

#### 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...... CTA22110800801

FCC ID...... 2A3JH-PC386A

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Date of issue...... Nov. 10, 2022

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 Yuzhenrong Trading Co., Ltd.

Room 204, No.74, Humen Xinlian 9th Street, Humen Village, Humen

Town, Dongguan City, Guangdong, China

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

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Test	item (	descripti	on	wire	less	key	board
------	--------	-----------	----	------	------	-----	-------

Trade Mark .....N/A

Manufacturer ...... Dongguan Yuzhenrong Trading Co., Ltd.

CTATESTING

Model/Type reference......KM-205W(M7034)

Listed Models ......N/A

Modulation ...... GFSK

Frequency...... 2402-2480MHz

Ratings ...... DC 1.5V From Battery

Result.....PASS



CTATESTIN

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#### TEST REPORT

Equipment under Test : wireless keyboard

Model /Type KM-205W(M7034)

: N/A Listed Models

: Dongguan Yuzhenrong Trading Co., Ltd. **Applicant** 

Room 204, No.74, Humen Xinlian 9th Street, Humen Village, Humen Address

Town, Dongguan City, Guangdong, China

Dongguan Yuzhenrong Trading Co., Ltd. Manufacturer

: Room 204, No.74, Humen Xinlian 9th Street, Humen Village, Humen CTA TESTING Address

Town, Dongguan City, Guangdong, China

CTATES		
	CTATE	TATING
Tes	st Result:	PASS

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test laboratory. It is not permitted to copy extracts of these test result without the written permission of the test CTA TESTING

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	C/L	



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#### 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

#### 2. SUMMARY

#### 2.1. General Remarks

2.1. General Remarks			
Date of receipt of test sample		Nov. 05, 2022	STING
Testing commenced on	E T	Nov. 05, 2022	CTATES
Testing concluded on	:	Nov. 10, 2022	

# 2.2. Product Description

Name of EUT	wireless keyboard
Model Number	KM-205W(M7034)
List Model:	N/A
Power Rating	DC 1.5V From Battery
Sample ID:	CTA221108008-1#(Engineer sample)
Sample 1D.	CTA221108008-2#(Normal sample)
Operation frequency	2402-2480MHz
Modulation	GFSK
Antenna Type	PCB antenna
Antenna Gain	-1.52 dBi

#### 2.3. Equipment Under Test

#### Power supply system utilised

2.3. Equipment Under Tes		C7			ESTING	
Power supply system utilis	sed				TATES	
Power supply voltage	:	0	230V / 50 Hz	C	120V / 60Hz	
		0	12 V DC	C	24 V DC	NE II
. C.		•	Other (specified in bl	ank below	<u>'</u> )	(-2.76)

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

This is a wireless keyboard

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

#### 2.5. EUT operation mode

The Applicant use Key to control the EUT for staying in continuous transmitting and receiving mode for testing .There is 75 channels provided to the EUT. Channel Low, Mid and High was selected to test.

Channel	Frequency (MHz)
01	2402
02	2440
03	2480

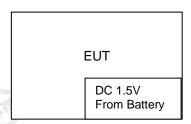
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Test frequency:

Channel	Frequency (MHz)	
Low	2402	NG
Mid	2440	
High	2480	

### 2.6. Block Diagram of Test Setup



#### 2.7. 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:

Temperature:	23 ° C
Humidity:	48 %
NG	
Atmospheric pressure:	950-1050mbar

## AC Main Conducted testing:

AC Main Conducted testing:		
Temperature:	24 ° C	16
G		GTING
Humidity:	45 %	TES
77,000.	30,110	
Atmospheric pressure:	950-1050mbar	

#### Conducted testing:

Johnanden resume:	
Temperature:	24 ° C
Humidity:	45 %
-55711	
Atmospheric pressure:	950-1050mbar
	CTATESTING

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#### 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

Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz) = 3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz) = 4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz) = 4.06dB, k=2

