

# **FCC Test Report**

Report No.: AGC01924220501FE06

FCC ID	: 2A3JH-OC501A
APPLICATION PURPOSE	: Original Equipment
PRODUCT DESIGNATION	: Bluetooth FM Transmitter
BRAND NAME	: N/A
MODEL NAME	: CZ501, OC501A, BH501, 501
APPLICANT	: Dongguan Yuzhenrong Trading Co., Ltd.
DATE OF ISSUE	: Jun. 20, 2022
STANDARD(S)	: FCC Part 15.239
<b>REPORT VERSION</b>	: V1.0
	Compliance Shenzh

Attestation of Global Conference (Shenzhen) Co., Ltd





## **Report Revise Record**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jun. 20, 2022	Valid	Initial Release



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## **1. VERIFICATION OF CONFORMITY**

Applicant	Dongguan Yuzhenrong Trading Co., Ltd.	
Address	Room 204, No.74.Humen Xinlian 9th Street, Humen Village, Humen Town,	
	Dongguan City, Guangdong	
Manufacturer	Dongguan Yuzhenrong Trading Co., Ltd.	
Address	Room 204, No.74.Humen Xinlian 9th Street, Humen Village, Humen Town,	
Address	Dongguan City, Guangdong	
Factory	Dongguan Pinmi Electronic Technology Co., Ltd	
Address	2F, E block, Hongda Industrial Park, Shima Community, Tangxia Town, Dongguan	
Address	City, Guangdong, China	
Product Designation	Bluetooth FM Transmitter	
Brand Name	N/A	
Test Model	CZ501	
Series Model	OC501A, BH501, 501	
Difference Description	All the same except for the model name	
Date of test	May 09, 2022 to Jun. 17, 2022	
Deviation	No any deviation from the test method	
<b>Condition of Test Sample</b>	Normal	
Test Result	Pass	
Report Template	AGCRT-US-BR/RF (2013-03-01)	

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 15.239.

Prepared By

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Cool Cheng (Project Engineer)

Jun. 20, 2022

Reviewed By

Calvin Liu (Reviewer)

Jun. 20, 2022

Approved By

Max Zhang (Authorized Officer)

Jun. 20, 2022

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

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# 2. GENERAL INFORMATION

## 2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	88.1MHz-107.9MHz	
Test Frequency	Low: 88.1MHz; Middle:98.0MHz; High: 107.9MHz	
Field Strength(3m)	39.42dBuV/m(PK)@3m	
Modulation	FM	
Number of channels	199(Channel spacing 100kHz)	
Hardware Version	V1.1	
Software Version	V1	
Antenna Designation	Built-in Antenna (Met 15.203 Antenna requirement)	
Antenna Gain	3.37dBi	
Power Supply	DC 12V~24V	

NOTE: About the EUT, please refer to User's Manual.

#### 2.2 TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	1	88.10
	2	88.20
88.1MHz-107.9MHz		
	100	98.00
	101	98.10
	198	107.80
	199	107.90

## 3. MEASUREMENT UNCERTAINTY

- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.8 dB

- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.9 dB



## 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION	
1	Transmitting mode(Low channel)	
2	Transmitting mode(Middle channel)	
3	Transmitting mode(High channel)	
Note: 1. For Radiated Emission, 3axis were chosen for testing for each applicable mode.		
2. All the requirements have been tested by modulating the transmitter with a 2.5 kHz tone at a fixed		
level which set to the manufacturer's maximum rated input to the modulator.		
3. Only the result	of the worst case was recorded in the report, if no other cases.	



## **5. SYSTEM TEST CONFIGURATION**

#### **5.1. EQUIPMENT USED IN EUT SYSTEM**

ltem	Equipment	Model No.	ID or Specification	Remark
1	Bluetooth FM Transmitter	CZ501	2A3JH-OC501A	EUT
2	Battery	L2 400-H	DC 12V	AE
3	Battery	L2 400-H	DC 12V	AE

## **5.2. SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT
15.239	Field Strength of Fundamental and Spurious Emission	Compliant
15.215	Bandwidth	Compliant
15.207	Line Conducted Emission	Not applicable

Note: The EUT was supplied by car battery.



