

TEST REPORT

Report No.: SHE22120079-02AE

Date: 2023-01-03

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Applicant : Keeson Technology Corporation Limited
Address of Applicant : No. 195, Yuanfeng East Road, Wangjiangjing, Xiuzhou District, Jiaxing City, 314000, China

Product Name : REMOTE CONTROL
Brand Name : N/A
Model No. : RF427A
Sample acquisition Method : Sent by Client
Sample No. : E22120079-01#01
E22120079-01#02
FCC ID : 2AK23-RF427A
ISED Number : 22406-RF427A

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 : 2022-12-27
Date of Test : 2022-12-28 ~ 2022-12-30
Date of Issue : 2023-01-03

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)

Reviewed by:


(Jennifer Zhou)

Approved by:


(Authorized signatory: Guoyou Chi)

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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	Keeson Technology Corporation Limited
Address	No. 195, Yuanfeng East Road,Wangjiangjing, Xiuzhou District,Jiaxing City,314000,China
Contact Person	Sam xu
Telephone	18279170755
Email	xuwb@keeson.com
Manufacturer Company Name	DewertOkin Technology Group Co., Ltd.
Address	No.465, Xinnanyang Road, Wangjiangjing Development Zone, Xiuzhou District, Jiaxing City, Zhejiang Province, China.
Factory Company Name	DewertOkin Technology Group Co., Ltd.
Address	No.465, Xinnanyang Road, Wangjiangjing Development Zone, Xiuzhou District, Jiaxing City, Zhejiang Province, China.

1.3 Details of EUT

Product Name	REMOTE CONTROL
Brand Name	N/A
Test Model No.	RF427A
FCC ID	2AK23-RF427A
ISED Number	22406- RF427A
Operation Frequency	2403MHz ~ 2480MHz
Maximum Field Strength	92.46dBuV/m(peak)@3m
Number of Channels	78
Modulation Type	GFSK
Antenna Type	PCB Antenna
Antenna Gain	1.225dBi
Extreme Temperature Range	-10℃~ +40℃
Test Voltage	DC 3V supply by battery(2*AAA battery)
Hardware version	R5.109.00.1048A

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Software version	V1.0
Test SW Version	BL410_R; BL410_E
RF power setting in TEST SW	Enter the fixed frequency mode by pressing the key_Default power

- Note:
- The above information was declared by the manufacture.
 - 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 ^{note}

Note(s): The EUT is powered by battery (DC 3V supply by 2*AAA 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	2022-06-10	2023-06-09
Signal Generator	Rohde & Schwarz	SMR27	100184	2022-08-02	2023-08-01
EMI Test Receiver	Rohde & Schwarz	ESR 7	101911	2022-06-10	2023-06-09
DC Power Supply	ITECH	IT6512A	N/A	2022-06-07	2024-06-06
Broadband Antenna	SCHWARZBECK	VULB9163	9163-1037	2021-06-08	2023-06-07
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1775	2021-06-08	2023-06-07
Loop Antenna	SCHWARZBECK	FMZB 1513	/	2022-06-10	2023-06-09
Broadband Preamplifier	SCHWARZBECK	BBV 9718	346	2022-06-10	2023-06-09
EMC chamber 9*6*6 (L*W*H)	CHANGNING	966	N/A	2022-06-10	2023-06-09
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	± 1.5 dB
	> 1GHz	± 1.5 dB
Radiated Emission	9KHz – 30MHz	± 3.42 dB
	30 MHz – 1GHz	± 5.00 dB
	> 1GHz	± 4.88 dB
Occupied Channel Bandwidth		± 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

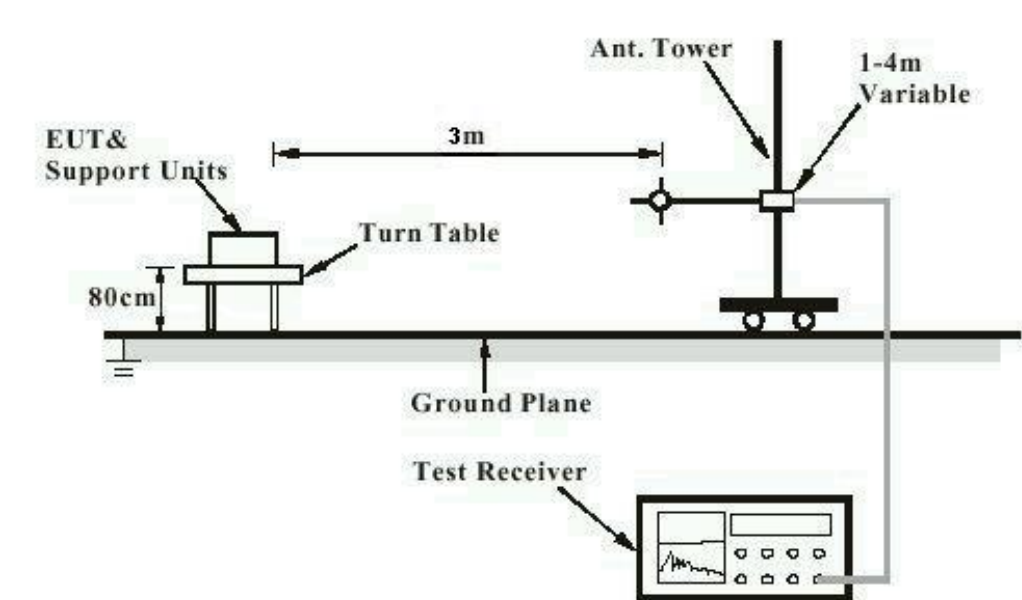
3.3 Support Software

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

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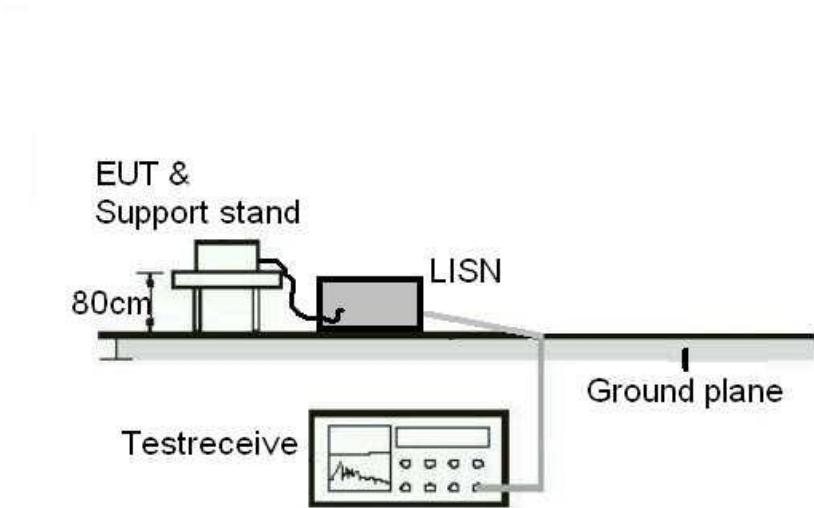
3.4 Test Setup Diagram

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 Conduction Test



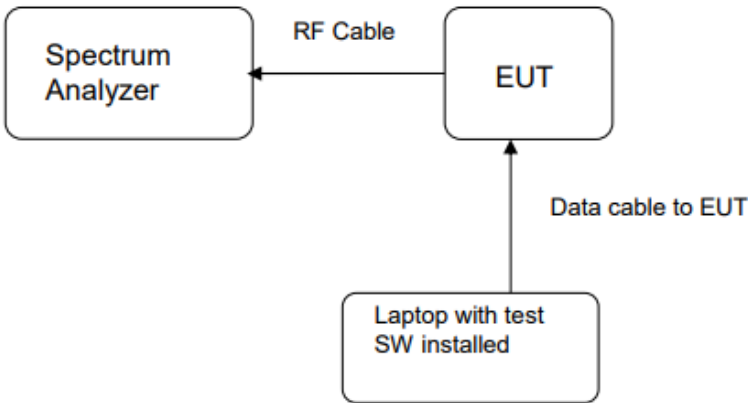
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Diagram of Measurement Configuration for Transmitter Test



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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 : 22°C

Relative humidity : 52%

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.

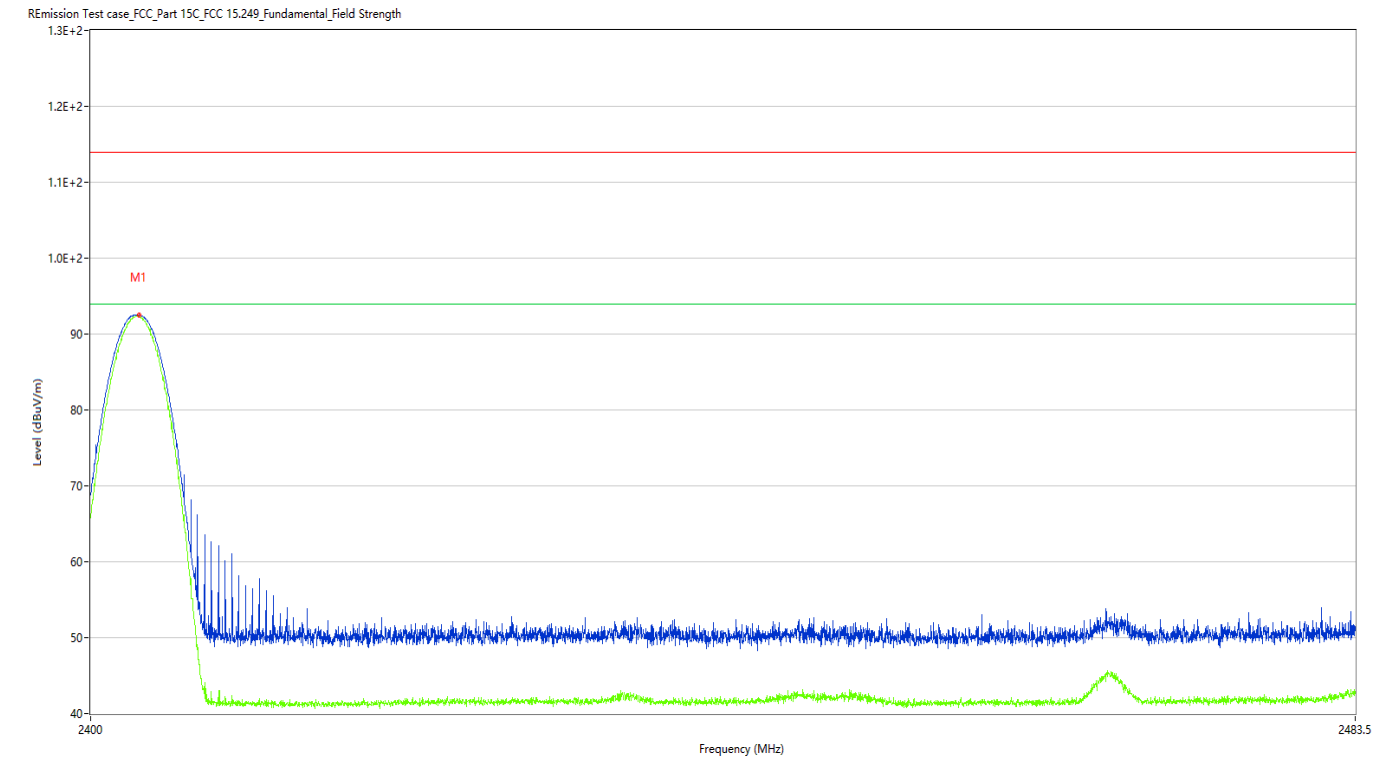
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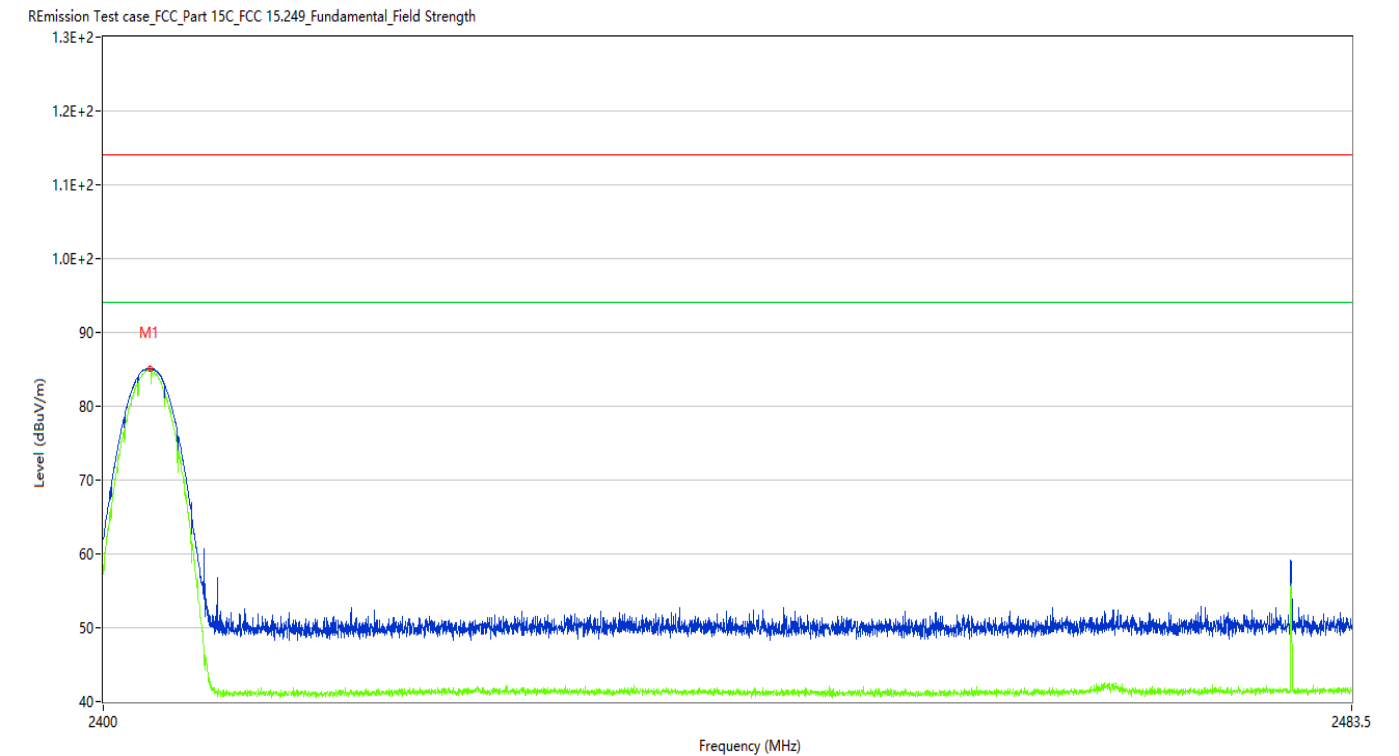
Figure 1: Test plots of Field strength of fundamental, 2403MHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2403.131	92.46	-9.82	114.0	21.54	Peak	182.00	100	Horizontal	Pass
1**	2403.131	92.32	-9.82	94.0	1.68	AV	182.00	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	2403.048	85.02	-9.82	114.0	28.98	Peak	235.20	100	Vertical	Pass
1**	2403.048	84.88	-9.82	94.0	9.12	AV	235.20	100	Vertical	Pass

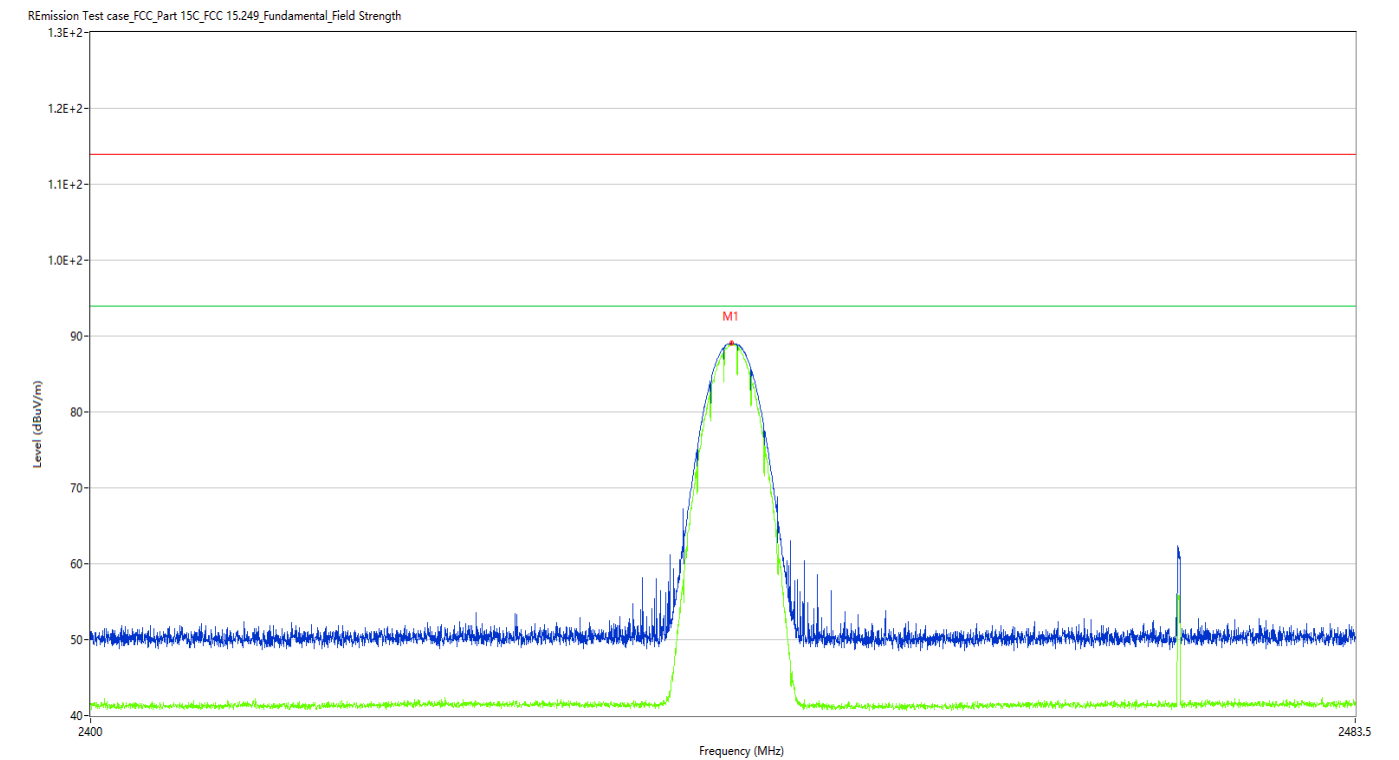
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Figure 3: Test plots of Field strength of fundamental, 2442MHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2441.938	89.03	-9.61	114.0	24.97	Peak	83.50	100	Horizontal	Pass
1**	2441.938	88.88	-9.61	94.0	5.12	AV	83.50	100	Horizontal	Pass

