

TEST REPORT

Report No.: SHE19080042-02HE

Date: 2019-10-31

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Applicant : Shenzhen UniStrong Science & Technology Co.,Ltd.
Address of Applicant : B,4-4Factory, Zhengcheng Road, Fuyong Baoan District, Shenzhen, China

Product Name : Rugged Tablet
Model No. : UT52
Sample No. : E19080042-01#05
E19080042-01#08
FCC ID : 2AOPD-UT52
ISED Number : 11546A-UT52

Standards : FCC CFR47 Part 15, Subpart C
RSS-Gen (Issue 5, March 2019)
RSS-247 (Issue 2, February 2017)

Date of Receipt : 2019-09-09
Date of Test : 2019-09-09 ~ 2019-11-05
Date of Issue : 2019-11-05

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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(Jennifer Zhou)

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Revision Record			
Version	Date	Revisions	Revised By
1.0	2019-11-05	Original	--

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1 General Information

1.1 Testing Laboratory

Company Name	ICAS Testing Technology Services (Shanghai) Co., Ltd.
Address	155 Pingbei Rd, Minhang District, Shanghai, China
Telephone	0086 21-51682999
Fax	0086 21-54711112
Homepage	www.icasiso.com

1.2 Details of Application

Company Name	Shenzhen UniStrong Science & Technology Co.,Ltd.
Address	B,4-4Factory, Zhengcheng Road, Fuyong Baoan District, Shenzhen, China
Contact Person	Lili Zheng
Telephone	+86-21-54467182
Email	ll.zheng@unistrong.com

1.3 Details of EUT

Product Name	Rugged Tablet
Brand Name	Unistrong
Model No.	UT52
FCC ID	2AOPD-UT52
ISED Number	11546A-UT52
Mode of Operation	Bluetooth BR/EDR
Frequency Range	2400MHz ~ 2483.5MHz
Number of Channels	79 (at intervals of 1 MHz)
Modulation Type	GFSK, $\pi/4$ -DQPSK, 8-DPSK
Antenna Type	Internal Antenna
Antenna Gain	-3.63 dBi
Extreme Temperature Range	-10°C ~ +55°C
Test Voltage	DC 3.8V

1.4 Test Methodology

47 CFR Part 15, Subpart C (10-1-16 Edition)	Miscellaneous Wireless Communications Services
FCC PUBLIC NOTICE DA 00-705 (Mar.30, 2000)	Filling and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems
RSS-Gen (Issue 5, March 2019)	General Requirements for Compliance of Radio Apparatus

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RSS-247 (Issue 2, February 2017)	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
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.

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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. Due Date
Spectrum Analyzer	Keysight	N9020B	MY59260184	2020-07-28
Spectrum Analyzer	Rohde & Schwarz	FSV40N	101450	2020-06-24
EMI Test Receiver	Rohde & Schwarz	ESPI3	100173	2020-06-19
EMI Test Receiver	Rohde & Schwarz	ESR 7	101911	2020-06-19
V-network	SCHWARZBECK	NSLK 8127	8127-902	2020-02-20
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	100687	2020-08-22
Broadband Antenna	SCHWARZBECK	VULB9163	9163-1037	2020-06-06
Horn Antenna-18G	SCHWARZBECK	BBHA9120D	9120D-1775	2020-06-06
Loop Antenna	SCHWARZBECK	FMZB 1513	N/A	2021-03-19
Horn Antenna-40G	YINGLIAN	LB-180400-KF	N/A	2020-07-26
EMC chamber 9*6*6 (L*W*H)	CHANGNING	966	N/A	2020-06-26
Shielded Enclosure 8*5*4 (L*W*H)	CHANGNING	854	N/A	2020-08-28
Test Software	BL	BL410_E	N/A	N/A

2.3 Measurement Uncertainty

Parameter	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	± 1.5 dB
	> 1GHz	± 1.5 dB
Radiated Emission	30 MHz – 1 GHz	± 3 dB
	> 1GHz	± 3 dB

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3 Test Set-up and Operation Modes

3.1 Details of Test Mode

Using test software was control EUT work in continuous transmitter and receiver mode. Select test channel as below:

Channel	Frequency
The lowest channel(CH0)	2402MHz
The middle channel(CH39)	2441MHz
The Highest channel(CH78)	2480MHz

The basic operation modes are:

- A. On
 - 1. BR/EDR mode
 - a. Transmitting
 - i. Low Channel
 - ii. Middle Channel
 - iii. High Channel
 - iv. Hopping mode
 - b. Receiving
 - 2. Normal working with Bluetooth on
- B. Standby
- C. Off

3.2 Special Accessories and Auxiliary Equipment

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	TP00083A	N/A

3.3 Support Software

Description	Manufacturer	Software Name
Software	Broadcom	Bluetool

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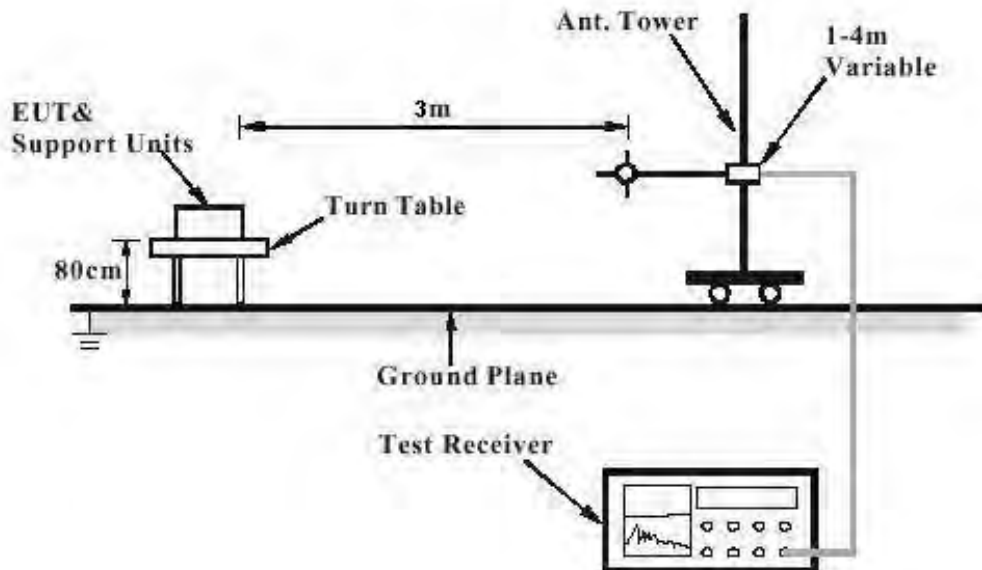
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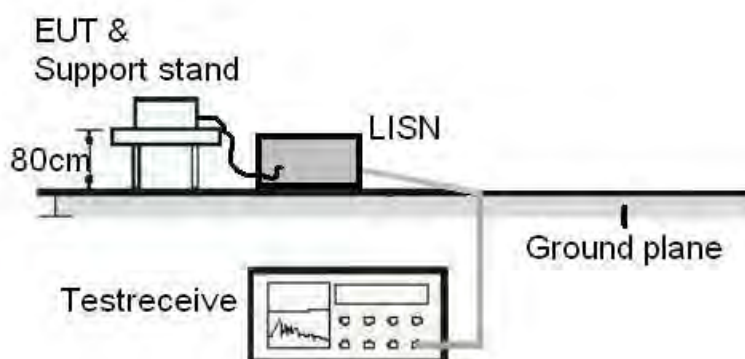
3.4 Test Setup Diagram

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 Equipment Configuration for Conduction Measurement



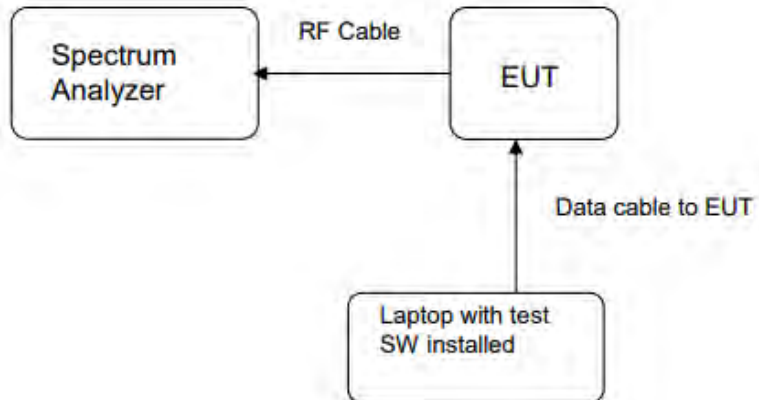
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Diagram of Measurement Equipment Configuration for Transmitter Measurement



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4 Test Results

4.1 Transmitter Requirement & Test Suites

4.1.1 Antenna Requirement

RESULT:

PASS

Test standard	:	FCC Part 15.247(b)(4), Part 15.203 RSS-247 5.4(6)
Requirement	:	The use of approved antennas only with directional gains that do not exceed 6 dBi

According to the manufacturer declaration, the EUT has an antenna with a directional gain of -3.63 dBi. The antenna is an internal 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 Maximum Conducted Output Power and E.I.R.P

RESULT:

PASS

Test standard : FCC Part 15.247(b)(1)
RSS-247 5.4(2)
Requirement : ANSI C63.10-2013
Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High
Operation Mode : A.1.a
Ambient temperature : 25°C
Relative humidity : 52%

Table 1: Maximum Conducted Output Power

Test Mode	Test Channel (MHz)	Measured Peak Power		Limit (W)
		(dBm)	(mW)	
GFSK	2402	3.40	2.19	< 1
	2441	4.50	2.82	
	2480	4.35	2.72	
$\pi/4$ -DQPSK	2402	4.62	2.90	< 0.125
	2441	4.88	3.08	
	2480	4.69	2.94	
8-DPSK	2402	4.63	2.90	< 0.125
	2441	4.86	3.06	
	2480	4.66	2.92	

Table 2: E.I.R.P

Test Mode	Test Channel (MHz)	E.I.R.P		Limit (W)
		(dBm)	(mW)	
GFSK	2402	-0.23	0.95	< 4
	2441	0.87	1.22	
	2480	0.72	1.18	
$\pi/4$ -DQPSK	2402	0.99	1.26	
	2441	1.25	1.33	
	2480	1.06	1.28	
8-DPSK	2402	1.00	1.26	
	2441	1.23	1.33	
	2480	1.03	1.27	

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Figure 1: Maximum Conducted Output Power, 2402MHz, GFSK



Figure 2: Maximum Conducted Output Power, 2441MHz, GFSK



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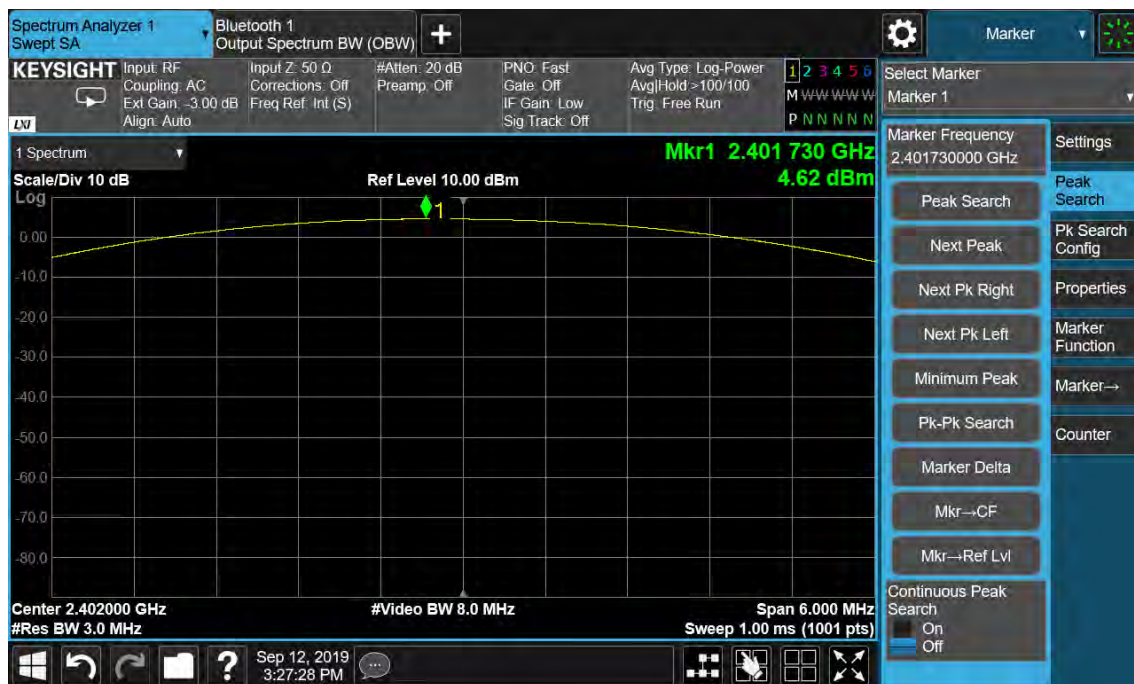
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Figure 3: Maximum Conducted Output Power, 2480MHz, GFSK



Figure 4: Maximum Conducted Output Power, 2402MHz, $\pi/4$ -DQPSK



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Figure 5: Maximum Conducted Output Power, 2441MHz, $\pi/4$ -DQPSK



Figure 6: Maximum Conducted Output Power, 2480MHz, $\pi/4$ -DQPSK



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Figure 7: Maximum Conducted Output Power, 2402MHz, 8-DPSK



Figure 8: Maximum Conducted Output Power, 2441MHz, 8-DPSK



Figure 9: Maximum Conducted Output Power, 2480MHz, 8-DPSK

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4.1.3 20dB Bandwidth and 99% Bandwidth

RESULT:

PASS

Test standard : FCC Part 15.247(a)(1)
RSS-247 5.1(1)
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.1.a
Ambient temperature : 25°C
Relative humidity : 52%

Table 3: 20dB Bandwidth and 99% Bandwidth

Test Mode	Test Channel (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
GFSK	2402	0.914	0.901
	2441	0.914	0.900
	2480	0.915	0.903
8-DPSK	2402	1.132	1.074
	2441	1.134	1.076
	2480	1.134	1.075

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Figure 10: 20dB Bandwidth and 99% Bandwidth, 2402MHz, GFSK

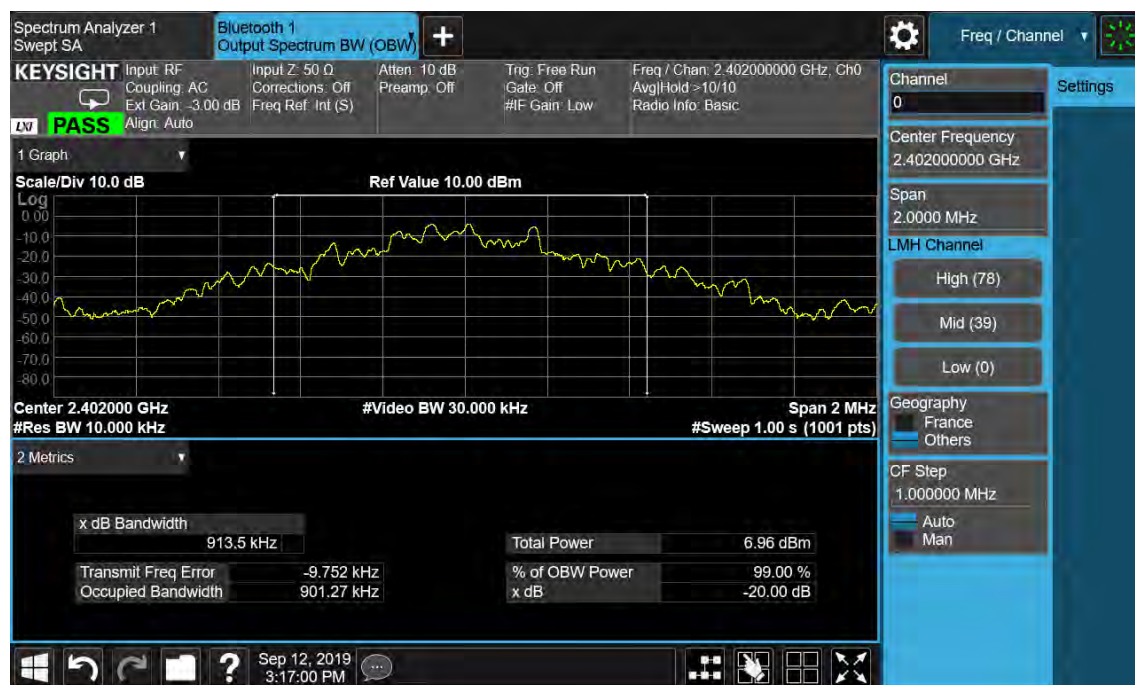
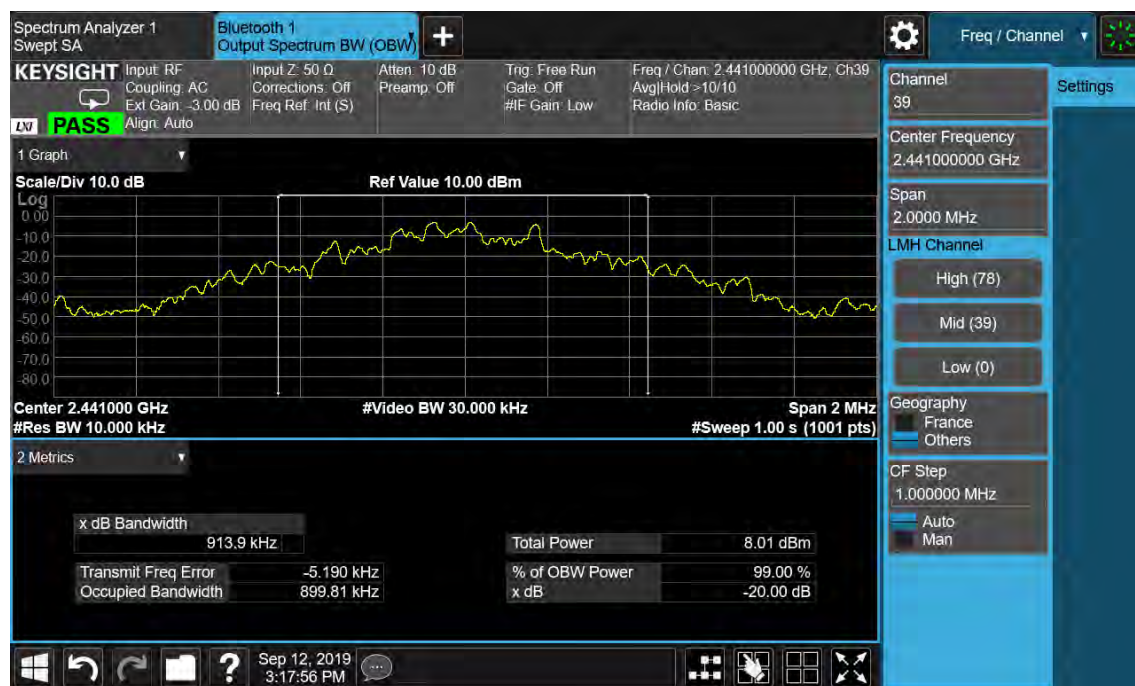


Figure 11: 20dB Bandwidth and 99% Bandwidth, 2441MHz, GFSK



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Figure 12: 20dB Bandwidth and 99% Bandwidth, 2480MHz, GFSK



Figure 13: 20dB Bandwidth and 99% Bandwidth, 2402MHz, 8-DPSK



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Figure 14: 20dB Bandwidth and 99% Bandwidth, 2441MHz, 8-DPSK



Figure 15: 20dB Bandwidth and 99% Bandwidth, 2480MHz, 8-DPSK



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4.1.4 Conducted Spurious Emission & Authorized-band band-edge

RESULT:

PASS

Test standard	: FCC Part 15.247(d) RSS-247 5.5
Requirement	: ANSI C63.10-2013
Kind of test site	: Shielded room

Test setup

Test Channel	: Low/Middle/High for spurious, Low/High for Band Edge
Operation Mode	: A.1.a
Ambient temperature	: 25°C
Relative humidity	: 52%

For details refer to following test plot.

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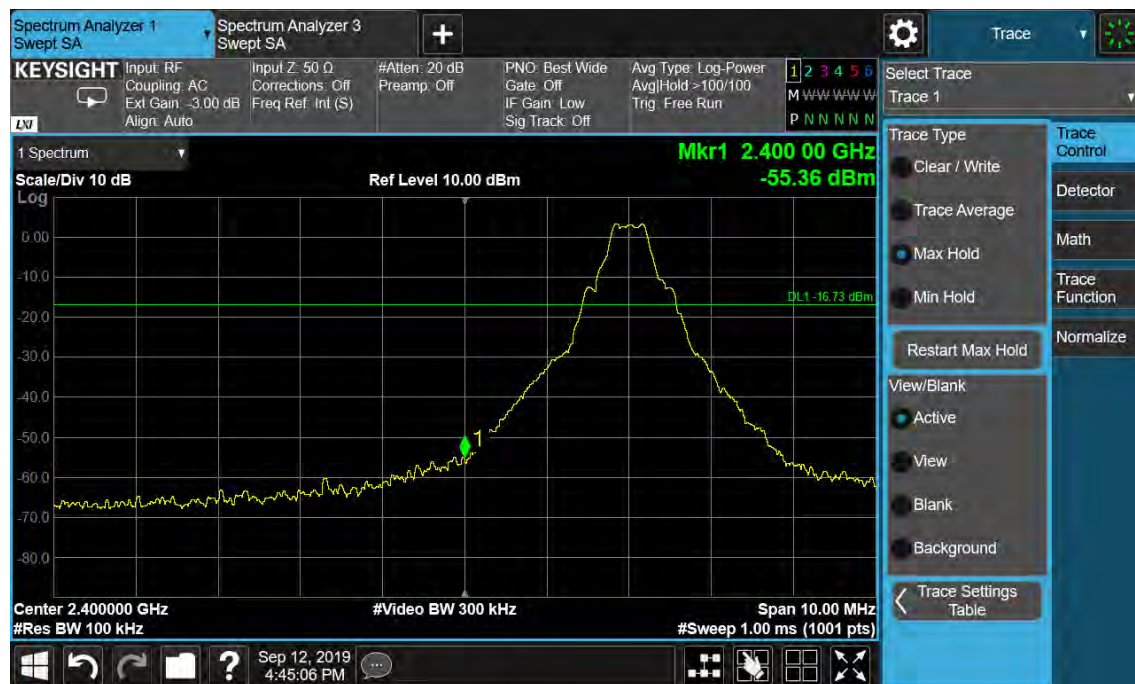
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Figure 16: Conducted Spurious Emission & Authorized-band band-edge, 2402MHz, GFSK Carrier Level



Band Edge



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Conducted spurious emissions 30MHz-25GHz



Figure 17: Conducted Spurious Emission & Authorized-band band-edge, 2441MHz, GFSK Carrier Level



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Conducted spurious emissions 30MHz-25GHz



Figure 18: Conducted Spurious Emission & Authorized-band band-edge, 2480MHz, GFSK Carrier Level



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Band Edge



Conducted spurious emissions 30MHz-25GHz



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Figure 19: Conducted Spurious Emission & Authorized-band band-edge, 2402MHz, 8-DPSK Carrier Level



Band Edge



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Conducted spurious emissions 30MHz-25GHz



Figure 20: Conducted Spurious Emission & Authorized-band band-edge, 2441MHz, 8-DPSK Carrier Level



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Conducted spurious emissions 30MHz-25GHz



Figure 21: Conducted Spurious Emission & Authorized-band band-edge, 2480MHz, 8-DPSK Carrier Level



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Band Edge



Conducted spurious emissions 30MHz-25GHz



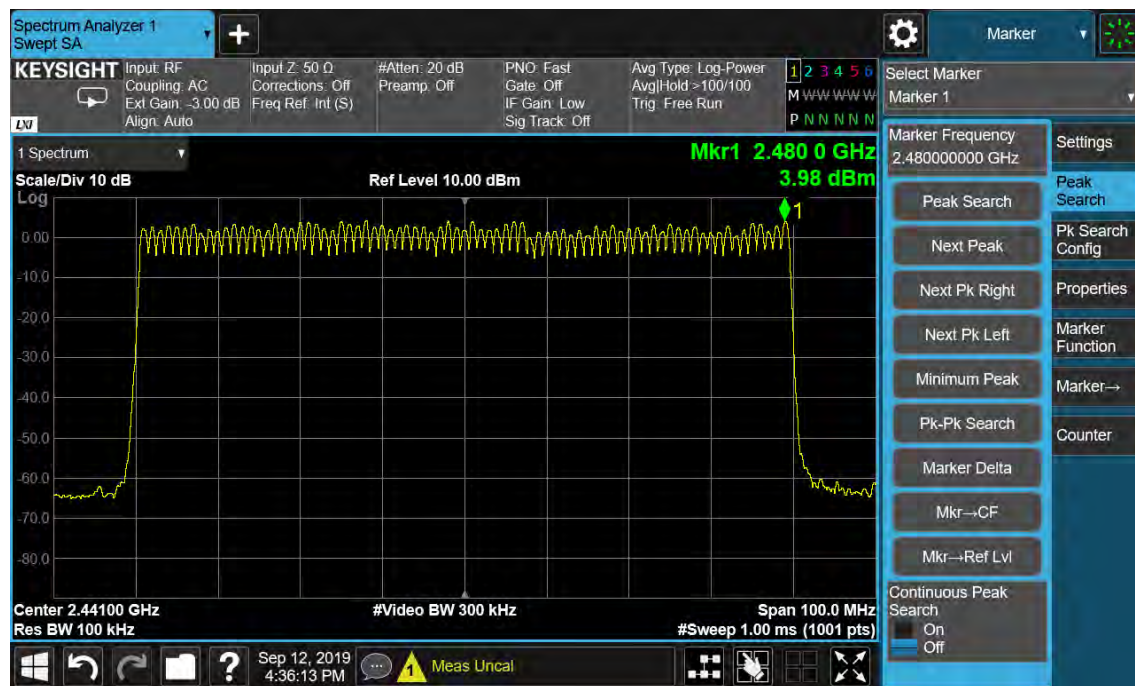
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Figure 22: Conducted Spurious Emission & Authorized-band band-edge, Hopping Mode, GFSK Carrier Level



Band Edge(Low)



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Band Edge(High)



Conducted spurious emissions 30MHz-25GHz



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Figure 23: Conducted Spurious Emission & Authorized-band band-edge, Hopping Mode, 8-DPSK Carrier Level



Band Edge(Low)



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Band Edge(High)



Conducted spurious emissions 30MHz-25GHz



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4.1.5 Spurious Emission

RESULT:

PASS

Test standard	: FCC Part 15.247(d), 15.205, 15.209 RSS-247 5.5
Requirement	: ANSI C63.10-2013
Kind of test site	: 3m Semi-Anechoic Chamber

Test setup

Test Channel	: Low/Middle/High
Operation Mode	: A
Ambient temperature	: 25°C
Relative humidity	: 52%

For details refer to following test plot.

