

# TEST REPORT

Report No.: SHE22060092-01AE

Date: 2022-07-20

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**Applicant** : GUARDIAN SHANGHAI CORP.  
**Address of Applicant** : 368, Min Shen Rd, SongJiang, Shanghai, China

**Product Name** : Remote Control for Garage Door Opener  
**Brand Name** : Guardian  
**Model No.** : 2211-L(CC), 2211-L(TX)  
**Sample No.** : E22060092-02#01  
E22060092-02#03  
E22060092-02#04

**FCC ID** : N6U303NTX-01  
**Standards** : FCC CFR47 Part 15, Subpart C Section 15.231

**Date of Receipt** : 2022-06-30  
**Date of Test** : 2022-07-01~2022-07-12  
**Date of Issue** : 2022-07-20

**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.*

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(Authorized signatory: Guoyou Chi)

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## 1 General Information

### 1.1 Testing Laboratory

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

### 1.2 Details of Application

Applicant Company Name	GUARDIAN SHANGHAI CORP.
Address	368, Min Shen Rd, SongJiang,Shanghai, China
Contact Person	Vincent Chan
Telephone	+86-21-57684828
Email	vincent@adhguardian.com
Manufacturer Company Name	GUARDIAN SHANGHAI CORP.
Address	368, Min Shen Rd, SongJiang,Shanghai, China
Factory Company Name	GUARDIAN SHANGHAI CORP.
Address	368, Min Shen Rd, SongJiang,Shanghai, China

### 1.3 Details of EUT

Product Name	Remote Control for Garage Door Opener
Brand Name	Guardian
Model Name Under Test	2211-L(CC)
Series Model Name	2211-L(TX)
Description of difference	2211-L(TX) -- 303MHz 2211-L(CC) --303/390MHz
FCC ID	N6U303NTX-01
Operation Frequency	303MHz,390MHz
Field Strength(3m)	70.76dBuV/m(peak)@3m
Modulation Type	ASK
Number of channels	2
Hardware version	TX303-G
Software version	TX303-G ver01
Antenna Type	Integral Antenna (Met 15.203 Antenna requirement)
Antenna Gain	-2dBi
Power Supply	DC 3V by battery(CR2032)

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## 1.4 Test Methodology

47 CFR Part 15, Subpart C	Telecommunication-Radio Frequency Devices-Intentional Radiators
ANSI C63.10-2013	American National Standard for Testing 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 (CR2032)

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## 2 Test Condition

### 2.1 Environmental conditions

Temperature (°C)	18-25
Humidity (%RH)	40-65
Barometric Pressure (mbar)	960-1060

### 2.2 Equipment List

Name of Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Keysight	N9020B	MY59260184	2021-08-13	2022-08-12
Spectrum Analyzer	Rohde & Schwarz	FSV40N	101450	2022-06-09	2023-06-08
EMI Test Receiver	Rohde & Schwarz	ESR 7	101911	2022-06-09	2023-06-08
Broadband Antenna	SCHWARZBECK	VULB9163	9163-1037	2022-06-09	2023-06-08
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1775	2021-06-08	2023-06-07
Loop Antenna	SCHWARZBECK	FMZB 1513	/	2020-11-23	2022-11-22
Broadband Preamplifier	SCHWARZBECK	BBV 9718	346	2022-06-09	2023-06-08
EMC chamber 9*6*6 (L*W*H)	CHANGNING	966	N/A	2020-06-09	2023-06-08
Test Software	BL	BL410_E	N/A	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  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

Parameter	Uncertainty	
Antenna Port Conducted Emission	< 1GHz	$\pm 1.5$ dB
	> 1GHz	$\pm 1.5$ dB
Radiated Emission	30 MHz – 1 GHz	$\pm 3.42$ dB
	> 1GHz	$\pm 4.20$ dB
Occupied Channel Bandwidth	$\pm 5$ %	

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## 3 Test Set-up and Operation Modes

### 3.1 Details of Test Mode

Channel	Frequency
1	303MHz
2	390MHz

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

### 3.2 Special Accessories and Auxiliary Equipment

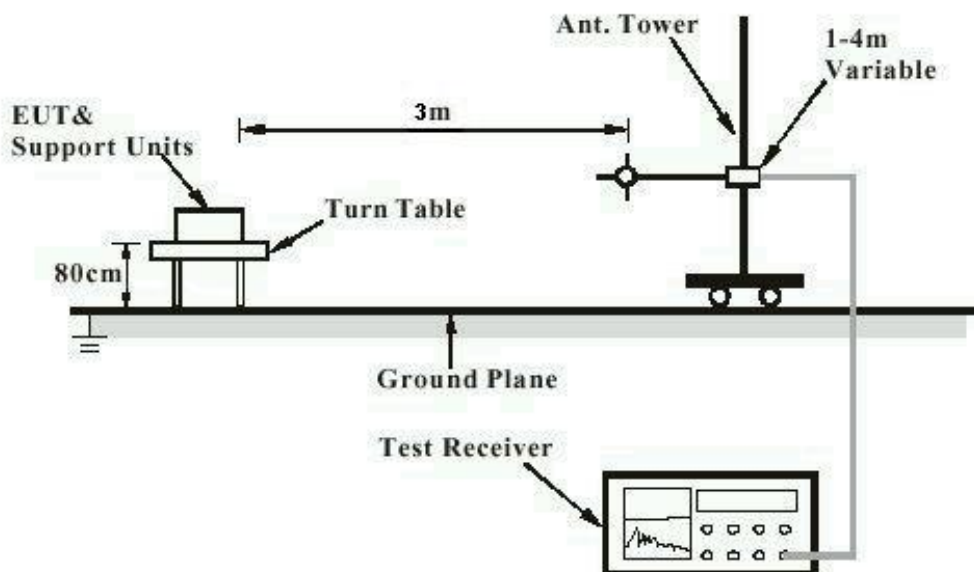
Description	Manufacturer	Model No.	Serial No.
N/A	N/A	N/A	N/A

### 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.

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## 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 -2dBi. The antenna is an Integral antenna with no possibility of replacement with a non-approved antenna by the end-user.

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

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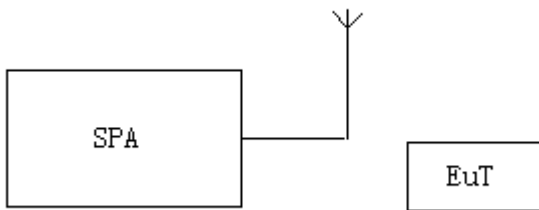
## 4.1.2 Provision For Momentary Operation

RESULT:

PASS

Test standard : §15.231(a)(1)  
Requirement : ANSI C63.10-2013

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
303MHz	912.8ms	<5s	Pass
390MHz	912.8ms	<5s	Pass



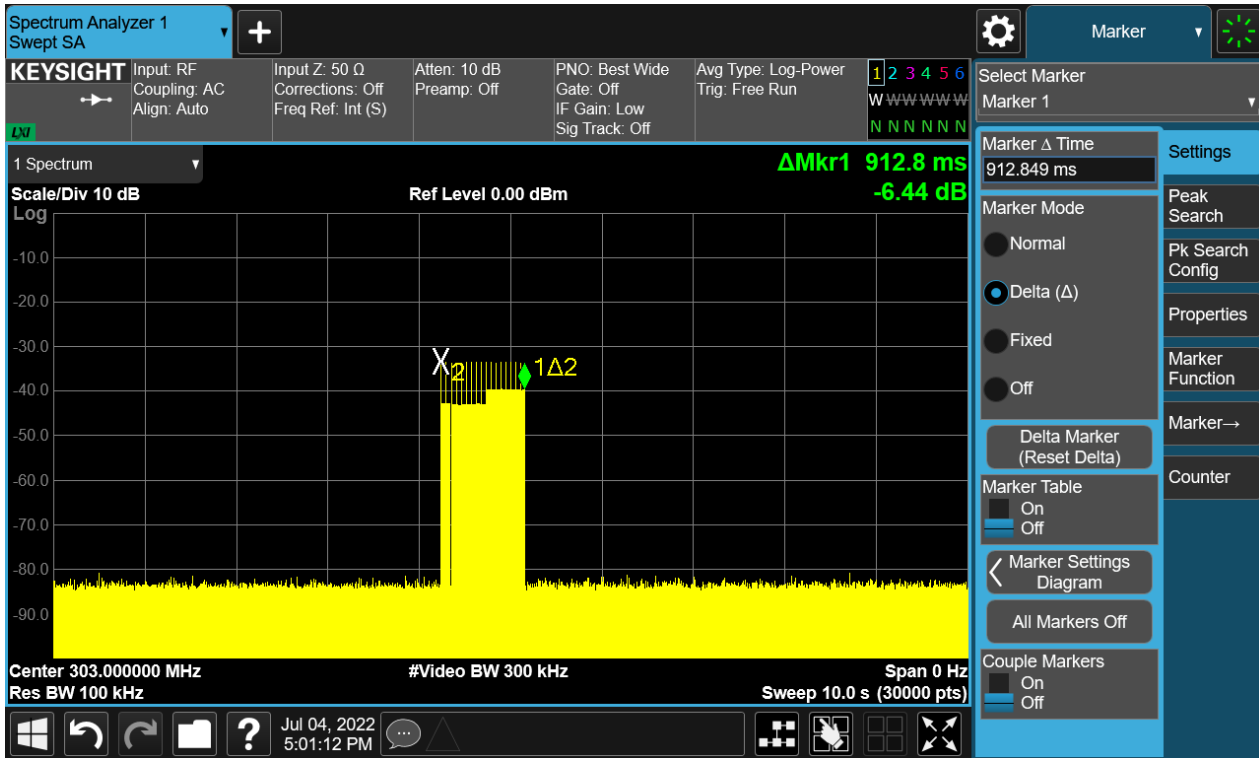
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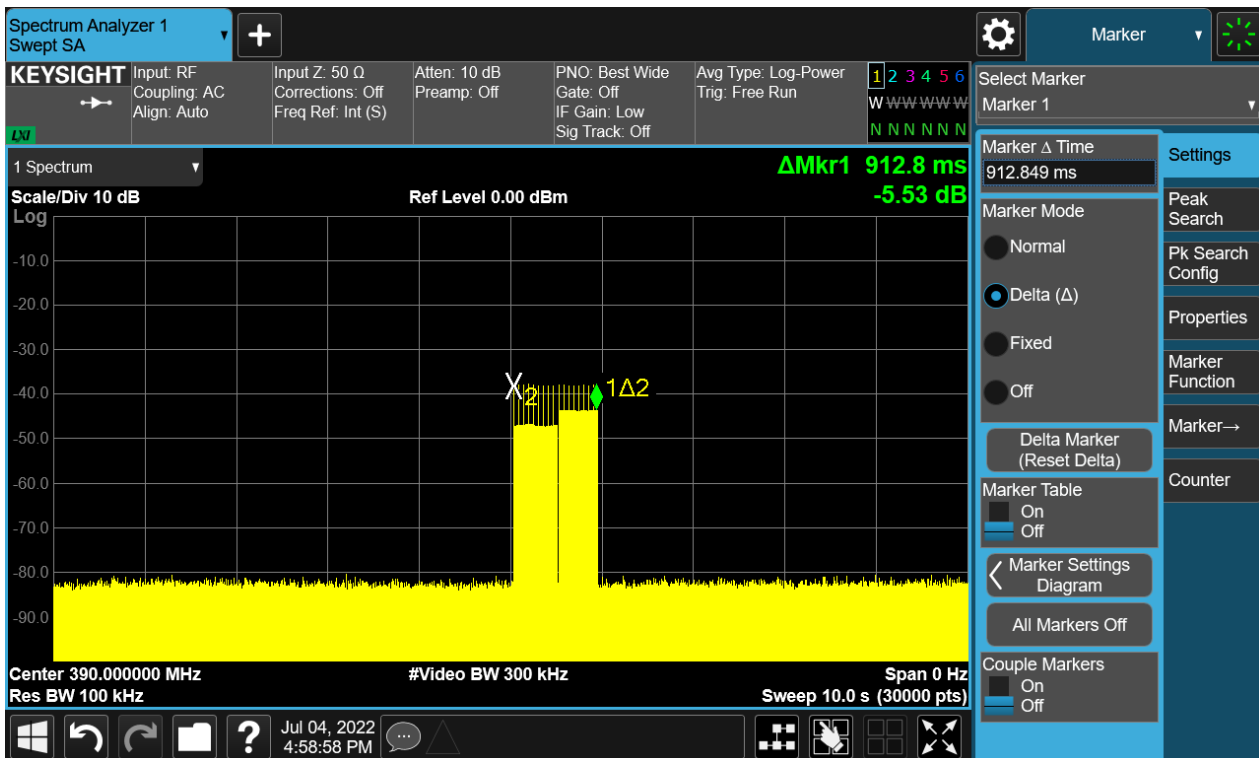
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Test plots of 303MHz



