TEST REPORT

Applicant	:	Hangzhou Rock Machinery Manufacture Co., Ltd.
Address of Applicant	:	No.1, 1st Road, Dongzhou Industrial Zone, Fuyang 311400, Hangzhou, China
Product Name	:	wireless winch remote control
Brand Name	:	Rock
Model Name	:	FEWL08
Sample No.	:	E25070071-01#01
FCC ID	:	2ANRDFEWL08
Standards	:	FCC CFR47 Part 15, Subpart C Section 15.231
Date of Receipt	:	2025-07-25
Date of Test	:	2025-07-29~2025-08-13
Date of Issue	:	2025-08-13

Remark:

This report details the results of the testing carried out on one sample, the results contained in this report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

Prepared by: Erik Yang (Erik Yang) Reviewed by: Jennifer Zhou (Jennifer Zhou) Approved by: Echo Mu (Authorized signatory: Echo Mu)

Contents

1 General Information

1.1 Testing Laboratory

Company Name	ICAS Testing Technology Service (Shanghai) Co., Ltd.
Address	No.1298, Pingan Road, Minhang District, Shanghai, China
Telephone	0086 21-51682999
Fax	0086 21-54711112
Homepage	www.icasiso.com

1.2 Details of Application

Applicant Company Name	Hangzhou Rock Machinery Manufacture Co., Ltd.
Applicant Company Address	No.1, 1st Road, Dongzhou Industrial Zone, Fuyang 311400, Hangzhou, China
Contact Person	Chunhong Jiang
Telephone	0086-571-87191226
Email	rockwinch@gmail.com
Manufacturer Company Name	Hangzhou Rock Machinery Manufacture Co., Ltd.
Manufacturer Company Address	No.1, 1st Road, Dongzhou Industrial Zone,Fuyang 311400, Hangzhou, China
Factory Company Name	Hangzhou Rock Machinery Manufacture Co., Ltd.
Factory Company Address	No.1, 1st Road, Dongzhou Industrial Zone,Fuyang 311400, Hangzhou, China

1.3 Details of EUT

Product Name	wireless winch remote control
Brand Name	Rock
Model Name Under Test	FEWL08
FCC ID	2ANRDFEWL08
Operation Frequency	315MHz
Field Strength(3m)	84.61dBuV/m(peak)@3m
Modulation Type	ASK
Number of channels	1
Hardware Version	V02
Software Version	V01
Antenna Type	Integral Antenna (Met 15.203 Antenna requirement)
Antenna Gain	-5dBi
Power Supply	DC 12V by battery

Note:

1. *The above information was declared by the manufacture.*
2. *For more details, please refer to the User's manual of the EUT.*

1.4 Test Methodology

47 CFR Part 15, Subpart C	Telecommunication-Radio Frequency Devices-Intentional Radiators
ANSI C63.10-2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

Note(s):

All test items were verified and recorded according to the standards and without any addition/deviation/exclusion during the test.

1.5 Test Summary

Test Item	FCC Rules	Result
Antenna Requirement	§15.203	PASS
Manually operated transmitter	§15.231(a)(1)	PASS
Average Factor	§15.231(b)	PASS
Field Strength of Fundamental and Spurious Emission	§15.231(b) & §15.209	PASS
20dB Bandwidth	§15.231(c)	PASS
AC power-line conducted emissions	§15.207	N/A

Note(s): The EUT is powered by battery

2 Test Condition

2.1 Environmental conditions

Temperature (°C)	15-35
Humidity (%RH)	30-60
Barometric Pressure (mbar)	860-1060

Note: Actual values will be recorded during the test.

2.2 Equipment List

Name of Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Keysight	N9020B	MY59260184	2025-06-30	2026-06-29
Spectrum Analyzer	Rohde & Schwarz	FSV40N	101450	2025-06-10	2026-06-09
Signal Generator	Rohde & Schwarz	SMR27	100184	2025-06-30	2026-06-29
EMI Test Receiver	Rohde & Schwarz	ESR 7	101911	2025-06-09	2026-06-08
Broadband Antenna	SCHWARZBECK	VULB9163	9163-1037	2025-03-24	2027-03-23
Horn Antenna-18G	SCHWARZBECK	BBHA9120D	9120D-1775	2025-06-22	2027-06-21
Loop Antenna	SCHWARZBECK	FMZB 1513	/	2025-06-23	2027-06-22
Broadband Preamplifier	SCHWARZBECK	BBV 9718	346	2025-06-09	2026-06-08
EMC chamber 9*6*6(L*W*H)	CHANGNING	966	N/A	2025-06-10	2028-06-09
Test Software	BL	BL410_E	Version:2.1.1.436	N/A	N/A

2.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in measurement” (GUM) published by CISPR and ANSI. The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95.45%.

Parameter		Uncertainty
Antenna Port Conducted Emission		± 1.04dB
Radiated Emission	< 1GHz	± 5.00dB
	> 1GHz	± 5.46dB
Duty Cycle		± 2.00%
Occupied Channel Bandwidth		±39.26KHz

3 Test Set-up and Operation Modes

3.1 Details of Test Mode

Channel	Frequency
1	315MHz

Note(s): For Radiated Emission, 3axis were chosen for testing for each applicable mode.

