

# TEST REPORT

Report No.: SHE23070010-01AE

Date: 2023-07-29

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**Applicant** : DewertOkin Technology Group Co., Ltd.  
**Address of Applicant** : Room 247, Floor 6, Jiaxing Photovoltaic Science and Innovation Park, 1288 Kanghe Road, Xiuzhou District, Jiaxing City, Zhejiang Province 314016 China

**Product Name** : REMOTE CONTROL  
**Brand Name** : N/A  
**Model Name** : RF60-10, RF60-7  
**Sample Acquisition Method** : Sent by Client  
**Sample No.** : E23070010-01#02(Radiation Prototype)  
E23070010-01#03(Radiation Prototype)  
E23070010-01#04(Conduction Prototype)  
**FCC ID** : 2AVJ8-RF60  
**ISED Number** : 25804-RF60

**Standards** : FCC CFR47 Part 15, Subpart C Section 15.249  
RSS-Gen (Issue 5, Amd.2-Feb 2021)  
RSS-210 (Issue 10, Amendment-Apr 2020)

**Date of Receipt** : 2023-07-05  
**Date of Test** : 2023-07-21 ~ 2023-07-26  
**Date of Issue** : 2023-07-29

**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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## 1 General Information

### 1.1 Testing Laboratory

ISED CAB identifier #	CN0081
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	DewertOkin Technology Group Co., Ltd.
Address	Room 247, Floor 6, Jiaying Photovoltaic Science and Innovation Park, 1288 Kanghe Road, Xiuzhou District, Jiaying City, Zhejiang Province 314016 China
Contact Person	Mia Ye
Telephone	+86-573-82281072
Email	Mia.Ye@refinedchina.com
Manufacturer Company Name	DewertOkin Technology Group Co., Ltd.
Address	Room 247, Floor 6, Jiaying Photovoltaic Science and Innovation Park, 1288 Kanghe Road, Xiuzhou District, Jiaying City, Zhejiang Province 314016 China
Factory Company Name	DewertOkin Technology Group Co., Ltd.
Address	Room 247, Floor 6, Jiaying Photovoltaic Science and Innovation Park, 1288 Kanghe Road, Xiuzhou District, Jiaying City, Zhejiang Province 314016 China

### 1.3 Details of EUT

Product Name	REMOTE CONTROL
Brand Name	N/A
Test Model Name	RF60-10
Series Model Name	RF60-7
Difference Description	All the same except for the buttons and model name, Refer to the sample photo for details.
FCC ID	2AVJ8-RF60
ISED Number	25804-RF60
Operation Frequency	2403MHz ~ 2480MHz
Maximum Field Strength	73.50dBuV/m(Peak)@3m
Number of Channels	78
Modulation Type	GFSK
Antenna Type	PCB Antenna

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Antenna Gain	1.225dBi
Extreme Temperature Range	-10°C~ +40°C
Test Voltage	DC 3.0V supply by battery
Hardware Version	R5.109.00.1074A
Software Version	V1.0
RF power setting in TEST SW	Enter the fixed frequency mode by pressing the key_Default power

Note:

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

## Channel List

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2.403GHz	28	2.430GHz	55	2.457GHz
2	2.404GHz	29	2.431GHz	56	2.458GHz
3	2.405GHz	30	2.432GHz	57	2.459GHz
4	2.406GHz	31	2.433GHz	58	2.460GHz
5	2.407GHz	32	2.434GHz	59	2.461GHz
6	2.408GHz	33	2.435GHz	60	2.462GHz
7	2.409GHz	34	2.436GHz	61	2.463GHz
8	2.410GHz	35	2.437GHz	62	2.464GHz
9	2.411GHz	36	2.438GHz	63	2.465GHz
10	2.412GHz	37	2.439GHz	64	2.466GHz
11	2.413GHz	38	2.440GHz	65	2.467GHz
12	2.414GHz	39	2.441GHz	66	2.468GHz
13	2.415GHz	40	2.442GHz	67	2.469GHz
14	2.416GHz	41	2.443GHz	68	2.470GHz
15	2.417GHz	42	2.444GHz	69	2.471GHz
16	2.418GHz	43	2.445GHz	70	2.472GHz
17	2.419GHz	44	2.446GHz	71	2.473GHz
18	2.420GHz	45	2.447GHz	72	2.474GHz
19	2.421GHz	46	2.448GHz	73	2.475GHz
20	2.422GHz	47	2.449GHz	74	2.476GHz
21	2.423GHz	48	2.450GHz	75	2.477GHz
22	2.424GHz	49	2.451GHz	76	2.478GHz
23	2.425GHz	50	2.452GHz	77	2.479GHz
24	2.426GHz	51	2.453GHz	78	2.480GHz
25	2.427GHz	52	2.454GHz		
26	2.428GHz	53	2.455GHz		
27	2.429GHz	54	2.456GHz		

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## 1.4 Test Methodology

47 CFR Part 15, Subpart C	Telecommunication-Radio Frequency Devices-Intentional Radiators
RSS-Gen (Issue 5, Amd.2-Feb 2021)	General Requirements for Compliance of Radio Apparatus
RSS-210 (Issue 10, Amendment-Apr 2020)	Licence-Exempt Radio Apparatus: Category I Equipment
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	ISED Rules	Result
Antenna Requirement	Part 15.203	RSS-GEN 6.8	PASS
Radiated Emission	FCC Part 15.249(a),15.209	RSS-210 B.10(a) RSS-GEN 8.9	PASS
Band Edge	FCC Part 15.249(d),15.209	RSS-210 B.10(b) RSS-GEN 8.10	PASS
20dB Bandwidth and 99% Bandwidth	FCC Part 15.215(c)	RSS-GEN 6.7	PASS
Conducted Emission on AC Mains	FCC Part 15.207(a)	RSS-Gen 8.8	N/A <sup>note</sup>

**Note(s):** The EUT is powered by battery (DC 3.0V supply by battery)

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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	2022-08-02	2023-08-01
Spectrum Analyzer	Rohde & Schwarz	FSV40N	101450	2023-06-08	2024-06-07
Signal Generator	Rohde & Schwarz	SMR27	100184	2022-08-02	2023-08-01
EMI Test Receiver	Rohde & Schwarz	ESR 7	101911	2023-06-08	2024-06-07
DC Power Supply	ITECH	IT6512A	N/A	2022-06-07	2024-06-06
Broadband Antenna	SCHWARZBECK	VULB9163	9163-1037	2023-03-22	2025-03-21
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1775	2023-06-13	2025-06-12
Loop Antenna	SCHWARZBECK	FMZB 1513	/	2023-06-09	2024-06-08
Broadband Preamplifier	SCHWARZBECK	BBV 9718	346	2023-06-08	2024-06-07
EMC chamber 9*6*6 (L*W*H)	CHANGNING	966	N/A	2023-06-09	2026-06-08
Test Software	BL	BL410_E	Version:1.0.0.117	N/A	N/A
Test Software	BL	BL410_R	Version:2.1.1.409	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 95.45%.

Parameter	Uncertainty	
Antenna Port Conducted Emission	< 1GHz	$\pm 1.5$ dB
	> 1GHz	$\pm 1.5$ dB
Radiated Emission	9KHz – 30MHz	$\pm 3.42$ dB
	30 MHz – 1GHz	$\pm 5.00$ dB
	> 1GHz	$\pm 4.88$ dB
Occupied Channel Bandwidth	$\pm 5$ %	

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## 3 Test Set-up and Operation Modes

### 3.1 Details of Test Mode

Enter the fixed frequency mode by pressing the key was control EUT work in continuous transmitter and receiver mode. Select test channel as below:

Channel	Frequency
The lowest channel(CH1)	2403MHz
The middle channel(CH40)	2442MHz
The highest channel(CH78)	2480MHz

The basic operation modes are:

- A. Transmitting
  - i. Low Channel
  - ii. Middle Channel
  - iii. High Channel

### 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

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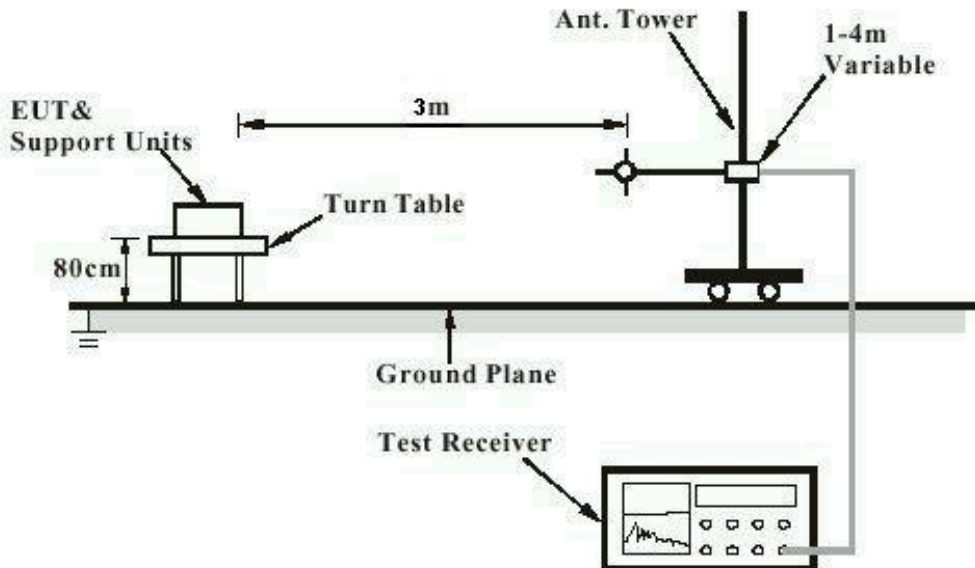
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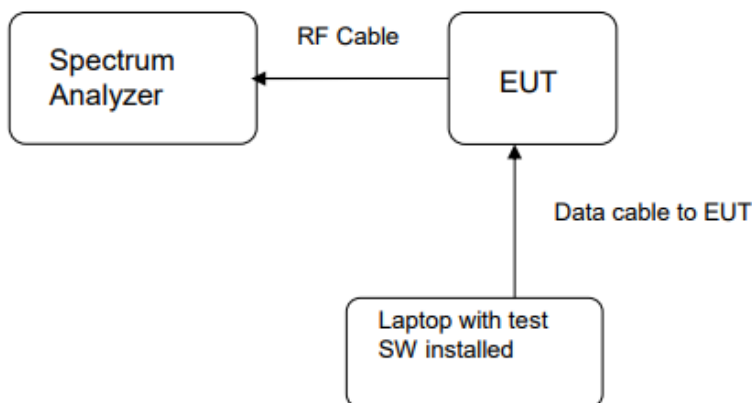
## 3.4 Test Setup Diagram

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.

Diagram of Measurement Configuration for Transmitter Test





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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, RSS-GEN 6.8
Requirement	: 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 shall be considered sufficient to comply with the provisions of this section. 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.

According to the manufacturer declaration, the EUT has an antenna with a directional gain of 1.225dBi. The antenna is pcb 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 Radiated Emission

RESULT:

**PASS**

Test standard : FCC Part 15.249(a), 15.209  
RSS-210 B.10(a), RSS-GEN 8.9

Requirement : ANSI C63.10-2013

Kind of test site : 3m Semi-Anechoic Chamber

### Test setup

Test Channel : Low/Middle/High

Operation Mode : A.i/ii/iii

Ambient temperature : 23.4°C

Relative humidity : 50%

### Notes

1. For 9 kHz ~ 30 MHz, the amplitude of spurious emissions that are attenuated by more than 20dB below the permissible. The value has no need to be reported.
2. The spurious above 18GHz is noise only and 20dB below the limit. The value has no need to be reported.
3. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement –X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.

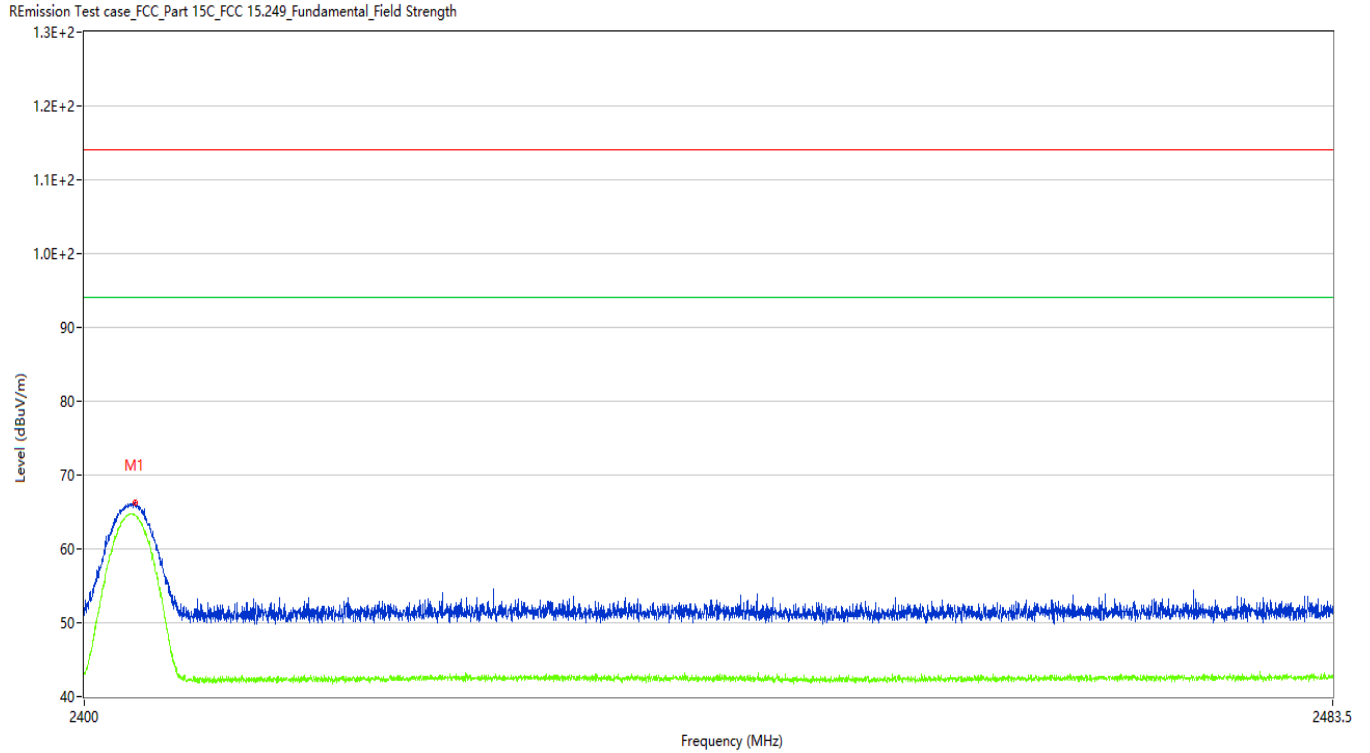
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**Figure 1: Test plots of Field strength of fundamental, 2403MHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2403.340	66.33	-9.81	114.0	47.67	Peak	252.70	100	Horizontal	Pass
1**	2403.340	64.52	-9.81	94.0	29.48	AV	252.70	100	Horizontal	Pass

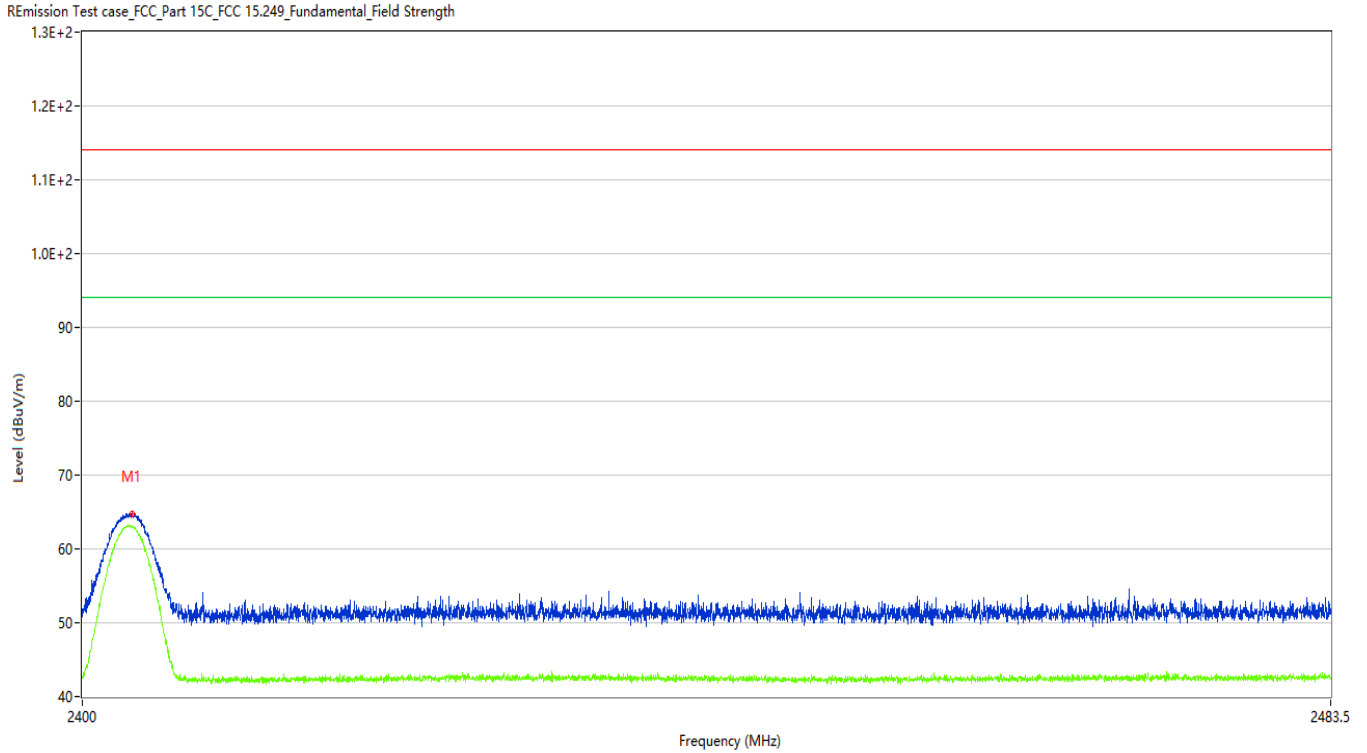
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**Figure 2: Test plots of Field strength of fundamental, 2403MHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2403.277	64.77	-9.81	114.0	49.23	Peak	228.30	100	Vertical	Pass
1**	2403.277	63.07	-9.81	94.0	30.93	AV	228.30	100	Vertical	Pass

