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TEST REPORT

For 2.4GHz devices

Report No. ..... :	**CHTEW23060013** Report Verification:
Project No.....:	**SHT2304047601EW**
FCC ID ..... :	**2BBUG-T-6819B**
Applicant's name ..... :	**Shenzhen FLYUEACE Model Technology Co., LTD**
Address.....:	Floor 3, Building 3, Acupoint Industrial Park, Jiuwei Community, Hangcheng Street, Baoan District, Shenzhen
Product Name ..... :	**2.4GHz Transmitter**
Trade Mark .....:	-
Model No. .....:	T-6819B
Listed Model(s) .....:	T-6819A,T-6819C,T-6819D,T-8196B,TX-9B,TX-8B,TX-10C, TX-10A,T-8166A,T-8198A, T-8619A, T-8192A,T-6973A
Standard ..... :	**FCC CFR Title 47 Part 15 Subpart C § 15.249**
Date of receipt of test sample.....:	Apr.26, 2023
Date of testing.....:	Apr.26, 2023-Jun.06, 2023
Date of issue.....:	Jun.07, 2023
Result..... .....:	**PASS**

Compiled by (Position+Printed name+Signature):	File administrator Fanghui Zhu	Fanghui Zhu
Supervised by (Position+Printed name+Signature):	Project Engineer Weiyang.Xiang	Weiyang.Xiang
Approved by (Position+Printed name+Signature):	RF Manager Hans Hu	Hans Hu

Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd.**
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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The test report merely correspond to the test sample.

Contents

1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:

– FCC CFR Title 47 Part 15 Subpart C § 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

1.2. Report version

Revision No.	Date of issue	Description
N/A	2023-06-07	Original

2. TEST DESCRIPTION

Report clause	Test Items	Standard Requirement	Result	Test Engineer
5.1	Antenna Requirement	15.203	PASS	Xiaoqin Li
5.2	AC Conducted Emission	15.207	N/A	N/A
5.3	20dB Bandwidth	15.215/15.249	PASS	Xiaoqin Li
5.4	99% Occupied Bandwidth	-	PASS*1	Xiaoqin Li
5.5	Duty cycle	-	PASS*1	Xiaoqin Li
5.6	Radiated field strength of the fundamental signal	15.249(a)	PASS	Quanhai Deng
5.7	Radiated Band Edge Emission	15.249(a)15.205/15.209	PASS	Yifan Wang
5.8	Radiated Spurious Emission	15.249(d)15.205/15.209	PASS	Junman Wang

Note:

– The measurement uncertainty is not included in the test result.

– *1: No requirement on standard, only report these test data.

3. SUMMARY

3.1. Client Information

Applicant:	Shenzhen FLYUEACE Model Technology Co., LTD
Address:	Floor 3, Building 3, Acupoint Industrial Park, Jiuwei Community, Hangcheng Street, Baoan District, Shenzhen
Manufacturer:	Shenzhen FLYUEACE Model Technology Co., LTD
Address:	Floor 3, Building 3, Acupoint Industrial Park, Jiuwei Community, Hangcheng Street, Baoan District, Shenzhen

3.2. Product Description

Main unit information:	
Product Name:	2.4GHz Transmitter
Trade Mark:	-
Model No.:	T-6819B
Listed Model(s):	T-6819A,T-6819C,T-6819D,T-8196B,TX-9B,TX-8B,TX-10C, TX-10A,T-8166A,T-8198A, T-8619A, T-8192A,T-6973A
Power supply:	1.5V*4 AA
Hardware version:	V1.0
Software version:	V1.0

3.3. Radio Specification Description

Operation frequency:	2410-2470MHz
Channel number:	16
Channel separation:	5MHz
Modulation:	GFSK
Antenna type:	Integral antenna
Antenna gain:	2.69dBi

3.4. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	
Contact information:	Phone: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn	
Qualifications	Type	Accreditation Number
	FCC	762235

4. TEST CONFIGURATION

4.1. Test frequency list

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channels which were tested. The Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the below blue front.

Channel	Frequency (MHz)	Remark
L	**2410**	**CH_L**
M	**2440**	**CH_M**
H	**2470**	**CH_H**

4.2. Descriptions of Test mode

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit.
For Radiated spurious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report.

4.3. Test sample information

Test item	HTW sample no.
RF Conducted test items	Please refer to the description in the appendix report
RF Radiated test items	YPHT23040476001

Note:

RF Conducted test items: 20dB Bandwidth ,99% Occupied Bandwidth, Duty cycle

RF Radiated test items: Radiated Band Edge Emission, Radiated Spurious Emission, Radiated field strength of the fundamental signal

4.4. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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

Whether support unit is used?			
✓ No			
Item	Equipment	Trade Name	Model No.
1			
2			

4.5. Testing environmental condition

Type	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar

4.6. Statement of the measurement uncertainty

No.	Test Items	Measurement Uncertainty
1	AC Conducted Emission	3.21dB
2	20dB Bandwidth	0.002%
3	99% Occupied Bandwidth	0.002%
4	Duty cycle	-
5	Radiated field strength of the fundamental signal	4.54dB for 30MHz-1GHz 5.10dB for above 1GHz
6	Radiated Band Edge Emission	4.54dB for 30MHz-1GHz 5.10dB for above 1GHz
7	Radiated Spurious Emission	4.54dB for 30MHz-1GHz 5.10dB for above 1GHz