3.2 Special Accessories and Auxiliary Equipment

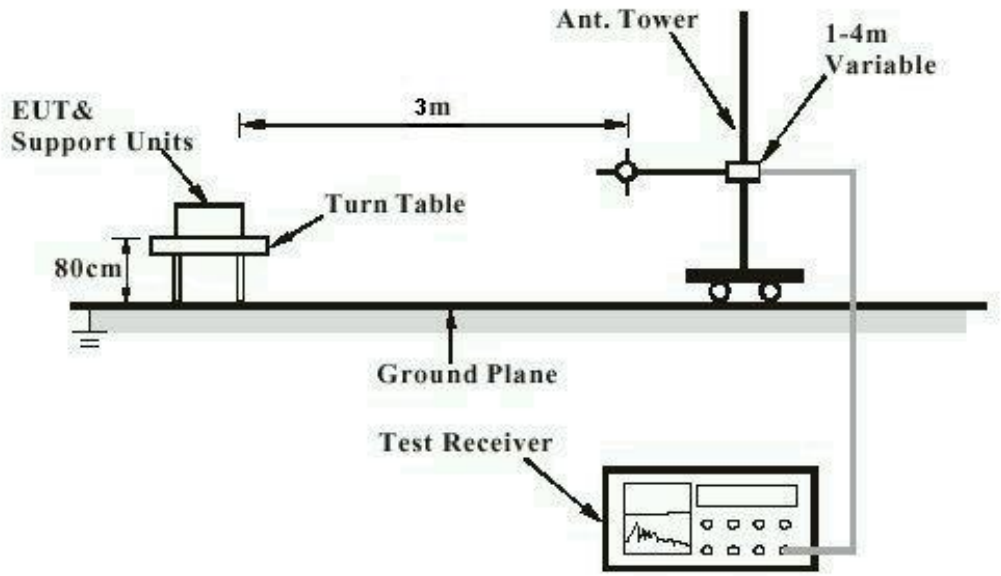
Description	Manufacturer	Model Name	Serial No.
N/A	N/A	N/A	N/A

3.3 Support Software

Description	Manufacturer	Software Name
N/A	N/A	N/A

3.4 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test



Note: Measurements above 1GHz are done with a table height of 1.5m. In addition, there is RF absorbing material on the floor of the test site for above 1GHz measurement.

4 Test Results

4.1 Transmitter Requirement & Test Suites

4.1.1 Antenna Requirement

RESULT: **PASS**

Test standard	:	Part 15.203
Requirement	:	The use of approved antennas only with directional gains that do not exceed 6dBi

According to the manufacturer declaration, The EUT has an antenna with a gain of -5dBi. The antenna is an Integral antenna with no possibility of replacement with a non-approvrd antenna by the end-user.

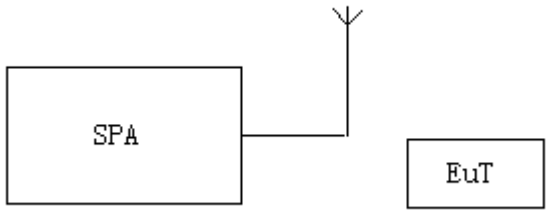
Therefore, the EUT is considered to comply with this provision.

4.1.2 Provision For Momentary Operation

RESULT: **PASS**

Test standard : §15.231(a)(1)
Requirement : ANSI C63.10-2020

Test Setup:



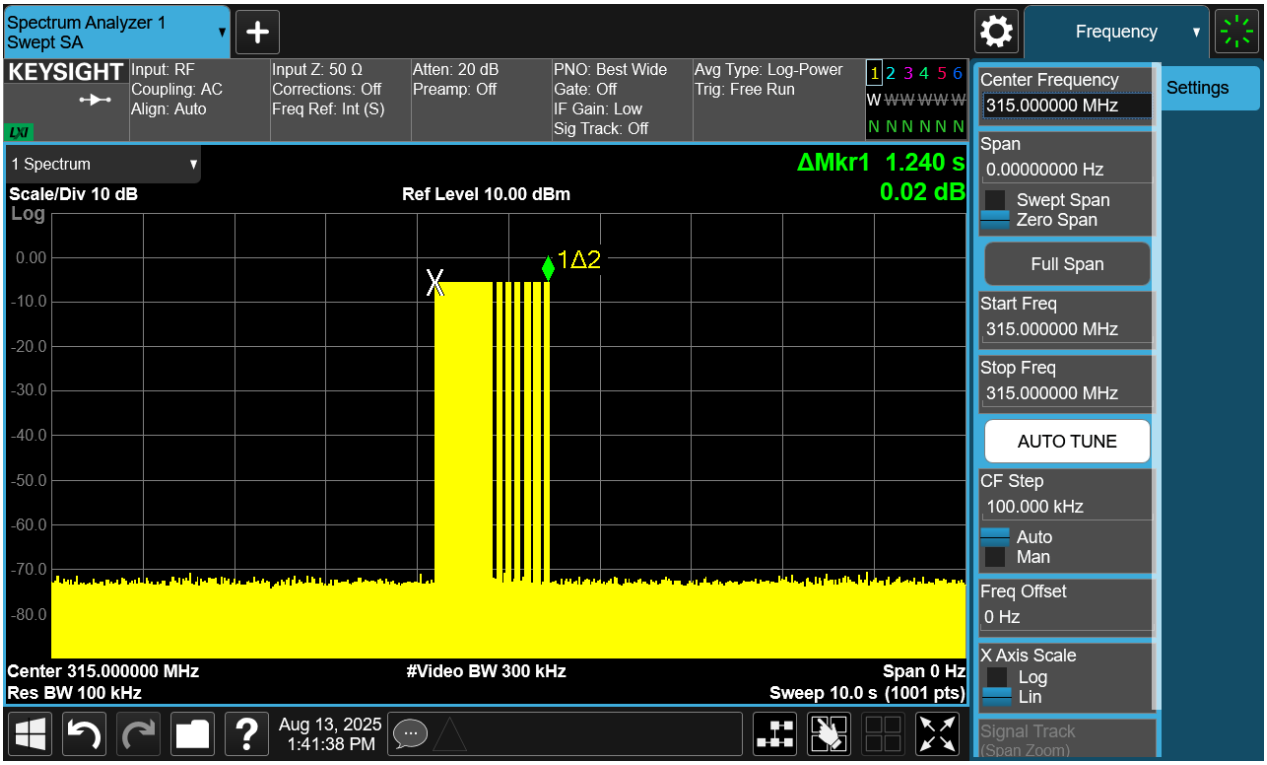
Measurement Procedure:

1. Set the parameters of SPA as below:
   Centre frequency = Operation Frequency
   RBW=100kHz, VBW=300KHz
   Span: 0Hz
   Sweep time: 10s
2. Set the EUT to transmit by manually operated. Use the “View” function of SPA to find the transmission time of being released.
3. Record the data.