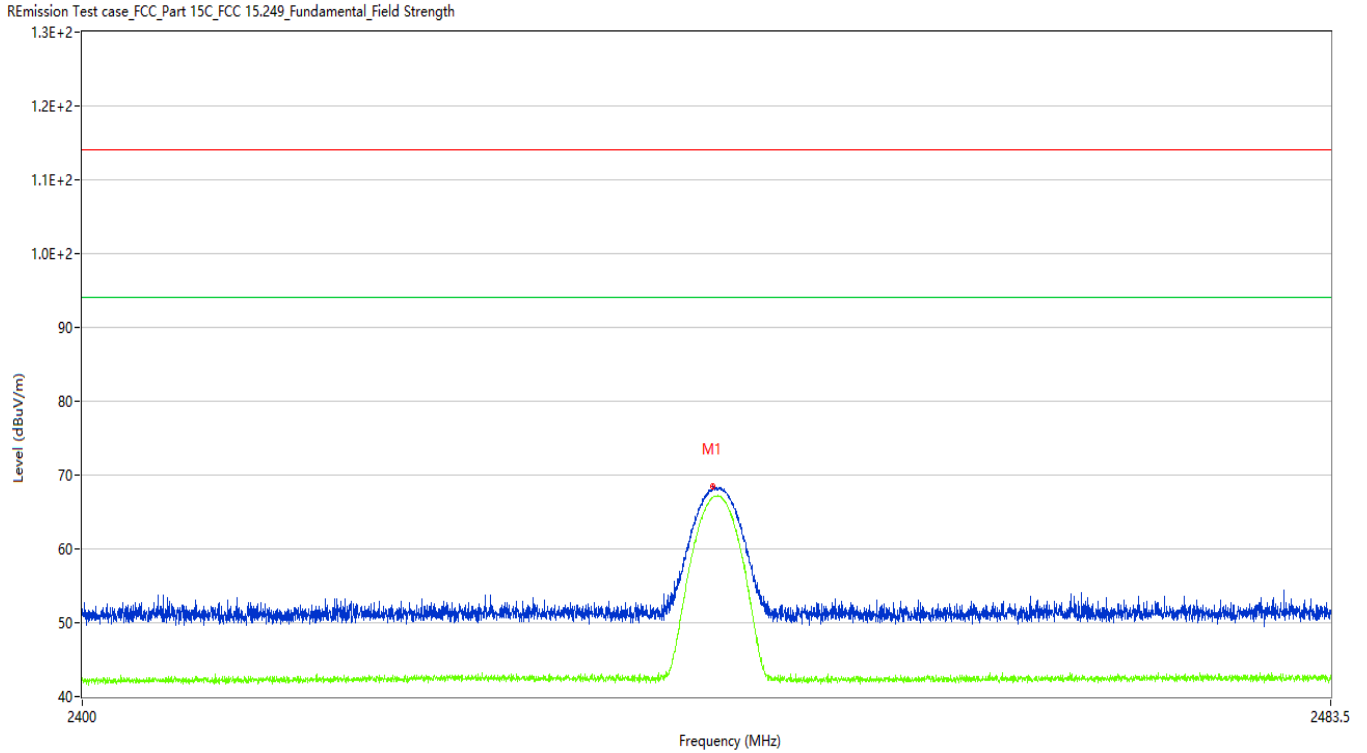
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**Figure 3: Test plots of Field strength of fundamental, 2442MHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2441.833	68.49	-9.61	114.0	45.51	Peak	40.70	100	Horizontal	Pass
1**	2441.833	66.99	-9.61	94.0	27.01	AV	40.70	100	Horizontal	Pass

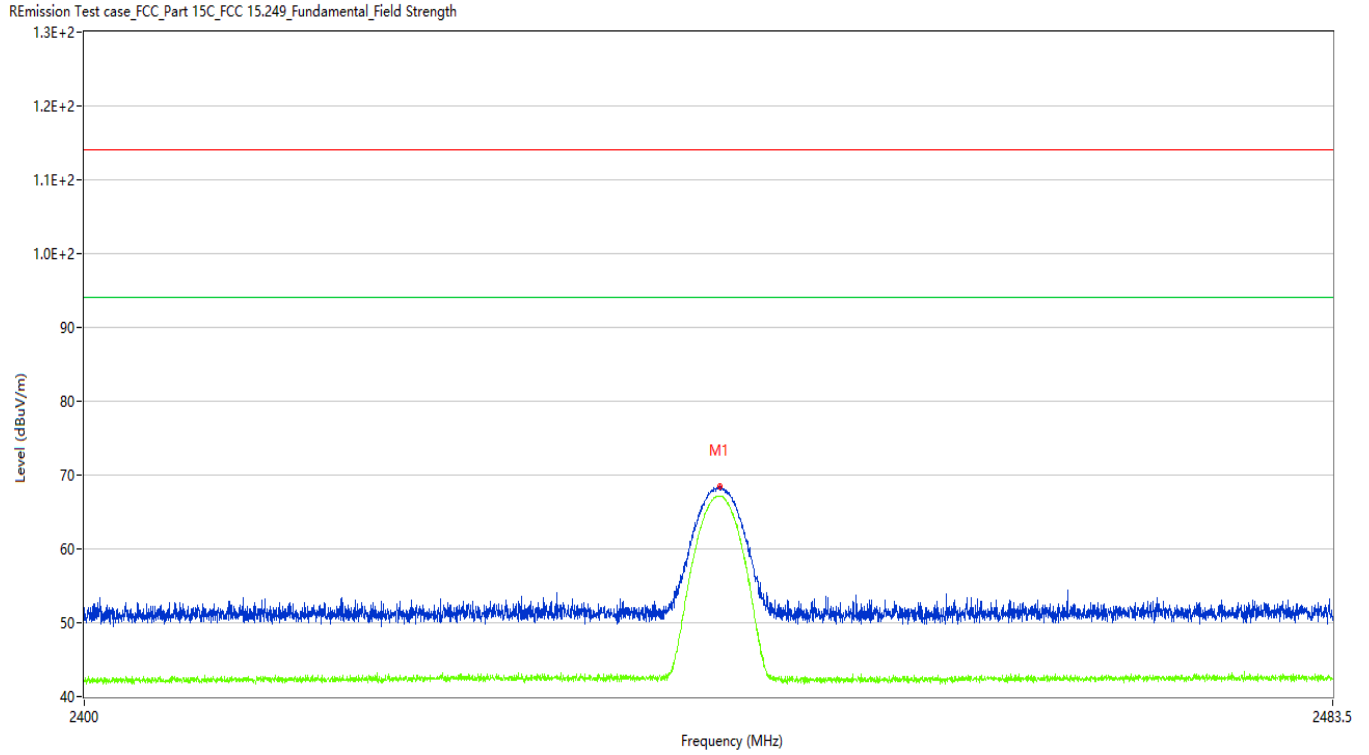
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**Figure 4: Test plots of Field strength of fundamental, 2442MHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2442.168	68.39	-9.62	114.0	45.61	Peak	313.40	100	Vertical	Pass
1**	2442.168	67.15	-9.62	94.0	26.85	AV	313.40	100	Vertical	Pass

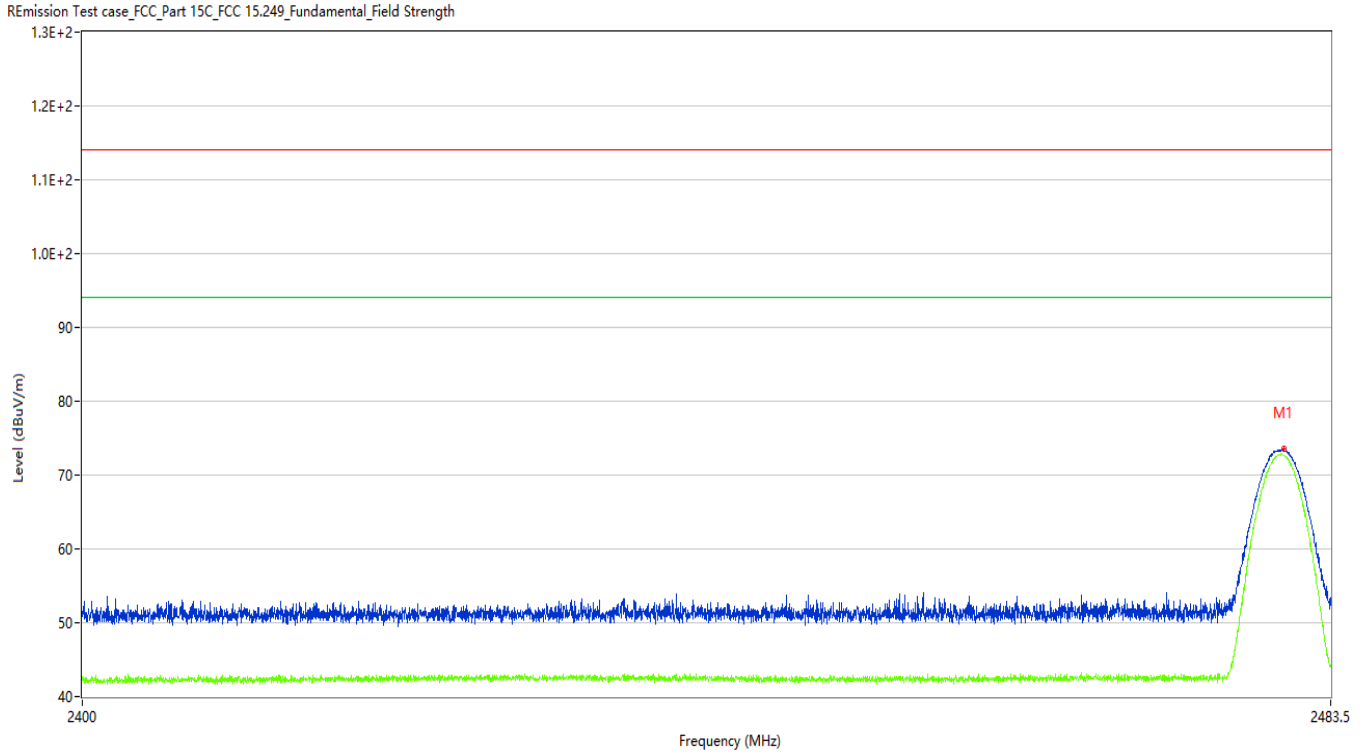
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**Figure 5: Test plots of Field strength of fundamental, 2480MHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2480.306	73.50	-9.48	114.0	40.50	Peak	168.60	100	Horizontal	Pass
1**	2480.306	72.68	-9.48	94.0	21.32	AV	168.60	100	Horizontal	Pass

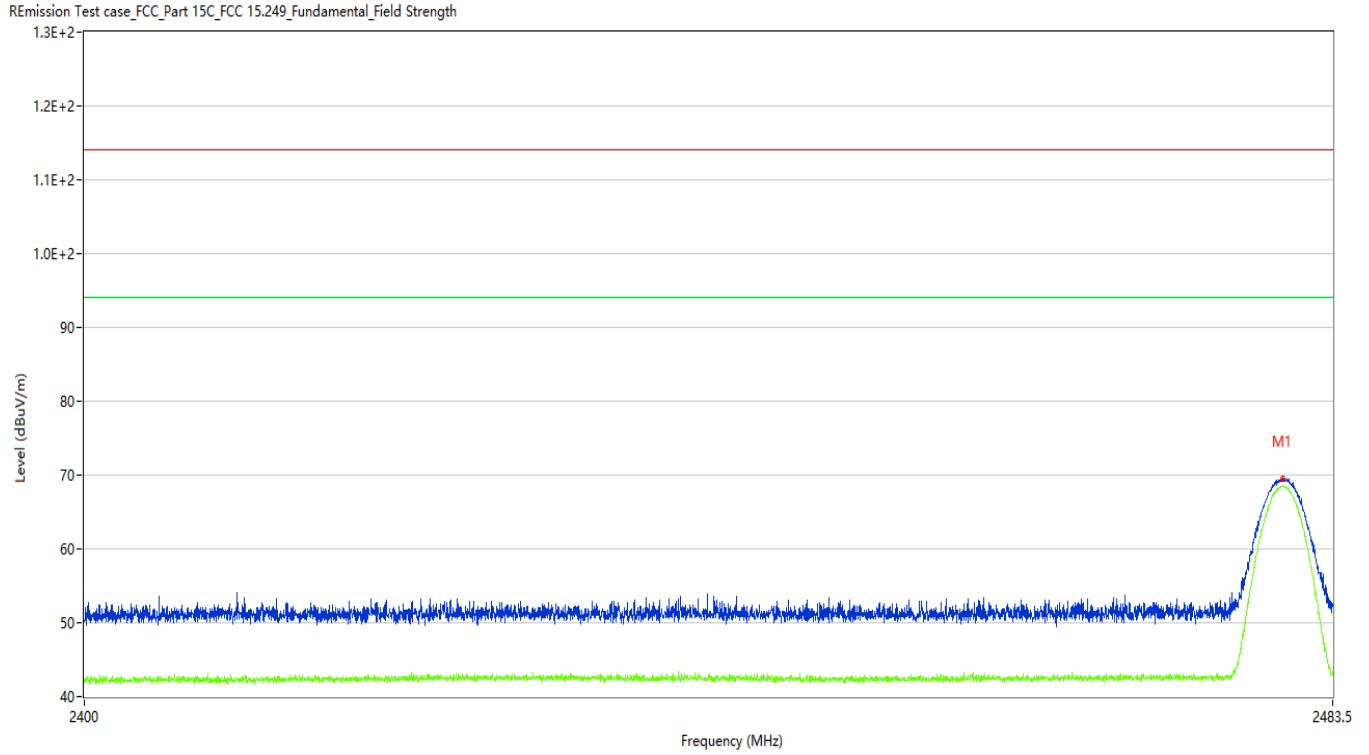
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**Figure 6: Test plots of Field strength of fundamental, 2480MHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2480.139	69.55	-9.48	114.0	44.45	Peak	45.80	100	Vertical	Pass
1**	2480.139	68.45	-9.48	94.0	25.55	AV	45.80	100	Vertical	Pass



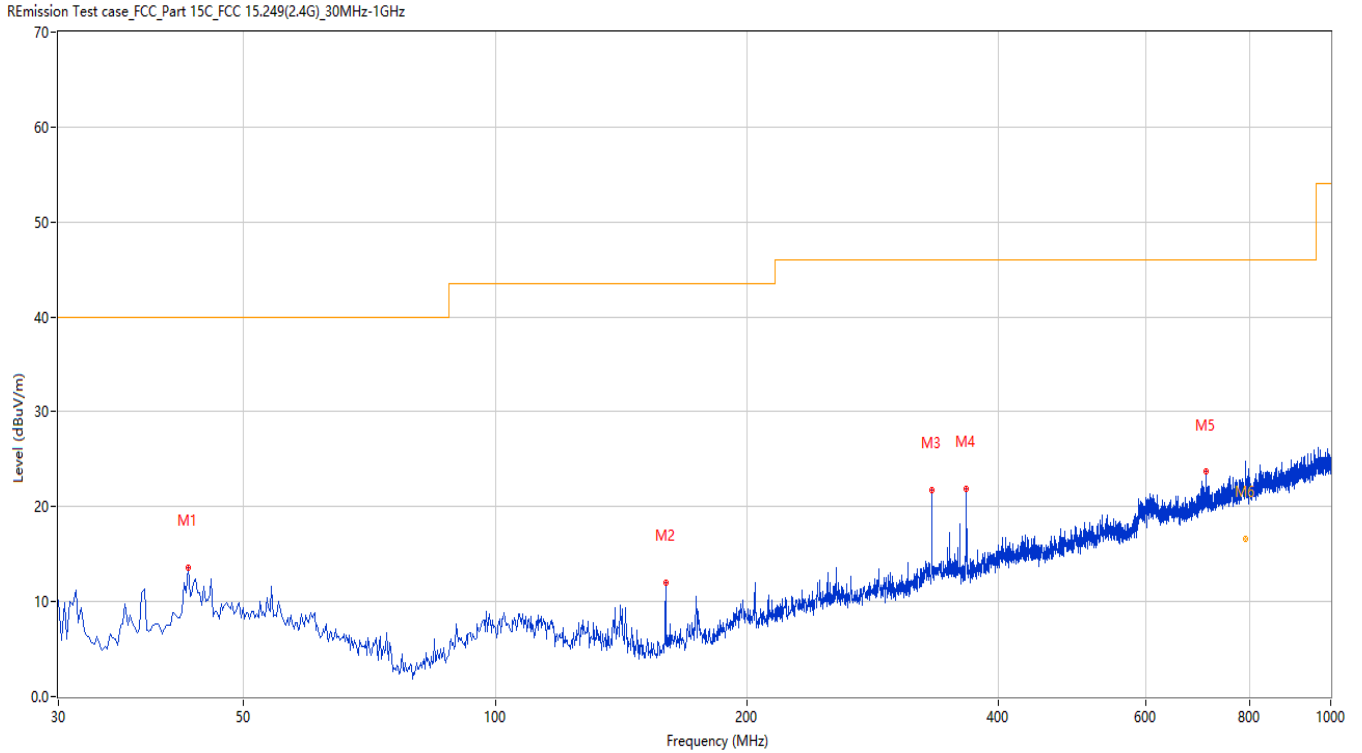
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**Figure 7: Test plots of Field strength of harmonics, 2403MHz, 30MHz-1GHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.849	13.60	-24.59	40.0	26.40	Peak	360.00	200	Horizontal	Pass
2	159.948	12.01	-28.69	43.5	31.49	Peak	132.90	100	Horizontal	Pass
3	333.049	21.81	-20.96	46.0	24.19	Peak	360.00	200	Horizontal	Pass
4	366.506	21.92	-20.86	46.0	24.08	Peak	75.80	100	Horizontal	Pass
5	709.073	23.67	-12.39	46.0	22.33	Peak	346.00	100	Horizontal	Pass
6	790.704	23.21	-11.07	46.0	22.79	Peak	58.30	242	Horizontal	Pass
6*	790.704	16.56	-11.07	46.0	29.44	QP	58.30	242	Horizontal	Pass

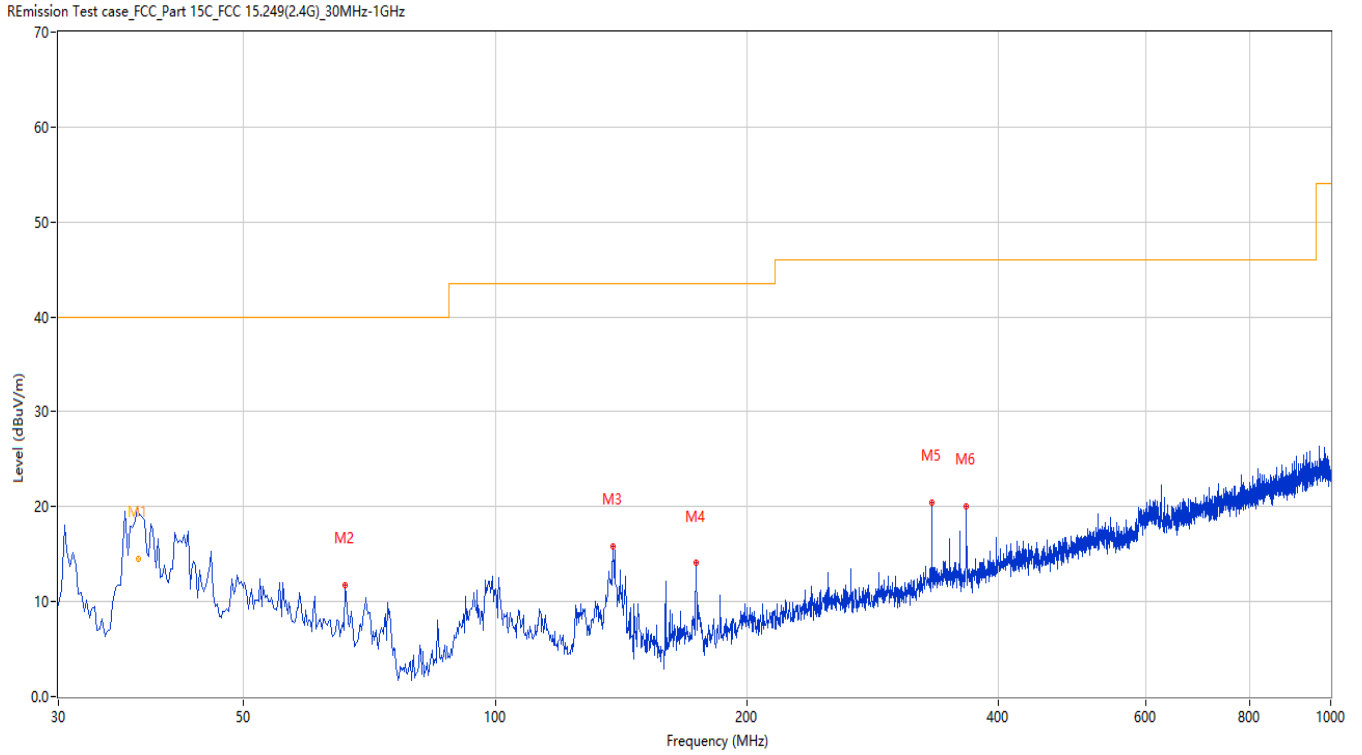
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**Figure 8: Test plots of Field strength of harmonics, 2403MHz, 30MHz-1GHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	37.357	18.56	-26.39	40.0	21.44	Peak	166.80	128	Vertical	Pass
1*	37.357	14.55	-26.39	40.0	25.45	QP	166.80	128	Vertical	Pass
2	66.123	11.77	-27.24	40.0	28.23	Peak	191.40	100	Vertical	Pass
3	138.370	15.82	-29.05	43.5	27.68	Peak	176.50	100	Vertical	Pass
4	174.009	14.04	-28.07	43.5	29.46	Peak	117.00	100	Vertical	Pass
5	333.292	20.45	-20.94	46.0	25.55	Peak	140.40	100	Vertical	Pass
6	366.506	20.01	-20.86	46.0	25.99	Peak	134.80	100	Vertical	Pass

