

## Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

## TEST REPORT FCC Rules and Regulations Part PART 15.249

Report Reference No...... CTA24123000701

FCC ID...... 2BMS8-ST403

Compiled by

(position+printed name+signature.. File administrators Xudong Zhang

Supervised by

( position+printed name+signature.. Project Engineer Zoey Cao

Approved by

( position+printed name+signature.. RF Manager Eric Wang

Testing Laboratory Name ...... Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community,

Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name...... Dongguan STTEAM Technology Co.,Ltd

Standard ...... FCC Rules and Regulations PART 15.249

## Shenzhen CTA Testing Technology Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen CTA Testing Technology Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen CTA Testing Technology Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test item description ...... 2.4G Remote Control Kit

Trade Mark ..... N/A

Manufacturer ...... Dongguan STTEAM Technology Co.,Ltd

Model/Type reference......ST403

ST403A, ST403B, ST403C, ST403D, ST403E, ST403F, ST403G,

CTATESTIN

ST403H, ST403I

CTATESTING

Modulation ...... GFSK

Frequency......2402MHz

Ratings...... DC 3.0V From battery

Result......PASS

Page 2 of 24 Report No.: CTA24123000701

## TEST REPORT

Equipment under Test : 2.4G Remote Control Kit

Model /Type ST403

: ST403A, ST403B, ST403C, ST403D, ST403E, ST403F, ST403G, Listed Models

ST403H, ST403I

CTATESTIN Model difference : The PCB board, circuit, structure and internal of these models are the

same, Only model number and colour is different for these model.

**Applicant** : Dongguan STTEAM Technology Co.,Ltd

: No.605, Diwang Square, Chang'an Town, Dongguan City, China Address

Manufacturer : Dongguan STTEAM Technology Co.,Ltd

Address No.605, Diwang Square, Chang'an Town, Dongguan City, China CTATES.

	CIN CI	CTATESTING	
, uG	Test Result:	PASS	G CT
ATESTIN	rt merely corresponds to the test sam		

Jut th It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Page 3 of 24 Report No.: CTA24123000701

## **Contents**

	CONTENTS CONTENTS	
To assume	TEST STANDARDS	<u>4</u>
_		:STII"
<u>2.</u>	<u>.SUMMARY</u>	<u> 5</u>
	CENTS OF THE PROPERTY OF THE P	_
2.1.	General Remarks	5
2.2.	Product Description	5 5
2.3.	Equipment Under Test	5
2.4.	Short description of the Equipment under Test (EUT)	5
2.5.	EUT configuration	5
2.6.	EUT operation mode	6
2.7.	Block Diagram of Test Setup	6
2.8.	Modifications	6
	CAN C.	
<u>3.</u>	TEST ENVIRONMENT	7
		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
3.1.	Address of the test leheratory	TATES
3.1. 3.2.	Address of the test laboratory Test Facility	C 7
3.2. 3.3.	Environmental conditions	7
3.3. 3.4.		7
3.4. 3.5.	Summary of measurement results	8
3.5. 3.6.	Statement of the measurement uncertainty	0
3.0.	Equipments Used during the Test	0
4.	TEST CONDITIONS AND RESULTS	<u>10</u>
	TATES	
	4.1. AC Power Conducted Emission	10
	4.2. Radiated Emission and Band Edges	11
	4.1. AC Power Conducted Emission	17
	4.4. Antenna Requirement	18
<u>5.</u>		19
	0	To contain
TESI	TEST BUOTOS OF THE FUT	2.0
<u>0.</u>	TEST PHOTOS OF THE EUT	<u>20</u>
	CTA TESTING	



Report No.: CTA24123000701 Page 4 of 24

## 1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.249: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

ANSI C63.10:2013: American National Standard for Testing Unlicensed Wireless Devices

ANSI C63.4: 2014: –American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz Range of 9 kHz to 40GHz

Report No.: CTA24123000701 Page 5 of 24

## 2. SUMMARY

## 2.1. General Remarks

2.1. General Remarks			
Date of receipt of test sample		Dec. 30, 2024	STING
Testing commenced on		Dec. 30, 2024	CTATES
Testing concluded on	:	Jan. 08, 2024	