Test plots of 390MHz



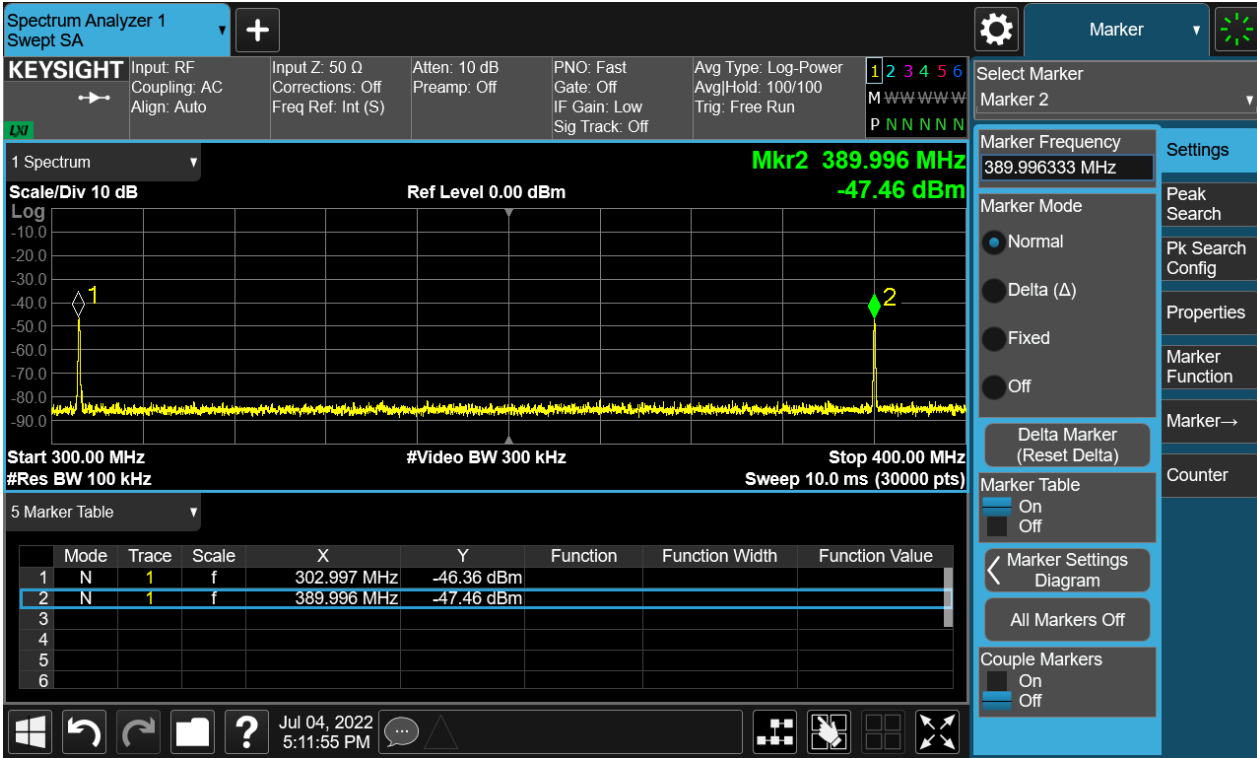
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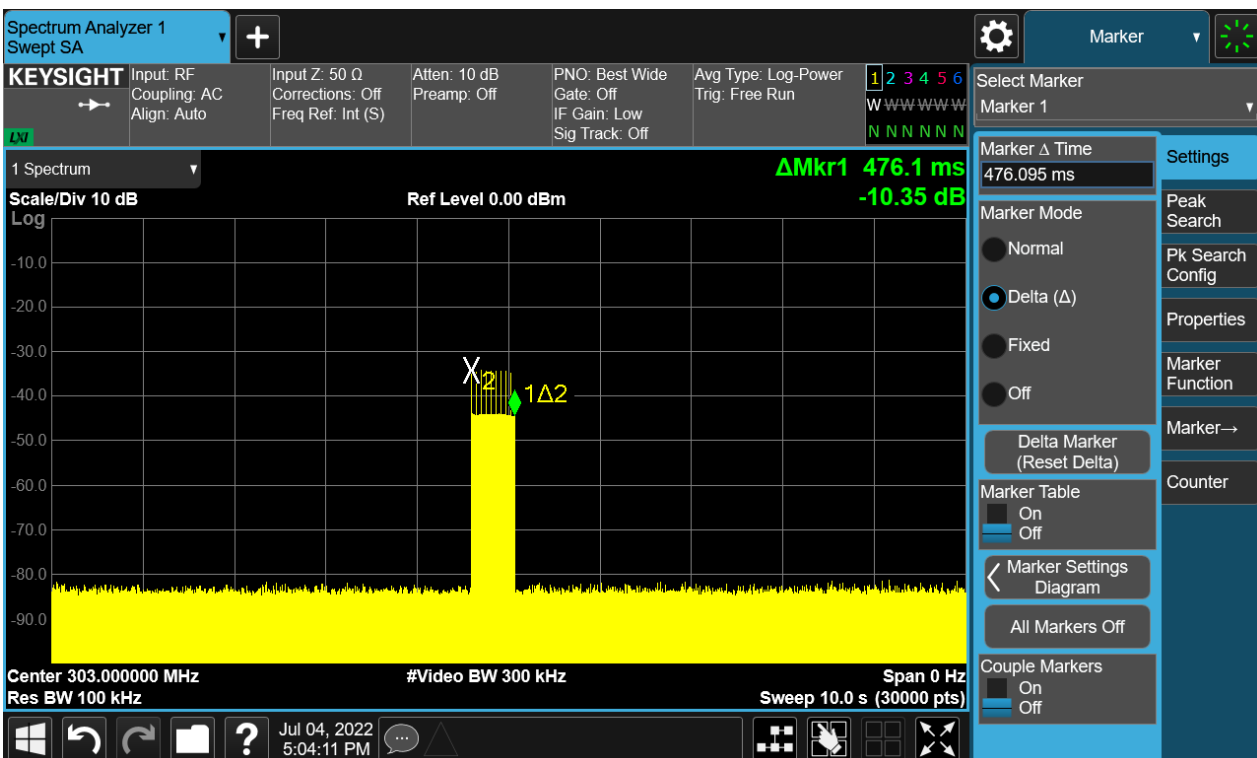
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When a button is pressed, the EUT will transmit in 303MHz for 476.1ms and then shift immediately to 390MHz for 422.1ms, then stop Transmitting.



