

TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 1 of 53

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 China

Product Name : REMOTE CONTROL
Brand Name : N/A
Model No. : RF58, RF62
Sample Acquisition Method : Sent by Client
Sample No. : E23020016-01#01
E23020016-01#02
FCC ID : 2AVJ8-RF58
ISED Number : 25804-RF58

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 : 2023-02-03
Date of Test : 2023-02-07 ~ 2023-02-21
Date of Issue : 2023-03-03

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)

TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 2 of 53

Contents

1	GENERAL INFORMATION	3
1.1	TESTING LABORATORY.....	3
1.2	DETAILS OF APPLICATION	3
1.3	DETAILS OF EUT	3
1.4	TEST METHODOLOGY.....	5
1.5	TEST SUMMARY.....	5
2	TEST CONDITION	6
2.1	ENVIRONMENTAL CONDITIONS	6
2.2	EQUIPMENT LIST	6
2.3	MEASUREMENT UNCERTAINTY.....	6
3	TEST SET-UP AND OPERATION MODES	7
3.1	DETAILS OF TEST MODE	7
3.2	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT.....	7
3.3	SUPPORT SOFTWARE.....	7
3.4	TEST SETUP DIAGRAM	8
4	TEST RESULTS	10
4.1	TRANSMITTER REQUIREMENT & TEST SUITES	10
4.1.1	<i>Antenna Requirement</i>	10
4.1.2	<i>Radiated Emission</i>	11
4.1.3	<i>Band Edge</i>	36
4.1.4	<i>20dB Bandwidth and 99% Bandwidth</i>	40
5	APPENDIXES	43
5.1	PHOTOGRAPHS OF THE SAMPLE.....	43
5.2	SET-UP FOR SPURIOUS EMISSIONS BELOW 1GHZ.....	53
5.3	SET-UP FOR SPURIOUS EMISSIONS ABOVE 1GHZ	53

TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 3 of 53

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, Jiaxing Photovoltaic Science and Innovation Park, 1288 Kanghe Road Xiuzhou District, Jiaxing City, Zhejiang Province 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, Jiaxing Photovoltaic Science and Innovation Park, 1288 Kanghe Road Xiuzhou District, Jiaxing City, Zhejiang Province China
Factory Company Name	DewertOkin Technology Group Co., Ltd.
Address	No.1507, Taoyuan Road, Gaozhao Street, Xiuzhou District, Jiaxing City, Zhejiang Province, China.

1.3 Details of EUT

Product Name	REMOTE CONTROL
Brand Name	N/A
Test Model No.	RF58
Series Model No.	RF62
Difference Description	All the same except for the model name, enclosure and appearance color(the black color is RF58 model ,the white color is RF62 model). Refer to the sample photo for details.
FCC ID	2AVJ8-RF58
ISED Number	25804-RF58
Operation Frequency	2403MHz ~ 2480MHz
Maximum Field Strength	78.14dBuV/m(peak)@3m
Number of Channels	78
Modulation Type	GFSK
Antenna Type	PCB Antenna
Antenna Gain	1.225dBi

TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 4 of 53

Extreme Temperature Range	-10℃~ +40℃
Test Voltage	DC 4.5V supply by battery(3*AAA battery)
Hardware version	R5.109.00.1025A
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:

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		

TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 5 of 53

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 4.5V supply by 3*AAA battery)

TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 6 of 53

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 %

TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 7 of 53

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

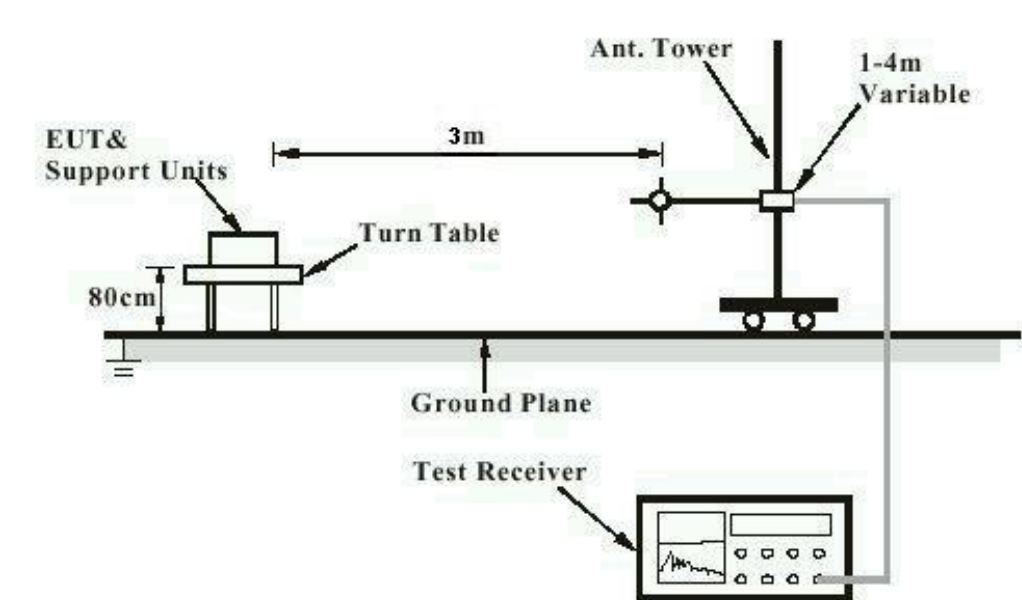
3.3 Support Software

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

TEST REPORT

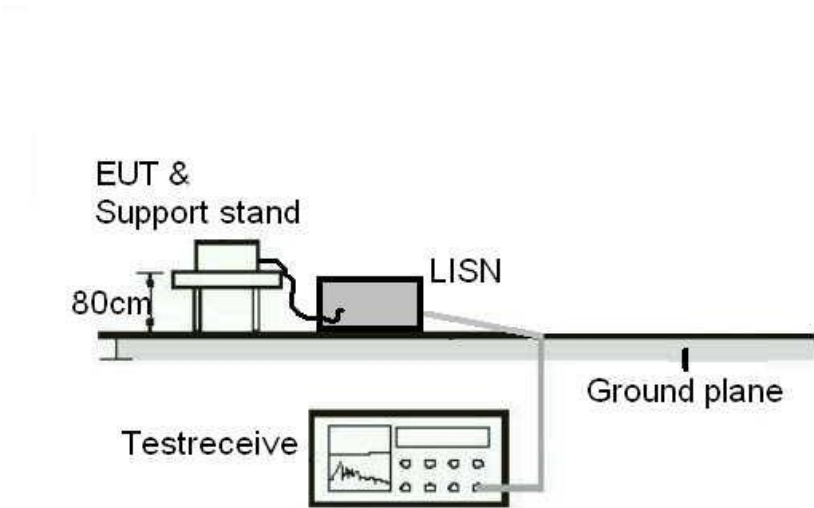
3.4 Test Setup Diagram

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



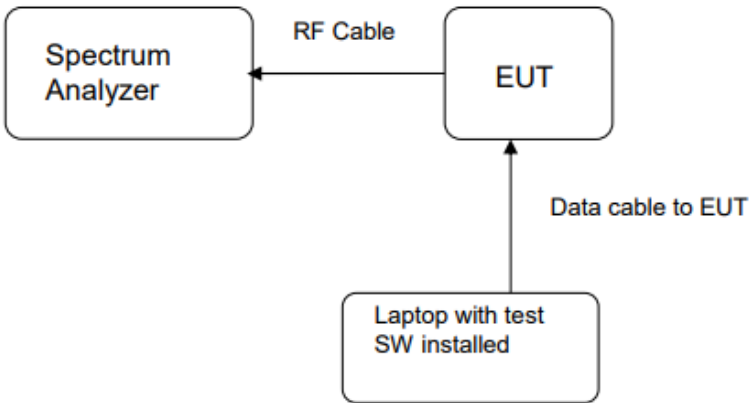
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 9 of 53

Diagram of Measurement Configuration for Transmitter Test



TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 10 of 53

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.

TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 11 of 53

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 : 21°C

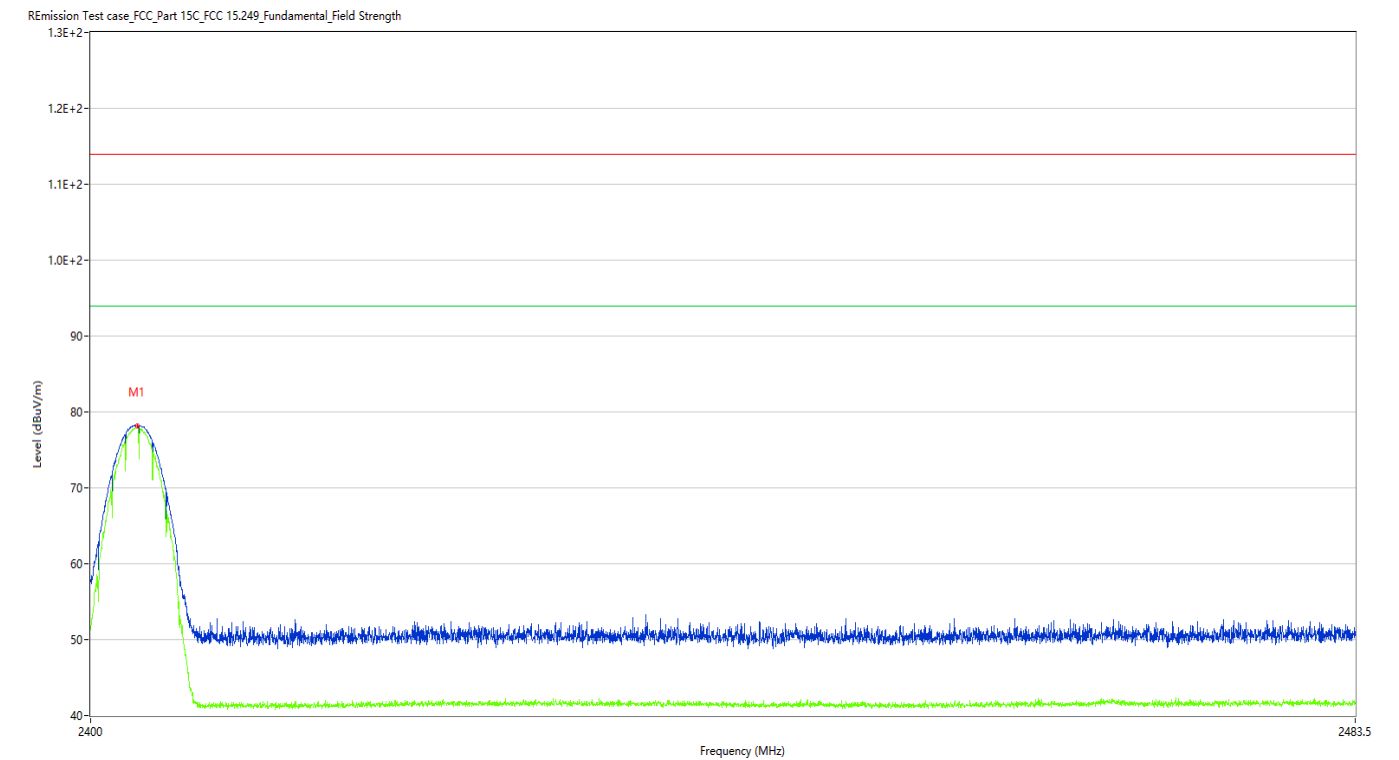
Relative humidity : 51%

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.

TEST REPORT

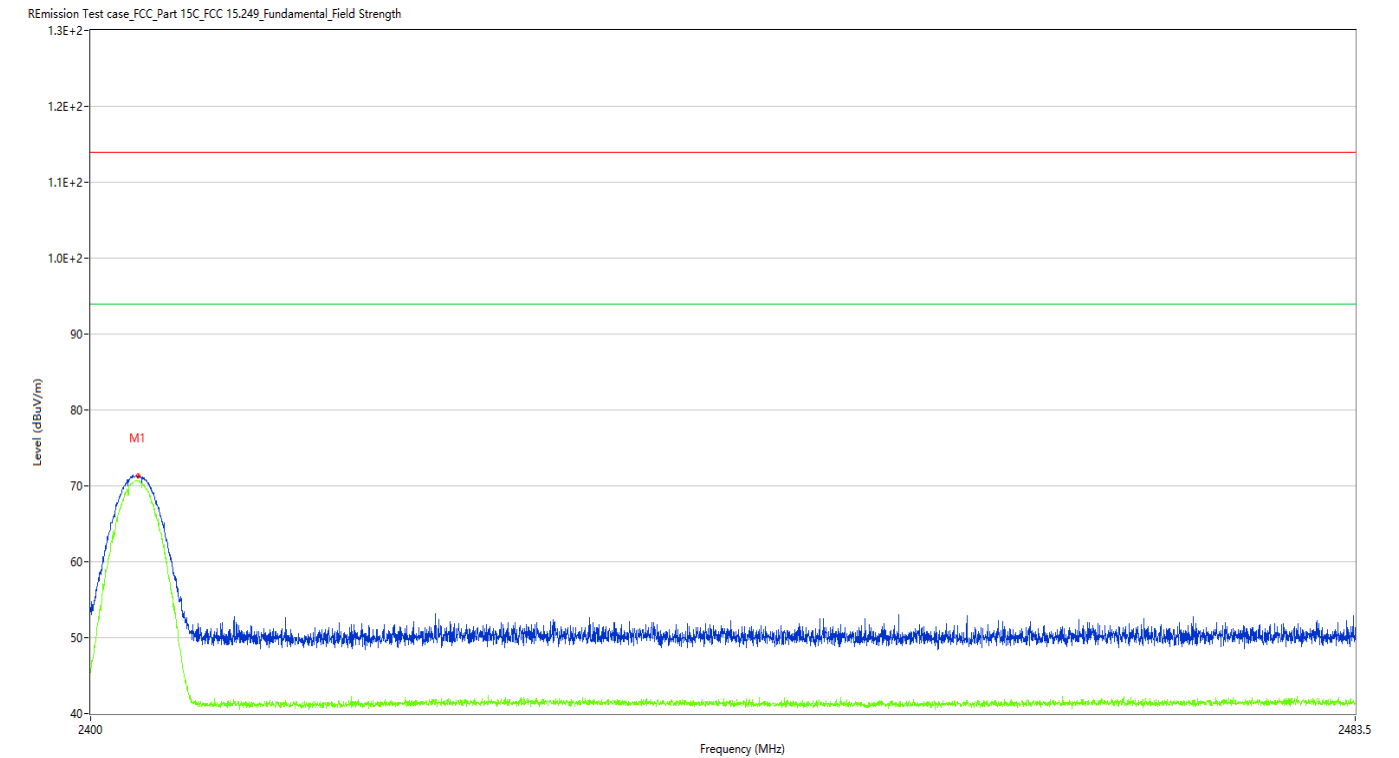
Figure 1: Test plots of Field strength of fundamental, 2403MHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2403.027	78.14	-9.82	114.0	35.86	Peak	41.60	200	Horizontal	Pass
1**	2403.027	77.87	-9.82	94.0	16.13	AV	41.60	200	Horizontal	Pass