CTATE	2.2. Product Description		
	Name of EUT	2.4G Remote Control Kit	
	Model Number	ST403	
	Power Rating	DC 3.0V From battery	
	Sample ID:	CTA241230007-1# (Engineer sample) CTA241230007-2# (Normal sample)	TESTI
	Operation frequency	2402MHz	CIL
\G	Modulation	GFSK	
	Antenna Type	PCB antenna	
	Antenna Gain	0 dBi	

## 2.3. Equipment Under Test

## Power supply system utilised

Power supply system utilised				ATES		
	Self-Control		() \		STIN STIN	
Power supply voltage		1	0	230V / 50 Hz	O 120V / 60Hz	
	715 000		0	12 V DC	○ 24 V DC	
			•	Other (specified in blank below)		

DC 3.0V From battery

## 2.4. Short description of the Equipment under Test (EUT)

This is a 2.4G Remote Control Kit.

For more details, refer to the user's manual of the EUT.

## 2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

supplied by the manufacturer

O - supplied by the lab

0		
CTA TESTIN		
CI	CTATESTING	
		CTATESTING
		TATES
		CIA

Page 6 of 24 Report No.: CTA24123000701

## 2.6. EUT operation mode

The Applicant use Key to control the EUT for staying in continuous transmitting and receiving mode for testing. There is 1 channels provided to the EUT.

Operation Frequency:	TING
Channel	Frequency (MHz)
00	2402

Test frequency:

	Channel	Frequency (MHz)
. TE	00	2402
CTA	TESTING	
2	7 Block Diagram of Test Setup	

## 2.7. Block Diagram of Test Setup

**EUT** DC 3.0V From battery

## 2.8. Modifications

No modifications were implemented to meet testing criteria.

## 3. TEST ENVIRONMENT

## 3.1. Address of the test laboratory

## Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Baoʻan District, Shenzhen, China

## 3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 517856 Designation Number: CN1318

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

## Industry Canada Registration Number. Is: 27890 CAB identifier: CN0127

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

A2LA-Lab Cert. No.: 6534.01

Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

## 3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

## Radiated Emission:

adiated Ettilecietti	
Temperature:	23 ° C
Humidity:	48 %
ING	
Atmospheric pressure:	950-1050mbar

# AC Main Conducted testing:

Temperature:	24 ° C
CIT	
Humidity:	45 %
To your time	C
Atmospheric pressure:	950-1050mbar

## Conducted testing:

Temperature:	24 ° C
Humidity:	45 %
Atmospheric pressure:	950-1050mbar
	CTATESTING

Page 8 of 24 Report No.: CTA24123000701

## 3.4. Summary of measurement results

FCC PART 15.249		
FCC Part 15.249(a)	Field Strength of Fundamental	PASS
FCC Part 15.209	Spurious Emission	PASS
FCC Part 15.209	Band edge	PASS
FCC Part 15.215(c)	20dB bandwidth	PASS
FCC Part 15.207	Conducted Emission	N/A
FCC Part 15.203	Antenna Requirement	PASS

## 3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen CTA Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen CTA Testing Technology Co., Ltd.:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz~30MHz	3.02 dB	(1)
Radiated Emission	30~1000MHz	4.06 dB	(1)
Radiated Emission	1~18GHz	5.14 dB	(1)
Radiated Emission	18-40GHz	5.38 dB	(1)
Conducted Disturbance	0.15~30MHz	2.14 dB	(1)
Output Peak power	30MHz~18GHz	0.55 dB	(1)
Power spectral density	/	0.57 dB	(1)
Spectrum bandwidth	/	1.1%	(1)
Radiated spurious emission (30MHz-1GHz)	30~1000MHz	4.10 dB	(1)
Radiated spurious emission (1GHz-18GHz)	1~18GHz	4.32 dB	(1)
Radiated spurious emission (18GHz-40GHz)	18-40GHz	5.54 dB	(1)

<sup>(1)</sup> This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence CTATESTIN level using a coverage factor of k=2.