Test Data:

Channel Frequency	The time of stopping transmission	Limit	Result
315MHz	1.240s	<5s	Pass

Test plots of 315MHz

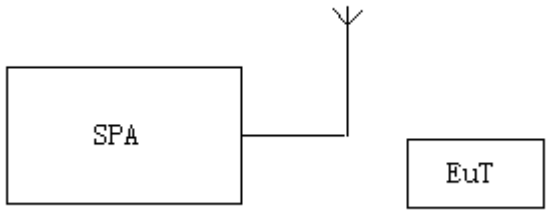


4.1.3 Duty Cycle Correction Factor

RESULT: **PASS**

Test standard : §15.231(b)
Requirement : ANSI C63.10-2020

Test Setup



Measurement Procedure

1. Set the parameters of SPA as below:
   Centre frequency = Operation Frequency
   RBW=100KHz; VBW=300KHz
   Span: 0Hz
   Sweep time: more than two pulse trains or more than each type of pulse occupancy time
2. Set the EUT to transmit. Use the “Delta mark” function of SPA to find the period time between two pulse trains and each type of pulse occupancy time.
3. Record the plots and Reported.

Test Data:

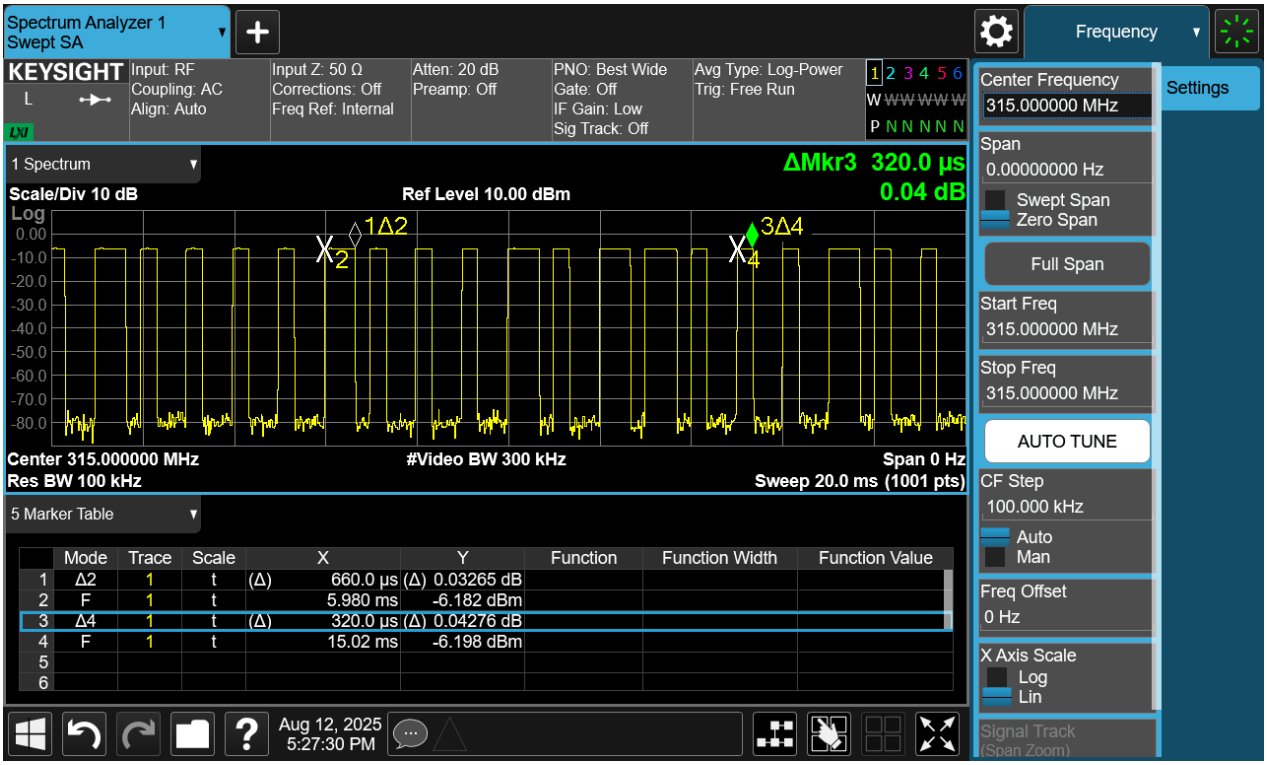
Channel Frequency	T(period)	Total On time	Duty Cycle	Duty cycle Correction Factor
315MHz	160.5ms	0.32x48+0.66x25=31.86ms	0.32	-9.90

Note: δ(dB) = 20log(Δ); δ is the duty cycle correction factor (dB); Δ is the duty cycle (dimensionless)

Test plots of 315MHz—Period (>100ms)

Test plots of 315MHz—On time(1)

Test plots of 315MHz—On time(2)



4.1.4 Radiated Emission

RESULT: **PASS**

Test standard : §15.231(b),§15.209
Requirement : ANSI C63.10-2020
Kind of test site : 3m Semi-Anechoic Chamber

Test setup

Test Diagram : Clause 3.4
Operation Mode : Transmitting mode
Ambient temperature : 23.7°C
Relative humidity : 49%

Note(s): In addition to the provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2250	225
70-130	1250	125
130-174	1250 to 3750*	125 to 375*
174-260	3750	375
260-470	3750 to 12500*	375 to 1250*
Above 470	12500	1250

*Linear interpolations

The above field strength limits are specified at a distance of 3 meters.

The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CI SPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a hi gher field strength.

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements start below or at the lowest crystal frequency.

Compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

Measurement Procedure

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

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

Spectrum Parameter	Setting
Start Frequency	1000MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz/1MHz for Peak, 1MHz/10Hz for Average

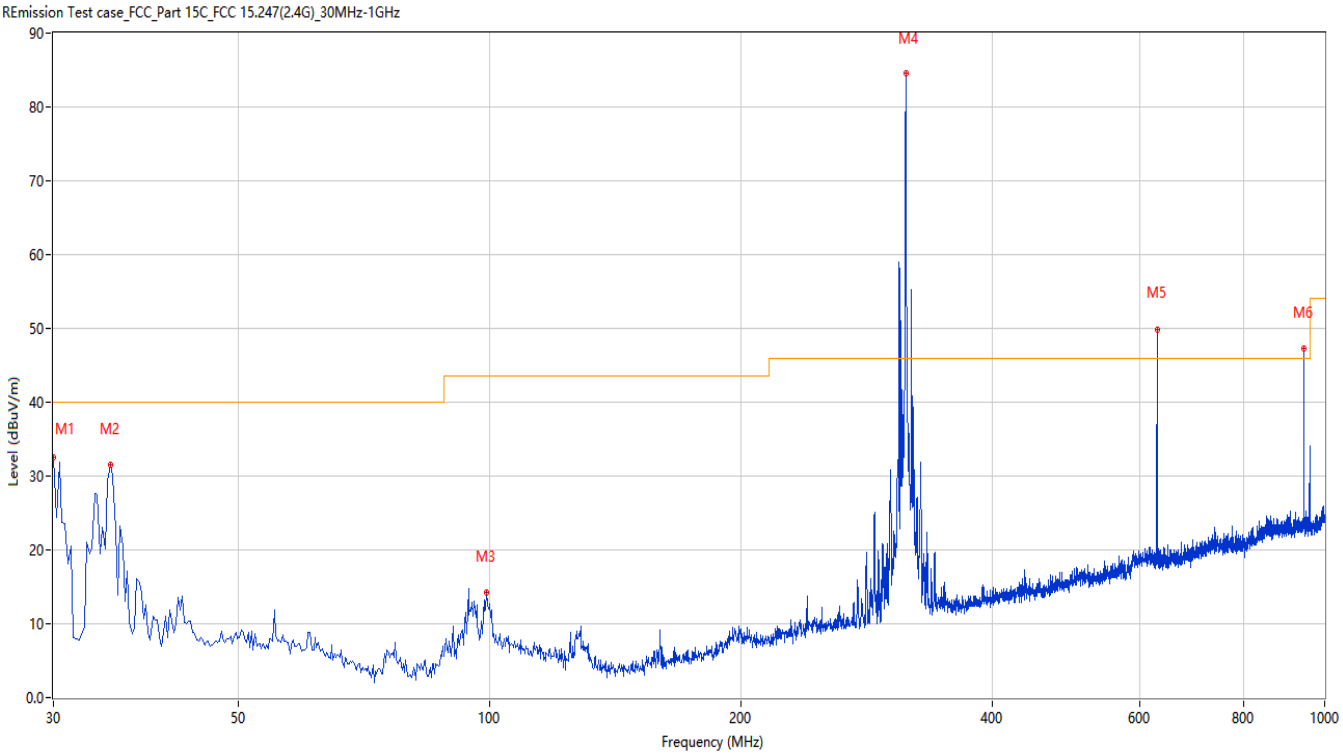
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RBW 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RBW 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RBW 120KHz for QP

Test Data

Radiated Emission Below 30MHz

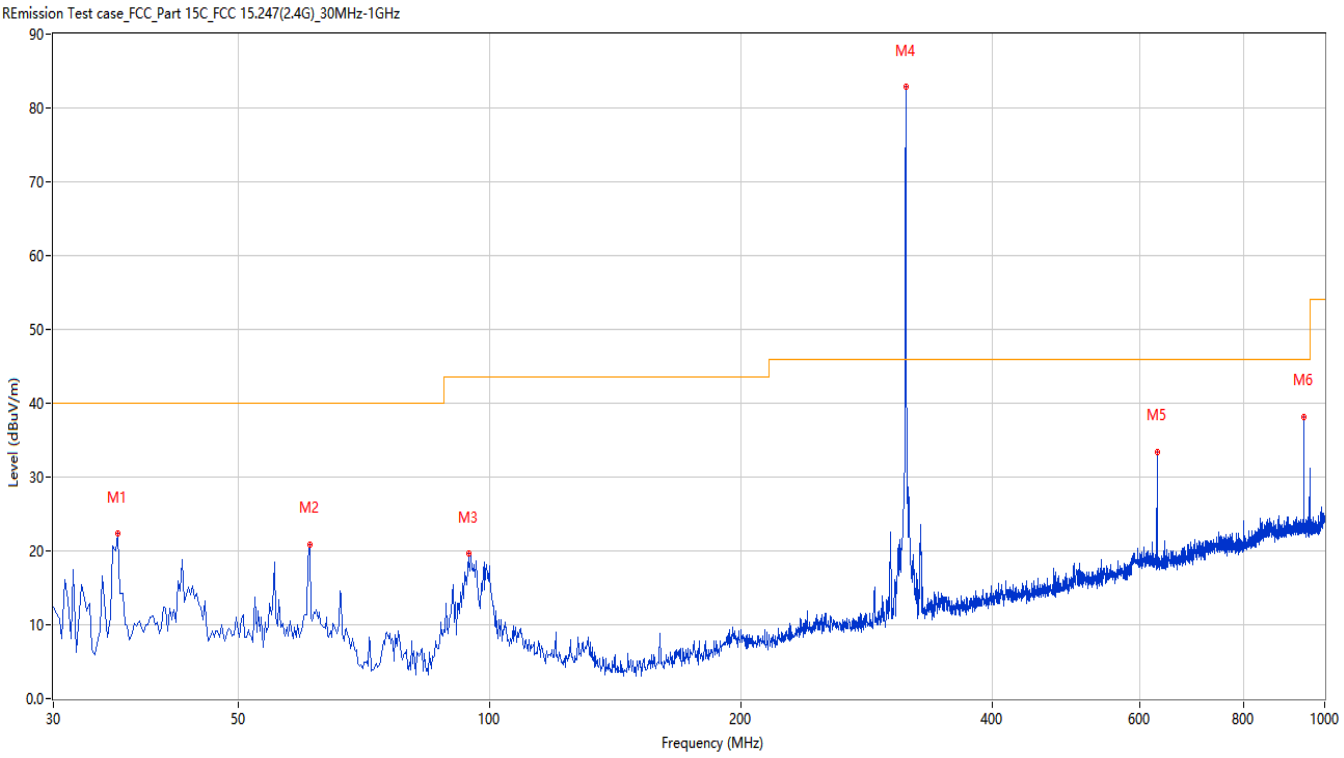
No emission found between lowest internal used/generated frequencies to 30MHz.