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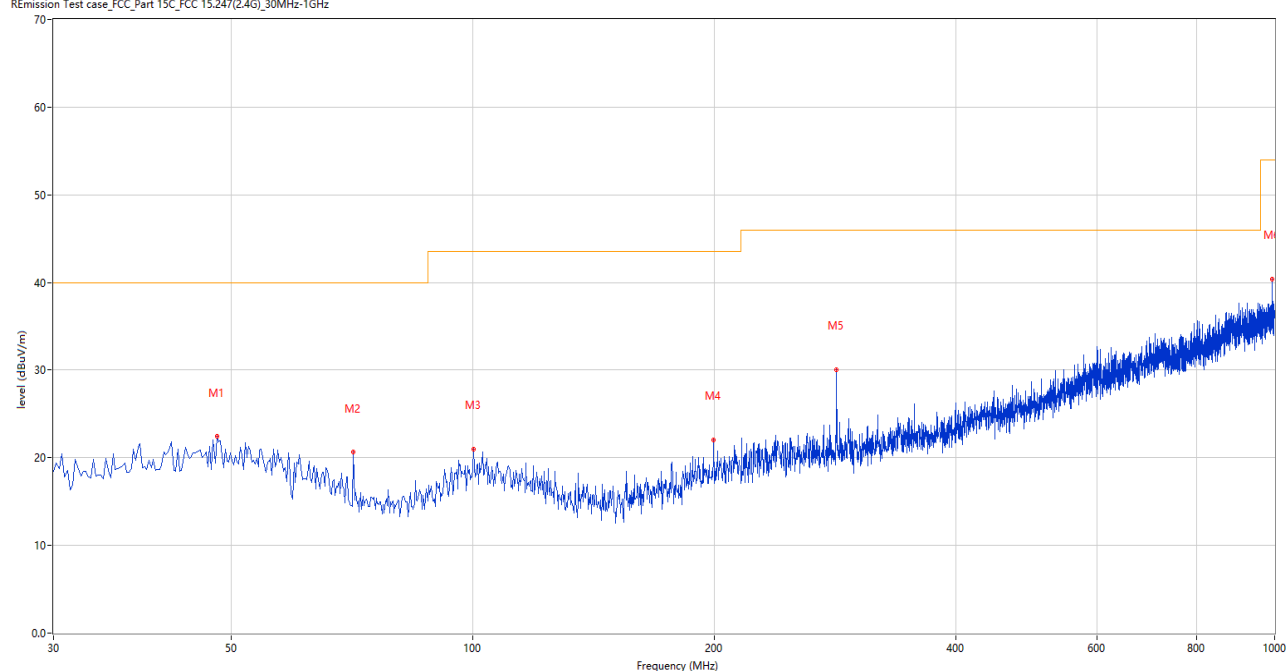
Notes:

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 is working in the Normal link mode below 1 GHz.

Figure 24: Spurious Emission, 30MHz – 1GHz, Normal Link Mode

30MHz-1GHz, Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_30MHz-1GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
47.941	22.46	--	--	-25.54	--	40.0	--	-17.54	2.00	100	Horizontal	Pass
70.972	20.63	--	--	-30.42	--	40.0	--	-19.37	11.00	100	Horizontal	Pass
100.307	21.03	--	--	-27.78	--	43.5	--	-22.47	6.00	100	Horizontal	Pass
199.708	22.08	--	--	-27.71	--	43.5	--	-21.42	9.00	100	Horizontal	Pass
284.319	30.09	--	--	-25.80	--	46.0	--	-15.91	1.00	100	Horizontal	Pass
992.727	40.41	--	--	-11.44	--	54.0	--	-13.59	15.00	100	Horizontal	Pass

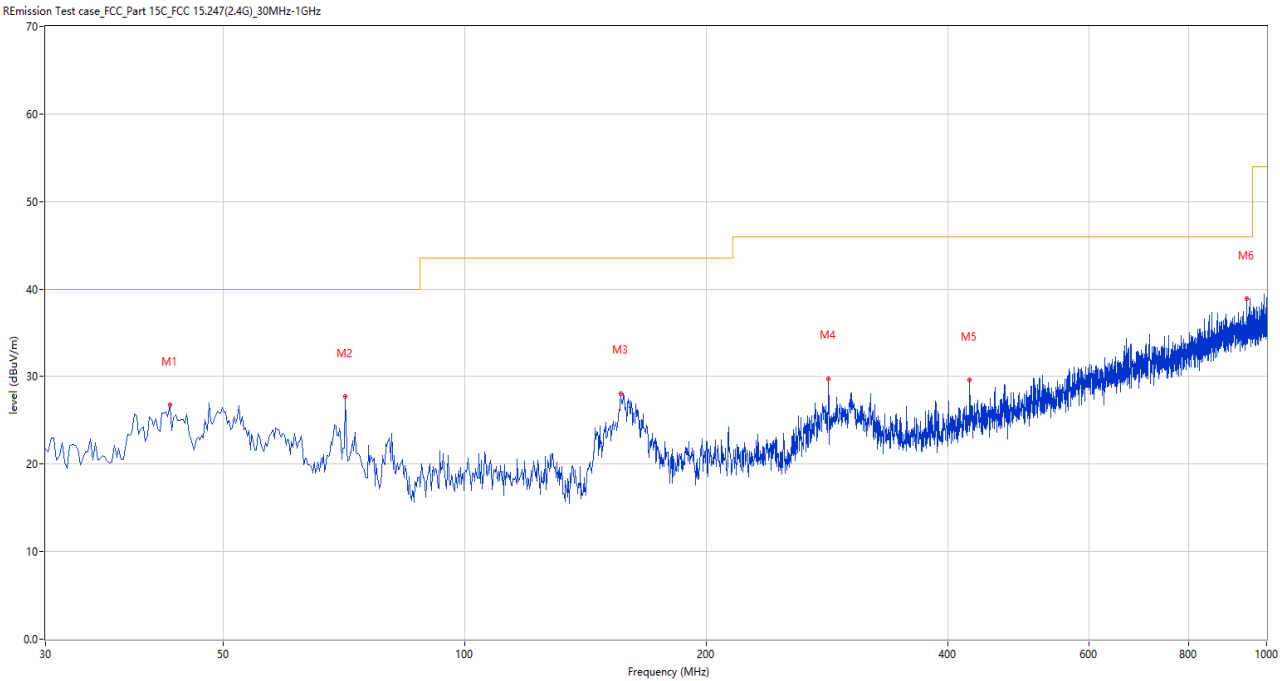
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30MHz-1GHz, Vertical



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
42.849	26.75	--	--	-25.67	--	40.0	--	-13.25	3.00	100	Vertical	Pass
70.972	27.73	--	--	-30.42	--	40.0	--	-12.27	3.00	100	Vertical	Pass
156.553	28.08	--	--	-30.75	--	43.5	--	-15.42	10.00	100	Vertical	Pass
284.319	29.75	--	--	-25.80	--	46.0	--	-16.25	12.00	100	Vertical	Pass
426.388	29.59	--	--	-22.40	--	46.0	--	-16.41	12.00	100	Vertical	Pass
943.997	38.85	--	--	-12.07	--	46.0	--	-7.15	9.00	100	Vertical	Pass

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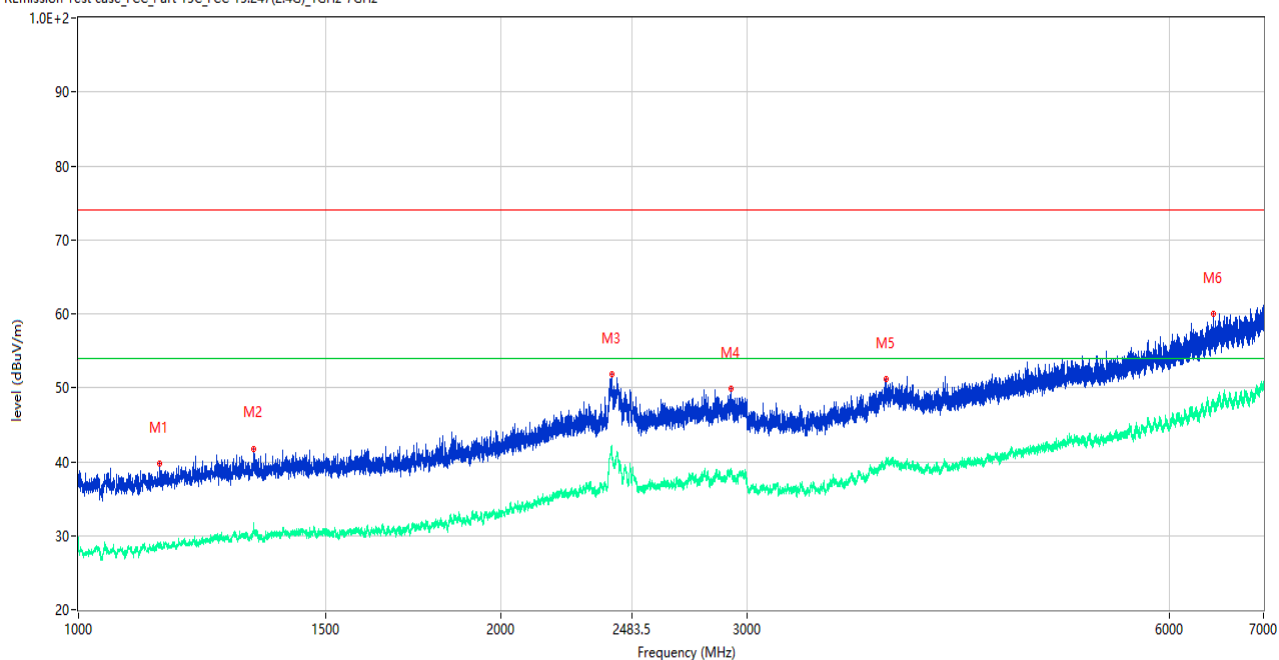
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Figure 25: Spurious Emission, 1GHz – 10th Harmonic, 2402MHz, GFSK
1GHz-7GHz, Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_1GHz-7GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
1141.982	39.74	--	28.97	-10.34	74.0	--	54.0	-25.03	1.00	100	Horizontal	Pass
1333.208	41.66	--	31.68	-9.70	74.0	--	54.0	-22.32	15.00	100	Horizontal	Pass
2399.325	51.87	--	42.05	2.11	74.0	--	54.0	-11.95	9.00	100	Horizontal	Pass
2921.010	49.93	--	38.78	-0.16	74.0	--	54.0	-15.22	15.00	100	Horizontal	Pass
3764.154	51.15	--	40.15	0.68	74.0	--	54.0	-13.85	7.00	100	Horizontal	Pass
6443.195	59.98	--	47.68	10.85	74.0	--	54.0	-6.32	15.00	100	Horizontal	Pass

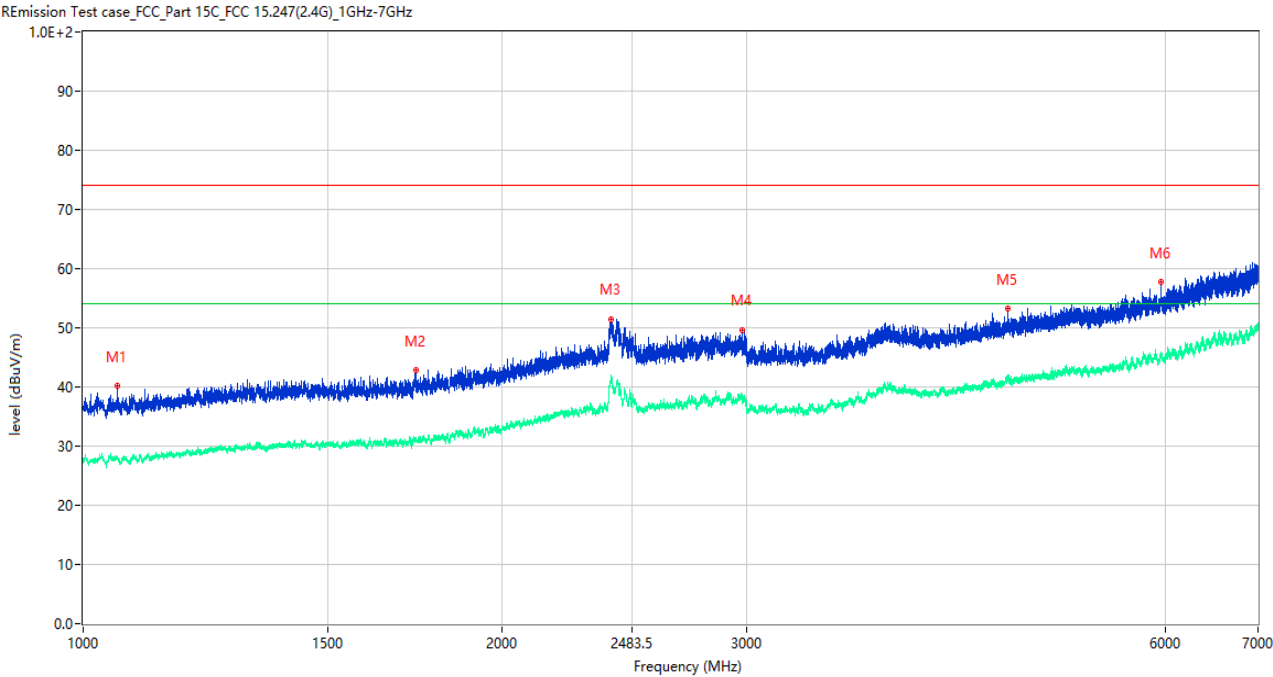
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1GHz-7GHz, Vertical



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
1058.993	40.13	--	28.44	-10.22	74.0	--	54.0	-25.56	6.00	100	Vertical	Pass
1733.908	42.81	--	31.21	-8.88	74.0	--	54.0	-22.79	0.00	100	Vertical	Pass
2398.075	51.49	--	41.70	2.16	74.0	--	54.0	-12.30	7.00	100	Vertical	Pass
2977.253	49.58	--	38.54	-0.30	74.0	--	54.0	-15.46	5.00	100	Vertical	Pass
4625.047	53.31	--	41.73	3.03	74.0	--	54.0	-12.27	4.00	100	Vertical	Pass
5965.504	57.68	--	45.25	7.69	74.0	--	54.0	-8.75	11.00	100	Vertical	Pass

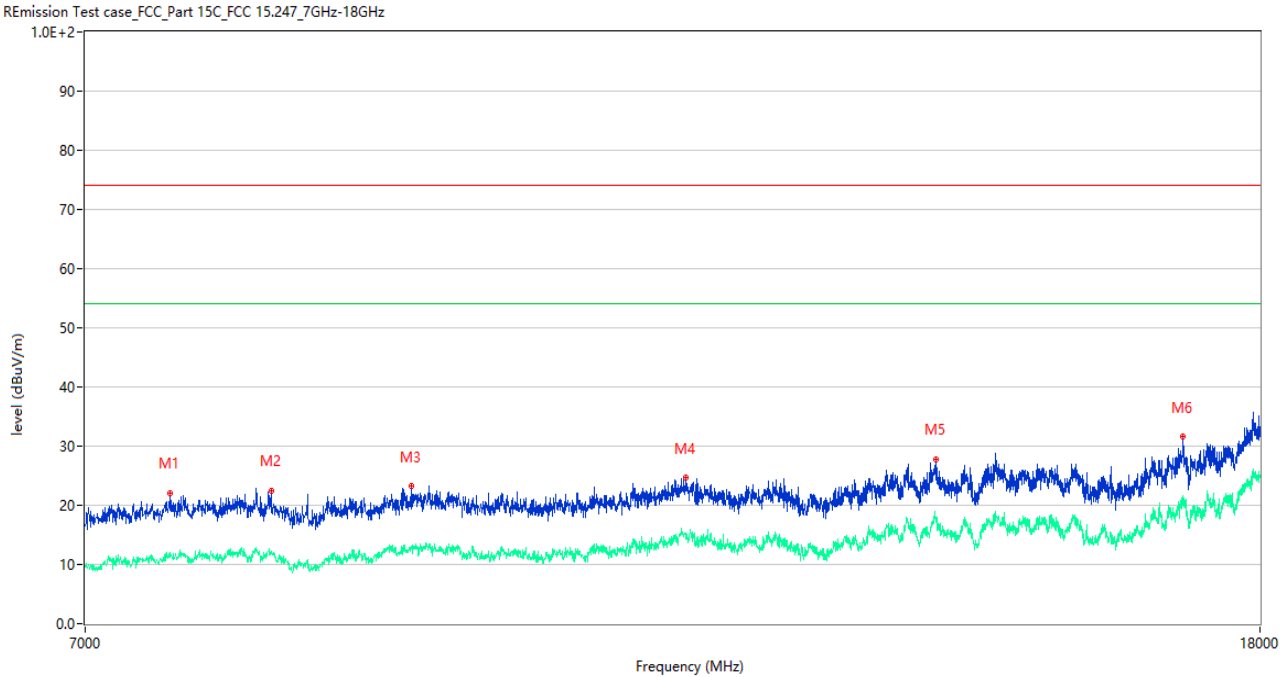
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7GHz-18GHz, Horizontal



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
7494.876	22.07	--	12.03	-26.20	74.0	--	54.0	-41.97	15.00	100	Horizontal	Pass
8127.218	22.54	--	12.30	-25.06	74.0	--	54.0	-41.70	6.00	100	Horizontal	Pass
9100.475	23.22	--	12.97	-25.05	74.0	--	54.0	-41.03	1.00	100	Horizontal	Pass
11346.663	24.59	--	15.41	-19.01	74.0	--	54.0	-38.59	13.00	100	Horizontal	Pass
13870.532	27.77	--	17.92	-15.73	74.0	--	54.0	-36.08	9.00	100	Horizontal	Pass
16919.520	31.62	--	21.30	-12.32	74.0	--	54.0	-32.70	10.00	100	Horizontal	Pass

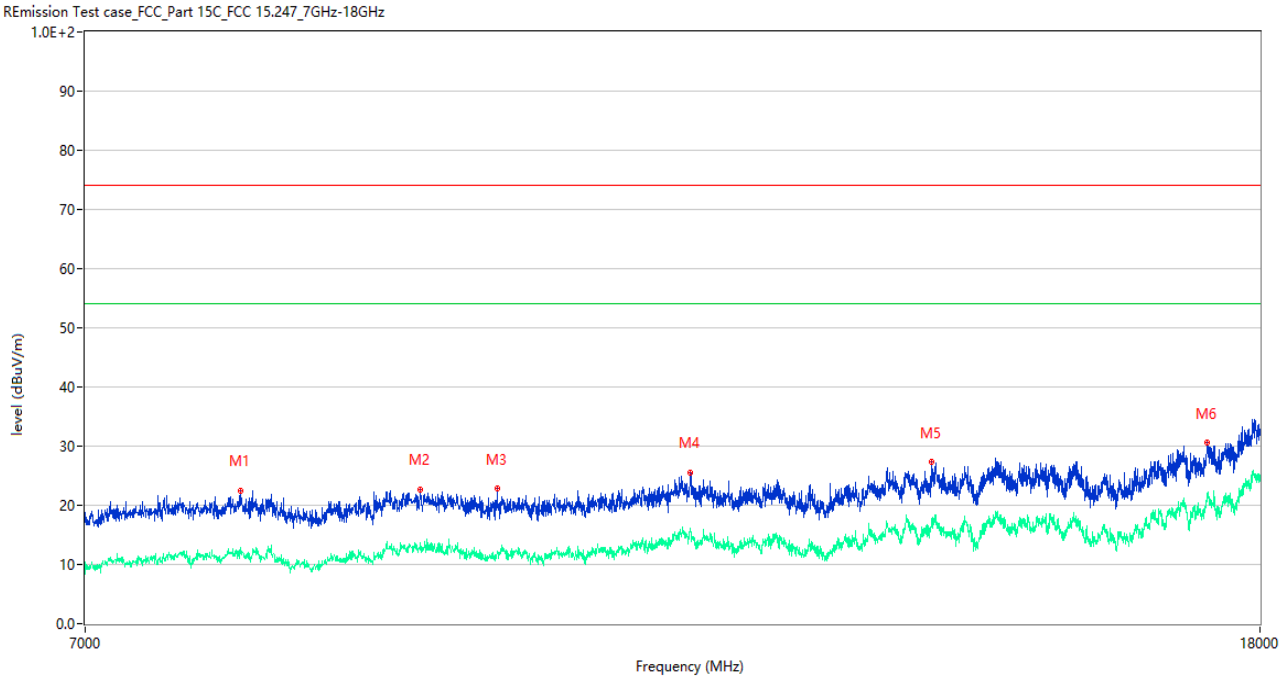
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7GHz-18GHz, Vertical



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
7932.017	22.55	--	12.94	-26.28	74.0	--	54.0	-41.06	6.00	100	Vertical	Pass
9166.458	22.69	--	13.75	-24.53	74.0	--	54.0	-40.25	0.00	100	Vertical	Pass
9749.313	22.76	--	11.82	-24.27	74.0	--	54.0	-42.18	0.00	100	Vertical	Pass
11385.154	25.53	--	16.03	-19.07	74.0	--	54.0	-37.97	7.00	100	Vertical	Pass
13829.293	27.31	--	17.25	-15.13	74.0	--	54.0	-36.75	13.00	100	Vertical	Pass
17257.686	30.60	--	22.06	-9.25	74.0	--	54.0	-31.94	15.00	100	Vertical	Pass

