



**中认信通**

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



# TEST REPORT

**Applicant: Cobra Electronics Corporation**

Address: 1701 Golf Road, Suite 3-900 Rolling Meadows, IL 60008 United States

**FCC ID: BBO29LX01**

**Product Name: CB Radio**

**Standard(s): 47 CFR Part 95 Subpart D  
ANSI C63.26-2015  
ANSI/TIA 603-E-2016**

The above equipment has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

**Report Number: CR230740637-00**

**Date Of Issue: 2023/10/13**

**Reviewed By: Calvin Chen**

*Calvin Chen*

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## Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

## Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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**DOCUMENT REVISION HISTORY**

<b>Revision Number</b>	<b>Report Number</b>	<b>Description of Revision</b>	<b>Date of Revision</b>
1.0	CR230740637-00	Original Report	2023/10/13

## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment under Test (EUT)

<b>EUT Name:</b>	CB Radio
<b>EUT Model:</b>	CCBP29LX01
<b>Multiple Model(s):</b>	CCBP29LXOE
<b>Trade Name:</b>	Cobra
<b>Modulation Type:</b>	AM/FM
<b>Emission Designator:</b>	A3E/F3E
<b>Operation Frequency:</b>	26.965-27.405MHz
<b>Rated Output Power:</b>	4 Watts
<b>Rated Input Voltage:</b>	13.8Vdc from DC Source
<b>Serial Number:</b>	2890-2
<b>EUT Received Date:</b>	2023/7/19
<b>EUT Received Status:</b>	Good
Note: The Multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer. All tests were performed with model: CCBP29LX01.	

### Operation Frequency Detail:

Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	<b>26.965</b>	11	27.085	21	27.215	31	27.315
2	26.975	12	27.105	22	27.225	32	27.325
3	26.985	13	27.115	23	27.255	33	27.335
4	27.005	14	27.125	24	27.235	34	27.345
5	27.015	15	27.135	25	27.245	35	27.355
6	27.025	16	27.155	26	27.265	36	27.365
7	27.035	17	27.165	27	27.275	37	27.375
8	27.055	18	27.175	28	27.285	38	27.385
9	27.065	<b>19</b>	<b>27.185</b>	29	27.295	39	27.395
10	27.075	20	27.205	30	27.305	<b>40</b>	<b>27.405</b>
Per C63.26-2015, section 5.1, the frequency in bold was performed the test.							

### Antenna Information Detail ▲:

Antenna Connector	Antenna Type	input impedance (Ohm)	Antenna Gain
UHF M Connector	External	50	0 dBi

### Accessory Information:

Accessory Description	Manufacturer	Model	Parameters
/	/	/	/

## 1.2 Description of Test Configuration

### 1.2.1 EUT Operation Condition:

<b>EUT Operation Mode:</b>	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.
<b>Equipment Modifications:</b>	No
<b>EUT Exercise Software:</b>	No

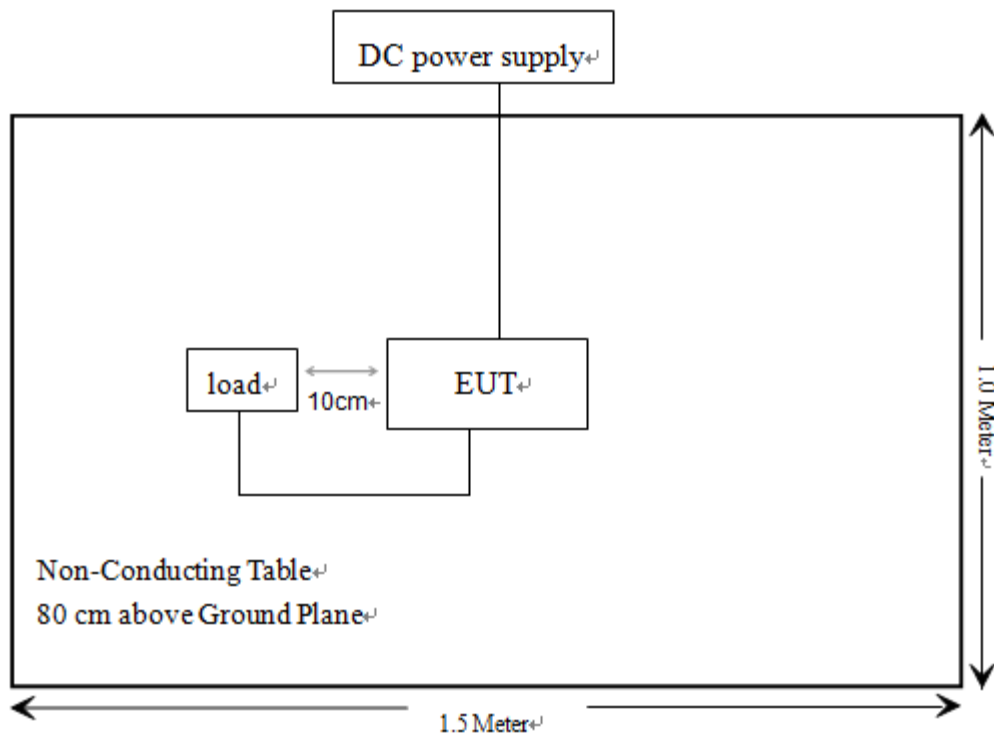
### 1.2.2 Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
unknown	load	unknown	unknown
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386

### 1.2.3 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RF Cable	NO	NO	0.4	load	EUT
DC cable	NO	NO	1.2	DC Power Supply	EUT

### 1.2.4 Block Diagram of Test Setup



### 1.3 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Unwanted Emissions, radiated	30M~200MHz: 4.15 dB, 200M~1GHz: 5.61 dB, 1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB
Unwanted Emissions, conducted	±1.26 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
RF Frequency	±0.082 × 10 <sup>-6</sup>
Audio Frequency/Low Pass Filter Response	4.02%
Modulation Limiting	1.19%



## 2. SUMMARY OF TEST RESULTS

Standard/Rule(s)	Description of Test	Results
§2.1046, §95.967	RF Output Power	Compliant
§2.1047, §95.975	Modulation Characteristic	Compliant
§2.1049, §95.973, §95.979	Occupied Bandwidth & Emission Mask	Compliant
§2.1053, §95.979	Spurious Radiation Emission	Compliant
§2.1051, §95.979	Conducted Spurious at Antenna Terminals	Compliant
§2.1055, §95.965	Frequency Stability	Compliant
§1.1310, §2.1091	RF Exposure Evaluation	Compliant

### 3. REQUIREMENTS AND TEST PROCEDURES

#### 3.1 RF OUTPUT POWER

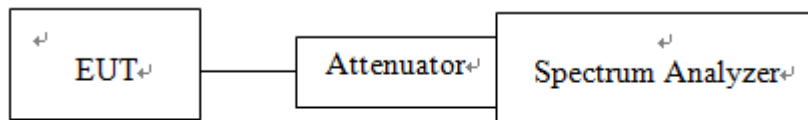
##### 3.1.1 Applicable Standard

FCC §95.967:

Each CBRS transmitter type must be designed such that the transmitter power can not exceed the following limits:

(a) When transmitting amplitude modulated (AM) voice signals or frequency modulated (FM) voice signals, the mean carrier power must not exceed 4 Watts.

##### 3.1.2 EUT Setup Block Diagram



Note: the path loss(cable loss and attenuator) has included into the plot.

