FCC PART 15C TEST REPORT FOR CERTIFICATION

On Behalf of

Eran Financial Services LLC

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FCC ID：2BAPV-ER1818A

Report Type：	**Product Type：**
Original report	Wireless 8-key touch remote control

Test Engineer: Clint Chen

Report Number: STDNB-230226F-001

Report Date: 2023-04-11

Reviewed By: Philip Guo

Prepared By:

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The device described above is tested by Standard-Tech Co., Ltd. Testing Center. to confirm comply with all the FCC Part 15 Subpart C requirements. The test results are contained in this test report and Standard-Tech Co., Ltd. Testing Center is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements. This Report is made under FCC Part 2.1074. No modifications were required during testing to bring this product into compliance. This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Standard-Tech Co., Ltd. Testing Center.

TABLE OF CONTENTS

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	**Standard**	**Results**
Power Line Conducted Emission	FCC Part 15: 15.207	N/A
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.205 FCC Part 15: 15.231(b)	PASS
Stop Transmitting Time Test	FCC Part 15: 15.231(a)(1)	PASS
20dB Bandwidth Test	FCC Part 15: 15.231(c)	PASS

2. GENERAL INFORMATION

2.1.Description of Equipment Under Test

Applicant:	Eran Financial Services LLC
Address:	3500 Boca Raton Blvd - Suite 717,Boca Raton, Florida 33431
Manufacturer:	Ningbo Shenghe Lighting Co.,LTD
Address:	311 Penglai Rd., Xiangshan, Ningbo, China
Factory:	Ningbo Shenghe Lighting Co.,LTD
Address:	311 Penglai Rd., Xiangshan, Ningbo, China
Product:	Wireless 8-key touch remote control
Model No.:	HCMN-Q0
Operation frequency:	433.92MHz
Modulation type:	ASK
Power Adapter:	Input: DC 3.0V, 50mA
Antenna Type:	Onboard antenna, 1dBi
Hardware version:	V1.0
Software version:	V1.0
Sample Type:	Prototype production
Date of Receipt:	2023-04-10
Date of Test:	2023/04/08-2023/04/10

2.2.Equipments Used during the Test

Conducted Emissions

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Shielding Room	AUDIX	N/A	N/A	2021/07/27	3 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESR7	101487	2022/04/01	2 Year
3.	V-LISN	Rohde & Schwarz	NNLK 8122	8122-00128	2022/03/31	2 Year
4.	RF Cable	YuanDao	RG223	N/A	2022/04/14	1 Year
5.	Test Software	AUDIX	e3	N/A	N/A	N/A
Note: N/A means Not applicable.						

For frequency range 30MHz~1000MHz (In 3m Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Semi-anechoic chamber	AUDIX	N/A	N/A	2021/07/27	3 Year
2.	EMI Test Receiver	R&S	ESR7	101487	2022/04/01	2 Year
3.	Biconical Logarithmic Antenna	SCHWARDZBECK	VULB 9162	9162-104	2022/04/10	2 Year
4.	Cable Line	PEWC	CFD400NL	N/A	2022/04/14	1 Year
5.	Loop Antenna	Beijing Daze	ZN30900C	1062	2023/01/19	1 Year
6.	Test Software	AUDIX	e3	N/A	N/A	1 Year
Note: N/A means Not applicable.						

For frequency range above 1GHz (In 3m Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Semi-anechoic chamber	AUDIX	N/A	N/A	2021/07/27	3 Year
2	Spectrum Analyzer	R&S	FSP	100615	2022/04/01	2 Year
3	Horn Antenna	SCHWARDZBECK	BBHA 9170	895	2023/01/19	1 Year
4	Horn Antenna	SCHWARDZBECK	BBHA 9120 D	9120D-1515	2022/04/06	2 Year
5	Broadband Preamplifier	SCHWARDZBECK	BBV9718	9718-269	2022/01/14	2 Year
6	Broadband Preamplifier	SKET	LNPA-1840	SK2019121201	2022/01/20	2 Year
7	RF Cable	SKET	RC-40G-K-M/K-M-0.6M	N/A	2022/07/05	1 Year
8	RF Cable	SKET	RC-40G-K-M/K-M-0.6M	N/A	2022/07/05	1 Year
9	Test Software	AUDIX	e3	N/A	N/A	N/A
Note: N/A means Not applicable.						