TEST REPORT

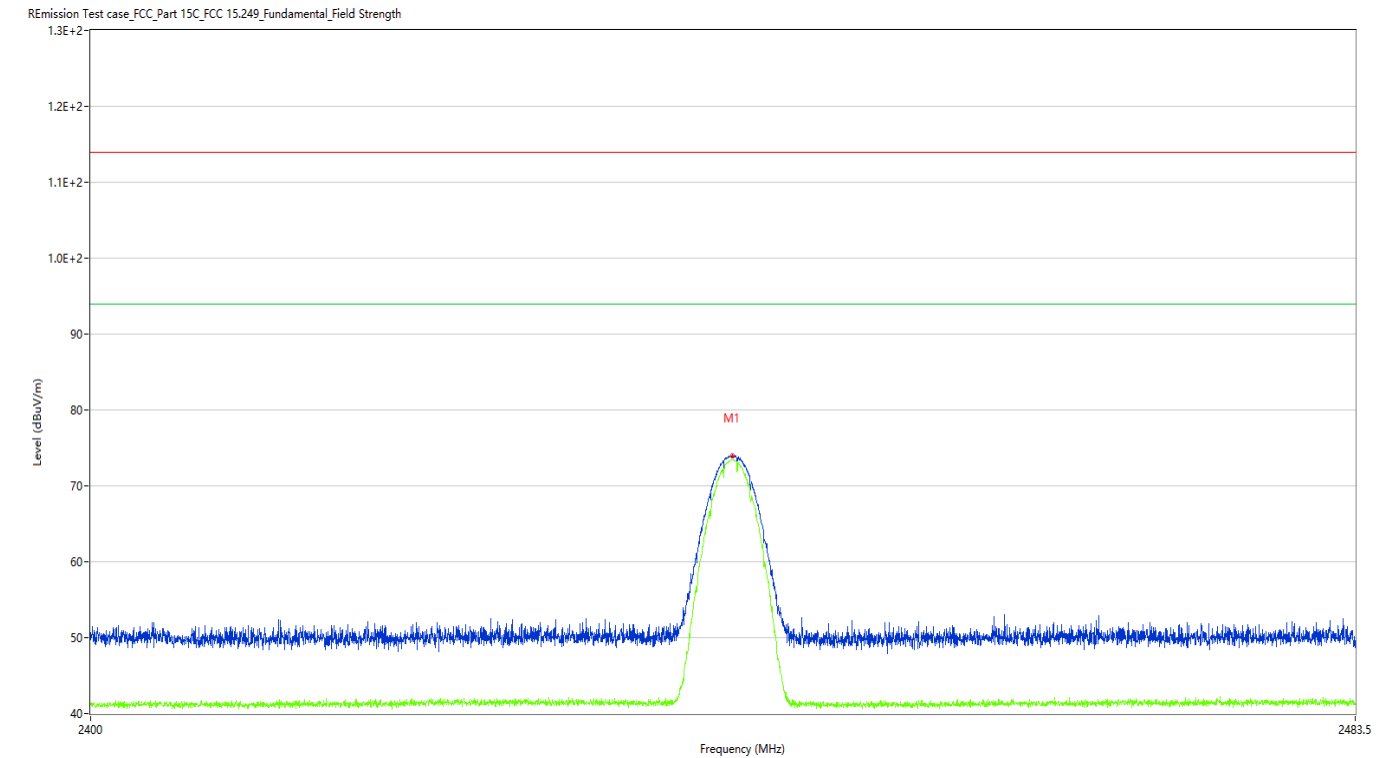
Figure 2: Test plots of Field strength of fundamental, 2403MHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2403.110	71.29	-9.82	114.0	42.71	Peak	195.80	100	Vertical	Pass
1**	2403.110	70.62	-9.82	94.0	23.38	AV	195.80	100	Vertical	Pass

TEST REPORT

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	2442.000	73.97	-9.61	114.0	40.03	Peak	15.70	100	Horizontal	Pass
1**	2442.000	73.41	-9.61	94.0	20.59	AV	15.70	100	Horizontal	Pass

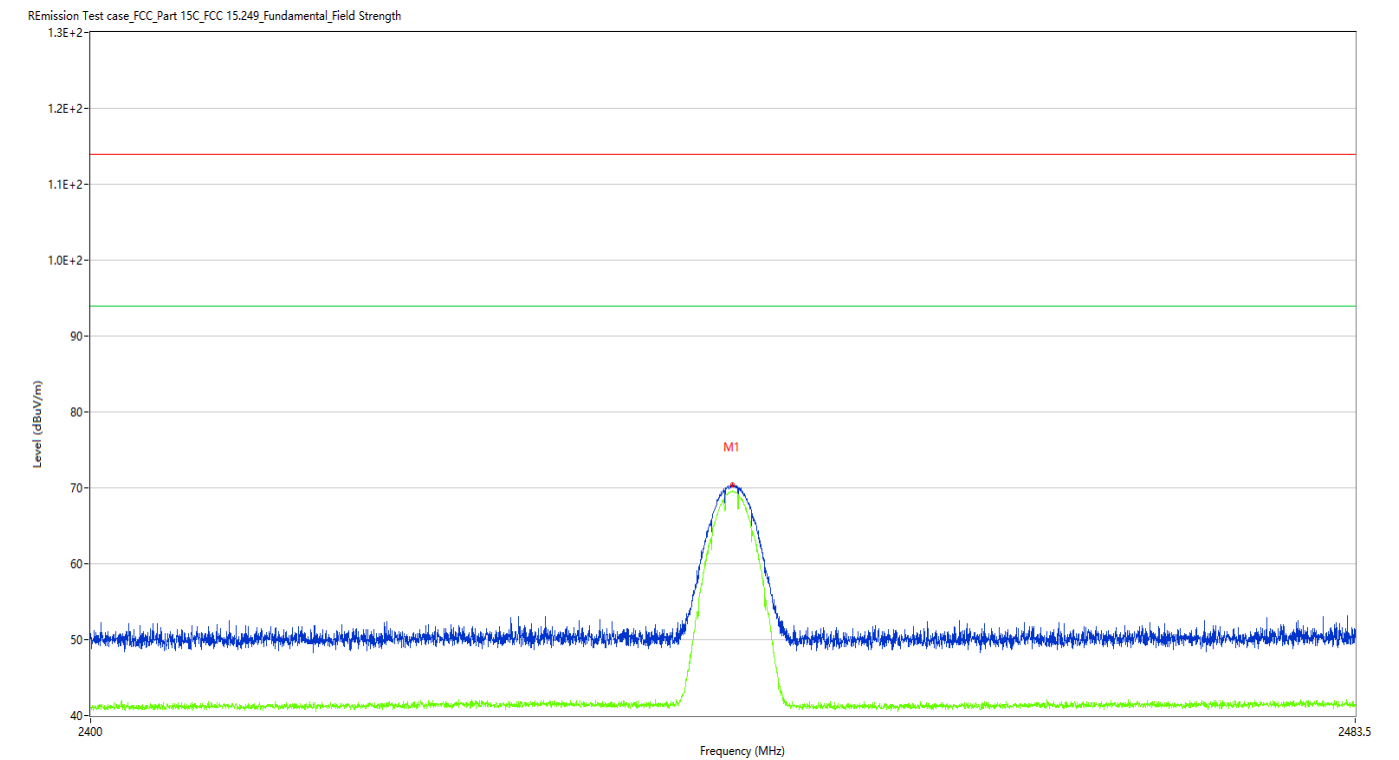
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 15 of 53

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	2442.021	70.41	-9.61	114.0	43.59	Peak	220.80	100	Vertical	Pass
1**	2442.021	69.55	-9.61	94.0	24.45	AV	220.80	100	Vertical	Pass

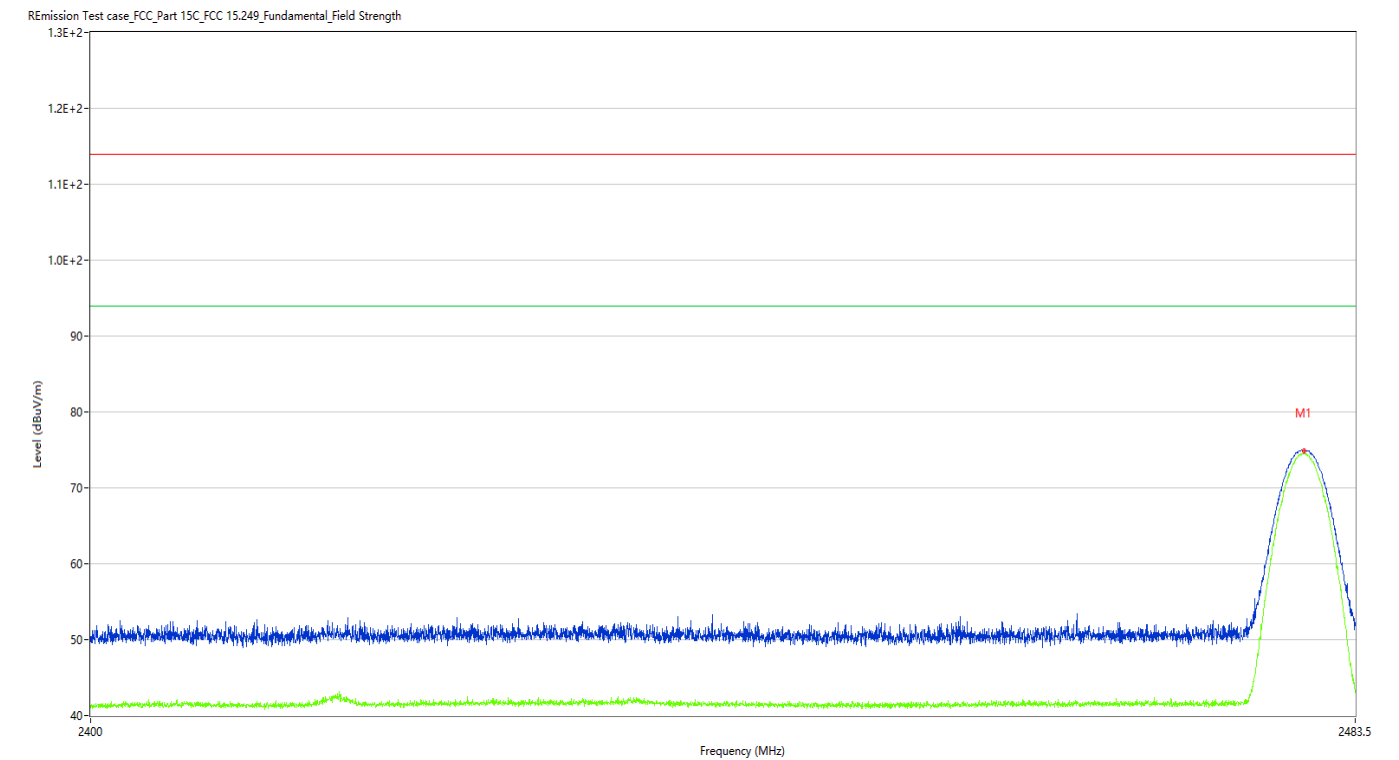
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 16 of 53

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	74.85	-9.48	114.0	39.15	Peak	108.80	100	Horizontal	Pass
1**	2480.056	74.50	-9.48	94.0	19.50	AV	108.80	100	Horizontal	Pass

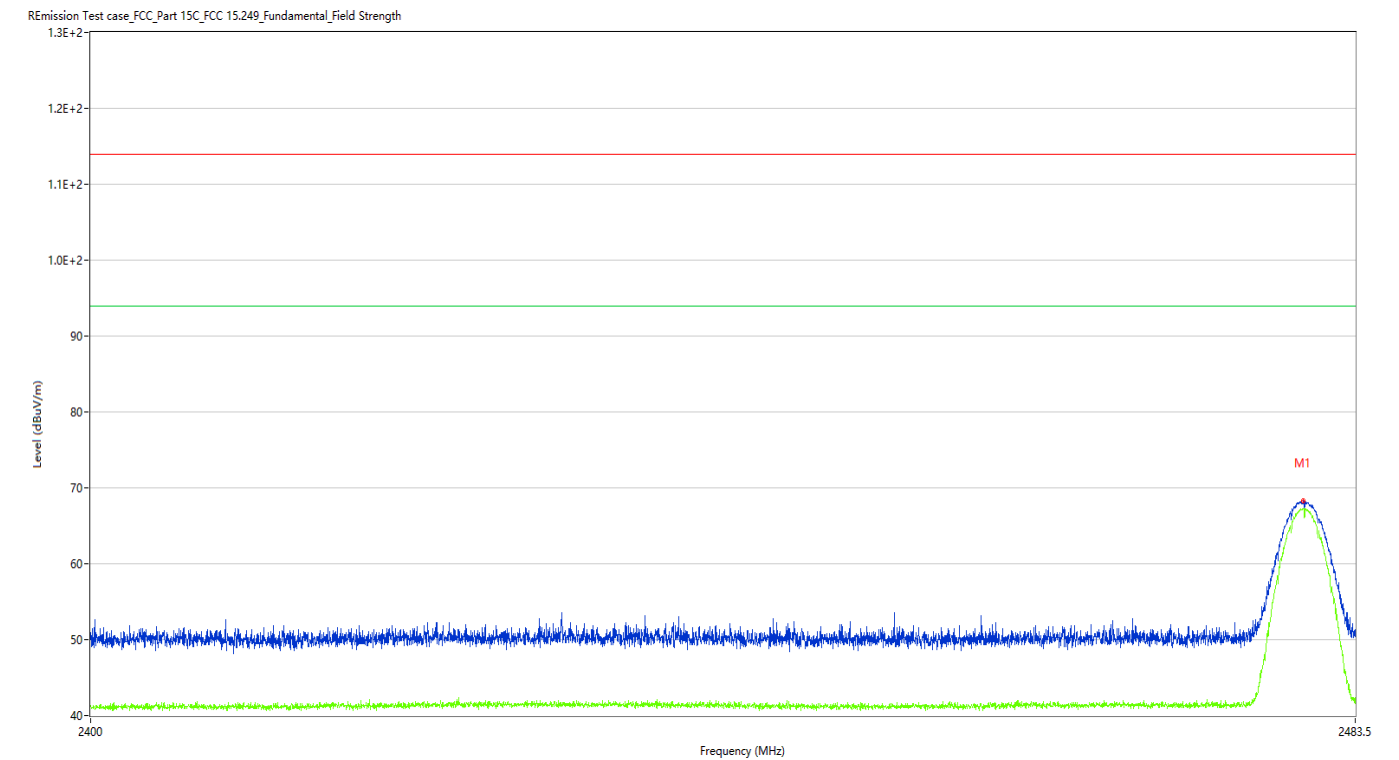
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 17 of 53