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.7. Equipment Used during the Test

● Conducted test item							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Signal and spectrum Analyzer	R&S	HTWE0242	FSV40	100048	2022/08/25	2023/08/24
●	Signal & Spectrum Analyzer	R&S	HTWE0262	FSW26	103440	2022/08/25	2023/08/24
●	Vector signal generator	R&S	HTWE0244	SMBV100A	260790	2023/05/23	2024/05/22
●	Test software	Tonscend	N/A	JS1120	N/A	N/A	N/A

● Radiated emission- Below 1GHz							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0127	SAC-3m-02	C11121	2018/09/30	2023/09/29
●	EMI Test Receiver	R&S	HTWE0099	ESCI	100900	2022/08/30	2023/08/29
●	Loop Antenna	R&S	HTWE0546	HFH2-Z2E	101073	2021/05/25	2024/05/24
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0547	VULB9163	945	2022/05/23	2025/05/22
●	Pre-Amplifer	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2022/11/04	2023/11/03
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-01	N/A	N/A	2023/02/24	2024/02/23
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-02	SUCOFLEX104	501184/4	2023/02/24	2024/02/23
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated emission- Above 1GHz							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	C11121	2018/09/27	2023/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2022/08/25	2023/08/24
●	Horn Antenna	ETS	HTWE0548	3117	240120	2022/05/20	2025/05/19
●	Horn Antenna	STEATITE	HTWE0549	QMS-00880	25661	2022/05/20	2025/05/19
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2022/11/04	2023/11/03
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2023/02/27	2024/02/26
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2023/02/24	2024/02/23
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2023/02/24	2024/02/23
●	RF Connection Cable	HUBER+SUHNER	HTWE0119-05	6m 3GHz RG Serisa	N/A	2023/02/24	2024/02/23
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2023/02/24	2024/02/23
●	Test Software	Audix	N/A	E3	N/A	N/A	N/A

5. TEST CONDITIONS AND RESULTS

5.1. Antenna Requirement

REQUIREMENT

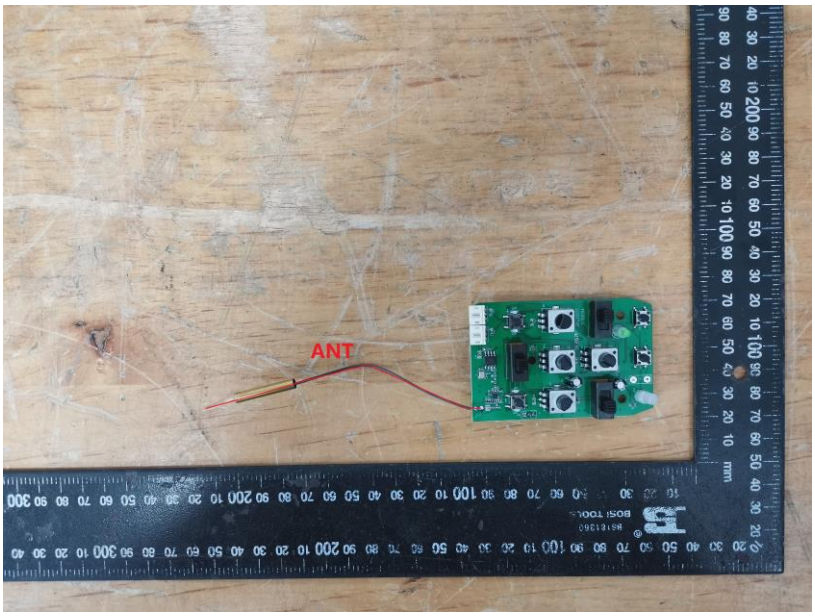
FCC CFR Title 47 Part 15 Subpart C Section 15.203:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

TEST RESULT

☒ **Passed** ☐ **Not Applicable**

The antenna type is a Integral antenna, the directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.



5.2. AC Conducted Emission

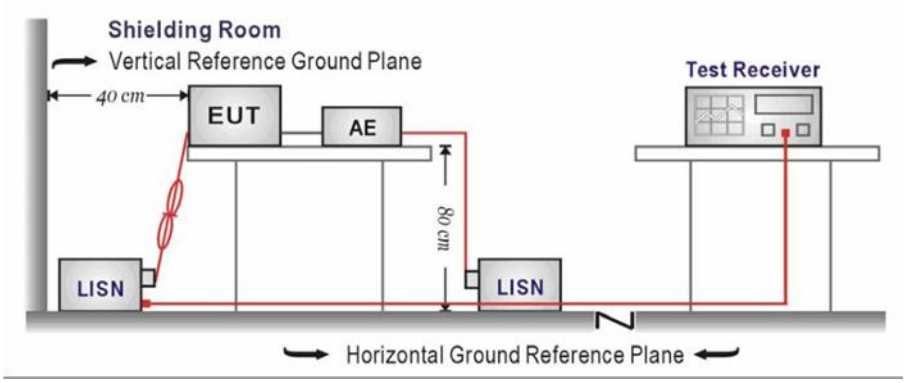
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Frequency range (MHz)	Limit (dBuV)	
	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.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST MODE