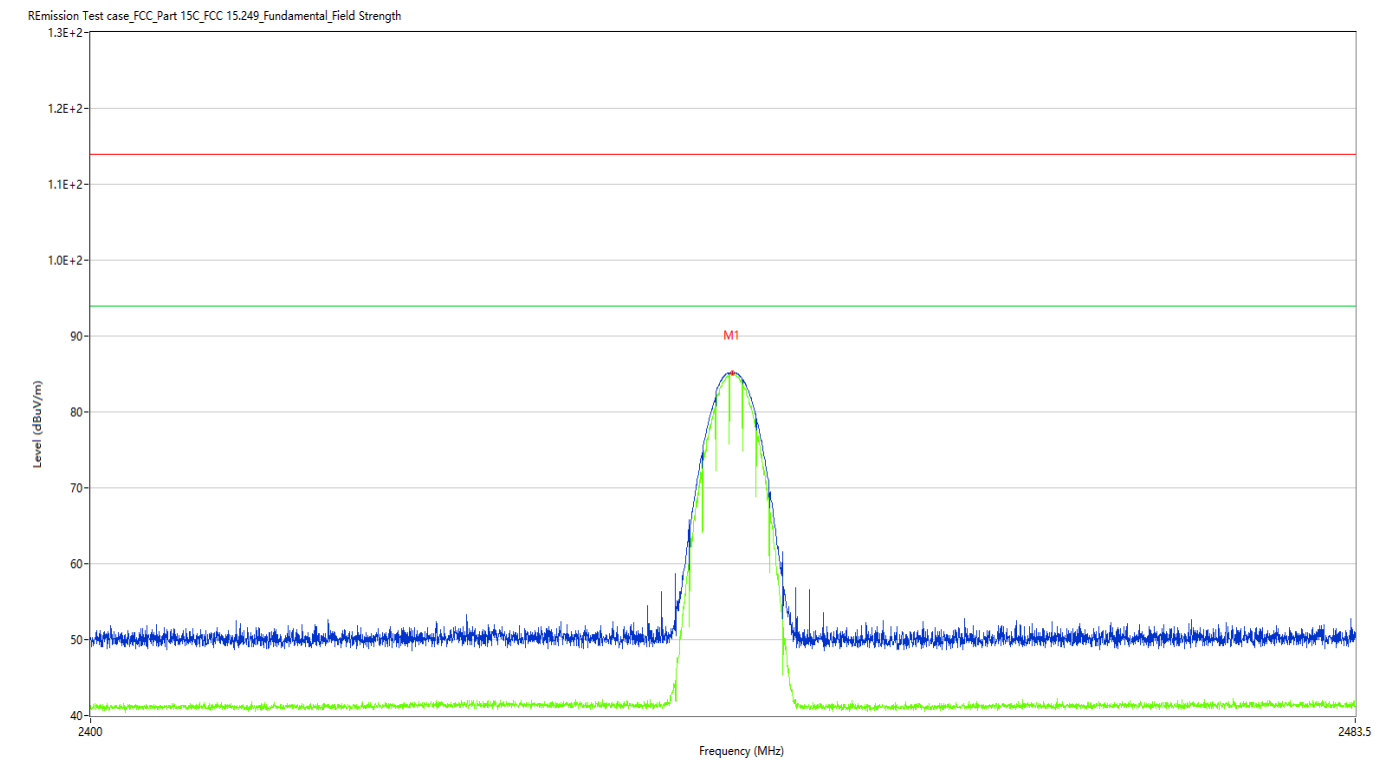
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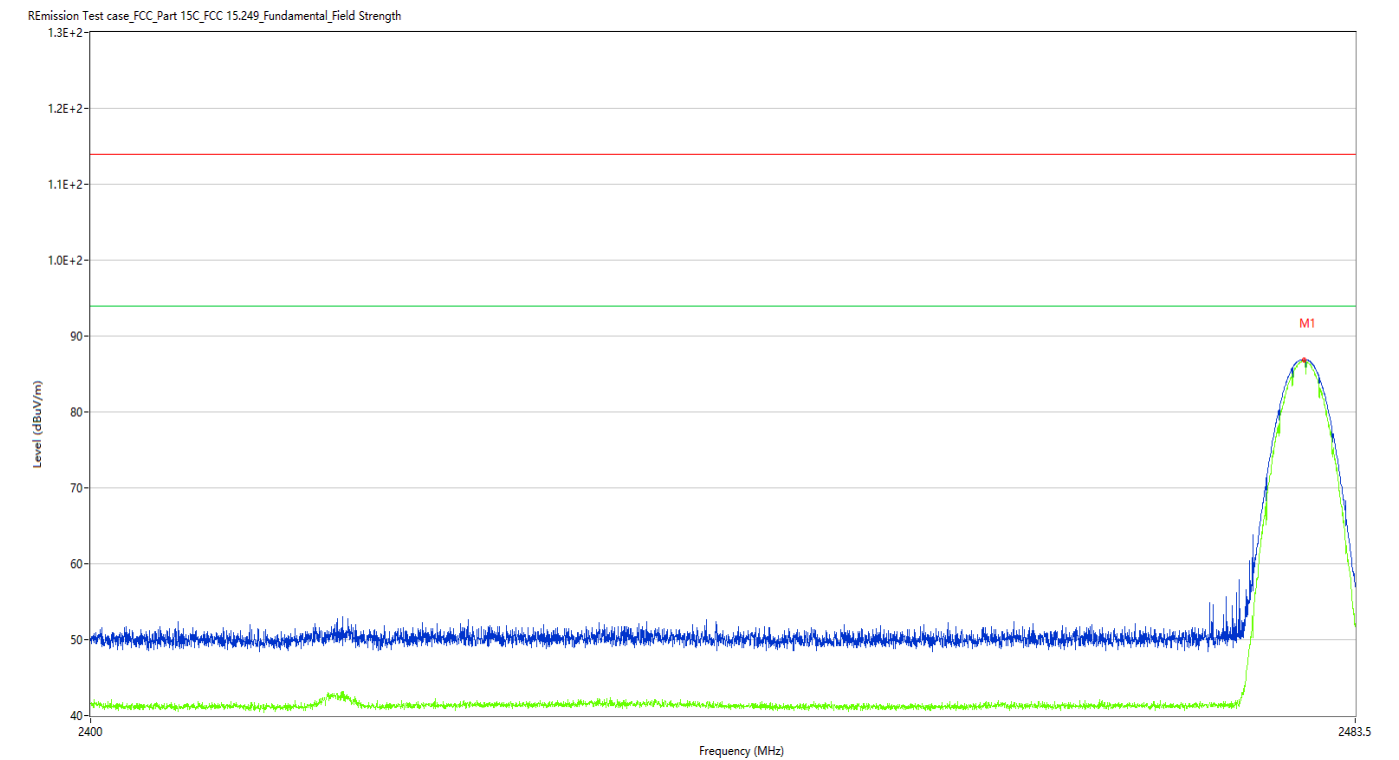
Figure 4: Test plots of Field strength of fundamental, 2442MHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2442.000	85.14	-9.61	114.0	28.86	Peak	273.50	100	Vertical	Pass
1**	2442.000	84.98	-9.61	94.0	9.02	AV	273.50	100	Vertical	Pass

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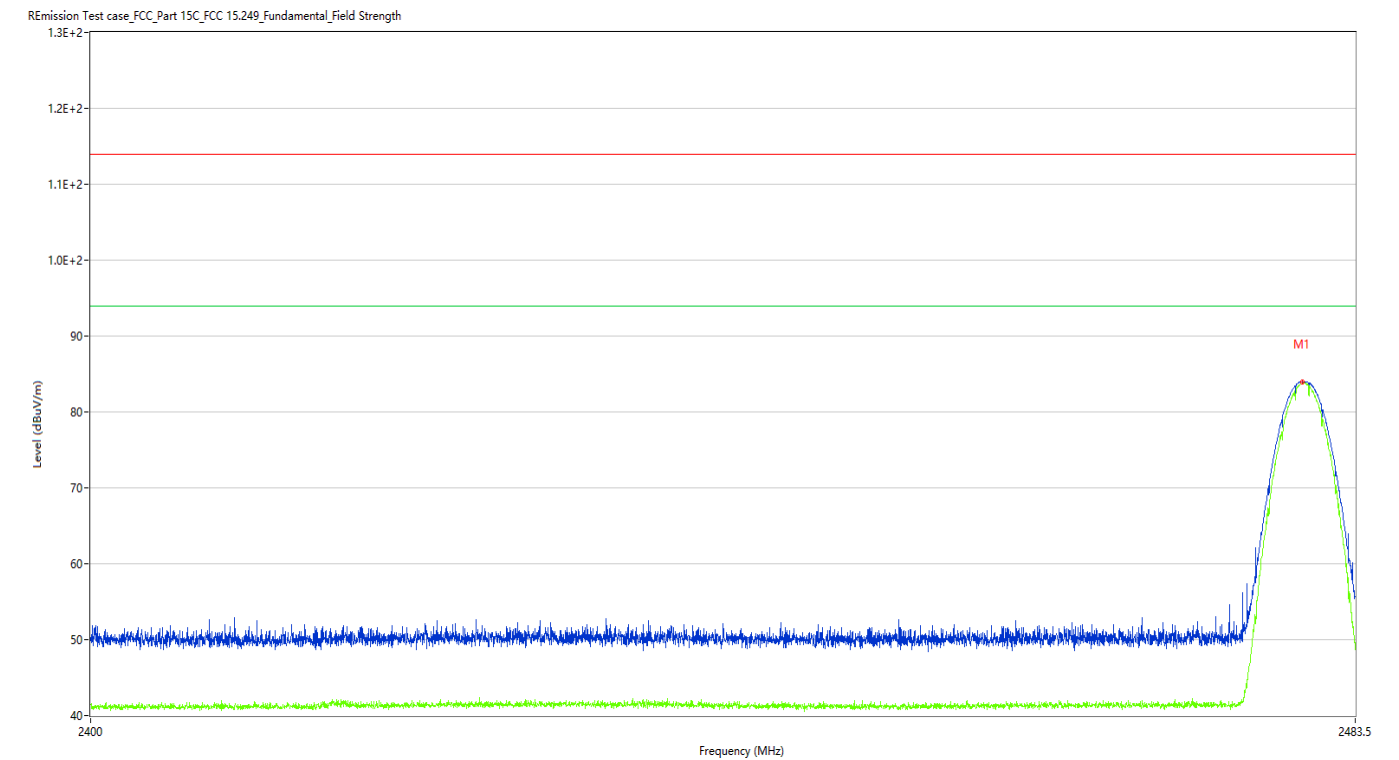
Figure 5: Test plots of Field strength of fundamental, 2480MHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2480.056	86.86	-9.48	114.0	27.14	Peak	83.20	100	Horizontal	Pass
1**	2480.056	86.72	-9.48	94.0	7.28	AV	83.20	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	2479.930	83.95	-9.48	114.0	30.05	Peak	136.30	100	Vertical	Pass
1**	2479.930	83.76	-9.48	94.0	10.24	AV	136.30	100	Vertical	Pass

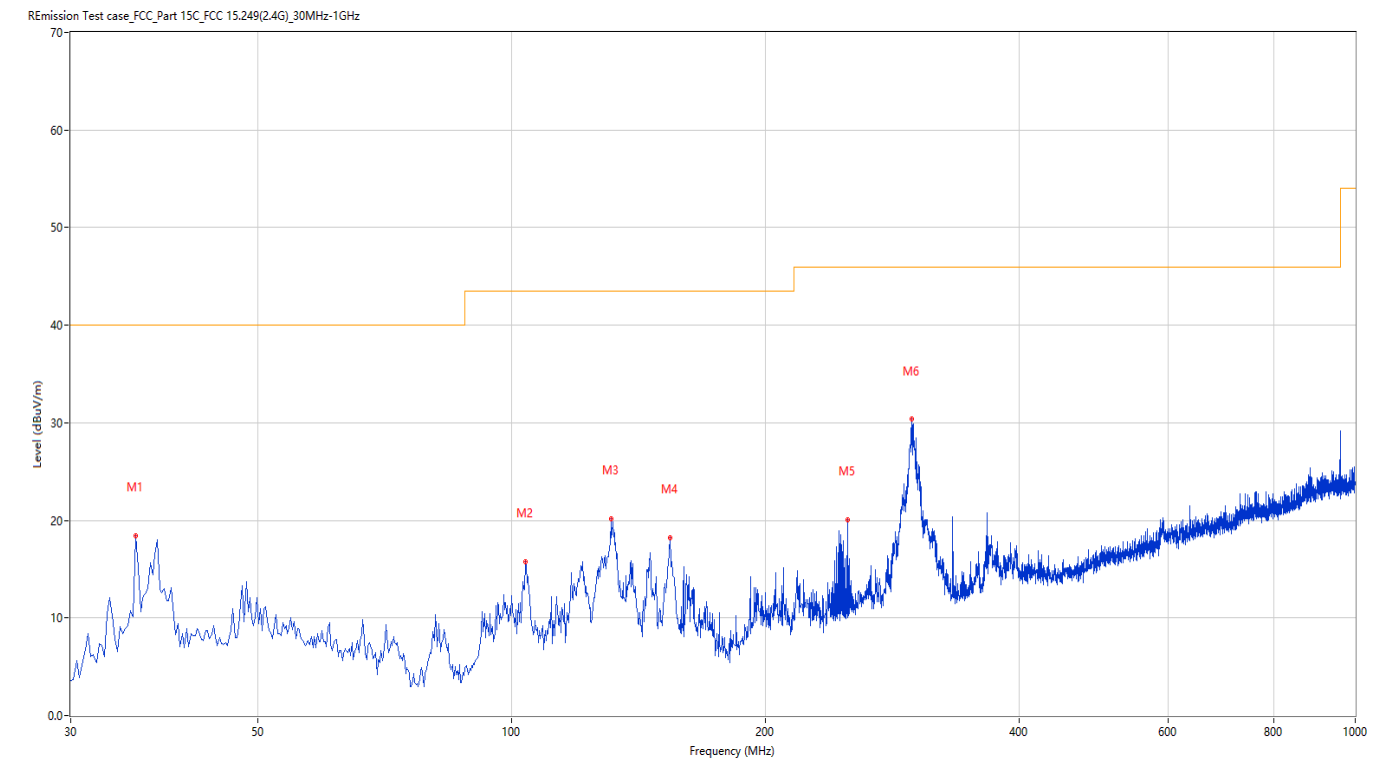
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Figure 7: Test plots of Field strength of harmonics, 2403MHz, 30MHz-1GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	35.819	18.41	-27.78	40.0	21.59	Peak	0.00	200	Horizontal	Pass
2	103.702	15.78	-26.56	43.5	27.72	Peak	106.20	200	Horizontal	Pass
3	131.097	20.13	-29.53	43.5	23.37	Peak	257.60	200	Horizontal	Pass
4	154.129	18.18	-29.76	43.5	25.32	Peak	243.50	200	Horizontal	Pass
5	249.893	20.03	-24.60	46.0	25.97	Peak	292.00	150	Horizontal	Pass
6	297.896	30.36	-23.83	46.0	15.64	Peak	0.00	200	Horizontal	Pass