## 3.6. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Equipment No.	Calibration Date	Calibration Due Date
LISN	LISN R&S		CTA-308	2024/08/03	2025/08/02
LISN R&S		ENV216	CTA-314	2024/08/03	2025/08/02
EMI Test Receiver	R&S	ESPI	CTA-307	2024/08/03	2025/08/02
EMI Test Receiver R&S		ESCI	CTA-306	2024/08/03	2025/08/02
Spectrum Analyzer Agilent		N9020A	CTA-301	2024/08/03	2025/08/02

			(th)			TESI"
	Report No.: CTA2412	3000701			Page	e 9 of 24
	Spectrum Analyzer	R&S	FSU	CTA-337	2024/08/03	2025/08/02
	Vector Signal generator	Agilent	N5182A	CTA-305	2024/08/03	2025/08/02
	Analog Signal Generator	R&S	SML03	CTA-304	2024/08/03	2025/08/02
	WIDEBAND RADIO COMMUNICATION TESTER	CMW500	R&S	CTA-302	2024/08/03	2025/08/02
	Temperature and humidity meter	Chigo	ZG-7020	CTA-326	2024/08/03	2025/08/02
	Ultra-Broadband Antenna	Schwarzbeck	VULB9163	CTA-310	2023/10/17	2026/10/16
78	Horn Antenna	Schwarzbeck	chwarzbeck BBHA 9120D		2023/10/13	2026/10/12
CTATE	Loop Antenna	Loop Antenna Zhinan		CTA-311	2023/10/17	2026/10/16
7	Horn Antenna	Beijing Hangwei Dayang	OBH100400	CTA-336	2023/10/17	2026/10/16
	Amplifier	Schwarzbeck	BBV 9745	CTA-312	2024/08/03	2025/08/02
	Amplifier	Taiwan chengyi	EMC051845B	CTA-313	2024/08/03	2025/08/02
G	Directional coupler	NARDA	4226-10	CTA-303	2024/08/03	2025/08/02
	High-Pass Filter	XingBo	XBLBQ-GTA18	CTA-402	2024/08/03	2025/08/02
	High-Pass Filter	XingBo	XBLBQ-GTA27	CTA-403	2024/08/03	2025/08/02
	Automated filter bank	Tonscend	JS0806-F	CTA-404	2024/08/03	2025/08/02
	Power Sensor	Agilent	U2021XA	CTA-405	2024/08/03	2025/08/02
	Amplifier	Schwarzbeck	BBV9719	CTA-406	2024/08/03	2025/08/02

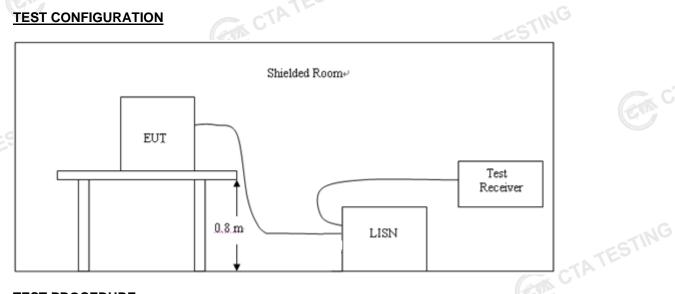
	Test Equipment	Manufacturer	Model No.	Version number	Calibration Date	Calibration Due Date	
CTATE	EMI Test Software	Tonscend	TS®JS32-RE	5.0.0.2	N/A	N/A	
CAL	EMI Test Software	MI Test Software Tonscend		5.0.0.1	N/A	N/A	
	RF Test Software	Tonscend	TS®JS1120-3	3.1.65	N/A	N/A	
	RF Test Software	Tonscend	TS®JS1120	3.1.46	N/A	N/A	
					CT	A	
G							

Page 10 of 24 Report No.: CTA24123000701

## 4. TEST CONDITIONS AND RESULTS

## 4.1. AC Power Conducted Emission

## **TEST CONFIGURATION**



## **TEST PROCEDURE**

- 1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. 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.
- 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, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5, All support equipments received AC power from a second LISN, if any.
- 6, The EUT 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.

## **AC Power Conducted Emission Limit**

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following:

Eroguenov renge (MHz)	Limit (d	dBuV)
Frequency range (MHz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency	uency.	