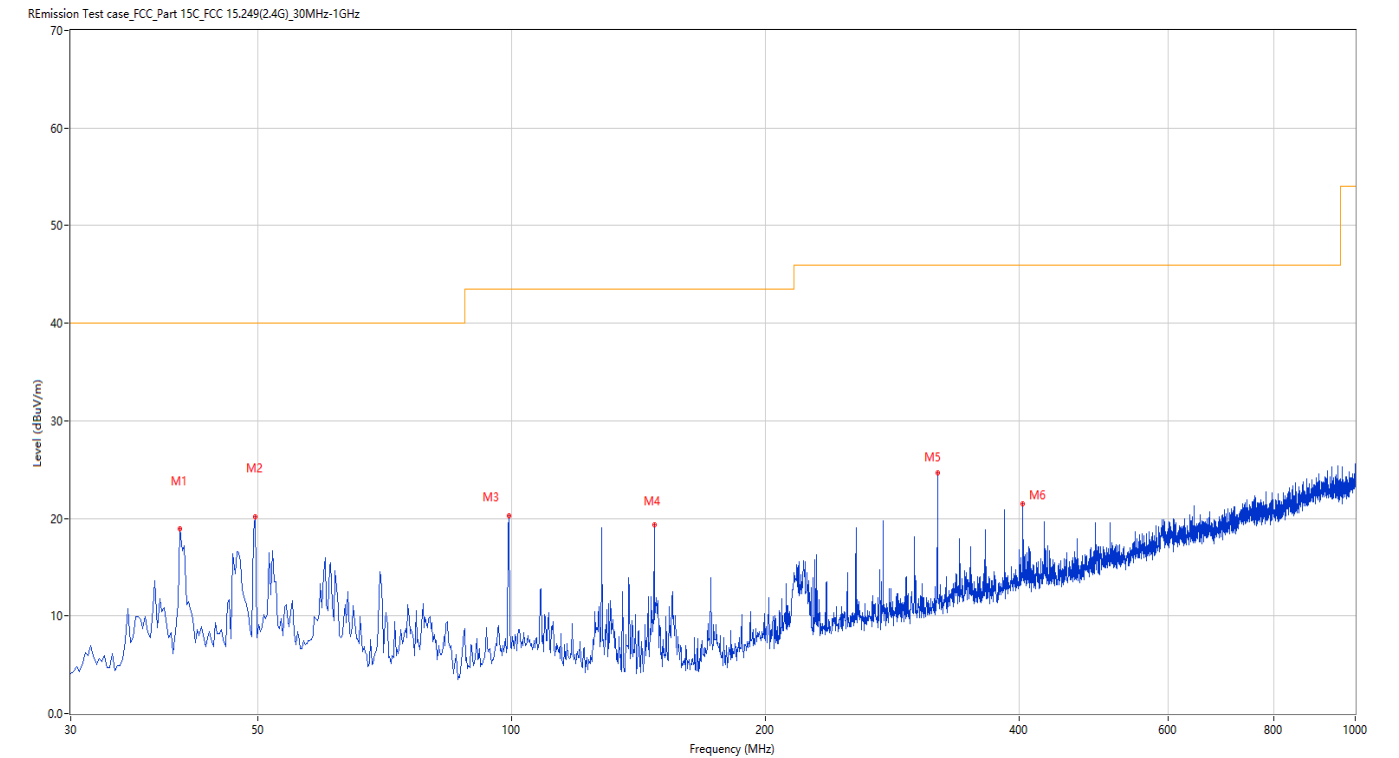
Figure 6: Test plots of Field strength of fundamental, 2480MHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2480.014	68.31	-9.48	114.0	45.69	Peak	155.00	100	Vertical	Pass
1**	2480.014	67.21	-9.48	94.0	26.79	AV	155.00	100	Vertical	Pass

TEST REPORT

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	40.425	18.89	-26.17	40.0	21.11	Peak	13.50	100	Horizontal	Pass
2	49.638	20.20	-25.03	40.0	19.80	Peak	73.90	200	Horizontal	Pass
3	99.338	20.31	-26.69	43.5	23.19	Peak	93.60	200	Horizontal	Pass
4	147.583	19.31	-29.99	43.5	24.19	Peak	72.00	200	Horizontal	Pass
5	319.958	24.71	-23.18	46.0	21.29	Peak	124.30	100	Horizontal	Pass
6	403.599	21.46	-20.67	46.0	24.54	Peak	231.50	100	Horizontal	Pass

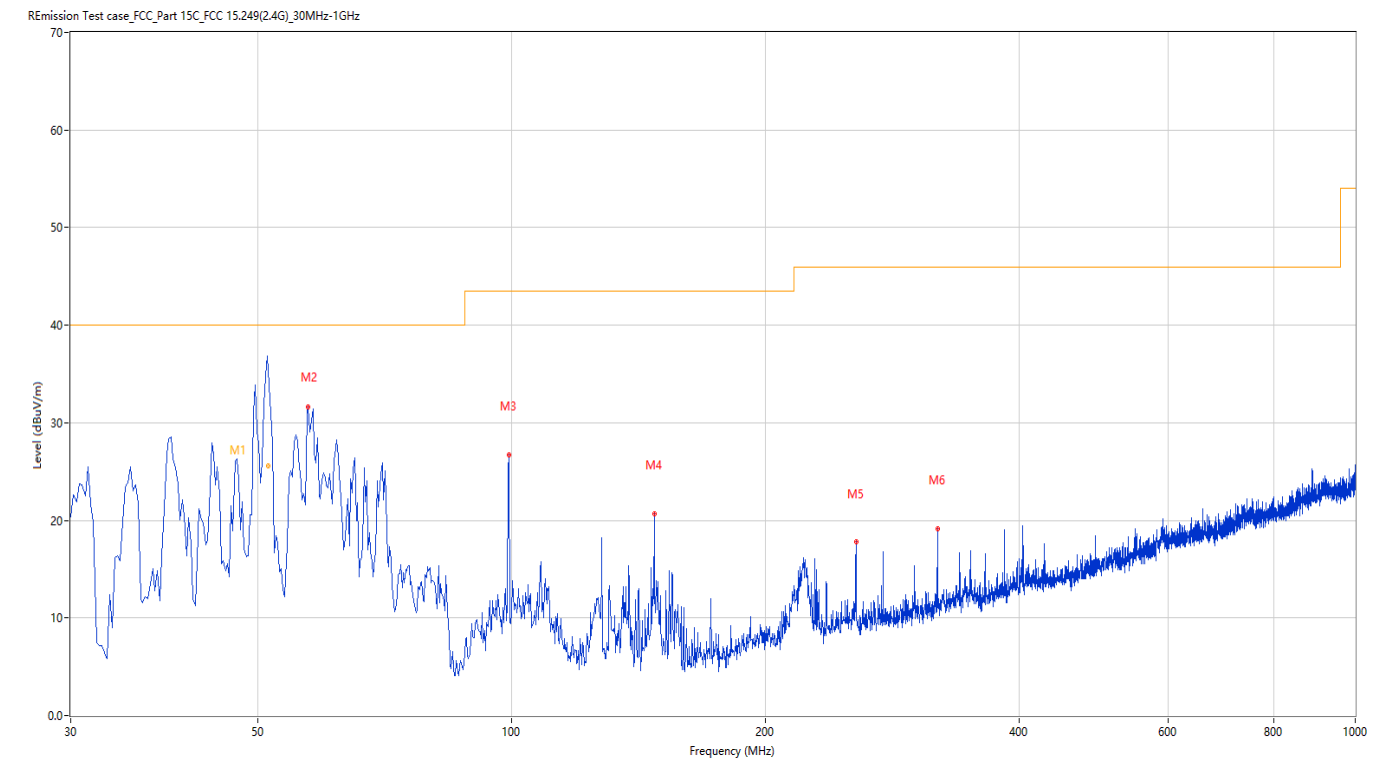
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 19 of 53

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*	51.445	25.56	-25.03	40.0	14.44	QP	360.00	101	Vertical	Pass
2	57.396	31.64	-25.75	40.0	8.36	Peak	316.70	100	Vertical	Pass
3	99.338	26.76	-26.69	43.5	16.74	Peak	144.90	100	Vertical	Pass
4	147.583	20.70	-29.99	43.5	22.80	Peak	183.90	100	Vertical	Pass
5	255.954	17.76	-24.42	46.0	28.24	Peak	347.80	200	Vertical	Pass
6	319.958	19.16	-23.18	46.0	26.84	Peak	162.30	100	Vertical	Pass

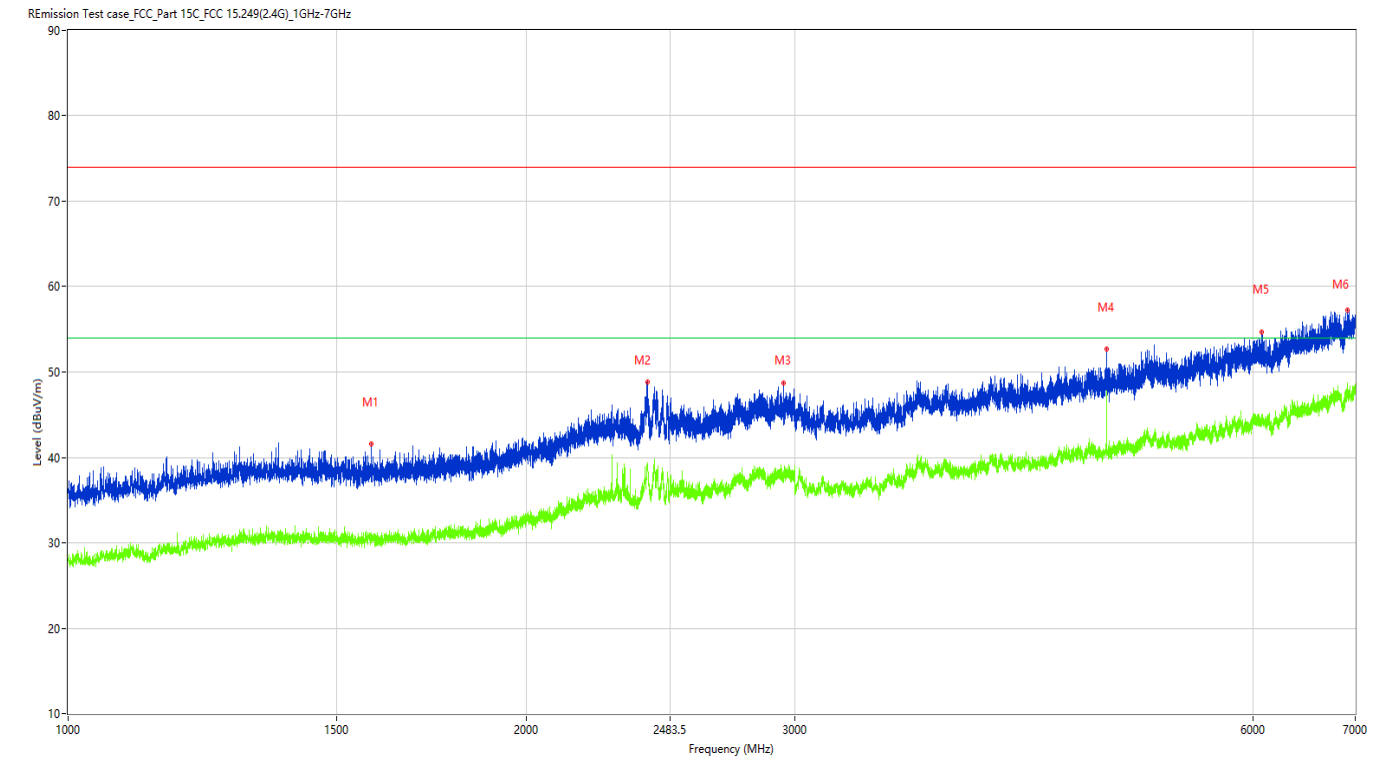
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 20 of 53

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	1582.000	41.54	-13.06	74.0	32.46	Peak	175.70	100	Horizontal	Pass
1**	1582.000	30.90	-13.06	54.0	23.10	AV	175.70	100	Horizontal	Pass
2	2400.000	48.89	-4.41	74.0	25.11	Peak	99.00	100	Horizontal	Pass
2**	2400.000	39.27	-4.41	54.0	14.73	AV	99.00	100	Horizontal	Pass
3	2949.250	48.66	-3.73	74.0	25.34	Peak	48.10	100	Horizontal	Pass
3**	2949.250	37.59	-3.73	54.0	16.41	AV	48.10	100	Horizontal	Pass
4	4806.000	52.67	-0.54	74.0	21.33	Peak	45.20	100	Horizontal	Pass
4**	4806.000	47.76	-0.54	54.0	6.24	AV	45.20	100	Horizontal	Pass
5	6080.500	54.66	2.87	74.0	19.34	Peak	286.40	100	Horizontal	Pass
5**	6080.500	44.77	2.87	54.0	9.23	AV	286.40	100	Horizontal	Pass
6	6918.000	57.29	5.07	74.0	16.71	Peak	11.00	100	Horizontal	Pass
6**	6918.000	47.35	5.07	54.0	6.65	AV	11.00	100	Horizontal	Pass

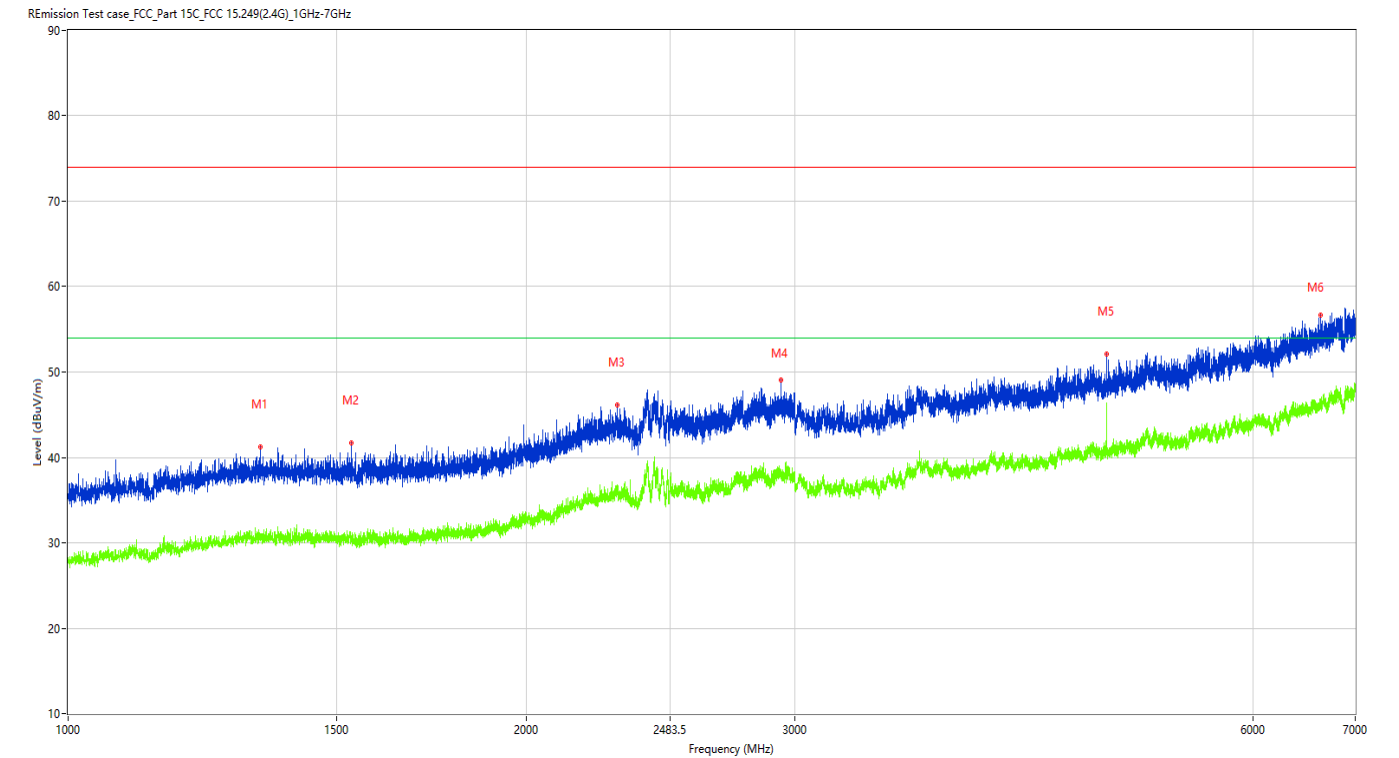
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 21 of 53

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	1336.500	41.22	-12.84	74.0	32.78	Peak	98.30	100	Vertical	Pass
1**	1336.500	30.68	-12.84	54.0	23.32	AV	98.30	100	Vertical	Pass
2	1535.500	41.69	-13.03	74.0	32.31	Peak	320.40	100	Vertical	Pass
2**	1535.500	30.55	-13.03	54.0	23.45	AV	320.40	100	Vertical	Pass
3	2295.250	46.19	-7.32	74.0	27.81	Peak	112.40	100	Vertical	Pass
3**	2295.250	35.91	-7.32	54.0	18.09	AV	112.40	100	Vertical	Pass
4	2936.750	49.01	-4.10	74.0	24.99	Peak	112.40	100	Vertical	Pass
4**	2936.750	38.13	-4.10	54.0	15.87	AV	112.40	100	Vertical	Pass
5	4805.500	52.09	-0.55	74.0	21.91	Peak	75.40	100	Vertical	Pass
5**	4805.500	44.55	-0.55	54.0	9.45	AV	75.40	100	Vertical	Pass
6	6646.500	56.67	4.53	74.0	17.33	Peak	58.60	100	Vertical	Pass
6**	6646.500	46.66	4.53	54.0	7.34	AV	58.60	100	Vertical	Pass