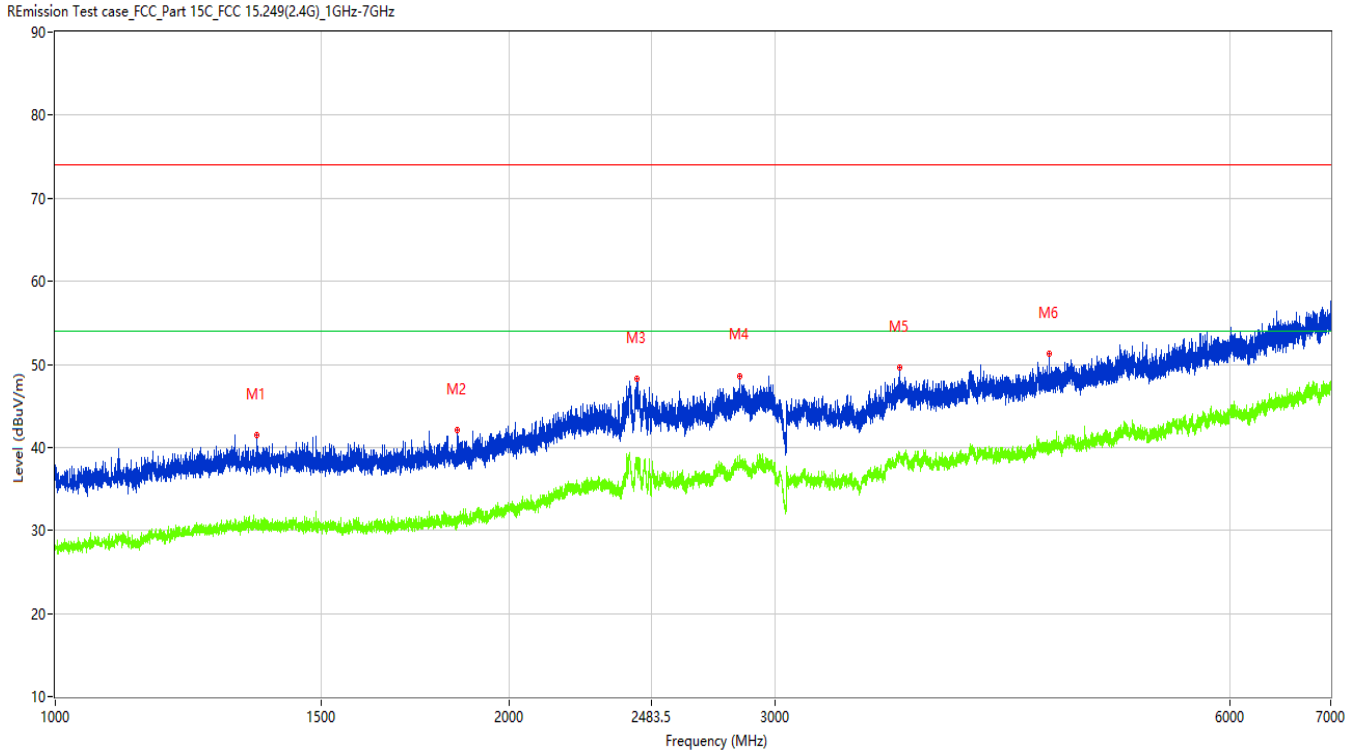
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**Figure 9: Test plots of Field strength of harmonics, 2403MHz, 1GHz-7GHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1359.750	41.53	-12.61	74.0	32.47	Peak	161.20	100	Horizontal	Pass
1**	1359.750	30.88	-12.61	54.0	23.12	AV	161.20	100	Horizontal	Pass
2	1846.500	42.08	-12.31	74.0	31.92	Peak	205.40	100	Horizontal	Pass
2**	1846.500	31.32	-12.31	54.0	22.68	AV	205.40	100	Horizontal	Pass
3	2427.500	48.30	-4.91	74.0	25.70	Peak	266.80	100	Horizontal	Pass
3**	2427.500	38.59	-4.91	54.0	15.41	AV	266.80	100	Horizontal	Pass
4	2840.500	48.62	-3.89	74.0	25.38	Peak	34.20	100	Horizontal	Pass
4**	2840.500	39.10	-3.89	54.0	14.90	AV	34.20	100	Horizontal	Pass
5	3626.500	49.58	-1.59	74.0	24.42	Peak	190.80	100	Horizontal	Pass
5**	3626.500	39.07	-1.59	54.0	14.93	AV	190.80	100	Horizontal	Pass
6	4556.500	51.33	-0.78	74.0	22.67	Peak	315.10	100	Horizontal	Pass
6**	4556.500	40.58	-0.78	54.0	13.42	AV	315.10	100	Horizontal	Pass

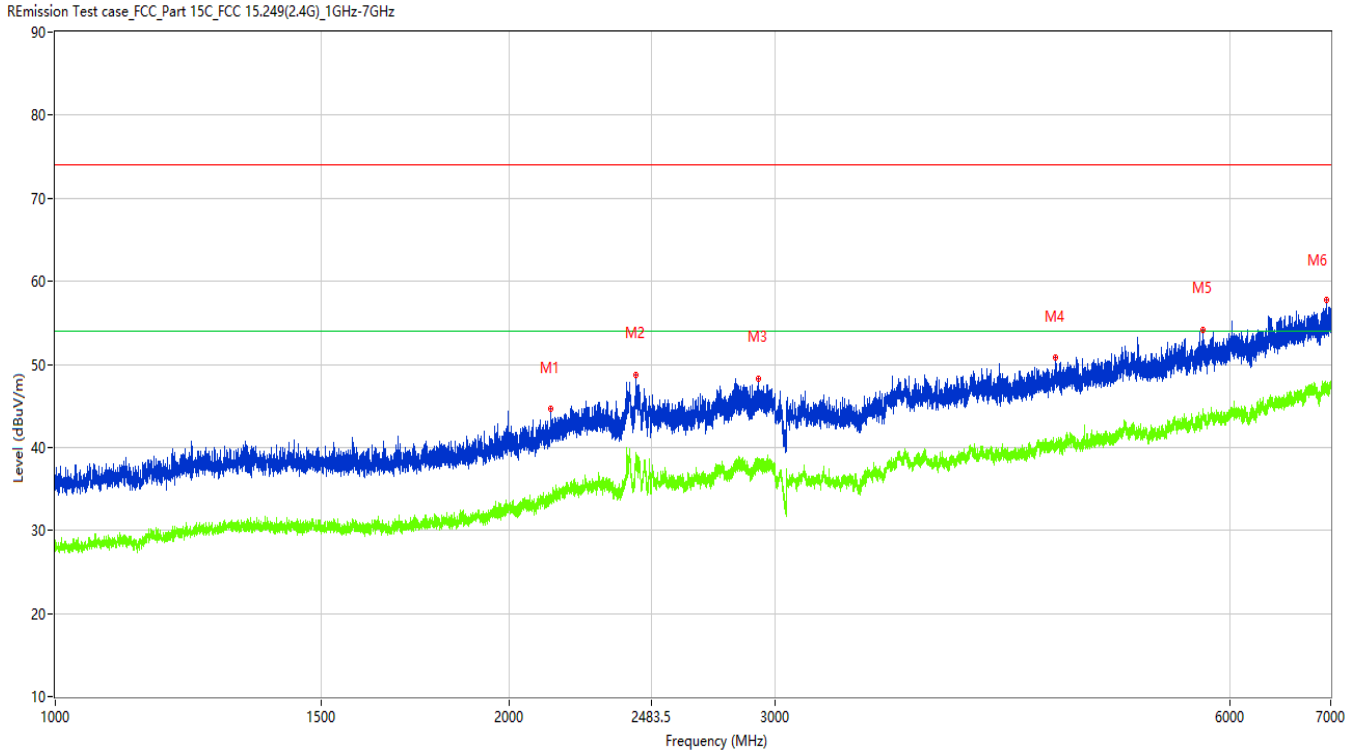
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**Figure 10: Test plots of Field strength of harmonics, 2403MHz, 1GHz-7GHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2130.000	44.67	-9.26	74.0	29.33	Peak	285.40	100	Vertical	Pass
1**	2130.000	33.58	-9.26	54.0	20.42	AV	285.40	100	Vertical	Pass
2	2425.500	48.78	-4.88	74.0	25.22	Peak	180.10	100	Vertical	Pass
2**	2425.500	38.55	-4.88	54.0	15.45	AV	180.10	100	Vertical	Pass
3	2922.500	48.32	-4.17	74.0	25.68	Peak	285.40	100	Vertical	Pass
3**	2922.500	38.25	-4.17	54.0	15.75	AV	285.40	100	Vertical	Pass
4	4598.500	50.79	-0.61	74.0	23.21	Peak	359.10	100	Vertical	Pass
4**	4598.500	40.18	-0.61	54.0	13.82	AV	359.10	100	Vertical	Pass
5	5758.500	54.19	2.11	74.0	19.81	Peak	131.60	100	Vertical	Pass
5**	5758.500	43.58	2.11	54.0	10.42	AV	131.60	100	Vertical	Pass
6	6951.500	57.71	5.19	74.0	16.29	Peak	317.60	100	Vertical	Pass
6**	6951.500	47.34	5.19	54.0	6.66	AV	317.60	100	Vertical	Pass

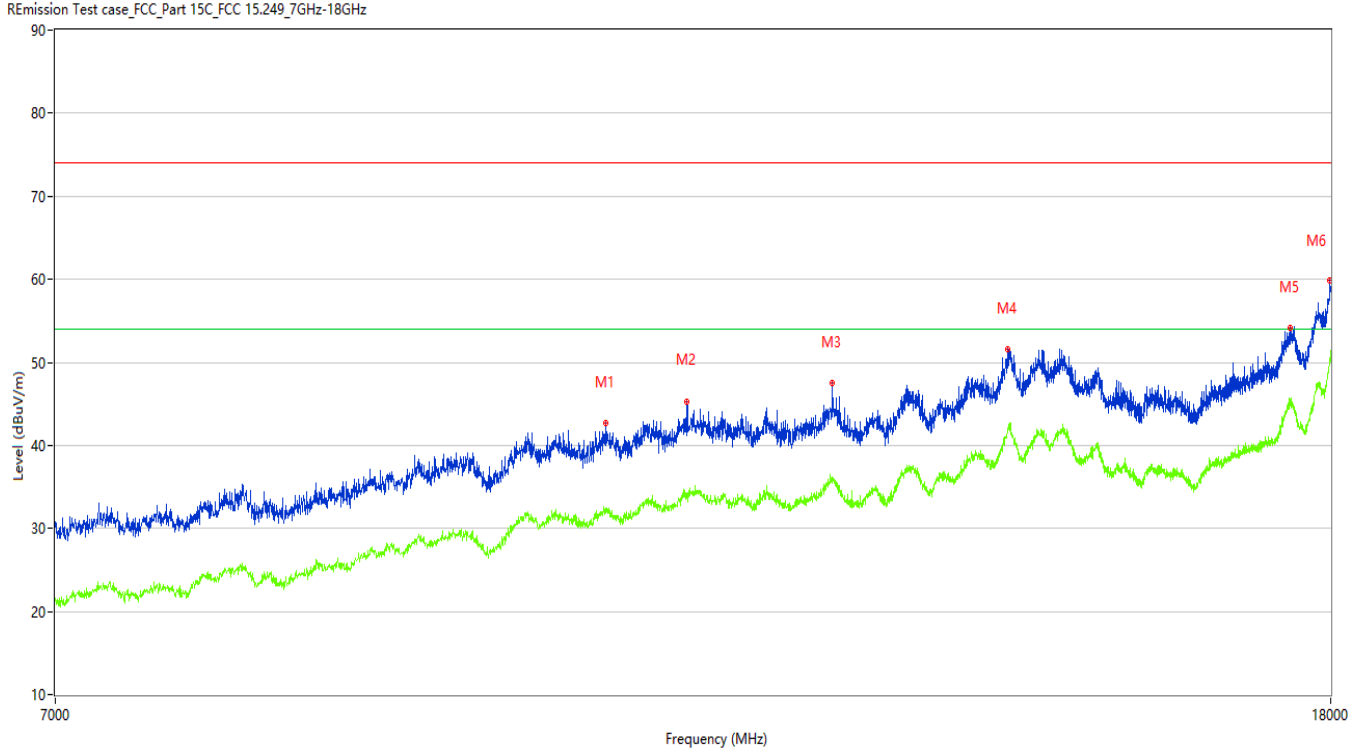
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**Figure 11: Test plots of Field strength of harmonics, 2403MHz, 7GHz-18GHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	10522.750	42.70	10.21	74.0	31.30	Peak	249.40	100	Horizontal	Pass
1**	10522.750	32.45	10.21	54.0	21.55	AV	249.40	100	Horizontal	Pass
2	11171.750	45.31	11.03	74.0	28.69	Peak	0.00	100	Horizontal	Pass
2**	11171.750	34.07	11.03	54.0	19.93	AV	0.00	100	Horizontal	Pass
3	12447.750	47.57	12.49	74.0	26.43	Peak	60.40	100	Horizontal	Pass
3**	12447.750	36.28	12.49	54.0	17.72	AV	60.40	100	Horizontal	Pass
4	14172.000	51.52	19.25	74.0	22.48	Peak	60.40	100	Horizontal	Pass
4**	14172.000	41.49	19.25	54.0	12.51	AV	60.40	100	Horizontal	Pass
5	17469.250	54.14	21.24	74.0	19.86	Peak	186.10	100	Horizontal	Pass
5**	17469.250	45.58	21.24	54.0	8.42	AV	186.10	100	Horizontal	Pass
6	17991.750	59.88	27.41	74.0	14.12	Peak	249.40	100	Horizontal	Pass
6**	17991.750	50.51	27.41	54.0	3.49	AV	249.40	100	Horizontal	Pass

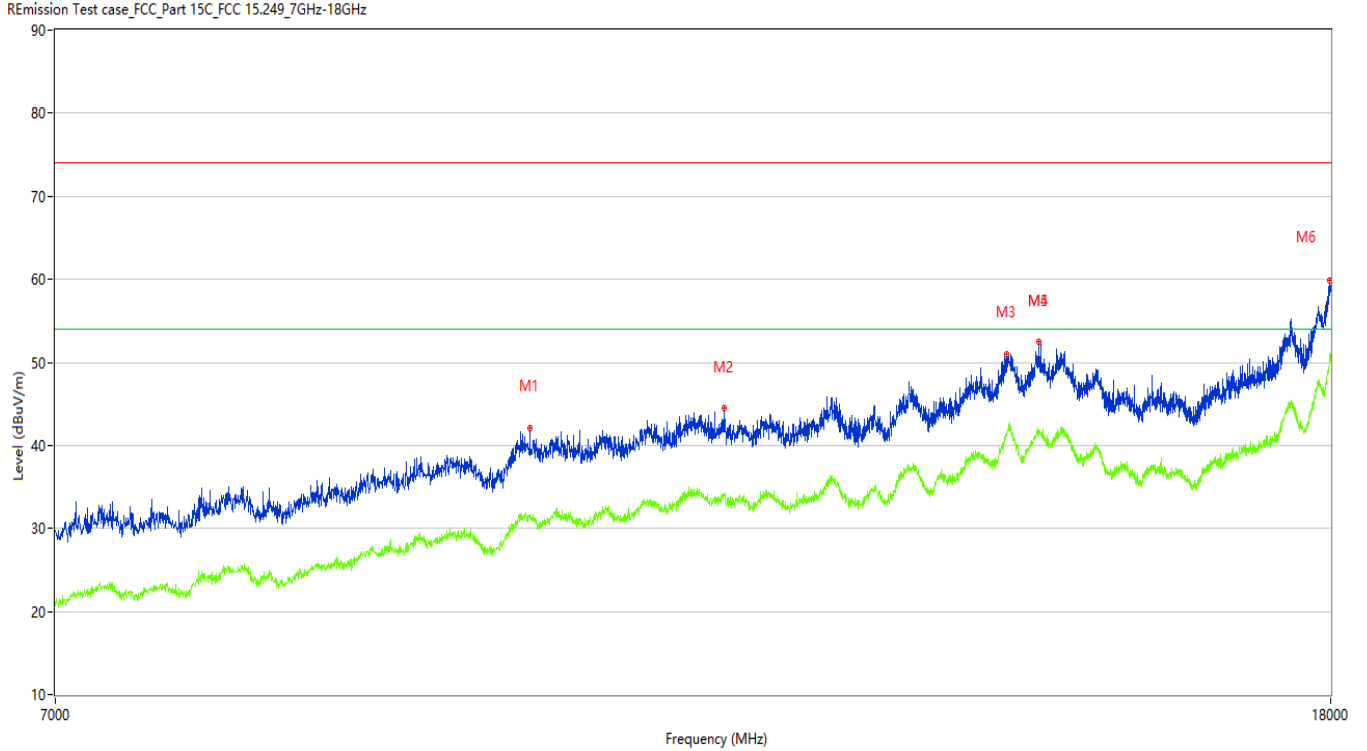
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**Figure 12: Test plots of Field strength of harmonics, 2403MHz, 7GHz-18GHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	9948.000	42.16	9.71	74.0	31.84	Peak	125.80	100	Vertical	Pass
1**	9948.000	31.38	9.71	54.0	22.62	AV	125.80	100	Vertical	Pass
2	11485.250	44.47	11.86	74.0	29.53	Peak	269.10	100	Vertical	Pass
2**	11485.250	34.14	11.86	54.0	19.86	AV	269.10	100	Vertical	Pass
3	14158.250	51.04	18.82	74.0	22.96	Peak	63.30	100	Vertical	Pass
3**	14158.250	41.19	18.82	54.0	12.81	AV	63.30	100	Vertical	Pass
4	14502.000	52.47	17.69	74.0	21.53	Peak	360.00	100	Vertical	Pass
4**	14502.000	41.68	17.69	54.0	12.32	AV	360.00	100	Vertical	Pass
5	14502.000	52.47	17.69	74.0	21.53	Peak	360.00	100	Vertical	Pass
5**	14502.000	41.68	17.69	54.0	12.32	AV	360.00	100	Vertical	Pass
6	17986.251	59.91	27.07	74.0	14.09	Peak	125.80	100	Vertical	Pass
6**	17986.251	49.76	27.07	54.0	4.24	AV	125.80	100	Vertical	Pass