Please refer to the clause 4.2

TEST RESULT

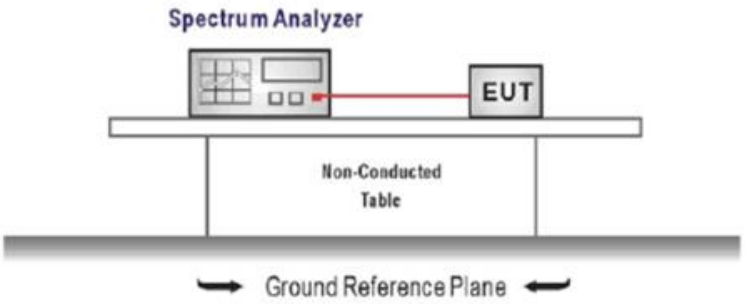
☐ **Passed** ☒ **Not Applicable**

5.3. 20dB bandwidth

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

   Center Frequency = channel center frequency

   Span= approximately 2 to 3 times the 20 dB bandwidth

   RBW = 100 kHz, VBW ≥ 3 × RBW

   Sweep time= auto couple

   Detector = Peak

   Trace mode = max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission, and record the pertinent measurements.

TEST MODE

Please refer to the clause 4.2

TEST RESULT

☒ **Passed** ☐ **Not Applicable**

TEST DATA

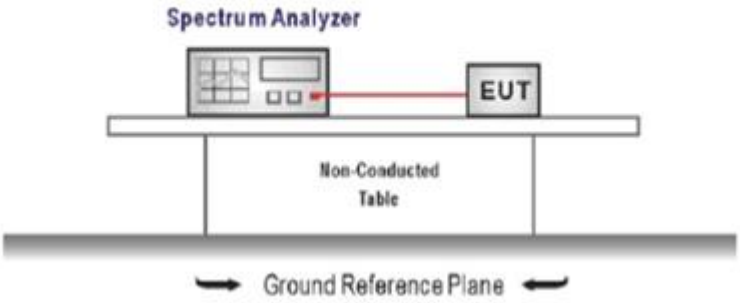
Refer to the appendix report on the section 8

5.4. 99% Occupied Bandwidth

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output andthe spectrum analyzer).
   Center Frequency =channel center frequency
   Span≥1.5 x OBW
   RBW = 1%~5%OBW
   VBW ≥ 3 × RBW
   Sweep time= auto couple
   Detector = Peak
   Trace mode = max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.

TEST MODE

Please refer to the clause 4.2

TEST RESULT

☒ **Passed** ☐ **Not Applicable**

TEST DATA

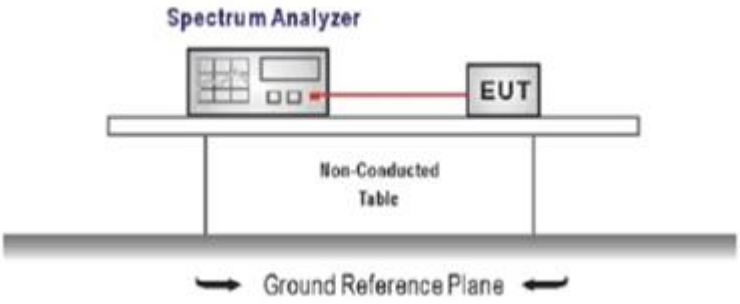
Refer to the appendix report on the section 8

5.5. Duty Cycle

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following spectrum analyzer settings:
   Span=zero span, Frequency=centered channel, RBW= 1 MHz, VBW ≥ RBW
   Sweep=as necessary to capture the entire dwell time,
   Detector function = peak, Trigger mode
4. Measure and record the duty cycle data

TEST MODE

Please refer to the clause 4.2

TEST RESULT

☒ **Passed** ☐ **Not Applicable**

TEST DATA

Refer to the appendix report on the section 8

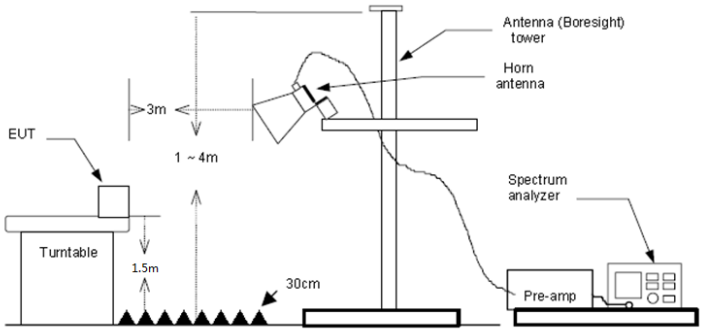
5.6. Radiated field strength of the fundamental signal

LIMIT

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50 (94dBuV/m @3m)	500 (54dBuV/m @3m)
2400-2483.5 MHz	50 (94dBuV/m @3m)	500 (54dBuV/m @3m)
5725-5875 MHz	50 (94dBuV/m @3m)	500 (54dBuV/m @3m)
24.0-24.25 GHz	250 (108dBuV/m @3m)	2500 (68dBuV/m @3m)

Frequencies above 1000 MHz, the field strength limits are based on average limits

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. Use the following spectrum analyzer settings:
   a) Span shall wide enough to fully capture the emission being measured
   b) Set RBW=100kHz for <1GHz, VBW=3*RBW, Sweep time=auto, Detector=peak, Trace=max hold
   c) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement

      For average measurement:

      – VBW=10Hz, When duty cycle is no less than 98 percent
      – VBW≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation, so refer to this clasue 5.6 duty cycle.