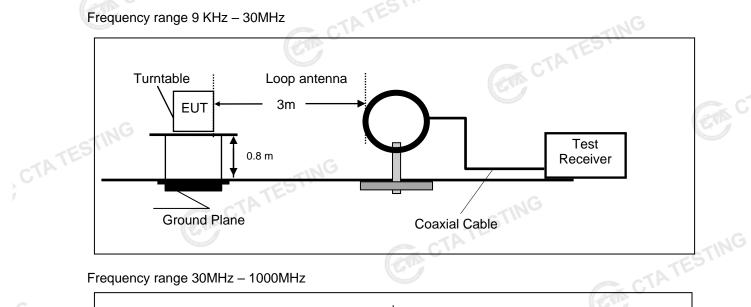
## TEST RESULTS

The EUT is powered by the Battery, so this test item is not applicable for the EUT. CTATESTING Report No.: CTA24123000701 Page 11 of 24

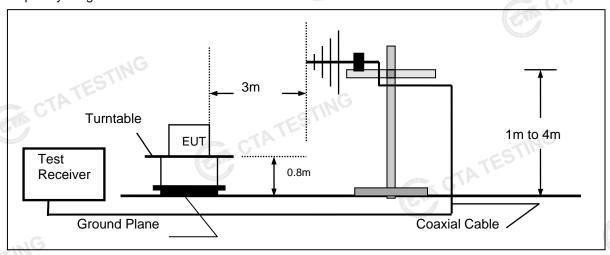
## 4.2. Radiated Emission and Band Edges

## **TEST CONFIGURATION**

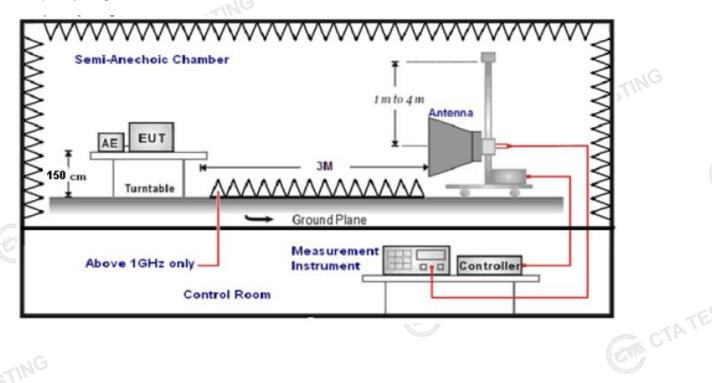
Frequency range 9 KHz - 30MHz



Frequency range 30MHz - 1000MHz



Frequency range above 1GHz-25GHz



## Report No.: CTA24123000701

## **TEST PROCEDURE**

- 1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 9 KHz 1GHz and 1.5m above ground plane when testing frequency range 1GHz-25GHz.
- 2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT.
- 3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 4. Repeat above procedures until all frequency measurements have been completed.
- 5. The EUT minimum operation frequency was 24MHz and maximum operation frequency was 2402MHz.so radiated emission test frequency band from 9KHz to 25GHz.

6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance	
9KHz-30MHz	Active Loop Antenna	3	43 us (
30MHz-1GHz	Ultra-Broadband Antenna	3	
1GHz-18GHz	Double Ridged Horn Antenna	3	
18GHz-25GHz	Horn Anternna	1	

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

## **Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

## FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	(4.7)

Transd=AF +CL-AG

## RADIATION LIMIT

According 15.249, the field strength of emissions from intentional radiators operated within 2400MHz-2483.5 MHz shall not exceed  $94dB\mu V/m$  (50mV/m):

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

## Radiated emission limits

			20	
Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)	
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)	
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)	
1.705-30	3	20log(30)+ 40log(30/3)	30	
30-88	3	40.0	JG 100	
88-216	3	43.5	150	
216-960	3	46.0	200	
Above 960	3	54.0	500	CATE
TEST RESULTS			GAN.	1,5

TEST RESULTS

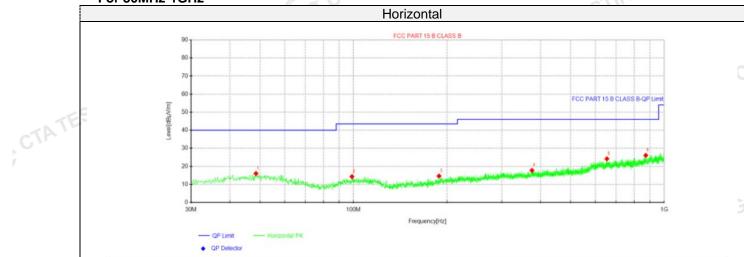
Report No.: CTA24123000701 Page 13 of 24

## Remark:

This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.