##### 3.1.3 Test Procedure

Conducted RF Output Power:

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Spectrum Analyzer Setting:

R B/W	Video B/W
10 kHz	30 kHz

## 3.2 MODULATION CHARACTERISTIC

### 3.2.1 Applicable Standard

FCC §95.975

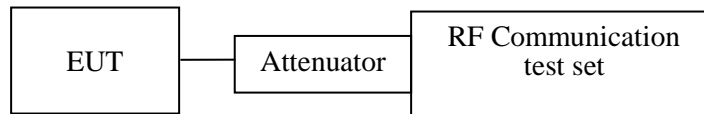
Each CBRS transmitter type must be designed such that the modulation characteristics are in compliance with the rules in this section.

(a) When emission type A3E is transmitted with voice modulation, the modulation percentage must be at least 85%, but not more than 100%.

(b) When emission type A3E is transmitted by a CBRS transmitter having a transmitter output power of more than 2.5 W, the transmitter must contain a circuit that automatically prevents the modulation percentage from exceeding 100%.

(c) When emission type F3E is transmitted the peak frequency deviation shall not exceed  $\pm 2$  kHz.

### 3.2.2 EUT Setup Block Diagram



### 3.2.3 Test Procedure

EIA/TIA-382-A Section 24.2 and section 25.2.  
ANSI/TIA-603-E-2016 Section 2.2.3

### 3.3 OCCUPIED BANDWIDTH AND EMISSION MASK

#### 3.3.1 Applicable Standard

FCC §95.973& §95.979

Each CBRS transmitter type must be designed such that the occupied bandwidth does not exceed the authorized bandwidth for the emission type under test.

(a) AM and FM. The authorized bandwidth for emission types A3E and F3E is 8 kHz.

(b) SSB. The authorized bandwidth for emission types J3E, R3E, and H3E is 4 kHz.

According to §95.979: Each CBRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section.

(a) Attenuation requirements. The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) as specified in the applicable paragraphs listed in the following table:

Emission type	Paragraph
A3E, F3E	(1), (3), (5), (6)
H3E, J3E, R3E	(2), (4), (5), (6)

(1) 25 dB (decibels) in the frequency band 4 kHz to 8 kHz removed from the channel center frequency;

(2) 25 dB in the frequency band 2 kHz to 6 kHz removed from the channel center frequency;

(3) 35 dB in the frequency band 8 kHz to 20 kHz removed from the channel center frequency;

(4) 35 dB in the frequency band 6 kHz to 10 kHz removed from the channel center frequency;

(5)  $53 + 10 \log (P)$  dB in any frequency band removed from the channel center frequency by more than 250% of the authorized bandwidth.

(6) 60 dB in any frequency band centered on a harmonic (*i.e.*, an integer multiple of two or more times) of the carrier frequency.

(b) *Measurement bandwidths.* The power of unwanted emissions in the frequency bands specified in paragraphs (a)(1) through (4) of this section is measured with a reference bandwidth of 300 Hz. The power of unwanted emissions in the frequency ranges specified in paragraphs (a)(5) and (6) of this section is measured with a reference bandwidth of at least 30 kHz.

(c) *Measurement conditions and procedures.* Subject to additional measurement standards and procedures established pursuant to part 2, subpart J, the following conditions and procedures must be used.

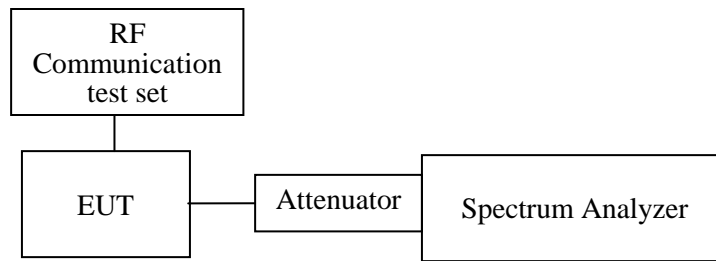
(1) The unwanted emissions limits requirements in this section must be met both with and without the connection of permitted attachments, such as external speakers, microphones, power cords and/or antennas.

(2) Either mean power output or peak envelope power output may be used for measurements, as appropriate for the emission type under test, provided that the same type of power measurement is used for both the transmitter output power and the power of the unwanted emissions.

#### 3.3.2 Judgment

Emission type is A3E, F3E.

### 3.3.3 EUT Setup Block Diagram



Note: the path loss(cable loss and attenuator) has included into the plot.

### 3.3.4 Test Procedure

EIA/TIA-382-A Section 23.2.

ANSI/TIA-603-E-2016 Section 2.2.11

### 3.4 SPURIOUS RADIATION EMISSION

#### 3.4.1 Applicable Standard

FCC §2.1053 and §95.979

Each CBRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section.

(a) *Attenuation requirements.* The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) as specified in the applicable paragraphs listed in the following table:

Emission type	Paragraph
A3E, F3E	(1), (3), (5), (6)
H3E, J3E, R3E	(2), (4), (5), (6)

(1) 25 dB (decibels) in the frequency band 4 kHz to 8 kHz removed from the channel center frequency;

(2) 25 dB in the frequency band 2 kHz to 6 kHz removed from the channel center frequency;

(3) 35 dB in the frequency band 8 kHz to 20 kHz removed from the channel center frequency;

(4) 35 dB in the frequency band 6 kHz to 10 kHz removed from the channel center frequency;

(5)  $53 + 10 \log (P)$  dB in any frequency band removed from the channel center frequency by more than 250% of the authorized bandwidth.

(6) 60 dB in any frequency band centered on a harmonic (*i.e.*, an integer multiple of two or more times) of the carrier frequency.

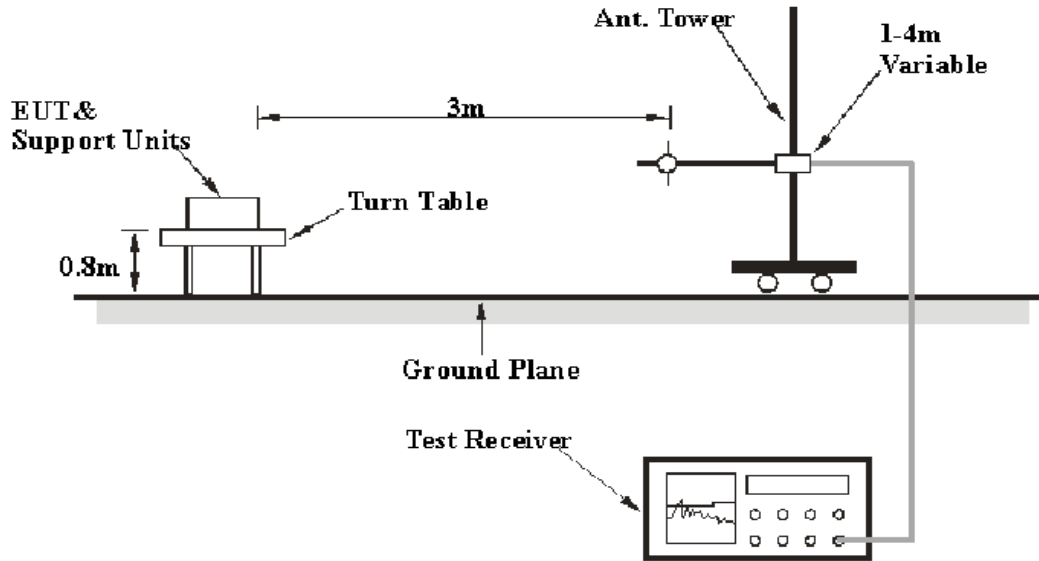
(b) *Measurement bandwidths.* The power of unwanted emissions in the frequency bands specified in paragraphs (a)(1) through (4) of this section is measured with a reference bandwidth of 300 Hz. The power of unwanted emissions in the frequency ranges specified in paragraphs (a)(5) and (6) of this section is measured with a reference bandwidth of at least 30 kHz.