#### 3.6. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Equipment No.	Calibration Date	Calibration Due Date	
LISN	R&S	ENV216	CTA-308	2022/08/03	2023/08/02	
LISN	R&S	ENV216	CTA-314	2022/08/03	2023/08/02	
EMI Test Receiver	R&S	ESPI	CTA-307	2022/08/03	2023/08/02	
EMI Test Receiver	R&S	ESCI	CTA-306	2022/08/03	2023/08/02	,\r
Spectrum Analyzer	Agilent	N9020A	CTA-301	2022/08/03	2023/08/02	
Spectrum Analyzer	R&S	FSP	CTA-337	2022/08/03	2023/08/02	
Vector Signal generator	Agilent	N5182A	CTA-305	2022/08/03	2023/08/02	
Analog Signal Generator	R&S	SML03	CTA-304	2022/08/03	2023/08/02	
Universal Radio Communication	CMW500	R&S	CTA-302	2022/08/03	2023/08/02	
Temperature and humidity meter	Chigo	ZG-7020	CTA-326	2022/08/03	2023/08/02	
Ultra-Broadband Antenna	Schwarzbeck	VULB9163	CTA-310	2021/08/07	2024/08/06	
Horn Antenna	Schwarzbeck	BBHA 9120D	CTA-309	2021/08/07	2024/08/06	
Loop Antenna	Zhinan	ZN30900C	CTA-311	2021/08/07	2024/08/06	
Horn Antenna	Beijing Hangwei Dayang	OBH100400	CTA-336	2021/08/07	2024/08/06	
Amplifier	Schwarzbeck	BBV 9745	CTA-312	2022/08/03	2023/08/02	TATE
Amplifier	Schwarzbeck	BBV 9745	CTA-312	2022/08/03	2023/08/02	C

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Amplifier	Taiwan chengyi	EMC051845B	CTA-313	2022/08/03	2023/08/02
Ampliner	raiwan chengyi	LIVIC031043D	C1A-515	2022/00/03	2023/00/02
Directional coupler	NARDA	4226-10	CTA-303	2022/08/03	2023/08/02
High-Pass Filter	XingBo	XBLBQ-GTA18	CTA-402	2022/08/03	2023/08/02
High-Pass Filter	XingBo	XBLBQ-GTA27	CTA-403	2022/08/03	2023/08/02
Automated filter bank	Tonscend	JS0806-F	CTA-404	2022/08/03	2023/08/02
Power Sensor	Agilent	U2021XA	CTA-405	2022/08/03	2023/08/02
Amplifier	Schwarzbeck	BBV9719	CTA-406	2022/08/03	2023/08/02

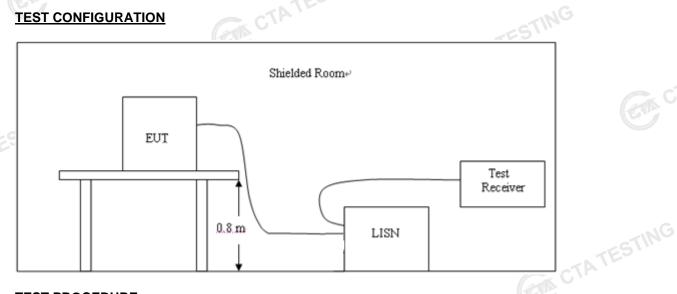
CTATE CTATESTING

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#### 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 (	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.	

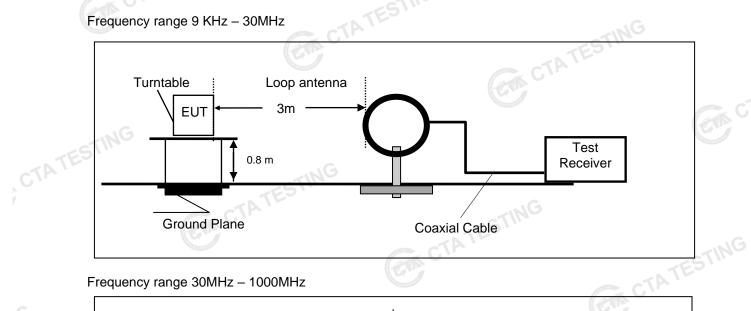
#### TEST RESULTS

The EUT is powered by the Battery, So this test item is not applicable for the EUT. CTATESTING Report No.: CTA22110800801 Page 11 of 24