Radiated Emission Below 1GHz-Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	30.000	32.47	-29.85	40.0	7.53	Peak	59.00	100	Horizontal	Pass
2	35.091	31.51	-28.18	40.0	8.49	Peak	293.00	100	Horizontal	Pass
3	99.095	14.17	-26.37	43.5	29.33	Peak	360.00	200	Horizontal	Pass
4	314.866	84.61	-23.01	95.62	11.01	Peak	44.20	100	Horizontal	Pass
4*	314.866	74.71	-23.01	75.62	0.91	AV	44.20	100	Horizontal	Pass
5	629.795	49.89	-14.89	75.62	25.73	Peak	97.10	100	Horizontal	Pass
5*	629.795	39.99	-14.89	55.62	15.63	AV	97.10	100	Horizontal	Pass
6	944.966	47.26	-8.83	75.62	28.36	Peak	87.40	100	Horizontal	Pass
6*	944.966	37.36	-8.83	55.62	18.26	AV	87.40	100	Horizontal	Pass

Radiated Emission Below 1GHz-Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	35.819	22.34	-27.95	40.0	17.66	Peak	1.70	200	Vertical	Pass
2	60.790	20.89	-26.52	40.0	19.11	Peak	360.00	200	Vertical	Pass
3	94.246	19.66	-27.21	43.5	23.84	Peak	30.40	100	Vertical	Pass
4	314.866	82.86	-23.01	95.62	12.76	Peak	118.90	100	Vertical	Pass
4*	314.866	72.96	-23.01	75.62	2.66	AV	118.90	100	Vertical	Pass
5	629.795	33.47	-14.89	75.62	42.15	Peak	113.40	100	Vertical	Pass
5*	629.795	23.57	-14.89	55.62	32.05	AV	113.40	100	Vertical	Pass
6	944.966	38.15	-8.83	75.62	37.47	Peak	201.40	100	Vertical	Pass
6*	944.966	28.25	-8.83	55.62	27.37	AV	201.40	100	Vertical	Pass

Result: Pass

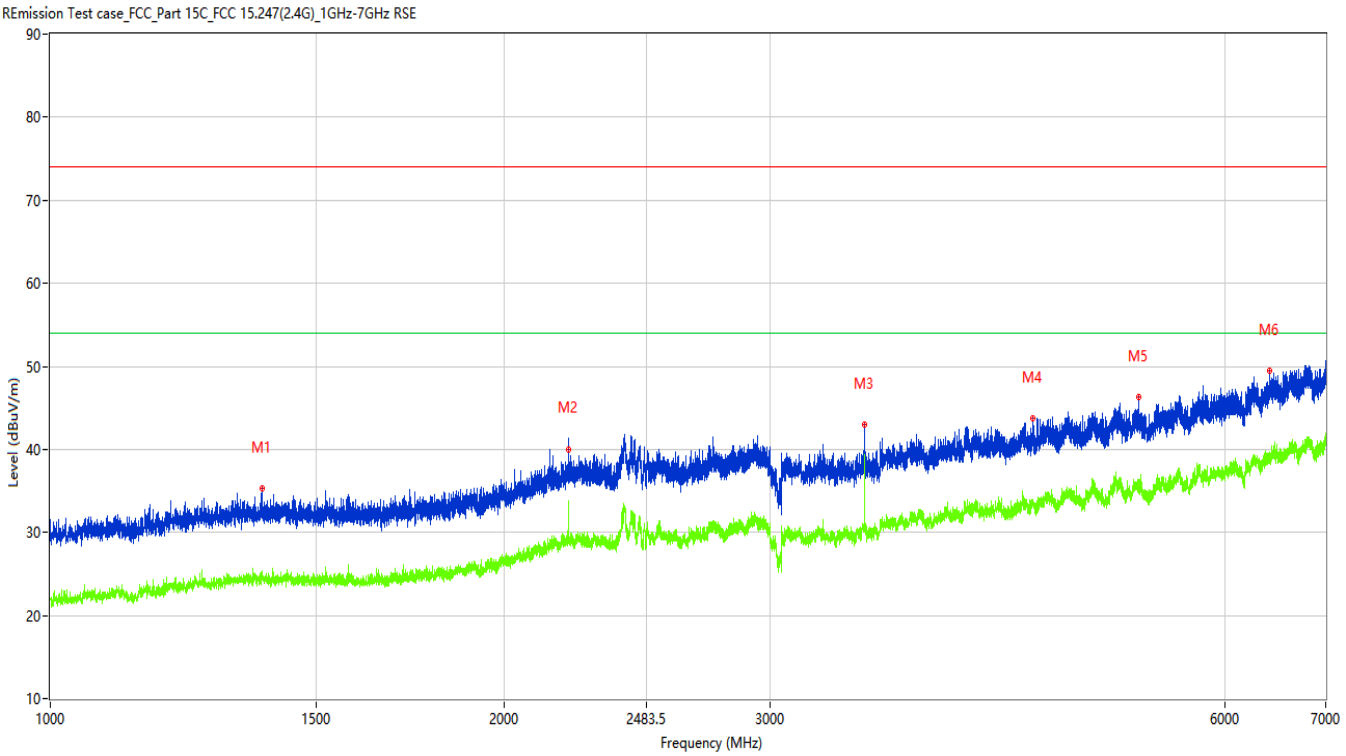
Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain, Margin= Results- Limit.