RF Conducted Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	R&S	FSP	100615	2022/04/01	2 Year
2.	RF Cable	STD	/	/	/	/

2.3. Test Facility

Site Description

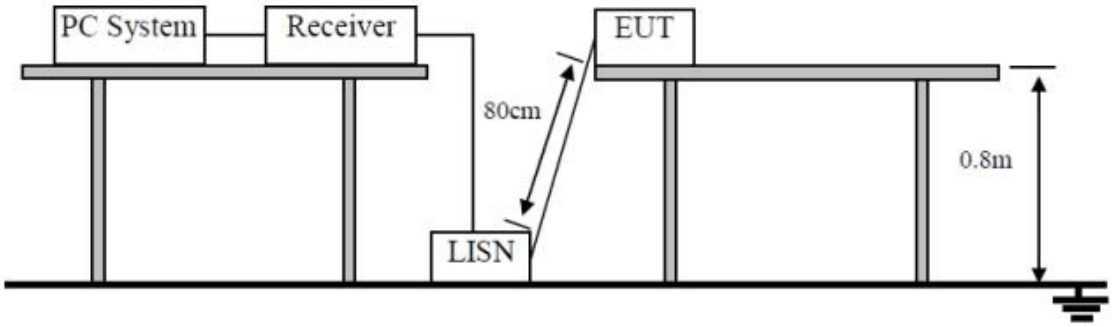
Name of Firm	:	STANDARD-TECH TESTING SERVICES Standard-Tech Building, No. 6 Guanhong Road Guangzhou Science City, Guangzhou City, Guangdong Province, Guangzhou 510663, People's Republic of China
A2LA	:	Certificate No.: 4703.01
EMC Lab.	:	Certificated by Industry Canada Registration Number: 20901 Valid Date: 2024/02/29
	:	Certificated by FCC USA. Designation No.: CN1222 Valid Date: 2024/02/29

2.4.Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	2.90dB(150KHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	5.34dB(30M~1GHz, Distance: 3m)
Uncertainty for Radiation Emission test in 3m chamber(1GHz-40GHz)	4.14dB(1~6GHz, Distance: 3m)
	4.60dB(6~18GHz, Distance: 3m)
	4.94dB(18~40GHz, Distance: 3m)
Uncertainty for Output power test	1.34dB
Uncertainty for Bandwidth test	92.3kHz

3. POWER LINE CONDUCTED EMISSION TEST

3.1.Block Diagram of Test Setup



3.2.Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.3.Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power Via PC connected to the power mains through a line impedance stabilization network (V-LISN). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESR7) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.4.Radiated Emission Test Results

Pass

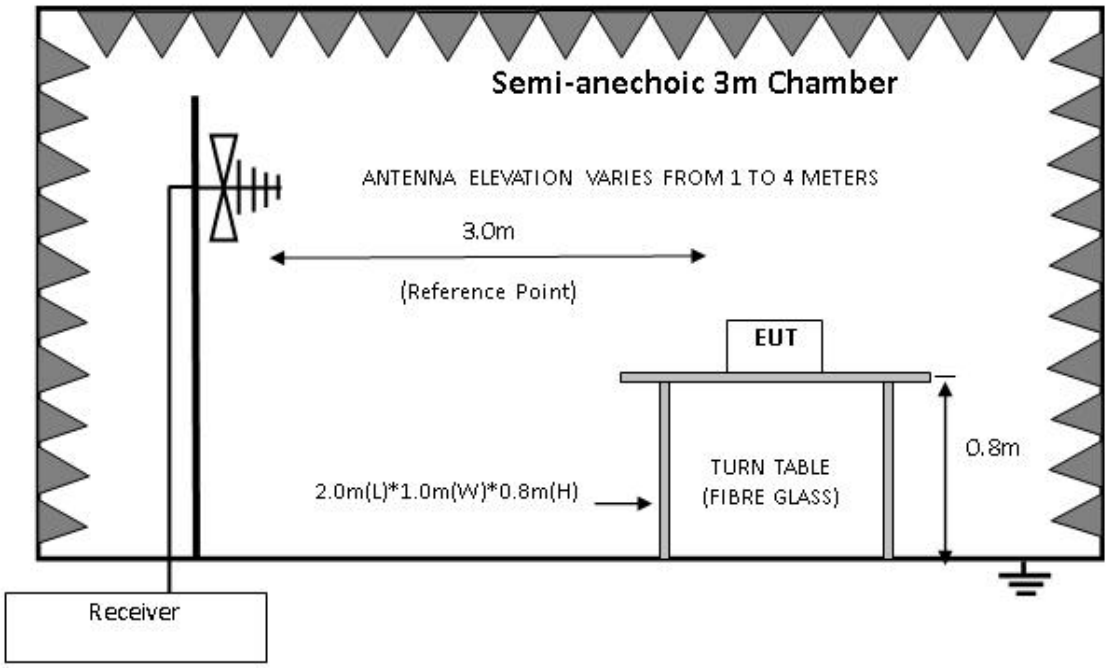
Corrected Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)
Margin (dB) = Limit (dBμV) – Corrected Amplitude (dBμV)