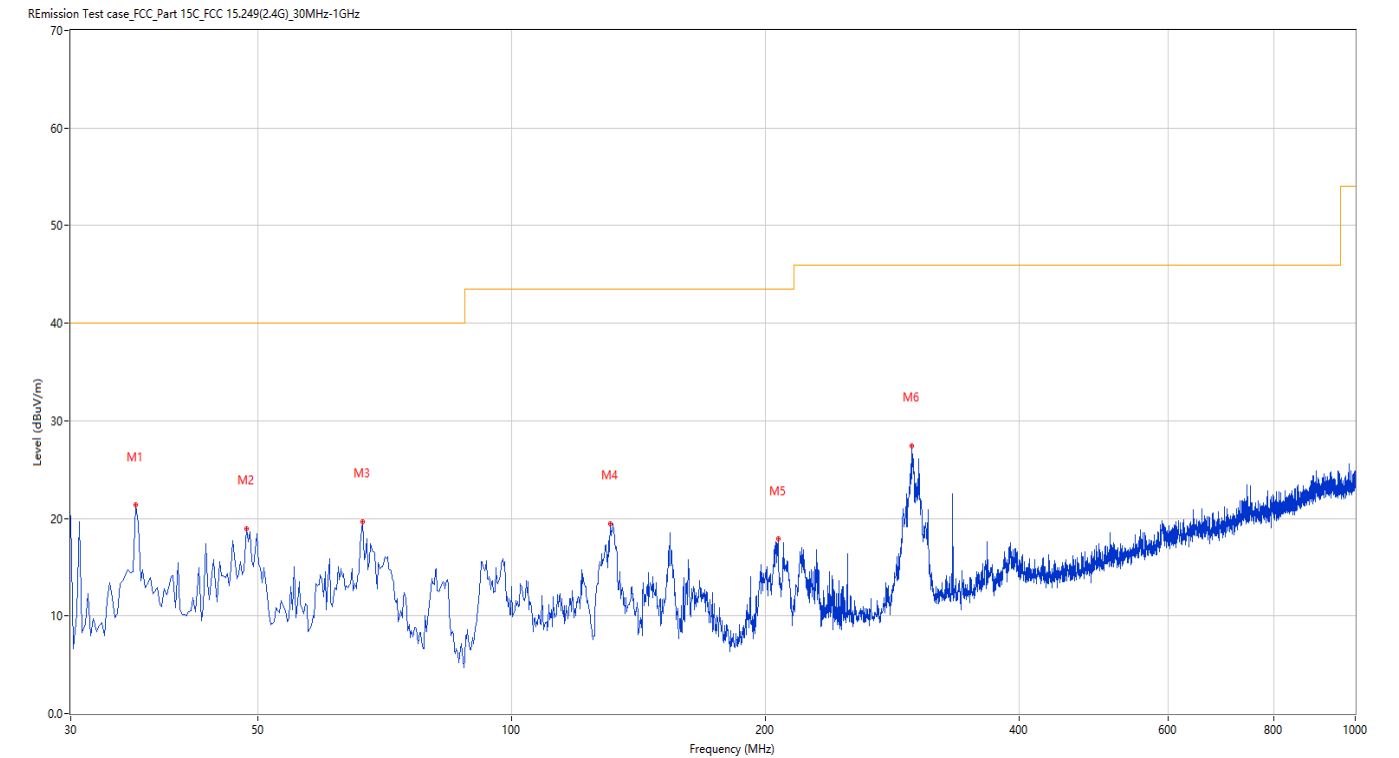
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Figure 8: Test plots of Field strength of harmonics, 2403MHz, 30MHz-1GHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	35.819	21.35	-27.78	40.0	18.65	Peak	0.00	200	Vertical	Pass
2	48.425	18.97	-25.08	40.0	21.03	Peak	56.60	100	Vertical	Pass
3	66.608	19.68	-28.18	40.0	20.32	Peak	0.00	100	Vertical	Pass
4	130.855	19.48	-29.51	43.5	24.02	Peak	124.70	100	Vertical	Pass
5	206.981	17.87	-26.79	43.5	25.63	Peak	177.60	100	Vertical	Pass
6	298.138	27.44	-23.82	46.0	18.56	Peak	352.90	100	Vertical	Pass

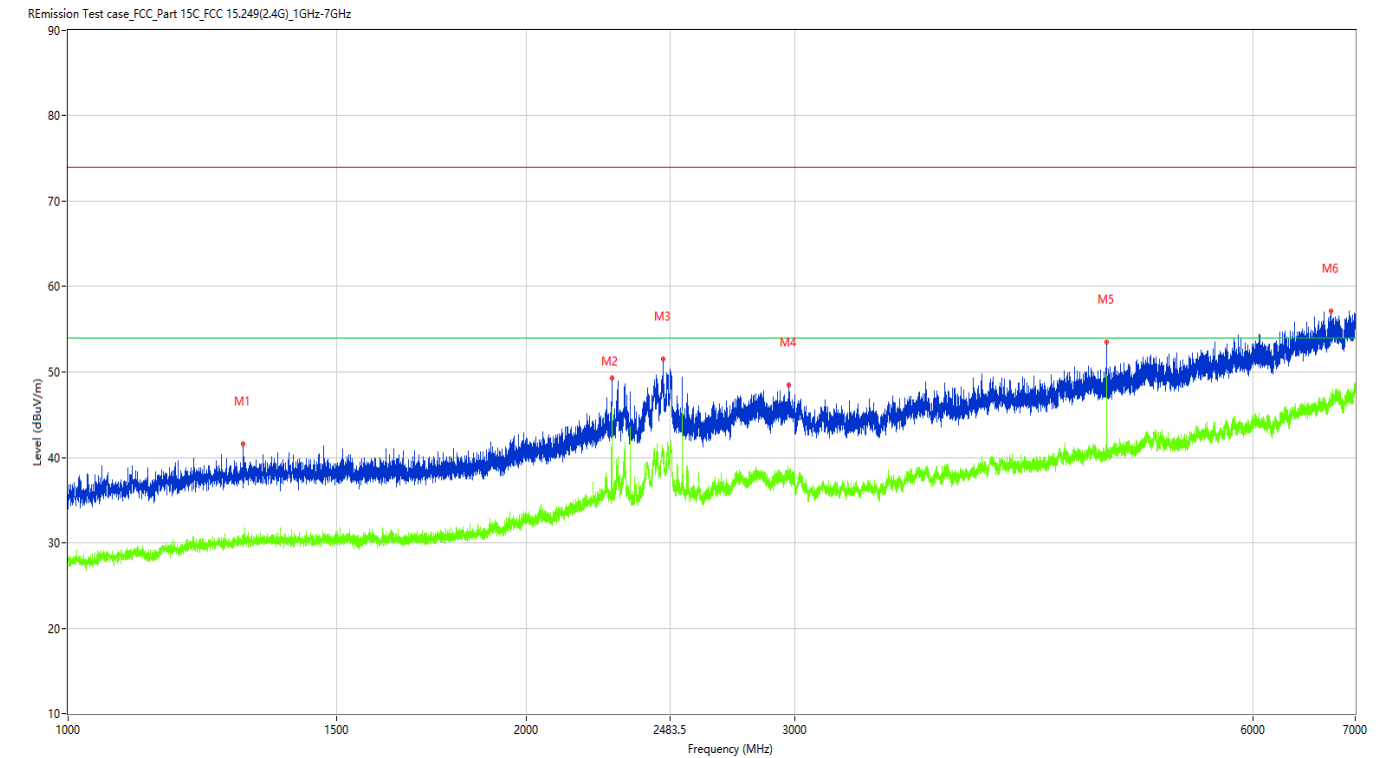
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Figure 9: Test plots of Field strength of harmonics, 2403MHz, 1GHz-7GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1302.750	41.60	-12.72	74.0	32.40	Peak	71.30	100	Horizontal	Pass
1**	1302.750	29.85	-12.72	54.0	24.15	AV	71.30	100	Horizontal	Pass
2	2275.000	49.31	-7.38	74.0	24.69	Peak	166.50	100	Horizontal	Pass
2**	2275.000	45.89	-7.38	54.0	8.11	AV	166.50	100	Horizontal	Pass
3	2457.500	51.50	-2.61	74.0	22.50	Peak	166.50	100	Horizontal	Pass
3**	2457.500	40.97	-2.61	54.0	13.03	AV	166.50	100	Horizontal	Pass
4	2973.500	48.47	-3.26	74.0	25.53	Peak	166.50	100	Horizontal	Pass
4**	2973.500	38.22	-3.26	54.0	15.78	AV	166.50	100	Horizontal	Pass
5	4805.500	53.50	-0.55	74.0	20.50	Peak	198.60	100	Horizontal	Pass
5**	4805.500	47.87	-0.55	54.0	6.13	AV	198.60	100	Horizontal	Pass
6	6744.500	57.18	4.79	74.0	16.82	Peak	344.80	100	Horizontal	Pass
6**	6744.500	46.65	4.79	54.0	7.35	AV	344.80	100	Horizontal	Pass

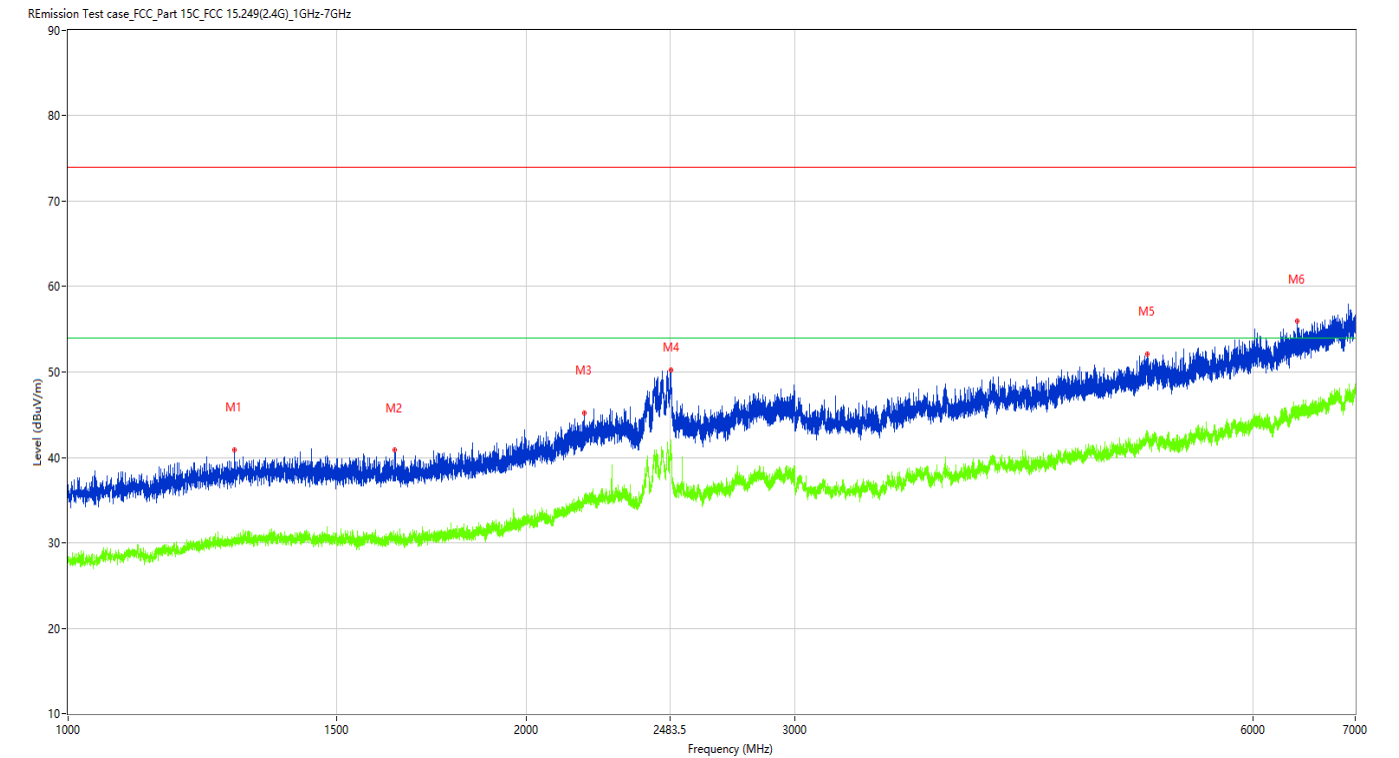
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Figure 10: Test plots of Field strength of harmonics, 2403MHz, 1GHz-7GHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1286.000	40.90	-12.90	74.0	33.10	Peak	179.10	100	Vertical	Pass
1**	1286.000	30.65	-12.90	54.0	23.35	AV	179.10	100	Vertical	Pass
2	1637.750	40.82	-12.97	74.0	33.18	Peak	80.80	100	Vertical	Pass
2**	1637.750	30.28	-12.97	54.0	23.72	AV	80.80	100	Vertical	Pass
3	2182.500	45.20	-8.15	74.0	28.80	Peak	179.10	100	Vertical	Pass
3**	2182.500	35.60	-8.15	54.0	18.40	AV	179.10	100	Vertical	Pass
4	2488.500	50.18	-1.87	74.0	23.82	Peak	80.80	100	Vertical	Pass
4**	2488.500	41.37	-1.87	54.0	12.63	AV	80.80	100	Vertical	Pass
5	5113.500	52.12	1.31	74.0	21.88	Peak	352.30	100	Vertical	Pass
5**	5113.500	42.05	1.31	54.0	11.95	AV	352.30	100	Vertical	Pass
6	6409.000	56.01	3.74	74.0	17.99	Peak	93.30	100	Vertical	Pass
6**	6409.000	45.30	3.74	54.0	8.70	AV	93.30	100	Vertical	Pass

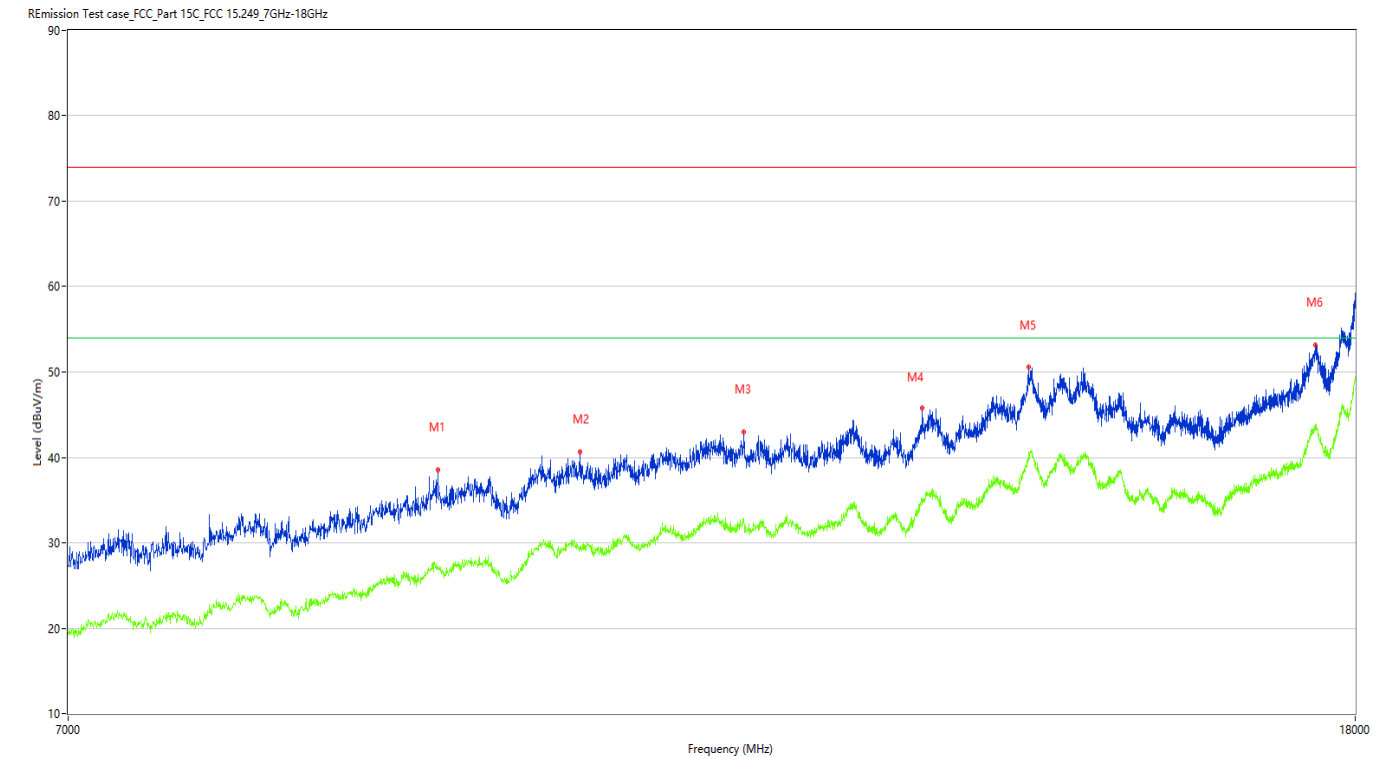
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Figure 11: Test plots of Field strength of harmonics, 2403MHz, 7GHz-18GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	9180.750	38.50	7.15	74.0	35.50	Peak	287.50	100	Horizontal	Pass
1**	9180.750	27.25	7.15	54.0	26.75	AV	287.50	100	Horizontal	Pass
2	10190.000	40.63	9.16	74.0	33.37	Peak	126.30	100	Horizontal	Pass
2**	10190.000	29.50	9.16	54.0	24.50	AV	126.30	100	Horizontal	Pass
3	11493.500	42.95	11.90	74.0	31.05	Peak	272.20	100	Horizontal	Pass
3**	11493.500	32.56	11.90	54.0	21.44	AV	272.20	100	Horizontal	Pass
4	13102.250	45.78	13.77	74.0	28.22	Peak	190.30	100	Horizontal	Pass
4**	13102.250	35.17	13.77	54.0	18.83	AV	190.30	100	Horizontal	Pass
5	14161.000	50.55	18.90	74.0	23.45	Peak	190.30	100	Horizontal	Pass
5**	14161.000	39.74	18.90	54.0	14.26	AV	190.30	100	Horizontal	Pass
6	17480.249	53.18	21.45	74.0	20.82	Peak	350.00	100	Horizontal	Pass
6**	17480.249	43.18	21.45	54.0	10.82	AV	350.00	100	Horizontal	Pass