(c) *Measurement conditions and procedures.* Subject to additional measurement standards and procedures established pursuant to part 2, subpart J, the following conditions and procedures must be used.

(1) The unwanted emissions limits requirements in this section must be met both with and without the connection of permitted attachments, such as external speakers, microphones, power cords and/or antennas.

(2) Either mean power output or peak envelope power output may be used for measurements, as appropriate for the emission type under test, provided that the same type of power measurement is used for both the transmitter output power and the power of the unwanted emissions.

### 3.4.2 EUT Setup Block Diagram



The radiated emissions were performed in the 3 meters distance, using the setup accordance with the ANSI C63.26-2015. The specification used was the FCC Part 95 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

### 3.4.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9kHz to 1GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
9 kHz – 150 kHz	300 Hz	1 kHz	/	Peak
150 kHz –30 MHz	10 kHz	30 kHz	/	Peak
30 MHz – 1000 MHz	100 kHz	300 kHz	120kHz	Peak

### 3.4.4 Test Procedure

- a) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.
- b) Each emission under consideration shall be evaluated:
  - 1) Raise and lower the measurement antenna in accordance 5.5.2, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
  - 2) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.

- 3) Return the turntable to the azimuth where the highest emission amplitude level was observed.
  - 4) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.
  - 5) Record the measured emission amplitude level and frequency using the appropriate RBW.
- c) Repeat step b) for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.
  - d) Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the initial EUT measurement.
  - e) Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.
  - f) Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.
  - g) For each emission that was detected and measured in the initial test [i.e., in step b) and step c)]:
    - 1) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.
    - 2) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step b) and step c).
    - 3) Record the output power level of the signal generator when equivalence is achieved in step 2).
  - h) Repeat step e) through step g) with the measurement antenna oriented in the opposite polarization.
  - i) Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:

$$P_e = P_s(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$

where

$P_e$  = equivalent emission power in dBm

$P_s$  = source (signal generator) power in dBm

NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.

- j) Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from:  $\text{gain (dBd)} = \text{gain (dBi)} - 2.15 \text{ dB}$ . If necessary, the antenna gain can be calculated from calibrated antenna factor information
- k) Provide the complete measurement results as a part of the test report.



### 3.4.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$\text{Absolute Level} = \text{Substituted Level} - \text{Cable loss} + \text{Antenna Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Absolute Level}$$

### 3.5 CONDUCTED SPURIOUS AT ANTENNA TERMINALS

#### 3.5.1 Applicable Standard

FCC §2.1051 and §95.979

Each CBRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section.

(a) *Attenuation requirements.* The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) as specified in the applicable paragraphs listed in the following table:

Emission type	Paragraph
A3E, F3E	(1), (3), (5), (6)
H3E, J3E, R3E	(2), (4), (5), (6)

(1) 25 dB (decibels) in the frequency band 4 kHz to 8 kHz removed from the channel center frequency;

(2) 25 dB in the frequency band 2 kHz to 6 kHz removed from the channel center frequency;

(3) 35 dB in the frequency band 8 kHz to 20 kHz removed from the channel center frequency;

(4) 35 dB in the frequency band 6 kHz to 10 kHz removed from the channel center frequency;

(5)  $53 + 10 \log(P)$  dB in any frequency band removed from the channel center frequency by more than 250% of the authorized bandwidth.

(6) 60 dB in any frequency band centered on a harmonic (*i.e.*, an integer multiple of two or more times) of the carrier frequency.

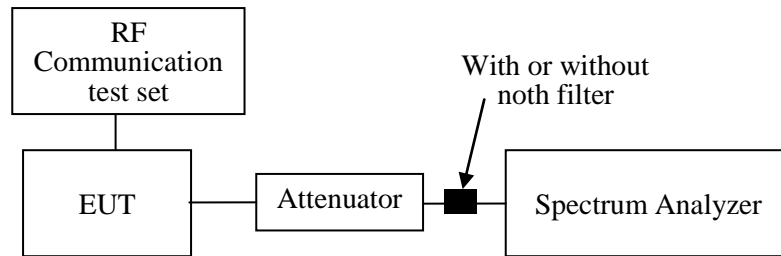
(b) *Measurement bandwidths.* The power of unwanted emissions in the frequency bands specified in paragraphs (a)(1) through (4) of this section is measured with a reference bandwidth of 300 Hz. The power of unwanted emissions in the frequency ranges specified in paragraphs (a)(5) and (6) of this section is measured with a reference bandwidth of at least 30 kHz.

(c) *Measurement conditions and procedures.* Subject to additional measurement standards and procedures established pursuant to part 2, subpart J, the following conditions and procedures must be used.

(1) The unwanted emissions limits requirements in this section must be met both with and without the connection of permitted attachments, such as external speakers, microphones, power cords and/or antennas.

(2) Either mean power output or peak envelope power output may be used for measurements, as appropriate for the emission type under test, provided that the same type of power measurement is used for both the transmitter output power and the power of the unwanted emissions.

### 3.5.2 EUT Setup Block Diagram



Note: the path loss(cable loss and attenuator) has included into the plot.

### 3.5.3 Test Procedure

EIA/TIA-382-A Section 21.2.

ANSI/TIA-603-E-2016 Section 2.2.13

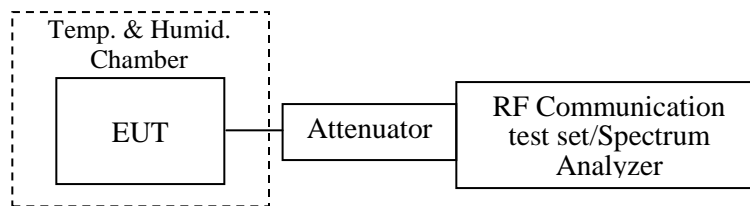
### 3.6 FREQUENCY STABILITY

#### 3.6.1 Applicable Standard

FCC §95.965

Each CBRS transmitter type must be designed such that the transmit carrier frequency (or in the case of SSB transmissions, the reference frequency) remains within 50 parts-per-million of the channel center frequencies specified in §95.963 under all normal operating conditions.

#### 3.6.2 Test setup:



#### 3.6.3 Test Procedure:

Frequency Stability vs. Temperature: The equipment under test was connected to an external AC/DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The power cable and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the counter.