N/A

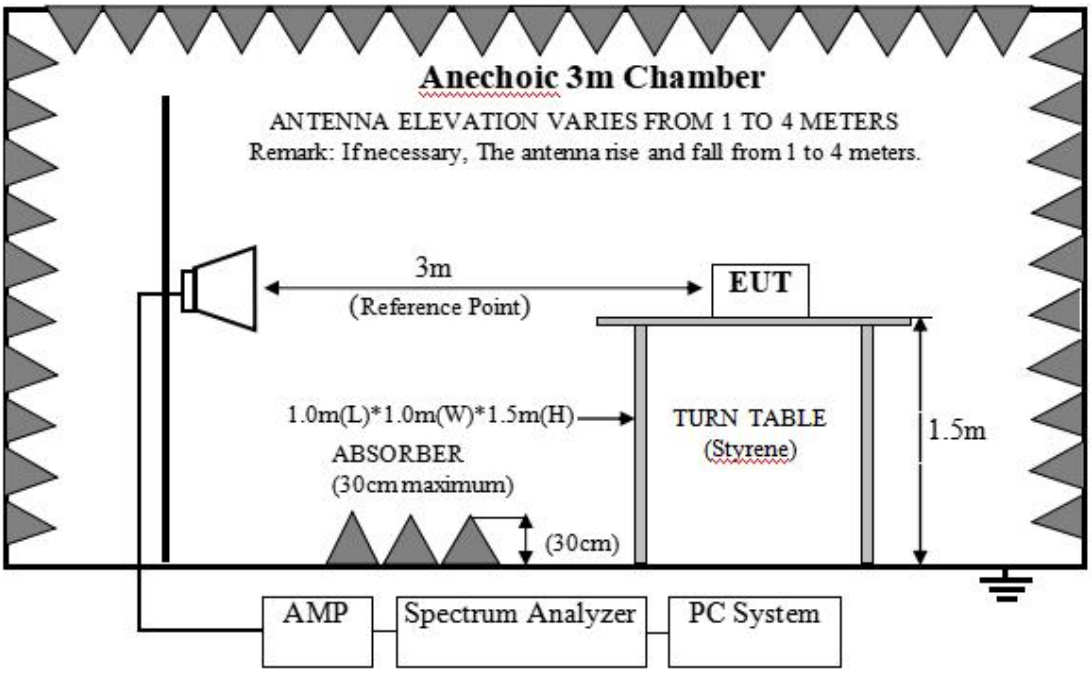
4. RADIATED EMISSION TEST

4.1.Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range above 1GHz



4.2.Radiated Emission Limit Standard: FCC 15.209 and 15.231

Fundamental Frequency(MHz)	Field Strength of Fundamental	Field Strength of Spurious emissions
433.92	AV:80.83dBuV/m at 3m distance PK:100.83dBuV/m at 3m distance	AV:60.83dBuV/m at 3m distance PK:80.83dBuV/m at 3m distance

Note: The spurious emissions appearing within the frequency band listed in 15.205 Shall also comply with limits shown in section 15.209

4.3. Operating Condition of EUT

4.3.1.Setup the EUT and simulator as shown as Section 4.2.
4.3.2.Turn on the power of all equipments.
4.3.3.Let EUT work in Tx mode.

4.4.Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground for frequency 30MHz~1000MHz, 1.5 meter high above ground for frequency above 1GHz and put the absorbing with 2.4m(L)*2.4m(W)*0.3m(H) on the ground . The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna for frequency 30MHz~1000MHz, and the Horm antenna is used as receiving antenna for frequency above 1GHz. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10-2013 on radiated emission Test.

The bandwidth of the EMI test receiver (R&S ESR7) is set at 120kHz for frequency range from 30MHz to 1000MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