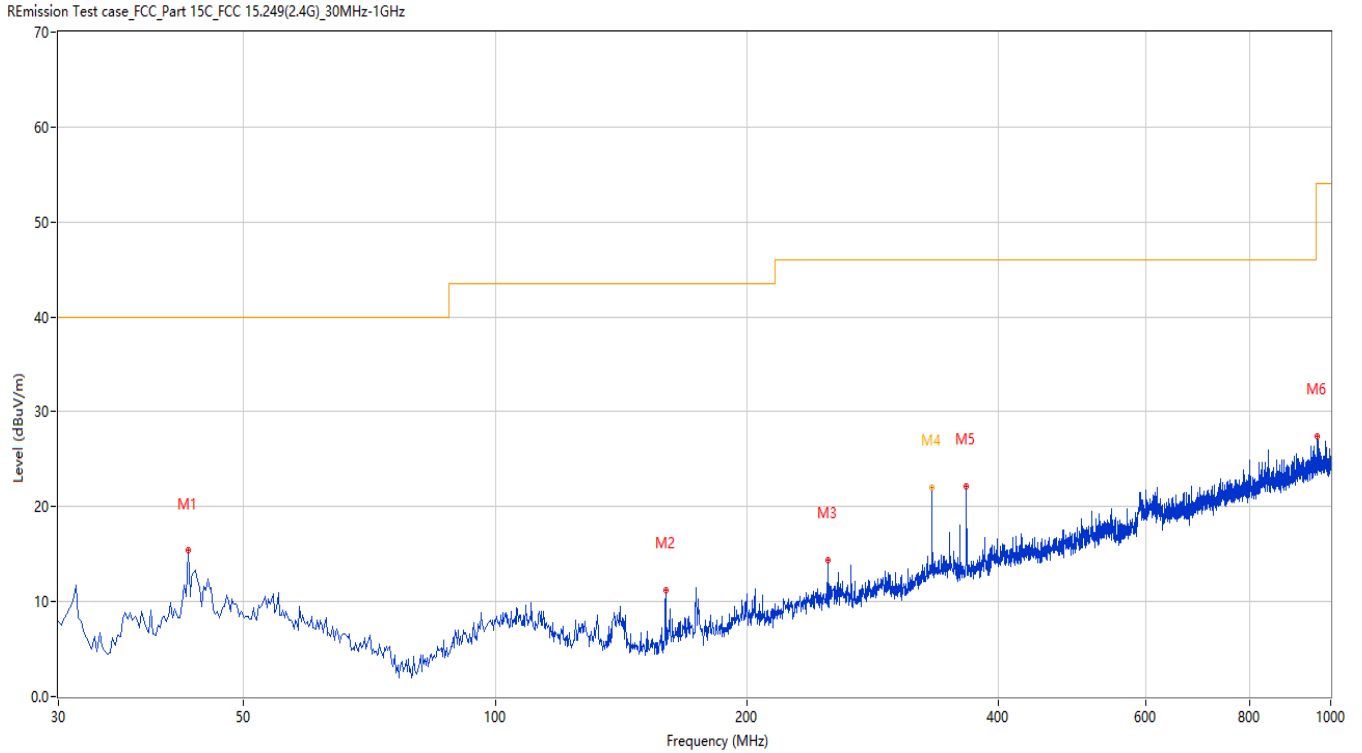
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**Figure 13: Test plots of Field strength of harmonics, 2442MHz, 30MHz-1GHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.849	15.36	-24.59	40.0	24.64	Peak	213.10	200	Horizontal	Pass
2	159.948	11.16	-28.69	43.5	32.34	Peak	310.60	100	Horizontal	Pass
3	249.893	14.34	-23.52	46.0	31.66	Peak	84.50	100	Horizontal	Pass
4	333.276	24.09	-20.96	46.0	21.91	Peak	83.80	249	Horizontal	Pass
4*	333.276	22.00	-20.96	46.0	24.00	QP	83.80	249	Horizontal	Pass
5	366.506	22.18	-20.86	46.0	23.82	Peak	249.80	100	Horizontal	Pass
6	964.604	27.38	-7.40	54.0	26.62	Peak	357.30	100	Horizontal	Pass

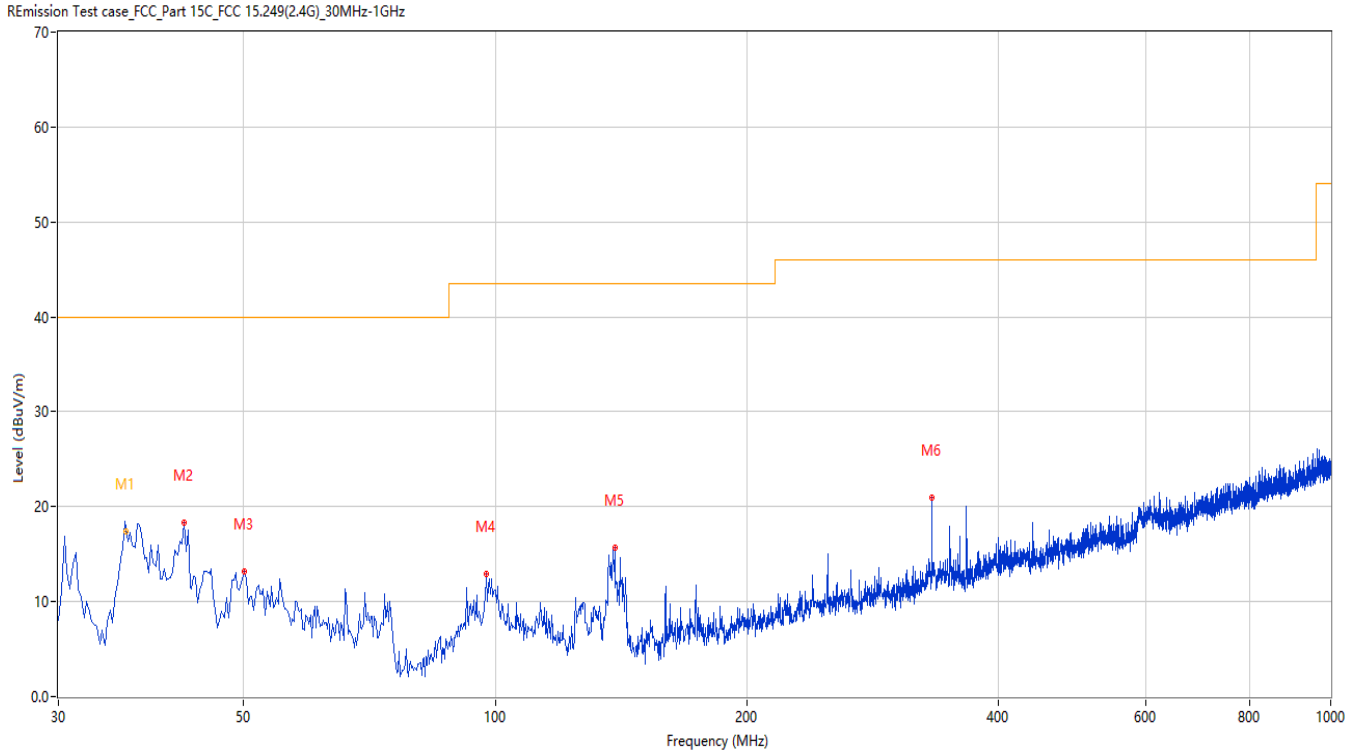
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**Figure 14: Test plots of Field strength of harmonics, 2442MHz, 30MHz-1GHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	36.135	21.25	-26.78	40.0	18.75	Peak	271.70	128	Vertical	Pass
1*	36.135	17.37	-26.78	40.0	22.63	QP	271.70	128	Vertical	Pass
2	42.364	18.30	-24.70	40.0	21.70	Peak	357.10	100	Vertical	Pass
3	50.122	13.16	-23.98	40.0	26.84	Peak	50.70	100	Vertical	Pass
4	97.641	12.97	-25.95	43.5	30.53	Peak	320.00	100	Vertical	Pass
5	139.098	15.66	-29.09	43.5	27.84	Peak	193.60	100	Vertical	Pass
6	333.049	20.92	-20.96	46.0	25.08	Peak	248.60	100	Vertical	Pass



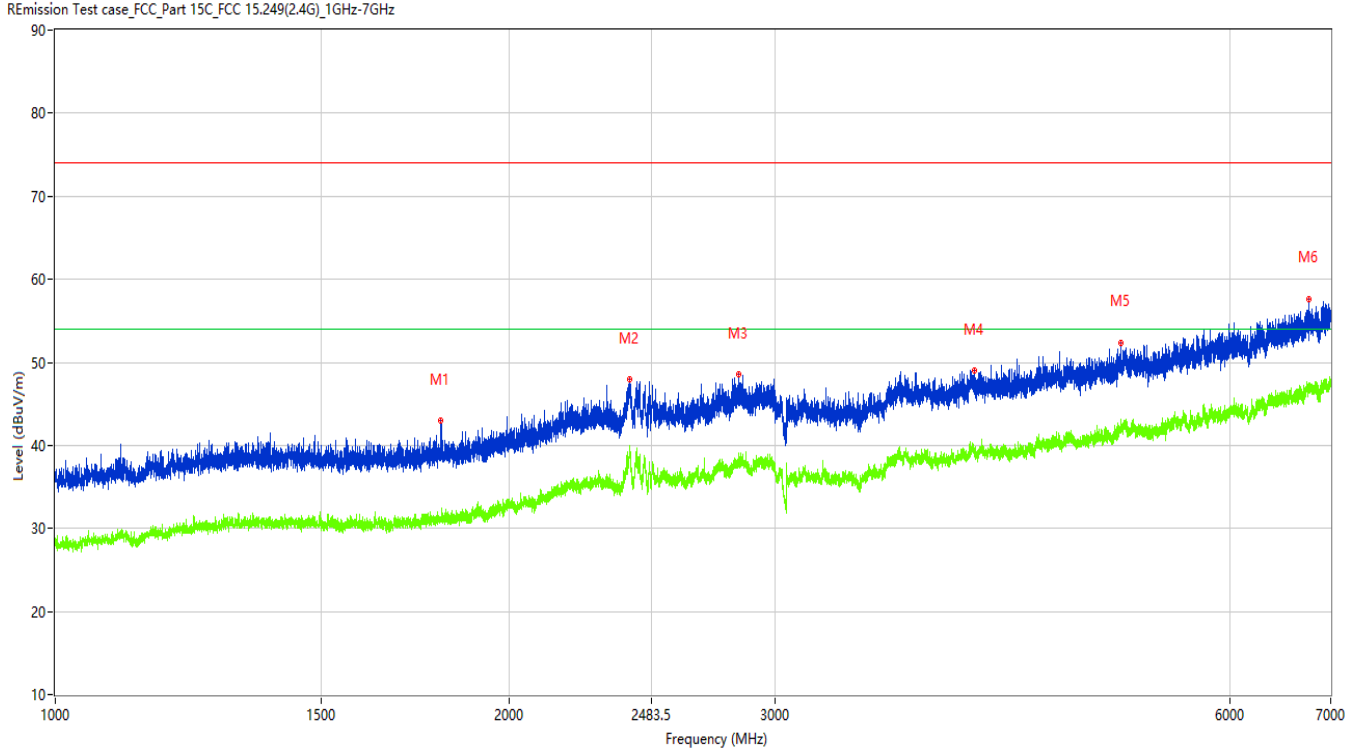
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**Figure 15: Test plots of Field strength of harmonics, 2442MHz, 1GHz-7GHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1801.500	42.97	-12.52	74.0	31.03	Peak	165.80	100	Horizontal	Pass
1**	1801.500	31.04	-12.52	54.0	22.96	AV	165.80	100	Horizontal	Pass
2	2401.750	48.01	-4.44	74.0	25.99	Peak	278.90	100	Horizontal	Pass
2**	2401.750	38.92	-4.44	54.0	15.08	AV	278.90	100	Horizontal	Pass
3	2837.750	48.60	-3.95	74.0	25.40	Peak	196.00	100	Horizontal	Pass
3**	2837.750	38.07	-3.95	54.0	15.93	AV	196.00	100	Horizontal	Pass
4	4067.500	49.07	-0.61	74.0	24.93	Peak	32.60	100	Horizontal	Pass
4**	4067.500	39.63	-0.61	54.0	14.37	AV	32.60	100	Horizontal	Pass
5	5080.500	52.39	1.12	74.0	21.61	Peak	277.80	100	Horizontal	Pass
5**	5080.500	42.38	1.12	54.0	11.62	AV	277.80	100	Horizontal	Pass
6	6772.500	57.67	5.08	74.0	16.33	Peak	193.70	100	Horizontal	Pass
6**	6772.500	46.87	5.08	54.0	7.13	AV	193.70	100	Horizontal	Pass

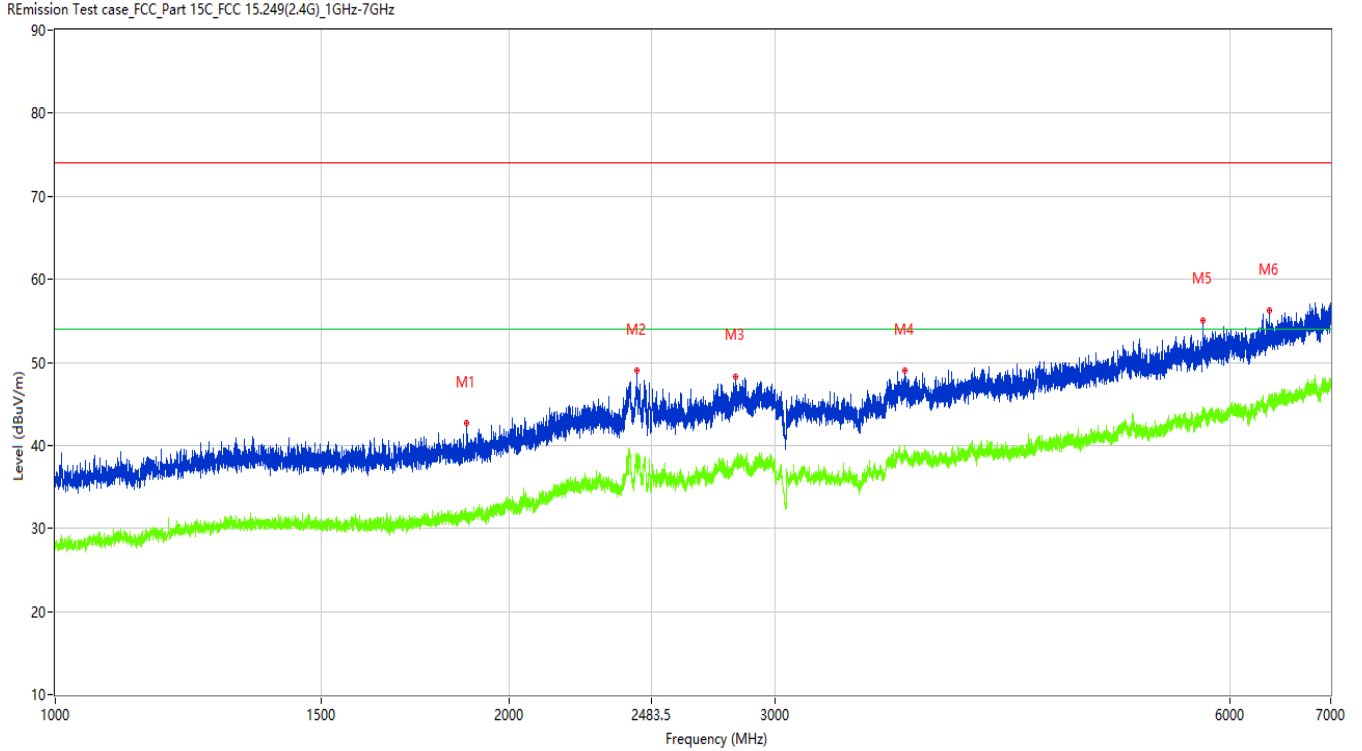
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**Figure 16: Test plots of Field strength of harmonics, 2442MHz, 1GHz-7GHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1874.250	42.62	-12.01	74.0	31.38	Peak	239.30	100	Vertical	Pass
1**	1874.250	32.05	-12.01	54.0	21.95	AV	239.30	100	Vertical	Pass
2	2427.250	49.06	-4.90	74.0	24.94	Peak	76.70	100	Vertical	Pass
2**	2427.250	38.74	-4.90	54.0	15.26	AV	76.70	100	Vertical	Pass
3	2822.250	48.32	-4.28	74.0	25.68	Peak	302.50	100	Vertical	Pass
3**	2822.250	37.41	-4.28	54.0	16.59	AV	302.50	100	Vertical	Pass
4	3657.500	48.96	-1.61	74.0	25.04	Peak	360.00	100	Vertical	Pass
4**	3657.500	38.97	-1.61	54.0	15.03	AV	360.00	100	Vertical	Pass
5	5761.000	55.10	2.15	74.0	18.90	Peak	305.00	100	Vertical	Pass
5**	5761.000	43.91	2.15	54.0	10.09	AV	305.00	100	Vertical	Pass
6	6377.500	56.22	3.58	74.0	17.78	Peak	273.00	100	Vertical	Pass
6**	6377.500	45.74	3.58	54.0	8.26	AV	273.00	100	Vertical	Pass

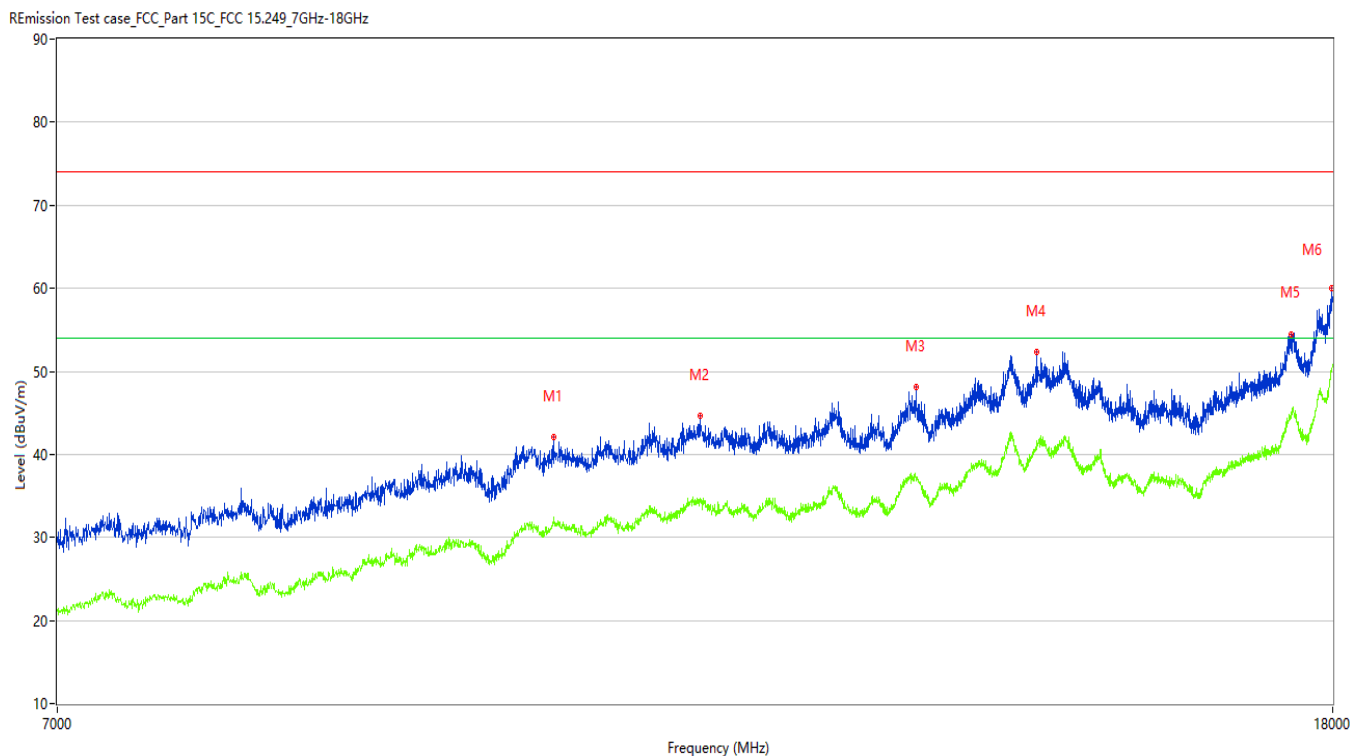
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Figure 17: Test plots of Field strength of harmonics, 2442MHz, 7GHz-18GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	10107.500	42.03	9.50	74.0	31.97	Peak	182.00	100	Horizontal	Pass
1**	10107.500	32.40	9.50	54.0	21.60	AV	182.00	100	Horizontal	Pass
2	11265.250	44.60	12.09	74.0	29.40	Peak	182.00	100	Horizontal	Pass
2**	11265.250	34.57	12.09	54.0	19.43	AV	182.00	100	Horizontal	Pass
3	13223.250	48.17	14.16	74.0	25.83	Peak	298.10	100	Horizontal	Pass
3**	13223.250	37.28	14.16	54.0	16.72	AV	298.10	100	Horizontal	Pass
4	14455.250	52.33	17.65	74.0	21.67	Peak	358.90	100	Horizontal	Pass
4**	14455.250	40.64	17.65	54.0	13.36	AV	358.90	100	Horizontal	Pass
5	17461.000	54.39	21.08	74.0	19.61	Peak	231.90	100	Horizontal	Pass
5**	17461.000	45.13	21.08	54.0	8.87	AV	231.90	100	Horizontal	Pass
6	17983.500	60.07	26.90	74.0	13.93	Peak	182.00	100	Horizontal	Pass
6**	17983.500	49.96	26.90	54.0	4.04	AV	182.00	100	Horizontal	Pass

