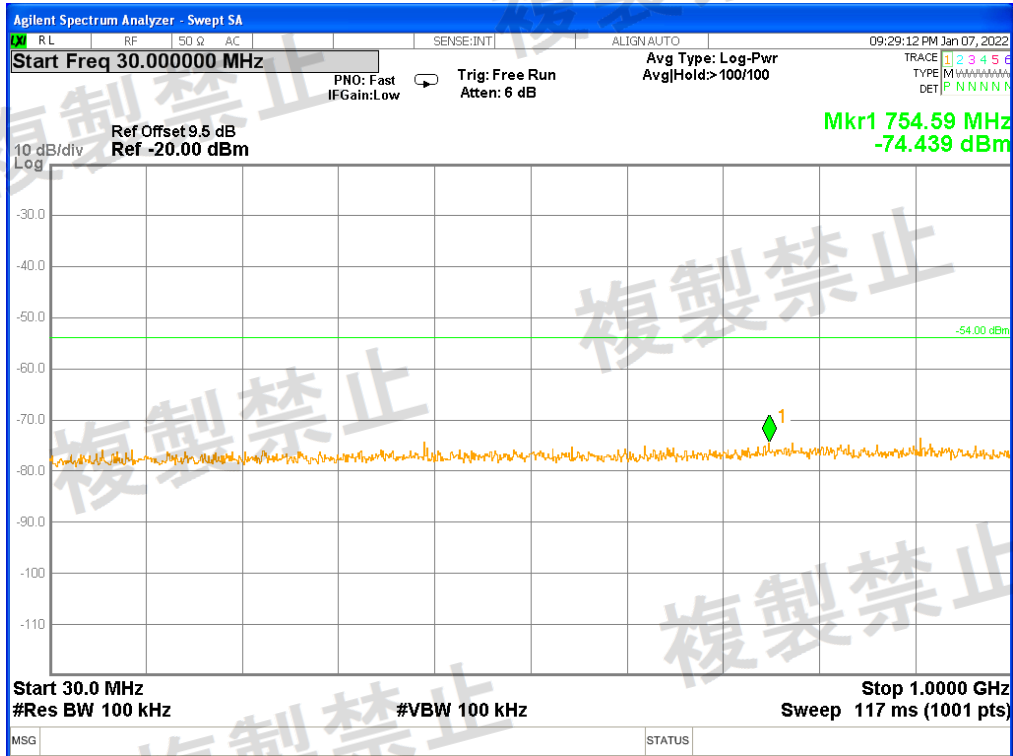
### 9.4 TEST SETUP



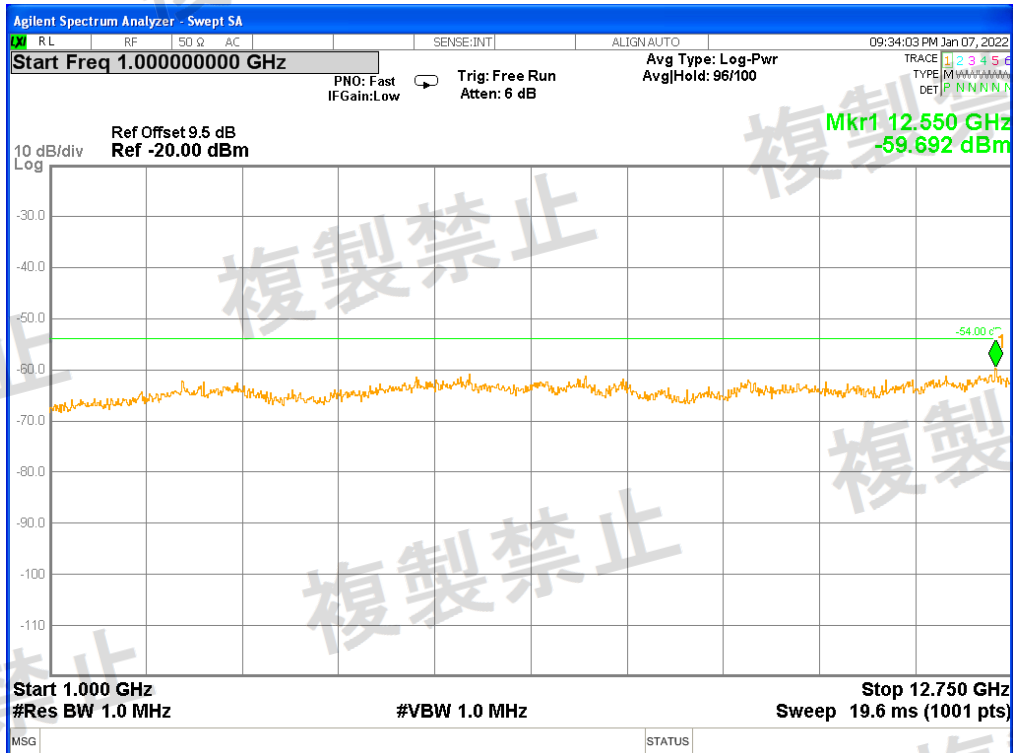


## 9.5 TEST RESULT

RX

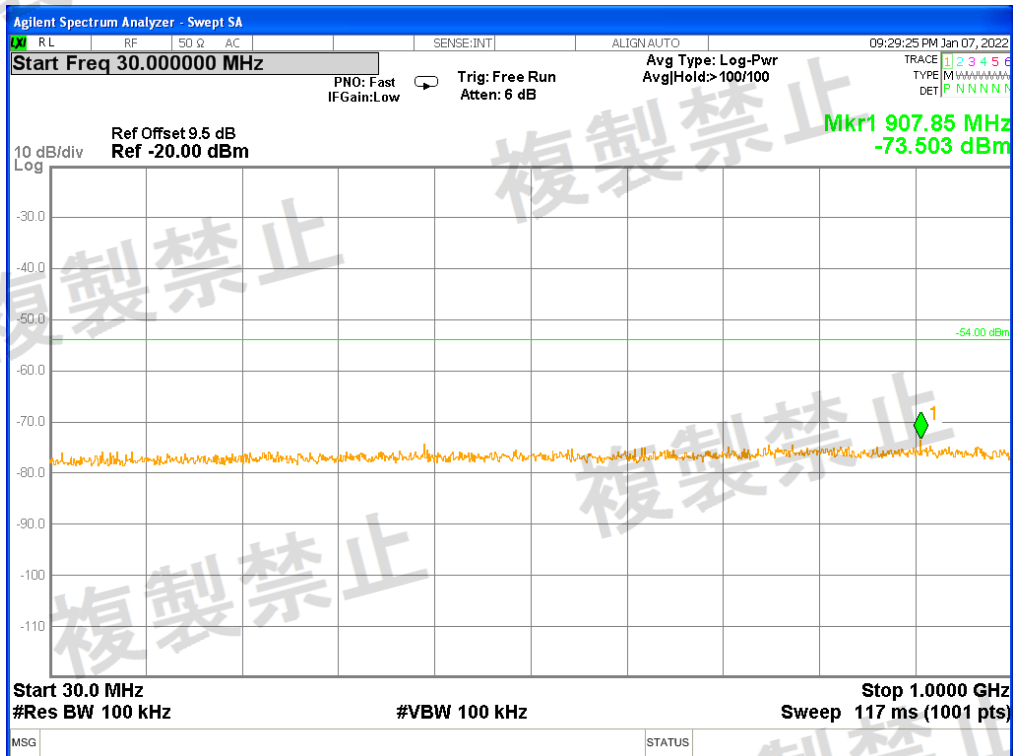
Low channel  
30MHz~1000MHz

1000MHz~13000MHz

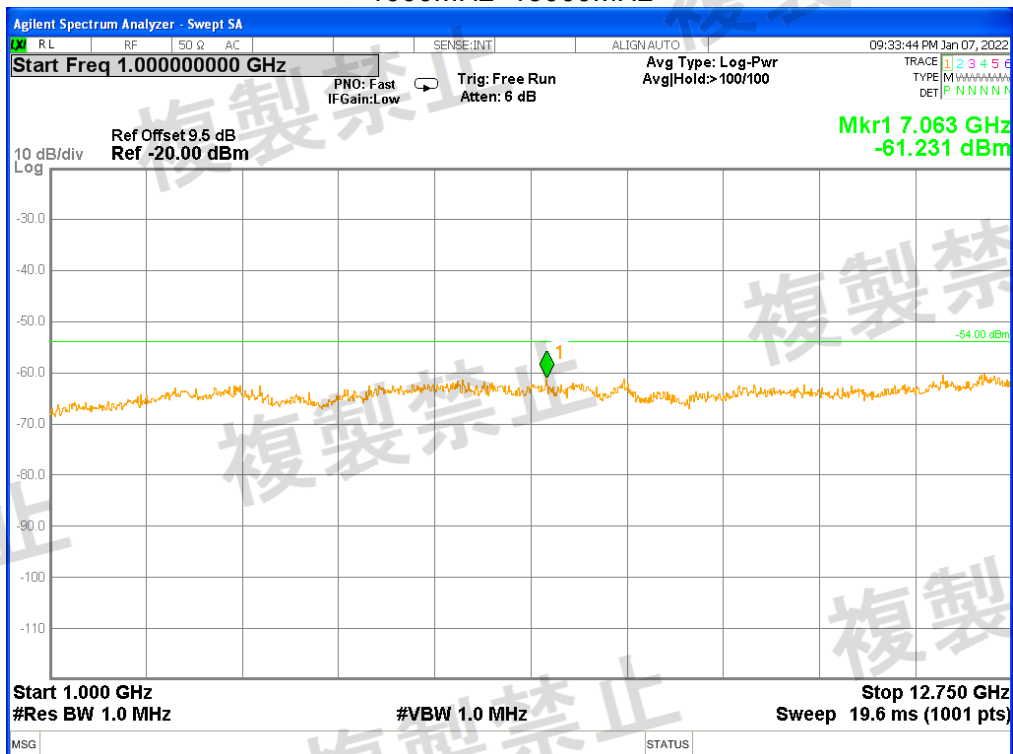




Middle channel  
30MHz~1000MHz

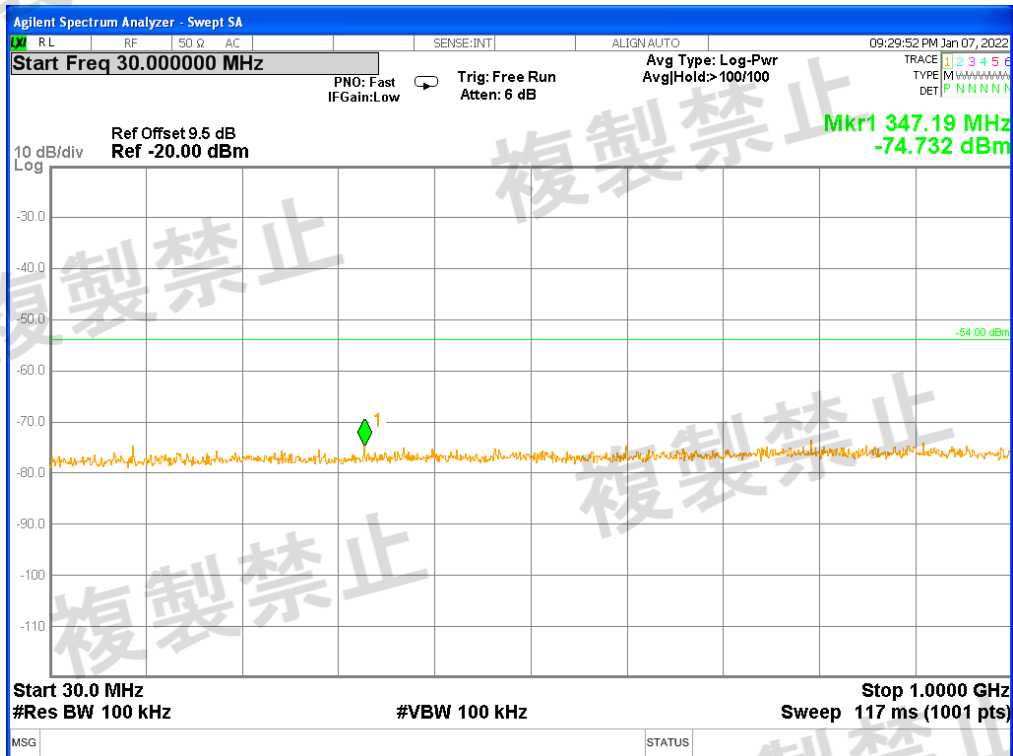


1000MHz~13000MHz

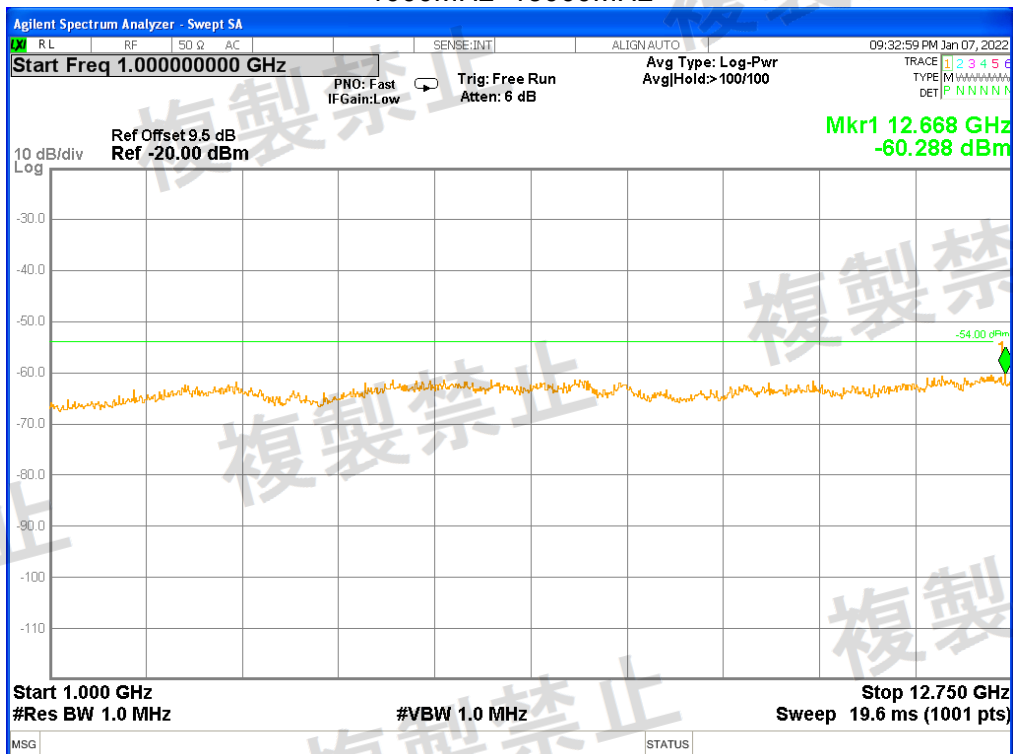