Test plots of 303MHz



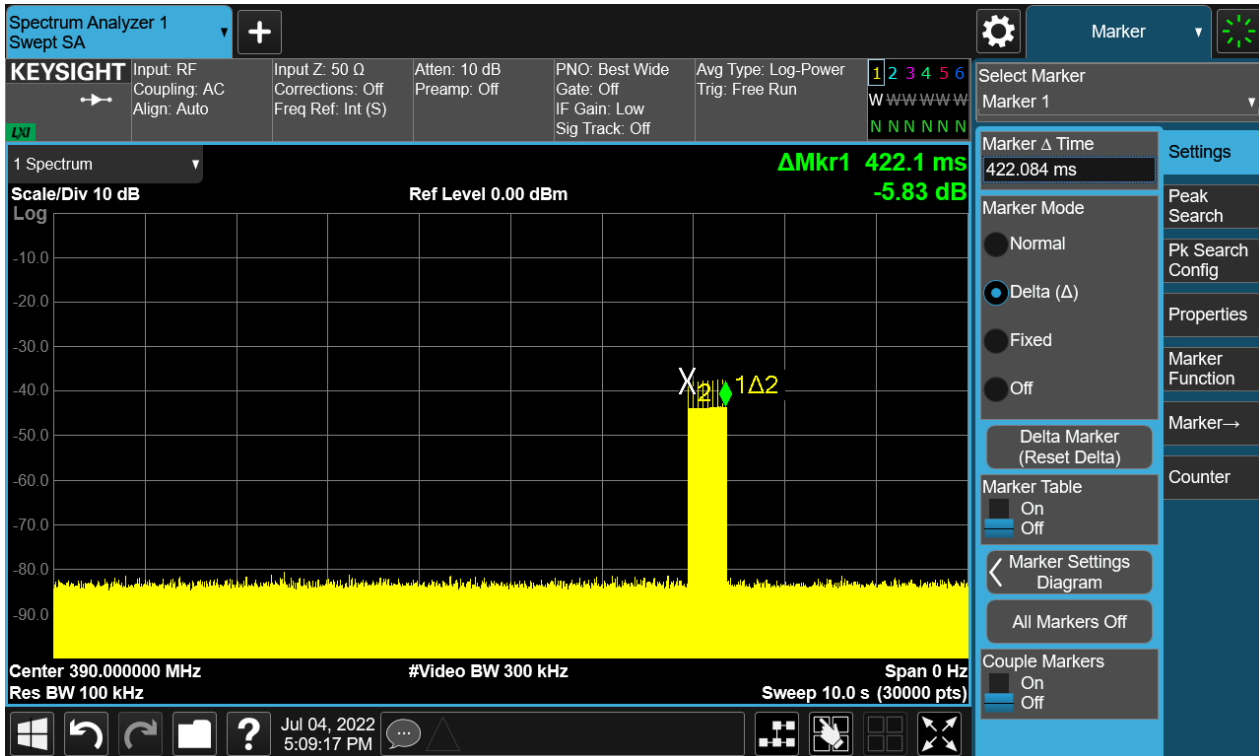
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Test plots of 390MHz



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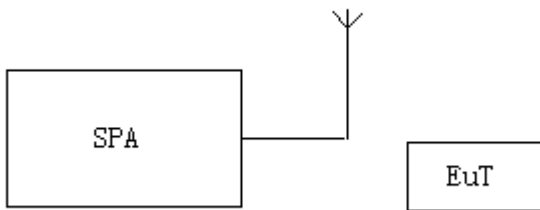
## 4.1.3 Duty Cycle Correction Factor

RESULT:

**PASS**

Test standard : §15.231(b)  
Requirement : ANSI C63.10-2013

### 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 Result

Note(s): The level of the peak emission are less than the average limit, so the average factor need not to be tested.

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## 4.1.4 Radiated Emission

RESULT:

PASS

Test standard : §15.231(b),§15.209  
Requirement : ANSI C63.10-2013  
Kind of test site : 3m Semi-Anechoic Chamber

### Test setup

Test Diagram : Clause 3.4  
Operation Mode : Transmitting mode  
Ambient temperature : 22.1°C  
Relative humidity : 52%

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)	f	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 higher 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.

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## 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.

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

Spectrum Parameter	Setting
Start Frequency	1000MHz
Stop Frequency	10 <sup>th</sup> 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

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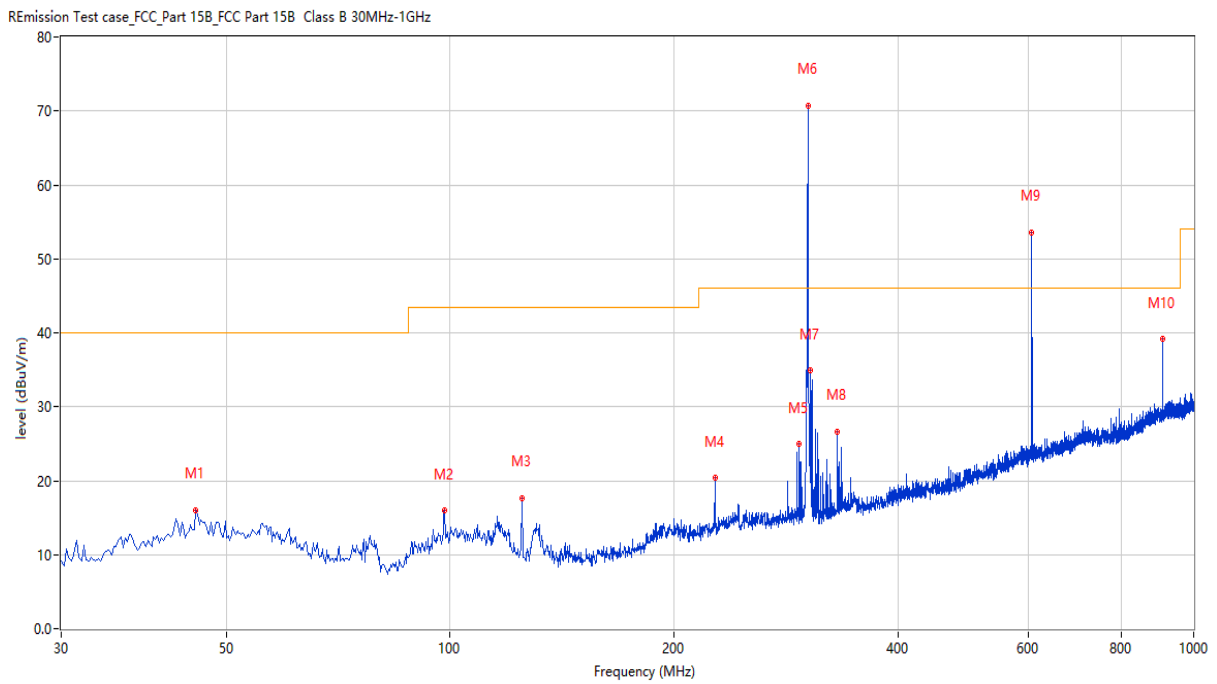
## Test Data

### Radiated Emission Below 30MHz

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

## Test plots of 303MHz

### Radiated Emission Below 1GHz-Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	45.516	15.99	-25.24	40.0	-24.01	Peak	268.60	150	Horizontal	Pass
2	98.368	15.96	-26.77	43.5	-27.54	Peak	249.10	200	Horizontal	Pass
3	124.794	17.66	-28.97	43.5	-25.84	Peak	360.00	200	Horizontal	Pass
4	227.103	20.36	-25.98	46.0	-25.64	Peak	0.00	150	Horizontal	Pass
5	294.986	24.92	-23.93	46.0	-21.08	Peak	0.00	150	Horizontal	Pass
6	302.744	70.76	-23.67	74.87	-4.11	Peak	0.00	150	Horizontal	Pass
7	304.684	34.93	-23.58	46.0	-11.07	Peak	360.00	200	Horizontal	Pass
8	331.352	26.53	-22.65	46.0	-19.47	Peak	49.80	100	Horizontal	Pass
9	605.794	53.62	-15.36	54.87	-1.25	Peak	26.70	100	Horizontal	Pass
10	908.843	39.15	-9.67	54.87	-15.72	Peak	316.80	100	Horizontal	Pass



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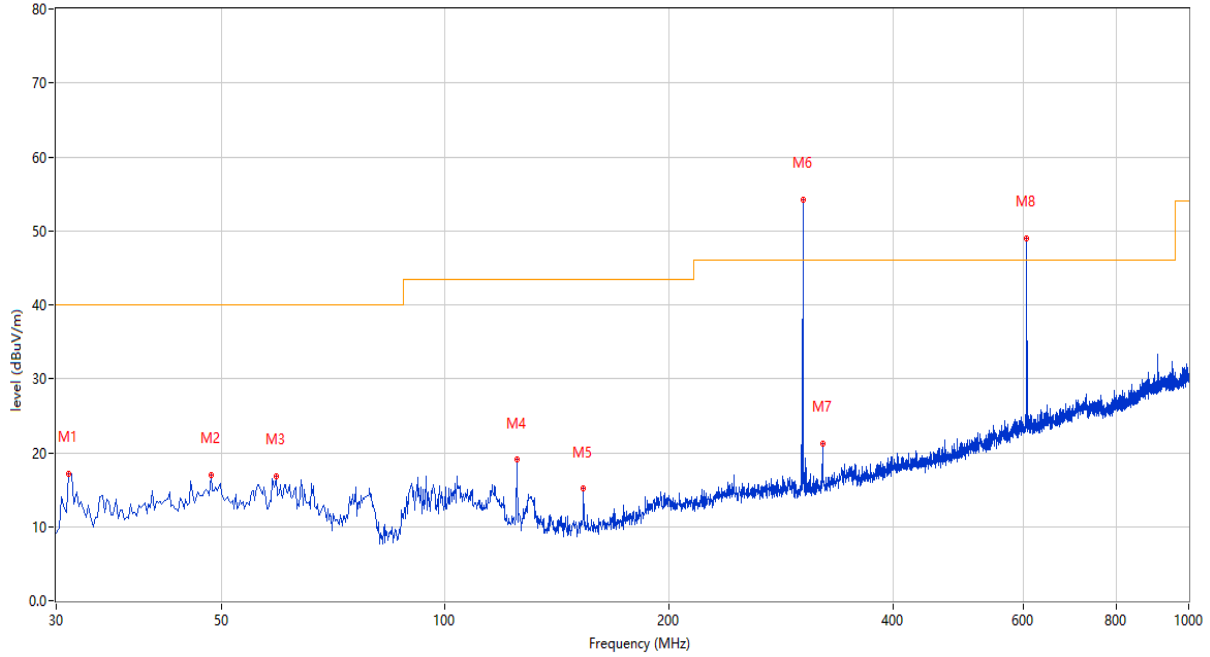
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## Radiated Emission Below 1GHz-Vertical