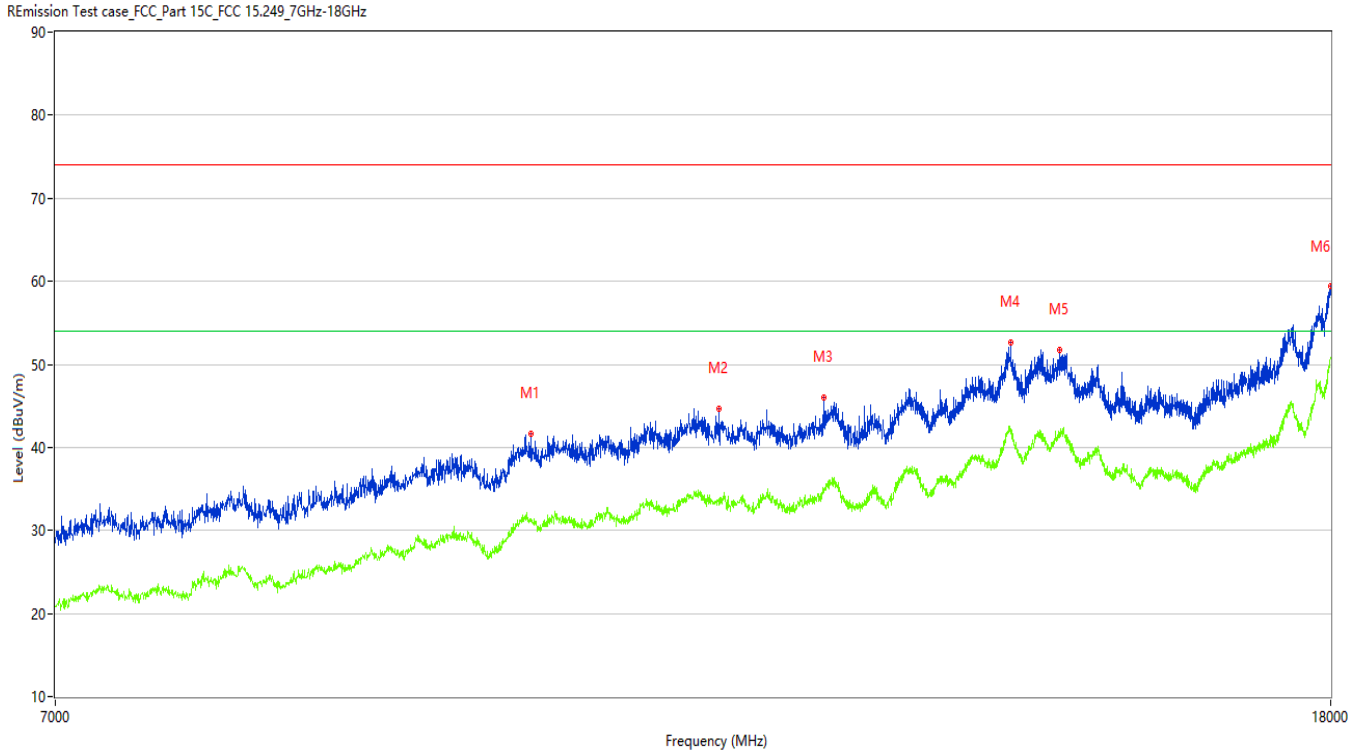
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**Figure 18: Test plots of Field strength of harmonics, 2442MHz, 7GHz-18GHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	9953.500	41.60	9.66	74.0	32.40	Peak	39.40	100	Vertical	Pass
1**	9953.500	31.33	9.66	54.0	22.67	AV	39.40	100	Vertical	Pass
2	11446.750	44.66	11.67	74.0	29.34	Peak	312.20	100	Vertical	Pass
2**	11446.750	33.83	11.67	54.0	20.17	AV	312.20	100	Vertical	Pass
3	12370.750	46.07	12.06	74.0	27.93	Peak	39.40	100	Vertical	Pass
3**	12370.750	34.98	12.06	54.0	19.02	AV	39.40	100	Vertical	Pass
4	14205.000	52.57	19.38	74.0	21.43	Peak	235.90	100	Vertical	Pass
4**	14205.000	41.82	19.38	54.0	12.18	AV	235.90	100	Vertical	Pass
5	14724.750	51.68	18.41	74.0	22.32	Peak	235.90	100	Vertical	Pass
5**	14724.750	41.72	18.41	54.0	12.28	AV	235.90	100	Vertical	Pass
6	17994.500	59.46	27.58	74.0	14.54	Peak	360.00	100	Vertical	Pass
6**	17994.500	50.77	27.58	54.0	3.23	AV	360.00	100	Vertical	Pass

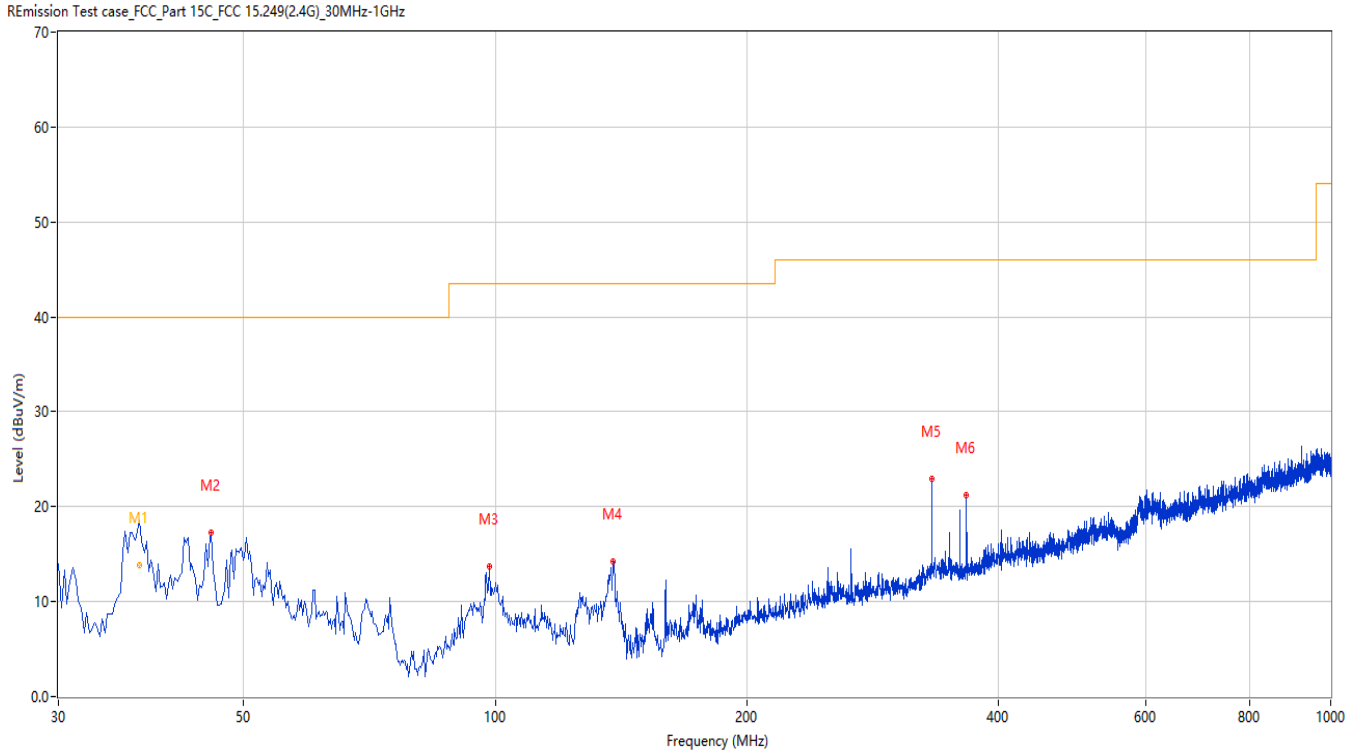
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**Figure 19: Test plots of Field strength of harmonics, 2480MHz, 30MHz-1GHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	37.540	18.52	-26.29	40.0	21.48	Peak	44.70	121	Horizontal	Pass
1*	37.540	13.78	-26.29	40.0	26.22	QP	44.70	121	Horizontal	Pass
2	45.759	17.32	-24.26	40.0	22.68	Peak	186.50	100	Horizontal	Pass
3	98.368	13.68	-25.85	43.5	29.82	Peak	323.00	100	Horizontal	Pass
4	138.370	14.25	-29.05	43.5	29.25	Peak	166.40	100	Horizontal	Pass
5	333.049	22.89	-20.96	46.0	23.11	Peak	63.90	200	Horizontal	Pass
6	366.506	21.22	-20.86	46.0	24.78	Peak	139.60	100	Horizontal	Pass

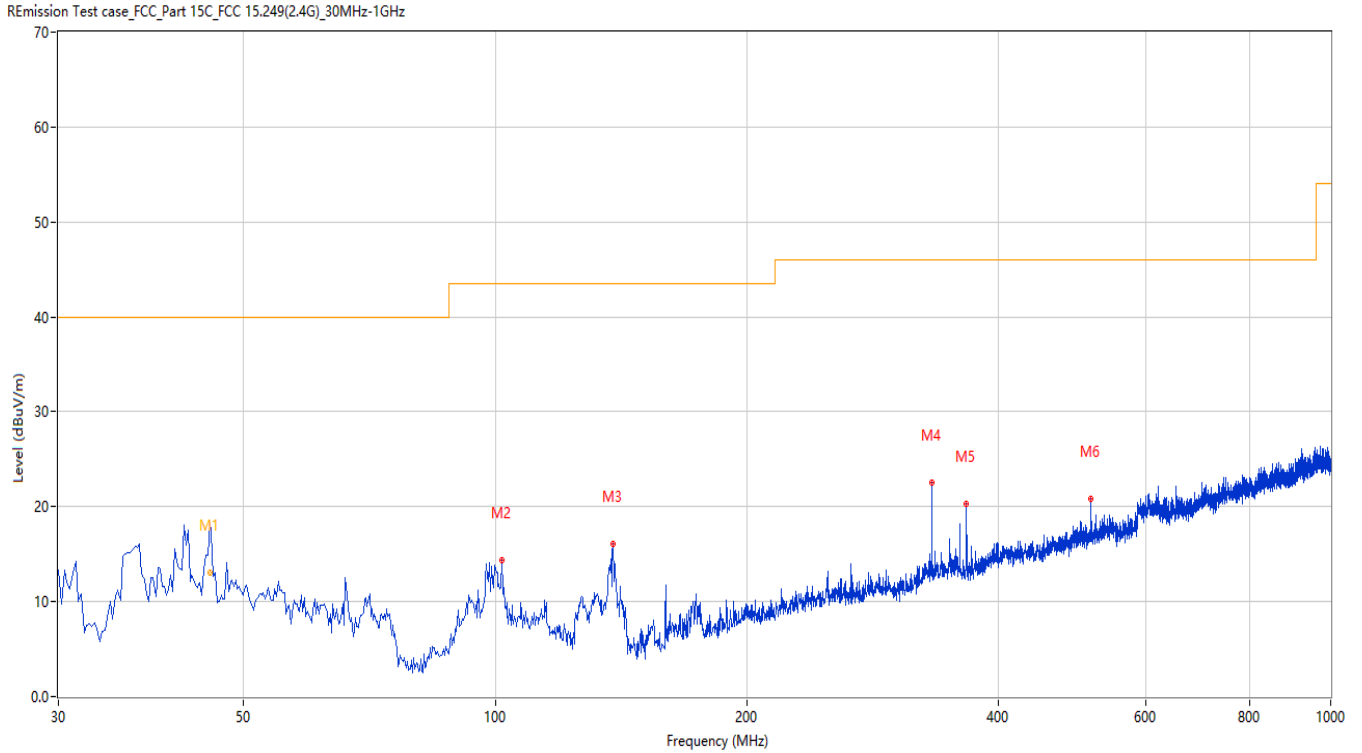
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**Figure 20: Test plots of Field strength of harmonics, 2480MHz, 30MHz-1GHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	45.571	18.95	-24.28	40.0	21.05	Peak	337.40	119	Vertical	Pass
1*	45.571	13.11	-24.28	40.0	26.89	QP	337.40	119	Vertical	Pass
2	101.762	14.37	-25.55	43.5	29.13	Peak	359.40	100	Vertical	Pass
3	138.370	16.14	-29.05	43.5	27.36	Peak	151.70	100	Vertical	Pass
4	333.049	22.57	-20.96	46.0	23.43	Peak	278.90	200	Vertical	Pass
5	366.506	20.28	-20.86	46.0	25.72	Peak	124.50	100	Vertical	Pass
6	516.818	20.78	-16.71	46.0	25.22	Peak	360.00	200	Vertical	Pass

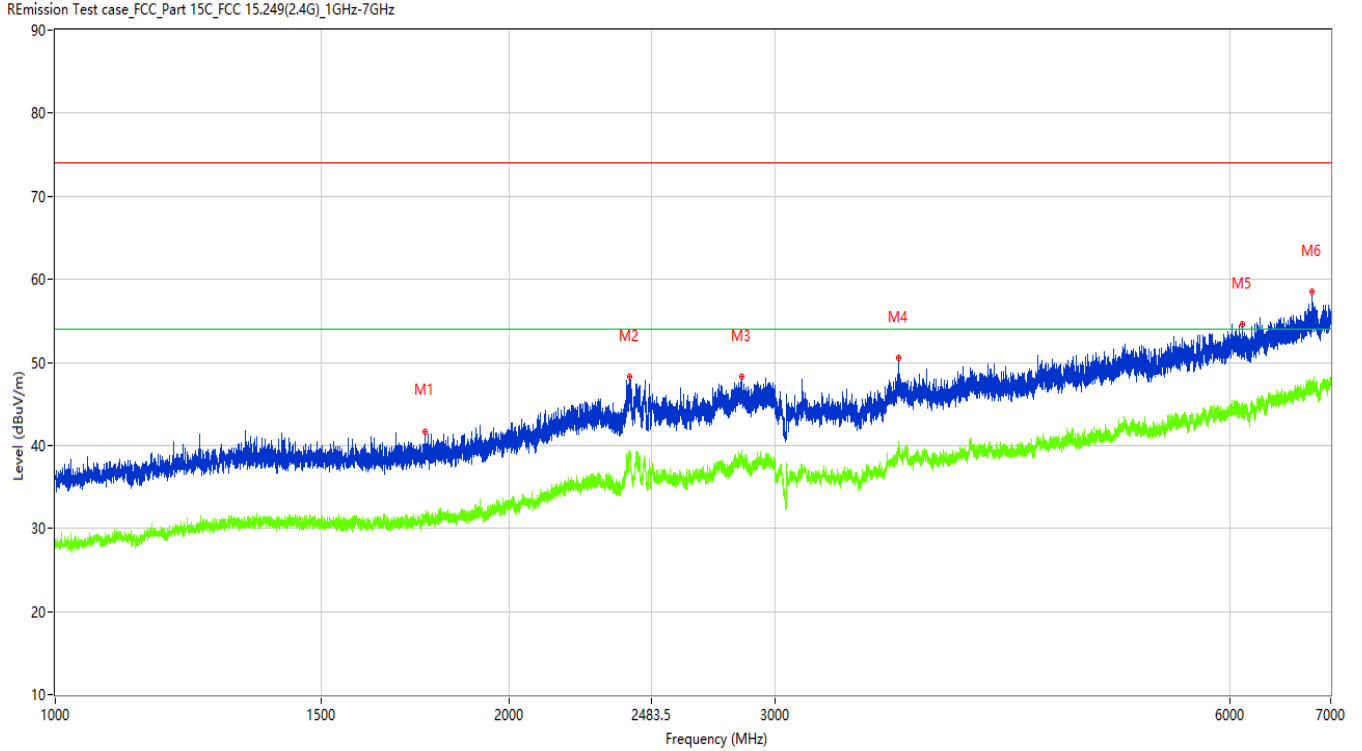
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**Figure 21: Test plots of Field strength of harmonics, 2480MHz, 1GHz-7GHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1756.750	41.70	-12.37	74.0	32.30	Peak	279.60	100	Horizontal	Pass
1**	1756.750	31.74	-12.37	54.0	22.26	AV	279.60	100	Horizontal	Pass
2	2400.500	48.22	-4.42	74.0	25.78	Peak	279.60	100	Horizontal	Pass
2**	2400.500	39.02	-4.42	54.0	14.98	AV	279.60	100	Horizontal	Pass
3	2848.500	48.31	-3.86	74.0	25.69	Peak	172.80	100	Horizontal	Pass
3**	2848.500	37.95	-3.86	54.0	16.05	AV	172.80	100	Horizontal	Pass
4	3623.500	50.48	-1.61	74.0	23.52	Peak	360.00	100	Horizontal	Pass
4**	3623.500	40.43	-1.61	54.0	13.57	AV	360.00	100	Horizontal	Pass
5	6116.500	54.60	2.55	74.0	19.40	Peak	59.40	100	Horizontal	Pass
5**	6116.500	45.06	2.55	54.0	8.94	AV	59.40	100	Horizontal	Pass
6	6801.000	58.46	5.16	74.0	15.54	Peak	360.00	100	Horizontal	Pass
6**	6801.000	46.55	5.16	54.0	7.45	AV	360.00	100	Horizontal	Pass

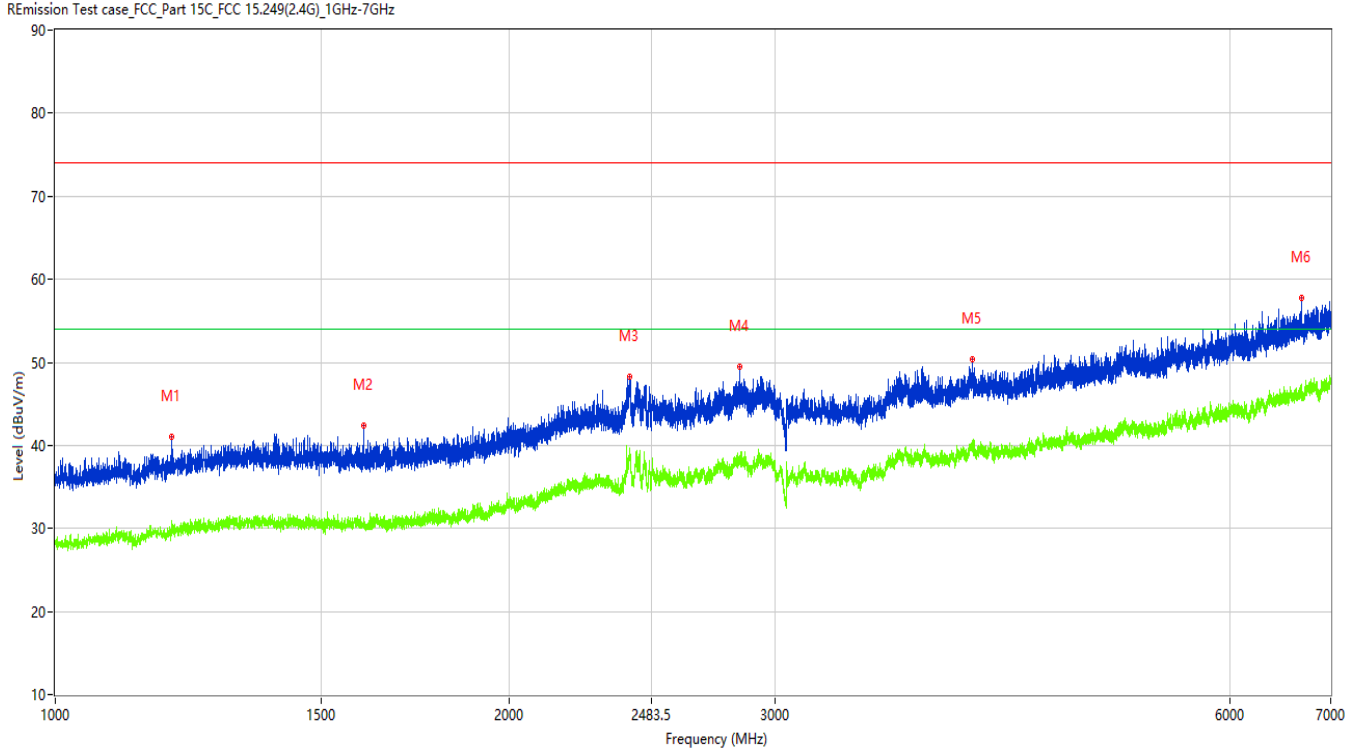
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**Figure 22: Test plots of Field strength of harmonics, 2480MHz, 1GHz-7GHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1195.000	41.08	-13.47	74.0	32.92	Peak	176.10	100	Vertical	Pass
1**	1195.000	29.81	-13.47	54.0	24.19	AV	176.10	100	Vertical	Pass
2	1599.750	42.34	-13.15	74.0	31.66	Peak	161.20	100	Vertical	Pass
2**	1599.750	31.20	-13.15	54.0	22.80	AV	161.20	100	Vertical	Pass
3	2400.500	48.27	-4.42	74.0	25.73	Peak	207.00	100	Vertical	Pass
3**	2400.500	39.43	-4.42	54.0	14.57	AV	207.00	100	Vertical	Pass
4	2839.250	49.42	-3.91	74.0	24.58	Peak	0.70	100	Vertical	Pass
4**	2839.250	38.41	-3.91	54.0	15.59	AV	0.70	100	Vertical	Pass
5	4052.000	50.39	-0.79	74.0	23.61	Peak	183.00	100	Vertical	Pass
5**	4052.000	39.45	-0.79	54.0	14.55	AV	183.00	100	Vertical	Pass
6	6692.500	57.75	4.48	74.0	16.25	Peak	325.80	100	Vertical	Pass
6**	6692.500	46.65	4.48	54.0	7.35	AV	325.80	100	Vertical	Pass