## 4. TEST DATA AND RESULTS

### 4.1 RF OUTPUT POWER

Serial Number:	289O-2	Test Date:	2023/10/11-2023/10/13
Test Site:	RF	Test Mode:	Transmitting
Tester:	Rod Luo	Test Result:	Pass

#### Environmental Conditions:

Temperature: (°C)	24-28	Relative Humidity: (%)	45-55	ATM Pressure: (kPa)	101
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#### Test Equipment List and Details:

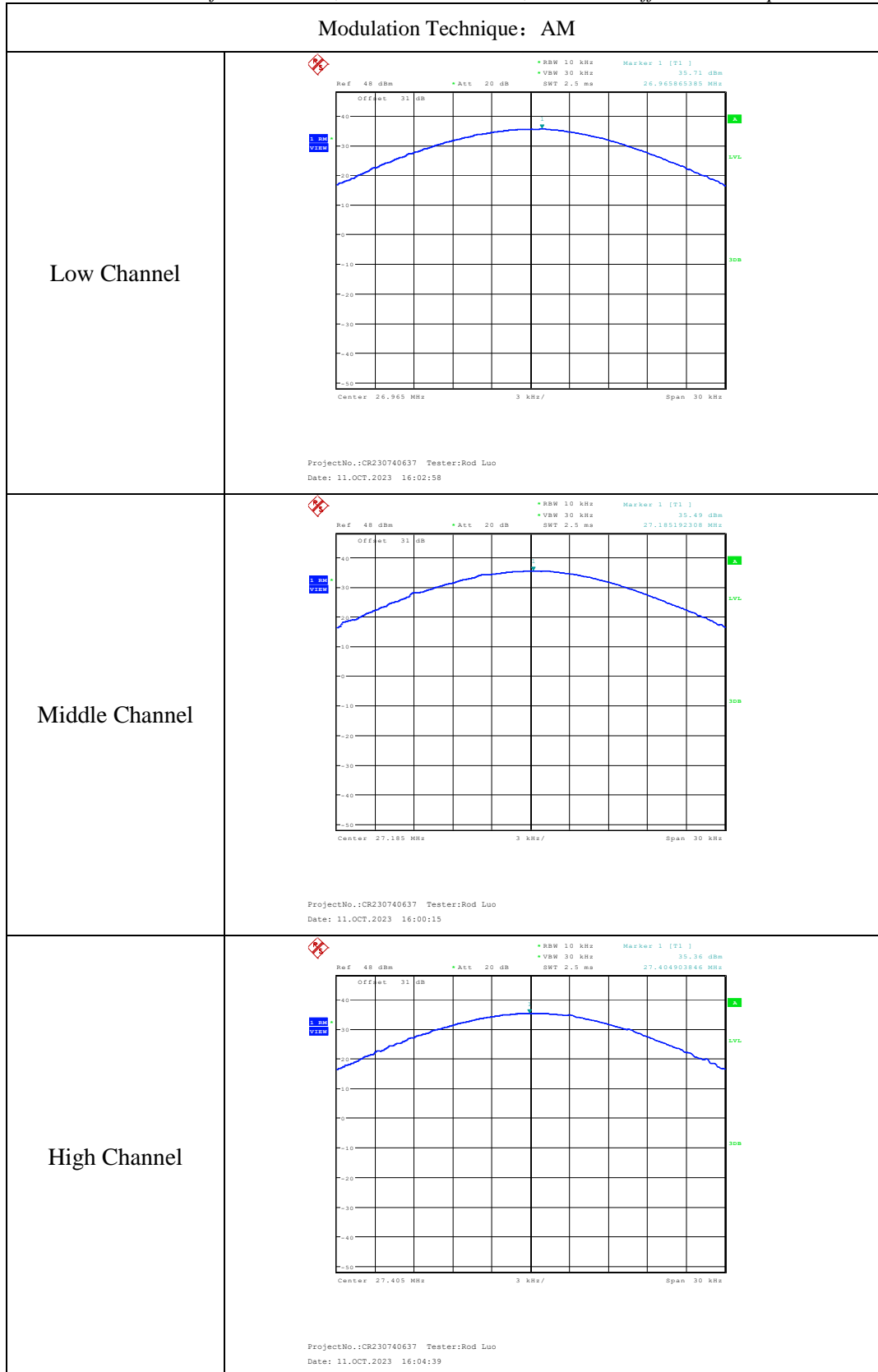
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200120	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A
Weinschel	Coaxial Attenuator	53-20-34	LN751	Each time	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### Test Data:

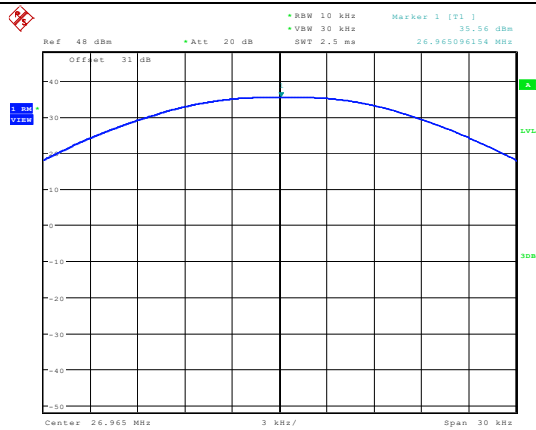
Modulate	Fc(MHz)	Conducted Output power (dBm)	Power(Watt)	Limit(Watt)
AM	26.965	35.71	3.72	4.0
AM	27.185	35.49	3.54	4.0
AM	27.405	35.36	3.44	4.0
FM	26.965	35.56	3.60	4.0
FM	27.185	35.54	3.58	4.0
FM	27.405	35.33	3.41	4.0

The 31 dB is the Insertion loss of the RF cable, Coaxial Attenuators, which was offset into the Spectrum Analyzer.



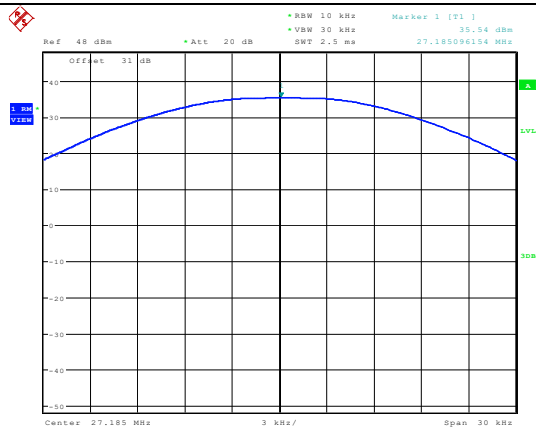
### Modulation Technique: FM

Low Channel



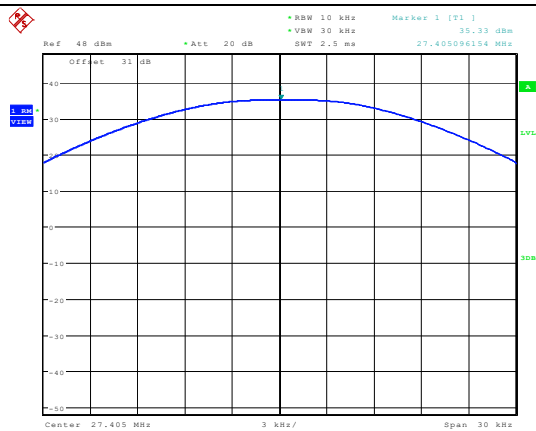
ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 13.OCT.2023 11:13:49

Middle Channel



ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 13.OCT.2023 11:11:24

High Channel



ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 13.OCT.2023 11:21:17

**4.2 MODULATION CHARACTERISTIC**

Serial Number:	289O-2	Test Date:	2023/10/11-2023/10/13
Test Site:	RF	Test Mode:	Transmitting
Tester:	Rod Luo	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24-28	Relative Humidity: (%)	45-55	ATM Pressure: (kPa)	101
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**Test Equipment List and Details:**