TEST MODE

Please refer to the clause 4.2

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note:

1) Level= Reading + Factor; Factor =Antenna Factor+ Cable Loss- Preamp Factor
2) Margin = Limit – Level

Test channel	CH_L
Polarity	Horizontal

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2409.97	84.17	32.18	3.99	42.20	20.00	98.14	114.00	-15.86	Peak

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2410.09	76.55	32.18	3.99	42.20	20.00	90.52	94.00	-3.48	Average

Test channel	CH_L
Polarity	Vertical

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2410.33	83.89	32.18	3.99	42.20	20.00	97.86	114.00	-16.14	Peak

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2410.09	75.88	32.18	3.99	42.20	20.00	89.85	94.00	-4.15	Average

Test channel	CH_M
Polarity	Horizontal

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2440.34	84.56	32.42	4.01	42.17	20.00	98.82	114.00	-15.18	Peak

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2440.10	75.87	32.42	4.01	42.17	20.00	90.13	94.00	-3.87	Average

Test channel	CH_M
Polarity	Vertical

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2440.34	82.67	32.42	4.01	42.17	20.00	96.93	114.00	-17.07	Peak

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2440.10	75.96	32.42	4.01	42.17	20.00	90.22	94.00	-3.78	Average

Test channel	CH_H
Polarity	Horizontal

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2470.23	84.08	32.62	4.03	42.15	20.00	98.58	114.00	-15.42	Peak

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2470.11	75.60	32.62	4.03	42.15	20.00	90.10	94.00	-3.90	Average

Test channel	CH_H
Polarity	Vertical

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2470.23	81.60	32.62	4.03	42.15	20.00	96.10	114.00	-17.90	Peak

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2469.99	75.45	32.62	4.03	42.15	20.00	89.95	94.00	-4.05	Average

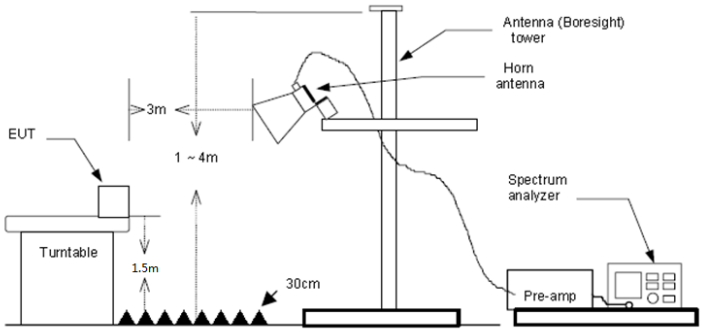
5.7. Radiated Band edge Emission

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, Radiated Emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the Radiated Emissions limits specified in §15.209(a) (see §15.205(c)).

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10 .
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find themaximum emission, all of the interface cables were manipulated according to ANSI C63.10 on radiated measurement.
5. Use the following spectrum analyzer settings:
   a) Span shall wide enough to fully capture the emission being measured
   b) Set RBW=100kHz for <1GHz, VBW=3*RBW, Sweep time=auto, Detector=peak, Trace=max hold
   c) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement

      For average measurement:

      – VBW=10Hz, When duty cycle is no less than 98 percent
      – VBW≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation, so refer to this clasue 5.6 duty cycle.

TEST MODE

Please refer to the clause 4.2

TEST RESULT

☒ **Passed** ☐ **Not Applicable**

Note:

3) Level= Reading + Factor; Factor =Antenna Factor+ Cable Loss- Preamp Factor
4) Over Limit = Level– Limit
5) Average measurement was not performed if peak level is lower than average limit(54 dBuV/m).

Test channel	CH_L	Polarity	Horizontal

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2310.00	39.84	31.62	3.92	42.24	20.00	53.14	74.00	-20.86	Peak
2	2388.95	51.06	32.01	3.97	42.21	20.00	64.83	74.00	-9.17	Peak
3	2390.01	47.40	32.02	3.97	42.21	20.00	61.18	74.00	-12.82	Peak

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2310.00	28.86	31.62	3.92	42.24	20.00	42.16	54.00	-11.84	Average
2	2390.01	28.98	32.02	3.97	42.21	20.00	42.76	54.00	-11.24	Average

Test channel	CH_L	Polarity	Vertical

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2310.00	39.24	31.62	3.92	42.24	20.00	52.54	74.00	-21.46	Peak
2	2389.80	47.88	32.02	3.97	42.21	20.00	61.66	74.00	-12.34	Peak
3	2390.01	43.85	32.02	3.97	42.21	20.00	57.63	74.00	-16.37	Peak

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2310.00	24.84	31.62	3.92	42.24	20.00	38.14	54.00	-15.86	Average
2	2390.01	25.22	32.02	3.97	42.21	20.00	39.00	54.00	-15.00	Average

Test channel	CH_H	Polarity	Horizontal

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2483.49	41.56	32.70	4.04	42.14	20.00	56.16	74.00	-17.84	Peak
2	2500.00	36.44	32.80	4.05	42.12	20.00	51.17	74.00	-22.83	Peak