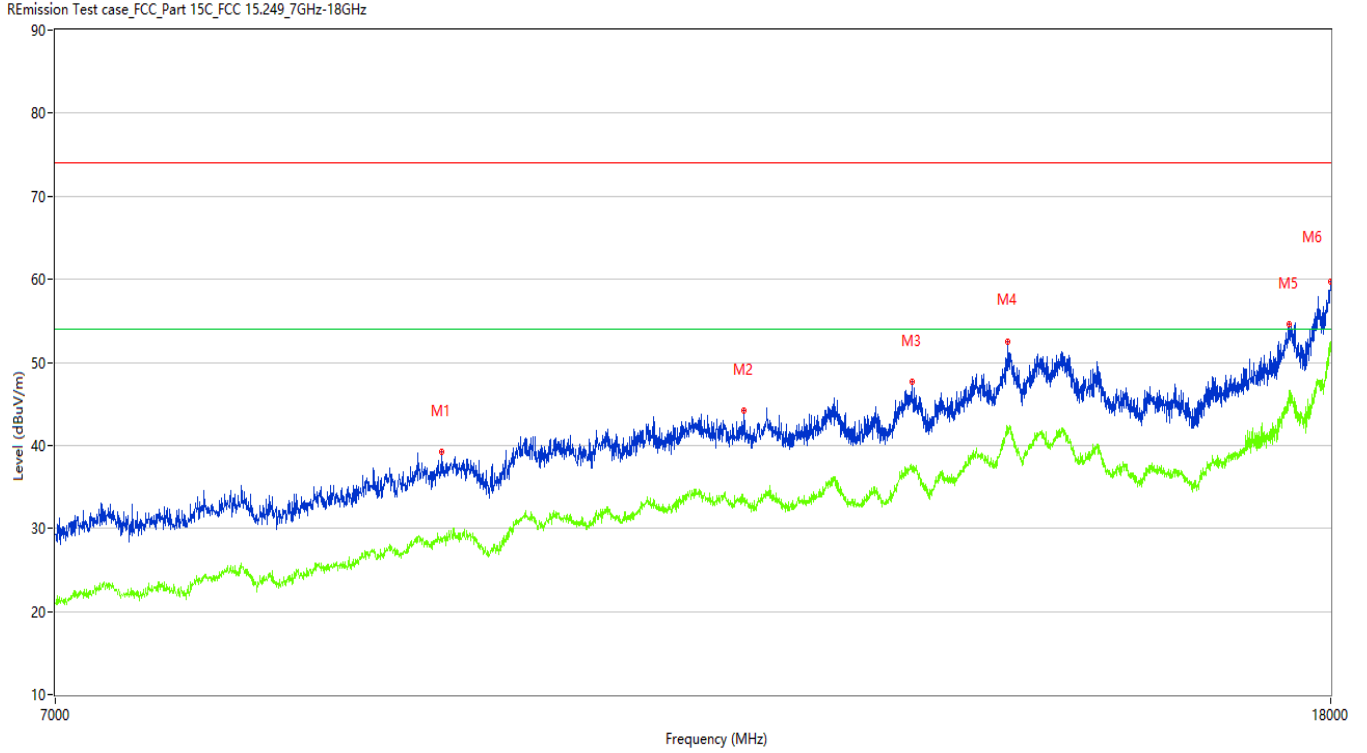
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**Figure 23: Test plots of Field strength of harmonics, 2480MHz, 7GHz-18GHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	9315.500	39.17	7.04	74.0	34.83	Peak	0.00	100	Horizontal	Pass
1**	9315.500	28.53	7.04	54.0	25.47	AV	0.00	100	Horizontal	Pass
2	11658.500	44.17	11.17	74.0	29.83	Peak	298.50	100	Horizontal	Pass
2**	11658.500	33.32	11.17	54.0	20.68	AV	298.50	100	Horizontal	Pass
3	13201.250	47.61	14.09	74.0	26.39	Peak	360.00	100	Horizontal	Pass
3**	13201.250	36.91	14.09	54.0	17.09	AV	360.00	100	Horizontal	Pass
4	14172.000	52.55	19.25	74.0	21.45	Peak	360.00	100	Horizontal	Pass
4**	14172.000	41.82	19.25	54.0	12.18	AV	360.00	100	Horizontal	Pass
5	17461.000	54.52	21.08	74.0	19.48	Peak	360.00	100	Horizontal	Pass
5**	17461.000	46.65	21.08	54.0	7.35	AV	360.00	100	Horizontal	Pass
6	17997.251	59.72	27.75	74.0	14.28	Peak	360.00	100	Horizontal	Pass
6**	17997.251	51.34	27.75	54.0	2.66	AV	360.00	100	Horizontal	Pass

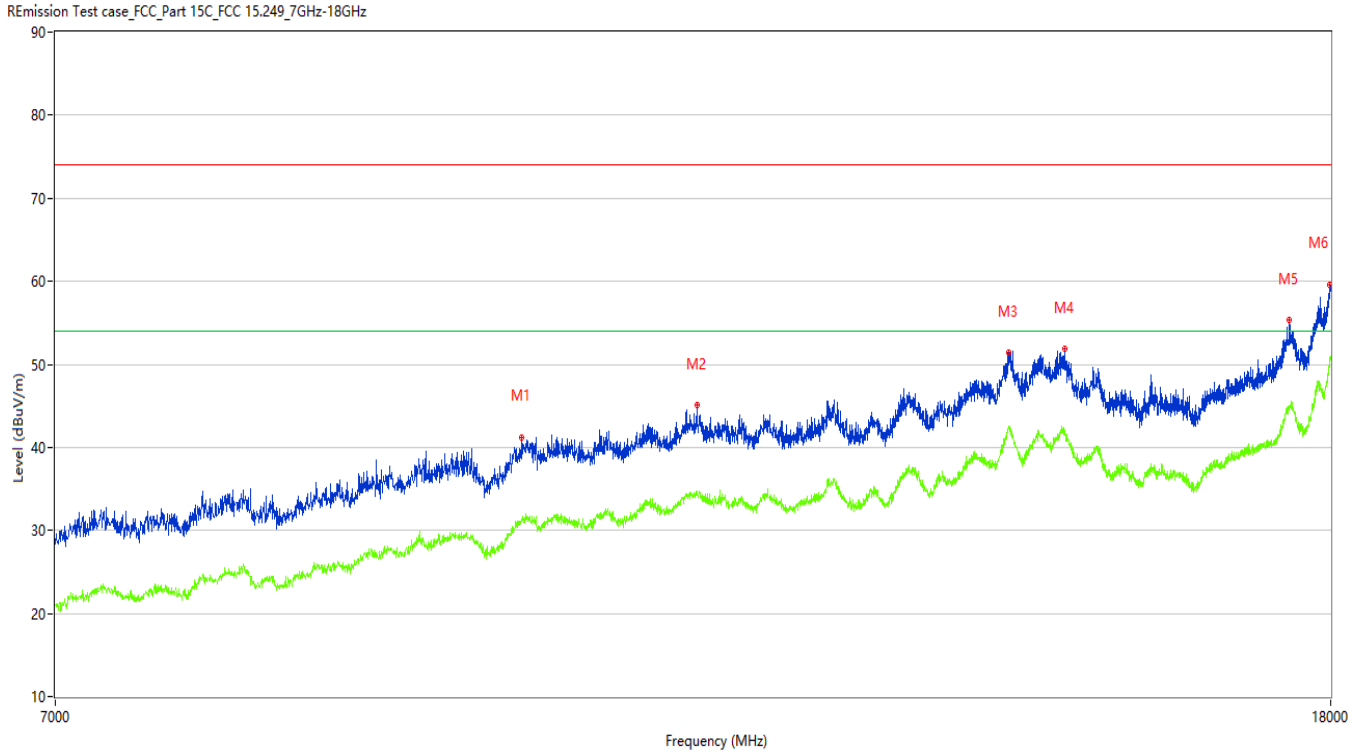
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**Figure 24: Test plots of Field strength of harmonics, 2480MHz, 7GHz-18GHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	9890.250	41.24	9.54	74.0	32.76	Peak	351.80	100	Vertical	Pass
1**	9890.250	31.34	9.54	54.0	22.66	AV	351.80	100	Vertical	Pass
2	11259.750	45.08	12.02	74.0	28.92	Peak	168.30	100	Vertical	Pass
2**	11259.750	34.67	12.02	54.0	19.33	AV	168.30	100	Vertical	Pass
3	14185.750	51.49	19.69	74.0	22.51	Peak	229.40	100	Vertical	Pass
3**	14185.750	42.43	19.69	54.0	11.57	AV	229.40	100	Vertical	Pass
4	14779.750	51.89	18.62	74.0	22.11	Peak	229.40	100	Vertical	Pass
4**	14779.750	42.07	18.62	54.0	11.93	AV	229.40	100	Vertical	Pass
5	17461.000	55.32	21.08	74.0	18.68	Peak	168.30	100	Vertical	Pass
5**	17461.000	44.86	21.08	54.0	9.14	AV	168.30	100	Vertical	Pass
6	17991.750	59.50	27.41	74.0	14.50	Peak	288.90	100	Vertical	Pass
6**	17991.750	50.84	27.41	54.0	3.16	AV	288.90	100	Vertical	Pass

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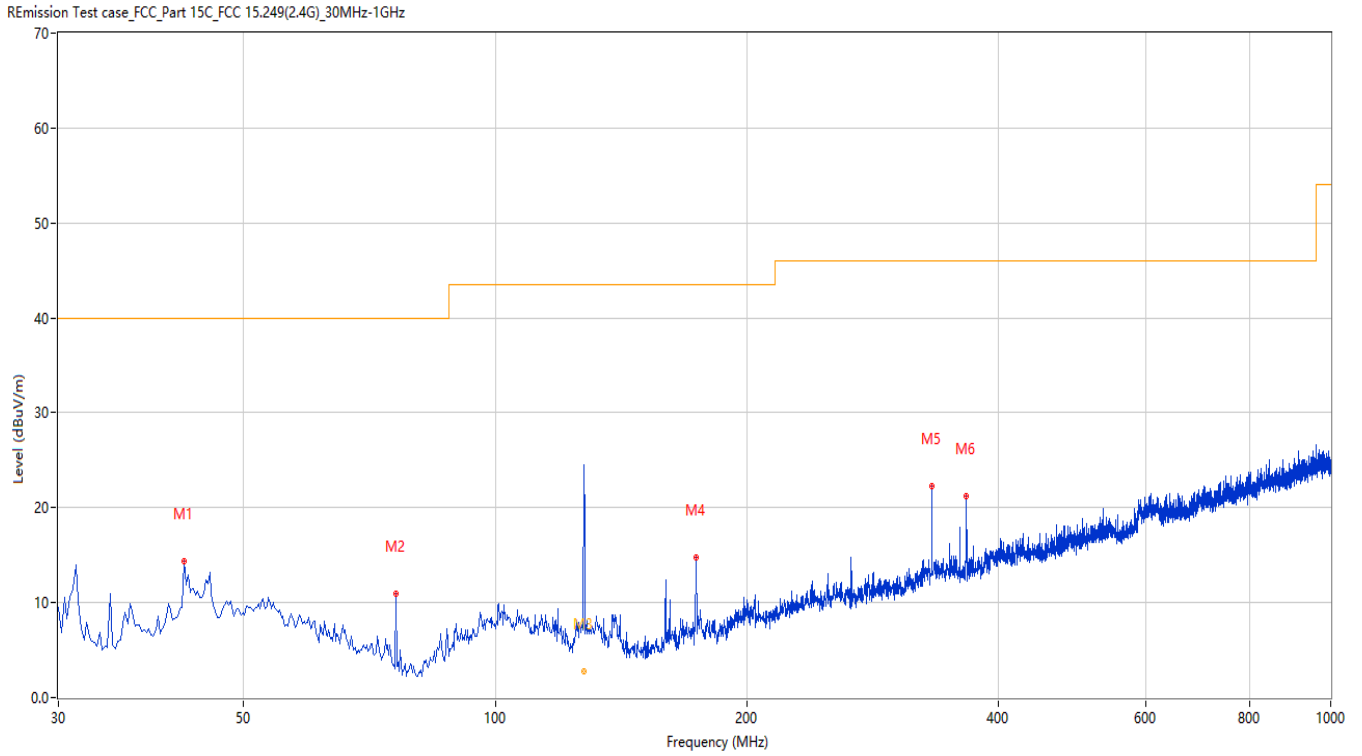
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Series model (RF60-7):

Figure 25: Test plots of Field strength of harmonics, 30MHz-1GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.364	14.37	-24.70	40.0	25.63	Peak	209.60	100	Horizontal	Pass
2	76.063	10.93	-30.71	40.0	29.07	Peak	0.00	200	Horizontal	Pass
3	127.592	8.86	-28.40	43.5	34.64	Peak	257.70	152	Horizontal	Pass
3*	127.592	2.80	-28.40	43.5	40.70	QP	257.70	152	Horizontal	Pass
4	174.009	14.74	-28.07	43.5	28.76	Peak	357.30	100	Horizontal	Pass
5	333.049	22.28	-20.96	46.0	23.72	Peak	310.50	100	Horizontal	Pass
6	366.506	21.28	-20.86	46.0	24.72	Peak	261.40	100	Horizontal	Pass

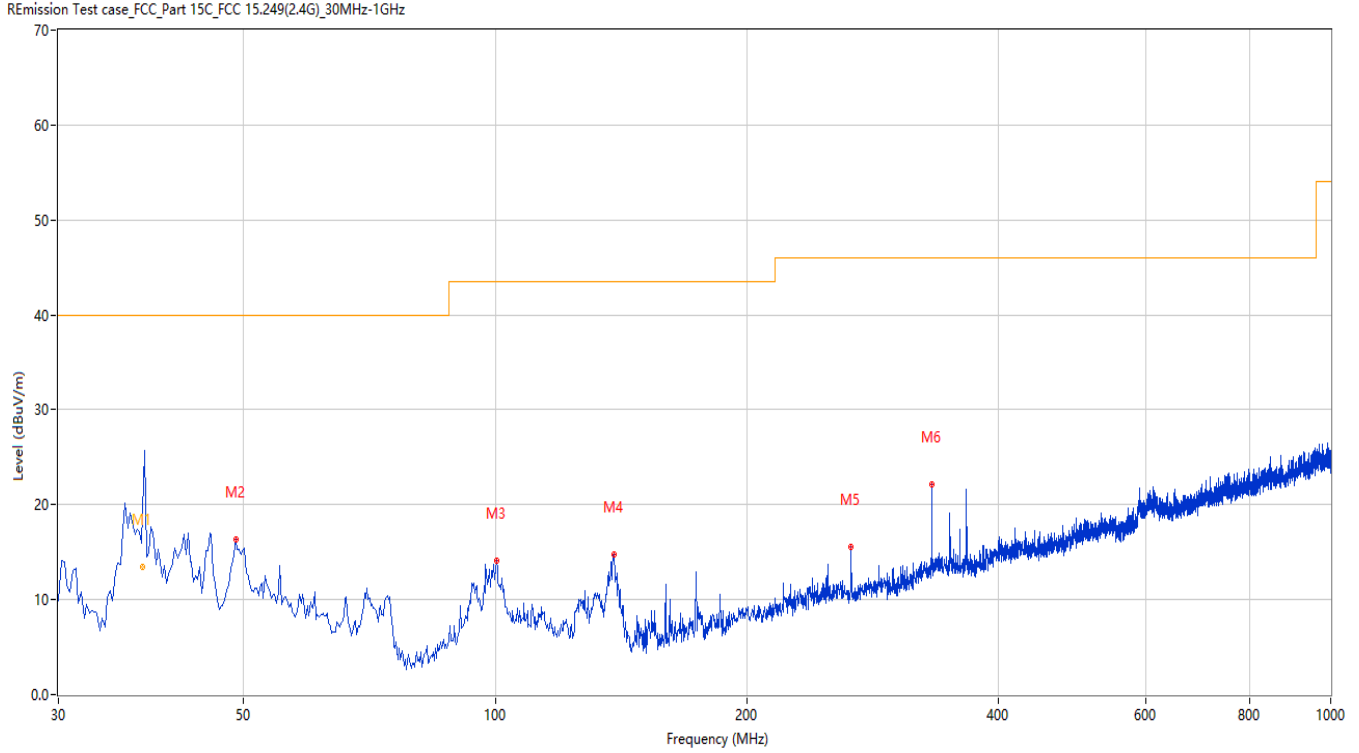
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**Figure 26: Test plots of Field strength of harmonics, 30MHz-1GHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	37.784	20.92	-26.11	40.0	19.08	Peak	220.20	133	Vertical	Pass
1*	37.784	13.48	-26.11	40.0	26.52	QP	220.20	133	Vertical	Pass
2	48.910	16.39	-24.00	40.0	23.61	Peak	0.00	200	Vertical	Pass
3	100.307	14.12	-25.65	43.5	29.38	Peak	318.30	100	Vertical	Pass
4	138.613	14.80	-29.06	43.5	28.70	Peak	180.80	100	Vertical	Pass
5	266.378	15.61	-23.53	46.0	30.39	Peak	204.20	100	Vertical	Pass
6	333.049	22.20	-20.96	46.0	23.80	Peak	70.60	200	Vertical	Pass

**Note:**

1. All the models were tested and only the worst data was recorded in the report.
2. Series model (RF60-7): Sensitive test item-30MHz-1GHz of Radiated Emission was recorded in the report.