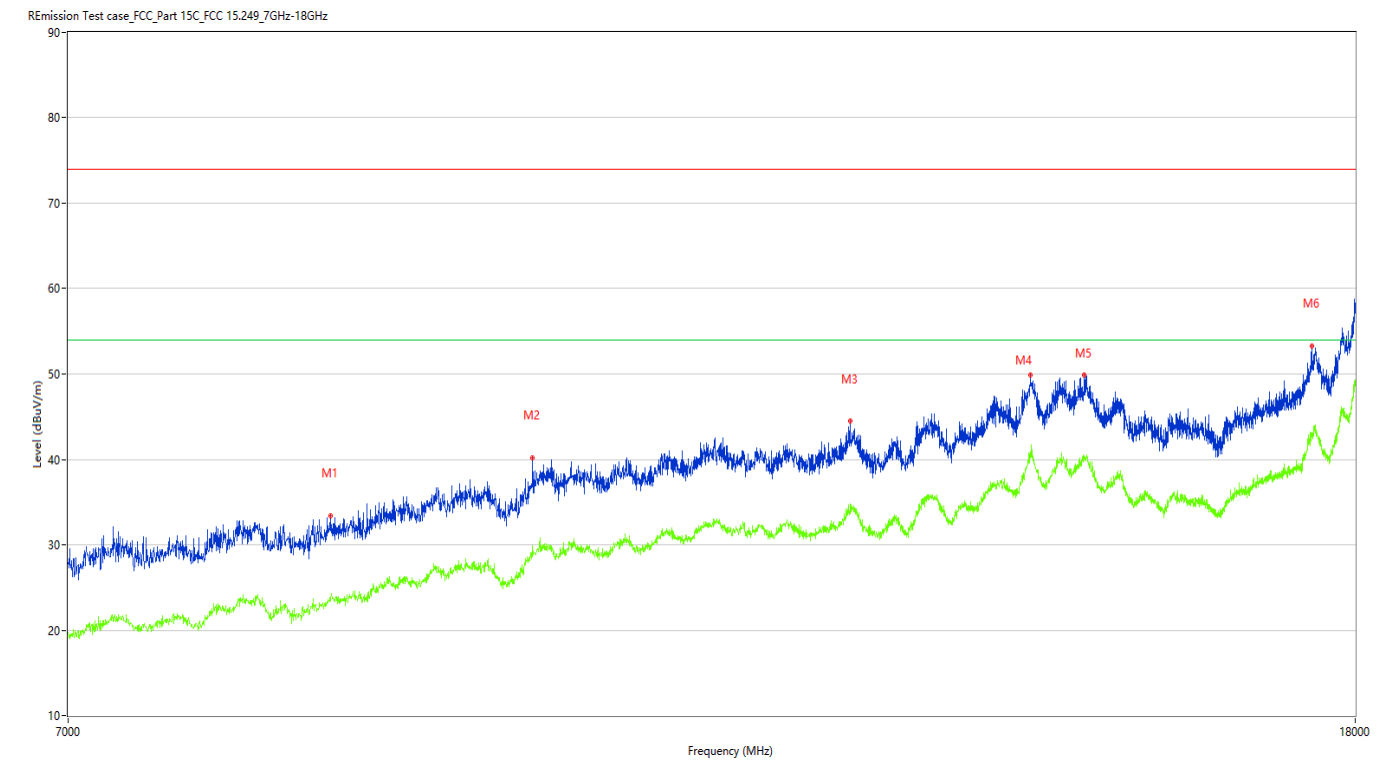
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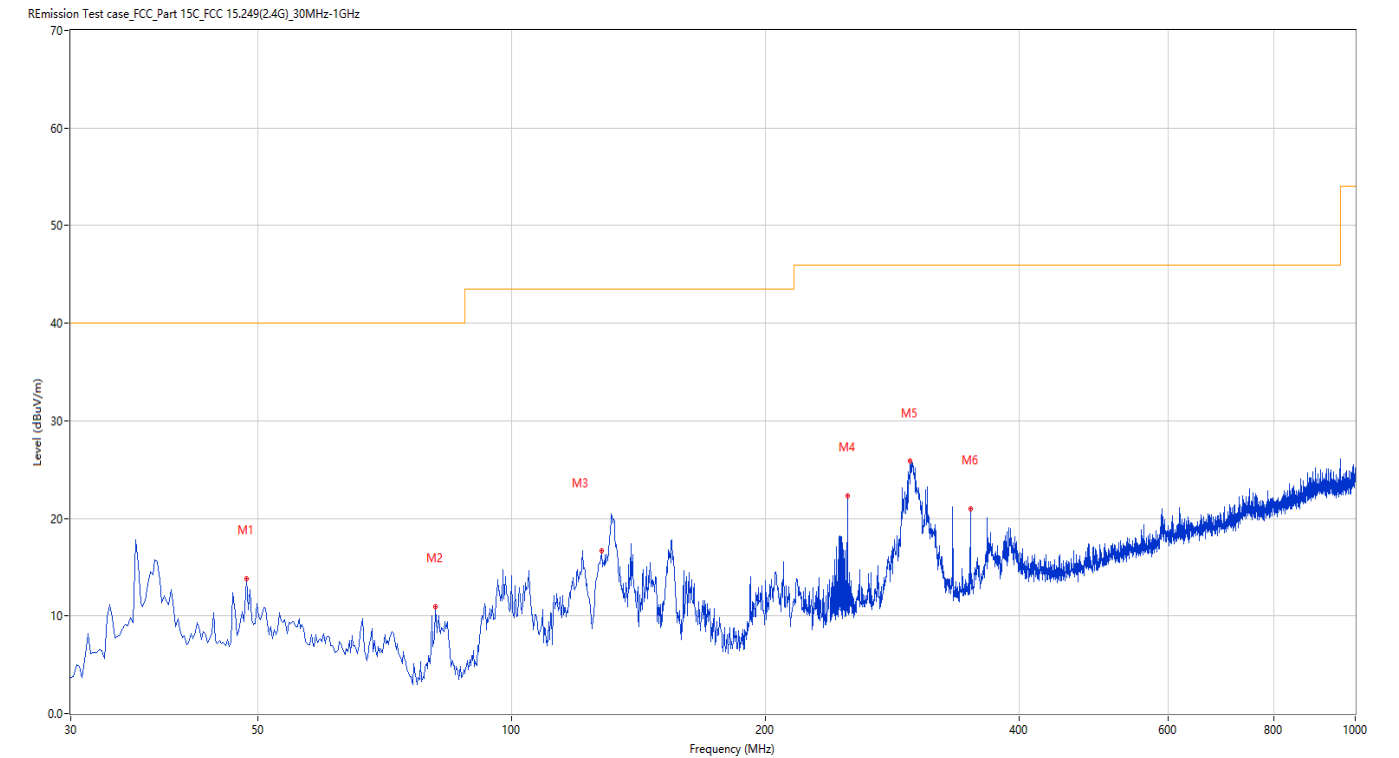
Figure 12: Test plots of Field strength of harmonics, 2403MHz, 7GHz-18GHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	8485.000	33.40	3.79	74.0	40.60	Peak	126.90	100	Vertical	Pass
1**	8485.000	23.50	3.79	54.0	30.50	AV	126.90	100	Vertical	Pass
2	9843.500	40.18	8.80	74.0	33.82	Peak	360.00	100	Vertical	Pass
2**	9843.500	29.89	8.80	54.0	24.11	AV	360.00	100	Vertical	Pass
3	12425.750	44.47	12.38	74.0	29.53	Peak	254.30	100	Vertical	Pass
3**	12425.750	34.82	12.38	54.0	19.18	AV	254.30	100	Vertical	Pass
4	14183.000	49.91	19.60	74.0	24.09	Peak	192.50	100	Vertical	Pass
4**	14183.000	40.17	19.60	54.0	13.83	AV	192.50	100	Vertical	Pass
5	14755.000	49.87	18.77	74.0	24.13	Peak	360.00	100	Vertical	Pass
5**	14755.000	40.31	18.77	54.0	13.69	AV	360.00	100	Vertical	Pass
6	17433.500	53.23	20.56	74.0	20.77	Peak	360.00	100	Vertical	Pass
6**	17433.500	43.05	20.56	54.0	10.95	AV	360.00	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	48.425	13.86	-25.08	40.0	26.14	Peak	29.80	150	Horizontal	Pass
2	81.155	10.92	-31.42	40.0	29.08	Peak	303.90	200	Horizontal	Pass
3	127.946	16.68	-29.33	43.5	26.82	Peak	258.90	200	Horizontal	Pass
4	249.893	22.35	-24.60	46.0	23.65	Peak	281.40	100	Horizontal	Pass
5	296.926	25.90	-23.86	46.0	20.10	Peak	0.00	150	Horizontal	Pass
6	349.778	21.00	-21.67	46.0	25.00	Peak	0.00	150	Horizontal	Pass

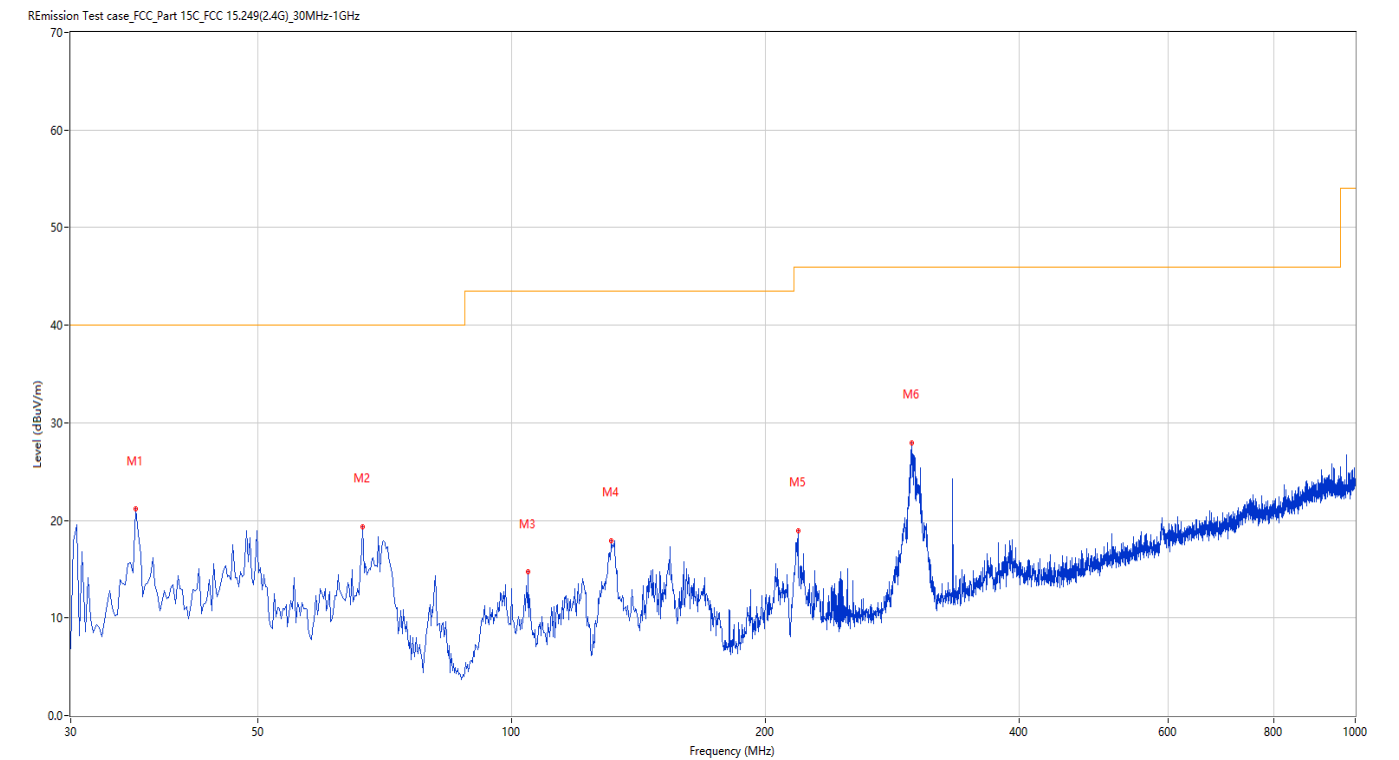
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Figure 14: Test plots of Field strength of harmonics, 2442MHz, 30MHz-1GHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	35.819	21.15	-27.78	40.0	18.85	Peak	360.00	150	Vertical	Pass
2	66.608	19.36	-28.18	40.0	20.64	Peak	138.80	100	Vertical	Pass
3	104.671	14.70	-26.56	43.5	28.80	Peak	191.80	200	Vertical	Pass
4	131.340	17.92	-29.55	43.5	25.58	Peak	169.70	100	Vertical	Pass
5	218.375	18.95	-26.42	46.0	27.05	Peak	0.00	200	Vertical	Pass
6	298.138	27.91	-23.82	46.0	18.09	Peak	360.00	150	Vertical	Pass

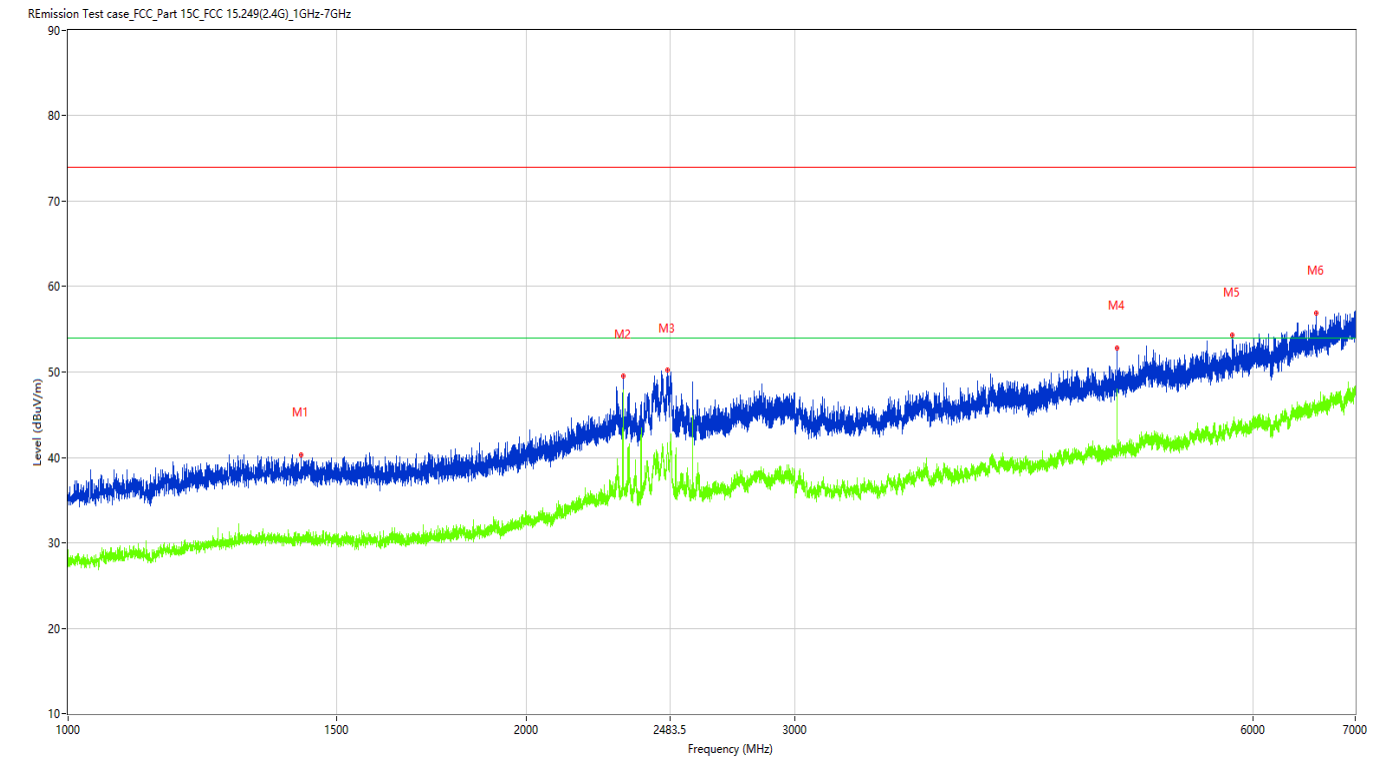
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Figure 15: Test plots of Field strength of harmonics, 2442MHz, 1GHz-7GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1422.250	40.33	-12.67	74.0	33.67	Peak	297.70	100	Horizontal	Pass
1**	1422.250	29.83	-12.67	54.0	24.17	AV	297.70	100	Horizontal	Pass
2	2313.750	49.53	-7.33	74.0	24.47	Peak	99.00	100	Horizontal	Pass
2**	2313.750	47.11	-7.33	54.0	6.89	AV	99.00	100	Horizontal	Pass
3	2474.750	50.19	-2.15	74.0	23.81	Peak	282.40	100	Horizontal	Pass
3**	2474.750	41.72	-2.15	54.0	12.28	AV	282.40	100	Horizontal	Pass
4	4884.500	52.78	0.07	74.0	21.22	Peak	184.00	100	Horizontal	Pass
4**	4884.500	46.48	0.07	54.0	7.52	AV	184.00	100	Horizontal	Pass
5	5809.500	54.32	2.36	74.0	19.68	Peak	134.50	100	Horizontal	Pass
5**	5809.500	43.66	2.36	54.0	10.34	AV	134.50	100	Horizontal	Pass
6	6595.500	56.87	4.30	74.0	17.13	Peak	52.60	100	Horizontal	Pass
6**	6595.500	45.77	4.30	54.0	8.23	AV	52.60	100	Horizontal	Pass