## 6. TEST FACILITY

TestSite	Attestation of Global Compliance(Shenzhen) Co., Ltd	
Location	1-2/F,Building19,JunfengIndustrialPark,ChongqingRoad,HepingCommunity,Fuhai Street,Bao'anDistrict,Shenzhen,Guangdong,China	
Designation Number	CN1259	
FCC Test Firm Registration Number	975832	
A2LA Cert. No.	5054.02	
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA	

## TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESCI	10096	Mar. 28, 2022	Mar. 27, 2023
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Nov. 17, 2021	Nov. 16, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Active Loop Antenna (9K-30Mhz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Preamplifier Assembly	ETS	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
Wideband Antenna	SCHWARZBECK	VULB9168	VULB9168-4 94	Jan. 08, 2021	Jan. 07, 2023
Universal Radio Communication Tester	HP	8920B	US35010161	Sep. 06, 2021	Sep. 05, 2022
Test Software	FARA	EZ-EMC(Ver. RA-03A)	N/A	N/A	N/A



# 7. RADIATED EMISSION

## 7.1. 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 emissions, 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.



The following table is the setting of spectrum analyzer and receiver.

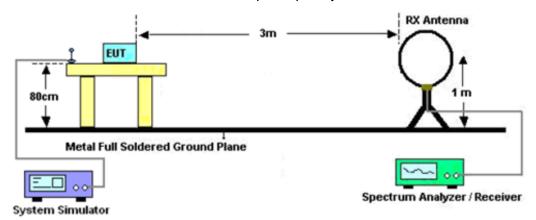
Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average

Receiver Parameter	Setting		
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP		
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP		
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP		

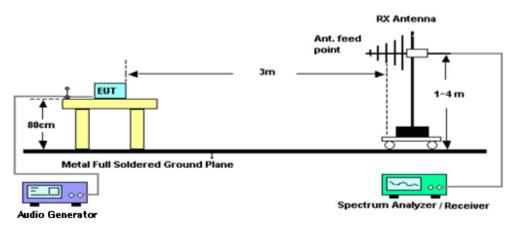


## 7.2.TEST SETUP

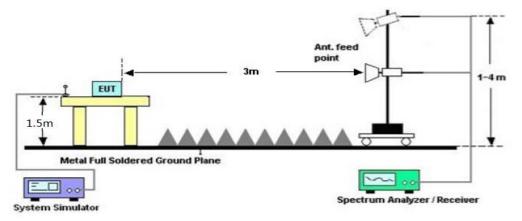
Radiated Emission Test-Setup Frequency Below 30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



## RADIATED EMISSION TEST SETUP ABOVE 1000MHz





#### 7.3. TEST RESULTFOR FIELD STRENGTH OF FUNDAMENTAL

Frequency MHz	Polarization	Level dB(uV/m) PK	Limit dB(uV/m) AV	Margin dB	Pass/Fail	Detector
88.100	н	27.47	47.96	20.49	Pass	PK
88.100	V	39.42	47.96	8.54	Pass	PK
98.000	Н	23.70	47.96	24.26	Pass	PK
98.000	V	20.29	47.96	27.67	Pass	PK
107.900	Н	28.26	47.96	19.70	Pass	PK
107.900	V	27.96	47.96	20.00	Pass	PK

#### 7.4. TEST RESULT FOR FIELD STRENGTH OF BAND EDGE EMISSION

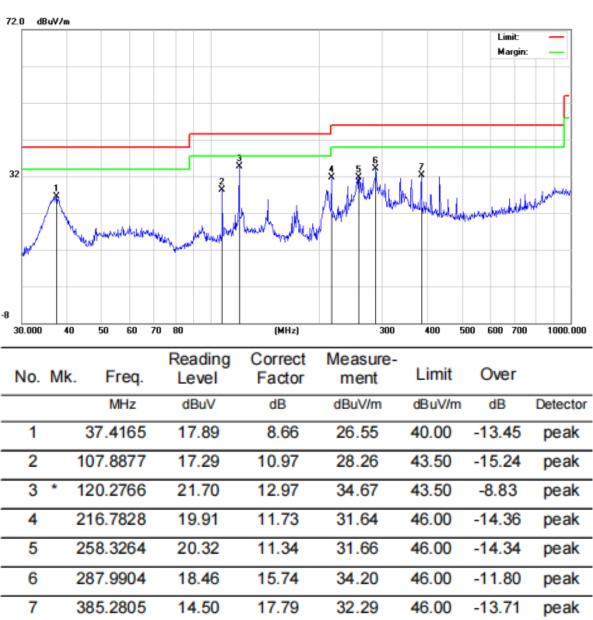
Frequency MHz	Polarization	Level dB(uV/m) QP	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Detector
88.000	Н	22.34	40	17.66	Pass	QP
88.000	V	30.57	40	9.43	Pass	QP
108.000	Н	27.64	43.5	15.86	Pass	QP
108.000	V	26.13	43.5	17.37	Pass	QP

Note: The above two frequencies are the worst case for the band edge emission test.