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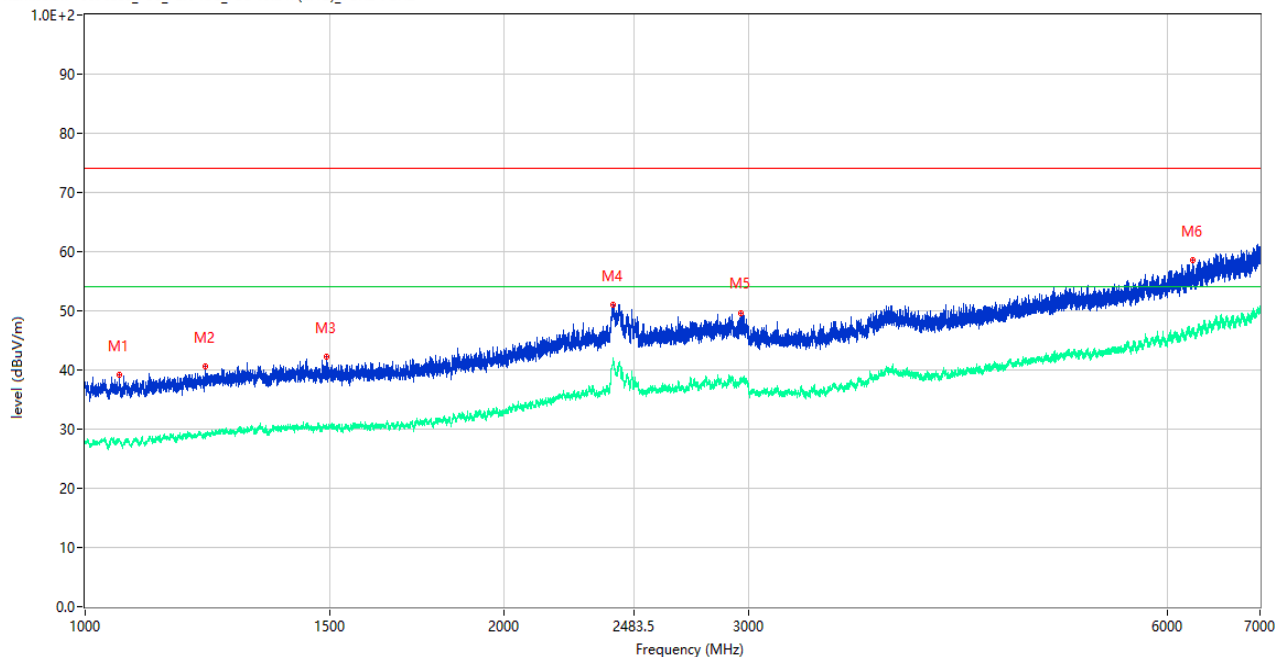
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Figure 26: Spurious Emission, 1GHz – 10th Harmonic, 2441MHz, GFSK
1GHz-7GHz, Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_1GHz-7GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
1057.993	39.13	--	28.02	-10.24	74.0	--	54.0	-25.98	5.00	100	Horizontal	Pass
1219.973	40.56	--	28.74	-10.53	74.0	--	54.0	-25.26	0.00	100	Horizontal	Pass
1490.939	42.23	--	30.66	-10.03	74.0	--	54.0	-23.34	15.00	100	Horizontal	Pass
2396.075	50.98	--	41.20	2.23	74.0	--	54.0	-12.80	0.00	100	Horizontal	Pass
2961.755	49.66	--	38.50	-0.36	74.0	--	54.0	-15.50	3.00	100	Horizontal	Pass
6265.467	58.54	--	46.54	9.35	74.0	--	54.0	-7.46	11.00	100	Horizontal	Pass

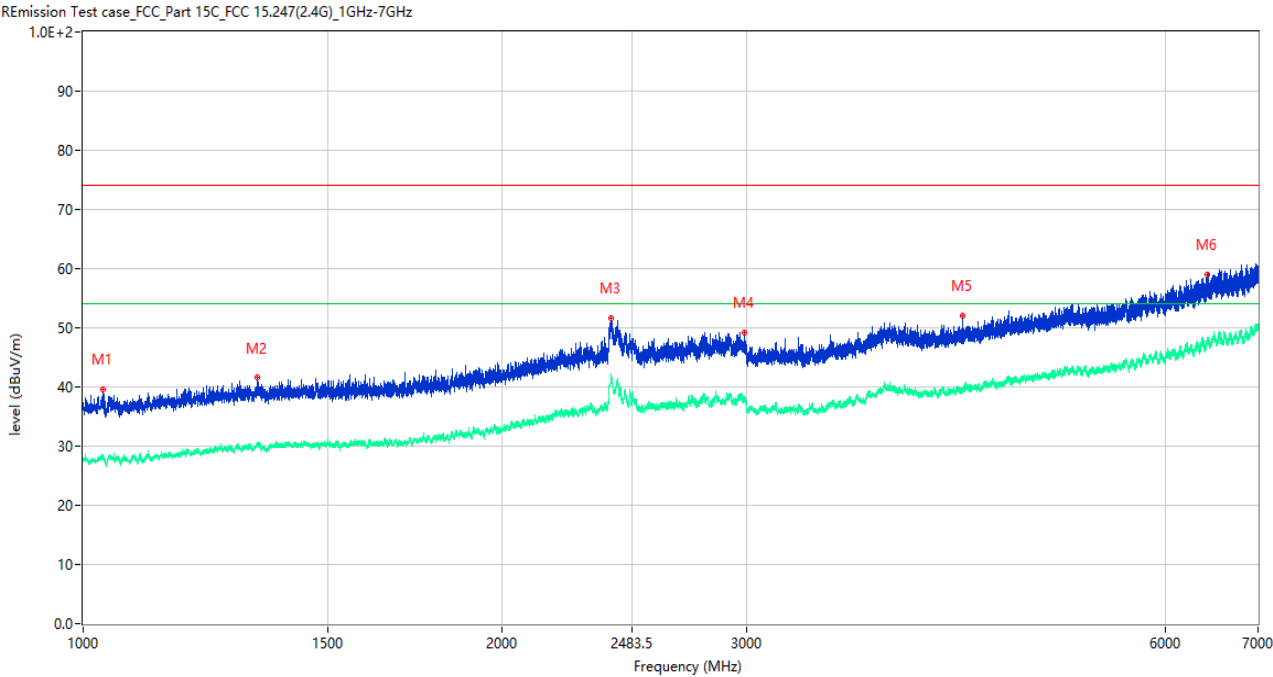
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1GHz-7GHz, Vertical



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
1033.496	39.61	--	28.56	-9.56	74.0	--	54.0	-25.44	10.00	100	Vertical	Pass
1334.708	41.57	--	30.11	-9.65	74.0	--	54.0	-23.89	6.00	100	Vertical	Pass
2397.575	51.66	--	41.70	2.18	74.0	--	54.0	-12.30	14.00	100	Vertical	Pass
2987.752	49.26	--	38.34	-0.17	74.0	--	54.0	-15.66	0.00	100	Vertical	Pass
4289.839	52.05	--	39.68	0.86	74.0	--	54.0	-14.32	3.00	100	Vertical	Pass
6434.696	59.02	--	47.90	10.77	74.0	--	54.0	-6.10	7.00	100	Vertical	Pass

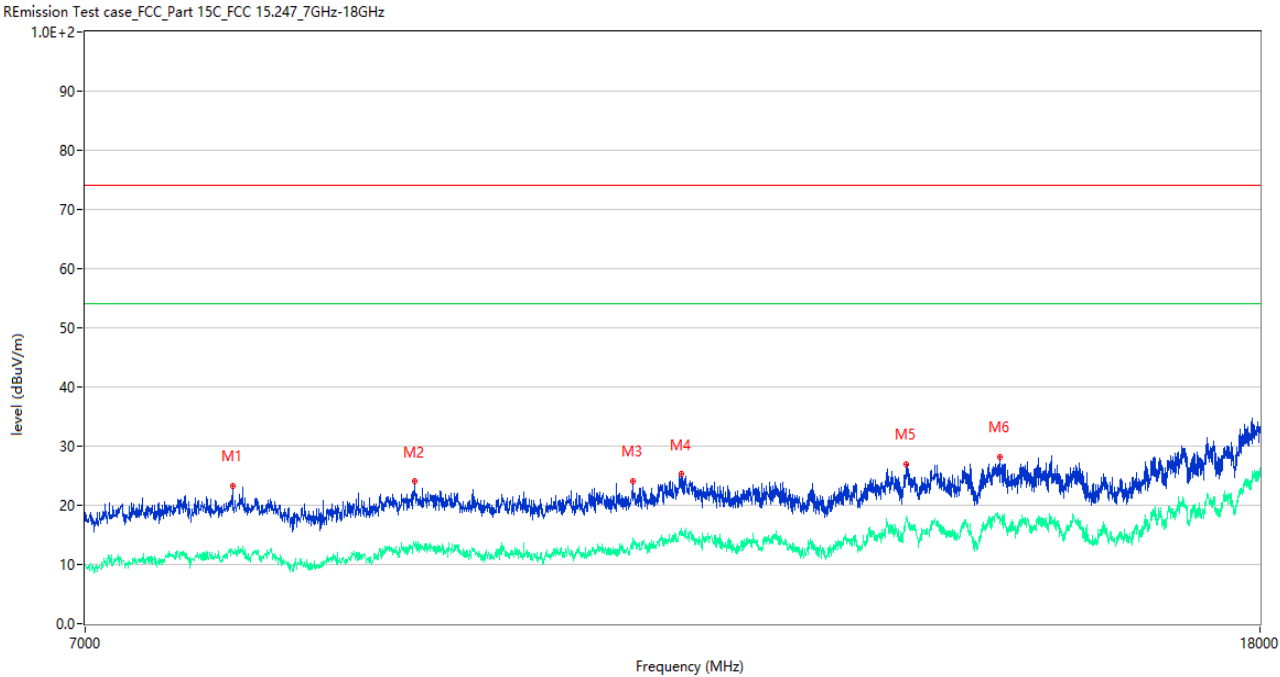
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7GHz-18GHz, Horizontal



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
7879.780	23.28	--	12.10	-26.62	74.0	--	54.0	-41.90	1.00	100	Horizontal	Pass
9125.219	24.05	--	13.24	-24.99	74.0	--	54.0	-40.76	7.00	100	Horizontal	Pass
10873.782	24.12	--	14.45	-20.13	74.0	--	54.0	-39.55	13.00	100	Horizontal	Pass
11305.424	25.25	--	15.69	-19.19	74.0	--	54.0	-38.31	0.00	100	Horizontal	Pass
13543.364	26.95	--	18.08	-16.19	74.0	--	54.0	-35.92	14.00	100	Horizontal	Pass
14604.599	28.18	--	18.14	-14.49	74.0	--	54.0	-35.86	4.00	100	Horizontal	Pass

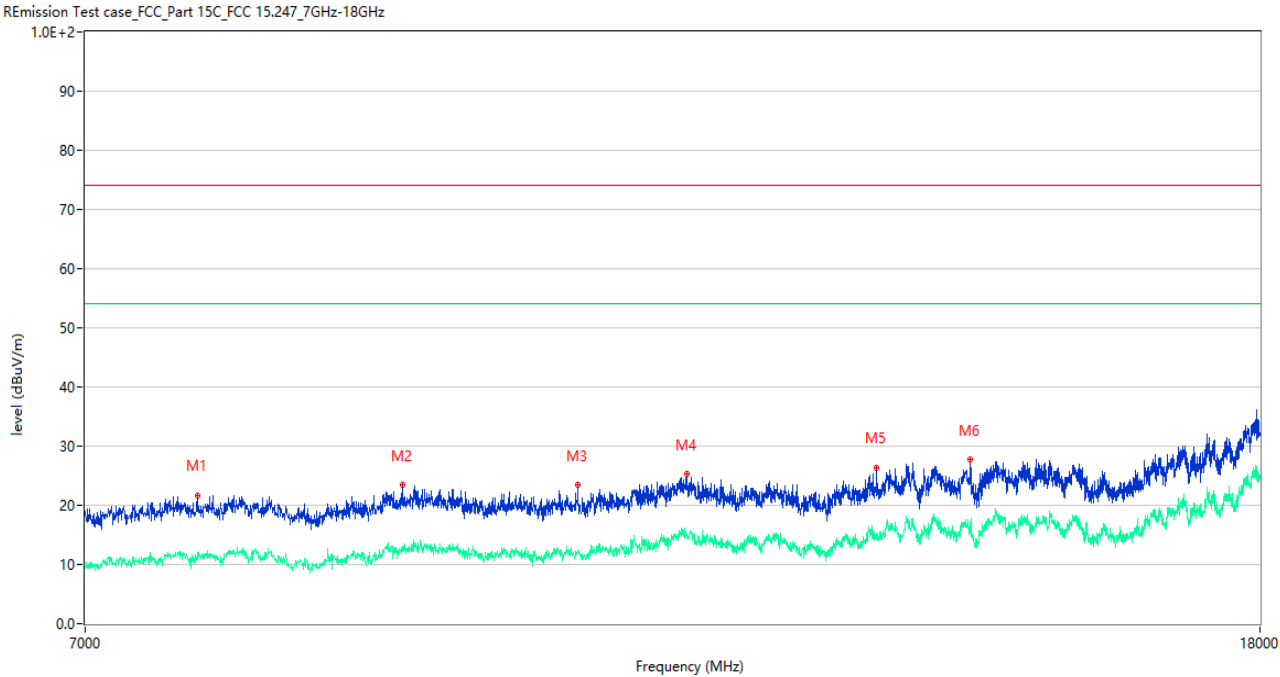
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7GHz-18GHz, Vertical



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
7662.584	21.71	--	11.58	-26.74	74.0	--	54.0	-42.42	15.00	100	Vertical	Pass
9031.742	23.47	--	13.07	-25.10	74.0	--	54.0	-40.93	12.00	100	Vertical	Pass
10400.900	23.41	--	12.09	-22.23	74.0	--	54.0	-41.91	0.00	100	Vertical	Pass
11352.162	25.25	--	15.00	-19.21	74.0	--	54.0	-39.00	3.00	100	Vertical	Pass
13221.695	26.37	--	15.30	-18.61	74.0	--	54.0	-38.70	14.00	100	Vertical	Pass
14258.185	27.66	--	16.50	-14.68	74.0	--	54.0	-37.50	9.00	100	Vertical	Pass

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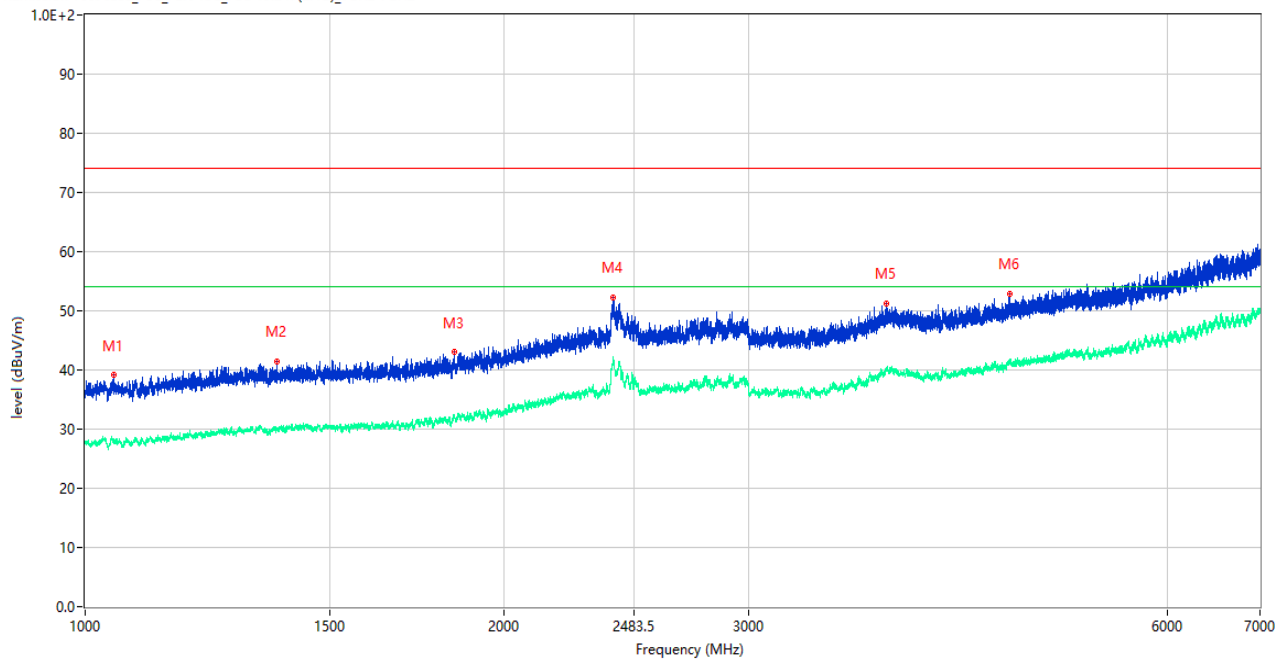
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Figure 27: Spurious Emission, 1GHz – 10th Harmonic, 2480MHz, GFSK
1GHz-7GHz, Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_1GHz-7GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
1048.244	39.13	--	28.32	-10.11	74.0	--	54.0	-25.68	10.00	100	Horizontal	Pass
1373.203	41.48	--	29.99	-10.16	74.0	--	54.0	-24.01	3.00	100	Horizontal	Pass
1841.645	43.05	--	32.35	-7.55	74.0	--	54.0	-21.65	13.00	100	Horizontal	Pass
2399.075	52.29	--	41.96	2.12	74.0	--	54.0	-12.04	7.00	100	Horizontal	Pass
3768.279	51.29	--	40.14	0.99	74.0	--	54.0	-13.86	0.00	100	Horizontal	Pass
4622.047	52.93	--	41.54	3.07	74.0	--	54.0	-12.46	4.00	100	Horizontal	Pass

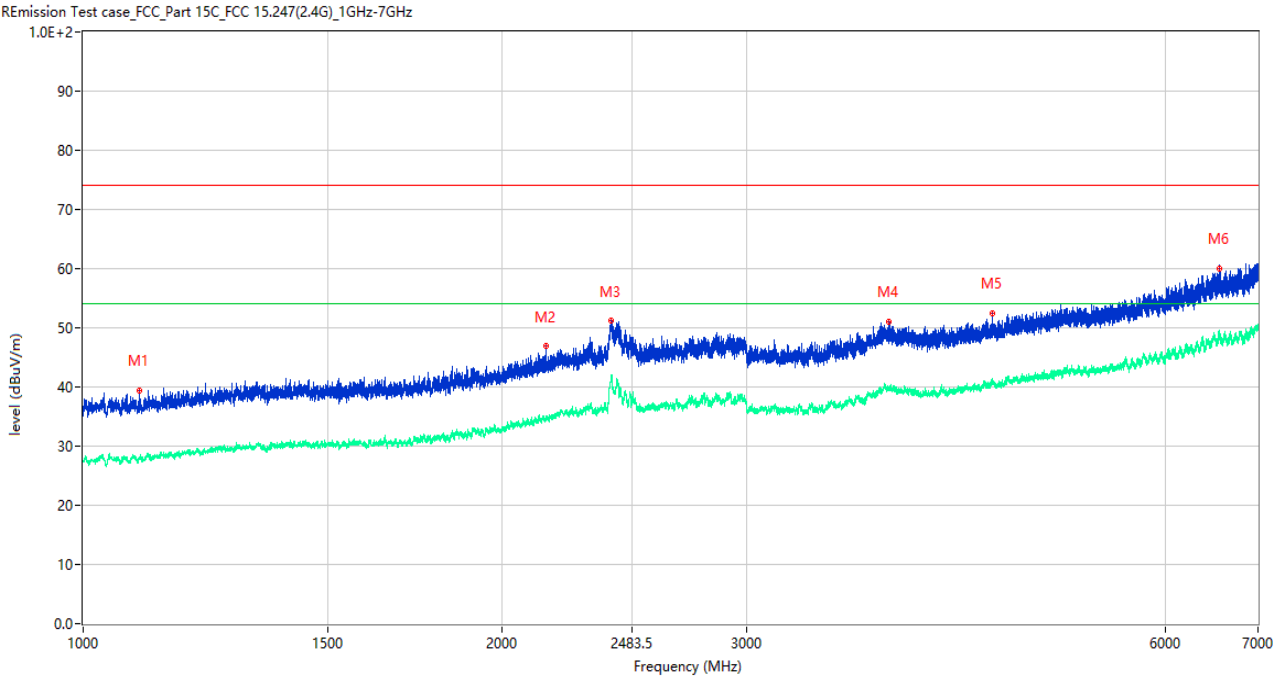
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1GHz-7GHz, Vertical



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
1098.488	39.44	--	28.26	-10.09	74.0	--	54.0	-25.74	10.00	100	Vertical	Pass
2153.856	46.89	--	35.01	-4.53	74.0	--	54.0	-18.99	7.00	100	Vertical	Pass
2397.825	51.21	--	41.58	2.17	74.0	--	54.0	-12.42	2.00	100	Vertical	Pass
3800.525	50.94	--	40.01	0.75	74.0	--	54.0	-13.99	5.00	100	Vertical	Pass
4506.937	52.46	--	40.94	2.17	74.0	--	54.0	-13.06	10.00	100	Vertical	Pass
6568.929	60.04	--	48.27	11.89	74.0	--	54.0	-5.73	0.00	100	Vertical	Pass

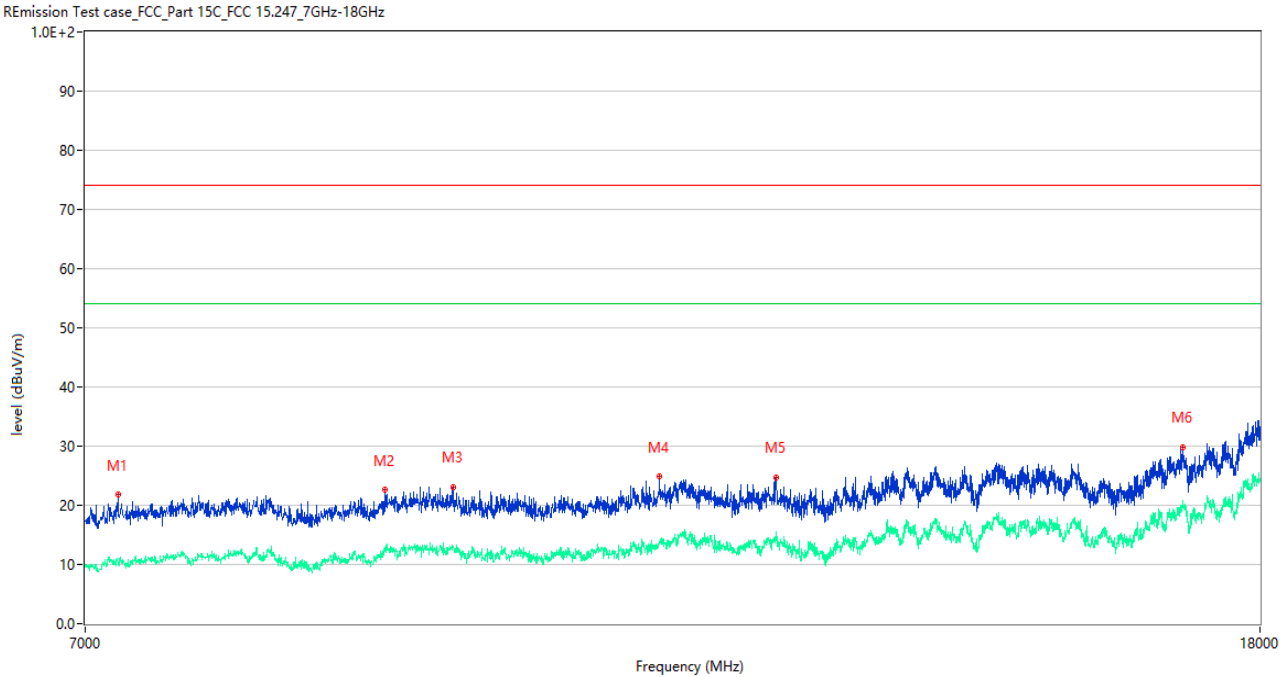
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7GHz-18GHz, Horizontal



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
7186.953	21.82	--	10.45	-26.40	74.0	--	54.0	-43.55	0.00	100	Horizontal	Pass
8905.274	22.57	--	12.86	-25.17	74.0	--	54.0	-41.14	6.00	100	Horizontal	Pass
9408.398	23.10	--	12.87	-25.04	74.0	--	54.0	-41.13	12.00	100	Horizontal	Pass
11104.724	24.83	--	13.39	-20.70	74.0	--	54.0	-40.61	0.00	100	Horizontal	Pass
12196.201	24.71	--	14.69	-19.74	74.0	--	54.0	-39.31	8.00	100	Horizontal	Pass
16914.021	29.83	--	20.81	-12.50	74.0	--	54.0	-33.19	15.00	100	Horizontal	Pass