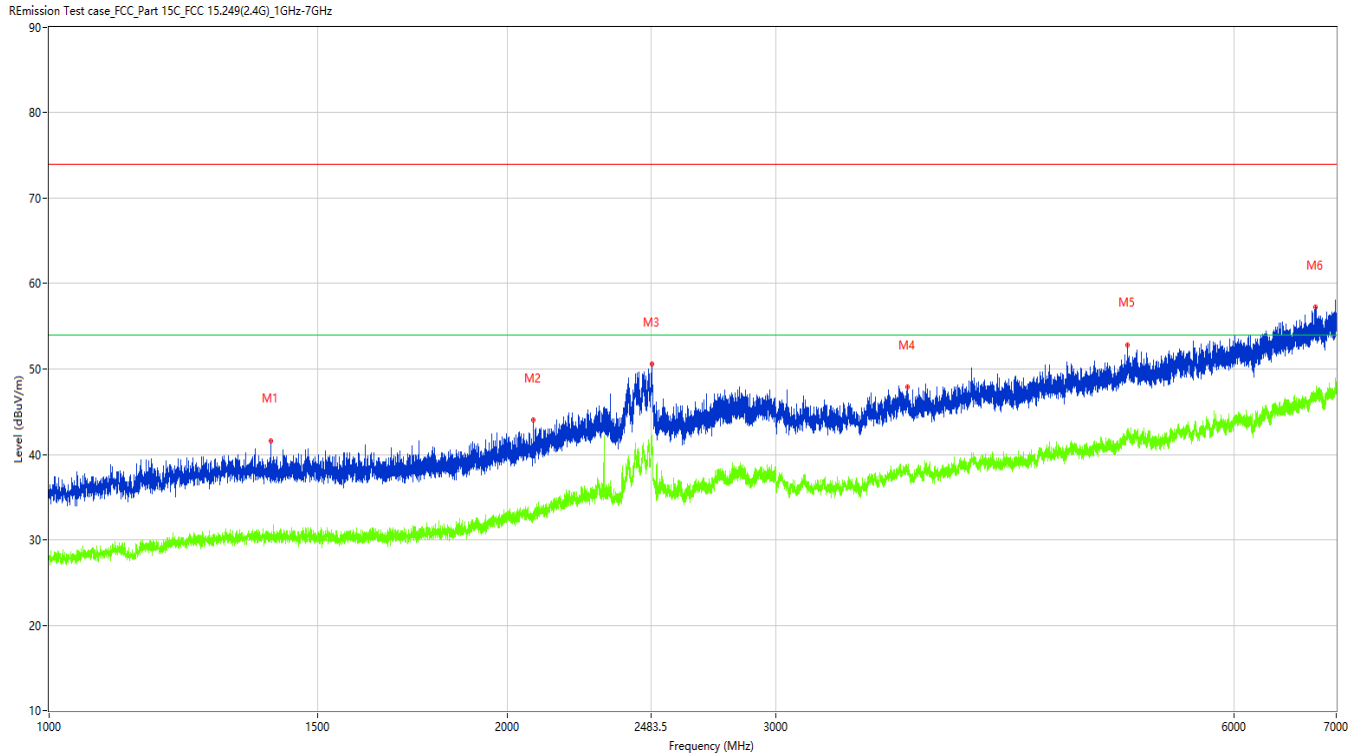
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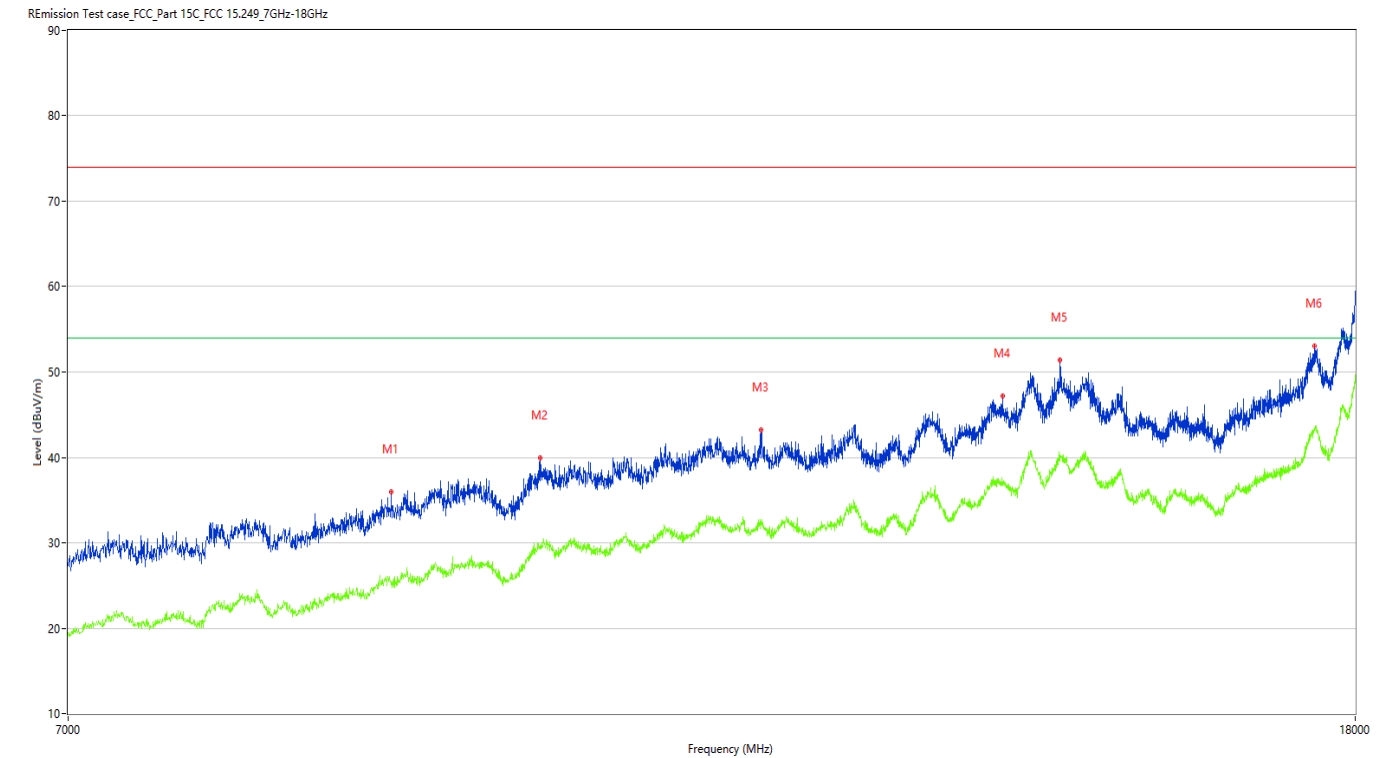
Figure 16: Test plots of Field strength of harmonics, 2442MHz, 1GHz-7GHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1397.500	41.57	-12.76	74.0	32.43	Peak	129.50	100	Vertical	Pass
1**	1397.500	30.04	-12.76	54.0	23.96	AV	129.50	100	Vertical	Pass
2	2078.250	44.05	-9.57	74.0	29.95	Peak	145.90	100	Vertical	Pass
2**	2078.250	32.88	-9.57	54.0	21.12	AV	145.90	100	Vertical	Pass
3	2488.500	50.55	-1.87	74.0	23.45	Peak	360.00	100	Vertical	Pass
3**	2488.500	40.16	-1.87	54.0	13.84	AV	360.00	100	Vertical	Pass
4	3661.500	47.95	-1.64	74.0	26.05	Peak	0.00	100	Vertical	Pass
4**	3661.500	38.44	-1.64	54.0	15.56	AV	0.00	100	Vertical	Pass
5	5108.000	52.86	1.30	74.0	21.14	Peak	190.70	100	Vertical	Pass
5**	5108.000	42.57	1.30	54.0	11.43	AV	190.70	100	Vertical	Pass
6	6782.500	57.25	5.19	74.0	16.75	Peak	300.90	100	Vertical	Pass
6**	6782.500	46.30	5.19	54.0	7.70	AV	300.90	100	Vertical	Pass

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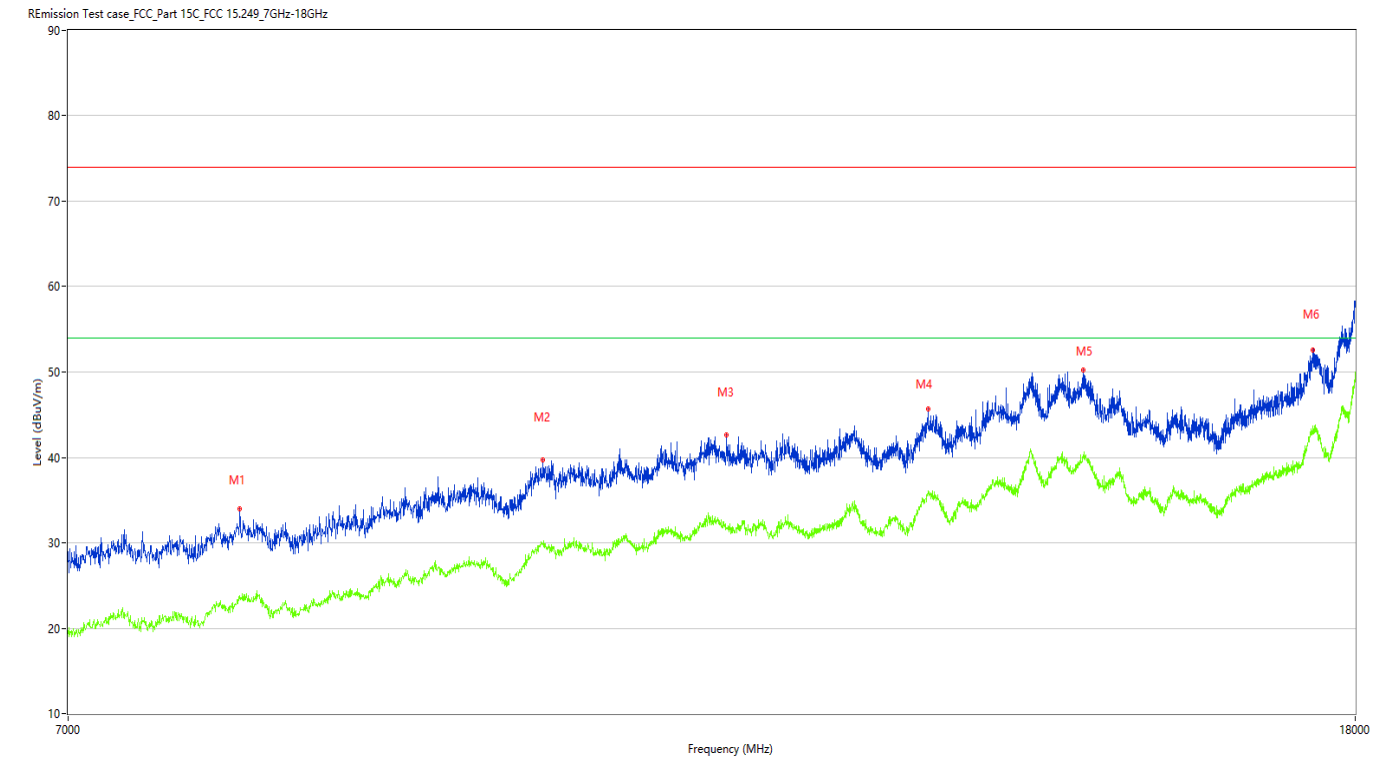
Figure 17: Test plots of Field strength of harmonics, 2442MHz, 7GHz-18GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	8875.500	36.02	5.36	74.0	37.98	Peak	0.00	100	Horizontal	Pass
1**	8875.500	25.36	5.36	54.0	28.64	AV	0.00	100	Horizontal	Pass
2	9898.500	39.88	9.68	74.0	34.12	Peak	111.80	100	Horizontal	Pass
2**	9898.500	29.59	9.68	54.0	24.41	AV	111.80	100	Horizontal	Pass
3	11636.500	43.17	11.13	74.0	30.83	Peak	360.00	100	Horizontal	Pass
3**	11636.500	32.34	11.13	54.0	21.66	AV	360.00	100	Horizontal	Pass
4	13894.250	47.15	15.48	74.0	26.85	Peak	188.80	100	Horizontal	Pass
4**	13894.250	36.82	15.48	54.0	17.18	AV	188.80	100	Horizontal	Pass
5	14496.500	51.45	17.73	74.0	22.55	Peak	49.60	100	Horizontal	Pass
5**	14496.500	39.85	17.73	54.0	14.15	AV	49.60	100	Horizontal	Pass
6	17472.000	53.05	21.29	74.0	20.95	Peak	360.00	100	Horizontal	Pass
6**	17472.000	43.42	21.29	54.0	10.58	AV	360.00	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	7940.500	33.96	3.29	74.0	40.04	Peak	65.90	100	Vertical	Pass
1**	7940.500	23.86	3.29	54.0	30.14	AV	65.90	100	Vertical	Pass
2	9917.750	39.76	9.92	74.0	34.24	Peak	268.10	100	Vertical	Pass
2**	9917.750	29.90	9.92	54.0	24.10	AV	268.10	100	Vertical	Pass
3	11350.500	42.66	11.94	74.0	31.34	Peak	123.20	100	Vertical	Pass
3**	11350.500	31.76	11.94	54.0	22.24	AV	123.20	100	Vertical	Pass
4	13157.250	45.73	13.99	74.0	28.27	Peak	236.80	100	Vertical	Pass
4**	13157.250	36.11	13.99	54.0	17.89	AV	236.80	100	Vertical	Pass
5	14741.250	50.26	18.61	74.0	23.74	Peak	268.10	100	Vertical	Pass
5**	14741.250	40.28	18.61	54.0	13.72	AV	268.10	100	Vertical	Pass
6	17444.499	52.53	20.77	74.0	21.47	Peak	123.20	100	Vertical	Pass
6**	17444.499	43.25	20.77	54.0	10.75	AV	123.20	100	Vertical	Pass

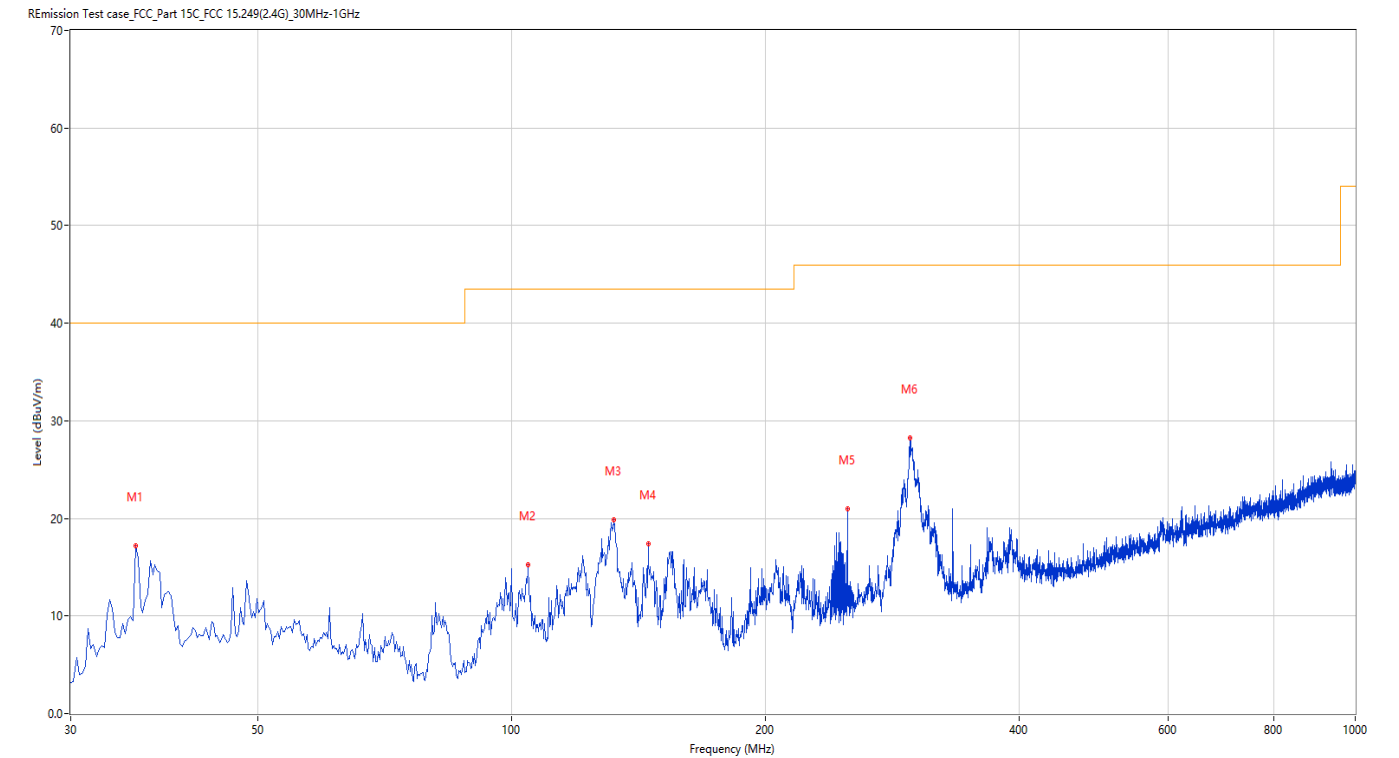
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Figure 19: Test plots of Field strength of harmonics, 2480MHz, 30MHz-1GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	35.819	17.24	-27.78	40.0	22.76	Peak	0.00	150	Horizontal	Pass
2	104.671	15.28	-26.56	43.5	28.22	Peak	106.30	200	Horizontal	Pass
3	132.067	19.84	-29.61	43.5	23.66	Peak	242.80	200	Horizontal	Pass
4	145.159	17.41	-30.01	43.5	26.09	Peak	63.90	150	Horizontal	Pass
5	249.893	21.02	-24.60	46.0	24.98	Peak	305.70	200	Horizontal	Pass
6	296.683	28.22	-23.87	46.0	17.78	Peak	0.00	150	Horizontal	Pass