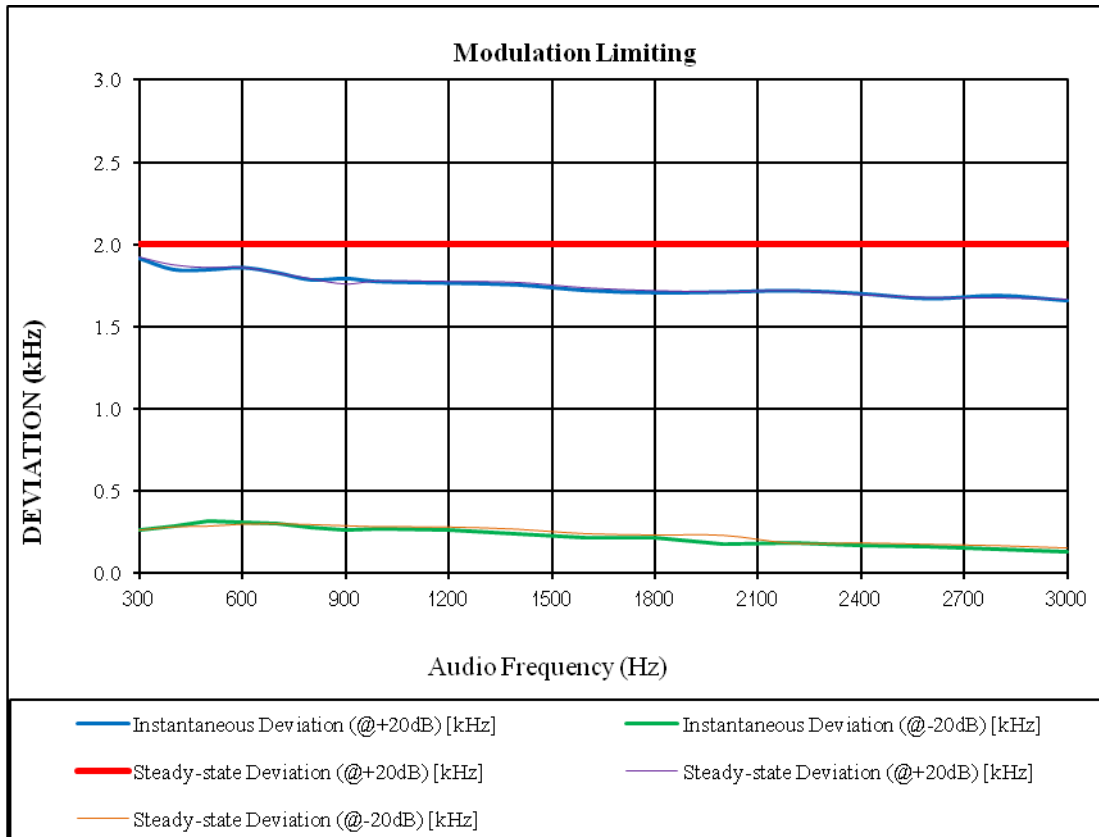
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A
Weinschel	Coaxial Attenuator	53-20-34	LN751	Each time	N/A
HP	RF Communications Test Set	8920A	3438A05209	2023/3/31	2024/3/30

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).



**Test Data:****MODULATION LIMITING (FM)**

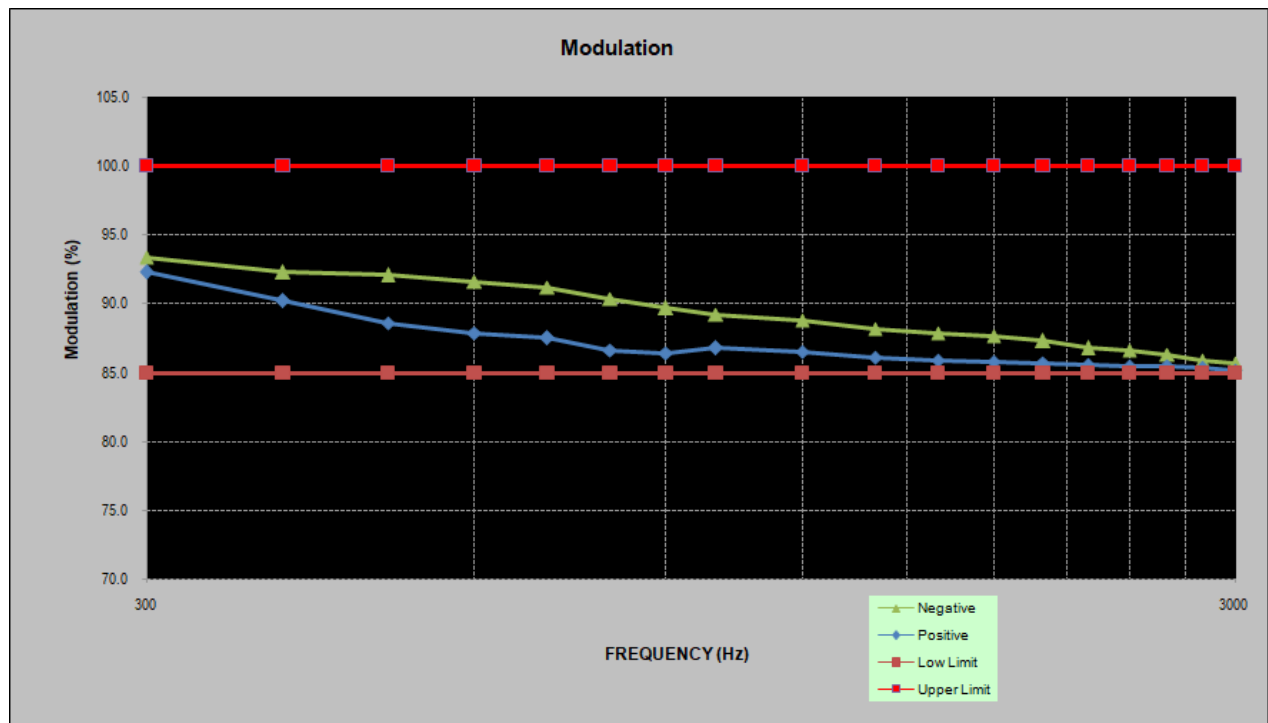
<b>Carrier Frequency: 27.185 MHz</b>					
<b>Audio Frequency (Hz)</b>	<b>Instantaneous</b>		<b>Steady-state</b>		<b>Limit [kHz]</b>
	<b>Deviation (@+20dB) [kHz]</b>	<b>Deviation (@-20dB) [kHz]</b>	<b>Deviation (@+20dB) [kHz]</b>	<b>Deviation (@-20dB) [kHz]</b>	
300	1.915	0.264	1.921	0.258	2.0
400	1.846	0.284	1.873	0.278	2.0
500	1.845	0.312	1.857	0.282	2.0
600	1.858	0.308	1.858	0.294	2.0
700	1.827	0.296	1.824	0.297	2.0
800	1.783	0.275	1.789	0.292	2.0
900	1.791	0.264	1.757	0.285	2.0
1000	1.772	0.271	1.776	0.279	2.0
1200	1.763	0.262	1.773	0.277	2.0
1400	1.752	0.239	1.767	0.264	2.0
1600	1.718	0.216	1.734	0.237	2.0
1800	1.704	0.211	1.717	0.229	2.0
2000	1.708	0.178	1.710	0.227	2.0
2200	1.716	0.179	1.718	0.179	2.0
2400	1.698	0.170	1.692	0.181	2.0
2600	1.667	0.158	1.675	0.173	2.0
2800	1.686	0.146	1.673	0.165	2.0
3000	1.655	0.125	1.664	0.151	2.0