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2483.49	24.84	32.70	4.04	42.14	20.00	39.44	54.00	-14.56	Average
2	2500.00	24.18	32.80	4.05	42.12	20.00	38.91	54.00	-15.09	Average

Test channel	CH_H	Polarity	Vertical

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2483.49	39.59	32.70	4.04	42.14	20.00	54.19	74.00	-19.81	Peak
2	2500.00	36.28	32.80	4.05	42.12	20.00	51.01	74.00	-22.99	Peak

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2483.49	24.45	32.70	4.04	42.14	20.00	39.05	54.00	-14.95	Average
2	2500.00	24.18	32.80	4.05	42.12	20.00	38.91	54.00	-15.09	Average

5.8. Radiated Spurious Emission

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

Frequency	Limit (dBuV/m)	Value
0.009 MHz ~0.49 MHz	2400/F(kHz) @300m	Quasi-peak
0.49 MHz ~ 1.705 MHz	24000/F(kHz) @30m	Quasi-peak
1.705 MHz ~30 MHz	30 @30m	Quasi-peak

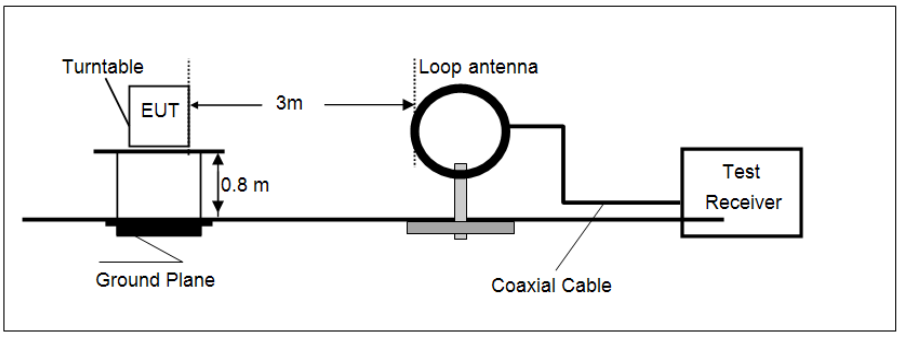
Note: Limit dBuV/m @3m = Limit dBuV/m @300m + 40*log(300/3)= Limit dBuV/m @300m +80,

Limit dBuV/m @3m = Limit dBuV/m @30m +40*log(30/3)= Limit dBuV/m @30m + 40.

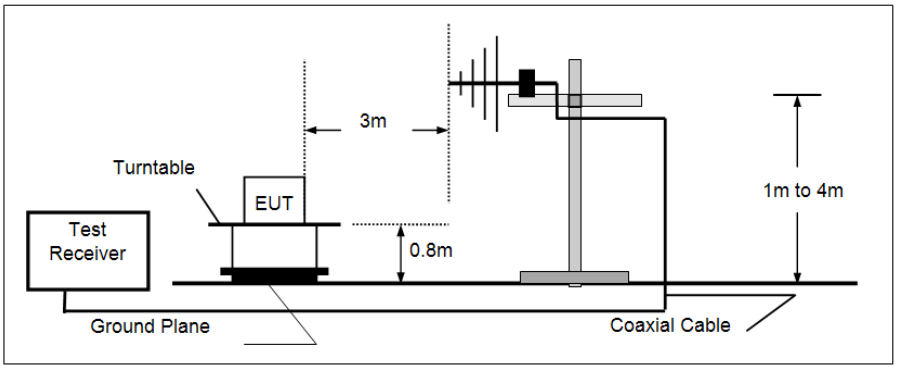
Frequency	Limit (dBuV/m @3m)	Value
30MHz~88MHz	40.00	Quasi-peak
88MHz~216MHz	43.50	Quasi-peak
216MHz~960MHz	46.00	Quasi-peak
960MHz~1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

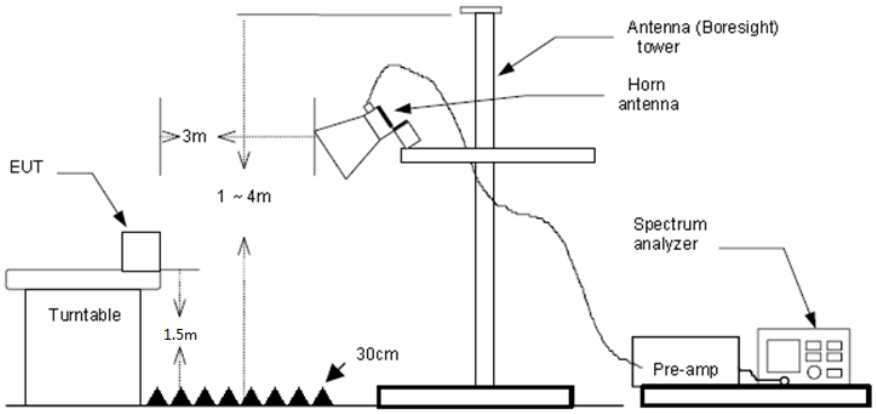
- 9 kHz ~ 30 MHz



- 30 MHz ~ 1 GHz



- Above 1 GHz



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10 .
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
   a) Span shall wide enough to fully capture the emission being measured;
   b) Below 1 GHz:

      RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

      If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
   c) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement

      For average measurement:

      – VBW=10Hz, When duty cycle is no less than 98 percent
      – VBW≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation, so refer to this clasue 5.6 duty cycle.