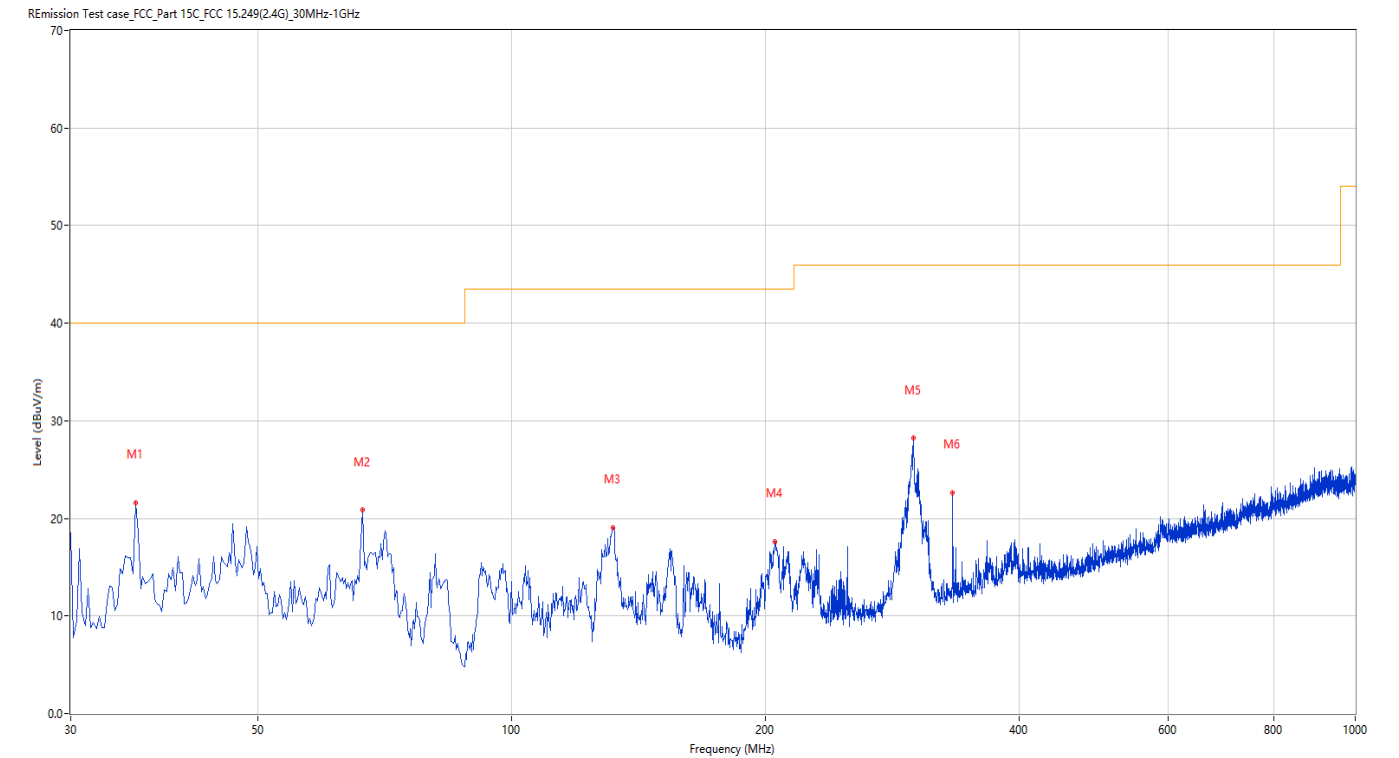
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Figure 20: Test plots of Field strength of harmonics, 2480MHz, 30MHz-1GHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	35.819	21.58	-27.78	40.0	18.42	Peak	0.00	150	Vertical	Pass
2	66.608	20.84	-28.18	40.0	19.16	Peak	108.00	100	Vertical	Pass
3	131.825	19.00	-29.59	43.5	24.50	Peak	210.70	100	Vertical	Pass
4	205.284	17.65	-26.74	43.5	25.85	Peak	183.90	100	Vertical	Pass
5	299.108	28.20	-23.79	46.0	17.80	Peak	360.00	200	Vertical	Pass
6	333.049	22.60	-22.53	46.0	23.40	Peak	183.90	100	Vertical	Pass

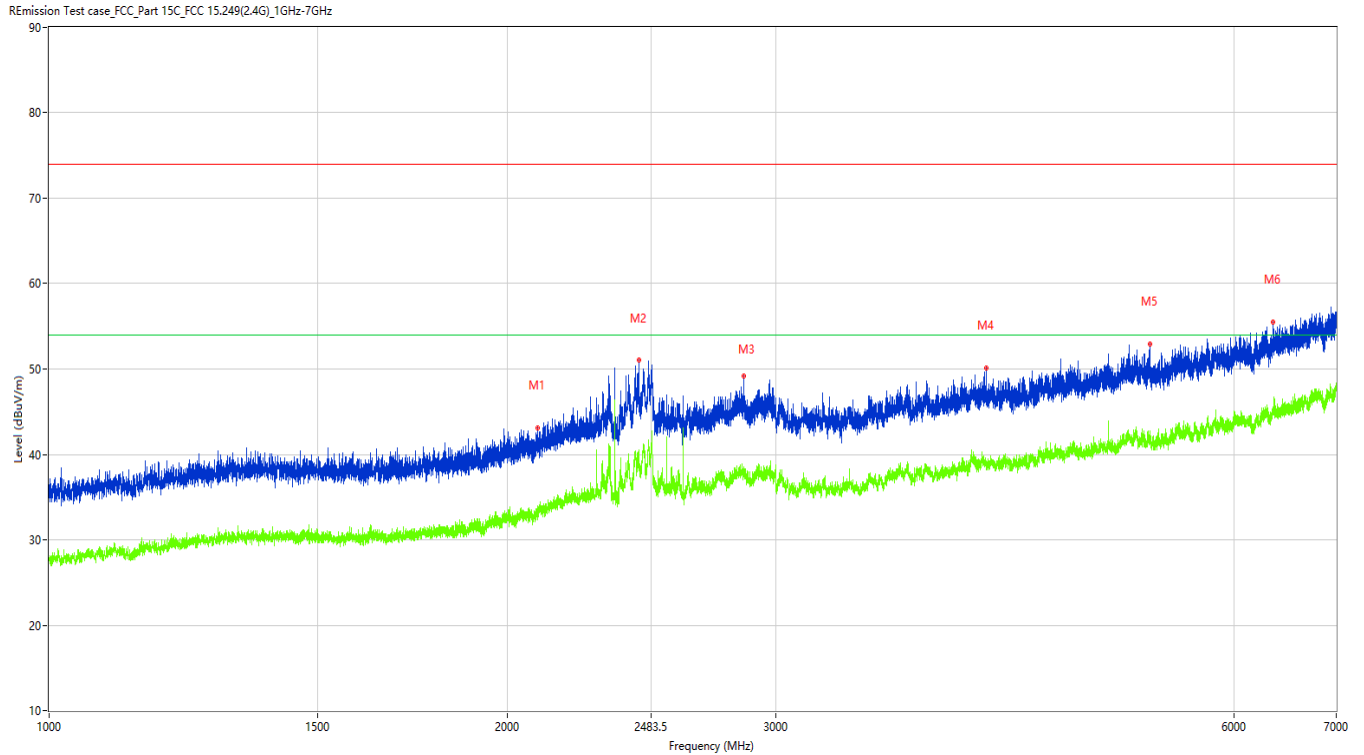
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Figure 21: Test plots of Field strength of harmonics, 2480MHz, 1GHz-7GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2094.250	43.11	-9.37	74.0	30.89	Peak	360.00	100	Horizontal	Pass
1**	2094.250	33.24	-9.37	54.0	20.76	AV	360.00	100	Horizontal	Pass
2	2438.000	51.00	-3.10	74.0	23.00	Peak	360.00	100	Horizontal	Pass
2**	2438.000	40.49	-3.10	54.0	13.51	AV	360.00	100	Horizontal	Pass
3	2858.000	49.12	-3.83	74.0	24.88	Peak	158.20	100	Horizontal	Pass
3**	2858.000	38.42	-3.83	54.0	15.58	AV	158.20	100	Horizontal	Pass
4	4125.000	50.12	-1.29	74.0	23.88	Peak	38.10	100	Horizontal	Pass
4**	4125.000	38.64	-1.29	54.0	15.36	AV	38.10	100	Horizontal	Pass
5	5282.000	52.93	0.71	74.0	21.07	Peak	24.40	100	Horizontal	Pass
5**	5282.000	41.80	0.71	54.0	12.20	AV	24.40	100	Horizontal	Pass
6	6365.500	55.51	3.52	74.0	18.49	Peak	53.80	100	Horizontal	Pass
6**	6365.500	45.60	3.52	54.0	8.40	AV	53.80	100	Horizontal	Pass

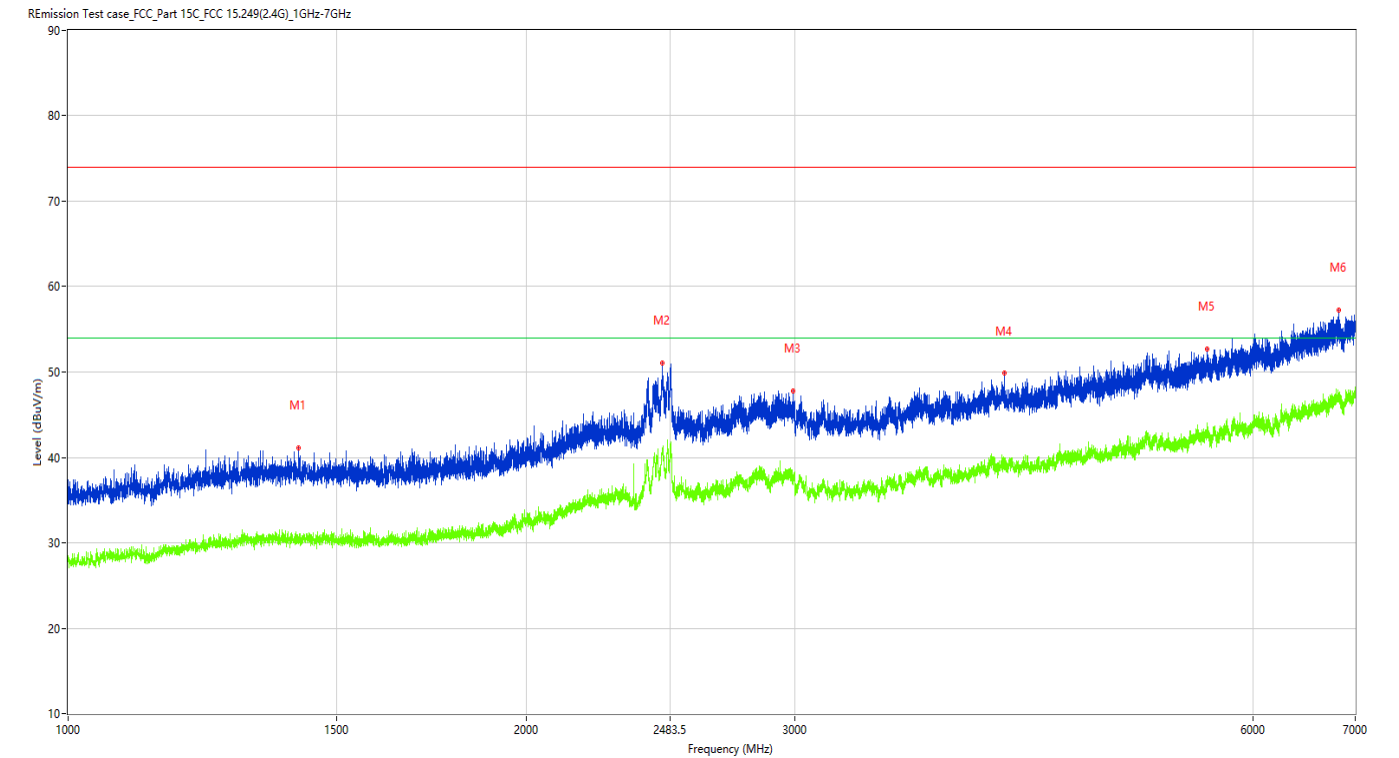
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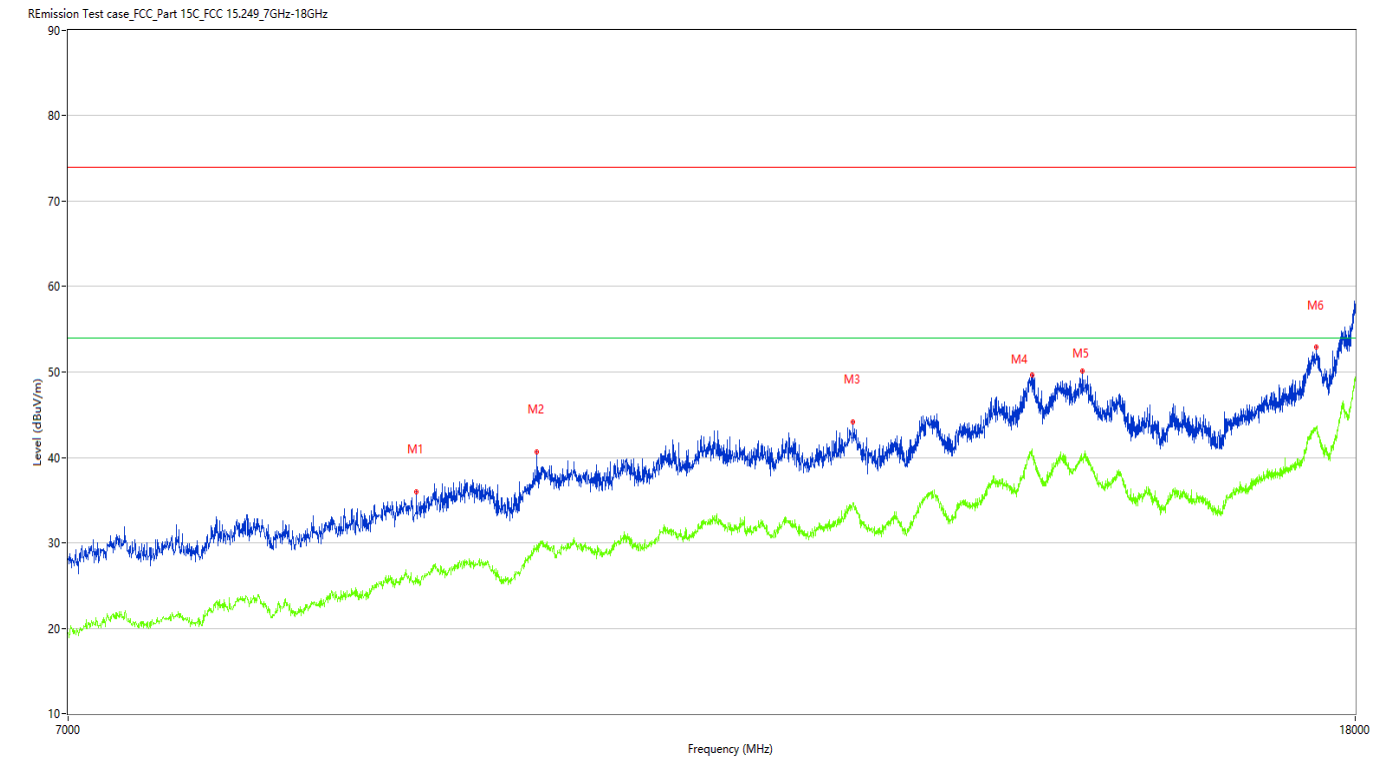
Figure 22: Test plots of Field strength of harmonics, 2480MHz, 1GHz-7GHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1416.500	41.14	-12.70	74.0	32.86	Peak	290.00	100	Vertical	Pass
1**	1416.500	30.34	-12.70	54.0	23.66	AV	290.00	100	Vertical	Pass
2	2456.250	51.06	-2.65	74.0	22.94	Peak	360.00	100	Vertical	Pass
2**	2456.250	40.97	-2.65	54.0	13.03	AV	360.00	100	Vertical	Pass
3	2993.000	47.80	-3.08	74.0	26.20	Peak	290.00	100	Vertical	Pass
3**	2993.000	37.73	-3.08	54.0	16.27	AV	290.00	100	Vertical	Pass
4	4118.000	49.85	-1.18	74.0	24.15	Peak	57.70	100	Vertical	Pass
4**	4118.000	39.23	-1.18	54.0	14.77	AV	57.70	100	Vertical	Pass
5	5599.000	52.67	1.59	74.0	21.33	Peak	91.50	100	Vertical	Pass
5**	5599.000	42.97	1.59	54.0	11.03	AV	91.50	100	Vertical	Pass
6	6830.500	57.24	5.09	74.0	16.76	Peak	304.00	100	Vertical	Pass
6**	6830.500	47.19	5.09	54.0	6.81	AV	304.00	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	9040.500	35.91	6.67	74.0	38.09	Peak	0.00	100	Horizontal	Pass
1**	9040.500	25.83	6.67	54.0	28.17	AV	0.00	100	Horizontal	Pass
2	9873.750	40.70	9.27	74.0	33.30	Peak	148.20	100	Horizontal	Pass
2**	9873.750	29.81	9.27	54.0	24.19	AV	148.20	100	Horizontal	Pass
3	12450.500	44.15	12.51	74.0	29.85	Peak	271.10	100	Horizontal	Pass
3**	12450.500	34.41	12.51	54.0	19.59	AV	271.10	100	Horizontal	Pass
4	14205.000	49.66	19.38	74.0	24.34	Peak	195.90	100	Horizontal	Pass
4**	14205.000	40.32	19.38	54.0	13.68	AV	195.90	100	Horizontal	Pass
5	14733.000	50.06	18.51	74.0	23.94	Peak	319.50	100	Horizontal	Pass
5**	14733.000	39.95	18.51	54.0	14.05	AV	319.50	100	Horizontal	Pass
6	17494.000	52.97	21.33	74.0	21.03	Peak	303.50	100	Horizontal	Pass
6**	17494.000	43.54	21.33	54.0	10.46	AV	303.50	100	Horizontal	Pass