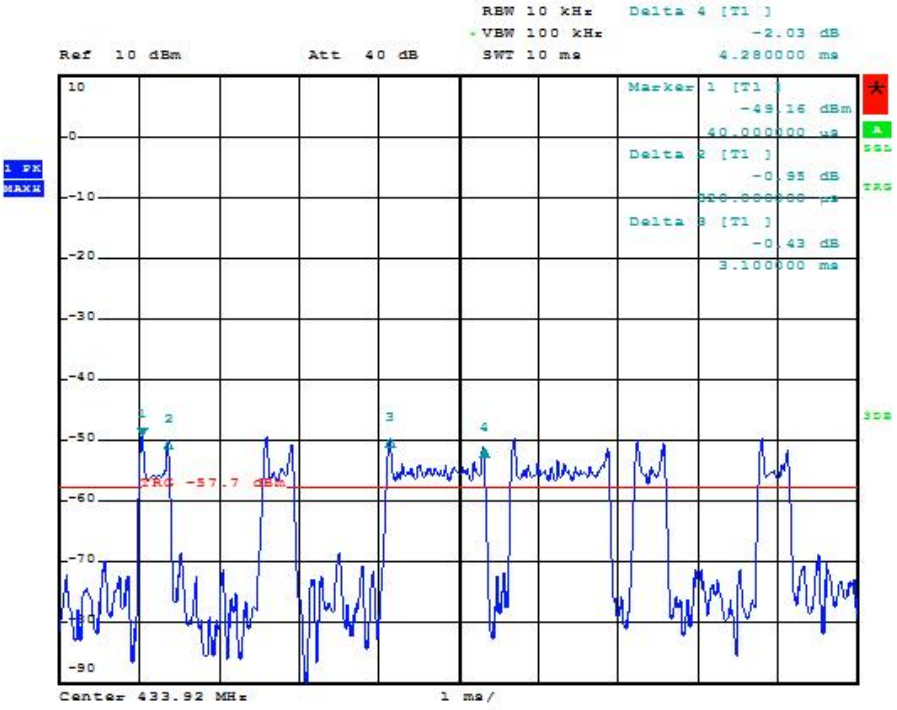
This device is pulse modulated, a duty cycle factor was used to calculate average level based measured peak level.

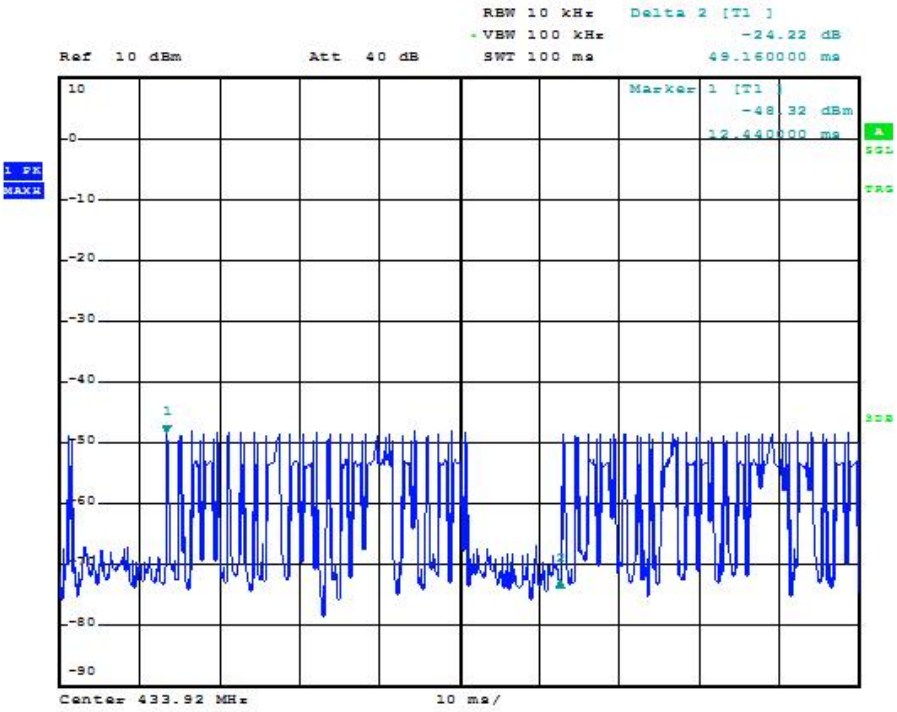
4.5.Radiated Emission Test Results

PASS.

The frequency range from 30MHz to 6000MHz was investigated. When PK measured Levels comply with average limit, then the average levels were deemed to comply with Average limits. When PK measured levers exceed average limit, then the duty cycle factor of 100ms was used to calculate average level.