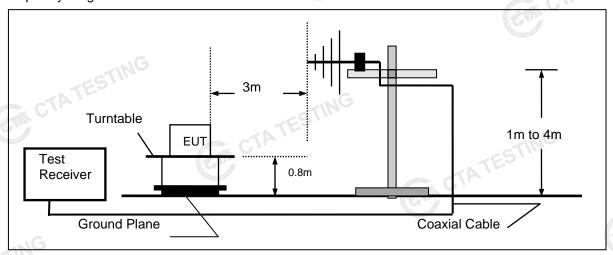
#### 4.2. Radiated Emission and Band Edges

#### **TEST CONFIGURATION**

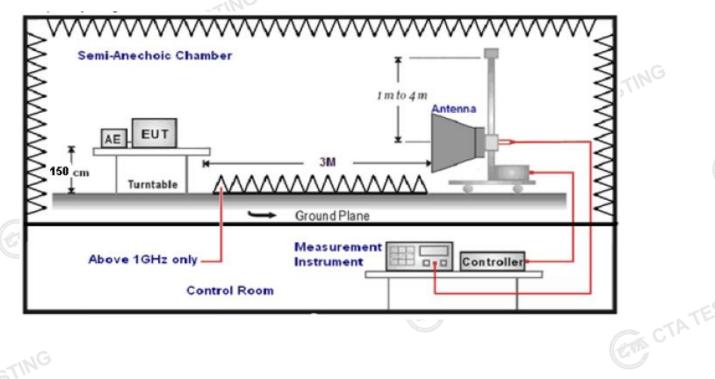
Frequency range 9 KHz - 30MHz



Frequency range 30MHz - 1000MHz



Frequency range above 1GHz-25GHz



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#### **TEST PROCEDURE**

- 1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 9 KHz -25GHz.
- 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.
- Repeat above procedures until all frequency measurements have been completed.
- The EUT minimum operation frequency was 26MHz and maximum operation frequency was 1910MHz.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
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

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	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

10 - 10/11/11 1 02 7/0	~711*
Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	Carlo C

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 94dBµV/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 CTATE with the radiated emission limits specified in §15.209(a)

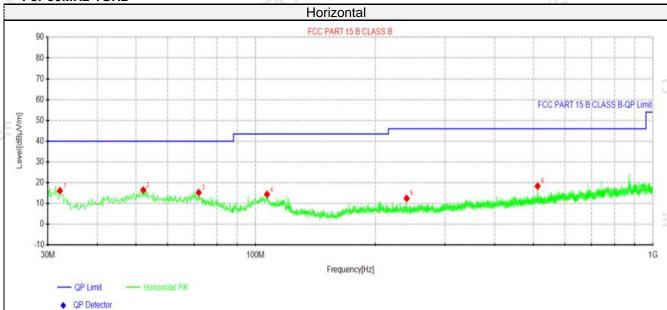
#### Radiated emission limits

		The state of the s		
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	100	
88-216	3 (1)	43.5	150	
216-960	3	46.0	200	
Above 960	3	54.0	500	
TEST RESULTS Remark:			CTIN C	(A)

Remark: CTATESTING

- 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
- 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.