REmission Test case\_FCC\_Part 15B\_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	30.727	12.89	-29.59	40.0	-27.11	Peak	360.00	150	Vertical	Pass
2	48.425	17.01	-25.08	40.0	-22.99	Peak	336.10	100	Vertical	Pass
3	59.335	16.81	-26.12	40.0	-23.19	Peak	253.50	100	Vertical	Pass
4	124.794	19.06	-28.97	43.5	-24.44	Peak	360.00	150	Vertical	Pass
5	153.402	15.17	-29.79	43.5	-28.33	Peak	267.20	100	Vertical	Pass
6	302.987	54.22	-23.66	74.87	-20.65	Peak	354.60	100	Vertical	Pass
7	321.897	21.23	-23.08	46.0	-24.77	Peak	50.60	150	Vertical	Pass
8	605.794	49.06	-15.36	54.87	-5.81	Peak	23.10	150	Vertical	Pass

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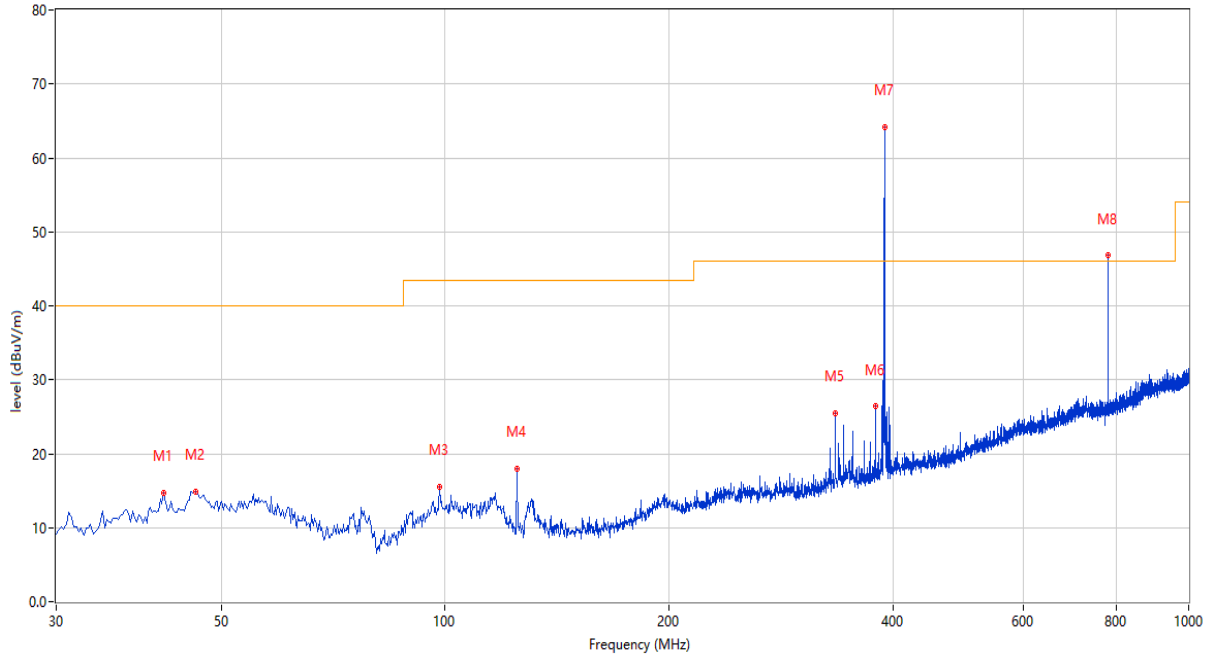
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Test plots of 390MHz

## Radiated Emission Below 1GHz-Horizontal

REmission Test case\_FCC\_Part 15B\_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	41.880	14.72	-25.75	40.0	-25.28	Peak	313.30	150	Horizontal	Pass
2	46.243	14.78	-25.20	40.0	-25.22	Peak	0.00	150	Horizontal	Pass
3	98.368	15.51	-26.77	43.5	-27.99	Peak	14.30	200	Horizontal	Pass
4	124.794	17.98	-28.97	43.5	-25.52	Peak	360.00	200	Horizontal	Pass
5	334.989	25.45	-22.40	46.0	-20.55	Peak	343.20	100	Horizontal	Pass
6	379.113	26.38	-21.57	46.0	-19.62	Peak	256.10	100	Horizontal	Pass
7	389.780	64.22	-21.25	79.25	-15.03	Peak	278.80	100	Horizontal	Pass
8	779.865	46.81	-12.58	59.25	-12.44	Peak	338.70	100	Horizontal	Pass

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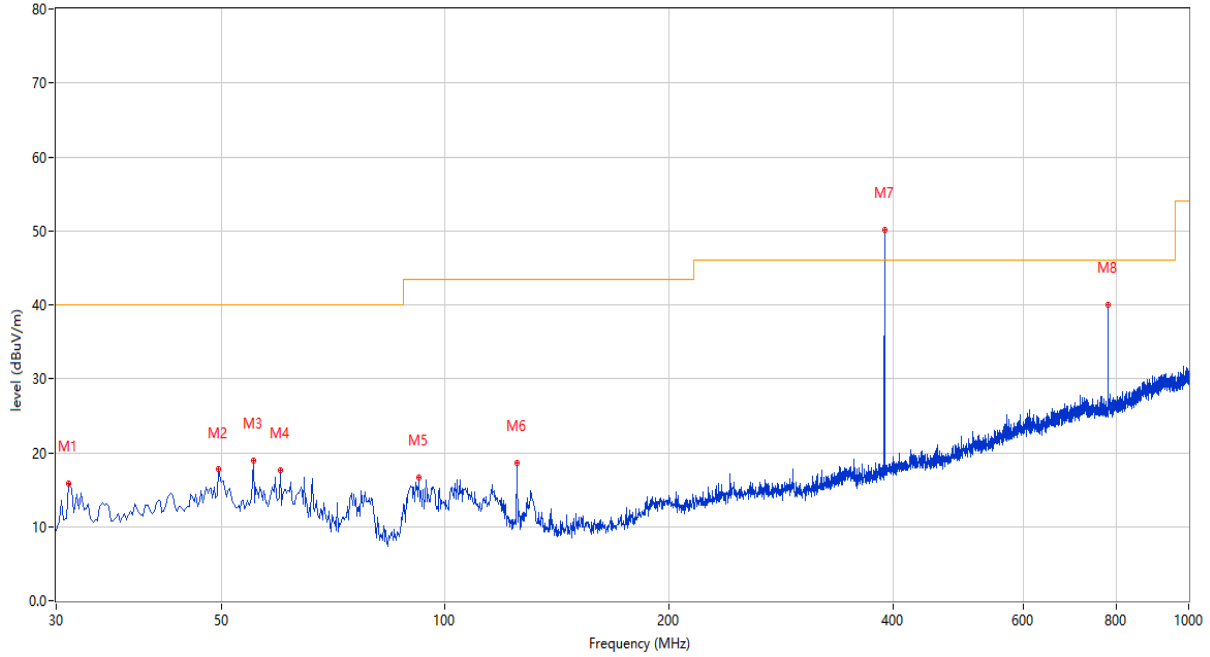
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## Radiated Emission Below 1GHz-Vertical

REmission Test case\_FCC\_Part 15B\_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	30.485	13.54	-29.66	40.0	-26.46	Peak	52.90	100	Vertical	Pass
2	49.638	17.73	-25.03	40.0	-22.27	Peak	240.80	100	Vertical	Pass
3	55.214	18.93	-25.42	40.0	-21.07	Peak	360.00	150	Vertical	Pass
4	60.062	17.62	-26.30	40.0	-22.38	Peak	254.60	100	Vertical	Pass
5	92.307	16.61	-28.10	43.5	-26.89	Peak	358.50	150	Vertical	Pass
6	124.794	18.60	-28.97	43.5	-24.90	Peak	360.00	150	Vertical	Pass
7	389.780	50.19	-21.25	79.25	-29.06	Peak	360.00	150	Vertical	Pass
8	779.865	40.01	-12.58	59.25	-19.24	Peak	250.10	100	Vertical	Pass

### Result: Pass

Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain, Over Limit= Results- Limit.
2. The "Factor" value can be calculated automatically by software of measurement system.

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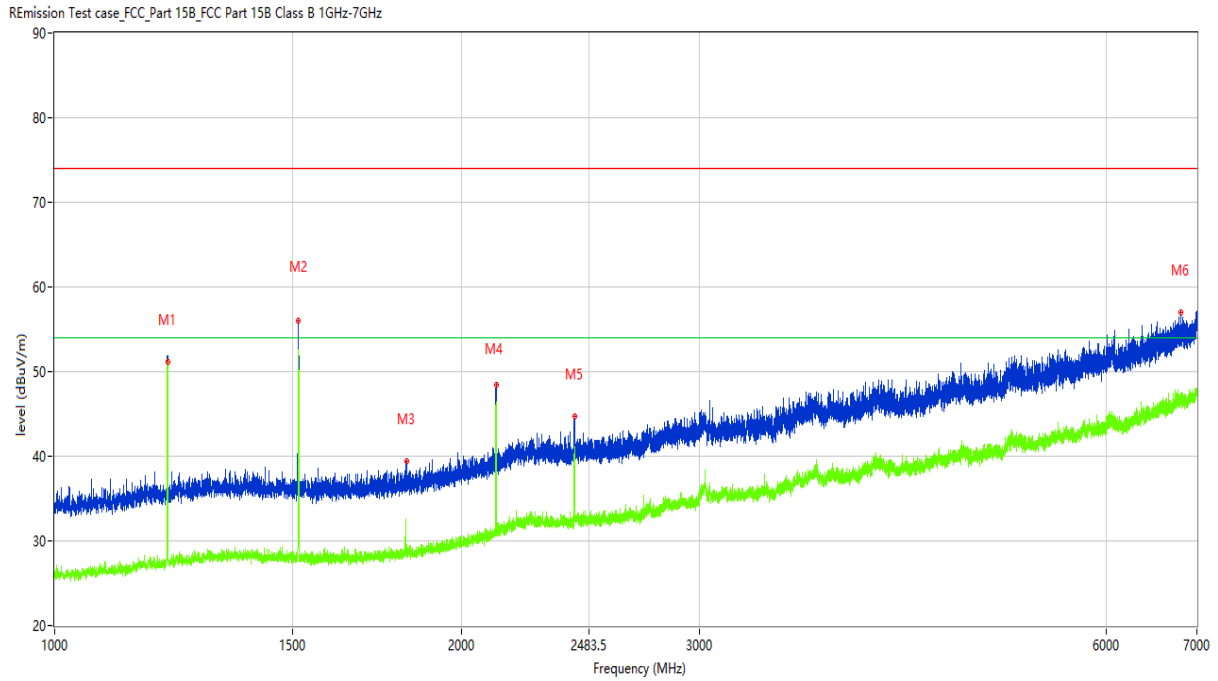
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Test plots of 303MHz