TEST MODE

Please refer to the clause 4.2

TEST RESULT

☒ **Passed** ☐ **Not Applicable**

Note:

1) Level= Reading + Factor/Transd; Factor/Transd =Antenna Factor+ Cable Loss- Preamp Factor
2) Over Limit = Level– Limit
3) Average measurement was not performed if peak level is lower than average limit(54 dBuV/m) for above 1GHz.

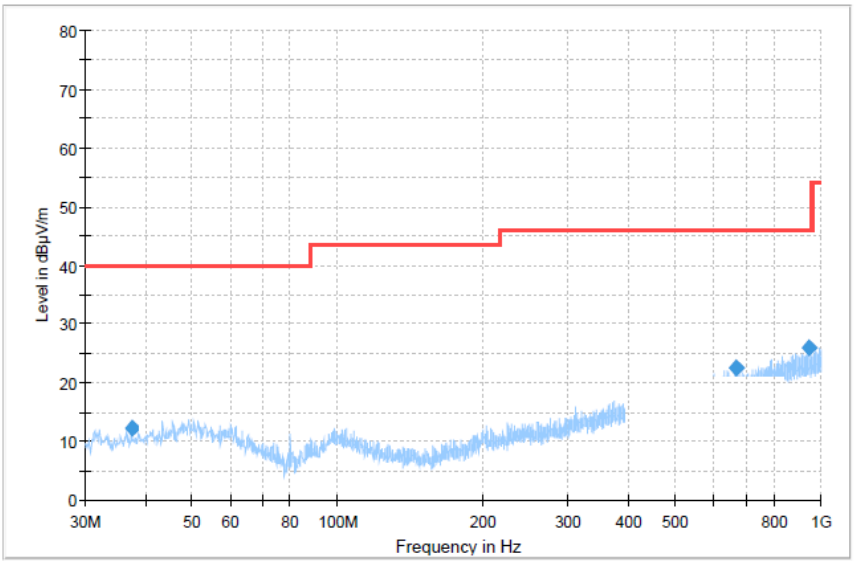
For 9 kHz ~ 30 MHz

The EUT was pre-scanned this frequency band, found the radiated level 20dB lower than the limit, so don't show data on this report.

For 30 MHz ~ 1000 MHz

Have pre-scan all test channel, found CH_M which it was worst case, so only show the worst case's data on this report.

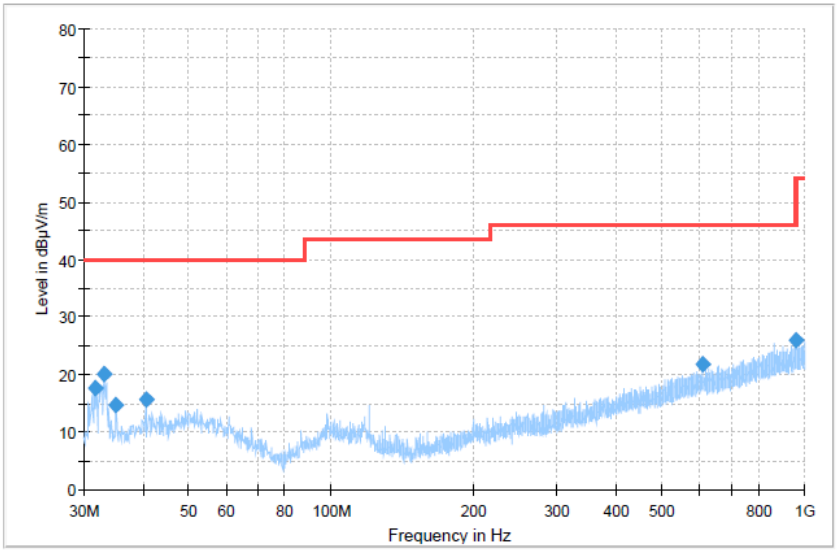
Polarization:	Horizontal



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.638750	12.24	40.00	27.76	300.0	H	148.0	-9.9
49.400000	13.62	40.00	26.38	300.0	H	0.0	-8.1
61.646250	12.52	40.00	27.48	100.0	H	343.0	-9.6
495.721250	18.68	46.00	27.32	300.0	H	330.0	-1.5
667.653750	22.42	46.00	23.58	300.0	H	306.0	1.2
945.316250	25.96	46.00	20.04	300.0	H	84.0	4.5

Polarization:	Vertical



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.697500	17.65	40.00	22.35	100.0	V	126.0	-11.0
33.152500	20.04	40.00	19.96	100.0	V	136.0	-10.7
35.092500	14.56	40.00	25.44	100.0	V	126.0	-10.3
40.548750	15.56	40.00	24.44	100.0	V	72.0	-9.4
608.362500	21.70	46.00	24.30	100.0	V	8.0	1.0
956.471250	25.90	46.00	20.10	100.0	V	141.0	4.6