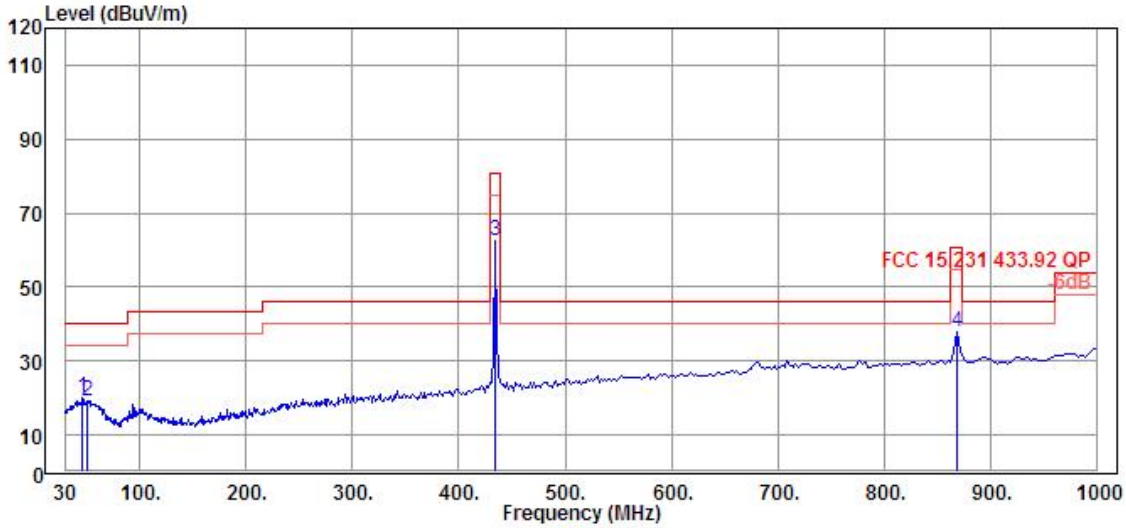
Duty cycle factor = 20log(1/duty cycle) = 20log[(0.32ms×9+1.18ms×12)/49.16ms]= -9.20





Frequency: 30MHz~1GHz

Polarization:	**Horizontal**

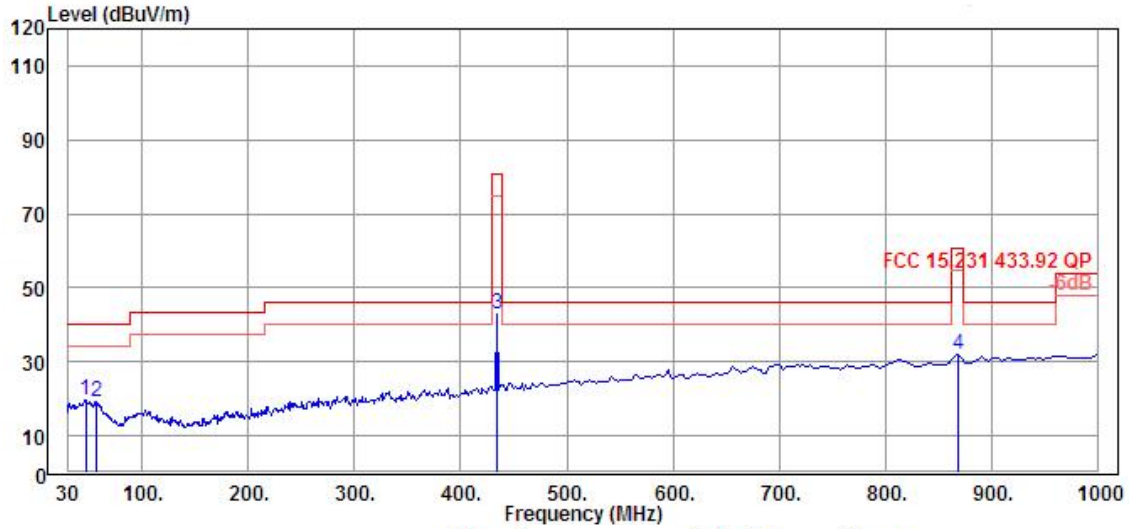


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	
1	45.69	20.28	0.85	19.43	40.00	-19.72	Peak
2	50.94	19.26	-0.51	19.77	40.00	-20.74	Peak
3	434.07	62.64	39.21	23.43	80.83	-18.19	Peak
4	869.13	37.79	7.15	30.64	60.83	-23.04	Peak

Average Value

Freq (MHz)	Peak Level dB(uV)	PDCF(dB)	Average Level dB(uV/m)	Limit dB(uV/m)	Over Limit dB(uV/m)	Remark
434.07	62.64	-9.20	53.44	80.83	27.39	Average
869.13	37.79	-9.20	28.59	60.83	32.24	Average