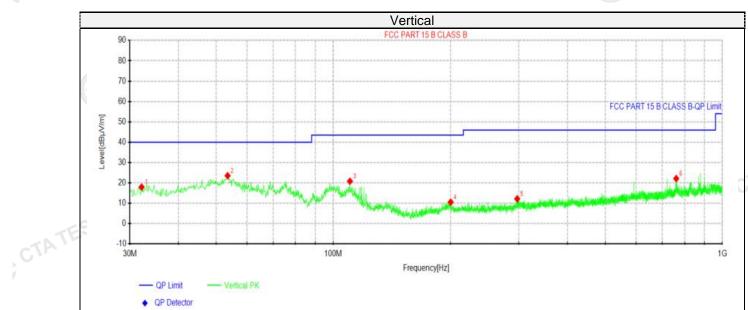
#### For 30MHz-1GHz



Suspected Data List										
NO	Freq. Readin	Reading	Level	Factor	Limit	Margin	Height	Angle	Dolority	
NO.	[MHz]	[dBµ∨]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity	
1	32.1825	34.52	16.15	-18.37	40.00	23.85	100	330	Horizontal	
2	52.1888	33.02	16.49	-16.53	40.00	23.51	100	170	Horizontal	
3	71.9525	36.26	15.29	-20.97	40.00	24.71	200	190	Horizontal	
4	106.872	33.11	14.41	-18.70	43.50	29.09	100	280	Horizontal	
5	240.005	30.75	12.48	-18.27	46.00	33.52	100	20	Horizontal	
6	512.696	32.48	18.37	-14.11	46.00	27.63	200	310	Horizontal	KF
Note:1).Level (dBµV/m)= Reading (dBµV)+ Factor (dB/m) 2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)										
<ol><li>3). Mar</li></ol>	gin(dB) = I	_imit (dBµV/r	n) - Level (d	dΒμV/m)						

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

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Suspe	Suspected Data List										
NO.	Freq.	Reading	Level	Factor	Limit	Margin	Height	Angle	Dolority.		
NO.	[MHz]	[dBµ∨]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity		
1	32.1825	36.32	17.95	-18.37	40.00	22.05	100	260	Vertical		
2	53.5225	40.38	23.56	-16.82	40.00	16.44	100	210	Vertical		
3	110.388	39.75	20.84	-18.91	43.50	22.66	100	210	Vertical		
4	200.356	29.86	10.58	-19.28	43.50	32.92	100	30	Vertical		
5	296.992	29.57	12.18	-17.39	46.00	33.82	200	220	Vertical		
6	760.895	32.79	22.14	-10.65	46.00	23.86	100	20	Vertical		

CTA

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 (dB $\mu$ V/m) - Level (dB $\mu$ V/m)

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#### For 1GHz to 25GHz

GFSK (above 1GHz)

Frequency(MHz):			24	02	Pola	arity:	Н	IORIZONTA	\L
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	97.60	PK	114.00	16.40	108.87	27.48	3.43	42.18	-11.27
2402.00	79.27	AV	94.00	14.73	90.54	27.48	3.43	42.18	-11.27
4804.00	50.25	PK	74.00	23.75	54.52	32.34	5.12	41.73	-4.27
4804.00	39.87	AV	54.00	14.13	44.14	32.34	5.12	41.73	-4.27
7206.00	48.10	PK	74.00	25.90	48.62	36.61	6.49	43.62	-0.52
7206.00	37.20	ΑV	54.00	16.80	37.72	36.61	6.49	43.62	-0.52

-NG								-	
Freque	ncy(MHz)	:	24	02	Pola	arity:	VERTICAL		
Frequency (MHz)	_	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	95.14	PK	114.00	18.86	106.41	27.48	3.43	42.18	-11.27
2402.00	76.81	AV	94.00	17.19	88.08	27.48	3.43	42.18	-11.27
4804.00	47.79	PK	74.00	26.21	52.06	32.34	5.12	41.73	-4.27
4804.00	37.41	AV	54.00	16.59	41.68	32.34	5.12	41.73	-4.27
7206.00	45.64	PK	74.00	28.36	46.16	36.61	6.49	43.62	-0.52
7206.00	34.74	AV	54.00	19.26	35.26	36.61	6.49	43.62	-0.52

Frequency(MHz):			24	40	Pola	arity:	Н	IORIZONTA	۱L
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)
2440.00	97.57	PK	114.00	16.43	108.82	27.52	3.45	42.22	-11.25
2440.00	79.28	AV	94.00	14.72	90.53	27.52	3.45	42.22	-11.25
4880.00	51.64	PK	74.00	22.36	55.52	32.6	5.34	41.82	-3.88
4880.00	40.90	AV	54.00	13.10	44.78	32.6	5.34	41.82	-3.88
7320.00	52.62	PK	74.00	21.38	52.73	36.8	6.81	43.72	-0.11
7320.00	37.82	AV	54.00	16.18	37.93	36.8	6.81	43.72	-0.11