- 2. Both modes of GFSK were tested at Low, Middle, and High channel and recorded worst mode at GFSK
- 3. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

## For 30MHz-1GHz



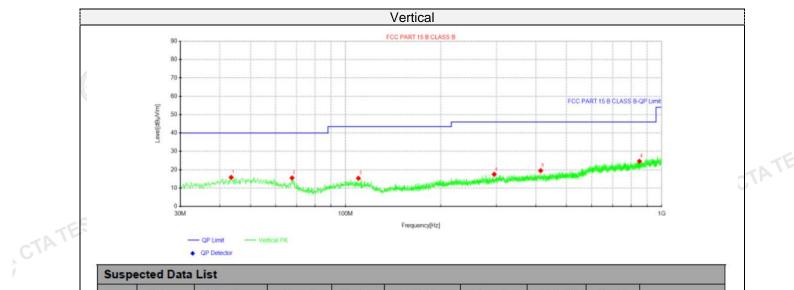
Susp	Suspected Data List											
NO.	Freq. [MHz]	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	48.5513	27.28	16.05	-11.23	40.00	23.95	100	360	Horizontal			
2	98.87	27.46	14.31	-13.15	43.50	29.19	100	57	Horizontal			
3	188.473	28.37	14.63	-13.74	43.50	28.87	100	242	Horizontal			
4	375.198	28.19	17.74	-10.45	46.00	28.26	200	359	Horizontal			
5	653.71	29.61	24.17	-5.44	46.00	21.83	100	324	Horizontal			
6	872.323	29.47	26.08	-3.39	46.00	19.92	200	34	Horizontal			

Note:1).Level ( $dB\mu V/m$ )= Reading ( $dB\mu V$ )+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

Report No.: CTA24123000701 Page 14 of 24



Susp	Suspected Data List										
NO.	Freq. [MHz]	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity		
1	43.4588	27.42	15.82	-11.60	40.00	24.18	100	97	Vertical		
2	67.7088	29.88	15.52	-14.36	40.00	24.48	200	236	Vertical		
3	109.782	28.67	15.34	-13.33	43.50	28.16	200	26	Vertical		
4	295.173	28.57	17.50	-11.07	46.00	28.50	200	294	Vertical		
5	414.12	29.54	19.49	-10.05	46.00	26.51	100	142	Vertical		
6	850.377	28.28	24.58	-3.70	46.00	21.42	100	294	Vertical		

Note:1).Level ( $dB\mu V/m$ )= Reading ( $dB\mu V$ )+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB) CTATESTING

3). Margin(dB) = Limit (dB $\mu$ V/m) - Level (dB $\mu$ V/m)

CTING

## Report No.: CTA24123000701

## For 1GHz to 25GHz

## GFSK (above 1GHz)

Frequency(MHz):			2402		Polarity:		HORIZONTAL		
Frequency (MHz)	Emis Le (dBu	vel	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)
2402.00	99.04	PK	114.00	14.96	110.32	27.47	3.43	42.18	-11.28
2402.00	80.29	AV	94.00	13.71	91.57	27.47	3.43	42.18	-11.28
4804.00	48.90	PK	74.00	25.10	53.17	32.33	5.12	41.72	-4.27
4804.00	40.58	AV	54.00	13.42	44.85	32.33	5.12	41.72	-4.27
7206.00	50.93	PK	74.00	23.07	51.45	36.6	6.49	43.61	-0.52
7206.00	36.61	AV	54.00	17.39	37.13	36.6	6.49	43.61	-0.52

JG								(	
Frequency(MHz):			24	02	Pola	arity:	VERTICAL		
Frequency (MHz)	Le	sion vel V/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)
2402.00	97.51	PK	114.00	16.49	108.79	27.47	3.43	42.18	-11.28
2402.00	78.97	AV	94.00	15.03	90.25	27.47	3.43	42.18	-11.28
4804.00	48.10	PK	74.00	25.90	52.37	32.33	5.12	41.72	-4.27
4804.00	37.42	ΑV	54.00	16.58	41.69	32.33	5.12	41.72	-4.27
7206.00	47.46	PK	74.00	26.54	47.98	36.6	6.49	43.61	-0.52
7206.00	35.44	AV	54.00	18.56	35.96	36.6	6.49	43.61	-0.52

## REMARKS:

- 1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)- Pre-amplifier
- 3. Margin value = Limit value- Emission level.
- 4. -- Mean the PK detector measured value is below average limit.
- 5. The other emission levels were very low against the limit.