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## 4.1.3 Band Edge

RESULT:

**PASS**

Test standard : FCC Part 15.249(d), 15.209  
 RSS-210 B.10(b), RSS-GEN 8.10

Requirement : ANSI C63.10-2013

Kind of test site : 3m Semi-Anechoic Chamber

### Test setup

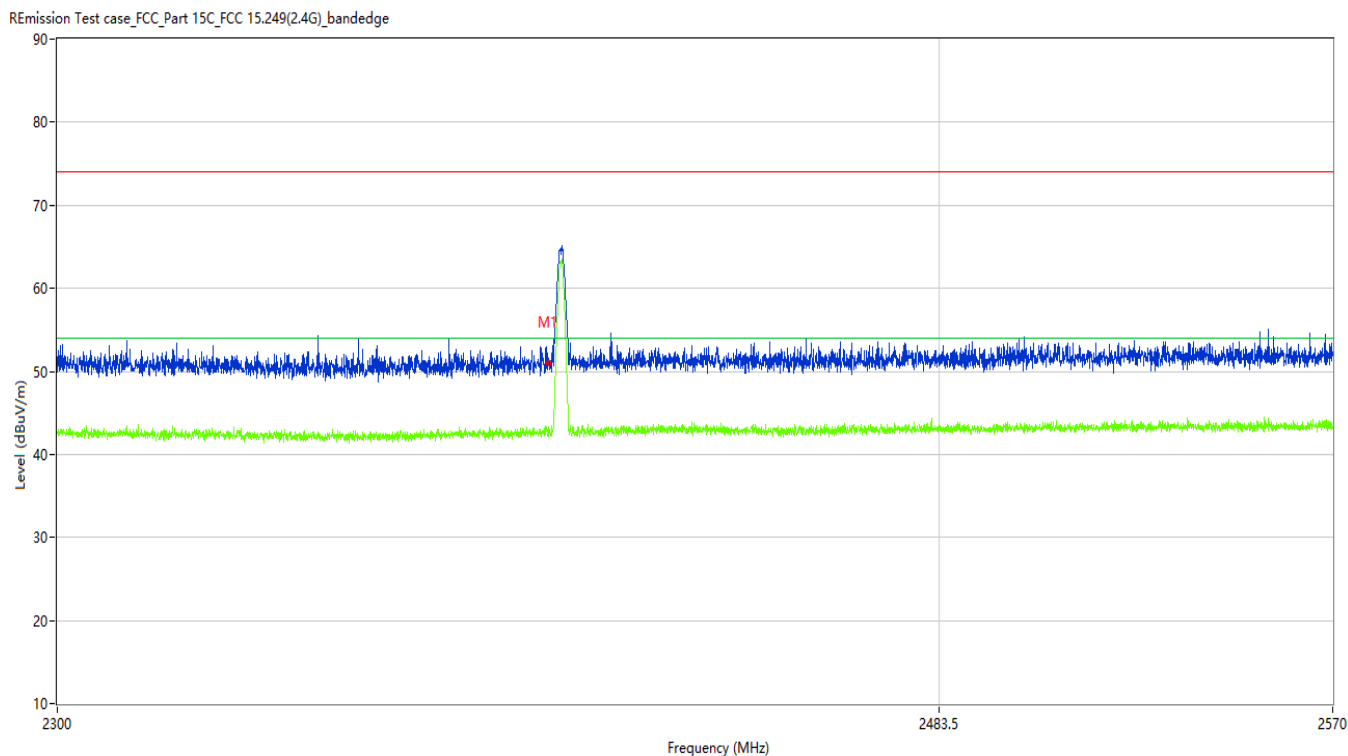
Test Channel : Low/High

Operation Mode : A.i/iii

Ambient temperature : 23.4°C

Relative humidity : 50%

**Figure 27: Test plots of Band Edge, 2403MHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2400.000	50.94	-9.87	74.0	23.06	Peak	249.01	100	Horizontal	Pass
1**	2400.000	43.04	-9.87	54.0	10.96	AV	249.01	100	Horizontal	Pass

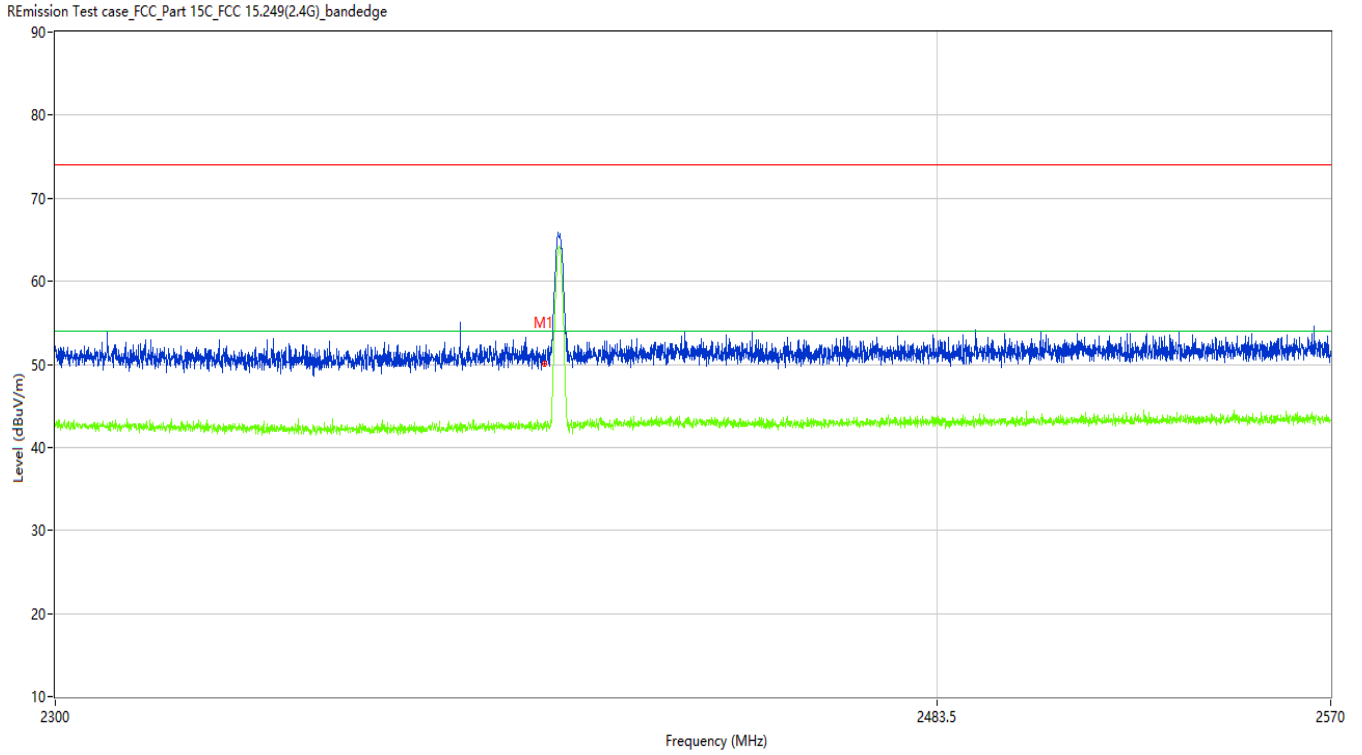
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**Figure 28: Test plots of Band Edge, 2403MHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2400.000	50.24	-9.87	74.0	23.76	Peak	333.98	100	Vertical	Pass
1**	2400.000	42.72	-9.87	54.0	11.28	AV	333.98	100	Vertical	Pass

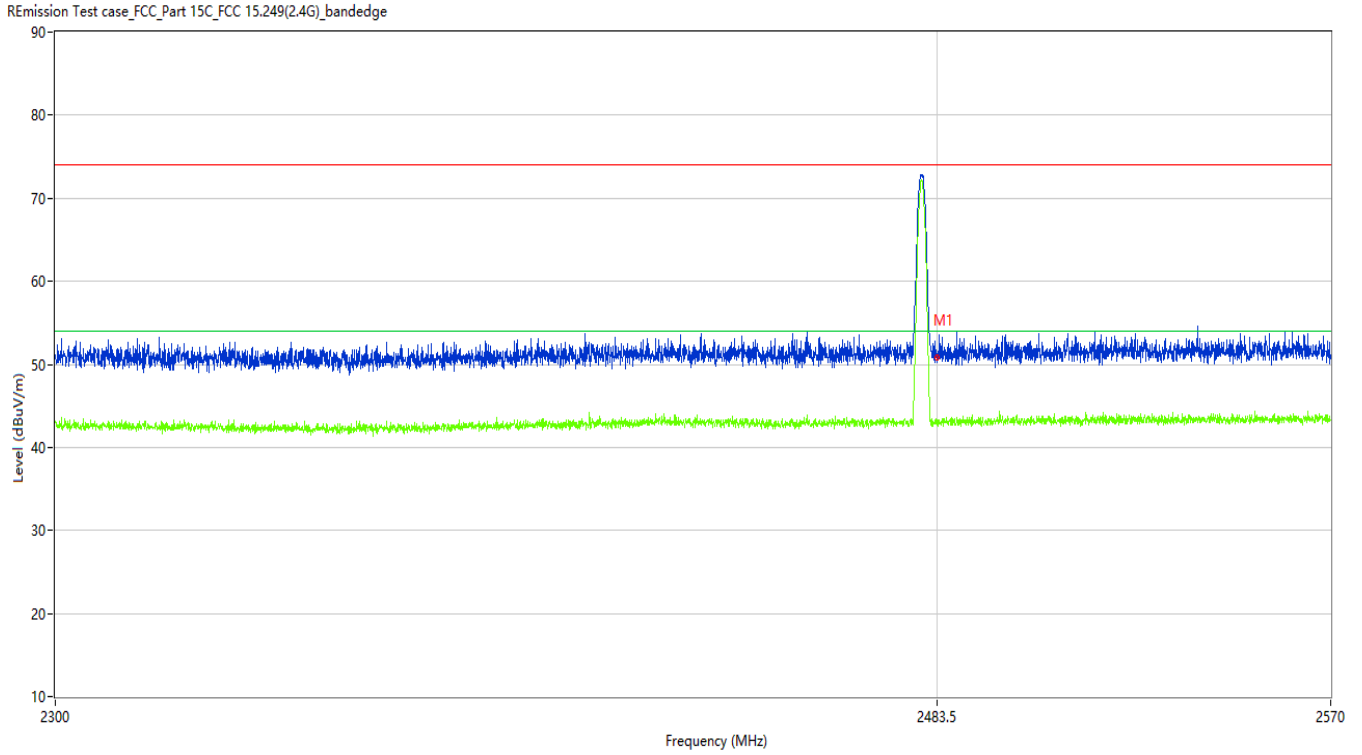
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**Figure 29: Test plots of Band Edge, 2480MHz, Horizontal polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.500	50.74	-9.51	74.0	23.26	Peak	67.07	100	Horizontal	Pass
1**	2483.500	43.01	-9.51	54.0	10.99	AV	67.07	100	Horizontal	Pass

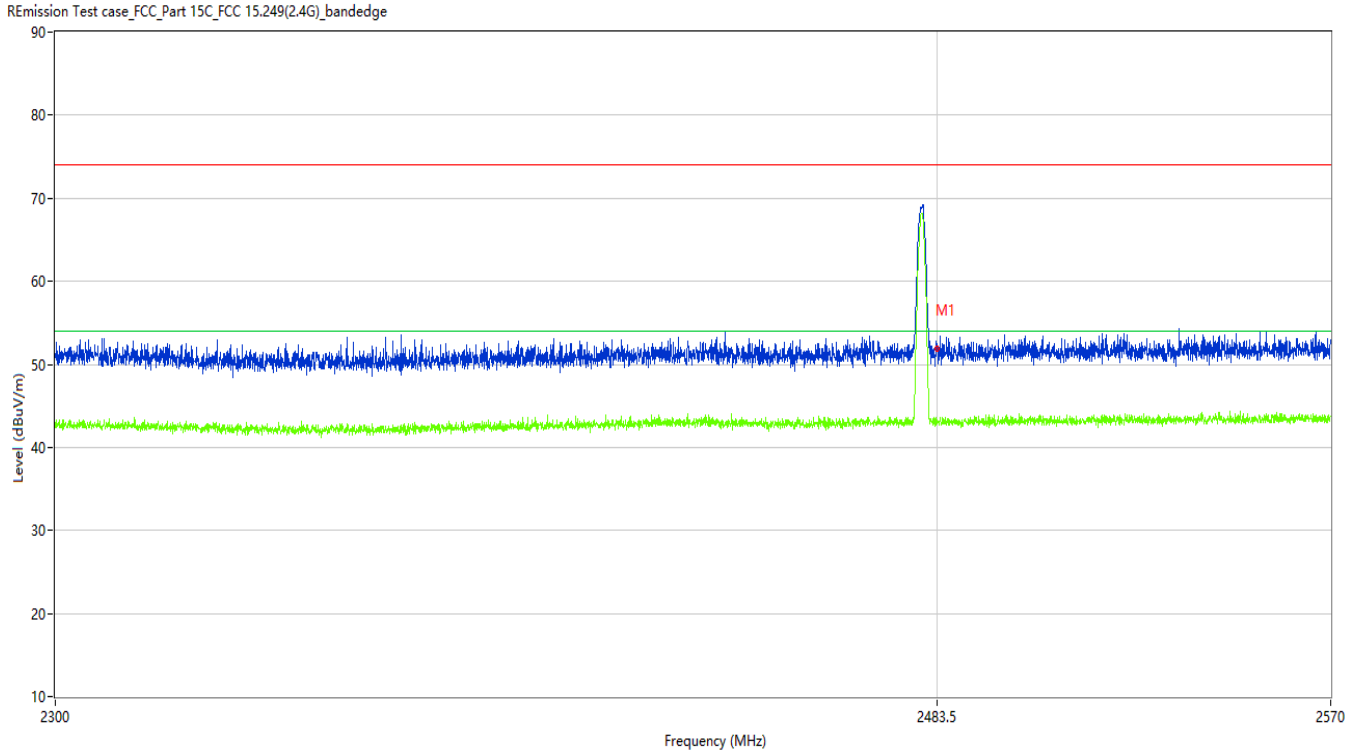
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**Figure 30: Test plots of Band Edge, 2480MHz, Vertical polarization**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.500	52.17	-9.51	74.0	21.83	Peak	77.11	100	Vertical	Pass
1**	2483.500	43.09	-9.51	54.0	10.91	AV	77.11	100	Vertical	Pass



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## 4.1.4 20dB Bandwidth and 99% Bandwidth

RESULT:

**PASS**

Test standard : FCC Part 15.215(c), RSS-GEN 6.7

Requirement : ANSI C63.10-2013

Kind of test site : Shielded room

### Test setup

Test Channel : Low/Middle/High

Operation Mode : A.i/ii/iii

Ambient temperature : 22.8°C

Relative humidity : 50%

**Table 1: 20dB Bandwidth and 99% Bandwidth**

Test Mode	Test Channel (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
GFSK	2403	0.966	0.925
	2442	1.057	0.948
	2480	0.970	0.934

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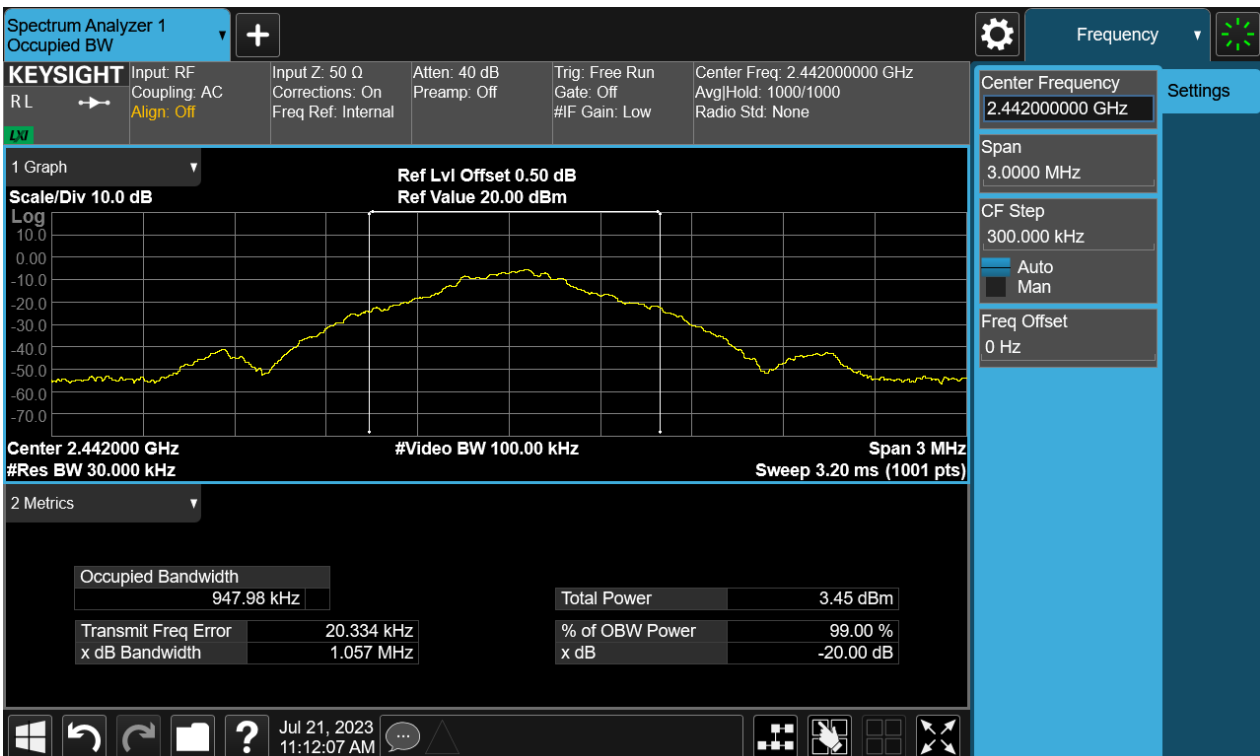
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Figure 31: The plots of 20dB Bandwidth and 99% Bandwidth, 2403MHz



Figure 32: The plots of 20dB Bandwidth and 99% Bandwidth, 2442MHz



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Figure 33: The plots of 20dB Bandwidth and 99% Bandwidth, 2480MHz



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## 5 Appendixes

### 5.1 Photographs of the Sample

Test Model: RF60-10



Front of the sample



Back of the sample



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Left of the sample



Right of the sample

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Top of the sample



Bottom of the sample



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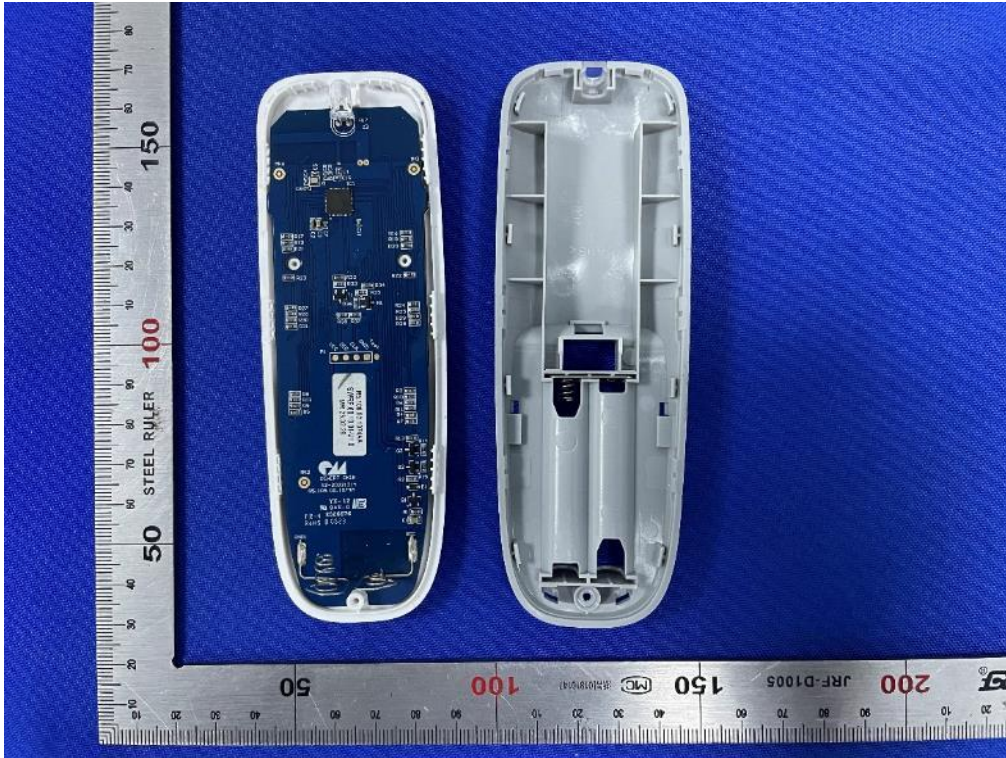
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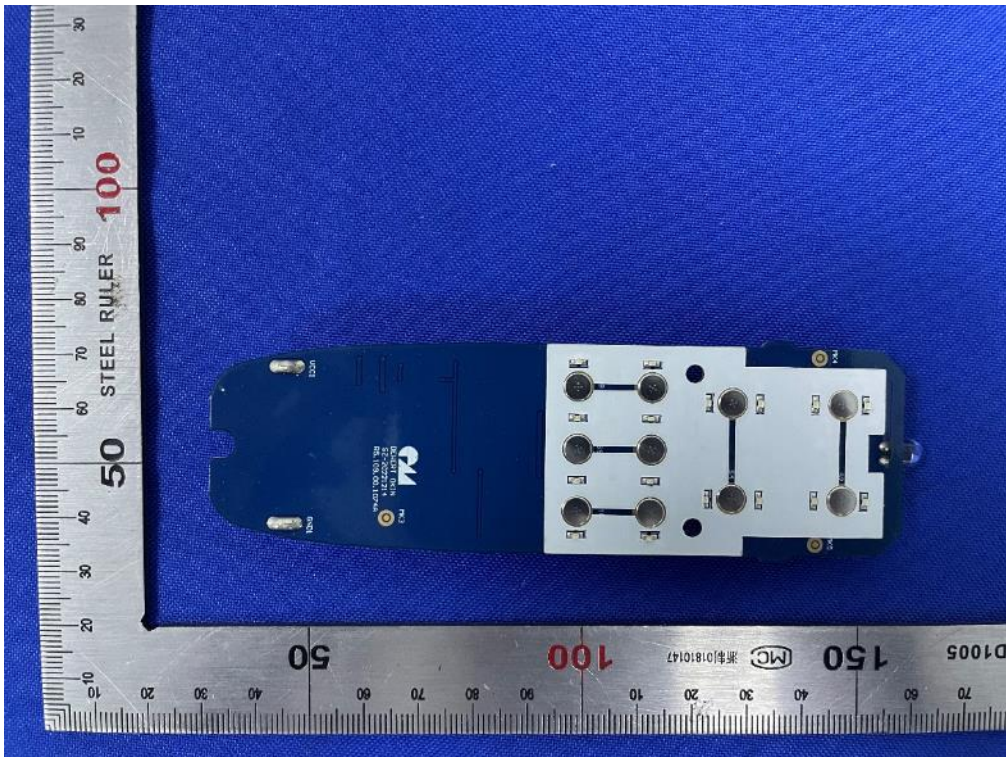
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Open of the sample