Frequency(MHz):		2440		Polarity:		VERTICAL			
Frequency (MHz)	Emis Lev (dBu	vel	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)
2440.00	95.03	PK	114.00	18.97	106.28	27.52	3.45	42.22	-11.25
2440.00	76.74	AV	94.00	17.26	87.99	27.52	3.45	42.22	-11.25
4880.00	49.10	PK	74.00	24.90	52.98	32.6	5.34	41.82	-3.88
4880.00	38.36	ΑV	54.00	15.64	42.24	32.6	5.34	41.82	-3.88
7320.00	50.08	PK	74.00	23.92	50.19	36.8	6.81	43.72	-0.11
7320.00	35.28	AV	54.00	18.72	35.39	36.8	6.81	43.72	-0.11

Frequency(MHz):			2480		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)
2480.00	97.66	PK	114.00	16.34	107.77	27.7	4.47	42.28	-10.11
2480.00	78.32	AV	94.00	15.69	88.43	27.7	4.47	42.28	-10.11
4960.00	51.08	PK	74.00	22.92	54.16	32.73	5.66	<b>3</b> 41.47	-3.08
4960.00	42.55	AV	54.00	11.45	45.63	32.73	5.66	41.47	-3.08
7440.00	52.17	PK	74.00	21.83	51.72	37.04	7.25	43.84	0.45
7440.00	38.07	AV	54.00	15.93	37.62	37.04	7.25	43.84	0.45

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Frequency(MHz):			2480		Polarity:		VERTICAL		
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)
2480.00	95.58	PK	114.00	18.42	105.69	27.7	4.47	42.28	-10.11
2480.00	76.23	AV	94.00	17.77	86.34	27.7	4.47	42.28	-10.11
4960.00	49.00	PK	74.00	25.00	52.08	32.73	5.66	41.47	-3.08
4960.00	40.47	ΑV	54.00	13.53	43.55	32.73	5.66	41.47	-3.08
7440.00	50.09	PK	74.00	23.91	49.64	37.04	7.25	43.84	0.45
7440.00	35.99	ΑV	54.00	18.01	35.54	37.04	7.25	43.84	0.45
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.									

#### REMARKS:

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

#### Results of restricted bands Test (Radiated)

Results of	restricte	d bands i	Test (Radiate	ed)					
Frequency(MHz):			2402		Polarity:		HORIZONTAL		
Frequency (MHz)	Emis Le (dBu		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)
2390.00	60.16	PK	74	13.84	70.58	27.42	4.31	42.15	-10.42
2390.00	42.28	AV	54	11.72	52.70	27.42	4.31	42.15	-10.42
Freque	ncy(MHz)	:	2402		Polarity:		VERTICAL		
Frequency (MHz)	Emis Le (dBu		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)
2390.00	57.64	PK	74	16.36	68.06	27.42	4.31	42.15	-10.42
2390.00	39.76	ΑV	54	14.24	50.18	27.42	4.31	3 42.15	-10.42
Freque	ncy(MHz)	:	2480		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	60.46	PK	74	13.54	70.57	27.7	4.47	42.28	-10.11
2483.50	41.36	AV	54	12.64	51.47	27.7	4.47	42.28	-10.11
Frequency(MHz):		2480		Polarity:		VERTICAL			
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	57.94	PK	74	16.06	68.05	27.7	4.47	42.28	-10.11
2483.50	38.84	AV	54	15.16	48.95	27.7	4.47	42.28	-10.11

#### Note:

- Emission level (dBuV/m) = Meter Reading+ antenna Factor+ cable loss- preamp factor.

  Margin value = Limits-Emission level.

  -- Mean the PK detector measured value. 1)

- 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

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#### 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 CTATESTING 20dB.