2. The “Factor” value can be calculated automatically by software of measurement system.

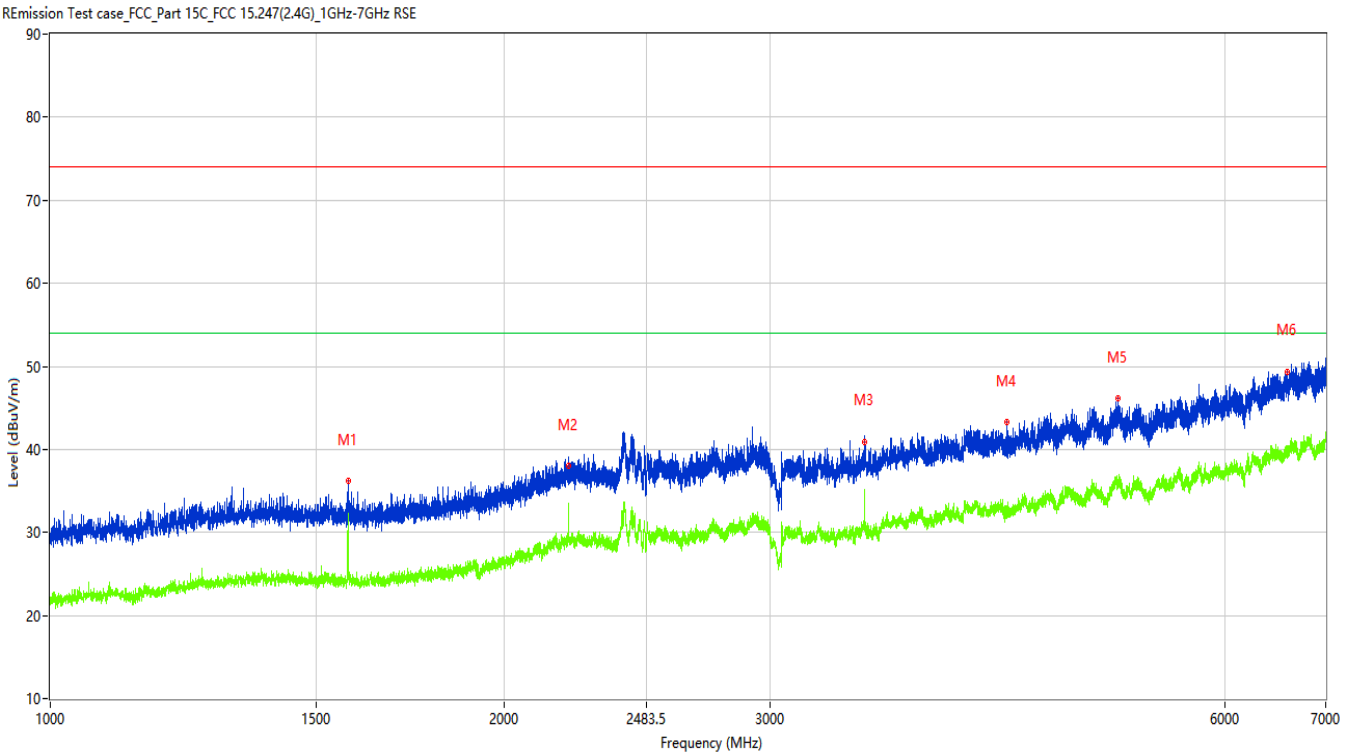
3. AV Value(Field strength of fundamental or Field strength of spurious emissions) is Peak + Duty cycle Correction Factor.

Radiated Emission above 1GHz-Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1380.750	35.33	-13.48	74.0	38.67	Peak	176.00	100	Horizontal	Pass
1**	1380.750	24.64	-13.48	54.0	29.36	AV	176.00	100	Horizontal	Pass
2	2205.500	40.03	-8.55	75.62	35.59	Peak	359.99	100	Horizontal	Pass
2**	2205.500	30.13	-8.55	55.62	25.49	AV	359.99	100	Horizontal	Pass
3	3465.000	42.98	-5.09	75.62	32.64	Peak	327.10	100	Horizontal	Pass
3**	3465.000	33.08	-5.09	55.62	22.54	AV	327.10	100	Horizontal	Pass
4	4475.500	43.76	-2.11	74.0	30.24	Peak	180.30	100	Horizontal	Pass
4**	4475.500	33.56	-2.11	54.0	20.44	AV	180.30	100	Horizontal	Pass
5	5263.000	46.34	-0.01	74.0	27.66	Peak	258.90	100	Horizontal	Pass
5**	5263.000	35.73	-0.01	54.0	18.27	AV	258.90	100	Horizontal	Pass
6	6423.000	49.41	2.63	74.0	24.59	Peak	158.30	100	Horizontal	Pass
6**	6423.000	39.64	2.63	54.0	14.36	AV	158.30	100	Horizontal	Pass

Radiated Emission above 1GHz-Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1575.000	36.20	-13.73	75.62	39.42	Peak	359.30	100	Vertical	Pass
1**	1575.000	26.30	-13.73	55.62	29.32	AV	359.30	100	Vertical	Pass
2	2205.250	38.05	-8.54	75.62	37.57	Peak	130.98	100	Vertical	Pass
2**	2205.250	28.15	-8.54	55.62	27.47	AV	130.98	100	Vertical	Pass
3	3465.000	40.95	-5.09	75.62	34.67	Peak	34.50	100	Vertical	Pass
3**	3465.000	31.05	-5.09	55.62	24.57	AV	34.50	100	Vertical	Pass
4	4305.500	43.25	-2.51	74.0	30.75	Peak	108.60	100	Vertical	Pass
4**	4305.500	32.30	-2.51	54.0	21.70	AV	108.60	100	Vertical	Pass
5	5096.000	46.14	0.64	74.0	27.86	Peak	253.20	100	Vertical	Pass
5**	5096.000	36.03	0.64	54.0	17.97	AV	253.20	100	Vertical	Pass
6	6603.000	49.37	3.21	74.0	24.63	Peak	11.50	100	Vertical	Pass
6**	6603.000	39.41	3.21	54.0	14.59	AV	11.50	100	Vertical	Pass

Result: Pass

Note:

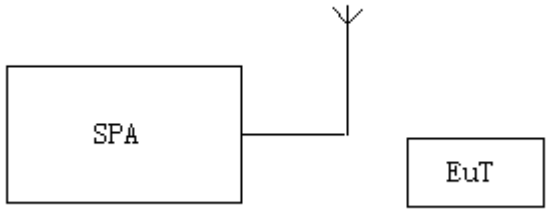
1. Factor=Antenna Factor + Cable loss - Amplifier gain, Margin= Results- Limit.
2. The “Factor” value can be calculated automatically by software of measurement system.
3. AV Value(Field strength of spurious emissions) is Peak + Duty cycle Correction Factor.