**MODULATION LIMITING (AM)**

Carrier Frequency: 27.185 MHz

Audio Frequency (Hz)	Modulation Level[%]		Low Limit [%]	Upper Limit [%]
	Positive	Negative		
300	92.300	93.400	85.000	100.000
400	90.200	92.300	85.000	100.000
500	88.600	92.100	85.000	100.000
600	87.900	91.600	85.000	100.000
700	87.500	91.200	85.000	100.000
800	86.600	90.400	85.000	100.000
900	86.400	89.700	85.000	100.000
1000	86.800	89.200	85.000	100.000
1200	86.500	88.800	85.000	100.000
1400	86.100	88.200	85.000	100.000
1600	85.900	87.900	85.000	100.000
1800	85.800	87.700	85.000	100.000
2000	85.700	87.300	85.000	100.000
2200	85.600	86.800	85.000	100.000
2400	85.500	86.600	85.000	100.000
2600	85.500	86.300	85.000	100.000
2800	85.400	85.900	85.000	100.000
3000	85.200	85.700	85.000	100.000



**4.3 OCCUPIED BANDWIDTH AND EMISSION MASK**

Serial Number:	2890-2	Test Date:	2023/10/11
Test Site:	RF	Test Mode:	Transmitting
Tester:	Rod Luo	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24-28	Relative Humidity: (%)	45-55	ATM Pressure: (kPa)	101
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200120	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A
Weinschel	Coaxial Attenuator	53-20-34	LN751	Each time	N/A
HP	RF Communications Test Set	8920A	3438A05209	2023/3/31	2024/3/30

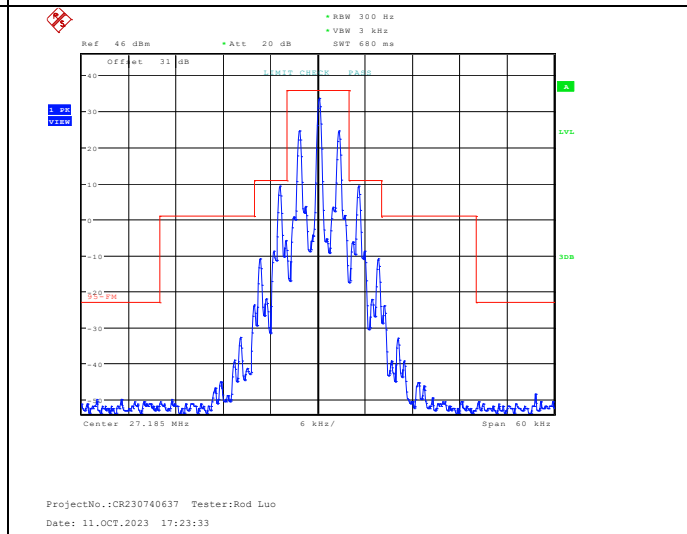
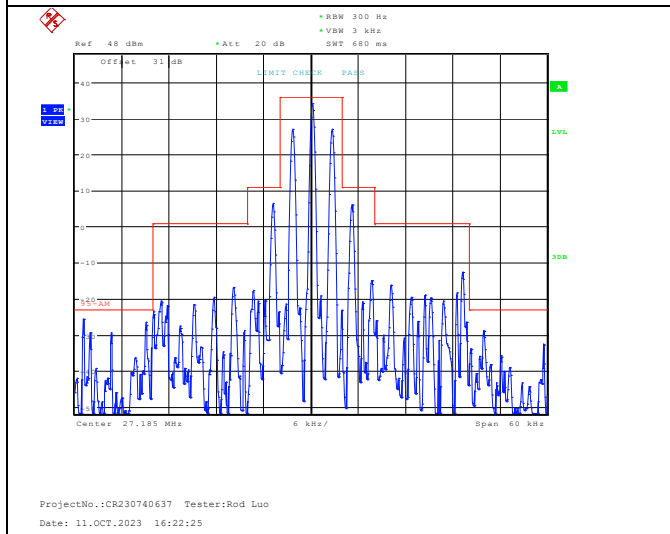
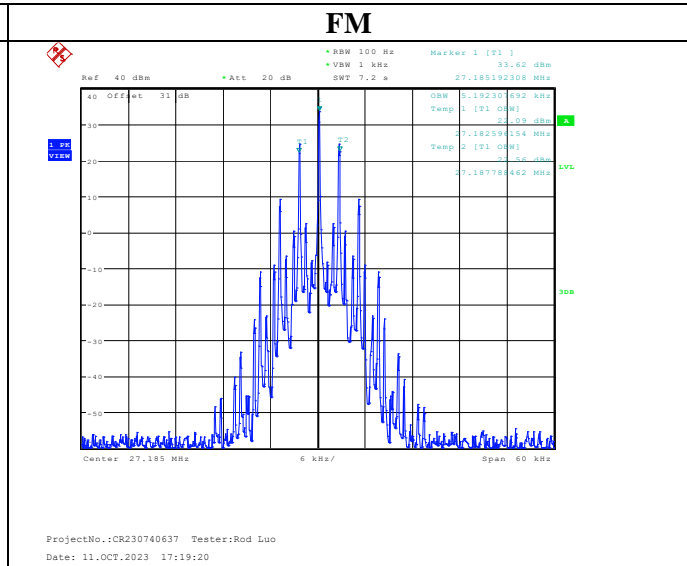
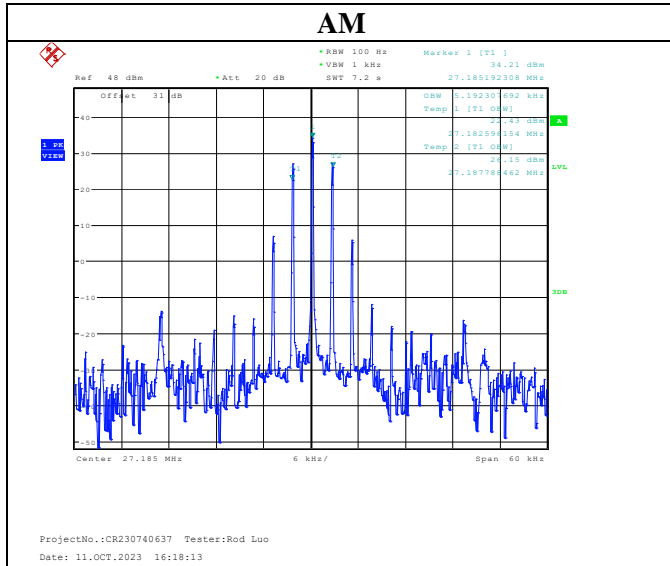
\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data:**

Modulate	Test Frequency (MHz)	99% Occupied Bandwidth (kHz)	Limit (kHz)
AM	27.185	5.192	≤8
FM	27.185	5.192	≤8

Emission Mask please refer to the plots.

The 31 dB is the Insertion loss of the RF cable, Coaxial Attenuators, which was offset into the Spectrum Analyzer.



#### 4.4 Radiated Spurious Emission

Serial Number:	289O-2	Test Date:	2023.7.24
Test Site:	966-2	Test Mode:	Transmitting
Tester:	Tao Zhu	Test Result:	Pass

#### Environmental Conditions:

Temperature: (°C)	25.3	Relative Humidity: (%)	57	ATM Pressure: (kPa)	101
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#### Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
R&S	EMI Test Receiver	ESR3	102724	2023/3/31	2024/3/30
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2023/7/16	2024/7/15
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2023/7/16	2024/7/15
EMCO	Adjustable Dipole Antenna	3121C	9109-756	N/A	N/A
MICRO-COAX	Coaxial Cable	UFA210B-0-0720- 300300	99G1448	2022/7/16	2024/7/15
Agilent	Signal Generator	E8247C	MY43321352	2022/11/18	2023/11/17

\* **Statement of Traceability:** China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### Test Data:

Please refer to the below table and plots.