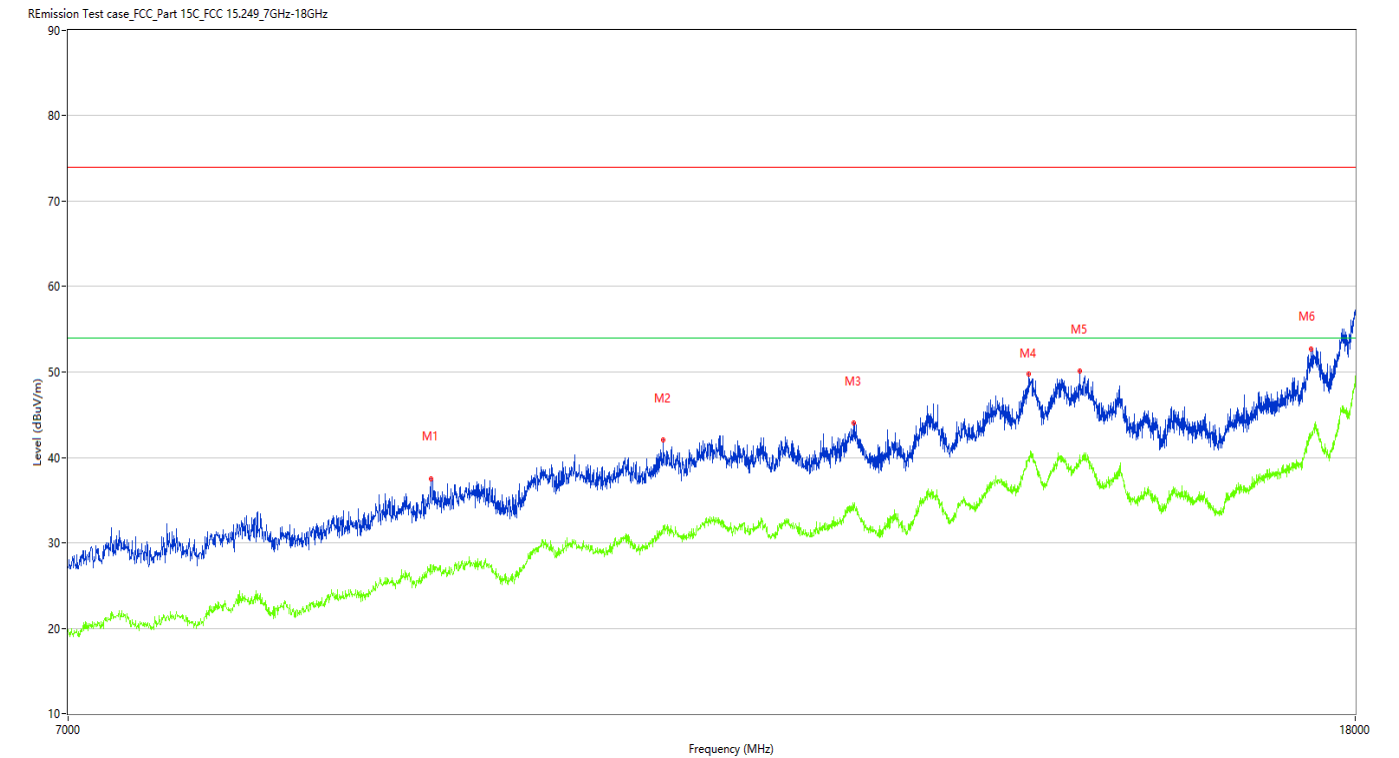
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 22 of 53

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	9134.000	37.43	7.05	74.0	36.57	Peak	360.00	100	Horizontal	Pass
1**	9134.000	27.48	7.05	54.0	26.52	AV	360.00	100	Horizontal	Pass
2	10833.500	42.01	10.95	74.0	31.99	Peak	81.60	100	Horizontal	Pass
2**	10833.500	31.97	10.95	54.0	22.03	AV	81.60	100	Horizontal	Pass
3	12461.500	43.98	12.55	74.0	30.02	Peak	360.00	100	Horizontal	Pass
3**	12461.500	33.74	12.55	54.0	20.26	AV	360.00	100	Horizontal	Pass
4	14166.500	49.77	19.08	74.0	24.23	Peak	197.80	100	Horizontal	Pass
4**	14166.500	40.04	19.08	54.0	13.96	AV	197.80	100	Horizontal	Pass
5	14702.750	50.08	18.15	74.0	23.92	Peak	259.90	100	Horizontal	Pass
5**	14702.750	40.28	18.15	54.0	13.72	AV	259.90	100	Horizontal	Pass
6	17428.001	52.72	20.45	74.0	21.28	Peak	308.30	100	Horizontal	Pass
6**	17428.001	42.35	20.45	54.0	11.65	AV	308.30	100	Horizontal	Pass

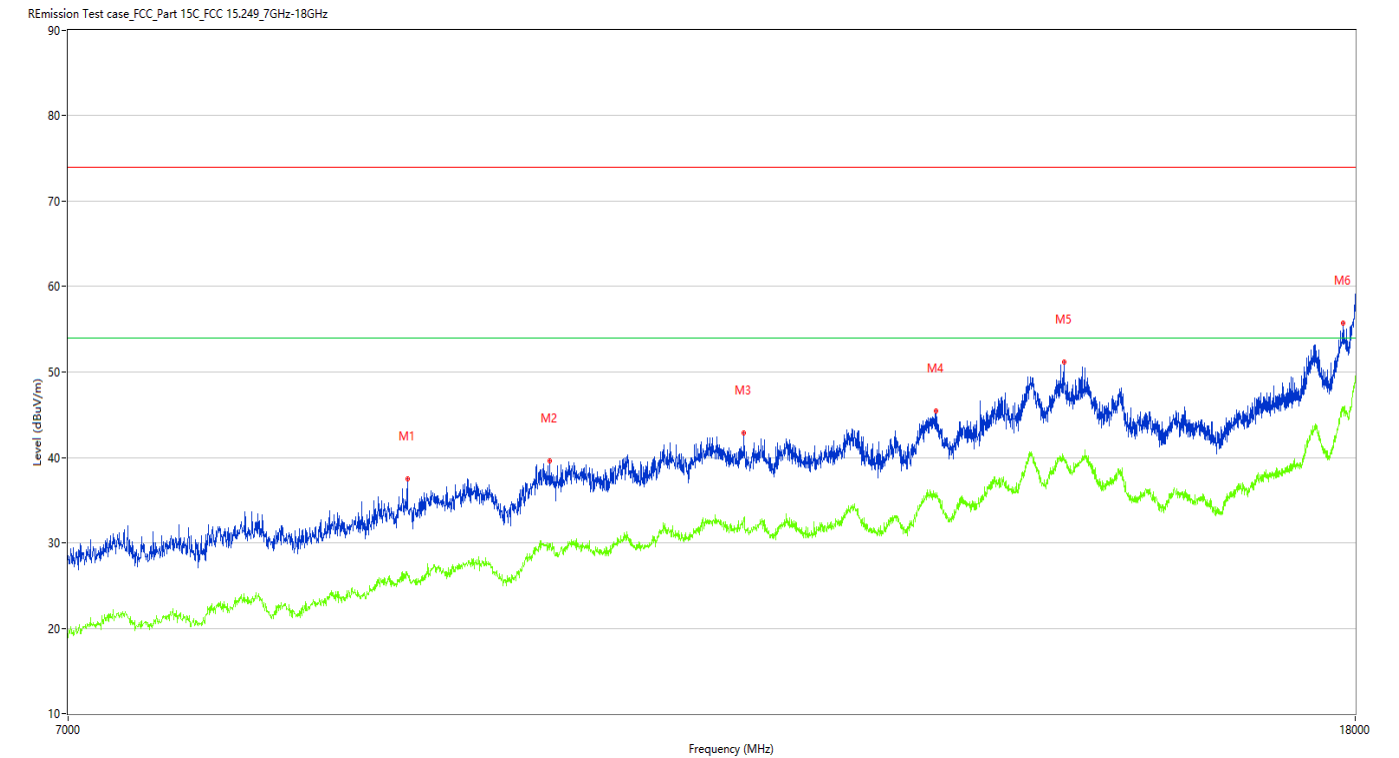
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 23 of 53

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	8980.000	37.48	7.99	74.0	36.52	Peak	138.40	100	Vertical	Pass
1**	8980.000	26.29	7.99	54.0	27.71	AV	138.40	100	Vertical	Pass
2	9967.250	39.56	9.53	74.0	34.44	Peak	186.00	100	Vertical	Pass
2**	9967.250	29.88	9.53	54.0	24.12	AV	186.00	100	Vertical	Pass
3	11493.500	42.89	11.90	74.0	31.11	Peak	186.00	100	Vertical	Pass
3**	11493.500	32.80	11.90	54.0	21.20	AV	186.00	100	Vertical	Pass
4	13231.500	45.44	14.19	74.0	28.56	Peak	75.40	100	Vertical	Pass
4**	13231.500	35.33	14.19	54.0	18.67	AV	75.40	100	Vertical	Pass
5	14535.000	51.16	17.44	74.0	22.84	Peak	155.50	100	Vertical	Pass
5**	14535.000	39.79	17.44	54.0	14.21	AV	155.50	100	Vertical	Pass
6	17837.750	55.77	22.48	74.0	18.23	Peak	247.80	100	Vertical	Pass
6**	17837.750	45.82	22.48	54.0	8.18	AV	247.80	100	Vertical	Pass

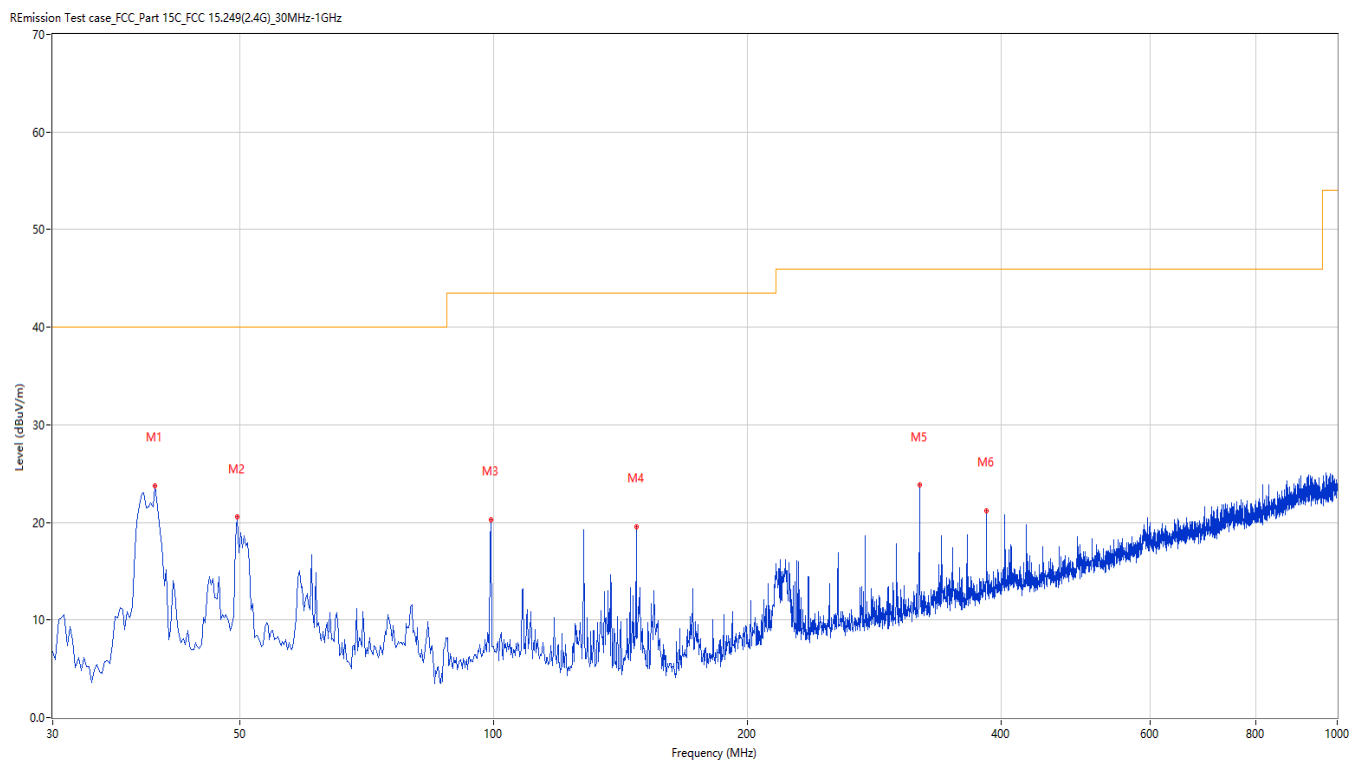
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 24 of 53

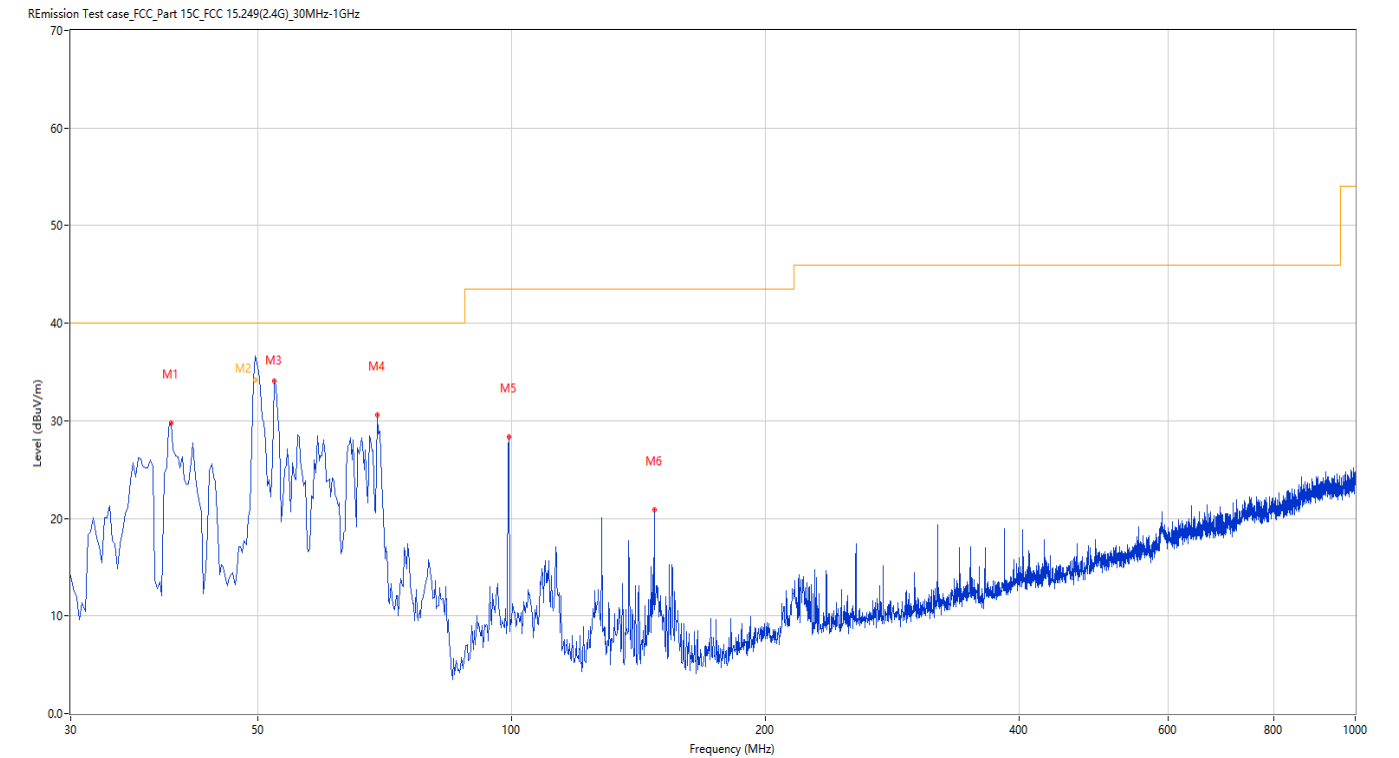
Figure 13: Test plots of Field strength of harmonics, 2442MHz, 30MHz-1GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	39.698	23.79	-26.43	40.0	16.21	Peak	61.10	200	Horizontal	Pass
2	49.638	20.52	-25.03	40.0	19.48	Peak	76.00	200	Horizontal	Pass
3	99.338	20.29	-26.69	43.5	23.21	Peak	94.90	200	Horizontal	Pass
4	147.583	19.56	-29.99	43.5	23.94	Peak	114.60	200	Horizontal	Pass
5	319.958	23.80	-23.18	46.0	22.20	Peak	123.30	100	Horizontal	Pass
6	383.962	21.22	-21.48	46.0	24.78	Peak	60.00	100	Horizontal	Pass