High channel  
30MHz~1000MHz



1000MHz~13000MHz





## 10. MAXIMUM FREQUENCY DEVIATION

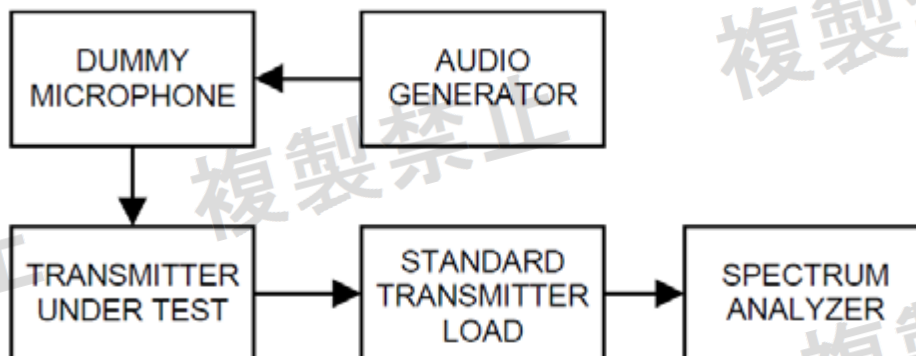
### 10.1 LIMIT

Item	Limits
Maximum frequency deviation	Shall not exceed $\pm 2.5$ kHz

### 10.2 TEST PROCEDURES

1. Connect the equipment as illustrated.
2. Adjust the transmitter per the manufacturer's procedure for full rated system deviation