**Part 95D:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd)	Cable Loss (dB)			
FM , Frequency:			27.185	MHz				
108.740	H	41.46	-39.47	0.00	0.19	-39.66	-24.00	15.66
108.740	V	36.79	-38.30	0.00	0.19	-38.49	-24.00	14.49
190.295	H	39.47	-41.75	0.00	0.26	-42.01	-24.00	18.01
190.295	V	37.20	-40.96	0.00	0.26	-41.22	-24.00	17.22
217.480	H	43.70	-37.45	0.00	0.27	-37.72	-24.00	13.72
217.480	V	35.34	-43.34	0.00	0.27	-43.61	-24.00	19.61
271.850	H	43.53	-36.64	0.00	0.31	-36.95	-24.00	12.95
271.850	V	39.52	-39.36	0.00	0.31	-39.67	-24.00	15.67
462.145	H	48.62	-27.98	0.00	0.41	-28.39	-24.00	4.39
462.145	V	39.54	-33.54	0.00	0.41	-33.95	-24.00	9.95
543.700	H	40.59	-34.38	0.00	0.47	-34.85	-24.00	10.85
543.700	V	39.92	-31.73	0.00	0.47	-32.20	-24.00	8.20
AM, Frequency:			27.185	MHz				
54.370	H	51.03	-21.88	-12.89	0.13	-34.90	-24.00	10.90
54.370	V	43.39	-28.43	-12.89	0.13	-41.45	-24.00	17.45
108.740	H	39.84	-41.09	0.00	0.19	-41.28	-24.00	17.28
108.740	V	33.44	-41.65	0.00	0.19	-41.84	-24.00	17.84
244.665	H	49.26	-31.57	0.00	0.30	-31.87	-24.00	7.87
244.665	V	38.86	-40.84	0.00	0.30	-41.14	-24.00	17.14
271.850	H	42.58	-37.59	0.00	0.31	-37.90	-24.00	13.90
271.850	V	38.28	-40.60	0.00	0.31	-40.91	-24.00	16.91
434.960	H	44.33	-32.83	0.00	0.41	-33.24	-24.00	9.24
434.960	V	37.00	-37.16	0.00	0.41	-37.57	-24.00	13.57
462.145	H	45.24	-31.36	0.00	0.41	-31.77	-24.00	7.77
462.145	V	36.81	-36.27	0.00	0.41	-36.68	-24.00	12.68

Note 1: The unit of antenna gain is dBd for frequency below 1GHz.

Note 2:

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

**4.5 CONDUCTED SPURIOUS AT ANTENNA TERMINALS**

Serial Number:	289O-2	Test Date:	2023/10/11-2023/10/13
Test Site:	RF	Test Mode:	Transmitting
Tester:	Rod Luo	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24-28	Relative Humidity: (%)	45-55	ATM Pressure: (kPa)	101
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200120	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A
Weinschel	Coaxial Attenuator	53-20-34	LN751	Each time	N/A
HP	RF Communications Test Set	8920A	3438A05209	2023/3/31	2024/3/30

\* **Statement of Traceability:** China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data:**

Please refer to the below plots.

Note:

Limit for harmonic: 60dB below the rated power = 36dBm-60dB=-24dBm

Limit for frequencies other than harmonic(exclude  $f_c \pm 250\%$  authorized bandwidth): 53 + 10 log (P) dB below the rated power=-23dBm

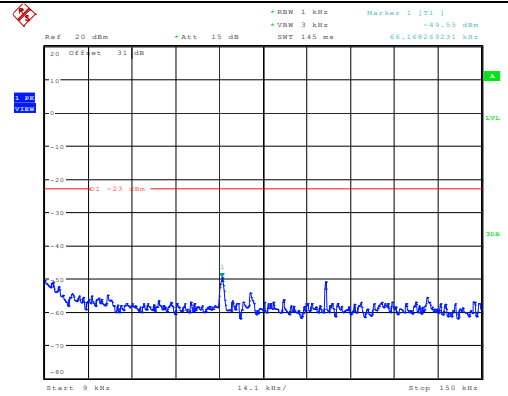
For 20MHz-1GHz, the tighter limit -24dBm was used.

*The 31 dB is the Insertion loss of the RF cable, Coaxial Attenuators, which was offset into the Spectrum Analyzer.*



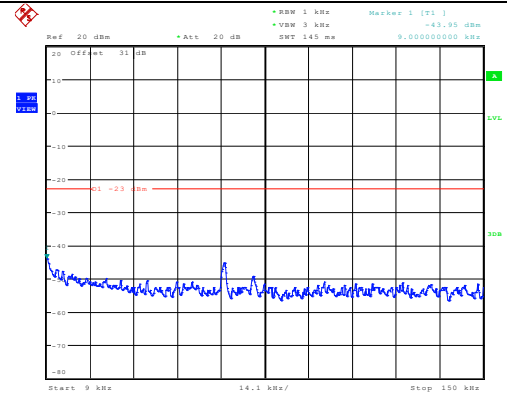
### Spurious Emissions at Antenna Terminal

#### FM

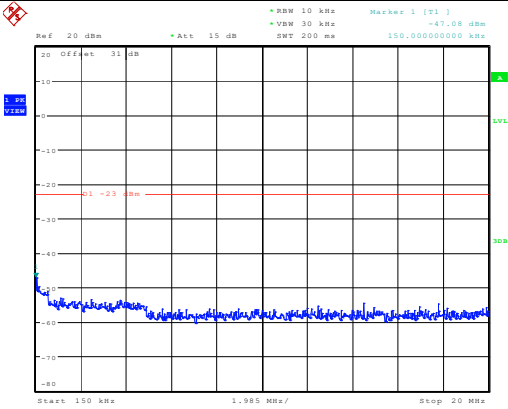


ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 13.OCT.2023 11:39:04

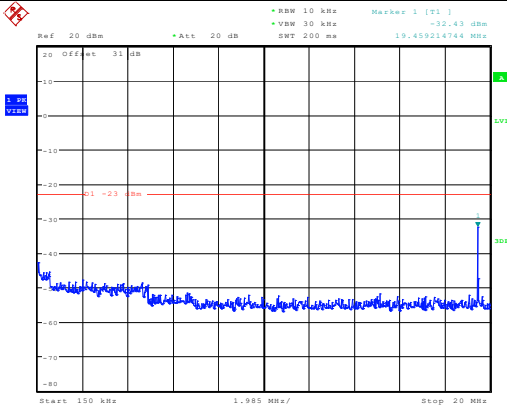
#### AM



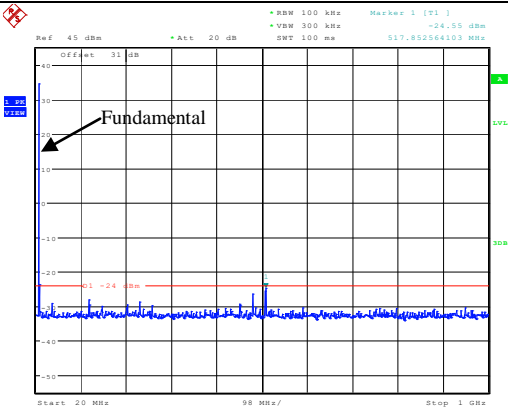
ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 11.OCT.2023 16:43:09