#### LIMIT

N/A

#### **TEST RESULTS**

Modulation	Channel	20dB bandwidth (MHz)	Result					
CIATE	Low	2.156						
GFSK	Mid	2.181	PASS					
22 20 1251	High	2.148	-61	ING				
Note: 1.The test results including the cable lose.								



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#### 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.

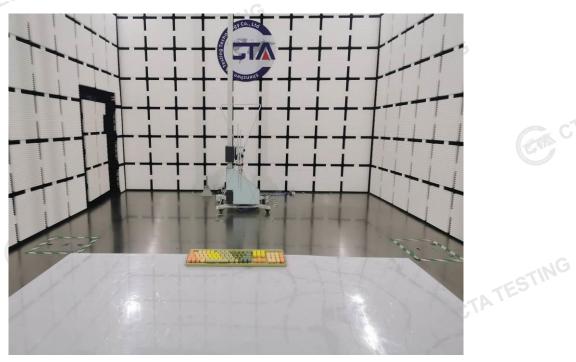
And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than CTATE 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

The maximum gain of antenna was -1.52 dBi.

Remark:The anter 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.

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#### 5. Test Setup Photos of the EUT





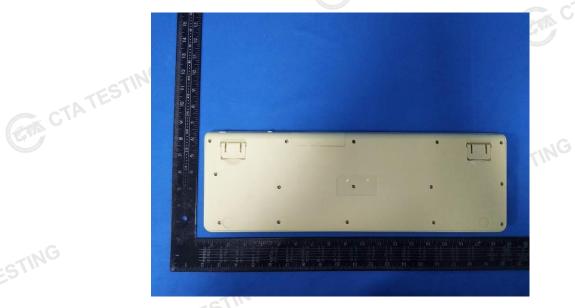
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### 6. Test Photos of the EUT







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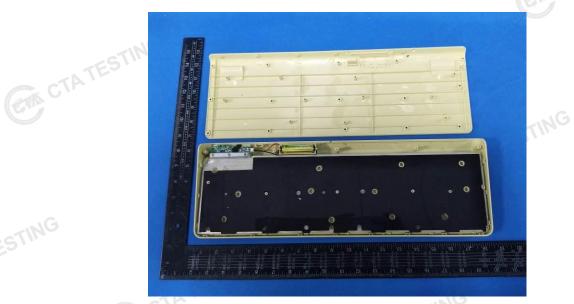


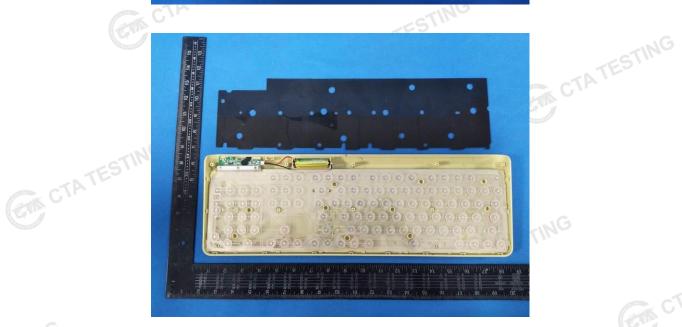


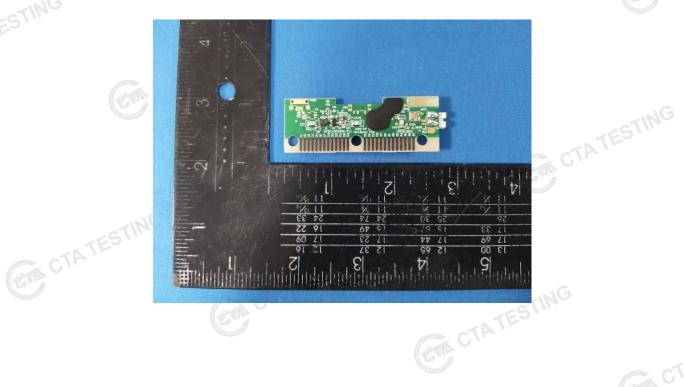


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