## Radiated Emission above 1GHz-Horizontal



No.	Frequency (MHz)	Results (dBUV/m)	Factor (dB)	Limit (dBUV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1212.000	51.90	-15.03	74.0	-22.10	Peak	93.70	100	Horizontal	Pass
1**	1212.000	51.18	-15.03	54.0	-2.82	AV	93.70	100	Horizontal	Pass
2	1514.500	56.00	-14.87	74.0	-18.00	Peak	233.60	100	Horizontal	Pass
2**	1514.500	52.29	-14.87	54.0	-1.71	AV	233.60	100	Horizontal	Pass
3	1820.750	39.39	-14.33	74.0	-34.61	Peak	303.60	100	Horizontal	Pass
3**	1820.750	28.47	-14.33	54.0	-25.53	AV	303.60	100	Horizontal	Pass
4	2121.000	48.48	-11.45	74.0	-25.52	Peak	292.60	100	Horizontal	Pass
4**	2121.000	46.39	-11.45	54.0	-7.61	AV	292.60	100	Horizontal	Pass
5	2424.000	44.27	-9.41	74.0	-29.73	Peak	274.50	100	Horizontal	Pass
5**	2424.000	40.54	-9.41	54.0	-13.46	AV	274.50	100	Horizontal	Pass
6	6809.000	56.98	5.14	74.0	-17.02	Peak	27.00	100	Horizontal	Pass
6**	6809.000	47.07	5.14	54.0	-6.93	AV	27.00	100	Horizontal	Pass

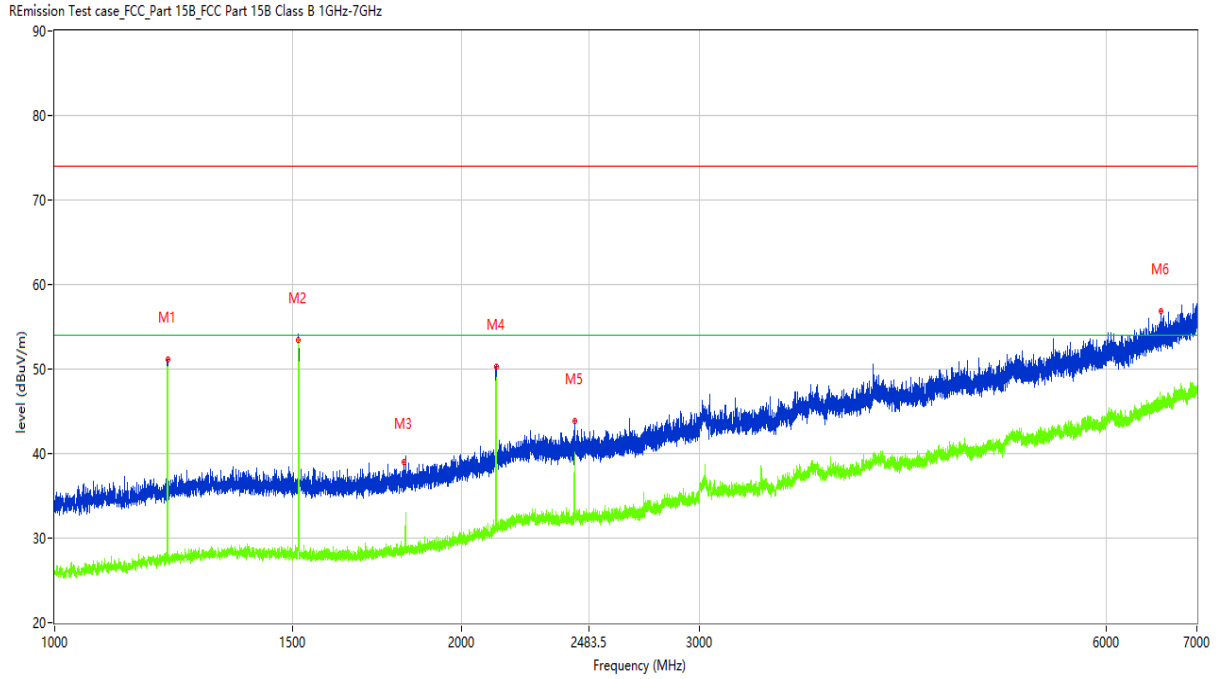
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## Radiated Emission above 1GHz-Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1212.000	42.15	-15.03	74.0	-31.85	Peak	352.70	100	Vertical	Pass
1**	1212.000	39.07	-15.03	54.0	-14.93	AV	352.70	100	Vertical	Pass
2	1515.000	53.07	-14.86	74.0	-20.93	Peak	359.00	100	Vertical	Pass
2**	1515.000	51.83	-14.86	54.0	-2.17	AV	359.00	100	Vertical	Pass
3	1814.000	38.93	-14.36	74.0	-35.07	Peak	117.00	100	Vertical	Pass
3**	1814.000	28.67	-14.36	54.0	-25.33	AV	117.00	100	Vertical	Pass
4	2121.000	50.30	-11.45	74.0	-23.70	Peak	101.70	100	Vertical	Pass
4**	2121.000	48.95	-11.45	54.0	-5.05	AV	101.70	100	Vertical	Pass
5	2424.250	43.92	-9.41	74.0	-30.08	Peak	37.50	100	Vertical	Pass
5**	2424.250	39.33	-9.41	54.0	-14.67	AV	37.50	100	Vertical	Pass
6	6581.500	56.82	4.23	74.0	-17.18	Peak	82.40	100	Vertical	Pass
6**	6581.500	46.25	4.23	54.0	-7.75	AV	82.40	100	Vertical	Pass

# TEST REPORT

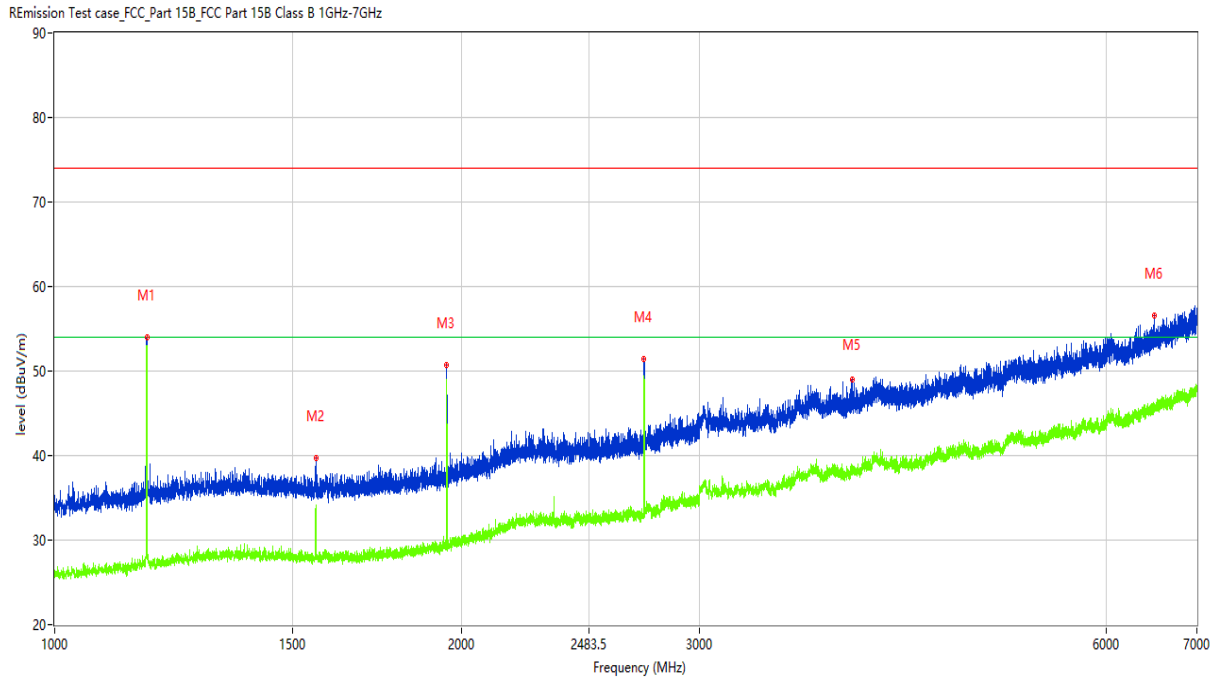
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Test plots of 390MHz

## Radiated Emission above 1GHz-Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1170.000	54.05	-15.00	74.0	-19.95	Peak	291.40	100	Horizontal	Pass
1**	1170.000	53.03	-15.00	54.0	-0.97	AV	291.40	100	Horizontal	Pass
2	1560.250	39.74	-14.86	74.0	-34.26	Peak	233.50	100	Horizontal	Pass
2**	1560.250	33.98	-14.86	54.0	-20.02	AV	233.50	100	Horizontal	Pass
3	1950.000	50.71	-13.46	74.0	-23.29	Peak	252.90	100	Horizontal	Pass
3**	1950.000	49.05	-13.46	54.0	-4.95	AV	252.90	100	Horizontal	Pass
4	2730.000	51.36	-7.99	74.0	-22.64	Peak	284.00	100	Horizontal	Pass
4**	2730.000	49.46	-7.99	54.0	-4.54	AV	284.00	100	Horizontal	Pass
5	3889.000	49.00	-2.07	74.0	-25.00	Peak	154.80	100	Horizontal	Pass
5**	3889.000	38.07	-2.07	54.0	-15.93	AV	154.80	100	Horizontal	Pass
6	6509.500	56.58	3.98	74.0	-17.42	Peak	104.60	100	Horizontal	Pass
6**	6509.500	46.03	3.98	54.0	-7.97	AV	104.60	100	Horizontal	Pass