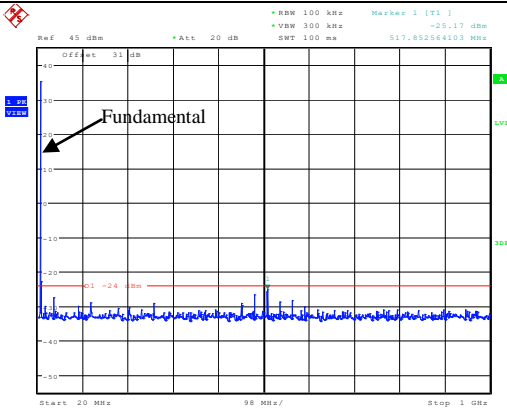
ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 13.OCT.2023 11:41:01



ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 11.OCT.2023 16:47:10



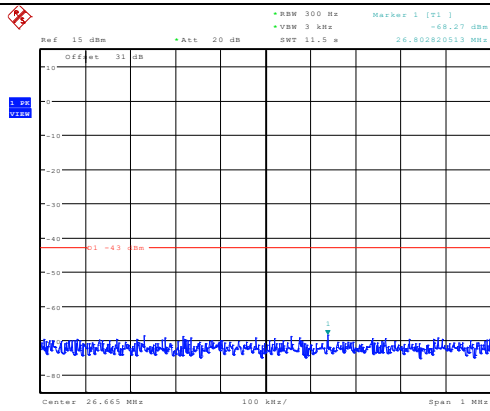
ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 11.OCT.2023 17:33:36



ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 11.OCT.2023 16:45:01

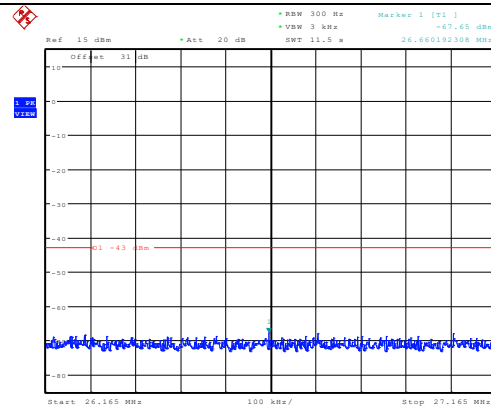
**Frequency immediately outside 2.5 times authorized bandwidth from channel center frequency:**

**FM, 27.185MHz**

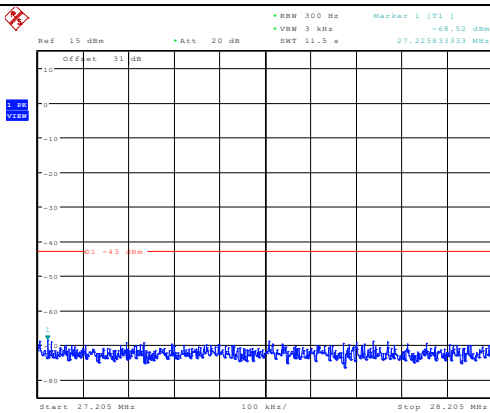


ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 13.OCT.2023 15:11:14

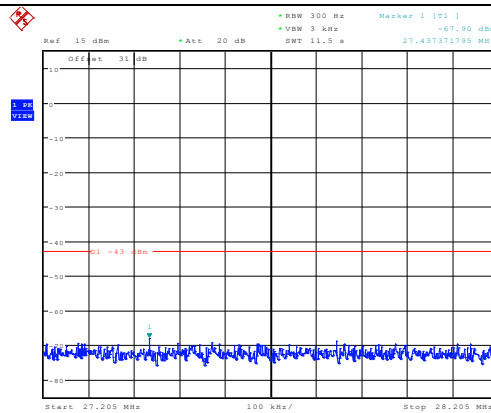
**AM, 27.185MHz**



ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 13.OCT.2023 14:52:34



ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 13.OCT.2023 15:12:42



ProjectNo.:CR230740637 Tester:Rod Luo  
Date: 13.OCT.2023 14:54:11

Note: the limit is -23dBm/30kHz for the range, a 300Hz RBW was used for the test, so the limit was reduce by a factor of  $10 \cdot \log(30\text{kHz}/300\text{Hz})=20\text{dB}$ .

**4.6 FREQUENCY STABILITY**

Serial Number:	289O-2	Test Date:	2023/10/11-2023/10/13
Test Site:	RF	Test Mode:	Transmitting
Tester:	Rod Luo	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24-28	Relative Humidity: (%)	45-55	ATM Pressure: (kPa)	101
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A
Weinschel	Coaxial Attenuator	53-20-34	LN751	Each time	N/A
HP	RF Communications Test Set	8920A	3438A05209	2023/3/31	2024/3/30
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2023/9/28	2024/9/27
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A

\* **Statement of Traceability:** China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data:**

Please refer to the below tables.

**Test Data:****AM**

Test Frequency (MHz)	Temperature (°C)	Voltage (V <sub>DC</sub> )	Measured Frequency (MHz)	Frequency Error (ppm)	limit (ppm)
27.185	-30	13.8	27.185055	2.0232	±50
	-20	13.8	27.185024	0.8828	±50
	-10	13.8	27.185127	4.6717	±50
	0	13.8	27.185241	8.8652	±50
	10	13.8	27.185264	9.7112	±50
	20	13.8	27.185261	9.6009	±50
	30	13.8	27.185267	9.8216	±50
	40	13.8	27.185257	9.4537	±50
	50	13.8	27.185018	0.6621	±50
	20	10.8	27.185253	9.3066	±50
	20	15.6	27.185232	8.5341	±50

**FM**

Test Frequency (MHz)	Temperature (°C)	Voltage (V <sub>DC</sub> )	Measured Frequency (MHz)	Frequency Error (ppm)	limit (ppm)
27.185	-30	13.8	27.185126	4.6349	±50
	-20	13.8	27.185249	9.1595	±50
	-10	13.8	27.185325	11.9551	±50
	0	13.8	27.185214	7.8720	±50
	10	13.8	27.185652	23.9838	±50
	20	13.8	27.185235	8.6445	±50
	30	13.8	27.185502	18.4661	±50
	40	13.8	27.185401	14.7508	±50
	50	13.8	27.185268	9.8584	±50
	20	10.8	27.185351	12.9115	±50
	20	15.6	27.185367	13.5001	±50

## 5. RF EXPOSURE EVALUATION

### 5.1 Applicable Standard

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f <sup>3</sup> )	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; \* = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

### 5.2 Calculation formula:

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$  = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

### 5.3 Calculated Data:

Operation Mode	Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance (mW)	Evaluation Distance (cm)	Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
		(dBi)	(numeric)				
CB Radio	26.965-27.405	0	1	4000	36.5	0.239	0.24

Note:

The Conducted output power including Tune-up Tolerance was declared by manufacturer.

**Result:** The device meet FCC MPE at 36.5cm distance.

## **6. EUT PHOTOGRAPHS**

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Please refer to the attachment CR230740637-EXP EUT EXTERNAL PHOTOGRAPHS and  
CR230740637-INP EUT INTERNAL PHOTOGRAPHS

## **7. TEST SETUP PHOTOGRAPHS**

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Please refer to the attachment CR230740637-00-TSP TEST SETUP PHOTOGRAPHS.

**===== END OF REPORT =====**