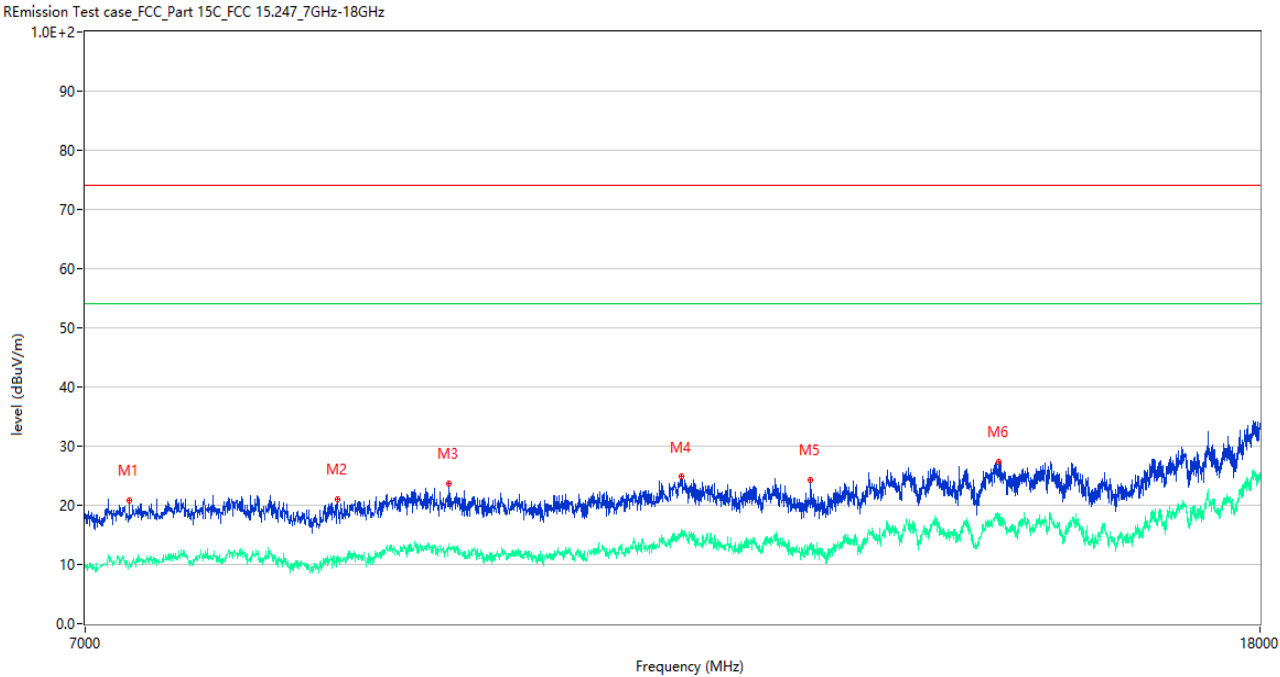
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7GHz-18GHz, Vertical



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Table (o)	Height (cm)	ANT	Verdict
7252.937	20.86	--	10.45	-26.71	74.0	--	54.0	-43.55	15.00	100	Vertical	Pass
8575.356	21.03	--	10.56	-25.94	74.0	--	54.0	-43.44	0.00	100	Vertical	Pass
9378.155	23.69	--	12.72	-24.37	74.0	--	54.0	-41.28	12.00	100	Vertical	Pass
11308.173	24.88	--	15.61	-19.32	74.0	--	54.0	-38.39	0.00	100	Vertical	Pass
12542.614	24.29	--	13.42	-19.89	74.0	--	54.0	-40.58	8.00	100	Vertical	Pass
14590.852	27.38	--	17.98	-14.22	74.0	--	54.0	-36.02	15.00	100	Vertical	Pass

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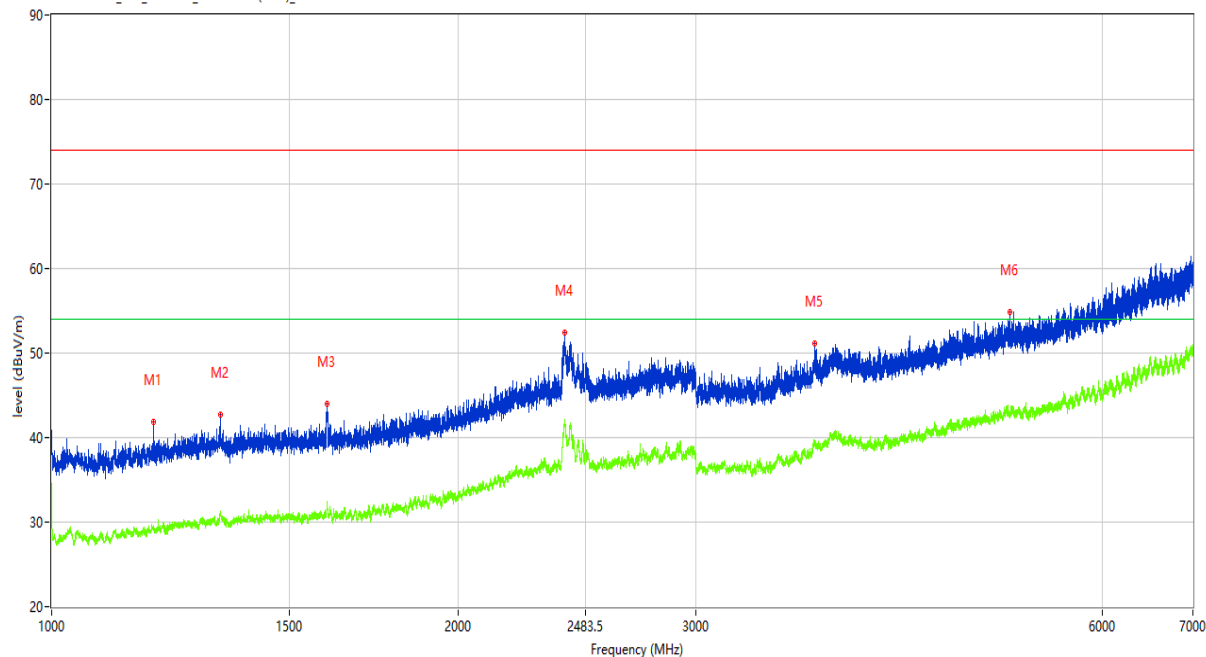
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Figure 28: Spurious Emission, 1GHz – 10th Harmonic, 2402MHz, 8-DPSK

1GHz-7GHz, Horizontal

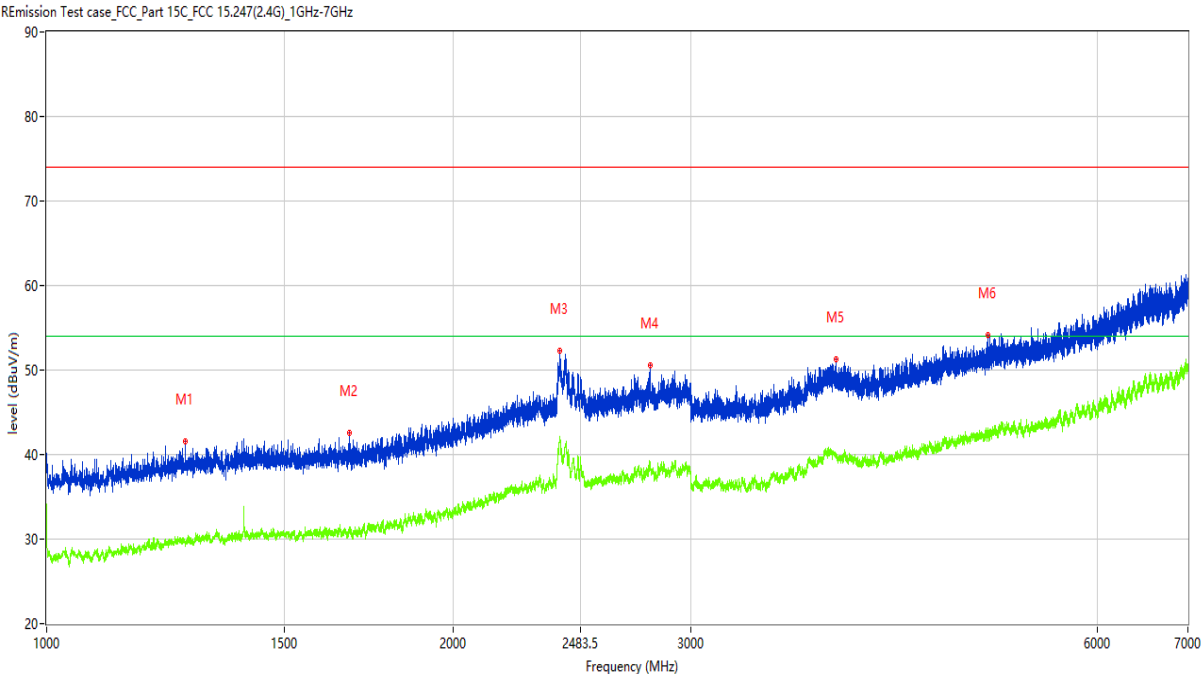
REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_1GHz-7GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1188.976	29.32	-9.96	54.0	-24.68	AV	12.00	100	Horizontal	Pass
1	1188.976	41.81	-9.96	74.0	-32.19	Peak	12.00	100	Horizontal	Pass
2**	1333.208	31.10	-9.70	54.0	-22.90	AV	1.00	100	Horizontal	Pass
2	1333.208	42.77	-9.70	74.0	-31.23	Peak	1.00	100	Horizontal	Pass
3**	1599.675	32.38	-10.38	54.0	-21.62	AV	15.00	100	Horizontal	Pass
3	1599.675	43.97	-10.38	74.0	-30.03	Peak	15.00	100	Horizontal	Pass
4**	2397.325	41.58	2.18	54.0	-12.42	AV	11.00	100	Horizontal	Pass
4	2397.325	52.39	2.18	74.0	-21.61	Peak	11.00	100	Horizontal	Pass
5**	3671.916	39.49	0.01	54.0	-14.51	AV	14.00	100	Horizontal	Pass
5	3671.916	51.09	0.01	74.0	-22.91	Peak	14.00	100	Horizontal	Pass
6**	5120.360	42.89	4.24	54.0	-11.11	AV	6.00	100	Horizontal	Pass
6	5120.360	54.81	4.24	74.0	-19.19	Peak	6.00	100	Horizontal	Pass

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1GHz-7GHz, Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1266.217	29.75	-10.15	54.0	-24.25	AV	1.00	100	Vertical	Pass
1	1266.217	41.56	-10.15	74.0	-32.44	Peak	1.00	100	Vertical	Pass
2**	1676.915	31.42	-9.08	54.0	-22.58	AV	13.00	100	Vertical	Pass
2	1676.915	42.61	-9.08	74.0	-31.39	Peak	13.00	100	Vertical	Pass
3**	2399.575	41.76	2.10	54.0	-12.24	AV	7.00	100	Vertical	Pass
3	2399.575	52.35	2.10	74.0	-21.65	Peak	7.00	100	Vertical	Pass
4**	2800.275	38.40	-0.34	54.0	-15.60	AV	7.00	100	Vertical	Pass
4	2800.275	50.63	-0.34	74.0	-23.37	Peak	7.00	100	Vertical	Pass
5**	3839.520	39.93	0.55	54.0	-14.07	AV	3.00	100	Vertical	Pass
5	3839.520	51.31	0.55	74.0	-22.69	Peak	3.00	100	Vertical	Pass
6**	4980.127	42.98	4.48	54.0	-11.02	AV	2.00	100	Vertical	Pass
6	4980.127	54.10	4.48	74.0	-19.90	Peak	2.00	100	Vertical	Pass

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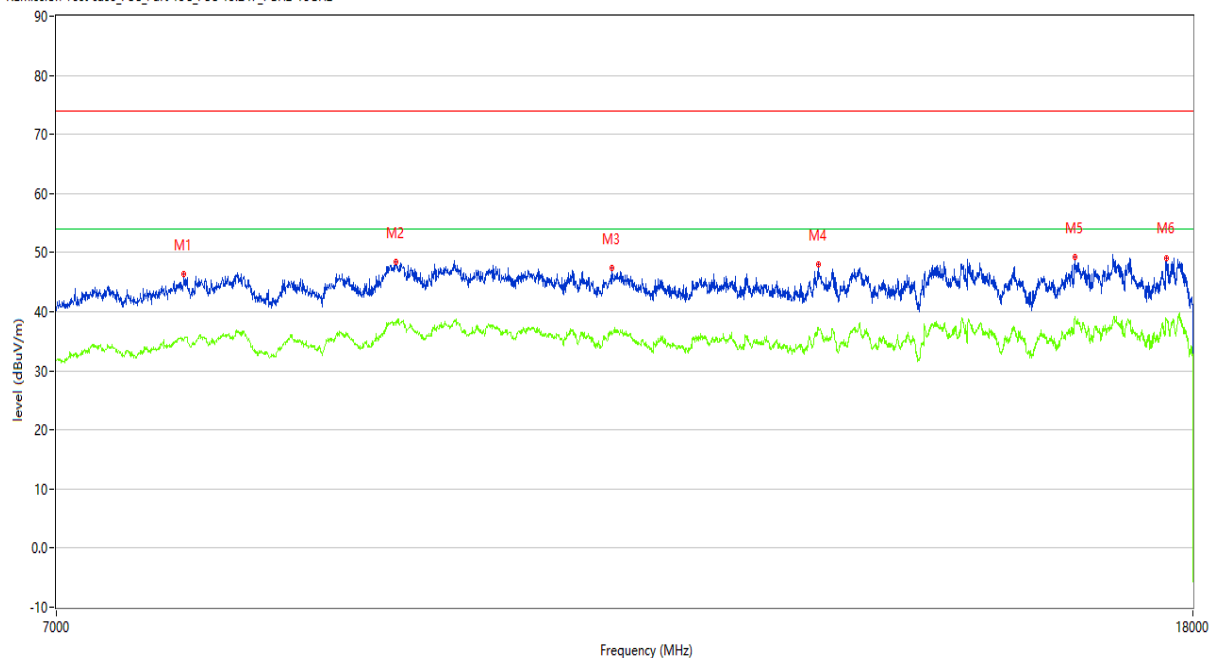
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7GHz-18GHz, Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247_7GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	7783.554	46.31	-28.19	74.0	-27.69	Peak	127.30	150	Horizontal	Pass
1**	7783.554	35.16	-28.19	54.0	-18.84	AV	127.30	150	Horizontal	Pass
2	9279.180	48.37	-24.10	74.0	-25.63	Peak	271.60	150	Horizontal	Pass
2**	9279.180	38.24	-24.10	54.0	-15.76	AV	271.60	150	Horizontal	Pass
3	11110.222	47.31	-22.36	74.0	-26.69	Peak	223.40	150	Horizontal	Pass
3**	11110.222	36.65	-22.36	54.0	-17.35	AV	223.40	150	Horizontal	Pass
4	13185.954	48.04	-20.70	74.0	-25.96	Peak	214.30	150	Horizontal	Pass
4**	13185.954	36.95	-20.70	54.0	-17.05	AV	214.30	150	Horizontal	Pass
5	16320.170	49.26	-14.13	74.0	-24.74	Peak	356.10	150	Horizontal	Pass
5**	16320.170	38.96	-14.13	54.0	-15.04	AV	356.10	150	Horizontal	Pass
6	17606.848	49.10	-9.76	74.0	-24.90	Peak	199.50	150	Horizontal	Pass
6**	17606.848	38.86	-9.76	54.0	-15.14	AV	199.50	150	Horizontal	Pass

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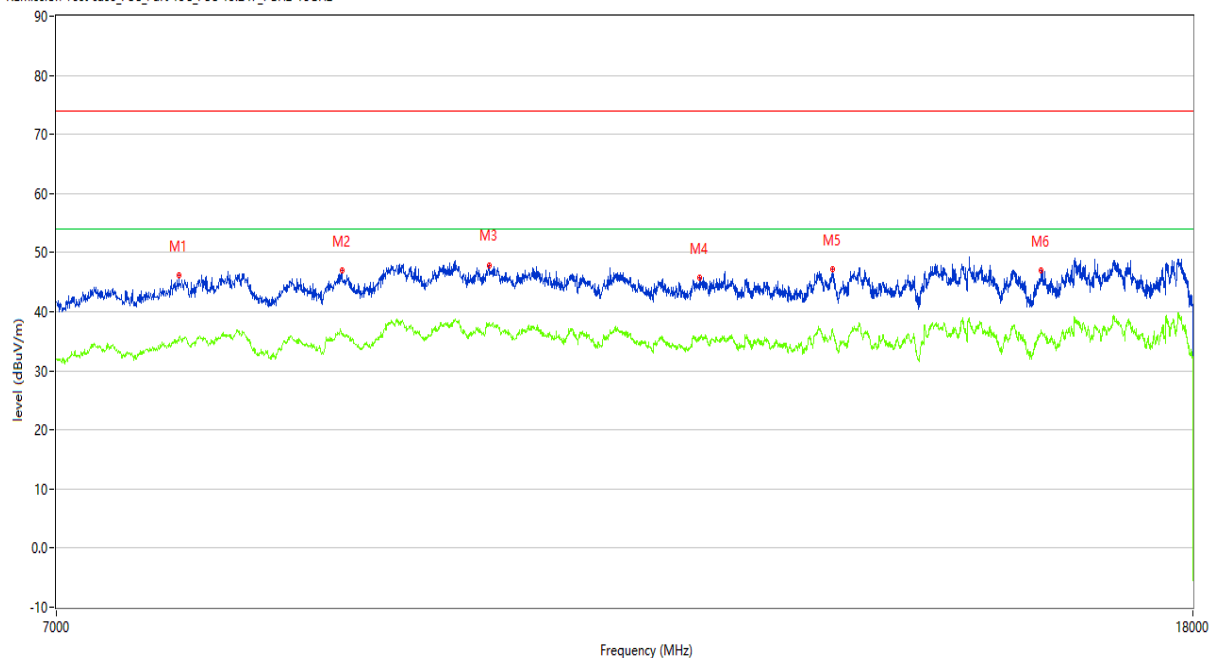
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7GHz-18GHz, Vertical

REmission Test case_FCC_Part 15C_FCC 15.247_7GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	7750.562	46.09	-28.14	74.0	-27.91	Peak	276.80	150	Vertical	Pass
1**	7750.562	35.27	-28.14	54.0	-18.73	AV	276.80	150	Vertical	Pass
2	8875.031	46.91	-25.98	74.0	-27.09	Peak	27.70	150	Vertical	Pass
2**	8875.031	36.12	-25.98	54.0	-17.88	AV	27.70	150	Vertical	Pass
3	10029.743	47.90	-23.30	74.0	-26.10	Peak	135.70	150	Vertical	Pass
3**	10029.743	37.90	-23.30	54.0	-16.10	AV	135.70	150	Vertical	Pass
4	11946.013	45.72	-22.85	74.0	-28.28	Peak	345.00	150	Vertical	Pass
4**	11946.013	35.52	-22.85	54.0	-18.48	AV	345.00	150	Vertical	Pass
5	13342.664	47.23	-20.21	74.0	-26.77	Peak	12.60	150	Vertical	Pass
5**	13342.664	36.98	-20.21	54.0	-17.02	AV	12.60	150	Vertical	Pass
6	15863.784	47.00	-17.12	74.0	-27.00	Peak	300.50	150	Vertical	Pass
6**	15863.784	36.20	-17.12	54.0	-17.80	AV	300.50	150	Vertical	Pass

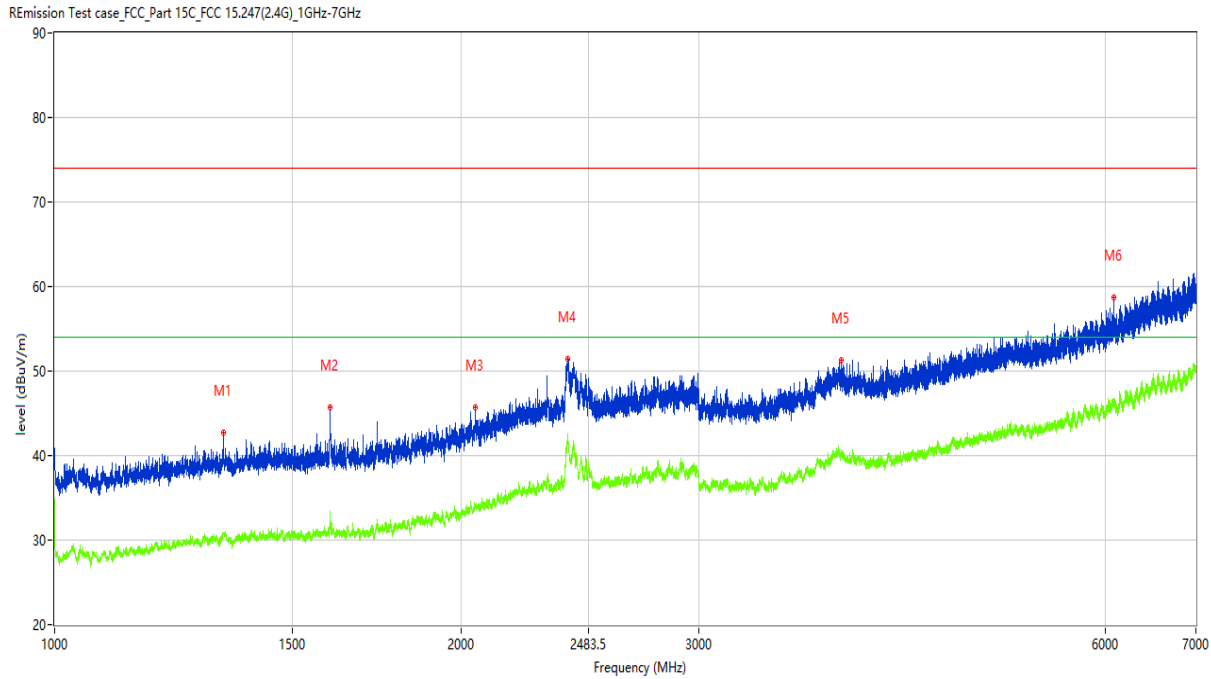
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Figure 29: Spurious Emission, 1GHz – 10th Harmonic, 2441MHz, 8-DPSK
1GHz-7GHz, Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1333.458	30.79	-9.67	54.0	-23.21	AV	0.00	100	Horizontal	Pass
1	1333.458	42.69	-9.67	74.0	-31.31	Peak	0.00	100	Horizontal	Pass
2**	1599.925	33.50	-10.37	54.0	-20.50	AV	0.00	100	Horizontal	Pass
2	1599.925	45.73	-10.37	74.0	-28.27	Peak	0.00	100	Horizontal	Pass
3**	2049.619	34.04	-5.93	54.0	-19.96	AV	15.00	100	Horizontal	Pass
3	2049.619	45.67	-5.93	74.0	-28.33	Peak	15.00	100	Horizontal	Pass
4**	2399.075	42.24	2.12	54.0	-11.76	AV	4.00	100	Horizontal	Pass
4	2399.075	51.41	2.12	74.0	-22.59	Peak	4.00	100	Horizontal	Pass
5**	3823.022	40.75	0.59	54.0	-13.25	AV	7.00	100	Horizontal	Pass
5	3823.022	51.29	0.59	74.0	-22.71	Peak	7.00	100	Horizontal	Pass
6**	6088.614	46.41	9.04	54.0	-7.59	AV	15.00	100	Horizontal	Pass
6	6088.614	58.65	9.04	74.0	-15.35	Peak	15.00	100	Horizontal	Pass

TEST REPORT

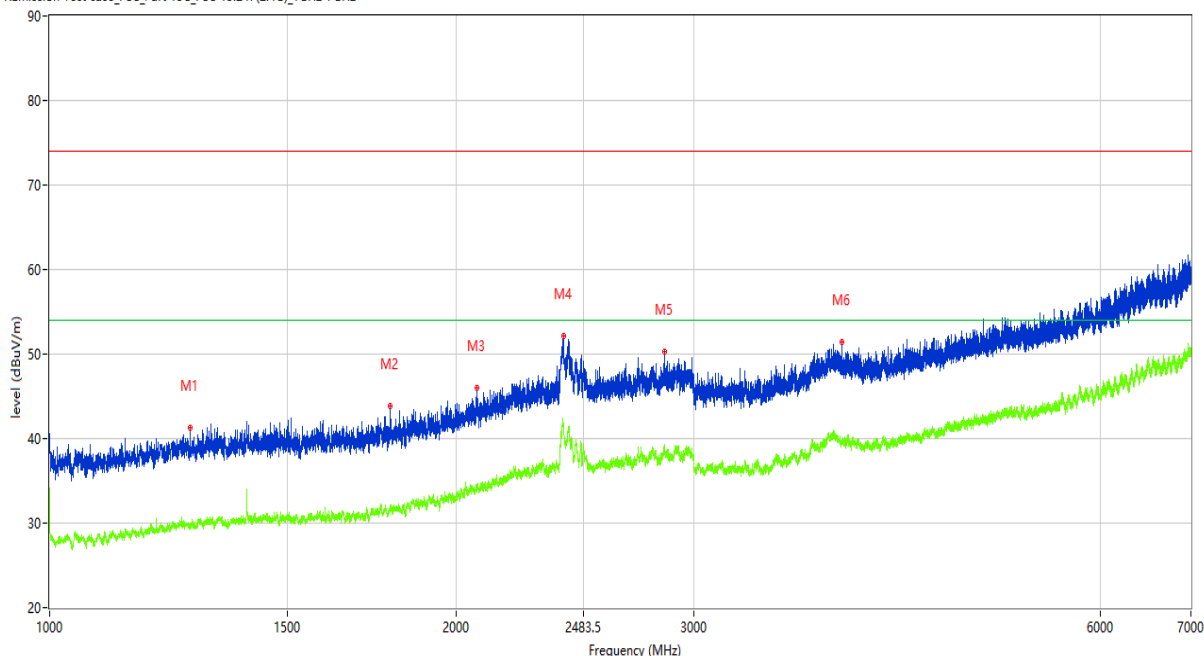
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1GHz-7GHz, Vertical