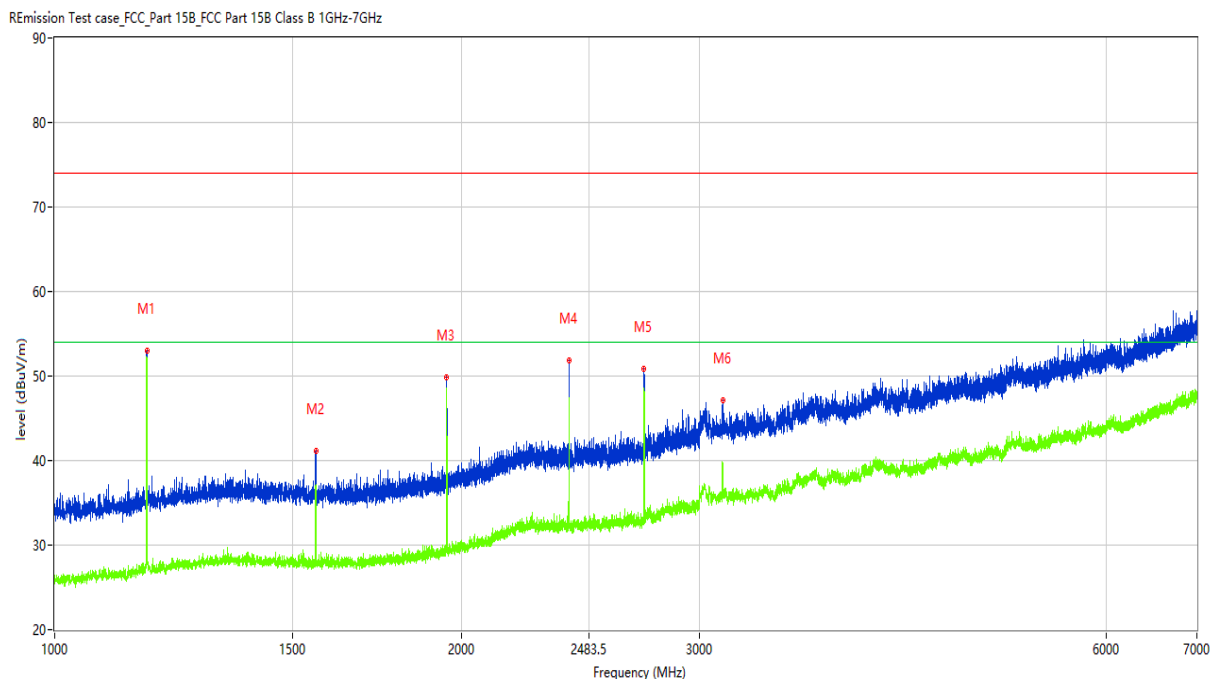
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## Radiated Emission above 1GHz-Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1170.000	53.00	-15.00	74.0	-21.00	Peak	197.30	100	Vertical	Pass
1**	1170.000	52.16	-15.00	54.0	-1.84	AV	197.30	100	Vertical	Pass
2	1560.250	41.08	-14.86	74.0	-32.92	Peak	57.20	100	Vertical	Pass
2**	1560.250	36.95	-14.86	54.0	-17.05	AV	57.20	100	Vertical	Pass
3	1950.000	49.89	-13.46	74.0	-24.11	Peak	42.10	100	Vertical	Pass
3**	1950.000	48.58	-13.46	54.0	-5.42	AV	42.10	100	Vertical	Pass
4	2402.750	51.92	-9.82	74.0	-22.08	Peak	282.00	100	Vertical	Pass
4**	2402.750	47.41	-9.82	54.0	-6.59	AV	282.00	100	Vertical	Pass
5	2729.750	50.89	-8.00	74.0	-23.11	Peak	57.20	100	Vertical	Pass
5**	2729.750	47.97	-8.00	54.0	-6.03	AV	57.20	100	Vertical	Pass
6	3120.000	46.15	-4.95	74.0	-27.85	Peak	20.30	100	Vertical	Pass
6**	3120.000	39.65	-4.95	54.0	-14.35	AV	20.30	100	Vertical	Pass

### Result: Pass

Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain, Over Limit= Results- Limit.
2. The "Factor" value can be calculated automatically by software of measurement system.

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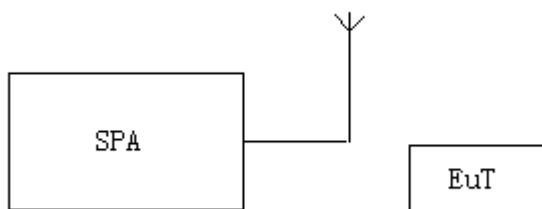
## 4.1.5 20dB Bandwidth

RESULT:

**PASS**

Test standard : §15.231(c)  
Requirement : ANSI C63.10-2013

### Test setup



### Test procedure

1. Set the parameters of SPA as below:  
Centre frequency = Operation Frequency  
RBW=3KHz  
VBW=10KHz  
Span: 250KHz  
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.



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## Test Data

Channel Frequency	20dB Bandwidth	Limit	Result
303MHz	46.40KHz	757.5KHz	Pass
390MHz	49.60KHz	975.0KHz	Pass

Note: Limit= Operation Frequency x0.25%

## Test plots of 303MHz



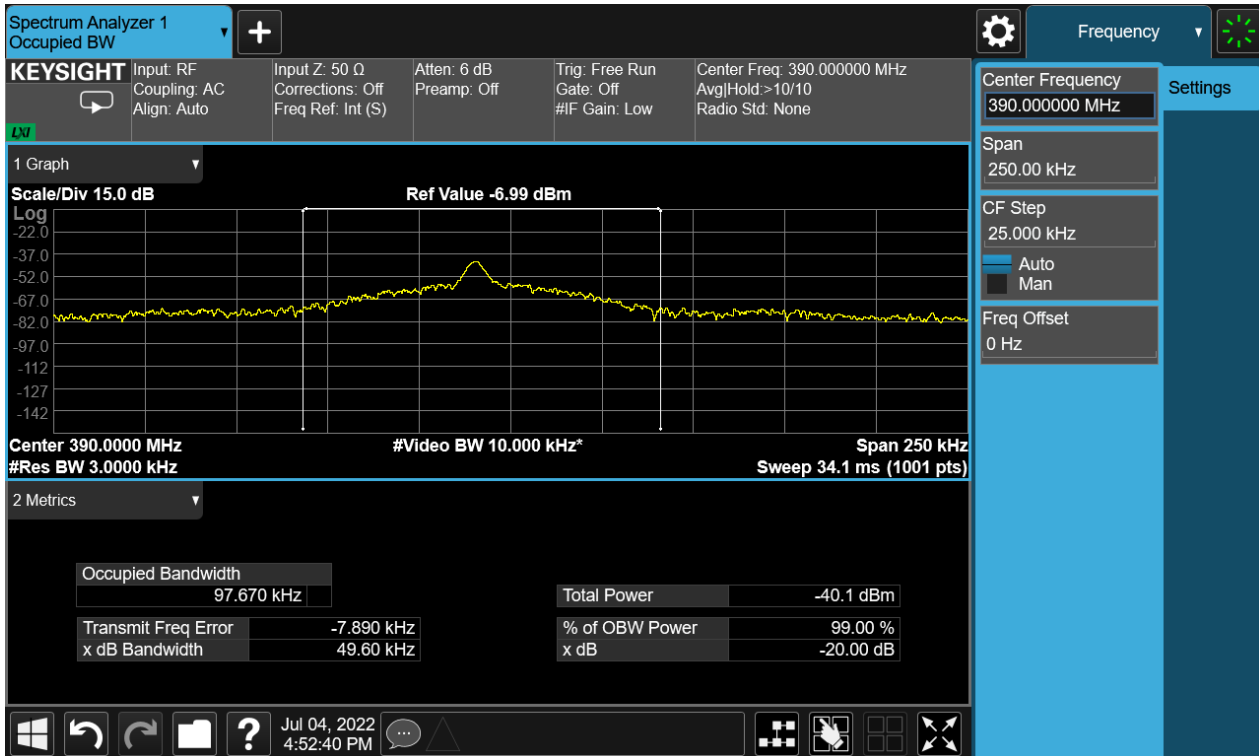
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Test plots of 390MHz