#### 7.5. TEST RESULT FOR SPURIOUS EMISSION

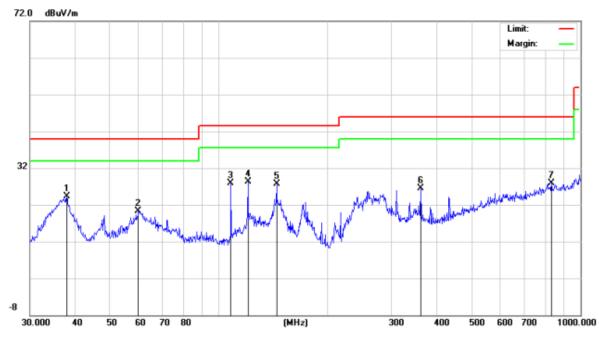
#### RADIATED EMISSION BELOW 30MHz



No emission found between lowest internal used/generated frequencies to 30MHz. RADIATED EMISSION BELOW 1GHZ-Horizontal

#### **RESULT: PASS**





**RADIATED EMISSION BELOW 1GHZ-Vertical** 

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		37.9450	15.29	8.95	24.24	40.00	-15.76	peak
2		59.8588	8.47	11.82	20.29	40.00	-19.71	peak
3		107.8877	17.99	9.97	27.96	43.50	-15.54	peak
4	* '	120.2766	15.41	12.97	28.38	43.50	-15.12	peak
5		144.3348	14.91	12.79	27.70	43.50	-15.80	peak
6	1	361.7139	12.27	14.17	26.44	46.00	-19.56	peak
7	8	330.4002	5.33	22.48	27.81	46.00	-18.19	peak

#### **RESULT: PASS**

Note: 1. Factor=Antenna Factor+ Cable loss-Amplifier gain, Over=Measurement-Limit.

- 2. The "Factor" value can be calculated automatically by software of measurement system.
- 3. All test modes had been pre-tested. The mode1 is the worst case and recorded in the report.
- 4. Which above 1GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



# 8. BANDWIDTH

## **8.1. MEASUREMENT PROCEDURE**

- 1. Set the parameters of SPA as below:
  - Centre frequency = Operation Frequency

RBW=3KHz

VBW=10KHz

Span: 300kHz

Sweep time: Auto

For the occupied bandwidth measurements, the input signal shall be a 2.5 kHz tone.

The level of the tone shall be 16 dB higher than that required to produce a frequency deviation

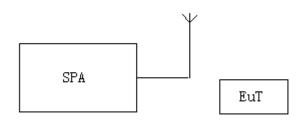
of 75 kHz, or 50% of the manufacturer's rated deviation, whichever is less.

Alternatively, in the event that a 16 dB increase cannot be achieved, the level of the tone shall

be set to the manufacturer's maximum rated input to the modulator.

- 2.Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the "N dB down" function of SPA to define the bandwidth.
- 3. Record the plots and Reported.

## 8.2. TEST SETUP





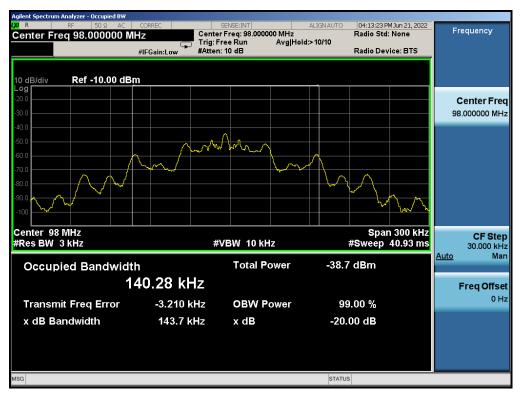
#### 8.3. TEST RESULT

Channel	Channel Frequency(MHz)	-20dB bandwidth (kHz)	Limit(kHz)
Low	88.1	132.3	200
Middle	98.0	143.7	200
High	107.9	155.9	200



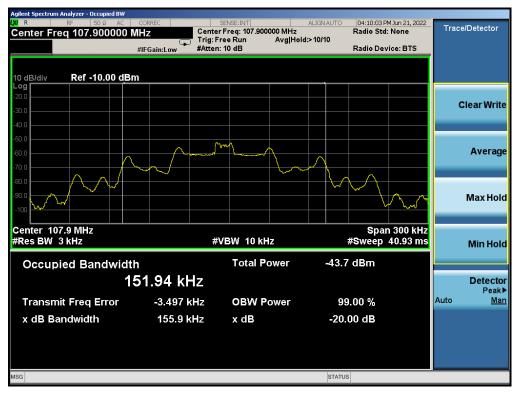
#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL





#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL







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## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC01924220501AP02

# APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC01924220501AP03

----END OF REPORT----



# Conditions of Issuance of Test Reports

 All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd. (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").
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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.

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