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_1GHz-7GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1270.966	29.62	-10.23	54.0	-24.38	AV	13.00	100	Vertical	Pass
1	1270.966	41.27	-10.23	74.0	-32.73	Peak	13.00	100	Vertical	Pass
2**	1785.902	31.42	-8.55	54.0	-22.58	AV	13.00	100	Vertical	Pass
2	1785.902	43.81	-8.55	74.0	-30.19	Peak	13.00	100	Vertical	Pass
3**	2072.366	34.33	-5.41	54.0	-19.67	AV	9.00	100	Vertical	Pass
3	2072.366	45.94	-5.41	74.0	-28.06	Peak	9.00	100	Vertical	Pass
4**	2402.825	40.54	1.98	54.0	-13.46	AV	9.00	100	Vertical	Pass
4	2402.825	52.08	1.98	74.0	-21.92	Peak	9.00	100	Vertical	Pass
5**	2853.018	38.90	-0.09	54.0	-15.10	AV	7.00	100	Vertical	Pass
5	2853.018	50.35	-0.09	74.0	-23.65	Peak	7.00	100	Vertical	Pass
6**	3857.893	39.73	0.18	54.0	-14.27	AV	7.00	100	Vertical	Pass
6	3857.893	51.43	0.18	74.0	-22.57	Peak	7.00	100	Vertical	Pass

TEST REPORT

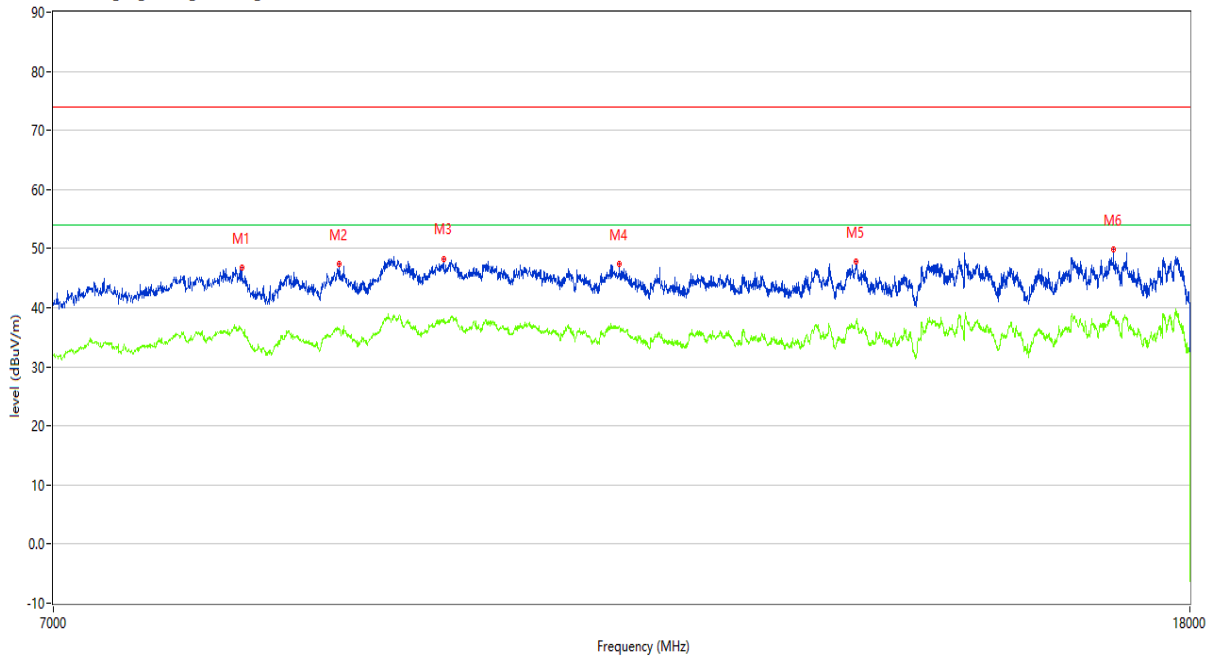
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7GHz-18GHz, Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247_7GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	8187.703	46.79	-27.89	74.0	-27.21	Peak	283.80	150	Horizontal	Pass
1**	8187.703	36.10	-27.89	54.0	-17.90	AV	283.80	150	Horizontal	Pass
2	8875.031	47.42	-25.98	74.0	-26.58	Peak	154.10	150	Horizontal	Pass
2**	8875.031	36.54	-25.98	54.0	-17.46	AV	154.10	150	Horizontal	Pass
3	9683.329	48.29	-23.96	74.0	-25.71	Peak	335.30	150	Horizontal	Pass
3**	9683.329	37.59	-23.96	54.0	-16.41	AV	335.30	150	Horizontal	Pass
4	11203.699	47.37	-22.30	74.0	-26.63	Peak	0.10	150	Horizontal	Pass
4**	11203.699	36.93	-22.30	54.0	-17.07	AV	0.10	150	Horizontal	Pass
5	13642.339	47.85	-18.95	74.0	-26.15	Peak	232.00	150	Horizontal	Pass
5**	13642.339	37.62	-18.95	54.0	-16.38	AV	232.00	150	Horizontal	Pass
6	16894.776	49.87	-12.97	74.0	-24.13	Peak	229.00	150	Horizontal	Pass
6**	16894.776	38.17	-12.97	54.0	-15.83	AV	229.00	150	Horizontal	Pass

TEST REPORT

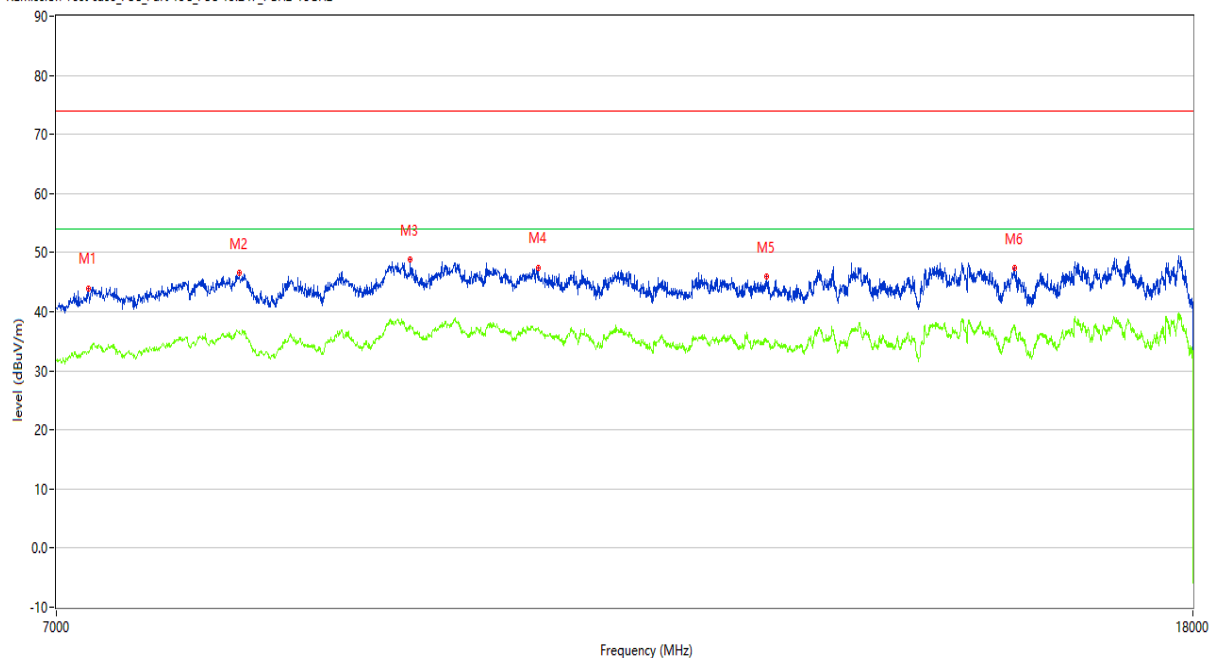
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7GHz-18GHz, Vertical

REmission Test case_FCC_Part 15C_FCC 15.247_7GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	7175.956	42.97	-30.34	74.0	-31.03	Peak	94.00	150	Vertical	Pass
1**	7175.956	32.96	-30.34	54.0	-21.04	AV	94.00	150	Vertical	Pass
2	8149.213	46.58	-27.73	74.0	-27.42	Peak	304.10	150	Vertical	Pass
2**	8149.213	36.61	-27.73	54.0	-17.39	AV	304.10	150	Vertical	Pass
3	9394.651	48.83	-23.06	74.0	-25.17	Peak	30.80	150	Vertical	Pass
3**	9394.651	37.82	-23.06	54.0	-16.18	AV	30.80	150	Vertical	Pass
4	10444.889	47.48	-22.36	74.0	-26.52	Peak	39.70	150	Vertical	Pass
4**	10444.889	37.29	-22.36	54.0	-16.71	AV	39.70	150	Vertical	Pass
5	12633.342	45.93	-21.57	74.0	-28.07	Peak	356.20	150	Vertical	Pass
5**	12633.342	35.17	-21.57	54.0	-18.83	AV	356.20	150	Vertical	Pass
6	15520.120	47.42	-17.58	74.0	-26.58	Peak	121.00	150	Vertical	Pass
6**	15520.120	37.31	-17.58	54.0	-16.69	AV	121.00	150	Vertical	Pass

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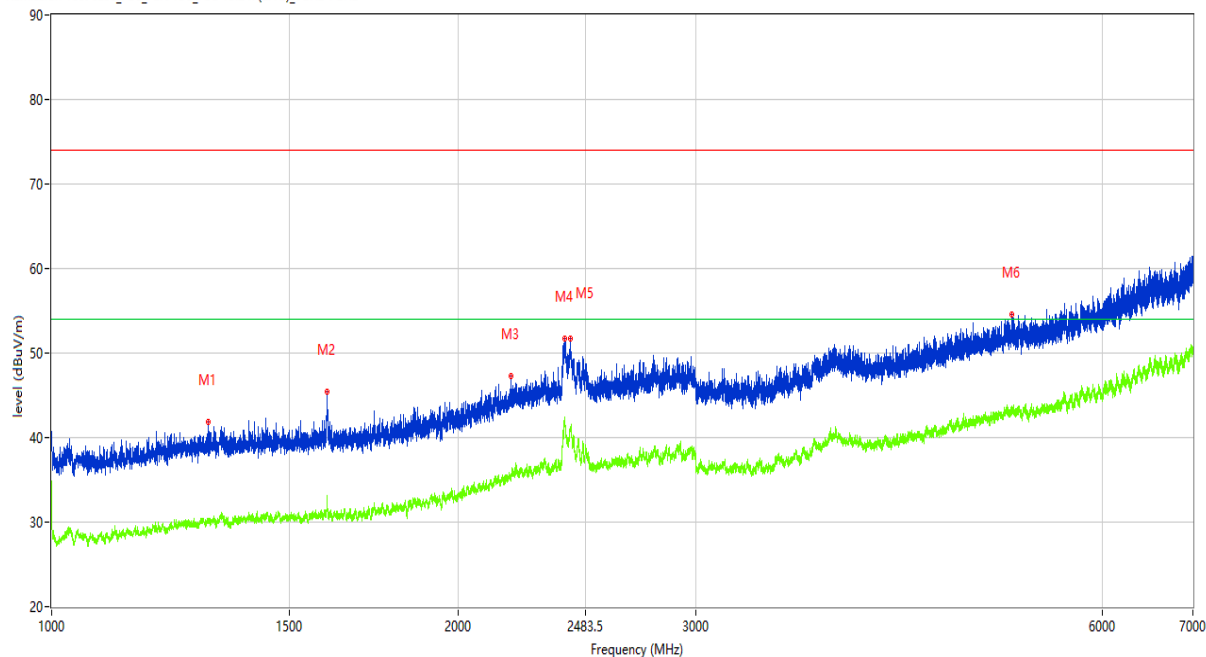
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Figure 30: Spurious Emission, 1GHz – 10th Harmonic, 2480MHz, 8-DPSK

1GHz-7GHz, Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_1GHz-7GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1306.212	30.32	-10.04	54.0	-23.68	AV	8.00	100	Horizontal	Pass
1	1306.212	41.85	-10.04	74.0	-32.15	Peak	8.00	100	Horizontal	Pass
2**	1598.675	31.40	-10.42	54.0	-22.60	AV	0.00	100	Horizontal	Pass
2	1598.675	45.39	-10.42	74.0	-28.61	Peak	0.00	100	Horizontal	Pass
3**	2189.601	35.75	-4.28	54.0	-18.25	AV	15.00	100	Horizontal	Pass
3	2189.601	47.22	-4.28	74.0	-26.78	Peak	15.00	100	Horizontal	Pass
4**	2398.825	41.97	2.13	54.0	-12.03	AV	14.00	100	Horizontal	Pass
4	2398.825	51.66	2.13	74.0	-22.34	Peak	14.00	100	Horizontal	Pass
5**	2423.072	41.32	1.26	54.0	-12.68	AV	0.00	100	Horizontal	Pass
5	2423.072	51.77	1.26	74.0	-22.23	Peak	0.00	100	Horizontal	Pass
6**	5141.357	43.18	4.80	54.0	-10.82	AV	6.00	100	Horizontal	Pass
6	5141.357	54.54	4.80	74.0	-19.46	Peak	6.00	100	Horizontal	Pass

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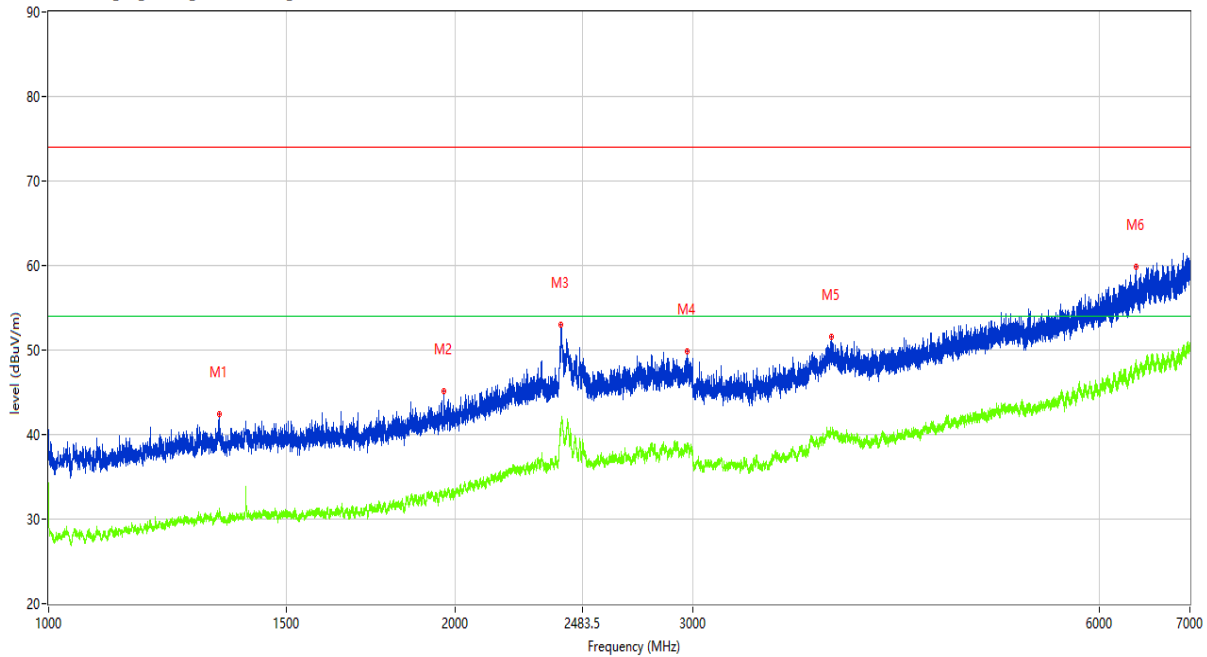
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1GHz-7GHz, Vertical

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_1GHz-7GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1337.958	30.42	-9.69	54.0	-23.58	AV	13.00	100	Vertical	Pass
1	1337.958	42.39	-9.69	74.0	-31.61	Peak	13.00	100	Vertical	Pass
2**	1963.130	33.26	-6.87	54.0	-20.74	AV	11.00	100	Vertical	Pass
2	1963.130	45.20	-6.87	74.0	-28.80	Peak	11.00	100	Vertical	Pass
3**	2396.075	41.35	2.23	54.0	-12.65	AV	15.00	100	Vertical	Pass
3	2396.075	53.06	2.23	74.0	-20.94	Peak	15.00	100	Vertical	Pass
4**	2970.004	38.78	-0.43	54.0	-15.22	AV	3.00	100	Vertical	Pass
4	2970.004	49.82	-0.43	74.0	-24.18	Peak	3.00	100	Vertical	Pass
5**	3802.025	40.04	0.81	54.0	-13.96	AV	11.00	100	Vertical	Pass
5	3802.025	51.52	0.81	74.0	-22.48	Peak	11.00	100	Vertical	Pass
6**	6383.952	48.51	10.42	54.0	-5.49	AV	3.00	100	Vertical	Pass
6	6383.952	59.84	10.42	74.0	-14.16	Peak	3.00	100	Vertical	Pass

TEST REPORT

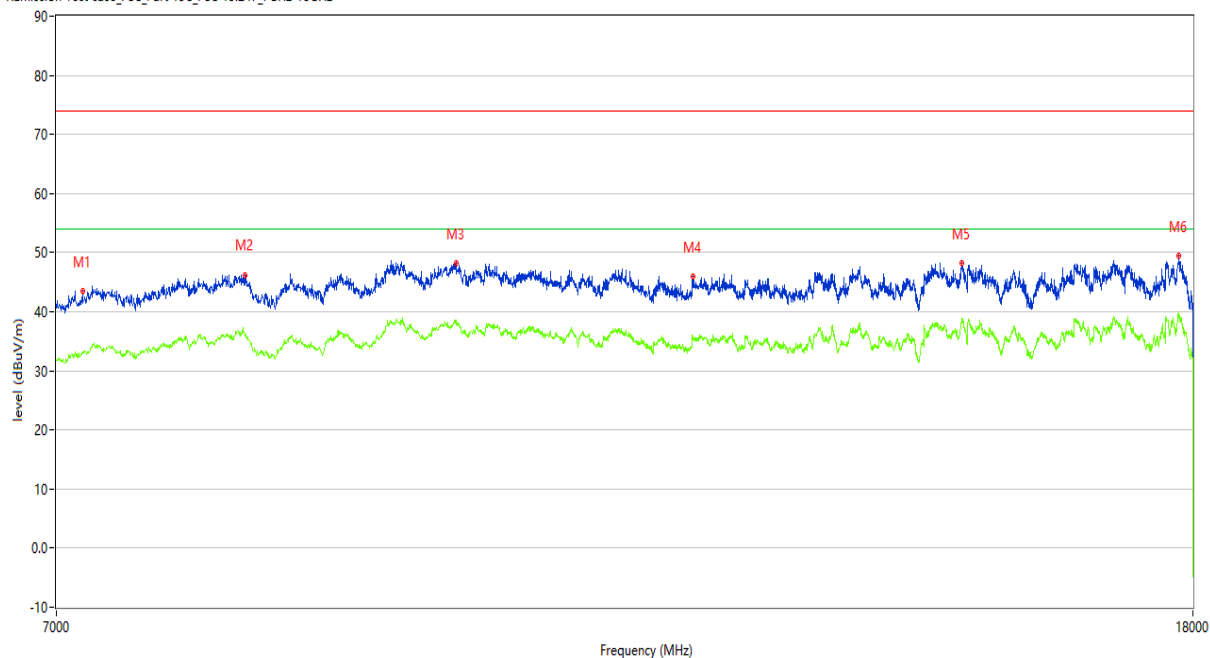
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7GHz-18GHz, Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247_7GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	7148.463	41.64	-30.57	74.0	-32.36	Peak	360.00	150	Horizontal	Pass
1**	7148.463	32.80	-30.57	54.0	-21.20	AV	360.00	150	Horizontal	Pass
2	8184.954	46.27	-27.88	74.0	-27.73	Peak	268.50	150	Horizontal	Pass
2**	8184.954	36.26	-27.88	54.0	-17.74	AV	268.50	150	Horizontal	Pass
3	9757.561	48.21	-23.30	74.0	-25.79	Peak	174.30	150	Horizontal	Pass
3**	9757.561	38.51	-23.30	54.0	-15.49	AV	174.30	150	Horizontal	Pass
4	11877.281	45.99	-23.05	74.0	-28.01	Peak	65.10	150	Horizontal	Pass
4**	11877.281	35.36	-23.05	54.0	-18.64	AV	65.10	150	Horizontal	Pass
5	14860.285	48.24	-14.98	74.0	-25.76	Peak	144.70	150	Horizontal	Pass
5**	14860.285	38.12	-14.98	54.0	-15.88	AV	144.70	150	Horizontal	Pass
6	17788.303	49.40	-10.85	74.0	-24.60	Peak	89.60	150	Horizontal	Pass
6**	17788.303	39.23	-10.85	54.0	-14.77	AV	89.60	150	Horizontal	Pass

TEST REPORT

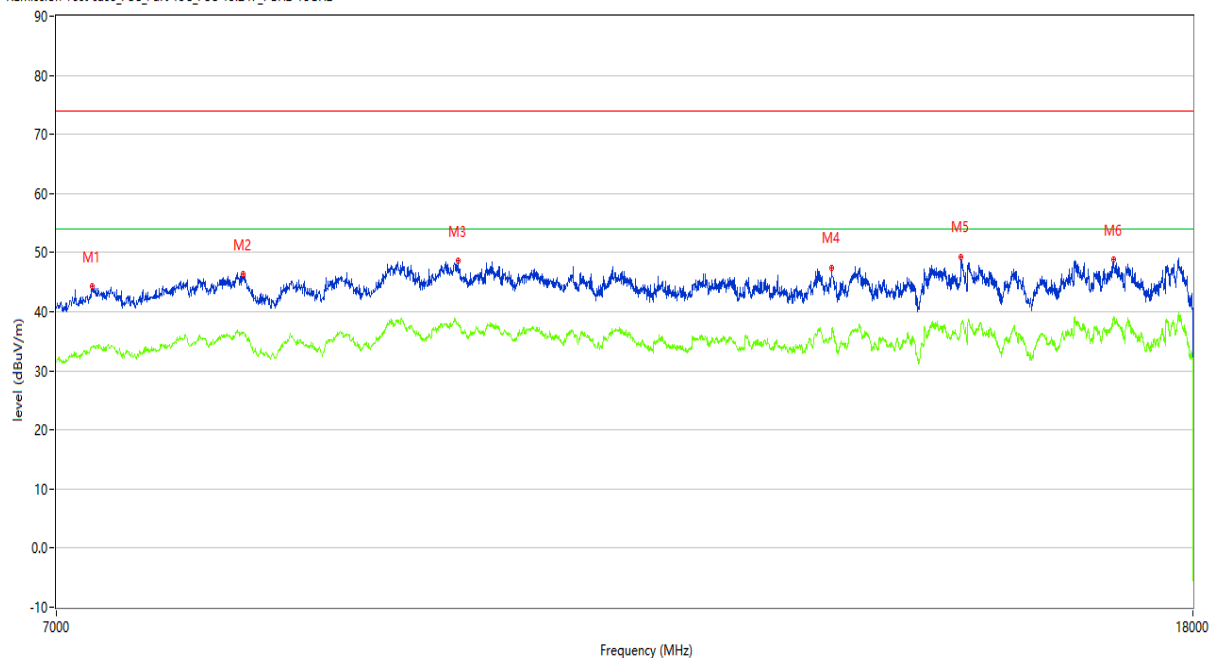
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7GHz-18GHz, Vertical