TEST REPORT

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	39.455	29.82	-26.52	40.0	10.18	Peak	165.20	100	Vertical	Pass
2*	49.684	34.17	-25.03	40.0	5.83	QP	51.70	106	Vertical	Pass
3	52.304	34.07	-25.10	40.0	5.93	Peak	360.00	200	Vertical	Pass
4	69.275	30.61	-29.11	40.0	9.39	Peak	229.20	100	Vertical	Pass
5	99.338	28.39	-26.69	43.5	15.11	Peak	194.90	100	Vertical	Pass
6	147.583	20.90	-29.99	43.5	22.60	Peak	190.90	100	Vertical	Pass

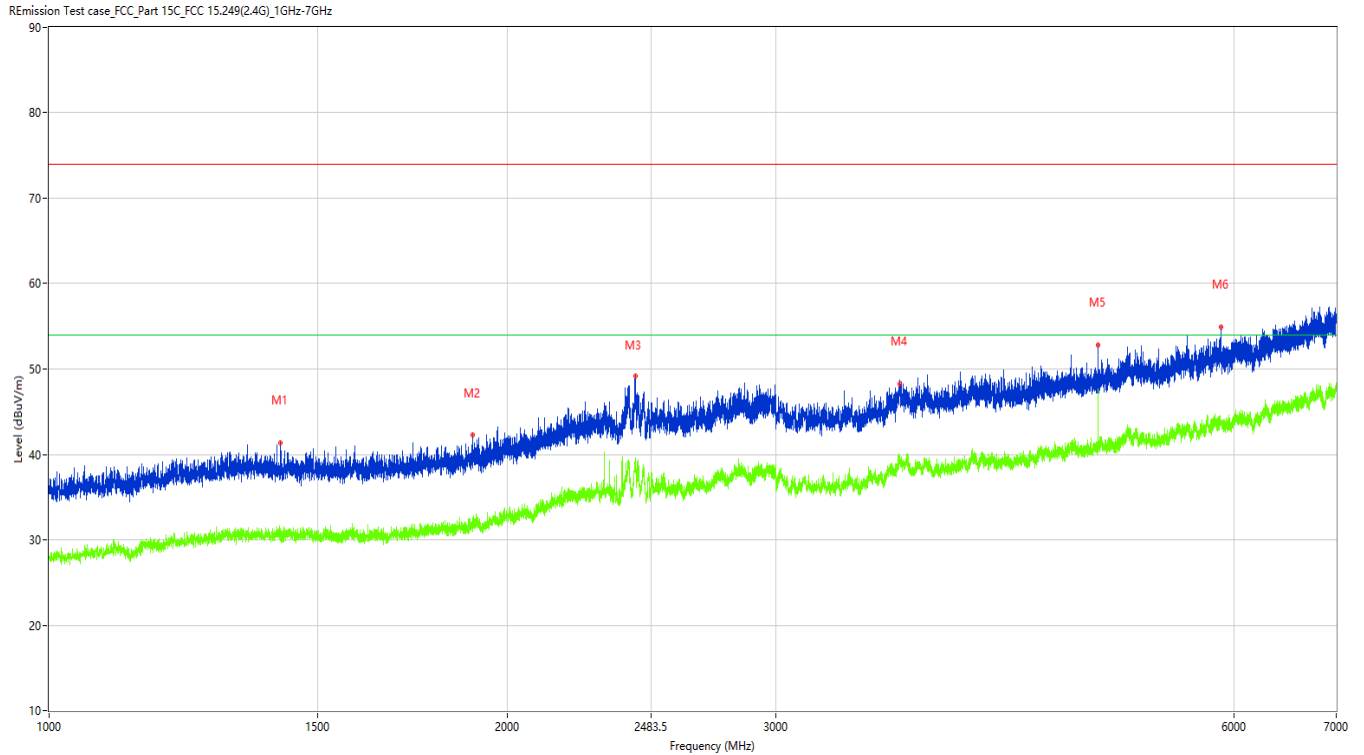
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 26 of 53

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	1419.000	41.33	-12.69	74.0	32.67	Peak	48.10	100	Horizontal	Pass
1**	1419.000	30.51	-12.69	54.0	23.49	AV	48.10	100	Horizontal	Pass
2	1897.250	42.23	-11.82	74.0	31.77	Peak	96.40	100	Horizontal	Pass
2**	1897.250	31.74	-11.82	54.0	22.26	AV	96.40	100	Horizontal	Pass
3	2426.500	49.20	-4.89	74.0	24.80	Peak	292.90	100	Horizontal	Pass
3**	2426.500	39.21	-4.89	54.0	14.79	AV	292.90	100	Horizontal	Pass
4	3616.500	48.29	-1.80	74.0	25.71	Peak	320.20	100	Horizontal	Pass
4**	3616.500	39.62	-1.80	54.0	14.38	AV	320.20	100	Horizontal	Pass
5	4884.500	52.79	0.07	74.0	21.21	Peak	302.70	100	Horizontal	Pass
5**	4884.500	47.08	0.07	54.0	6.92	AV	302.70	100	Horizontal	Pass
6	5884.000	54.90	2.15	74.0	19.10	Peak	268.90	100	Horizontal	Pass
6**	5884.000	43.54	2.15	54.0	10.46	AV	268.90	100	Horizontal	Pass

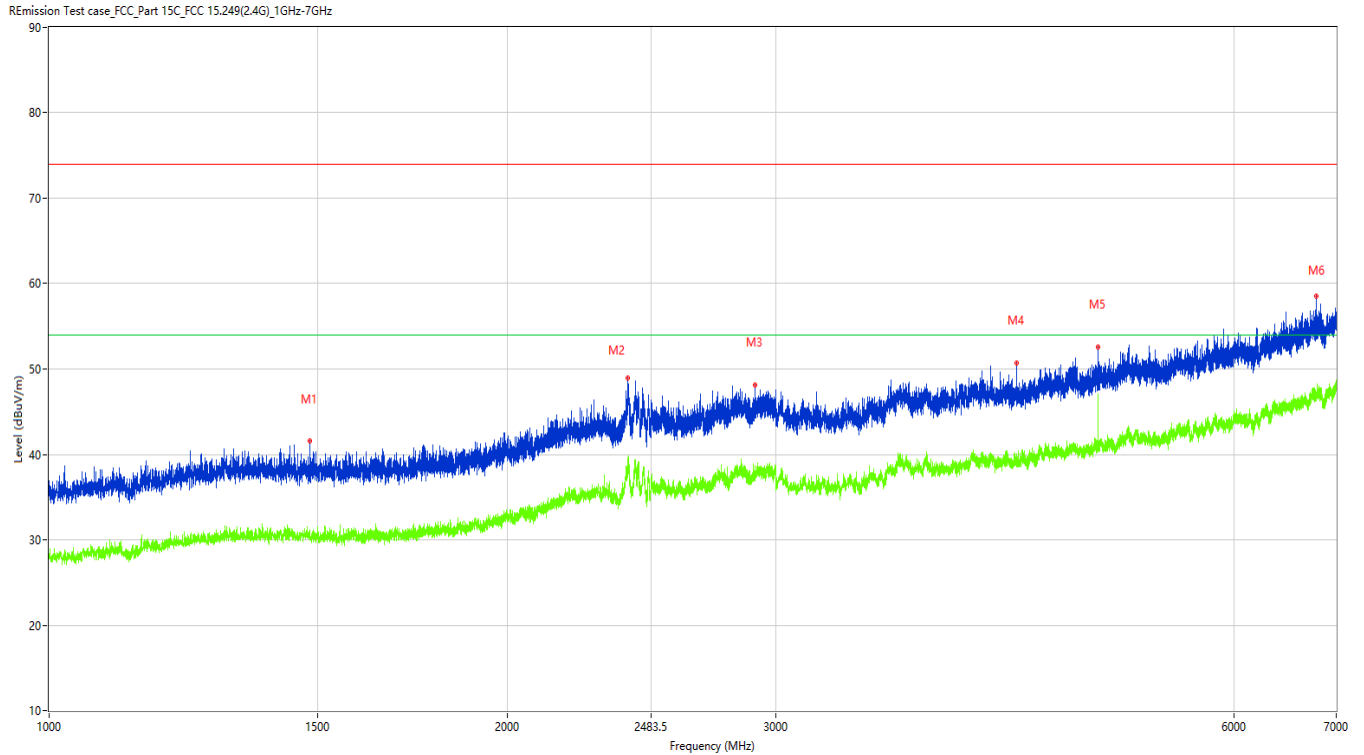
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 27 of 53

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	1484.000	41.54	-13.02	74.0	32.46	Peak	167.00	100	Vertical	Pass
1**	1484.000	30.41	-13.02	54.0	23.59	AV	167.00	100	Vertical	Pass
2	2399.000	48.94	-4.38	74.0	25.06	Peak	359.90	100	Vertical	Pass
2**	2399.000	39.47	-4.38	54.0	14.53	AV	359.90	100	Vertical	Pass
3	2909.000	48.15	-4.04	74.0	25.85	Peak	167.00	100	Vertical	Pass
3**	2909.000	37.43	-4.04	54.0	16.57	AV	167.00	100	Vertical	Pass
4	4316.500	50.72	-1.41	74.0	23.28	Peak	360.00	100	Vertical	Pass
4**	4316.500	39.66	-1.41	54.0	14.34	AV	360.00	100	Vertical	Pass
5	4884.000	52.61	0.07	74.0	21.39	Peak	41.10	100	Vertical	Pass
5**	4884.000	47.09	0.07	54.0	6.91	AV	41.10	100	Vertical	Pass
6	6789.500	58.57	5.19	74.0	15.43	Peak	73.10	100	Vertical	Pass
6**	6789.500	47.18	5.19	54.0	6.82	AV	73.10	100	Vertical	Pass

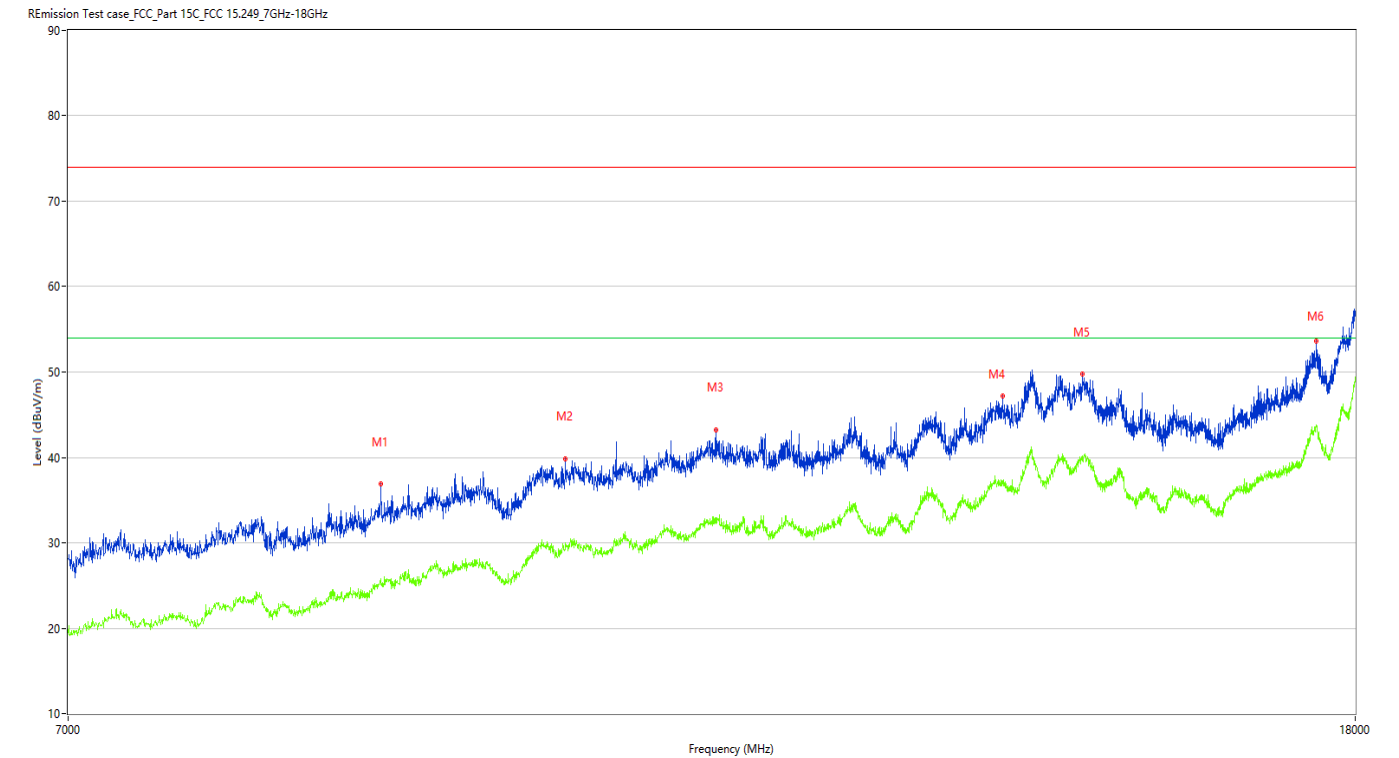
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 28 of 53