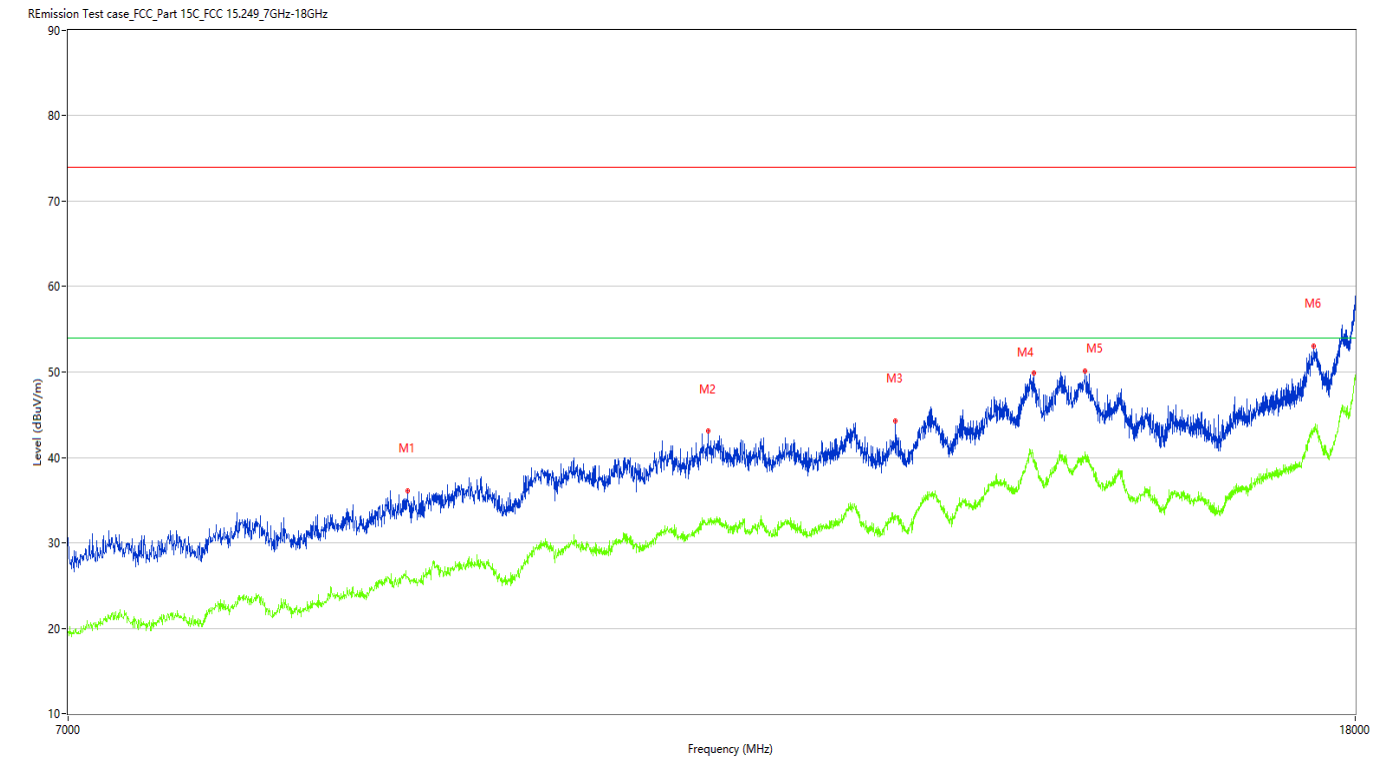
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Figure 24: Test plots of Field strength of harmonics, 2480MHz, 7GHz-18GHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	8980.000	36.10	7.99	74.0	37.90	Peak	66.80	100	Vertical	Pass
1**	8980.000	26.06	7.99	54.0	27.94	AV	66.80	100	Vertical	Pass
2	11196.500	43.05	11.23	74.0	30.95	Peak	10.30	100	Vertical	Pass
2**	11196.500	32.80	11.23	54.0	21.20	AV	10.30	100	Vertical	Pass
3	12846.500	44.31	12.24	74.0	29.69	Peak	273.30	100	Vertical	Pass
3**	12846.500	32.93	12.24	54.0	21.07	AV	273.30	100	Vertical	Pass
4	14215.999	49.91	19.13	74.0	24.09	Peak	0.00	100	Vertical	Pass
4**	14215.999	39.63	19.13	54.0	14.37	AV	0.00	100	Vertical	Pass
5	14763.250	50.15	18.86	74.0	23.85	Peak	197.40	100	Vertical	Pass
5**	14763.250	40.28	18.86	54.0	13.72	AV	197.40	100	Vertical	Pass
6	17458.250	53.09	21.03	74.0	20.91	Peak	360.00	100	Vertical	Pass
6**	17458.250	42.95	21.03	54.0	11.05	AV	360.00	100	Vertical	Pass

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4.1.3 Band Edge

RESULT:

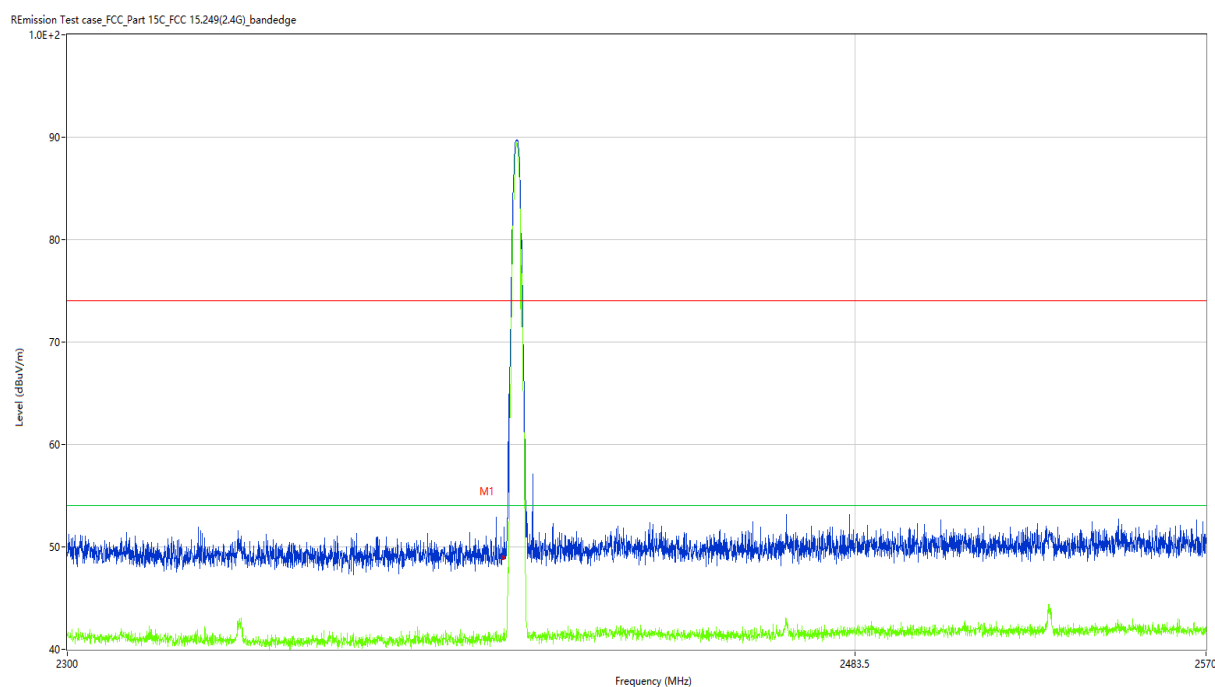
PASS

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 : 22°C
Relative humidity : 52%

Figure 25: 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	49.00	-9.87	74.0	25.00	Peak	186.16	100	Horizontal	Pass
1**	2400.000	40.93	-9.87	54.0	13.07	AV	186.16	100	Horizontal	Pass

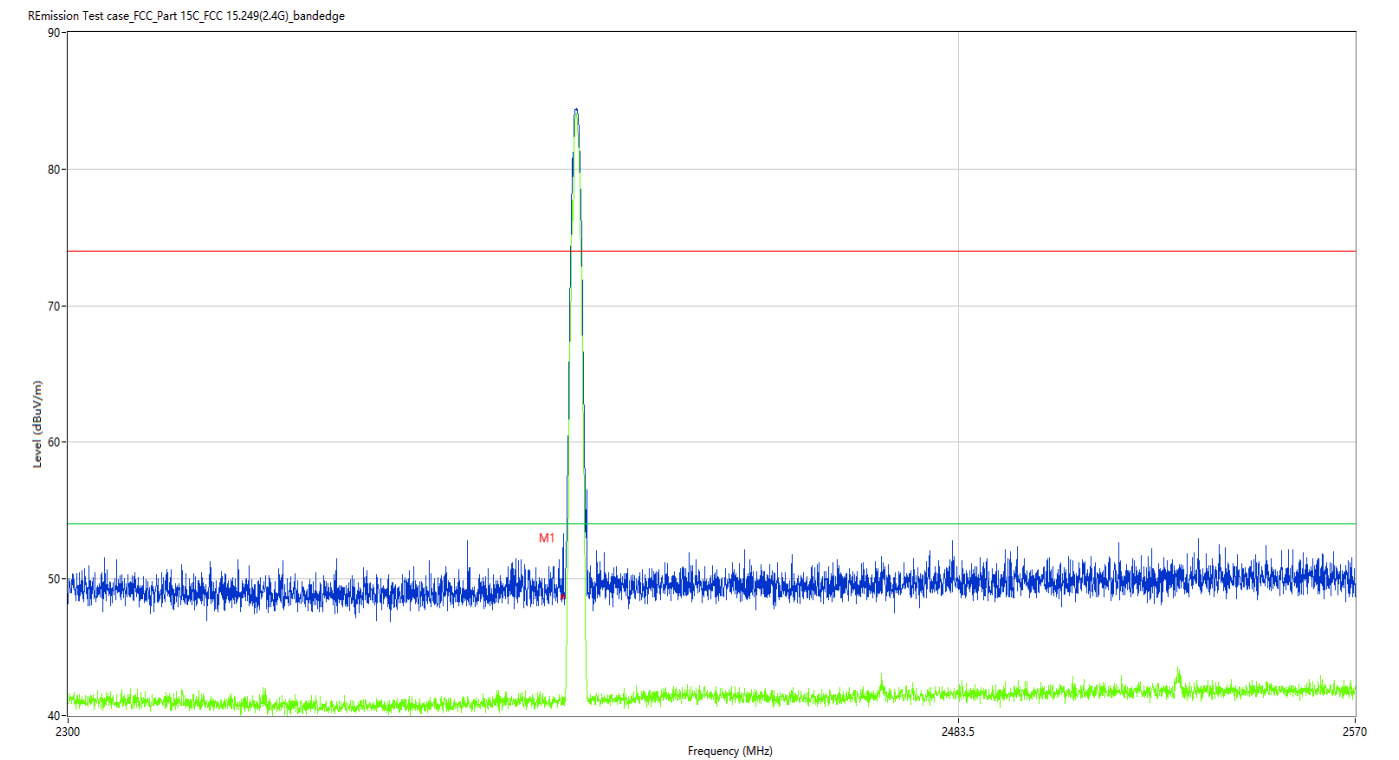
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Figure 26: Test plots of Band Edge, 2403MHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2400.000	48.77	-9.87	74.0	25.23	Peak	171.85	100	Vertical	Pass
1**	2400.000	41.12	-9.87	54.0	12.88	AV	171.85	100	Vertical	Pass

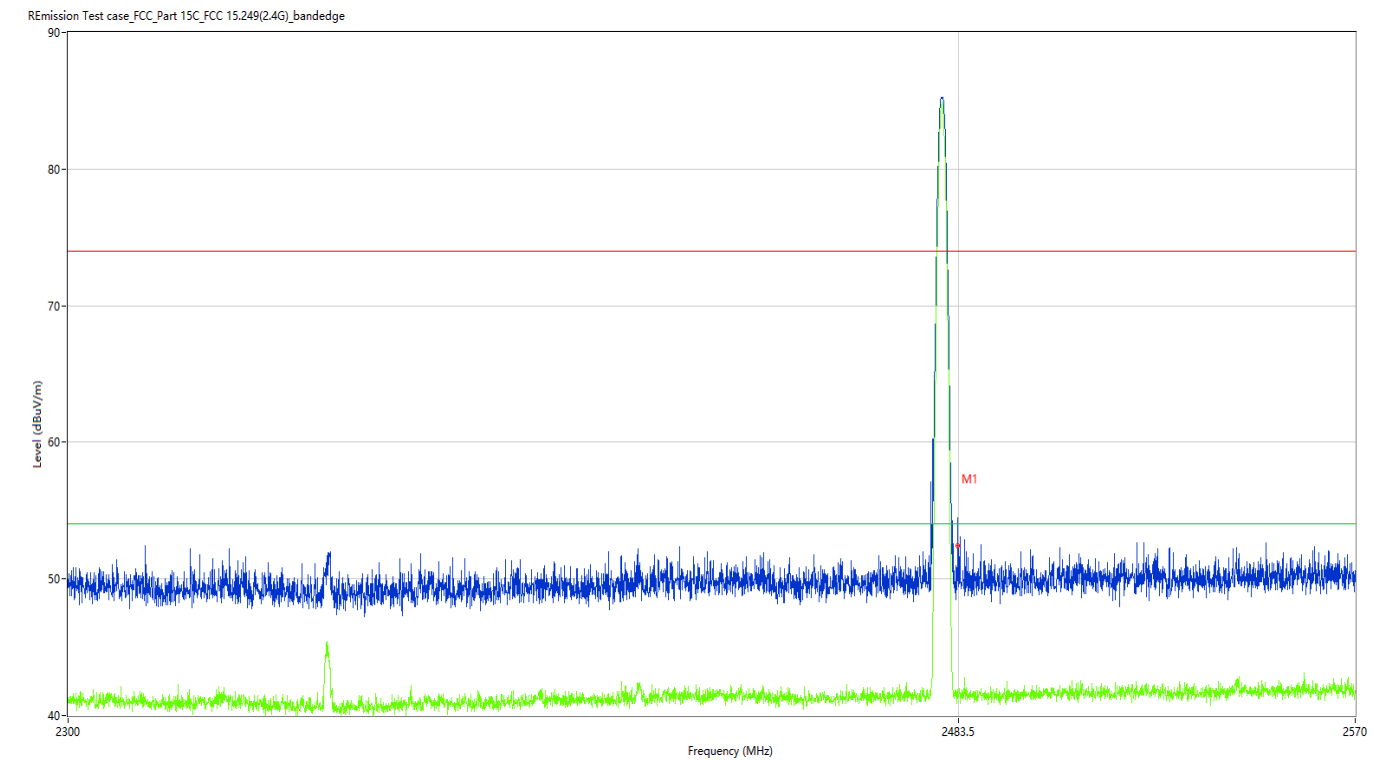
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Figure 27: Test plots of Band Edge, 2480MHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.500	52.16	-9.51	74.0	21.84	Peak	1.60	100	Horizontal	Pass
1**	2483.500	41.56	-9.51	54.0	12.44	AV	1.60	100	Horizontal	Pass

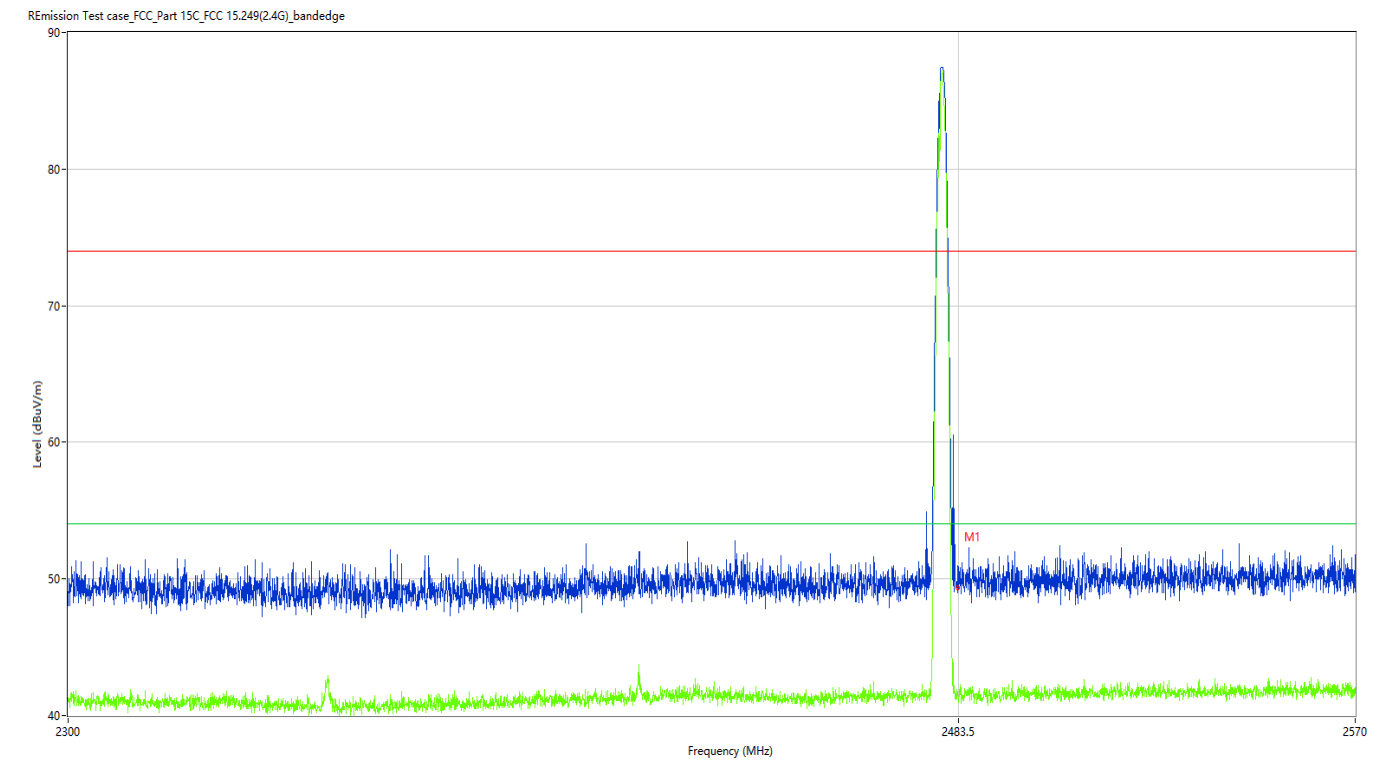
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Figure 28: Test plots of Band Edge, 2480MHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.500	49.22	-9.51	74.0	24.78	Peak	54.08	100	Vertical	Pass
1**	2483.500	41.43	-9.51	54.0	12.57	AV	54.08	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 : 20°C