REmission Test case_FCC_Part 15C_FCC 15.247_7GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	7208.948	44.34	-30.15	74.0	-29.66	Peak	132.70	150	Vertical	Pass
1**	7208.948	33.97	-30.15	54.0	-20.03	AV	132.70	150	Vertical	Pass
2	8173.957	46.40	-27.83	74.0	-27.60	Peak	256.80	150	Vertical	Pass
2**	8173.957	36.38	-27.83	54.0	-17.62	AV	256.80	150	Vertical	Pass
3	9771.307	48.55	-23.33	74.0	-25.45	Peak	316.60	150	Vertical	Pass
3**	9771.307	37.75	-23.33	54.0	-16.25	AV	316.60	150	Vertical	Pass
4	13334.416	47.32	-20.23	74.0	-26.68	Peak	129.80	150	Vertical	Pass
4**	13334.416	37.00	-20.23	54.0	-17.00	AV	129.80	150	Vertical	Pass
5	14849.288	49.18	-14.76	74.0	-24.82	Peak	302.00	150	Vertical	Pass
5**	14849.288	37.94	-14.76	54.0	-16.06	AV	302.00	150	Vertical	Pass
6	16853.537	48.85	-12.54	74.0	-25.15	Peak	253.60	150	Vertical	Pass
6**	16853.537	38.83	-12.54	54.0	-15.17	AV	253.60	150	Vertical	Pass

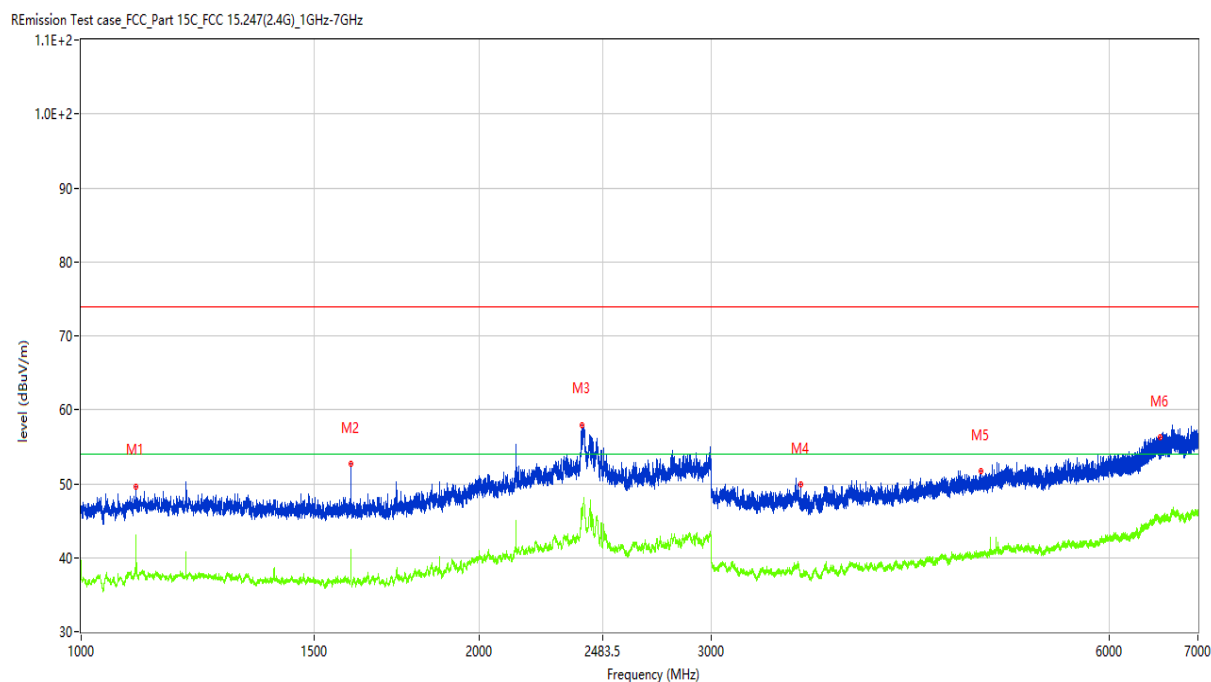
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Figure 31: Spurious Emission, 1GHz – 10th Harmonic, Hopping Mode, GFSK
1GHz-7GHz, Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1099.988	49.66	-3.84	74.0	-24.34	Peak	327.00	176	Horizontal	Pass
1**	1099.988	43.03	-3.84	54.0	-10.97	AV	327.00	176	Horizontal	Pass
2	1599.675	52.67	-5.89	74.0	-21.33	Peak	321.10	176	Horizontal	Pass
2**	1599.675	41.13	-5.89	54.0	-12.87	AV	321.10	176	Horizontal	Pass
3	2391.576	57.97	5.00	74.0	-16.03	Peak	1.00	176	Horizontal	Pass
3**	2391.576	46.89	5.00	54.0	-7.11	AV	1.00	176	Horizontal	Pass
4	3506.562	49.87	-1.22	74.0	-24.13	Peak	152.20	176	Horizontal	Pass
4**	3506.562	37.47	-1.22	54.0	-16.53	AV	152.20	176	Horizontal	Pass
5	4798.650	51.66	1.06	74.0	-22.34	Peak	341.70	176	Horizontal	Pass
5**	4798.650	40.51	1.06	54.0	-13.49	AV	341.70	176	Horizontal	Pass
6	6555.931	56.22	5.18	74.0	-17.78	Peak	252.50	176	Horizontal	Pass
6**	6555.931	44.81	5.18	54.0	-9.19	AV	252.50	176	Horizontal	Pass

TEST REPORT

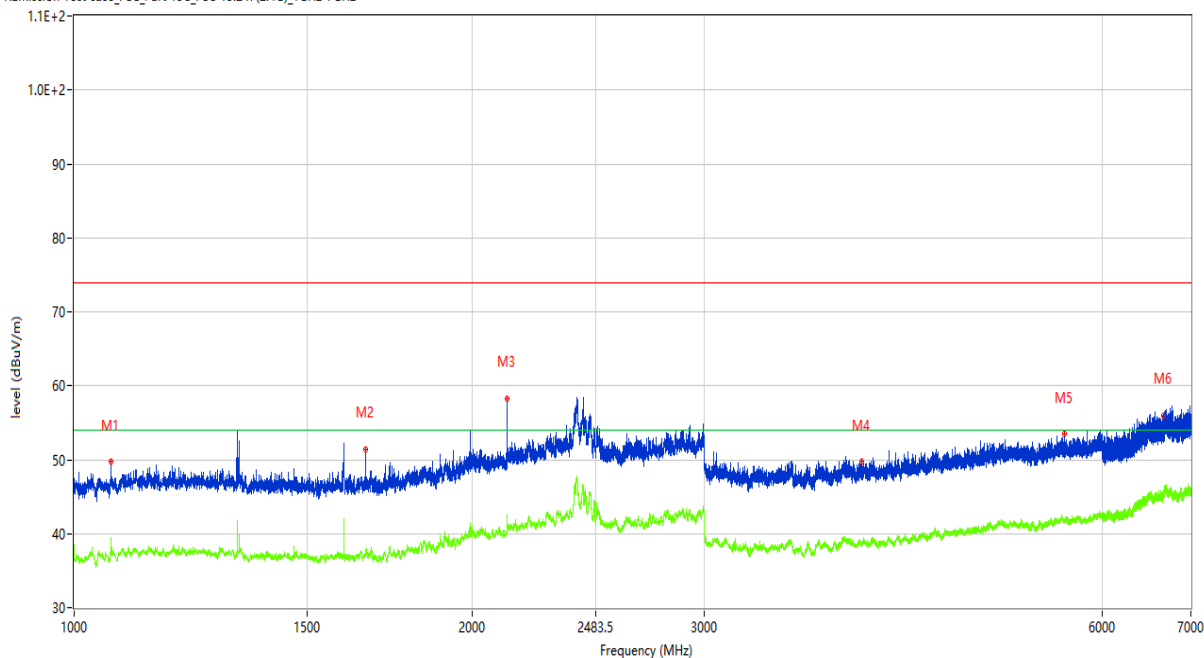
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1GHz-7GHz, Vertical

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_1GHz-7GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1066.742	49.68	-4.70	74.0	-24.32	Peak	32.20	176	Vertical	Pass
1**	1066.742	38.74	-4.70	54.0	-15.26	AV	32.20	176	Vertical	Pass
2	1662.667	51.37	-4.86	74.0	-22.63	Peak	253.30	176	Vertical	Pass
2**	1662.667	37.87	-4.86	54.0	-16.13	AV	253.30	176	Vertical	Pass
3	2126.859	58.28	-1.14	74.0	-15.72	Peak	265.90	176	Vertical	Pass
3**	2126.859	42.64	-1.14	54.0	-11.36	AV	265.90	176	Vertical	Pass
4	3941.507	49.71	-0.26	74.0	-24.29	Peak	71.20	176	Vertical	Pass
4**	3941.507	38.56	-0.26	54.0	-15.44	AV	71.20	176	Vertical	Pass
5	5615.673	53.47	2.08	74.0	-20.53	Peak	97.20	176	Vertical	Pass
5**	5615.673	41.89	2.08	54.0	-12.11	AV	97.20	176	Vertical	Pass
6	6674.791	55.97	5.83	74.0	-18.03	Peak	359.90	176	Vertical	Pass
6**	6674.791	45.32	5.83	54.0	-8.68	AV	359.90	176	Vertical	Pass

TEST REPORT

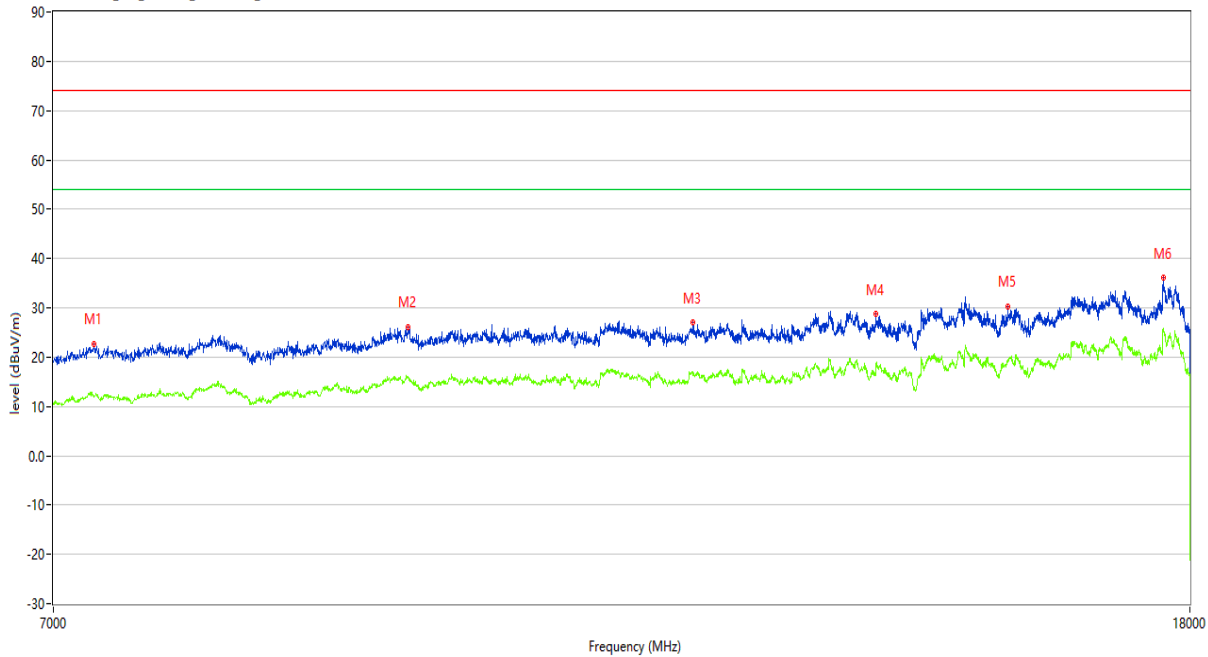
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7GHz-18GHz, Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247_7GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	7241.940	22.77	-30.19	74.0	-51.23	Peak	7.50	176	Horizontal	Pass
1**	7241.940	12.16	-30.19	54.0	-41.84	AV	7.50	176	Horizontal	Pass
2	9400.150	26.18	-23.05	74.0	-47.82	Peak	0.10	176	Horizontal	Pass
2**	9400.150	16.02	-23.05	54.0	-37.98	AV	0.10	176	Horizontal	Pass
3	11913.022	27.00	-23.13	74.0	-47.00	Peak	25.80	176	Horizontal	Pass
3**	11913.022	17.06	-23.13	54.0	-36.94	AV	25.80	176	Horizontal	Pass
4	13865.034	28.74	-20.07	74.0	-45.26	Peak	68.10	176	Horizontal	Pass
4**	13865.034	18.53	-20.07	54.0	-35.47	AV	68.10	176	Horizontal	Pass
5	15470.632	30.27	-17.70	74.0	-43.73	Peak	110.10	176	Horizontal	Pass
5**	15470.632	19.08	-17.70	54.0	-34.92	AV	110.10	176	Horizontal	Pass
6	17612.347	36.12	-9.79	74.0	-37.88	Peak	110.10	176	Horizontal	Pass
6**	17612.347	25.83	-9.79	54.0	-28.17	AV	110.10	176	Horizontal	Pass

TEST REPORT

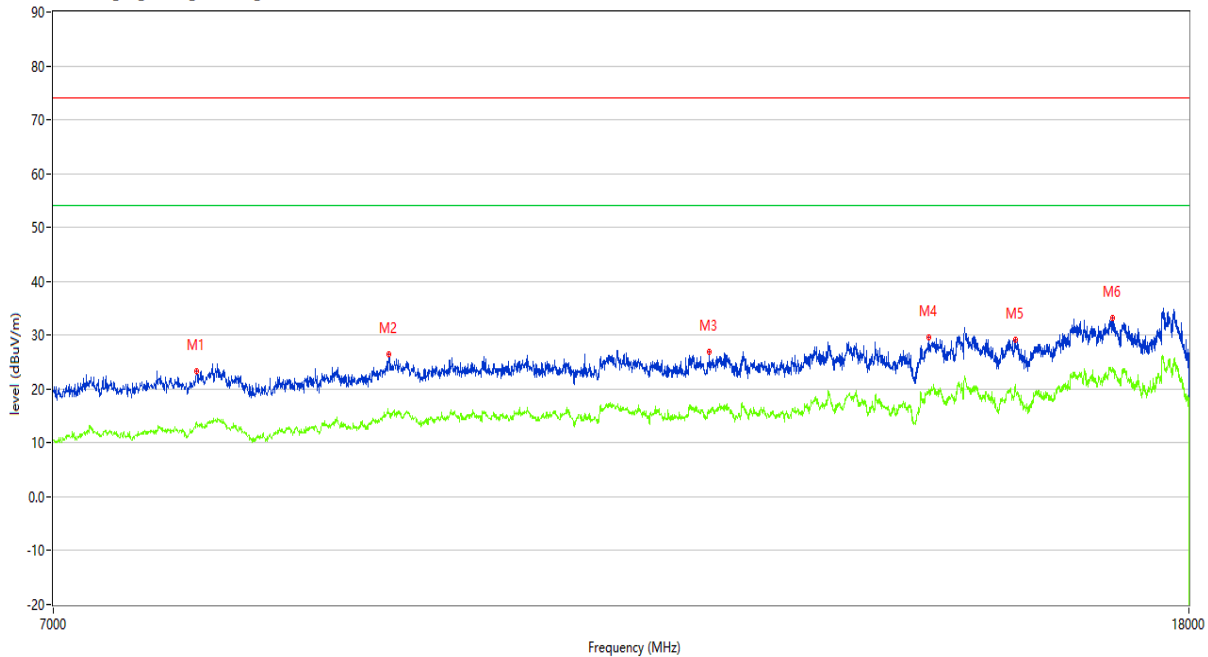
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7GHz-18GHz, Vertical

REmission Test case_FCC_Part 15C_FCC 15.247_7GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	7885.279	23.37	-28.09	74.0	-50.63	Peak	47.80	176	Vertical	Pass
1**	7885.279	13.92	-28.09	54.0	-40.08	AV	47.80	176	Vertical	Pass
2	9251.687	26.43	-24.37	74.0	-47.57	Peak	23.50	176	Vertical	Pass
2**	9251.687	15.48	-24.37	54.0	-38.52	AV	23.50	176	Vertical	Pass
3	12077.981	26.94	-22.44	74.0	-47.06	Peak	0.00	176	Vertical	Pass
3**	12077.981	15.41	-22.44	54.0	-38.59	AV	0.00	176	Vertical	Pass
4	14494.626	29.60	-16.05	74.0	-44.40	Peak	23.50	176	Vertical	Pass
4**	14494.626	19.92	-16.05	54.0	-34.08	AV	23.50	176	Vertical	Pass
5	15577.856	29.06	-17.83	74.0	-44.94	Peak	17.40	176	Vertical	Pass
5**	15577.856	20.88	-17.83	54.0	-33.12	AV	17.40	176	Vertical	Pass
6	16889.278	33.22	-12.91	74.0	-40.78	Peak	5.50	176	Vertical	Pass
6**	16889.278	23.43	-12.91	54.0	-30.57	AV	5.50	176	Vertical	Pass

TEST REPORT

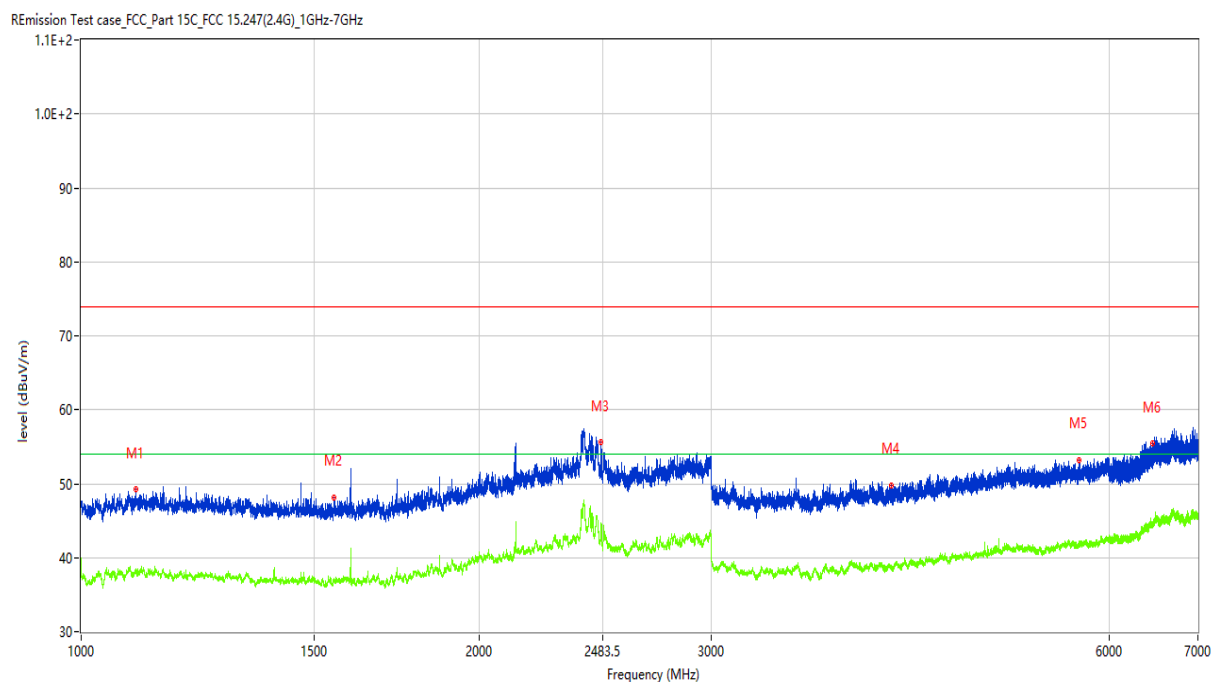
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Figure 32: Spurious Emission, 1GHz – 10th Harmonic, Hopping Mode, 8-DPSK

1GHz-7GHz, Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1099.488	49.20	-3.76	74.0	-24.80	Peak	78.00	176	Horizontal	Pass
1**	1099.488	38.25	-3.76	54.0	-15.75	AV	78.00	176	Horizontal	Pass
2	1553.181	48.18	-5.30	74.0	-25.82	Peak	334.20	176	Horizontal	Pass
2**	1553.181	36.76	-5.30	54.0	-17.24	AV	334.20	176	Horizontal	Pass
3	2475.316	55.57	2.43	74.0	-18.43	Peak	167.40	176	Horizontal	Pass
3**	2475.316	44.46	2.43	54.0	-9.54	AV	167.40	176	Horizontal	Pass
4	4105.737	49.83	-0.04	74.0	-24.17	Peak	120.70	176	Horizontal	Pass
4**	4105.737	39.00	-0.04	54.0	-15.00	AV	120.70	176	Horizontal	Pass
5	5690.289	53.24	2.15	74.0	-20.76	Peak	303.80	176	Horizontal	Pass
5**	5690.289	41.95	2.15	54.0	-12.05	AV	303.80	176	Horizontal	Pass
6	6466.192	55.41	4.88	74.0	-18.59	Peak	24.30	176	Horizontal	Pass
6**	6466.192	44.52	4.88	54.0	-9.48	AV	24.30	176	Horizontal	Pass

TEST REPORT

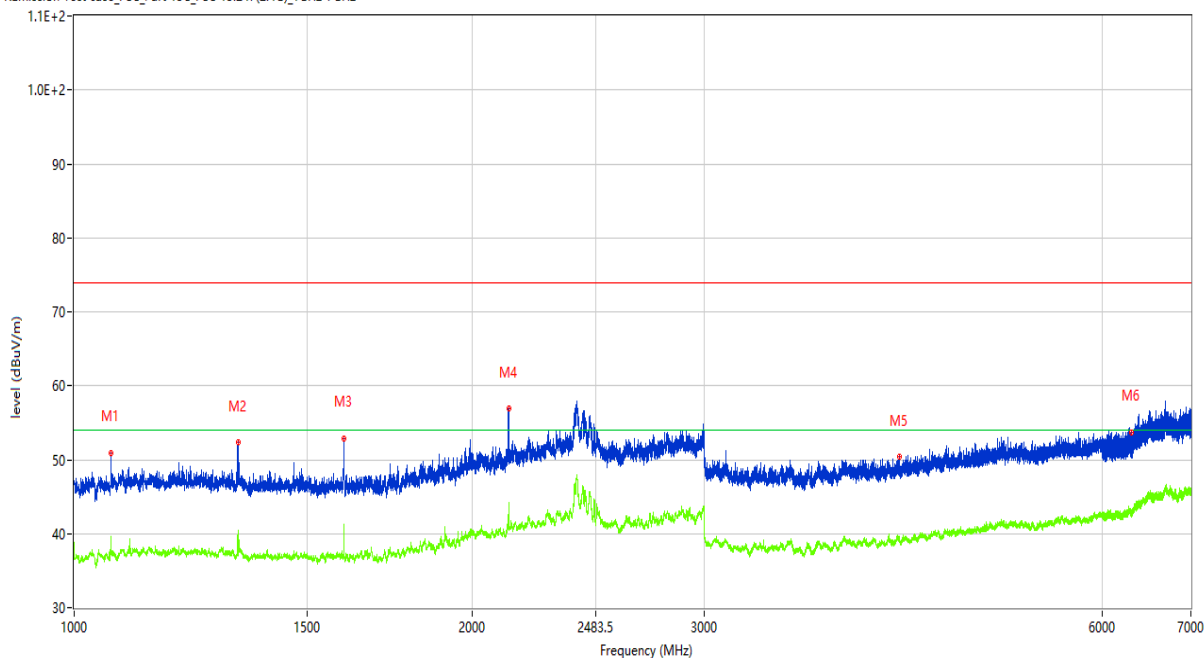
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1GHz-7GHz, Vertical

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_1GHz-7GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1066.742	50.90	-4.70	74.0	-23.10	Peak	253.80	176	Vertical	Pass
1**	1066.742	39.52	-4.70	54.0	-14.48	AV	253.80	176	Vertical	Pass
2	1331.959	52.31	-4.53	74.0	-21.69	Peak	331.40	176	Vertical	Pass
2**	1331.959	40.45	-4.53	54.0	-13.55	AV	331.40	176	Vertical	Pass
3	1600.175	52.85	-5.87	74.0	-21.15	Peak	9.10	176	Vertical	Pass
3**	1600.175	41.19	-5.87	54.0	-12.81	AV	9.10	176	Vertical	Pass
4	2131.859	56.95	-1.20	74.0	-17.05	Peak	185.60	176	Vertical	Pass
4**	2131.859	44.21	-1.20	54.0	-9.79	AV	185.60	176	Vertical	Pass
5	4215.973	50.34	-0.04	74.0	-23.66	Peak	204.30	176	Vertical	Pass
5**	4215.973	38.90	-0.04	54.0	-15.10	AV	204.30	176	Vertical	Pass
6	6315.211	53.69	3.45	74.0	-20.31	Peak	360.00	176	Vertical	Pass
6**	6315.211	43.08	3.45	54.0	-10.92	AV	360.00	176	Vertical	Pass