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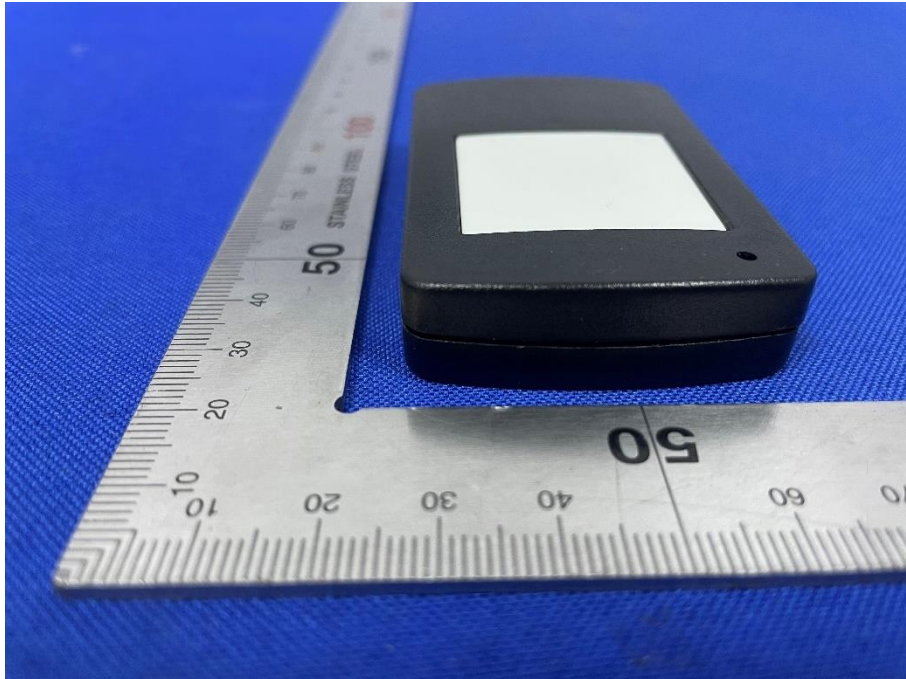
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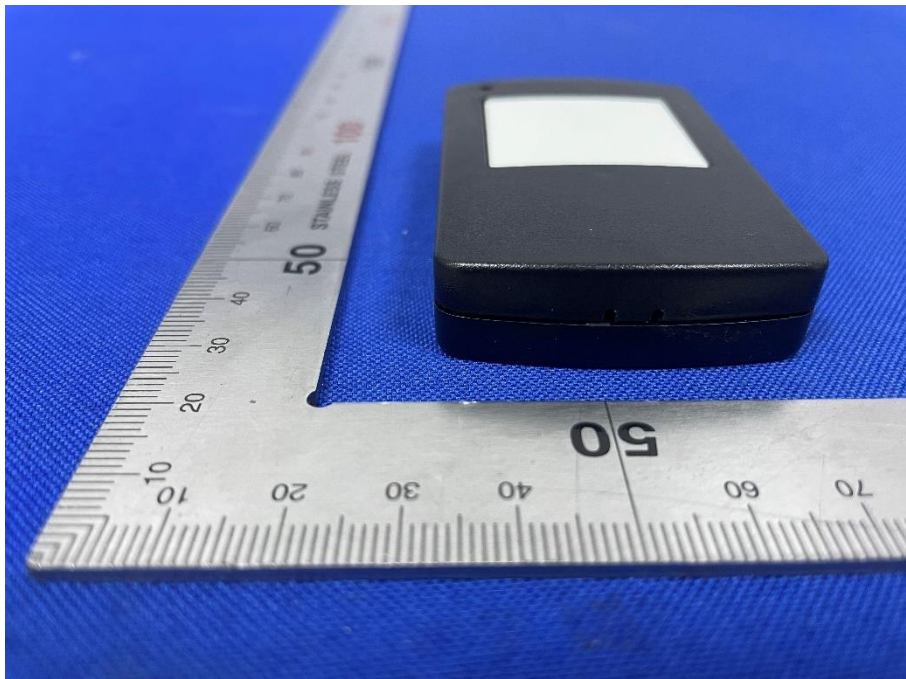
## 5 Appendixes

### 5.1 Photographs of the Sample

Top view of EUT



Bottom view of EUT



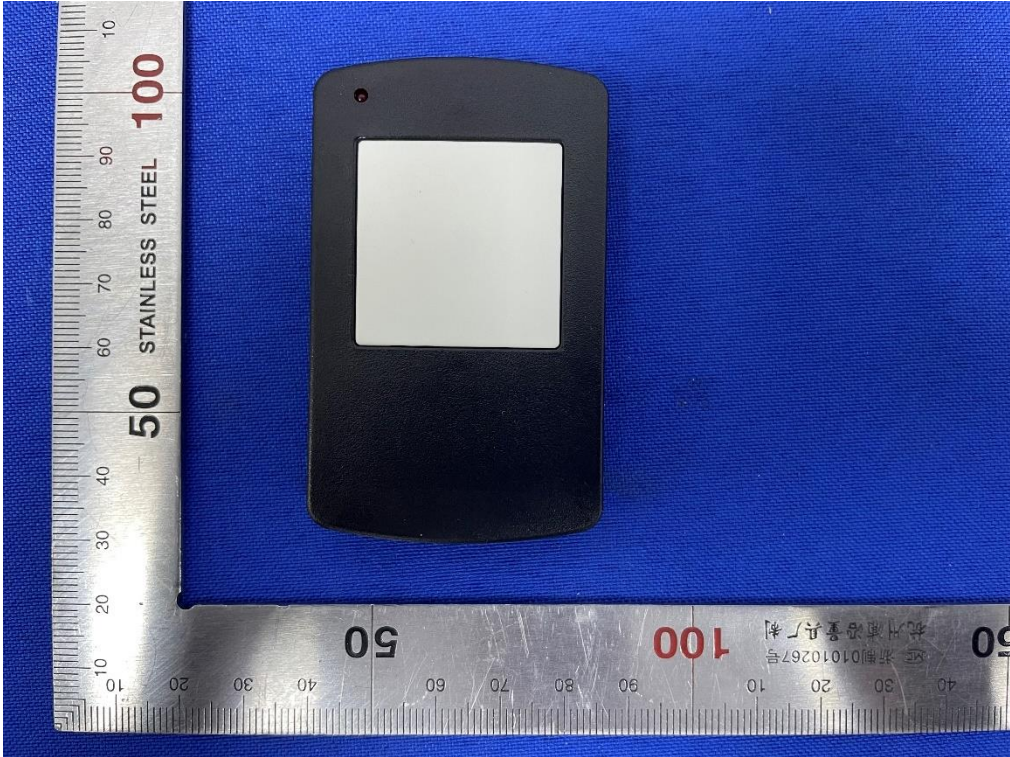
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Front view of EUT



Back view of EUT



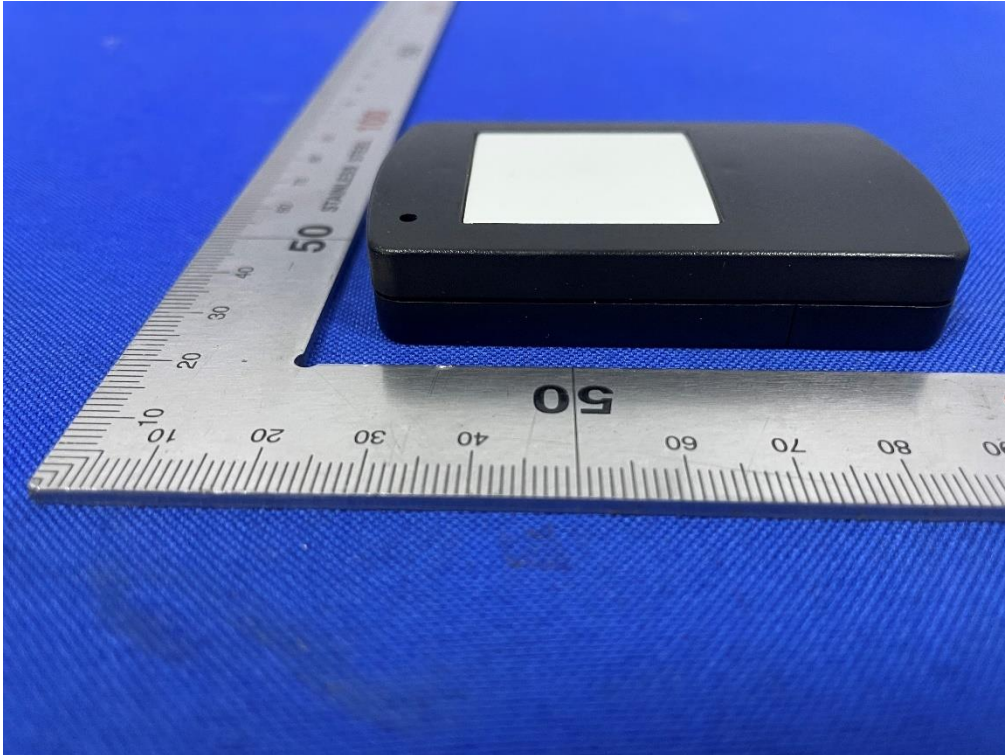
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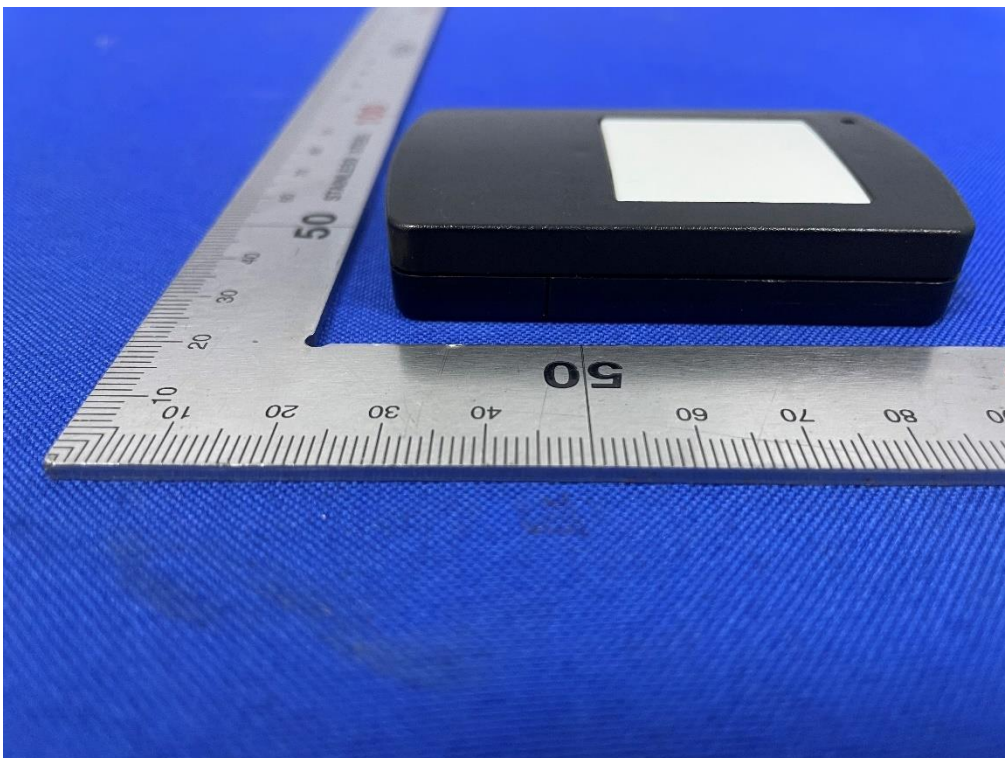
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Left view of EUT