Polarization:	Vertical



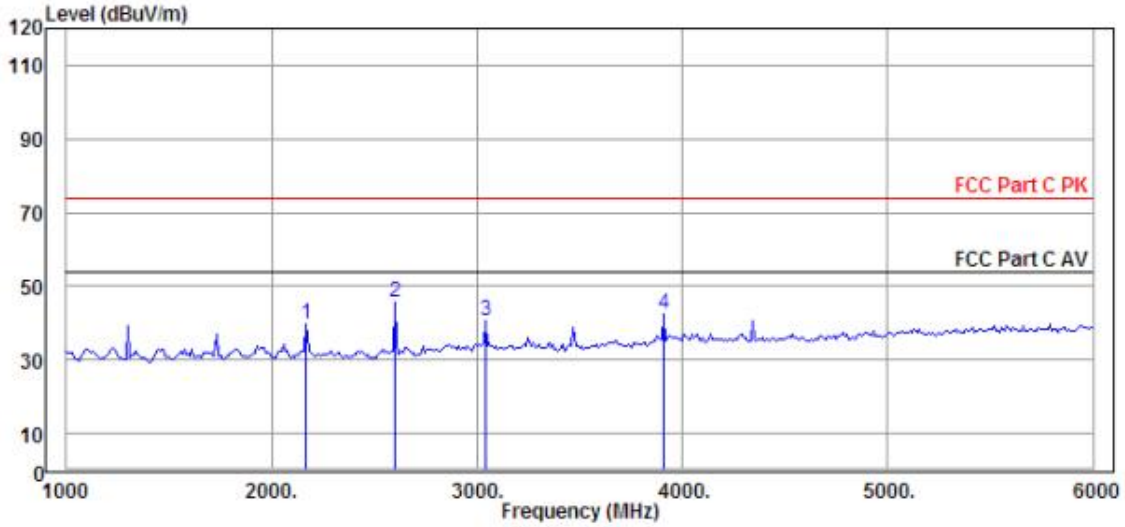
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	
1	46.34	19.71	0.20	19.51	40.00	-20.29	Peak
2	56.00	19.35	0.17	19.18	40.00	-20.65	Peak
3	434.07	43.07	19.64	23.43	80.83	-37.76	Peak
4	869.13	31.76	1.12	30.64	60.83	-29.07	Peak

Average Value

Freq (MHz)	Peak Level dB(uV)	PDCF(dB)	Average Level dB(uV/m)	Limit dB(uV/m)	Over Limit dB(uV/m)	Remark
434.07	43.07	-9.20	33.87	80.83	46.96	Average
869.13	31.76	-9.20	22.56	60.83	38.27	Average

Frequency: above 1GHz

ASK	Horizontal

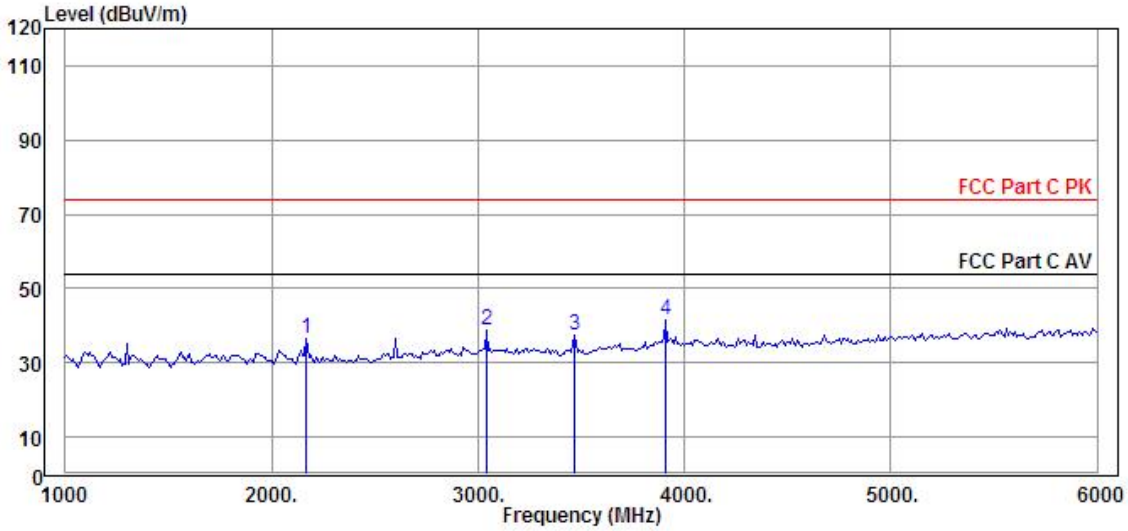


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	
1	2170.00	39.91	43.84	-3.93	74.00	-34.09	Peak
2	2600.00	45.52	49.22	-3.70	74.00	-28.48	Peak
3	3040.00	40.47	43.82	-3.35	74.00	-33.53	Peak
4	3910.00	42.31	43.03	-0.72	74.00	-31.69	Peak

Average Value

Freq (MHz)	Peak Level dB(uV)	PDCF(dB)	Average Level dB(uV/m)	Limit dB(uV/m)	Over Limit dB(uV/m)	Remark
2170.0	39.91	-9.20	30.71	60.83	30.12	Average
2600.0	45.52	-9.20	36.32	60.83	24.51	Average
3040.0	40.47	-9.20	31.27	60.83	29.56	Average
3910.0	42.31	-9.20	33.11	60.83	27.72	Average