For 1 GHz ~ 25 GHz

Test channel	CH_L
Polarization:	Horizontal

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	4809.50	52.26	33.90	5.61	40.98	50.79	74.00	-23.21	Peak
2	7227.39	48.49	36.00	7.12	41.05	50.56	74.00	-23.44	Peak
3	9660.72	45.16	36.80	8.16	39.68	50.44	74.00	-23.56	Peak
4	12055.60	43.41	38.71	9.31	40.47	50.96	74.00	-23.04	Peak

Polarization:	Vertical

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	4809.50	52.37	33.90	5.61	40.98	50.90	74.00	-23.10	Peak
2	7245.81	48.47	36.00	7.13	41.04	50.56	74.00	-23.44	Peak
3	9660.72	45.28	36.80	8.16	39.68	50.56	74.00	-23.44	Peak
4	12055.60	43.37	38.71	9.31	40.47	50.92	74.00	-23.08	Peak

Test channel	**CH_M**
Polarization:	Horizontal

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	4871.10	51.99	33.90	5.66	40.96	50.59	74.00	-23.41	Peak
2	7338.62	47.92	36.00	7.19	41.02	50.09	74.00	-23.91	Peak
3	9759.59	45.60	36.92	8.21	39.85	50.88	74.00	-23.12	Peak
4	12241.14	43.02	38.75	9.34	40.13	50.98	74.00	-23.02	Peak

Polarization:	Vertical

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	4895.97	51.76	33.90	5.67	40.95	50.38	74.00	-23.62	Peak
2	7338.62	48.33	36.00	7.19	41.02	50.50	74.00	-23.50	Peak
3	9784.47	45.38	36.97	8.22	39.89	50.68	74.00	-23.32	Peak
4	12210.02	42.32	38.74	9.33	40.19	50.20	74.00	-23.80	Peak

Test channel	**CH_H**
Polarization:	Horizontal

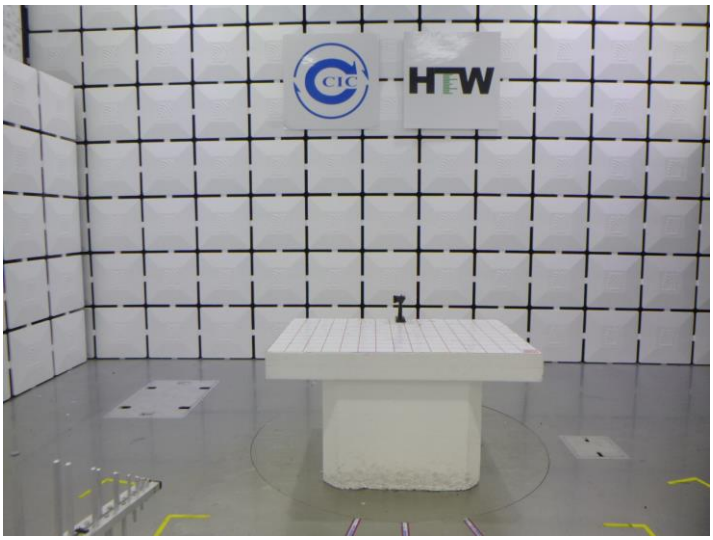
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	4946.07	52.21	33.99	5.71	40.92	50.99	74.00	-23.01	Peak
2	7432.62	48.35	36.00	7.24	40.99	50.60	74.00	-23.40	Peak
3	9884.60	45.52	37.08	8.27	40.06	50.81	74.00	-23.19	Peak
4	12397.94	42.03	38.78	9.36	39.85	50.32	74.00	-23.68	Peak

Polarization:	Vertical

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	4933.50	52.05	33.97	5.70	40.93	50.79	74.00	-23.21	Peak
2	7413.73	48.45	36.00	7.23	40.99	50.69	74.00	-23.31	Peak
3	9884.60	45.22	37.08	8.27	40.06	50.51	74.00	-23.49	Peak
4	12366.42	42.37	38.77	9.35	39.90	50.59	74.00	-23.41	Peak