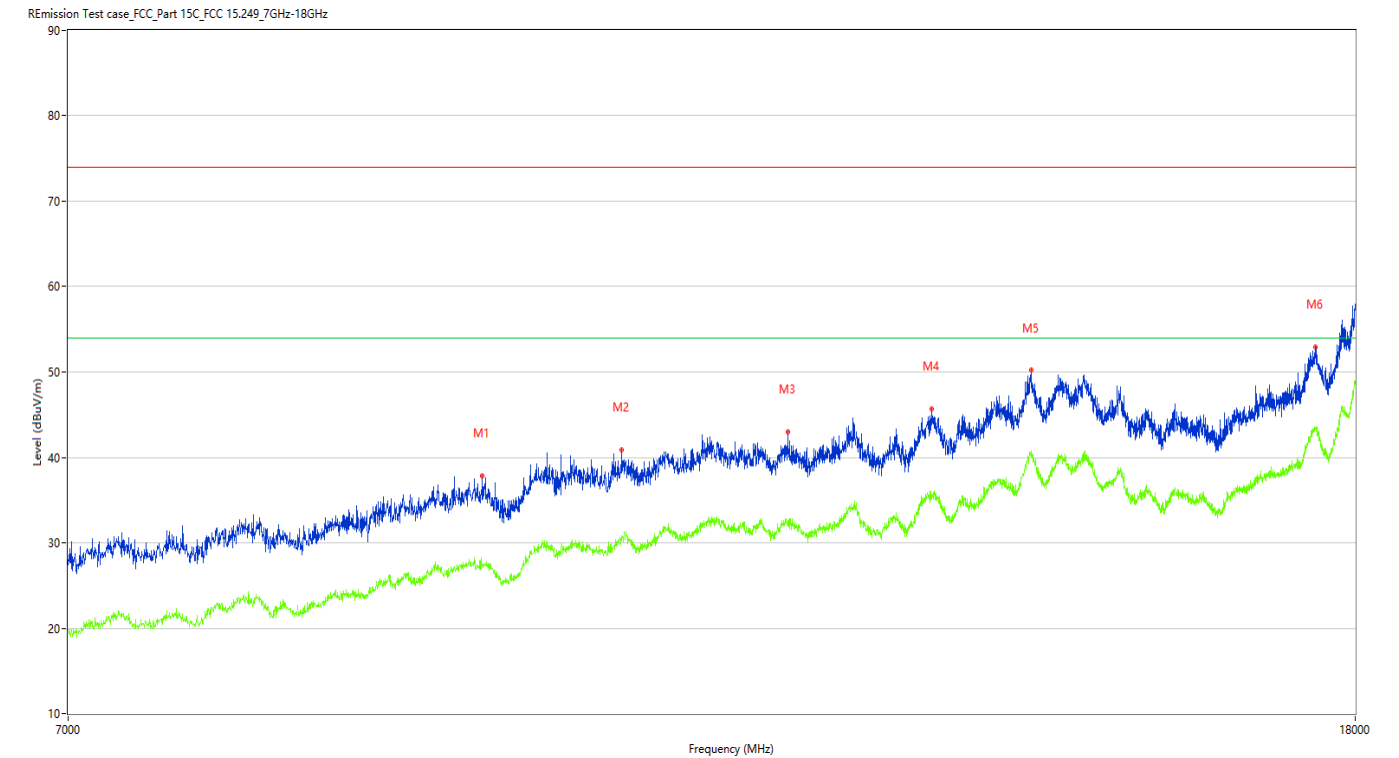
Figure 17: Test plots of Field strength of harmonics, 2442MHz, 7GHz-18GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	8806.750	36.92	5.06	74.0	37.08	Peak	60.00	100	Horizontal	Pass
1**	8806.750	25.25	5.06	54.0	28.75	AV	60.00	100	Horizontal	Pass
2	10082.750	39.82	9.39	74.0	34.18	Peak	185.80	100	Horizontal	Pass
2**	10082.750	29.97	9.39	54.0	24.03	AV	185.80	100	Horizontal	Pass
3	11262.500	43.19	12.06	74.0	30.81	Peak	247.20	100	Horizontal	Pass
3**	11262.500	32.87	12.06	54.0	21.13	AV	247.20	100	Horizontal	Pass
4	13897.000	47.21	15.49	74.0	26.79	Peak	310.40	100	Horizontal	Pass
4**	13897.000	36.85	15.49	54.0	17.15	AV	310.40	100	Horizontal	Pass
5	14730.250	49.71	18.48	74.0	24.29	Peak	124.40	100	Horizontal	Pass
5**	14730.250	39.65	18.48	54.0	14.35	AV	124.40	100	Horizontal	Pass
6	17496.750	53.67	21.27	74.0	20.33	Peak	60.00	100	Horizontal	Pass
6**	17496.750	43.61	21.27	54.0	10.39	AV	60.00	100	Horizontal	Pass

TEST REPORT

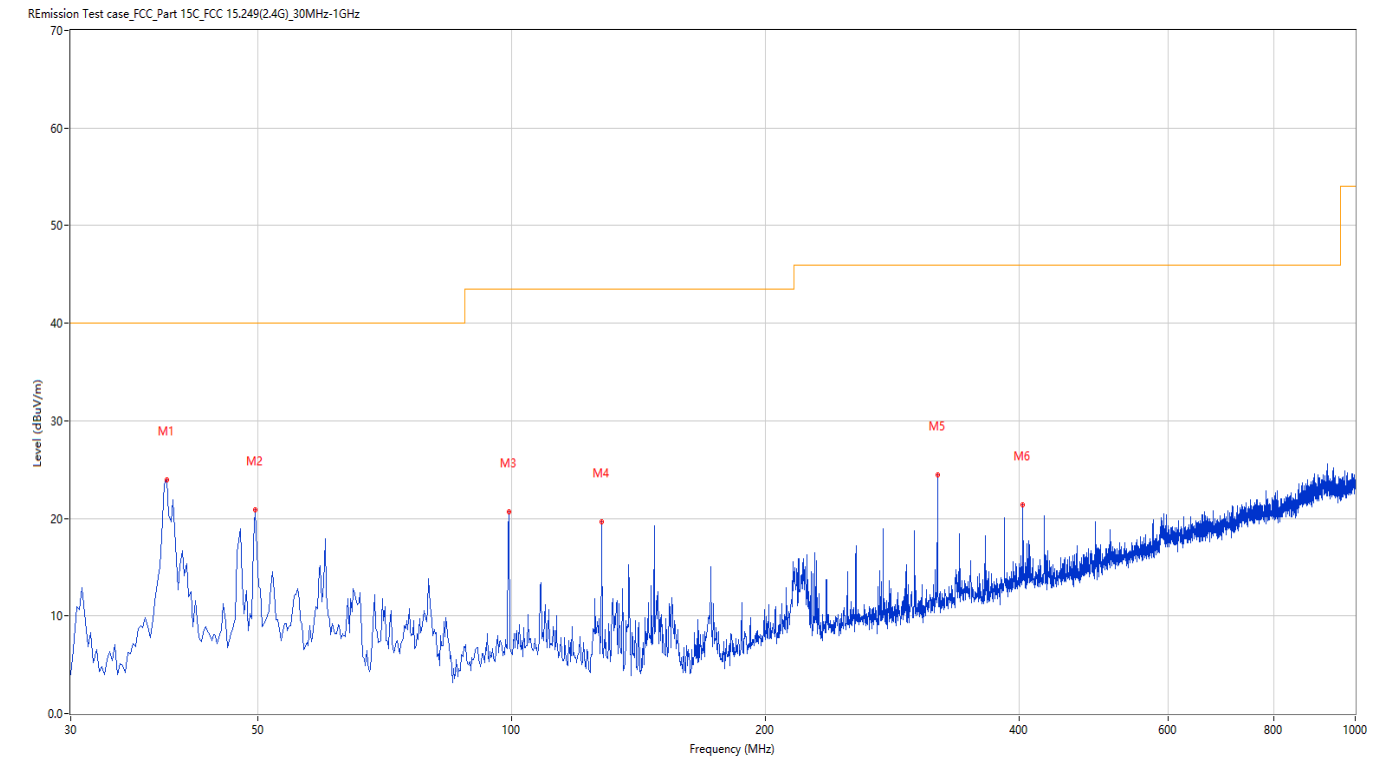
Figure 18: Test plots of Field strength of harmonics, 2442MHz, 7GHz-18GHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	9486.000	37.87	7.82	74.0	36.13	Peak	0.00	100	Vertical	Pass
1**	9486.000	27.28	7.82	54.0	26.72	AV	0.00	100	Vertical	Pass
2	10509.000	40.91	10.08	74.0	33.09	Peak	114.70	100	Vertical	Pass
2**	10509.000	30.20	10.08	54.0	23.80	AV	114.70	100	Vertical	Pass
3	11870.250	43.01	12.02	74.0	30.99	Peak	223.80	100	Vertical	Pass
3**	11870.250	32.62	12.02	54.0	21.38	AV	223.80	100	Vertical	Pass
4	13187.500	45.64	14.06	74.0	28.36	Peak	348.80	100	Vertical	Pass
4**	13187.500	35.65	14.06	54.0	18.35	AV	348.80	100	Vertical	Pass
5	14188.500	50.19	19.75	74.0	23.81	Peak	176.50	100	Vertical	Pass
5**	14188.500	40.80	19.75	54.0	13.20	AV	176.50	100	Vertical	Pass
6	17480.249	52.94	21.45	74.0	21.06	Peak	46.20	100	Vertical	Pass
6**	17480.249	43.42	21.45	54.0	10.58	AV	46.20	100	Vertical	Pass

TEST REPORT

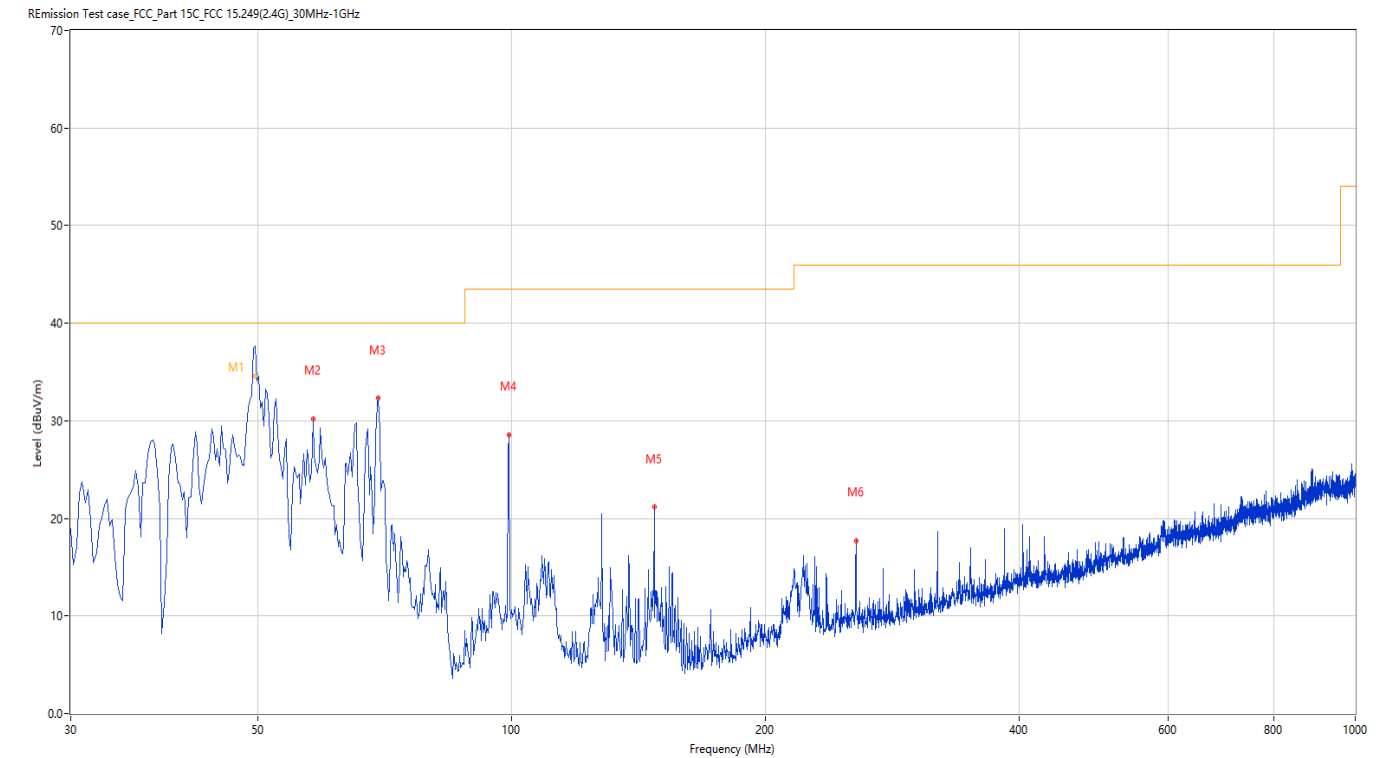
Figure 19: Test plots of Field strength of harmonics, 2480MHz, 30MHz-1GHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	38.970	23.99	-26.70	40.0	16.01	Peak	134.50	200	Horizontal	Pass
2	49.638	20.91	-25.03	40.0	19.09	Peak	95.10	200	Horizontal	Pass
3	99.338	20.67	-26.69	43.5	22.83	Peak	95.10	200	Horizontal	Pass
4	127.946	19.62	-29.33	43.5	23.88	Peak	247.70	200	Horizontal	Pass
5	319.958	24.43	-23.18	46.0	21.57	Peak	114.90	100	Horizontal	Pass
6	403.599	21.37	-20.67	46.0	24.63	Peak	242.90	100	Horizontal	Pass

TEST REPORT

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*	49.685	34.62	-25.03	40.0	5.38	QP	23.70	114	Vertical	Pass
2	58.123	30.21	-25.89	40.0	9.79	Peak	4.00	100	Vertical	Pass
3	69.518	32.30	-29.20	40.0	7.70	Peak	175.00	100	Vertical	Pass
4	99.338	28.55	-26.69	43.5	14.95	Peak	184.30	100	Vertical	Pass
5	147.583	21.14	-29.99	43.5	22.36	Peak	159.30	100	Vertical	Pass
6	255.954	17.72	-24.42	46.0	28.28	Peak	274.90	200	Vertical	Pass

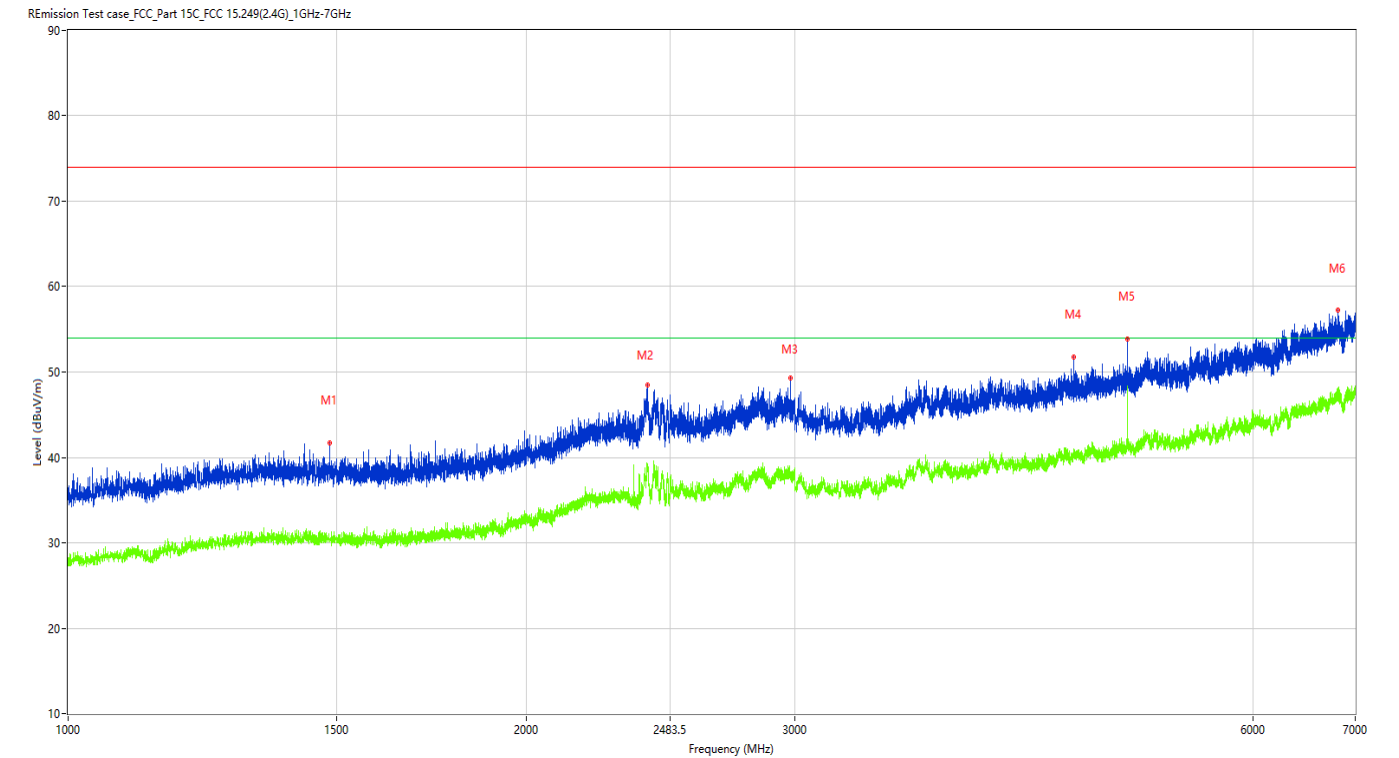
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 32 of 53