ASK	Vertical



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	
1	2170.00	36.60	40.53	-3.93	74.00	-37.40	Peak
2	3040.00	38.97	42.32	-3.35	74.00	-35.03	Peak
3	3470.00	37.40	40.01	-2.61	74.00	-36.60	Peak
4	3910.00	41.43	42.15	-0.72	74.00	-32.57	Peak

Average Value

Freq (MHz)	Peak Level dB(uV)	PDCF(dB)	Average Level dB(uV/m)	Limit dB(uV/m)	Over Limit dB(uV/m)	Remark
2170.0	36.60	-9.20	27.40	60.83	33.43	Average
2600.0	38.97	-9.20	29.77	60.83	31.06	Average
3040.0	37.40	-9.20	28.20	60.83	32.63	Average
3910.0	41.43	-9.20	32.23	60.83	28.60	Average

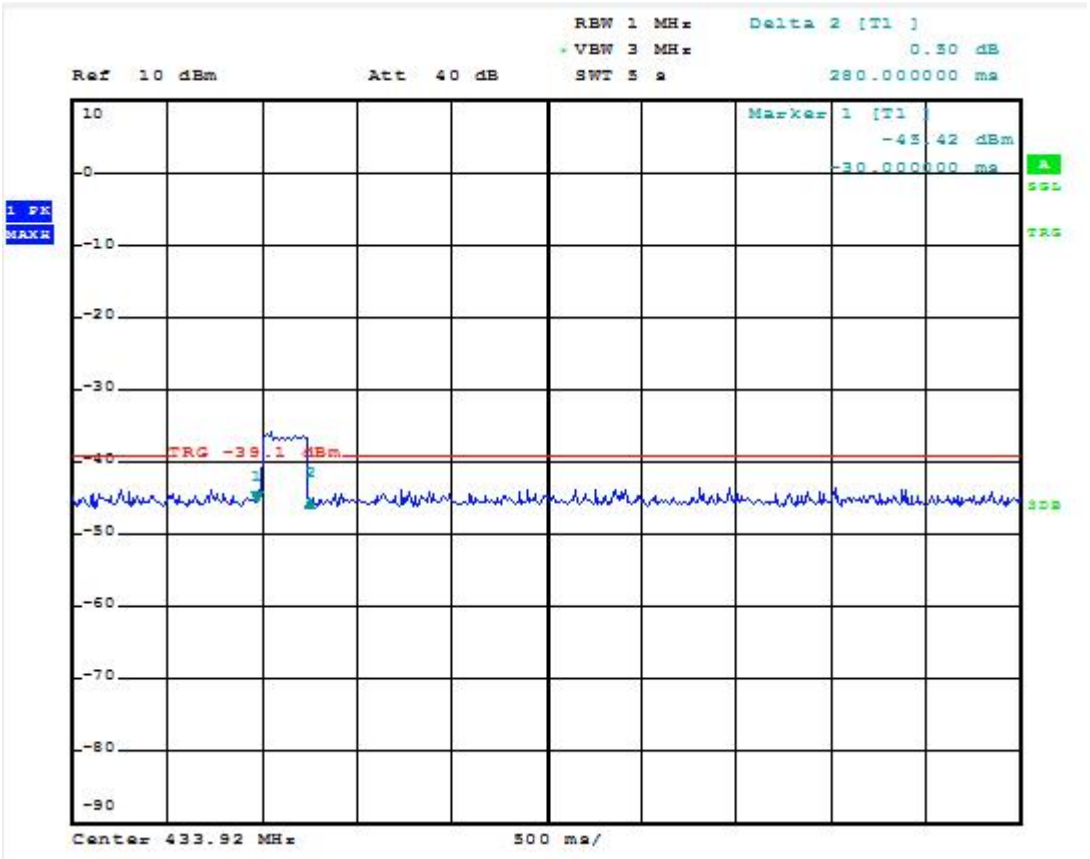
5. STOP TRANSMITTING TIME TEST

5.1.Limit

Per Part 15.231(a)(1): A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released Test Procedure

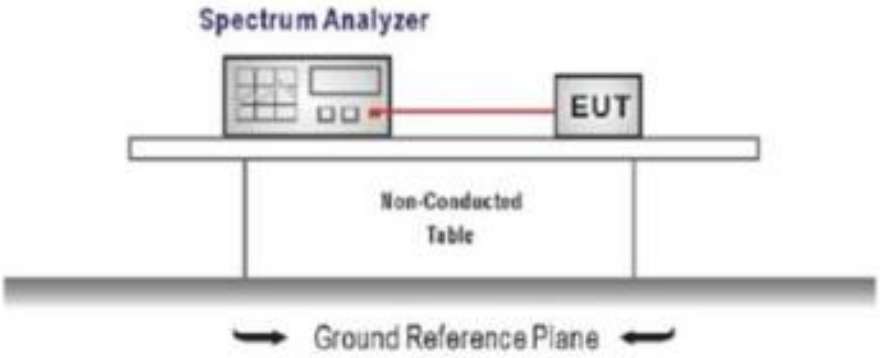
5.2.Test result

Frequency (MHz)	Test Mode	Stop Transmitting Time (s)	Limit (s)
433.92	Tx	0.28	<5
Conclusion: Pass			