4.1.5 20dB Bandwidth

RESULT: **PASS**

Test standard : §15.231(c)
Requirement : ANSI C63.10-2020

Test setup



Test procedure

1. Set the parameters of SPA as below:
   Centre frequency = Operation Frequency
   RBW=1KHz
   VBW=3KHz
   Span: 100KHz
   Sweep time: Auto
2. Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the “N dB down” function of SPA to define the bandwidth.
3. Record the plots and Reported.

Test Data

Channel Frequency	20dB Bandwidth	Limit	Result
315MHz	10.01KHz	787.5KHz	Pass

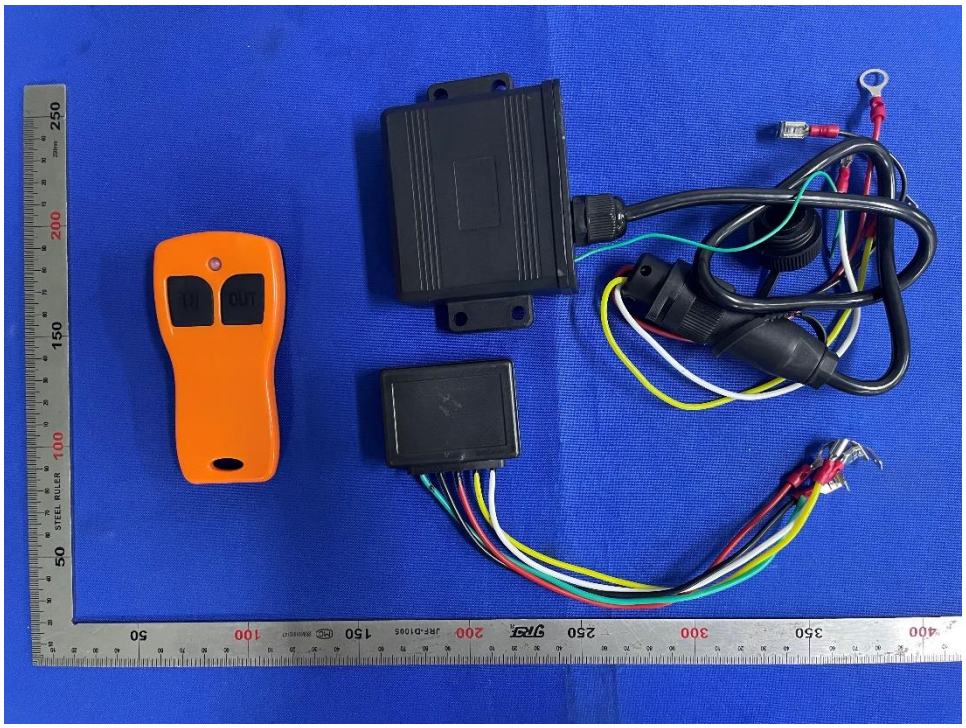