3. Set the test receiver to measure peak positive deviation. Set the audio bandwidth for  $\leq 0.25$  Hz to  $\geq 15,000$  Hz. Turn the de-emphasis function off
4. Apply a 1000 Hz modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain 60% of full rated system deviation, this level is as a reference (0dB) and vary the input level from  $-20$  to  $+20$  dB.
5. Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level
6. Repeat step 4-5 with input frequency changing to 300Hz, 1000Hz, 1500Hz, 2500Hz and 3000Hz in sequence.

### 10.3 TEST SETUP

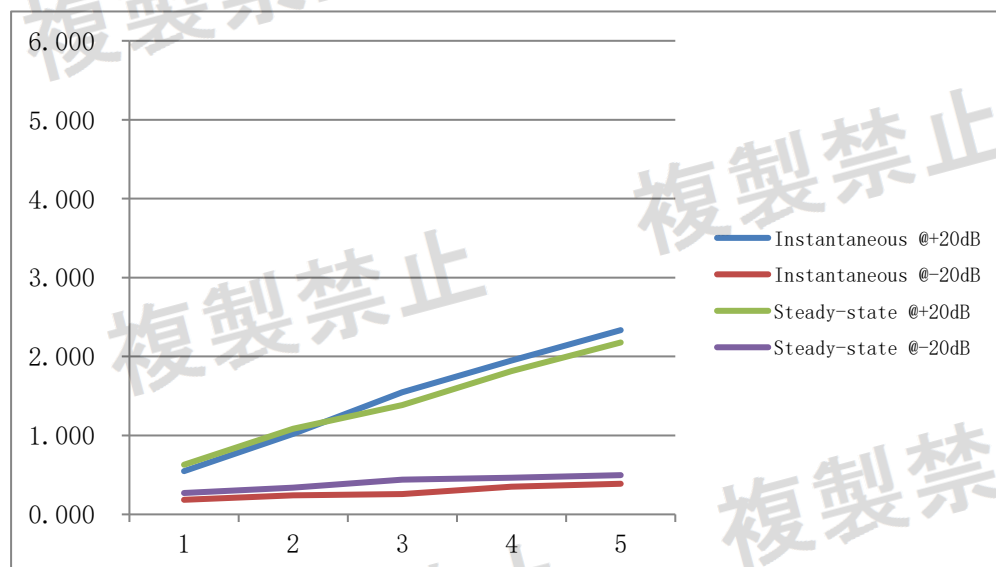




**10.4 TEST RESULT**

(Modulation Type:FM,Channel Separation:12.5kHz)

Audio Frequency	Instantaneous		Steady-state		Limit (kHz)	Result
(Hz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)		
300	0.548	0.185	0.629	0.271	±2.5	Pass
1000	1.022	0.243	1.084	0.338		
1500	1.547	0.258	1.384	0.441		
2500	1.948	0.349	1.817	0.466		
3000	2.334	0.388	2.178	0.497		





複製禁止

Report No.: LGT22A012RF02

## 11. EUT TEST PHOTO

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

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