6. 20dB Bandwidth Test

6.1.Block Diagram of Test Setup

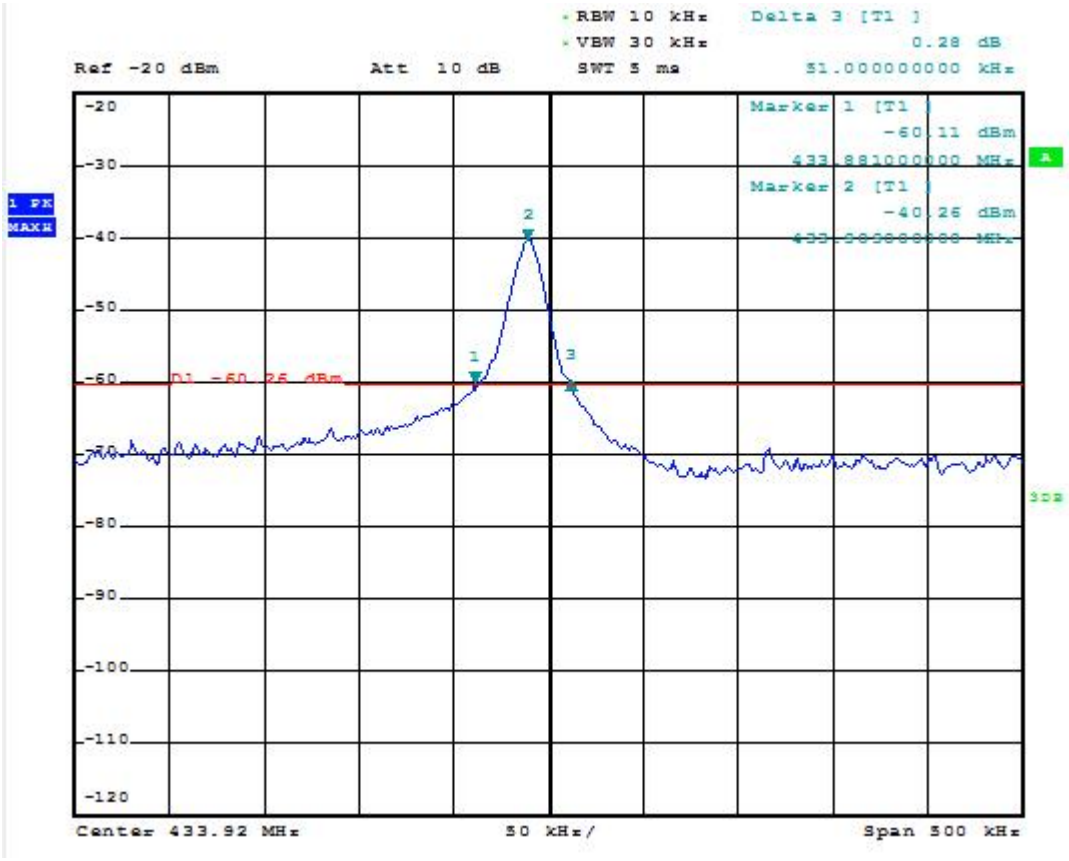


6.2.Limit

The bandwidth of the emission shall be no wider than 0.25% of the center frequency.

6.3.Test Results

Frequency (MHz)	Test Mode	-20dB Bandwith (kHz)	Limit (MHz)
433.92	Tx	51.0	<1.0848
Conclusion: Pass			



7. ANTENNA REQUIREMENT

RESULT: **PASS**

Test standard: **FCC Part 15.231**

Limit: **the use of antennas with directional gains that do not exceed 6 dBi**

According to the manufacturer declared, the EUT has an Whip antenna, the directional gain of antenna is 1.0dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply the provision.

8. RADIO FRREQUENCY EXPOSURE COMPLIANCE

RESULT: **Pass**

Test Standard: FCC KDB Publication 447498 D01 V06

Since maximum peak output power of the transmitter is <22mW, i.e.0.91<22mW, hence the EUT is excluded from SAR evaluation according to FCC KDB Publication 447498 D01: General RF Exposure Guidance V06.

**********End of Report**********