Note: Limit= Operation Frequency ×0.25%

Test plots of 315MHz

5 Appendixes

5.1 Photographs of the Sample

All view of EUT



Top view of EUT

Bottom view of EUT

Front view of EUT

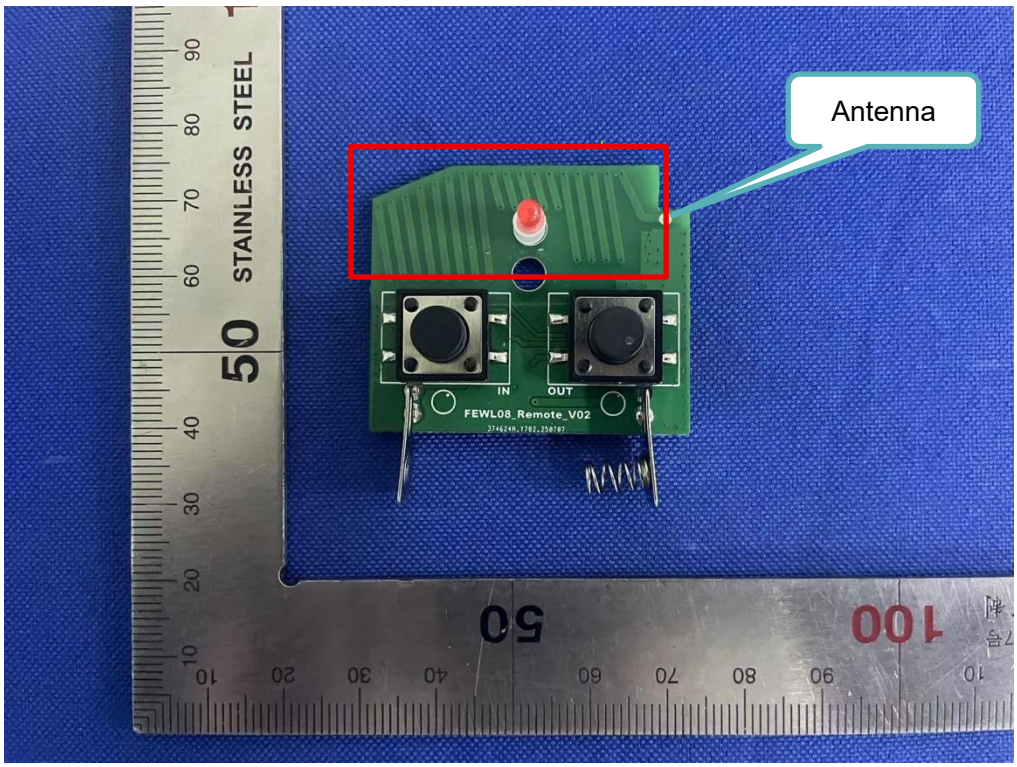
Back view of EUT

Left view of EUT

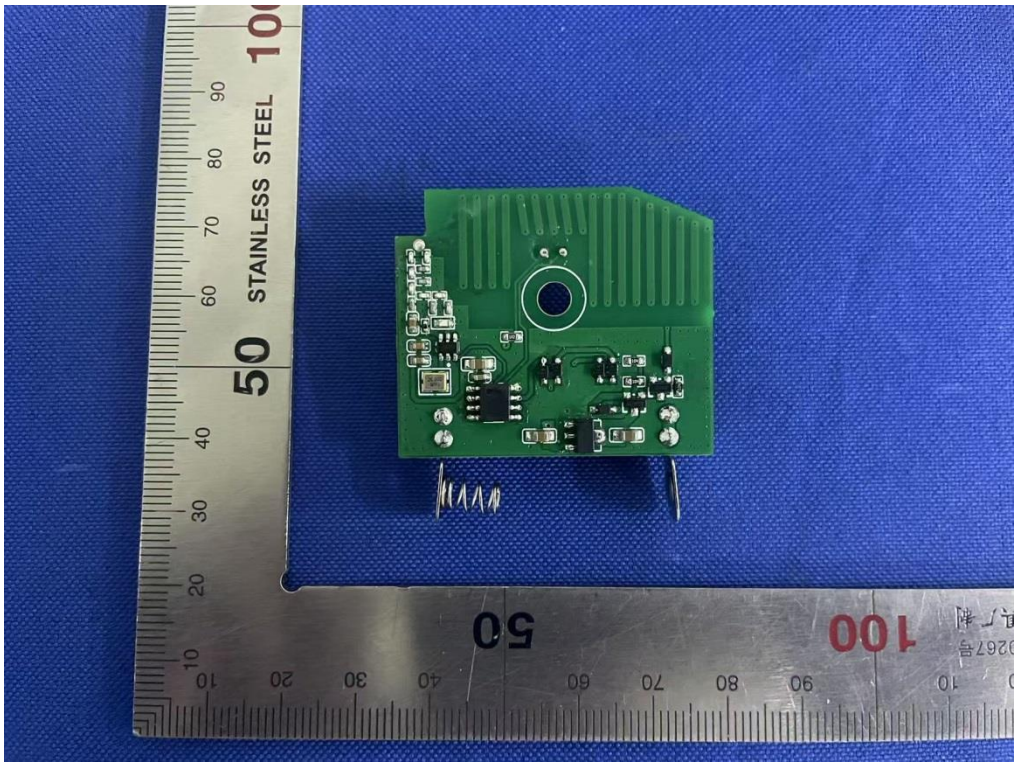
Right view of EUT

Open view of EUT

Internal view of EUT-1

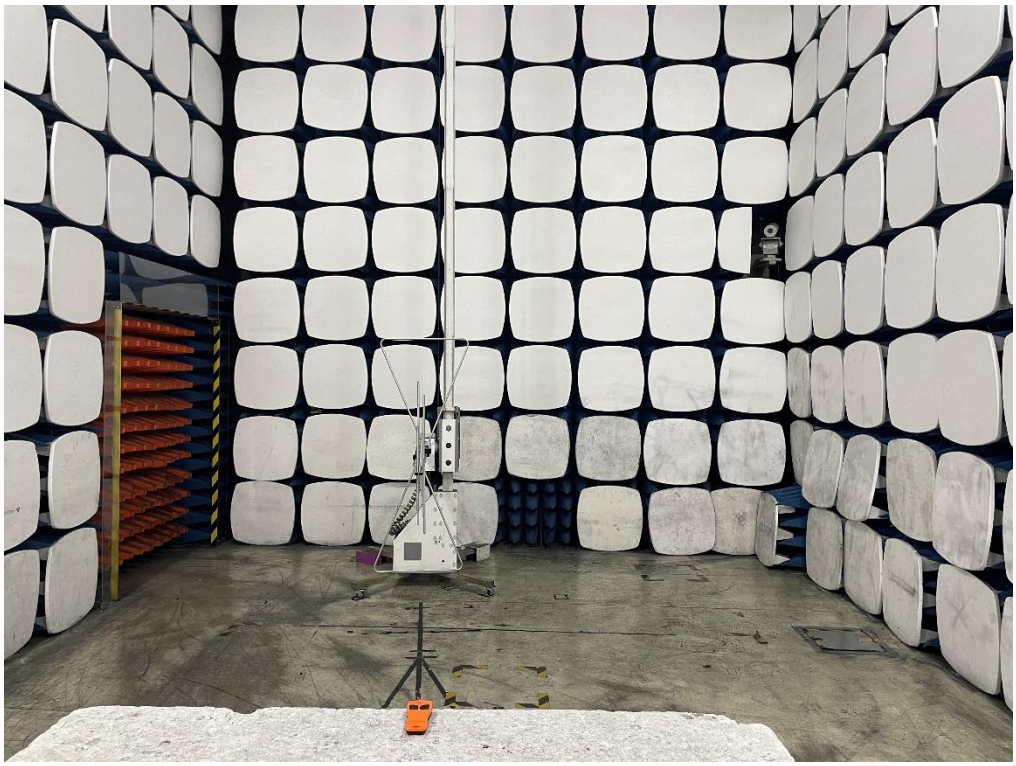


Internal view of EUT-2



5.2 Photographs of the Test Set-up

FCC Radiated Emission Test Setup-below 1GHz



FCC Radiated Emission Test Setup-above 1GHz

End of the report