6. TEST SETUP PHOTOS

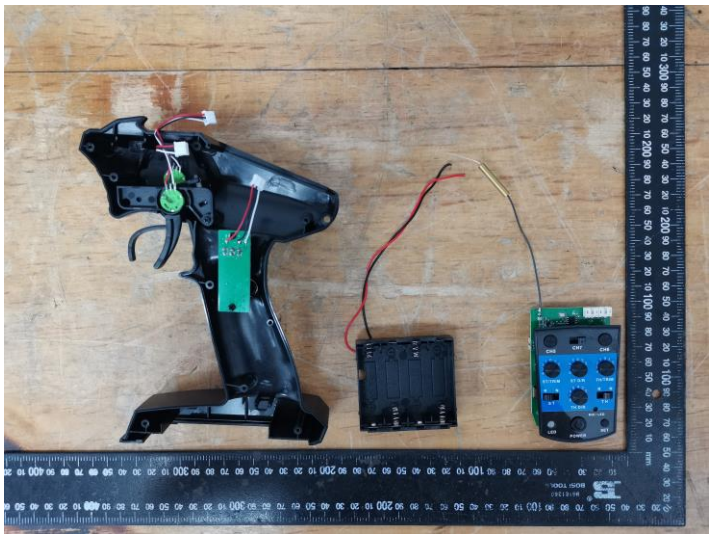
Radiated Emission

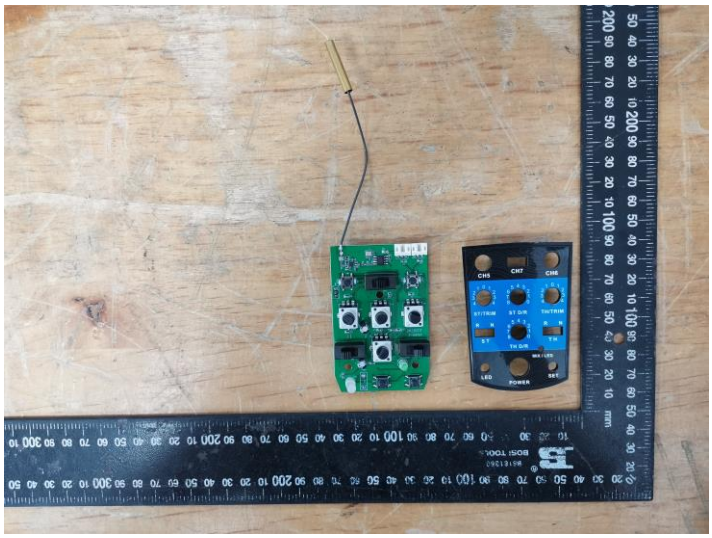


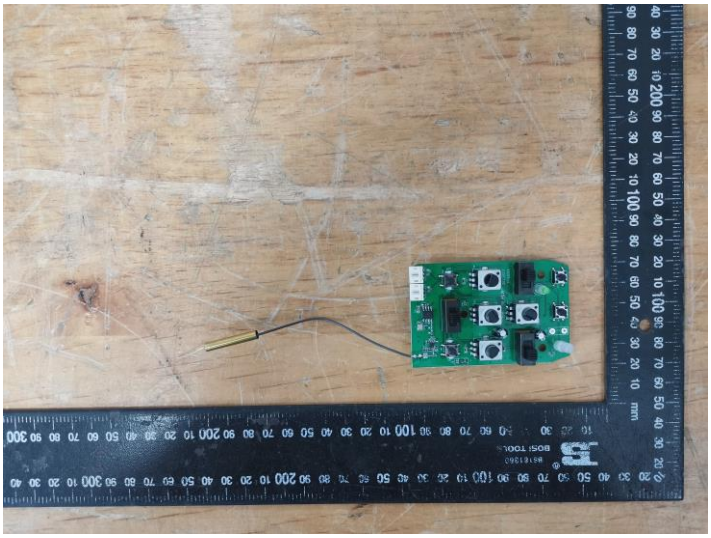
7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

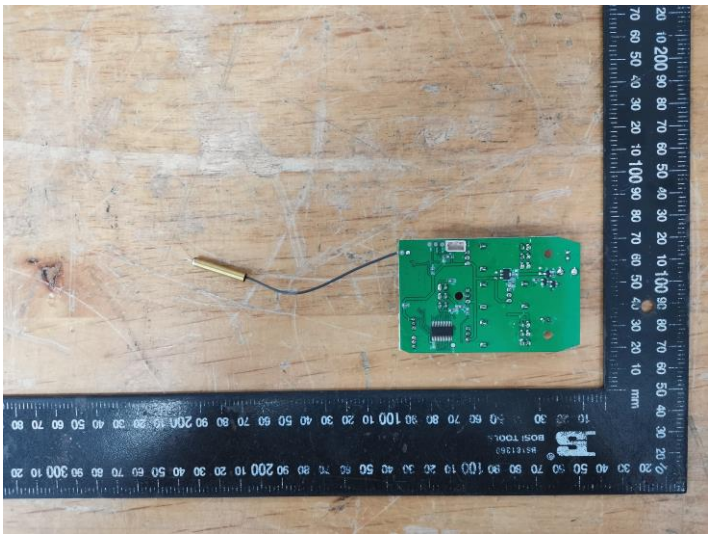
7.1. External Photos

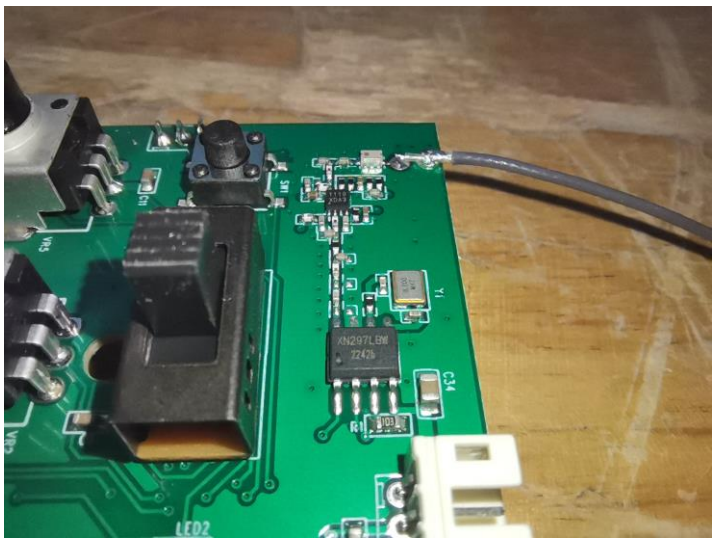
7.2. Internal Photos











8. APPENDIX REPORT