## Results of Band Edges Test (Radiated)

	Frequency(MHz):			2402		Polarity:		HORIZONTAL		
	Frequency (MHz)	Le	ssion vel V/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)
	2390.00	61.63	PK	74	12.37	72.05	27.42	4.31	42.15	-10.42
	2390.00	43.01	AV	54	10.99	53.43	27.42	4.31	42.15	-10.42
-1A	2400.00	63.78	PK	74	10.22	74.21	27.43	4.31	42.17	-10.43
CIL	2400.00	45.19	AV	54	8.81	55.62	27.43	4.31	42.17	-10.43
1	Frequency(MHz):		2402		Polarity:		VERTICAL			
	Frequency (MHz)		ssion vel V/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)
	2390.00	59.81	PK	74	14.19	70.23	27.42	4.31	42.15	-10.42
	2390.00	41.26	AV	54	12.74	51.68	27.42	4.31	42.15	-10.42
	2400.00	62.31	PK	74	11.69	72.74	27.43	4.31	42.17	-10.43
G	2400.00	45.82	AV	54	8.18	56.25	27.43	4.31	42.17	-10.43



Report No.: CTA24123000701 Page 16 of 24

Freque	ncy(MHz)	:	2402		Polarity:		HORIZONTAL			
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)	
2483.50	62.65	PK	74	11.35	72.76	27.7	4.47	42.28	-10.11	
2483.50	44.55	AV	54	9.45	54.66	27.7	4.47	42.28	-10.11	
Freque	Frequency(MHz):			2402		Polarity:		VERTICAL		
Frequency (MHz)	Emis Lev (dBu	/el	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)	
2483.50	60.72	PK	74	13.28	70.83	27.7	4.47	42.28	-10.11	
2483.50	44.91	AV	54	9.09	55.02	27.7	4.47	42.28	-10.11	
			= Meter Read	ling+ antenna		. C.	eamp factor.			

### Note:

- Emission level (dBuV/m) = Meter Reading+ antenna Factor+ cable loss- preamp factor. 1)
- 2) Margin value = Limits-Emission level.
- -- Mean the PK detector measured value is below average limit. 3)
- The other emission levels were very low against the limit. 4)
- RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV - AV 5) value.

Page 17 of 24 Report No.: CTA24123000701

## 4.3. 20dB Bandwidth Measurement

## **TEST CONFIGURATION**



## **TEST PROCEDURE**

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30KHz RBW and 300KHz VBW.

The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus CTA TESTING 20dB.

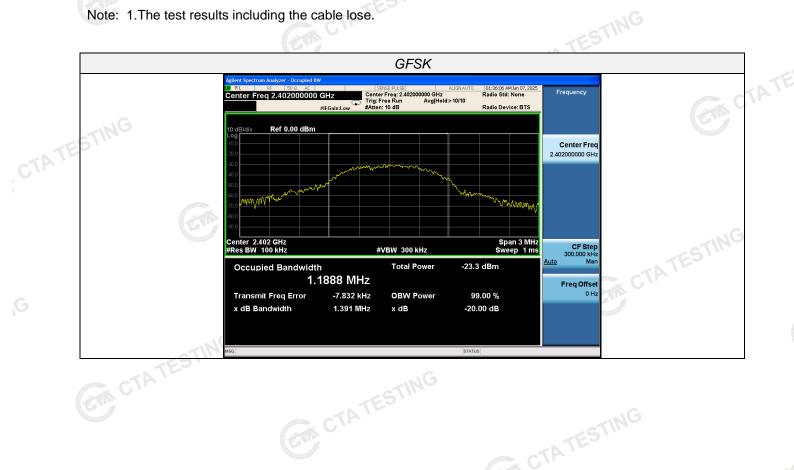
## LIMIT

N/A

## **TEST RESULTS**

Modulation	Channel Channel	20dB bandwidth (MHz)	Result
GFSK	00	1.391	PASS

Note: 1. The test results including the cable lose.