Internal-1 of the sample



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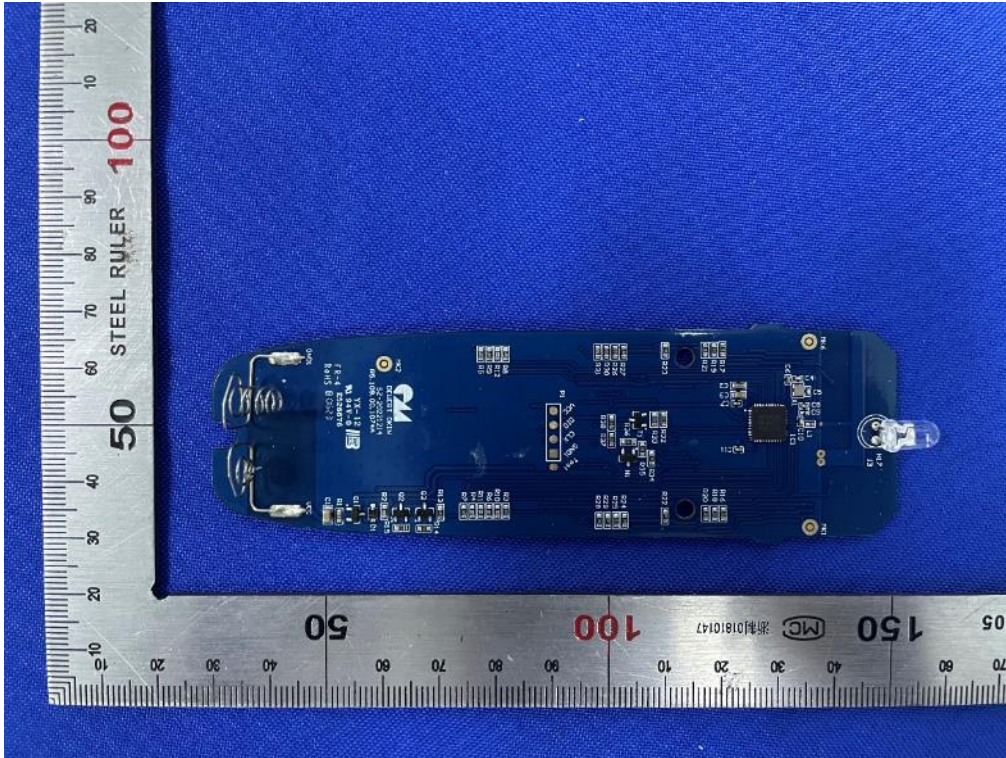
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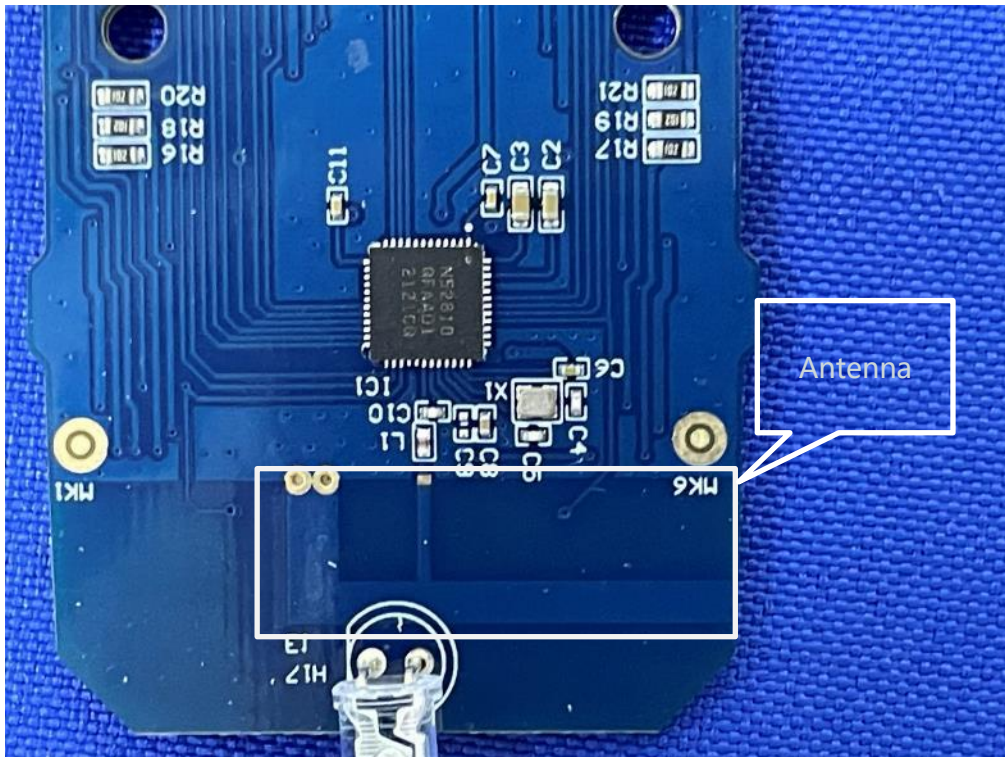
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Internal-2 of the sample



Antenna position of the sample



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Test Model: RF60-7



Front of the sample



Back of the sample

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Left of the sample



Right of the sample



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Top of the sample



Bottom of the sample

# TEST REPORT

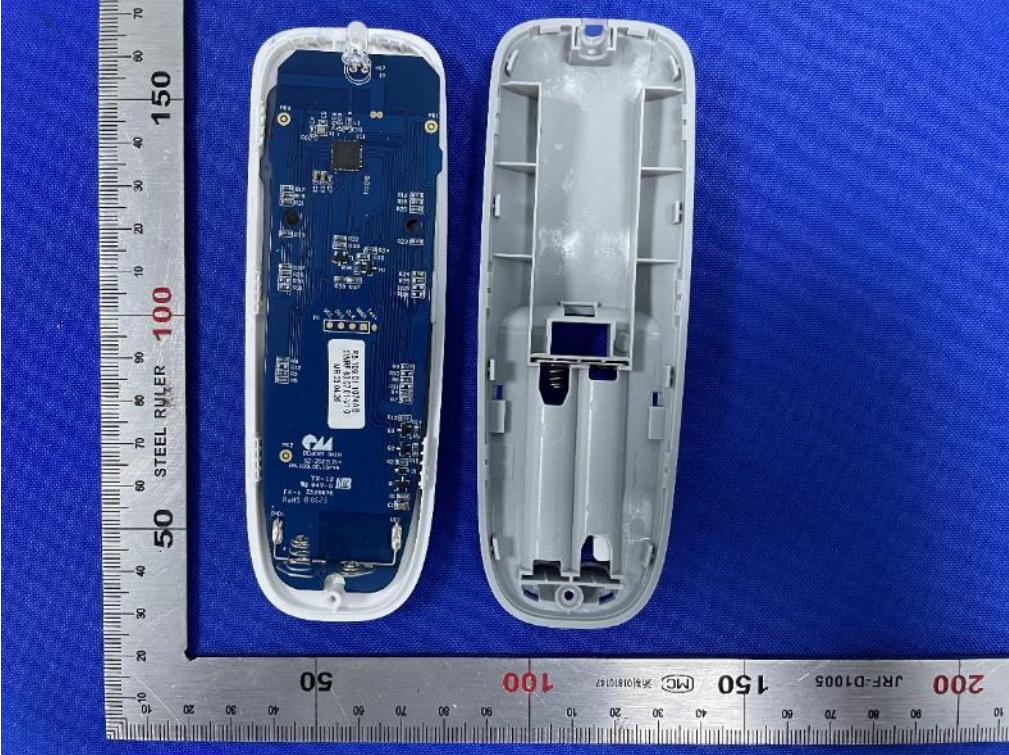
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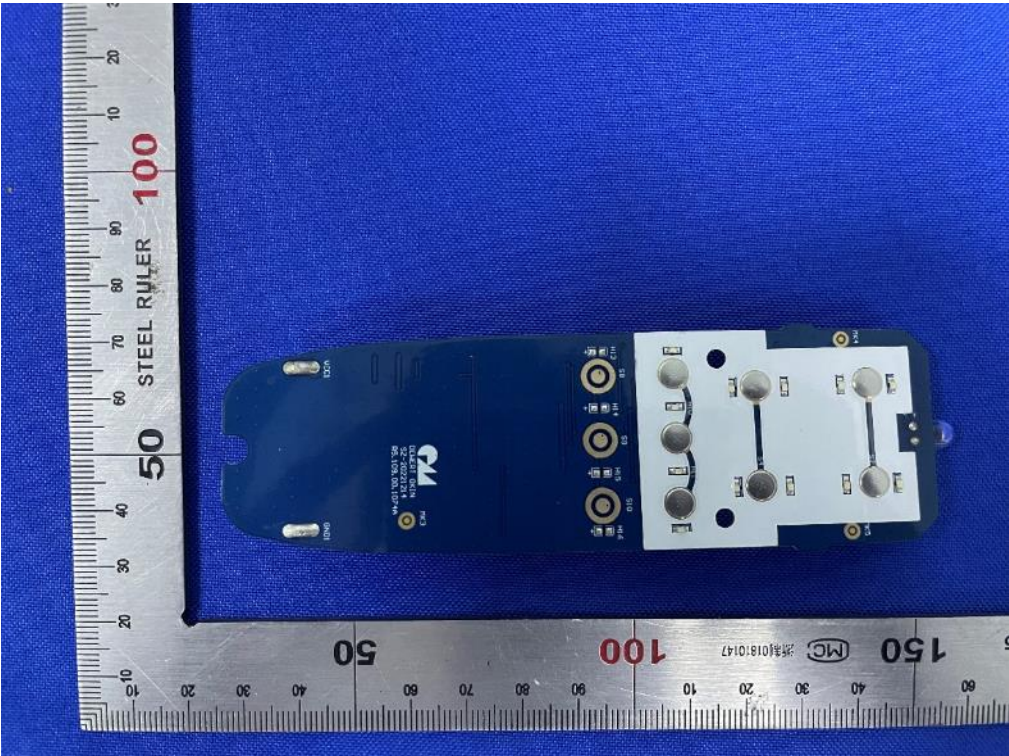
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Open of the sample



Internal-1 of the sample



# TEST REPORT

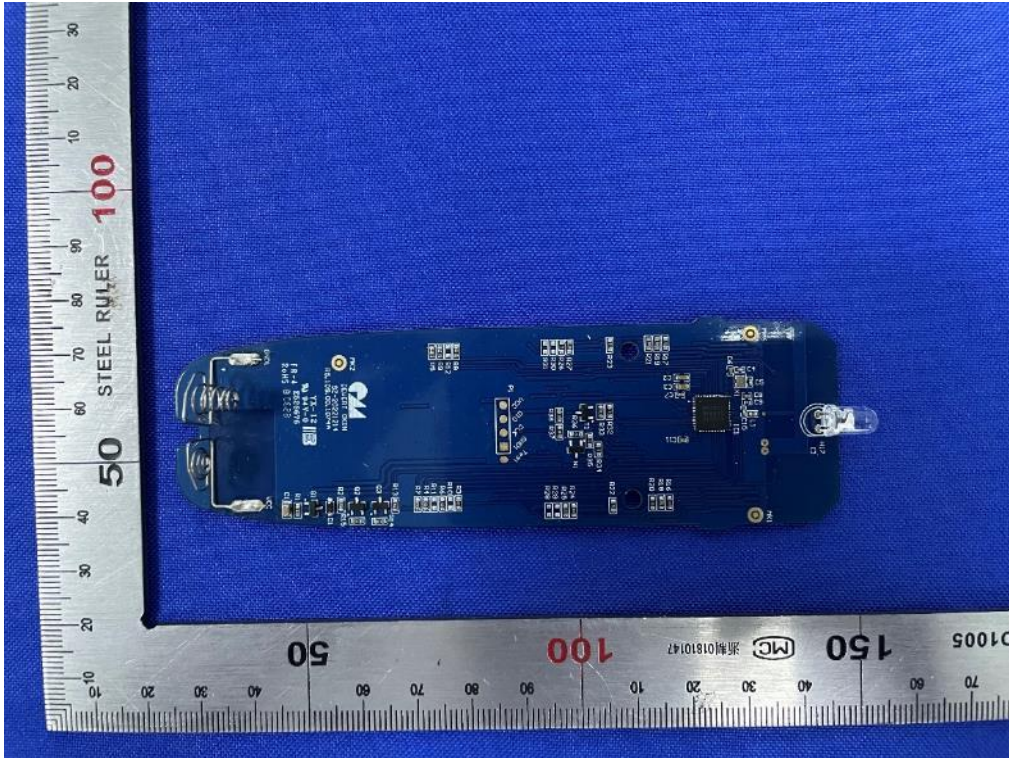
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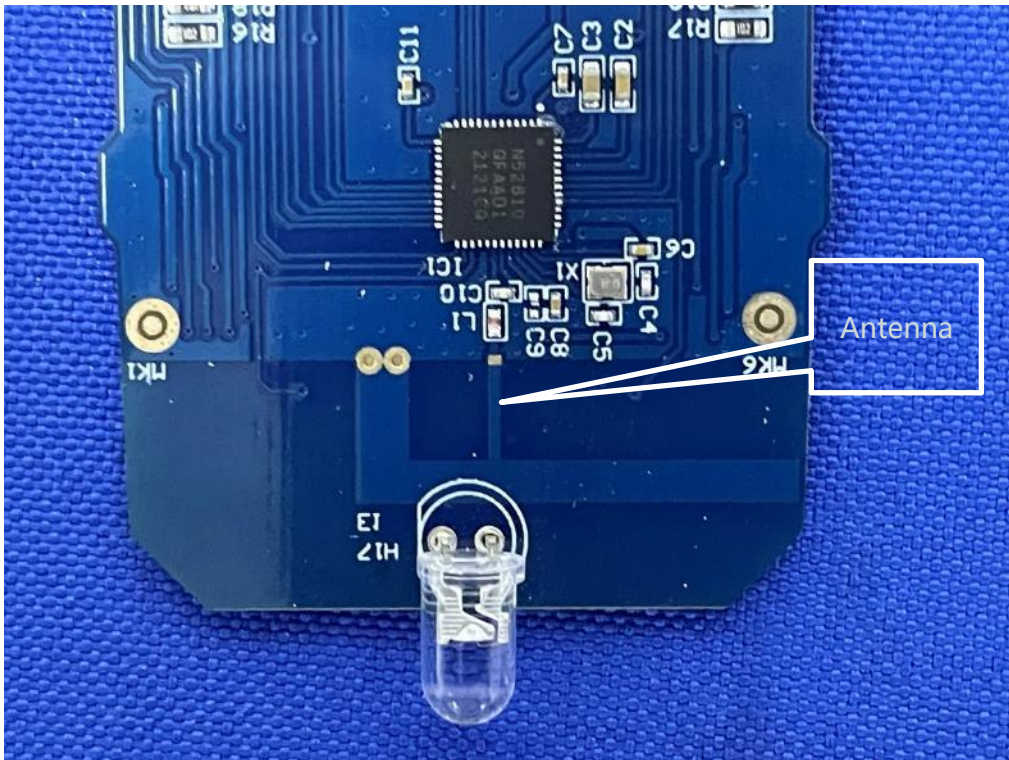
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Internal-2 of the sample



Antenna position of the sample

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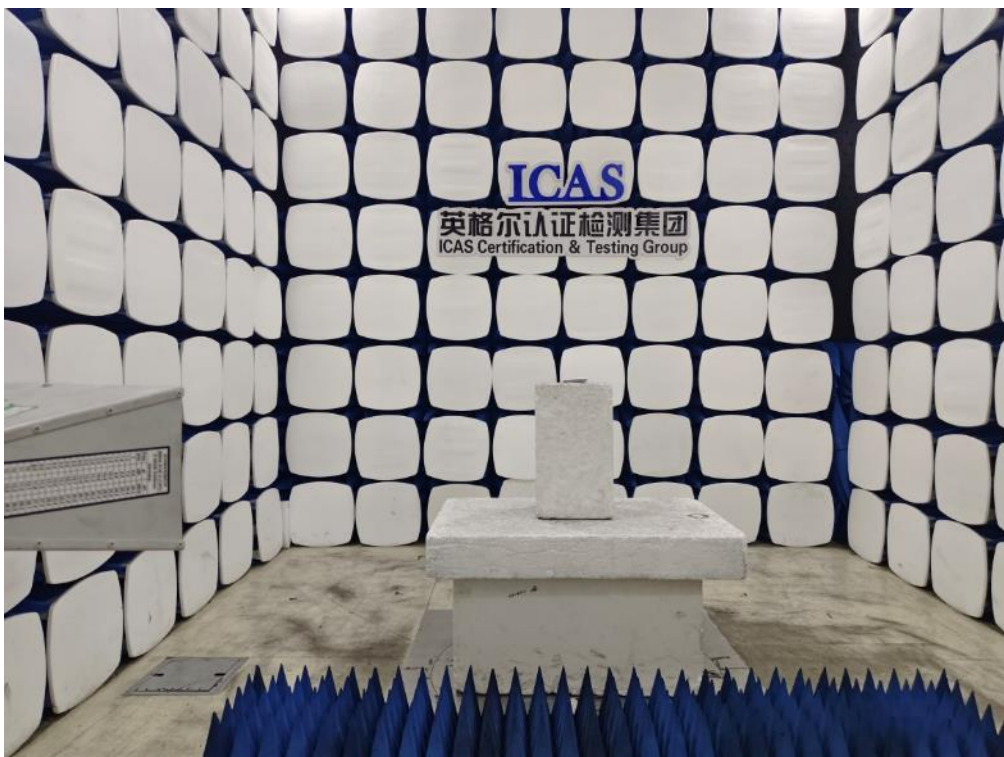
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## 5.2 Set-up for Spurious Emissions below 1GHz



## 5.3 Set-up for Spurious Emissions above 1GHz



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