TEST REPORT

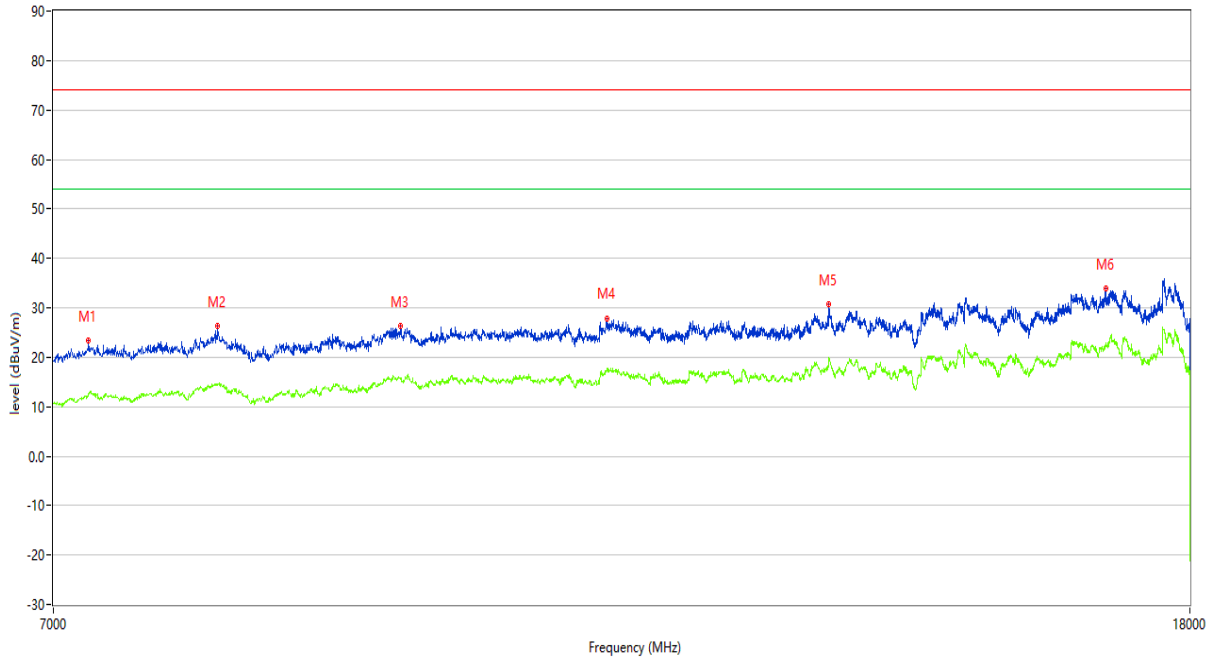
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7GHz-18GHz, Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247_7GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	7206.198	23.27	-30.15	74.0	-50.73	Peak	114.40	176	Horizontal	Pass
1**	7206.198	12.63	-30.15	54.0	-41.37	AV	114.40	176	Horizontal	Pass
2	8022.744	26.22	-27.50	74.0	-47.78	Peak	319.70	176	Horizontal	Pass
2**	8022.744	14.34	-27.50	54.0	-39.66	AV	319.70	176	Horizontal	Pass
3	9342.414	26.23	-23.29	74.0	-47.77	Peak	259.70	176	Horizontal	Pass
3**	9342.414	15.63	-23.29	54.0	-38.37	AV	259.70	176	Horizontal	Pass
4	11090.977	27.88	-22.34	74.0	-46.12	Peak	63.20	176	Horizontal	Pass
4**	11090.977	17.83	-22.34	54.0	-36.17	AV	63.20	176	Horizontal	Pass
5	13337.166	30.67	-20.22	74.0	-43.33	Peak	87.20	176	Horizontal	Pass
5**	13337.166	19.74	-20.22	54.0	-34.26	AV	87.20	176	Horizontal	Pass
6	16782.054	33.84	-13.28	74.0	-40.16	Peak	328.60	176	Horizontal	Pass
6**	16782.054	22.18	-13.28	54.0	-31.82	AV	328.60	176	Horizontal	Pass

TEST REPORT

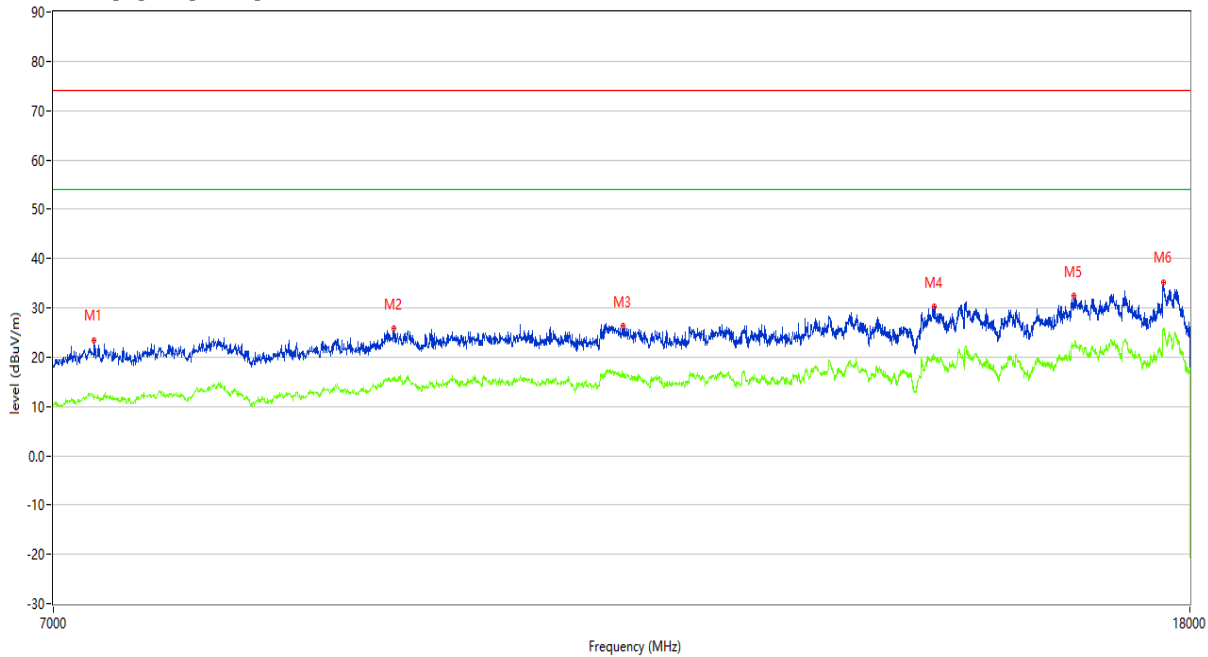
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7GHz-18GHz, Vertical

REmission Test case_FCC_Part 15C_FCC 15.247_7GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	7225.444	21.12	-30.17	74.0	-52.88	Peak	0.00	176	Vertical	Pass
1**	7225.444	12.15	-30.17	54.0	-41.85	AV	0.00	176	Vertical	Pass
2	9287.428	25.85	-24.02	74.0	-48.15	Peak	2.20	176	Vertical	Pass
2**	9287.428	15.38	-24.02	54.0	-38.62	AV	2.20	176	Vertical	Pass
3	11236.691	26.30	-22.35	74.0	-47.70	Peak	19.50	176	Vertical	Pass
3**	11236.691	16.50	-22.35	54.0	-37.50	AV	19.50	176	Vertical	Pass
4	14560.610	30.16	-16.05	74.0	-43.84	Peak	1.10	176	Vertical	Pass
4**	14560.610	20.29	-16.05	54.0	-33.71	AV	1.10	176	Vertical	Pass
5	16350.412	32.45	-14.12	74.0	-41.55	Peak	16.30	176	Vertical	Pass
5**	16350.412	22.41	-14.12	54.0	-31.59	AV	16.30	176	Vertical	Pass
6	17612.347	35.18	-9.79	74.0	-38.82	Peak	16.30	176	Vertical	Pass
6**	17612.347	25.39	-9.79	54.0	-28.61	AV	16.30	176	Vertical	Pass

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4.1.6 Band Edge (Restricted-band band-edge)

RESULT:

PASS

Test standard	: FCC Part 15.247(d), 15.205, 15.209 RSS-247 5.5
Requirement	: ANSI C63.10-2013
Kind of test site	: 3m Semi-Anechoic Chamber

Test setup

Test Channel	: Low/Middle/High
Operation Mode	: A.1
Ambient temperature	: 25°C
Relative humidity	: 52%

For details refer to following test plot.

TEST REPORT

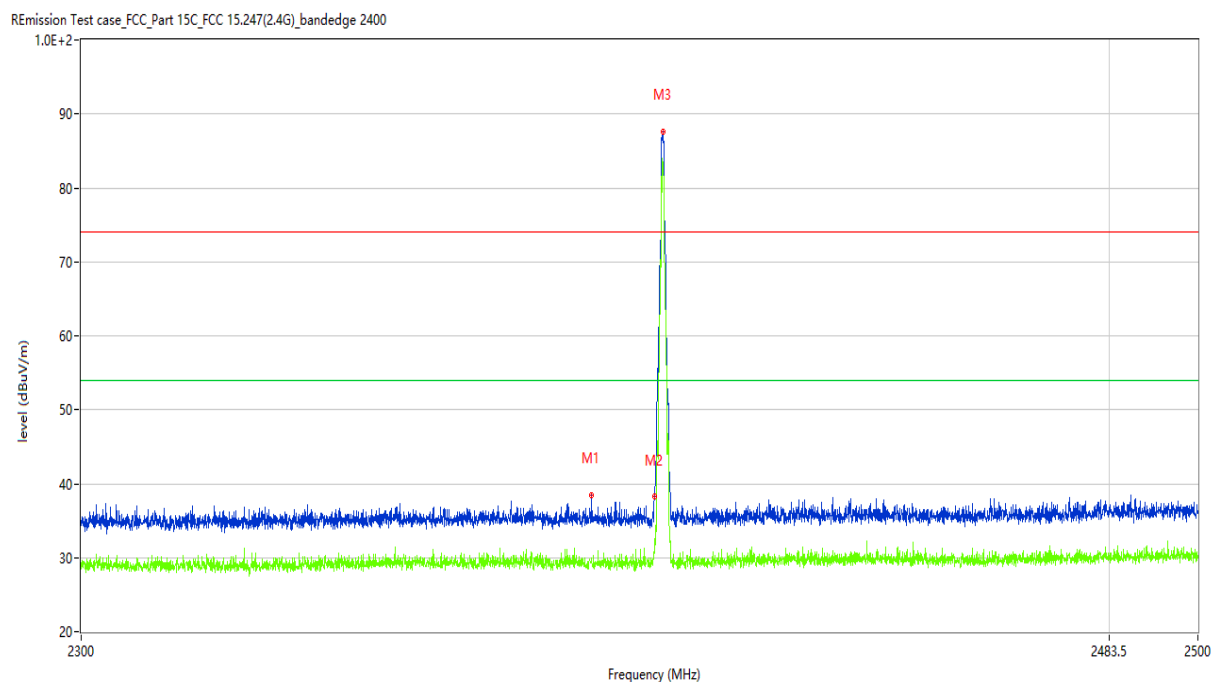
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Figure 33: Band Edge (Restricted-band band-edge), 2402MHz, GFSK

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	2389.328	29.97	4.58	54.0	-24.03	AV	136.80	100	Horizontal	Pass
1	2389.328	38.37	4.58	74.0	-35.63	Peak	136.80	100	Horizontal	Pass
2**	2400.625	30.69	4.50	54.0	-23.31	AV	303.30	100	Horizontal	Pass
2	2400.625	38.28	4.50	74.0	-35.72	Peak	303.30	100	Horizontal	Pass
3**	2402.074	83.29	4.52	54.0	29.29	AV	346.50	100	Horizontal	N/A
3	2402.074	87.61	4.52	74.0	13.61	Peak	346.50	100	Horizontal	N/A

TEST REPORT

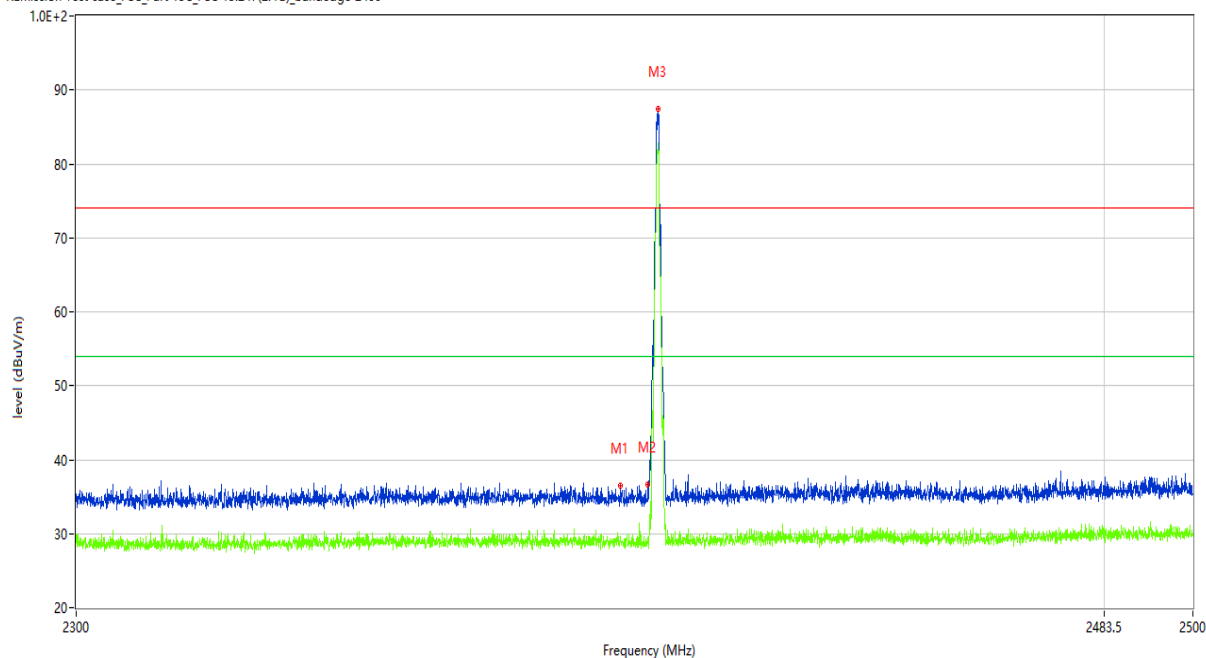
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Vertical

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_bandedge 2400



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	2395.326	29.20	4.53	54.0	-24.80	AV	126.20	100	Vertical	Pass
1	2395.326	36.42	4.53	74.0	-37.58	Peak	126.20	100	Vertical	Pass
2**	2400.325	29.11	4.49	54.0	-24.89	AV	311.00	100	Vertical	Pass
2	2400.325	36.65	4.49	74.0	-37.35	Peak	311.00	100	Vertical	Pass
3**	2402.224	82.80	4.52	54.0	28.80	AV	316.60	100	Vertical	N/A
3	2402.224	87.49	4.52	74.0	13.49	Peak	316.60	100	Vertical	N/A

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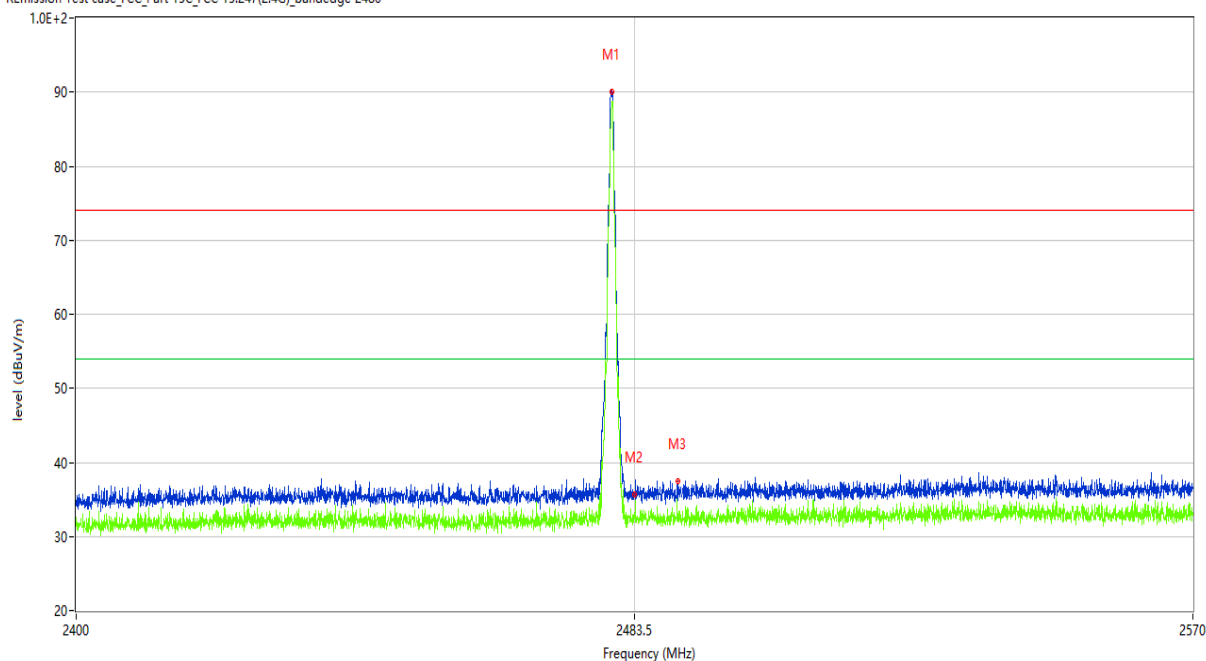
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Figure 34: Band Edge (Restricted-band band-edge), 2480MHz, GFSK

Horizontal

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_bandedge 2480



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	2480.092	87.73	5.53	54.0	33.73	AV	299.80	100	Horizontal	N/A
1	2480.092	89.71	5.53	74.0	15.71	Peak	299.80	100	Horizontal	N/A
2**	2483.492	32.60	5.57	54.0	-21.40	AV	291.10	100	Horizontal	Pass
2	2483.492	35.73	5.57	74.0	-38.27	Peak	291.10	100	Horizontal	Pass
3**	2490.120	32.99	5.64	54.0	-21.01	AV	331.40	100	Horizontal	Pass
3	2490.120	37.53	5.64	74.0	-36.47	Peak	331.40	100	Horizontal	Pass

TEST REPORT

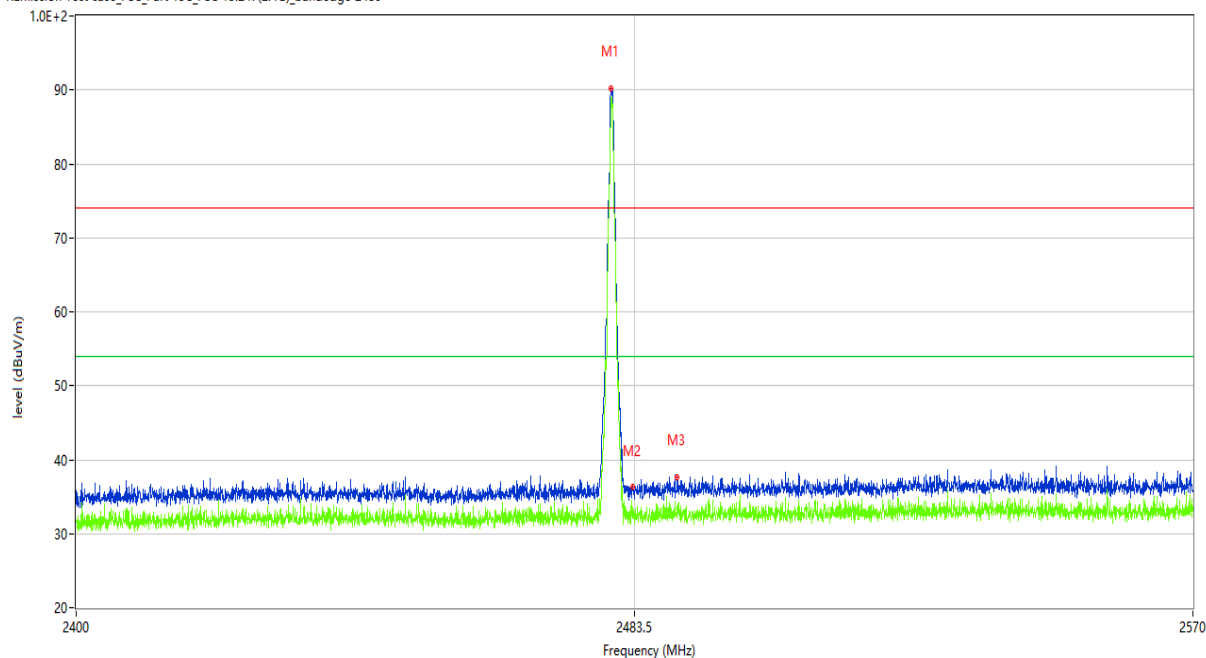
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Vertical

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_bandedge 2480



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	2479.965	87.22	5.53	54.0	33.22	AV	135.40	100	Vertical	N/A
1	2479.965	90.18	5.53	74.0	16.18	Peak	135.40	100	Vertical	N/A
2**	2483.237	33.58	5.56	54.0	-20.42	AV	348.40	100	Vertical	Pass
2	2483.237	36.40	5.56	74.0	-37.60	Peak	348.40	100	Vertical	Pass
3**	2490.077	33.09	5.64	54.0	-20.91	AV	199.10	100	Vertical	Pass
3	2490.077	37.62	5.64	74.0	-36.38	Peak	199.10	100	Vertical	Pass

TEST REPORT

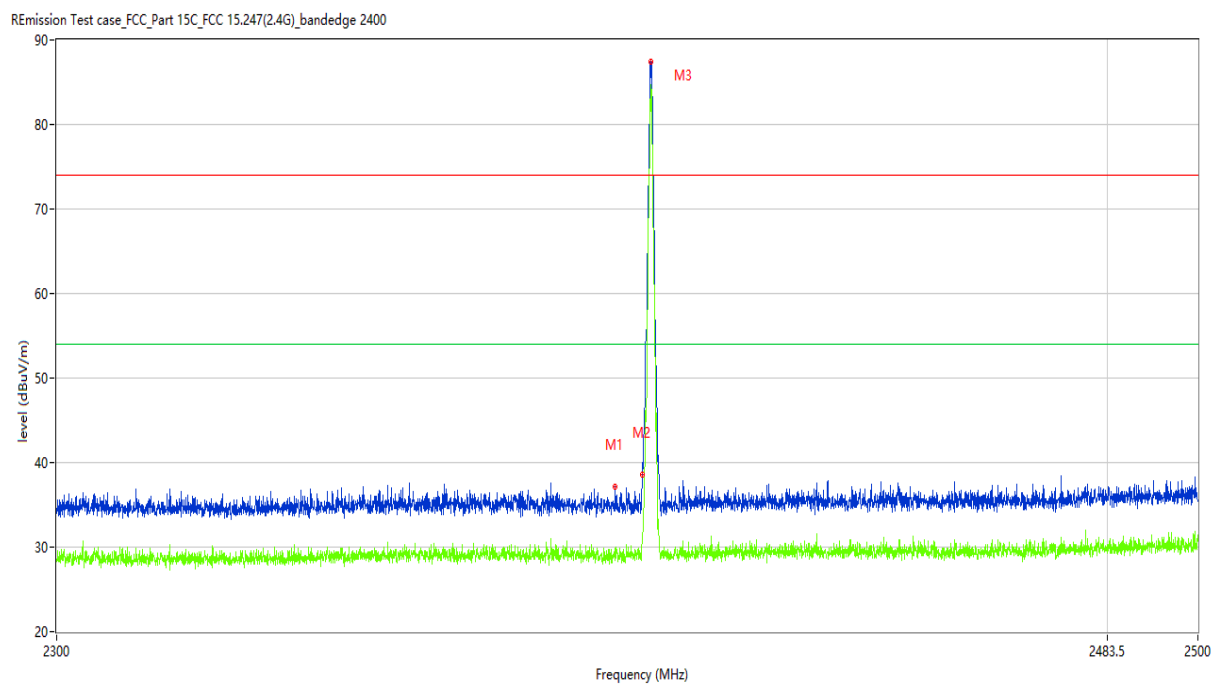
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Figure 35: Band Edge (Restricted-band band-edge), 2402MHz, 8-DPSK

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	2395.826	29.82	4.53	54.0	-24.18	AV	183.60	100	Horizontal	Pass
1	2395.826	37.21	4.53	74.0	-36.79	Peak	183.60	100	Horizontal	Pass
2**	2400.525	31.33	4.50	54.0	-22.67	AV	211.20	100	Horizontal	Pass
2	2400.525	38.54	4.50	74.0	-35.46	Peak	211.20	100	Horizontal	Pass
3**	2402.074	83.34	4.52	54.0	29.34	AV	320.40	100	Horizontal	N/A
3	2402.074	87.48	4.52	74.0	13.48	Peak	320.40	100	Horizontal	N/A