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	1484.750	41.67	-13.02	74.0	32.33	Peak	83.50	100	Horizontal	Pass
1**	1484.750	30.16	-13.02	54.0	23.84	AV	83.50	100	Horizontal	Pass
2	2401.250	48.52	-4.43	74.0	25.48	Peak	97.00	100	Horizontal	Pass
2**	2401.250	38.90	-4.43	54.0	15.10	AV	97.00	100	Horizontal	Pass
3	2980.250	49.25	-3.21	74.0	24.75	Peak	293.20	100	Horizontal	Pass
3**	2980.250	37.51	-3.21	54.0	16.49	AV	293.20	100	Horizontal	Pass
4	4576.500	51.79	-0.71	74.0	22.21	Peak	0.00	100	Horizontal	Pass
4**	4576.500	41.04	-0.71	54.0	12.96	AV	0.00	100	Horizontal	Pass
5	4960.000	53.88	0.22	74.0	20.12	Peak	107.90	100	Horizontal	Pass
5**	4960.000	48.42	0.22	54.0	5.58	AV	107.90	100	Horizontal	Pass
6	6820.000	57.21	5.11	74.0	16.79	Peak	347.90	100	Horizontal	Pass
6**	6820.000	47.55	5.11	54.0	6.45	AV	347.90	100	Horizontal	Pass

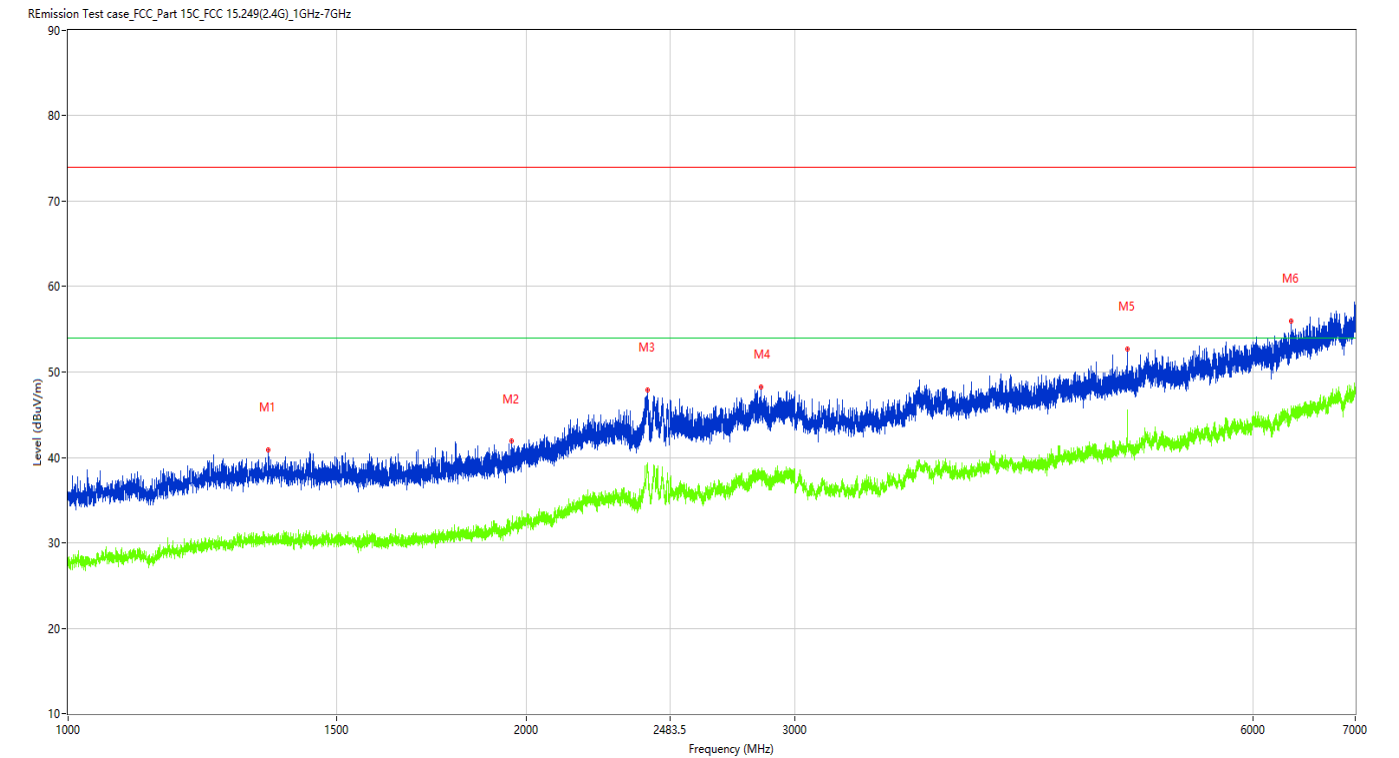
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 33 of 53

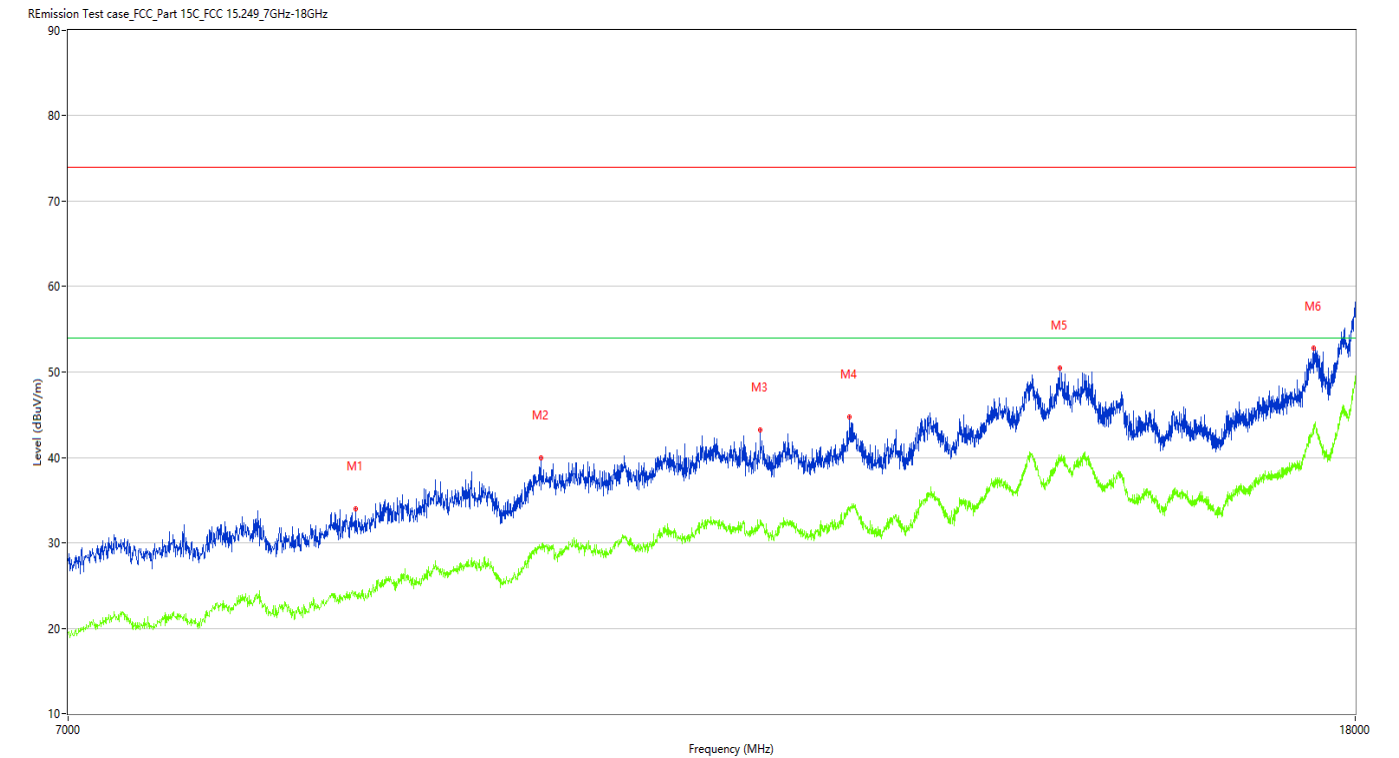
Figure 22: Test plots of Field strength of harmonics, 2480MHz, 1GHz-7GHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1353.750	40.87	-12.71	74.0	33.13	Peak	149.20	100	Vertical	Pass
1**	1353.750	30.50	-12.71	54.0	23.50	AV	149.20	100	Vertical	Pass
2	1955.250	41.89	-11.23	74.0	32.11	Peak	0.00	100	Vertical	Pass
2**	1955.250	32.09	-11.23	54.0	21.91	AV	0.00	100	Vertical	Pass
3	2401.250	47.90	-4.43	74.0	26.10	Peak	0.00	100	Vertical	Pass
3**	2401.250	39.40	-4.43	54.0	14.60	AV	0.00	100	Vertical	Pass
4	2849.500	48.27	-3.87	74.0	25.73	Peak	50.90	100	Vertical	Pass
4**	2849.500	37.83	-3.87	54.0	16.17	AV	50.90	100	Vertical	Pass
5	4960.500	52.74	0.22	74.0	21.26	Peak	354.10	100	Vertical	Pass
5**	4960.500	44.95	0.22	54.0	9.05	AV	354.10	100	Vertical	Pass
6	6353.500	56.01	3.47	74.0	17.99	Peak	98.20	100	Vertical	Pass
6**	6353.500	45.91	3.47	54.0	8.09	AV	98.20	100	Vertical	Pass

TEST REPORT

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	8644.500	33.97	4.70	74.0	40.03	Peak	236.00	100	Horizontal	Pass
1**	8644.500	23.95	4.70	54.0	30.05	AV	236.00	100	Horizontal	Pass
2	9901.250	39.98	9.72	74.0	34.02	Peak	0.00	100	Horizontal	Pass
2**	9901.250	29.55	9.72	54.0	24.45	AV	0.00	100	Horizontal	Pass
3	11631.000	43.21	11.11	74.0	30.79	Peak	0.00	100	Horizontal	Pass
3**	11631.000	31.96	11.11	54.0	22.04	AV	0.00	100	Horizontal	Pass
4	12420.250	44.73	12.35	74.0	29.27	Peak	236.00	100	Horizontal	Pass
4**	12420.250	34.07	12.35	54.0	19.93	AV	236.00	100	Horizontal	Pass
5	14493.750	50.53	17.75	74.0	23.47	Peak	0.00	100	Horizontal	Pass
5**	14493.750	39.97	17.75	54.0	14.03	AV	0.00	100	Horizontal	Pass
6	17455.499	52.78	20.98	74.0	21.22	Peak	48.80	100	Horizontal	Pass
6**	17455.499	43.76	20.98	54.0	10.24	AV	48.80	100	Horizontal	Pass

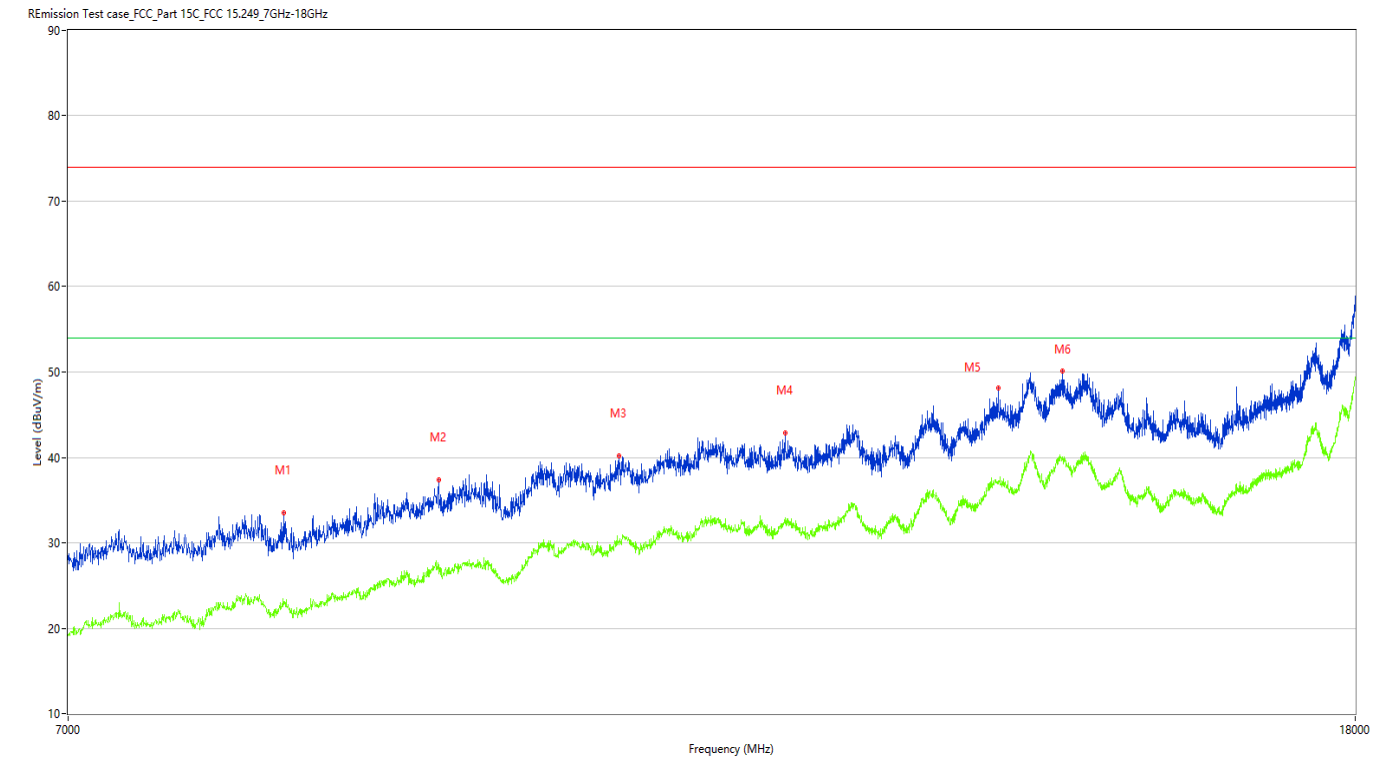
TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 35 of 53

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	8201.750	33.48	3.74	74.0	40.52	Peak	360.00	100	Vertical	Pass
1**	8201.750	23.15	3.74	54.0	30.85	AV	360.00	100	Vertical	Pass
2	9186.250	37.36	7.08	74.0	36.64	Peak	0.30	100	Vertical	Pass
2**	9186.250	27.47	7.08	54.0	26.53	AV	0.30	100	Vertical	Pass
3	10489.750	40.20	9.88	74.0	33.80	Peak	248.60	100	Vertical	Pass
3**	10489.750	29.88	9.88	54.0	24.12	AV	248.60	100	Vertical	Pass
4	11845.500	42.81	11.76	74.0	31.19	Peak	0.00	100	Vertical	Pass
4**	11845.500	32.98	11.76	54.0	21.02	AV	0.00	100	Vertical	Pass
5	13853.000	48.07	15.25	74.0	25.93	Peak	248.60	100	Vertical	Pass
5**	13853.000	37.29	15.25	54.0	16.71	AV	248.60	100	Vertical	Pass
6	14521.250	50.08	17.55	74.0	23.92	Peak	0.00	100	Vertical	Pass
6**	14521.250	39.96	17.55	54.0	14.04	AV	0.00	100	Vertical	Pass

TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 36 of 53

4.1.3 Band Edge

RESULT:

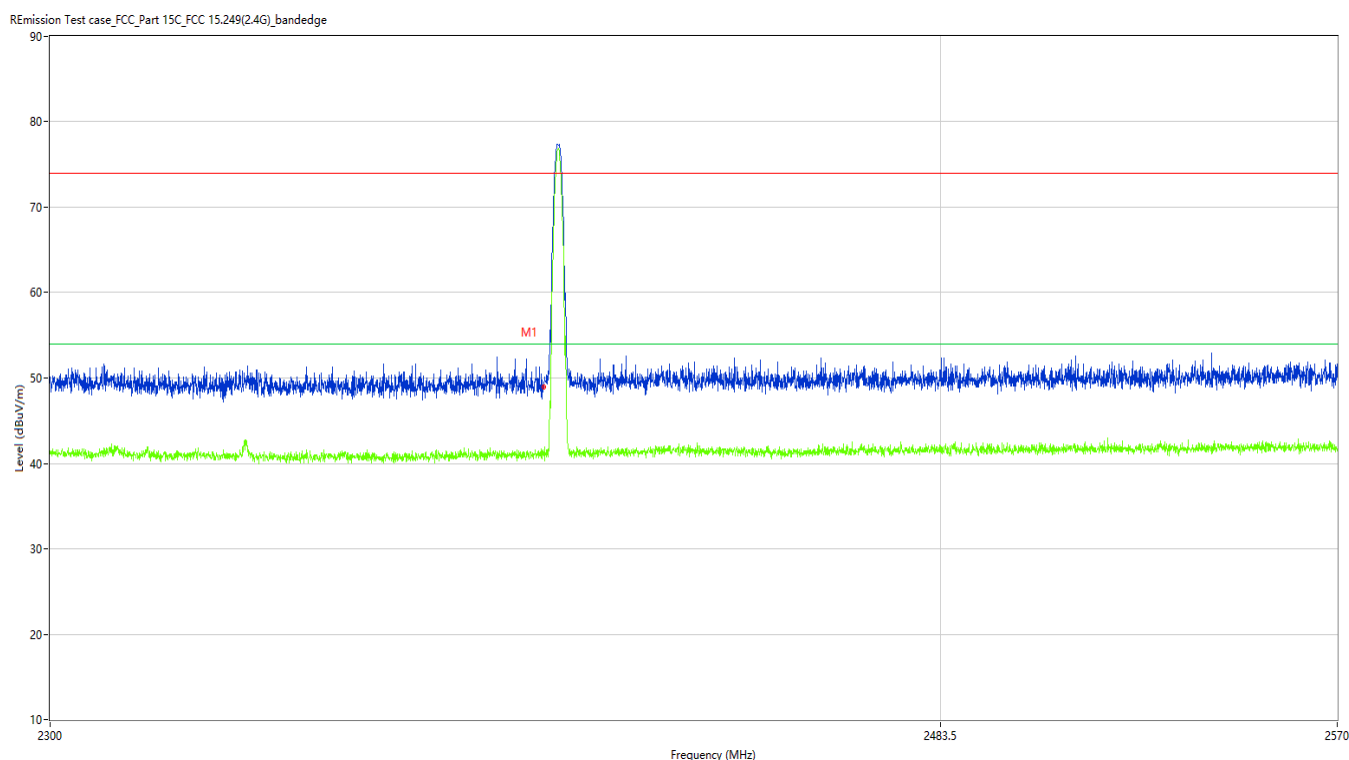
PASS

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 : 21°C
Relative humidity : 51%

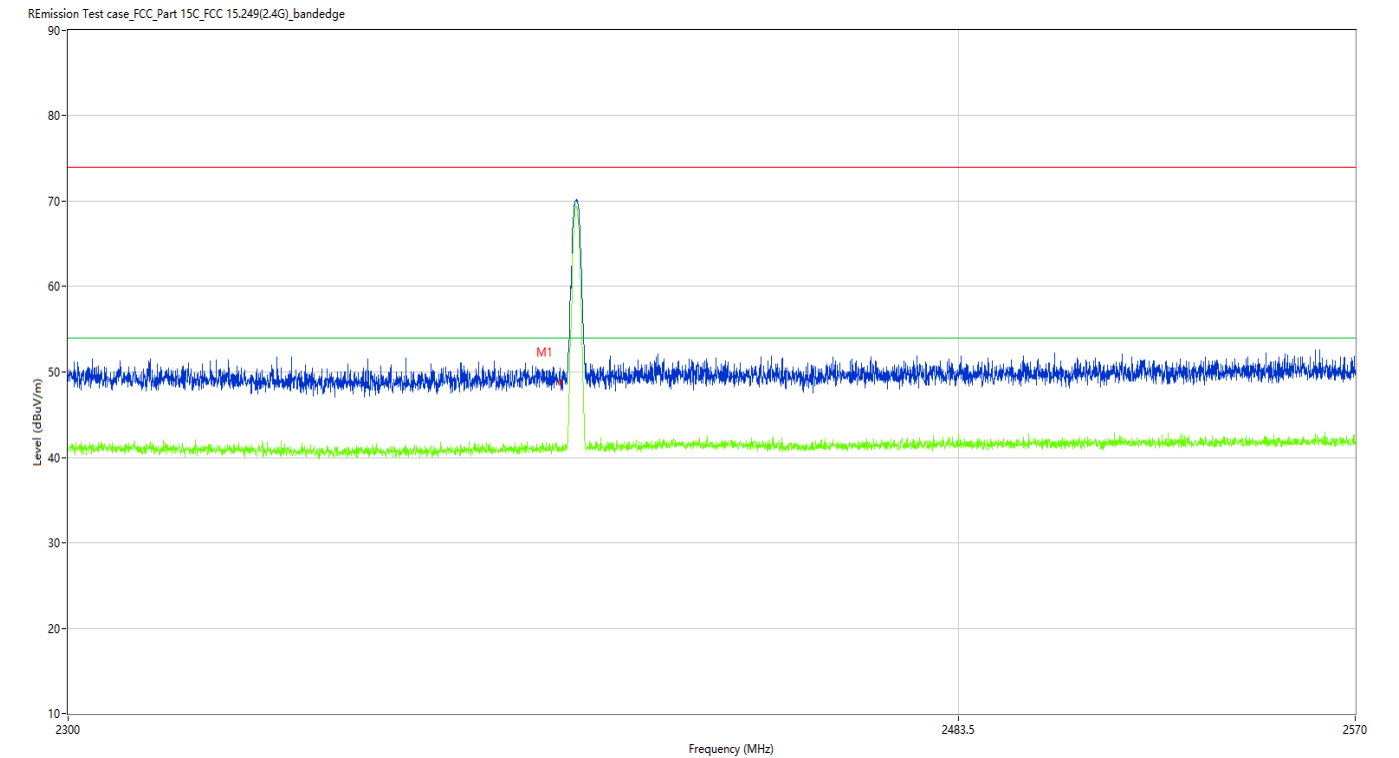
Figure 25: Test plots of Band Edge, 2403MHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2400.000	49.11	-9.87	74.0	24.89	Peak	257.31	100	Horizontal	Pass
1**	2400.000	41.11	-9.87	54.0	12.89	AV	257.31	100	Horizontal	Pass

TEST REPORT

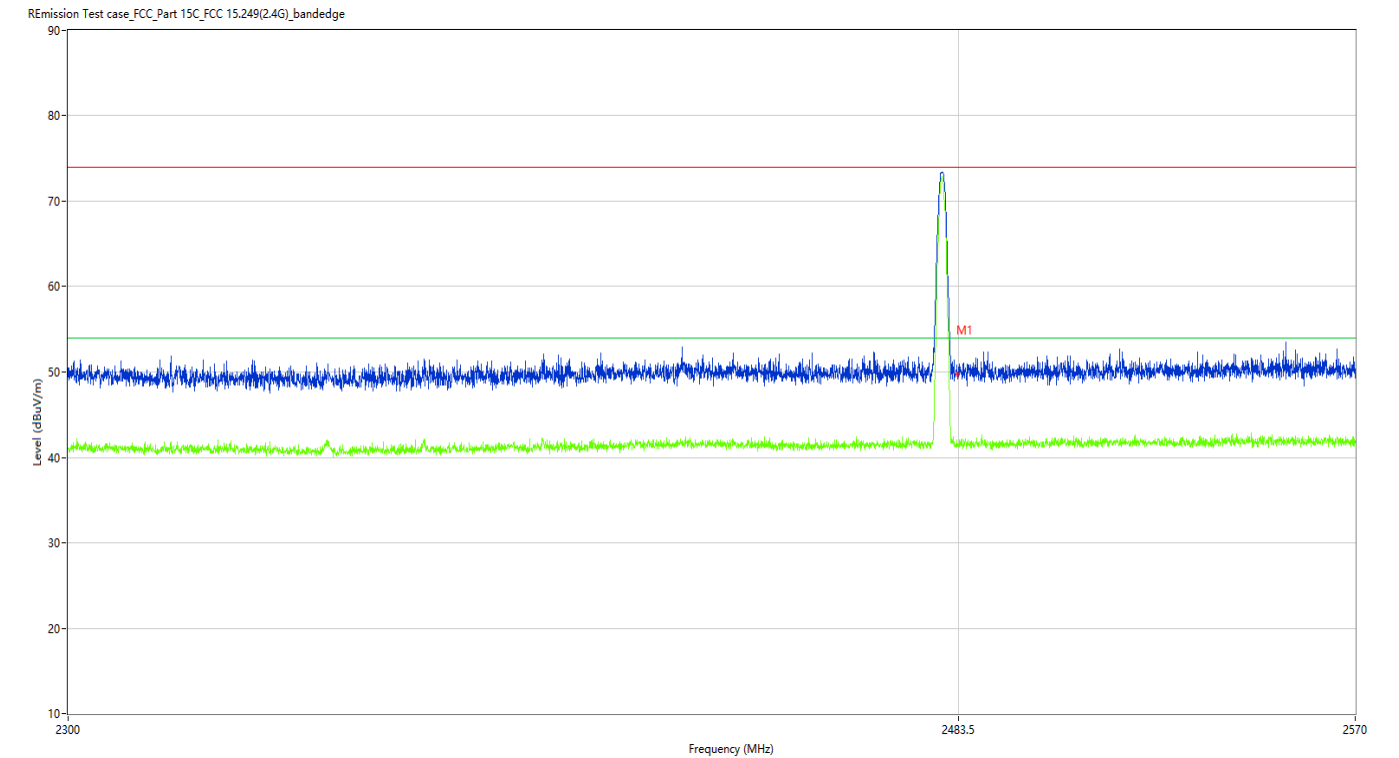
Figure 26: Test plots of Band Edge, 2403MHz, Vertical polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2400.000	48.56	-9.87	74.0	25.44	Peak	6.70	100	Vertical	Pass
1**	2400.000	40.72	-9.87	54.0	13.28	AV	6.70	100	Vertical	Pass

TEST REPORT

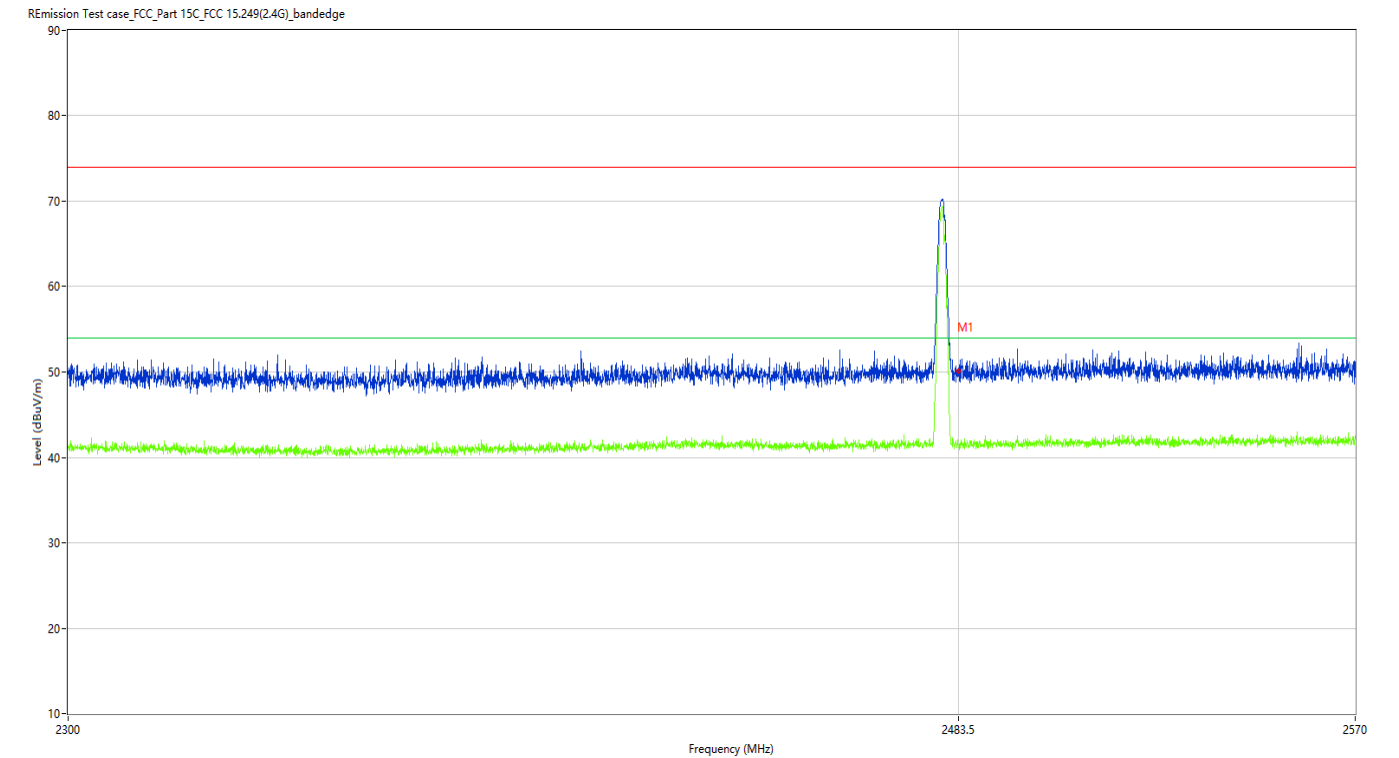
Figure 27: Test plots of Band Edge, 2480MHz, Horizontal polarization



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.500	49.68	-9.51	74.0	24.32	Peak	312.79	100	Horizontal	Pass
1**	2483.500	41.36	-9.51	54.0	12.64	AV	312.79	100	Horizontal	Pass

TEST REPORT

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	49.94	-9.51	74.0	24.06	Peak	89.41	100	Vertical	Pass
1**	2483.500	41.46	-9.51	54.0	12.54	AV	89.41	100	Vertical	Pass

TEST REPORT

Report No.: SHE23020016-02AE

Date: 2023-03-03

Page 40 of 53

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 : 24.3°C

Relative humidity : 54%

Table 1: 20dB Bandwidth and 99% Bandwidth

Test Mode	Test Channel (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
GFSK	2403	1.036	0.9681
	2442	1.033	0.9735
	2480	0.986	0.9572