Relative humidity : 49%

Table 1: 20dB Bandwidth and 99% Bandwidth

Test Mode	Test Channel (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
GFSK	2403	1.033	0.9306
	2442	1.013	0.9199
	2480	1.028	0.9381

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Figure 29: The plots of 20dB Bandwidth and 99% Bandwidth, 2403MHz

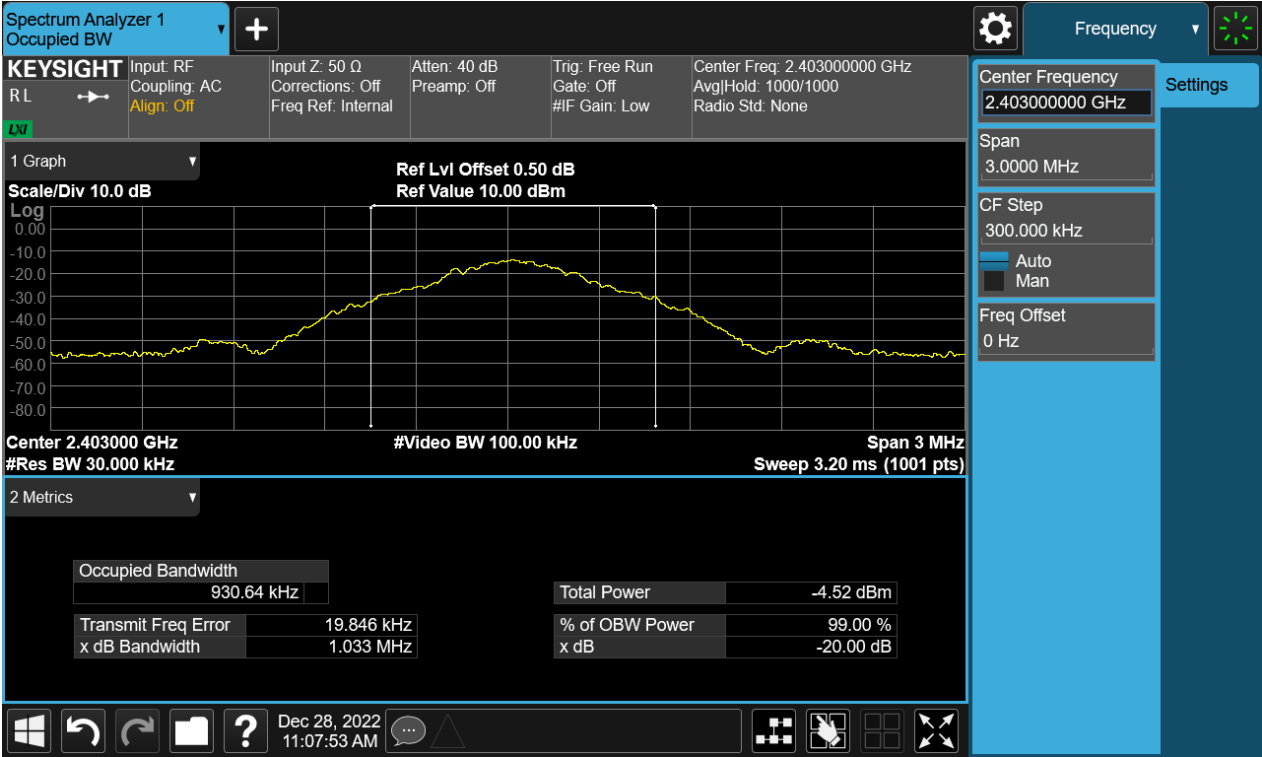


Figure 30: The plots of 20dB Bandwidth and 99% Bandwidth, 2442MHz



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Figure 31: The plots of 20dB Bandwidth and 99% Bandwidth, 2480MHz



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5 Appendixes

5.1 Photographs of the Sample



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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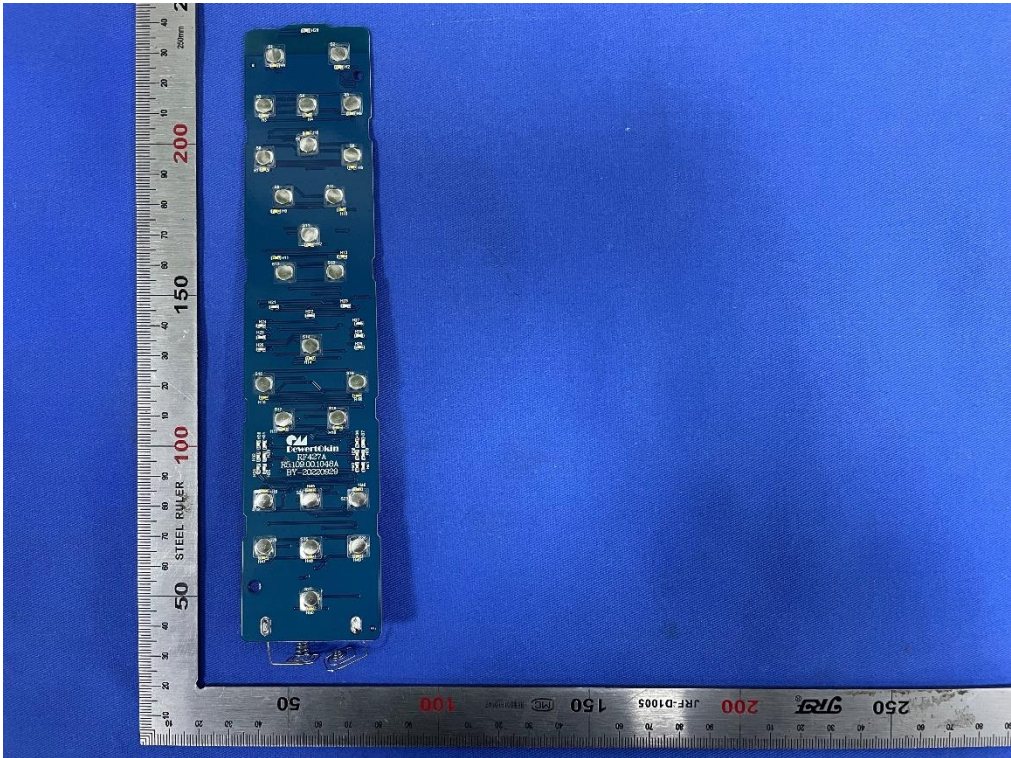
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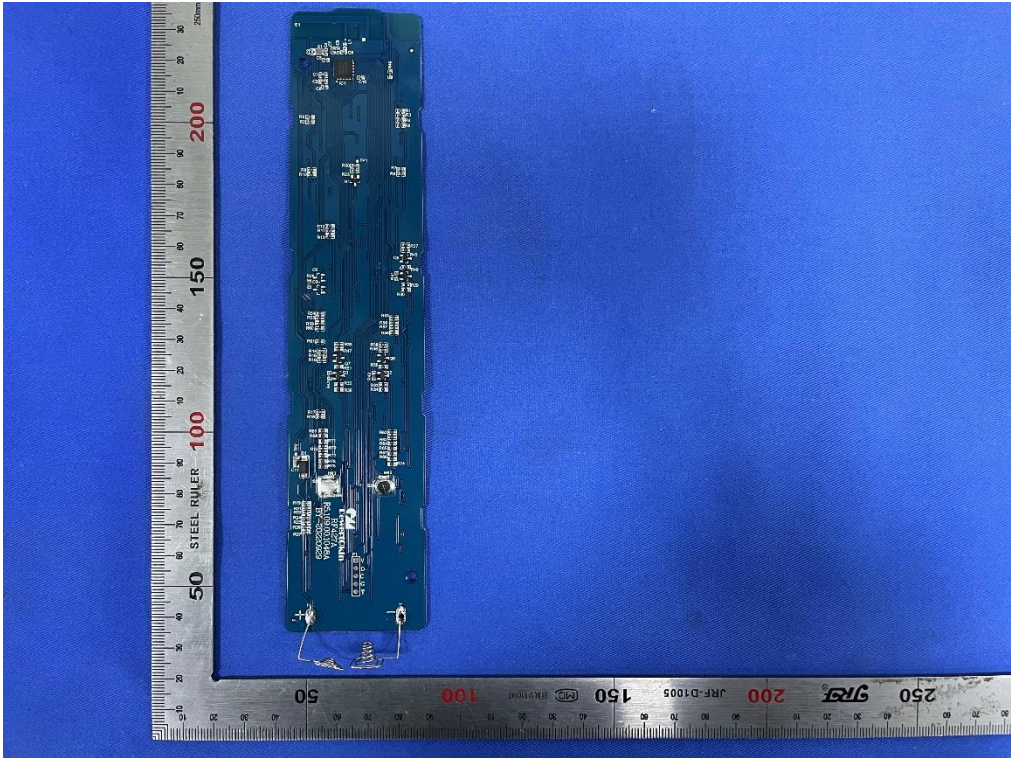


Open of the sample

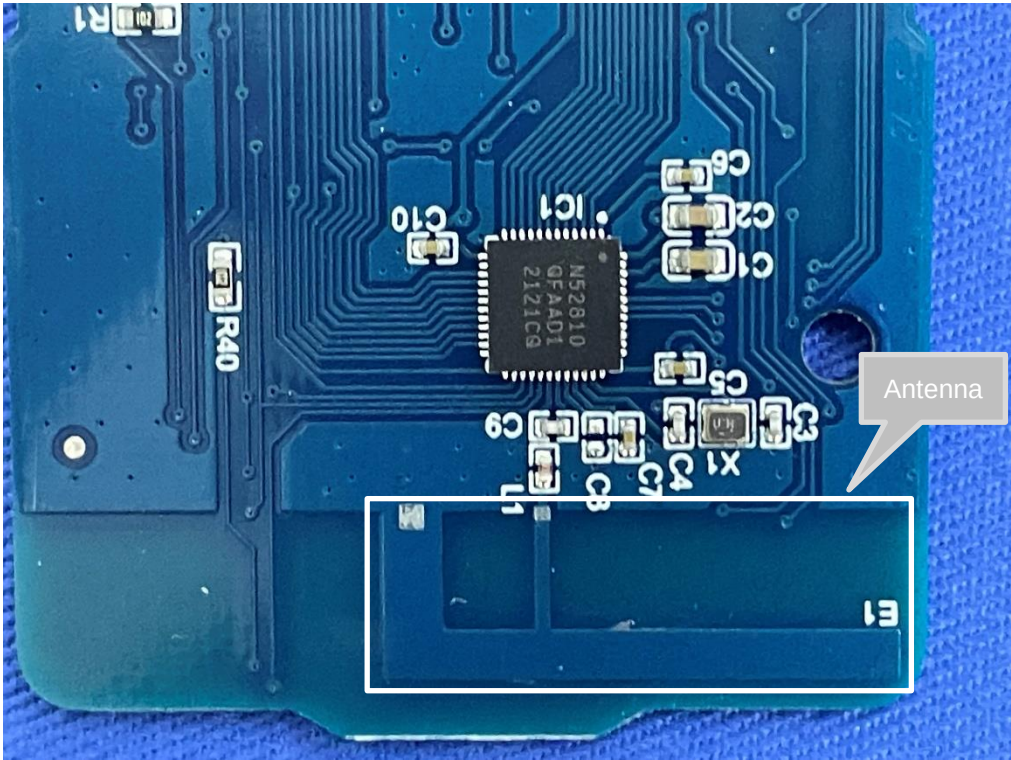


Internal-1 of the sample

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Internal-2 of the sample



Antenna position of the sample

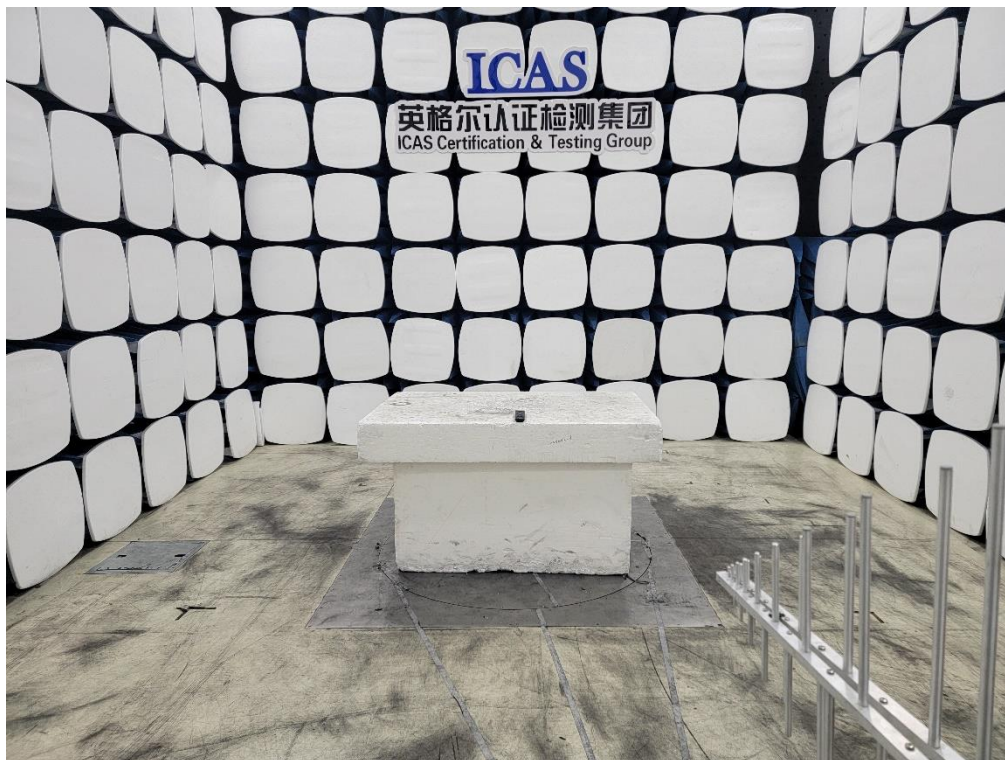
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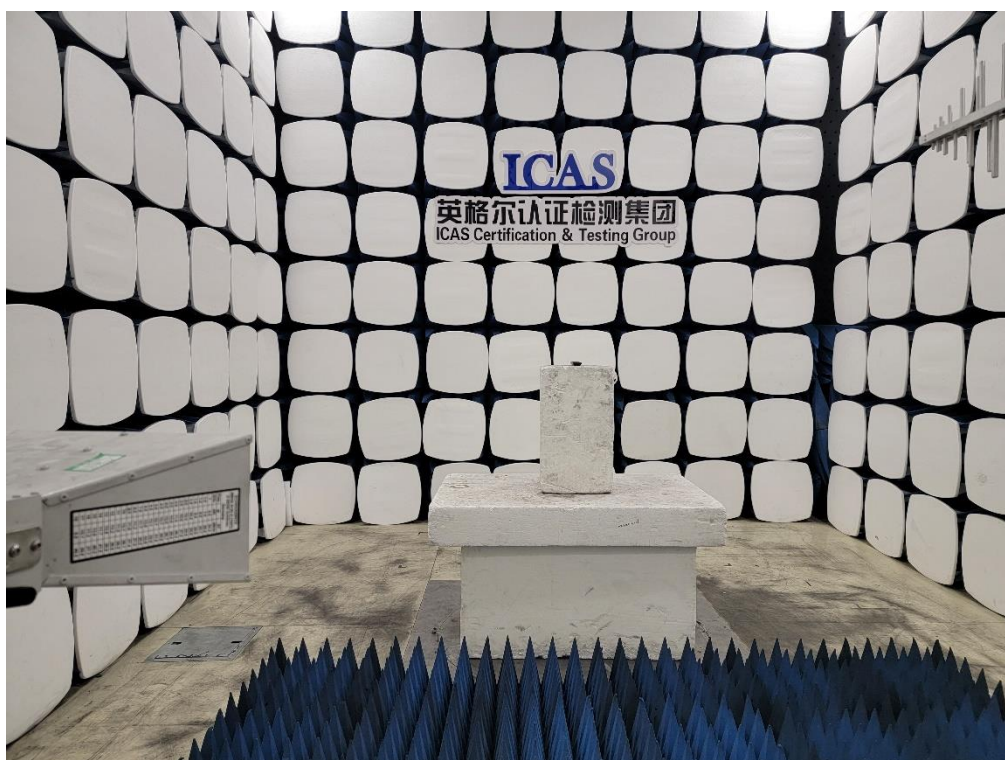
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5.2 Set-up for Spurious Emissions below 1GHz



5.3 Set-up for Spurious Emissions above 1GHz



End of the report