Page 18 of 24 Report No.: CTA24123000701

## 4.4. Antenna Requirement

## Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

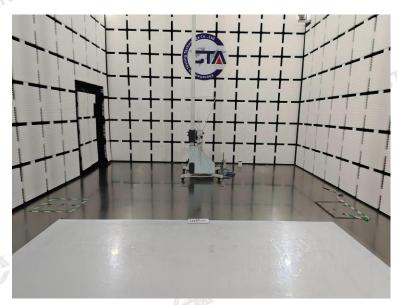
And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than CTATE 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

The maximum gain of antenna was 0 dBi.

Remark: The antenna was 1 dBi. Remark: The antenna gain is provided by the customer, if the data provided by the customer is not accurate, Shenzhen CTA Testing Technology Co., Ltd. does not assume any responsibility. CTATES

Page 19 of 24 Report No.: CTA24123000701

# 5. Test Setup Photos of the EUT CTATES.





Report No.: CTA24123000701 Page 20 of 24

## 6. Test Photos of the EUT







TATESTING

Report No.: CTA24123000701 Page 21 of 24





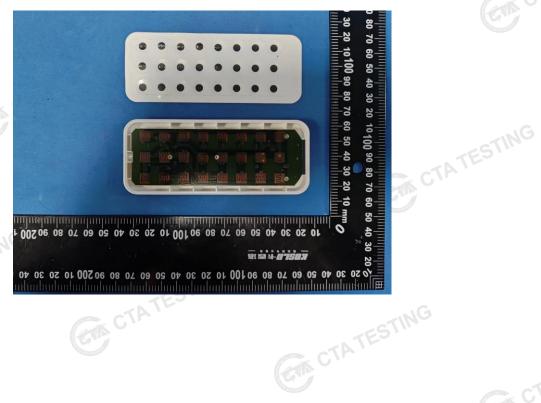


ATESTING

Report No.: CTA24123000701 Page 22 of 24

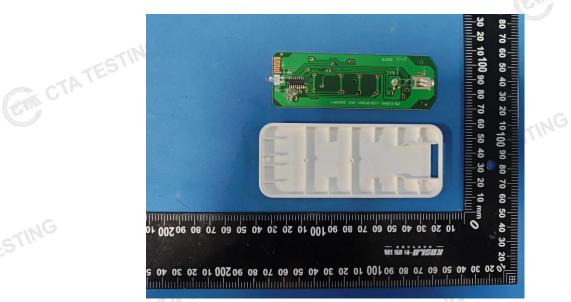


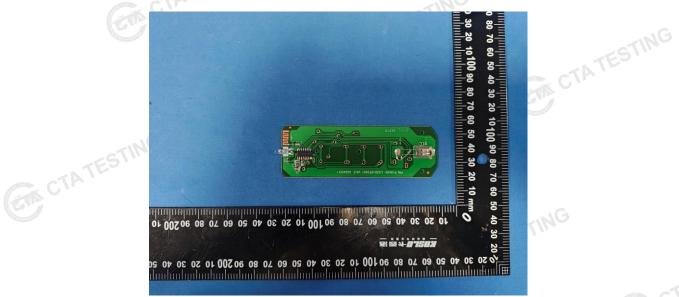




**TESTING** 

Report No.: CTA24123000701 Page 23 of 24

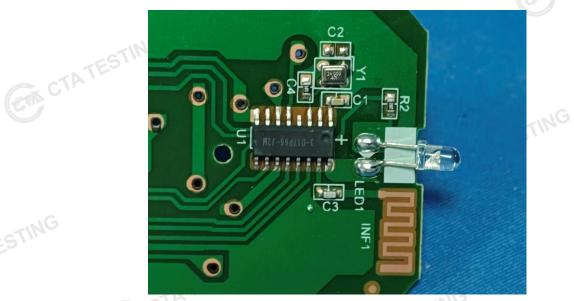






ESTING

Report No.: CTA24123000701 Page 24 of 24





.....End of Report.....

CTATESTING

CTATESTING