Right view of EUT



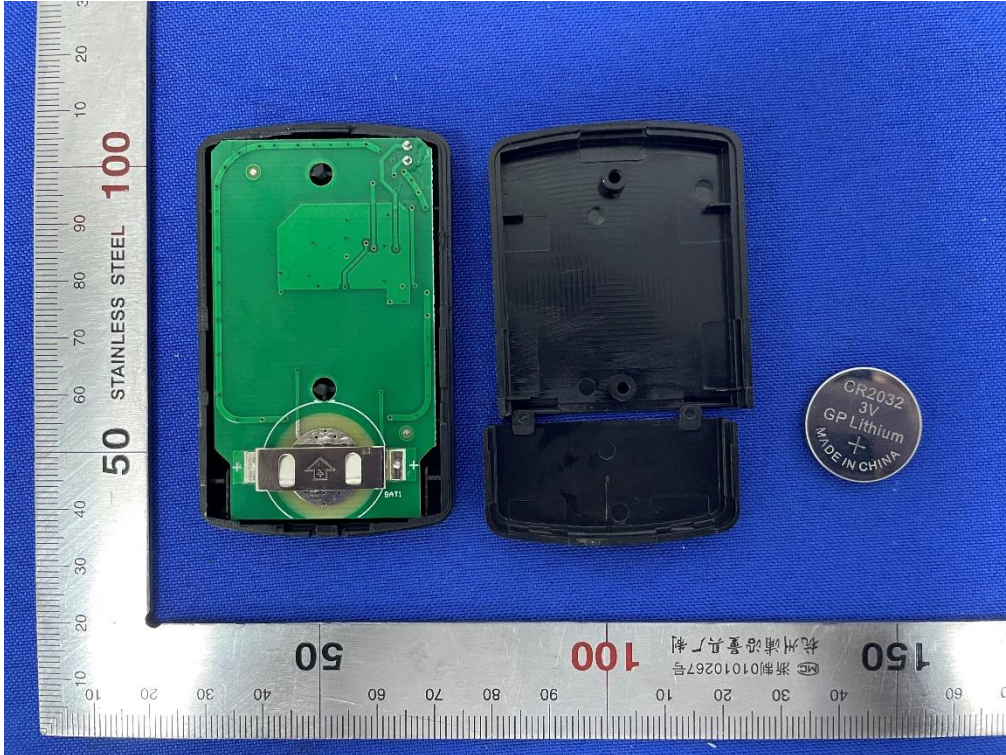
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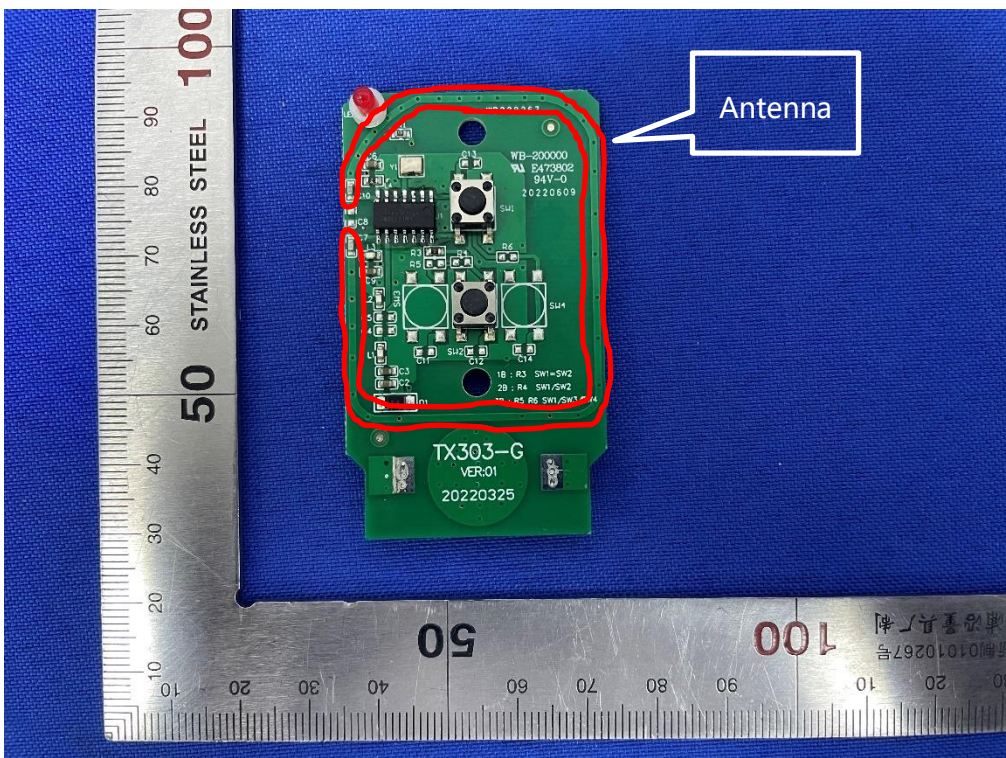
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Open view of EUT



Internal view of EUT-1



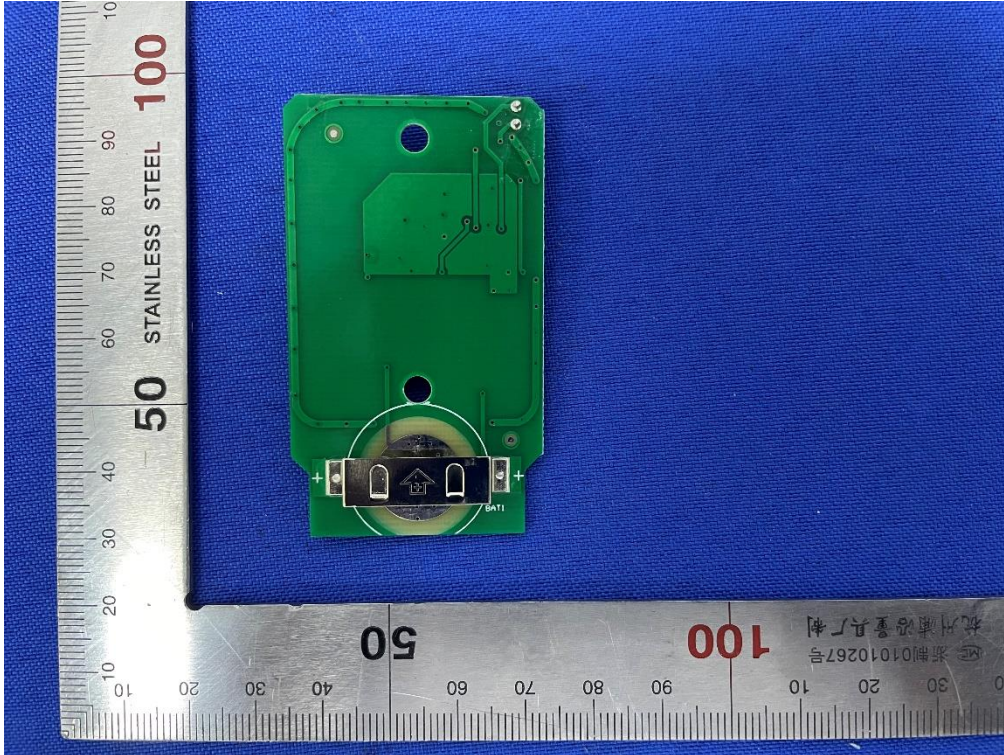
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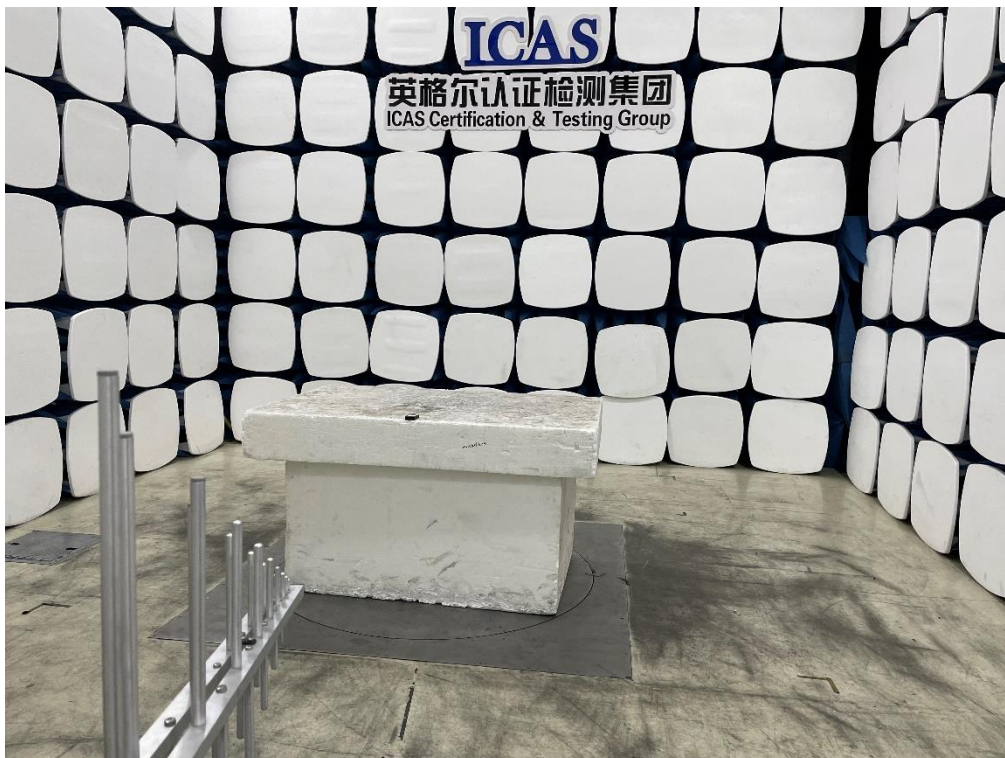
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Internal view of EUT-2



## 5.2 Photographs of the Test Set-up

FCC Radiated Emission Test Setup-below 1GHz



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FCC Radiated Emission Test Setup-above 1GHz



\*\*\*End of the report\*\*\*