TEST REPORT

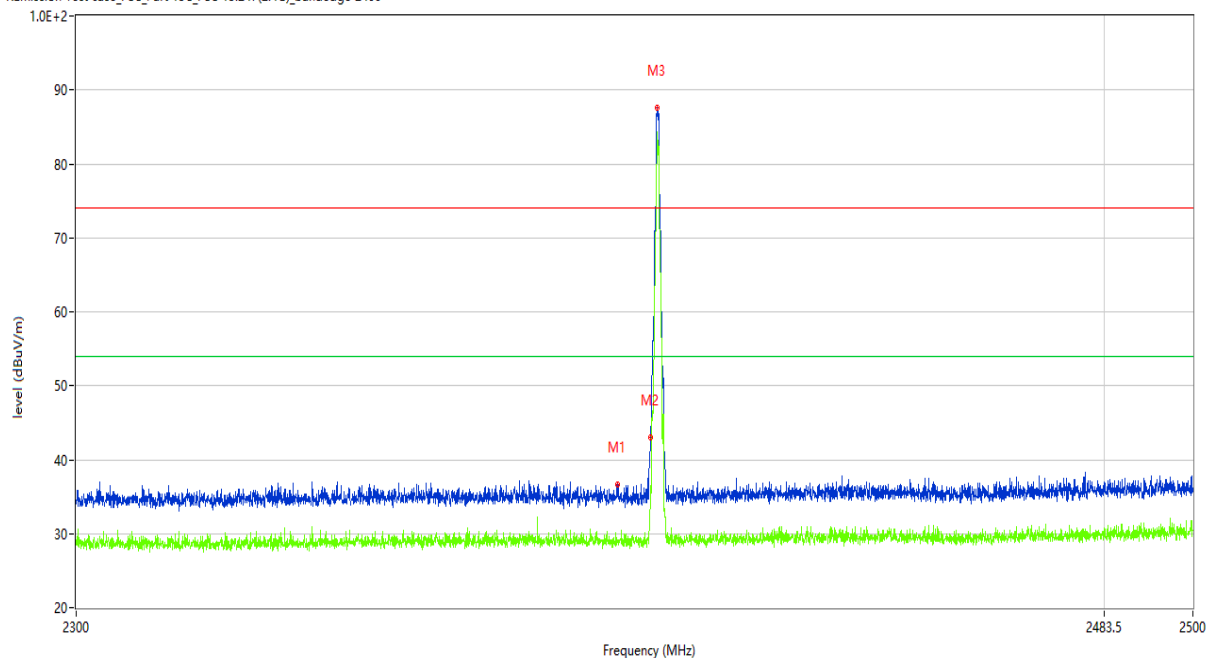
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Vertical

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_bandedge 2400



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	2394.826	28.40	4.53	54.0	-25.60	AV	293.80	100	Vertical	Pass
1	2394.826	36.66	4.53	74.0	-37.34	Peak	293.80	100	Vertical	Pass
2**	2400.725	34.51	4.50	54.0	-19.49	AV	176.80	100	Vertical	Pass
2	2400.725	43.03	4.50	74.0	-30.97	Peak	176.80	100	Vertical	Pass
3**	2401.975	82.93	4.52	54.0	28.93	AV	322.50	100	Vertical	N/A
3	2401.975	87.58	4.52	74.0	13.58	Peak	322.50	100	Vertical	N/A

TEST REPORT

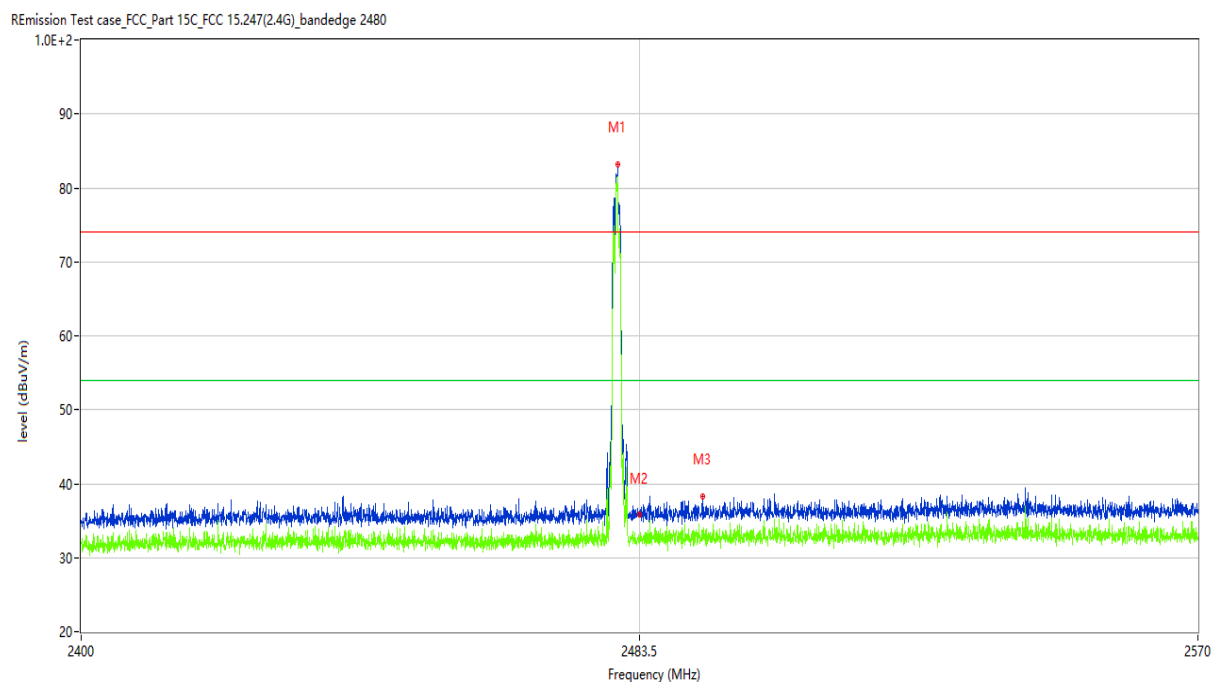
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Figure 36: Band Edge (Restricted-band band-edge), 2480MHz, 8-DPSK

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	2480.262	81.58	5.53	54.0	27.58	AV	203.10	100	Horizontal	N/A
1	2480.262	83.26	5.53	74.0	9.26	Peak	203.10	100	Horizontal	N/A
2**	2483.500	32.22	5.57	54.0	-21.78	AV	0.90	100	Horizontal	Pass
2	2483.500	35.76	5.57	74.0	-38.24	Peak	0.90	100	Horizontal	Pass
3**	2493.179	33.75	5.68	54.0	-20.25	AV	100.00	100	Horizontal	Pass
3	2493.179	38.29	5.68	74.0	-35.71	Peak	100.00	100	Horizontal	Pass

TEST REPORT

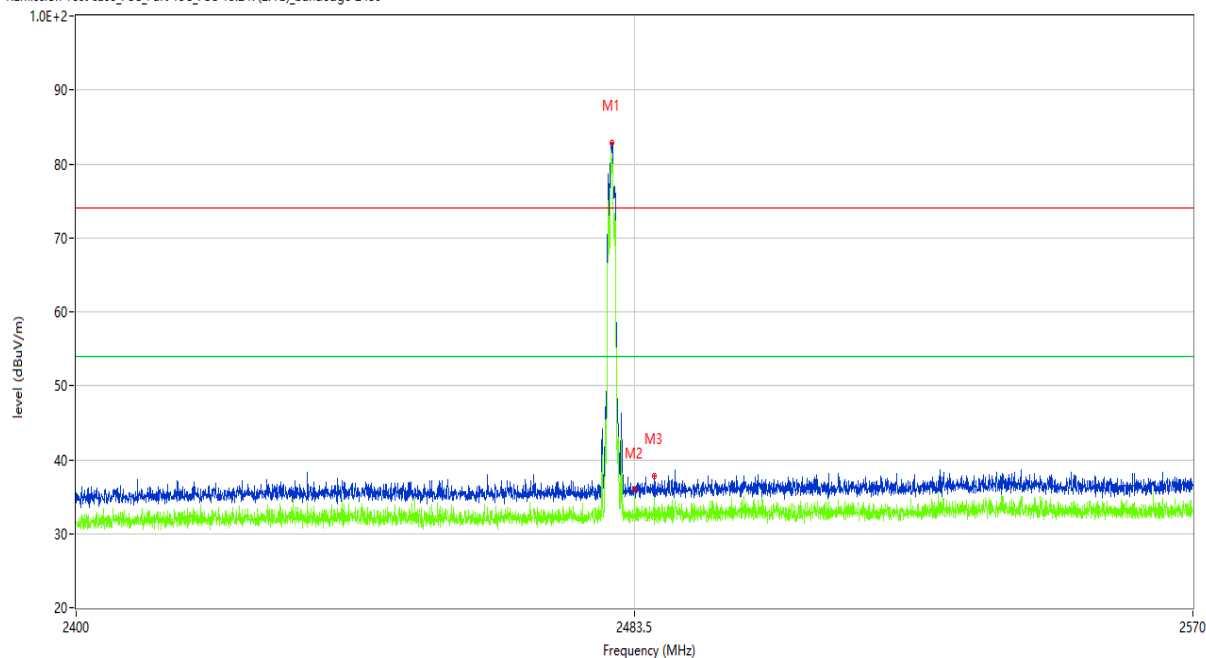
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Vertical

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_bandedge 2480



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	2480.050	80.70	5.53	54.0	26.70	AV	197.00	100	Vertical	N/A
1	2480.050	82.92	5.53	74.0	8.92	Peak	197.00	100	Vertical	N/A
2**	2483.500	32.56	5.57	54.0	-21.44	AV	229.60	100	Vertical	Pass
2	2483.500	35.98	5.57	74.0	-38.02	Peak	229.60	100	Vertical	Pass
3**	2486.508	34.92	5.60	54.0	-19.08	AV	108.60	100	Vertical	Pass
3	2486.508	37.84	5.60	74.0	-36.16	Peak	108.60	100	Vertical	Pass

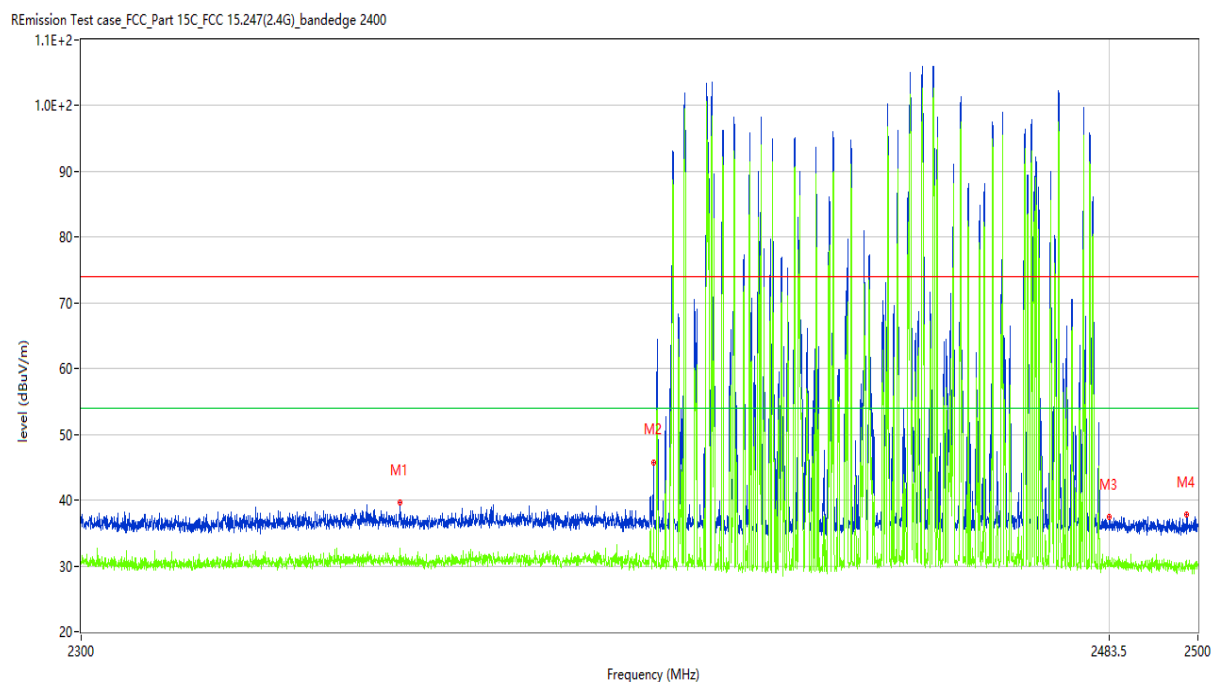
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Figure 37: Band Edge (Restricted-band band-edge), Hopping Mode, GFSK
Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2355.486	39.71	-4.21	74.0	-34.29	Peak	46.50	176	Horizontal	Pass
1**	2355.486	32.65	-4.21	54.0	-21.35	AV	46.50	176	Horizontal	Pass
2	2400.425	45.80	-4.18	74.0	-28.20	Peak	150.00	176	Horizontal	Pass
2**	2400.425	35.87	-4.18	54.0	-18.13	AV	150.00	176	Horizontal	Pass
3	2483.504	37.53	-3.87	74.0	-36.47	Peak	40.80	176	Horizontal	Pass
3**	2483.504	30.63	-3.87	54.0	-23.37	AV	40.80	176	Horizontal	Pass
4	2497.951	37.77	-4.36	74.0	-36.23	Peak	287.40	176	Horizontal	Pass
4**	2497.951	30.29	-4.36	54.0	-23.71	AV	287.40	176	Horizontal	Pass

TEST REPORT

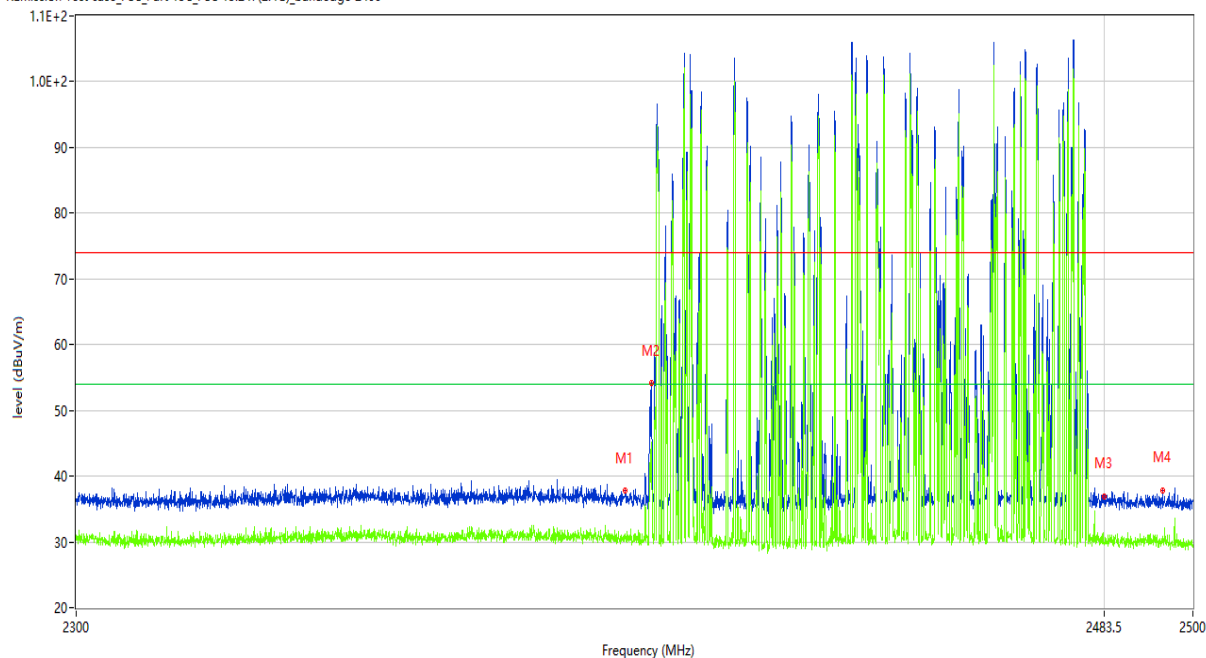
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Vertical

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_bandedge 2400



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2396.226	37.74	-4.02	74.0	-36.26	Peak	137.40	176	Vertical	Pass
1**	2396.226	31.22	-4.02	54.0	-22.78	AV	137.40	176	Vertical	Pass
2	2401.025	54.19	-4.18	74.0	-19.81	Peak	100.10	176	Vertical	Pass
2**	2401.025	45.12	-4.18	54.0	-8.88	AV	100.10	176	Vertical	Pass
3	2483.500	36.79	-3.87	74.0	-37.21	Peak	50.79	176	Vertical	Pass
3**	2483.500	29.77	-3.87	54.0	-24.23	AV	50.79	176	Vertical	Pass
4	2494.351	37.75	-4.23	74.0	-36.25	Peak	134.40	176	Vertical	Pass
4**	2494.351	30.37	-4.23	54.0	-23.63	AV	134.40	176	Vertical	Pass

TEST REPORT

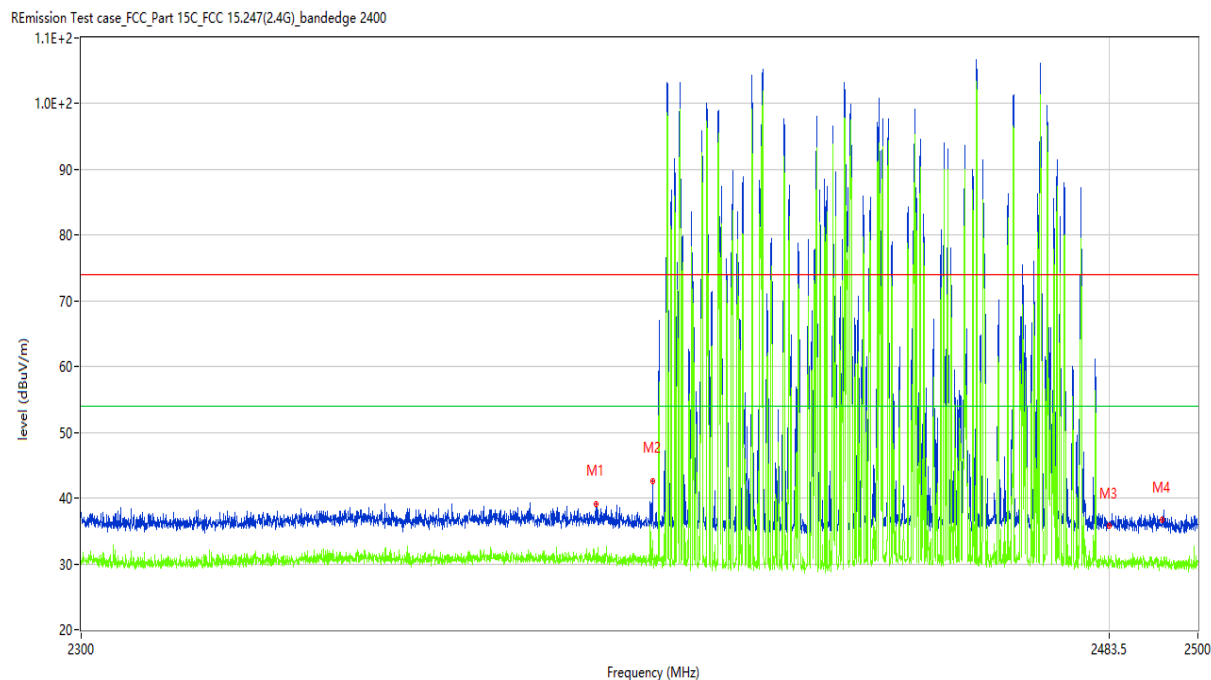
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Figure 38: Band Edge (Restricted-band band-edge), Hopping Mode, 8-DPSK

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2390.077	39.10	-3.76	74.0	-34.90	Peak	250.10	176	Horizontal	Pass
1**	2390.077	31.48	-3.76	54.0	-22.52	AV	250.10	176	Horizontal	Pass
2	2400.225	42.67	-4.18	74.0	-31.33	Peak	0.80	176	Horizontal	Pass
2**	2400.225	33.51	-4.18	54.0	-20.49	AV	0.80	176	Horizontal	Pass
3	2483.500	35.81	-3.87	74.0	-38.19	Peak	312.03	176	Horizontal	Pass
3**	2483.500	30.72	-3.87	54.0	-23.28	AV	312.03	176	Horizontal	Pass
4	2493.402	36.73	-4.20	74.0	-37.27	Peak	142.60	176	Horizontal	Pass
4**	2493.402	29.64	-4.20	54.0	-24.36	AV	142.60	176	Horizontal	Pass

TEST REPORT

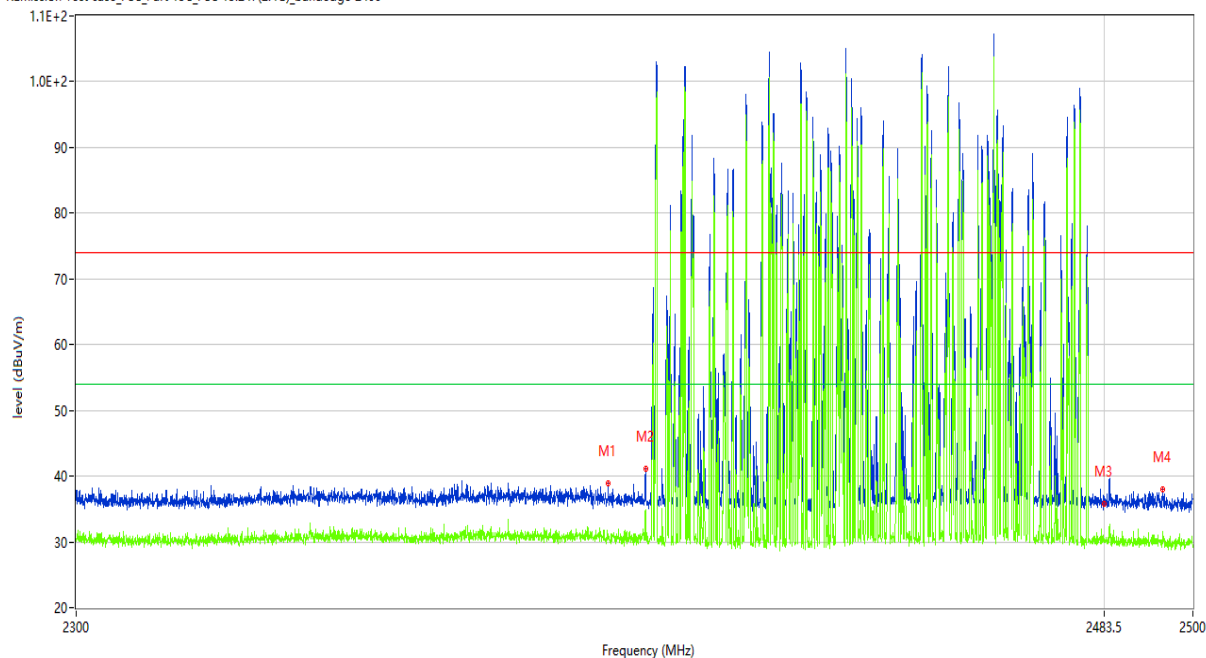
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Vertical

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_bandedge 2400



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2393.177	38.94	-3.89	74.0	-35.06	Peak	188.10	176	Vertical	Pass
1**	2393.177	31.15	-3.89	54.0	-22.85	AV	188.10	176	Vertical	Pass
2	2399.875	41.16	-4.17	74.0	-32.84	Peak	95.10	176	Vertical	Pass
2**	2399.875	34.93	-4.17	54.0	-19.07	AV	95.10	176	Vertical	Pass
3	2483.500	35.81	-3.87	74.0	-38.19	Peak	218.36	176	Vertical	Pass
3**	2483.500	30.00	-3.87	54.0	-24.00	AV	218.36	176	Vertical	Pass
4	2494.301	38.04	-4.23	74.0	-35.96	Peak	202.60	176	Vertical	Pass
4**	2494.301	31.52	-4.23	54.0	-22.48	AV	202.60	176	Vertical	Pass

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4.1.8 Hopping Frequency Separation

RESULT:

PASS

Test standard : FCC Part 15.247(a)(1)
RSS-247 5.1(2)
Requirement : ANSI C63.10-2013
Kind of test site : Shielded room

Test setup

Test Channel : Hopping
Operation Mode : A.1.a.iv
Ambient temperature : 25°C
Relative humidity : 52%

Table 4: Hopping Frequency Separation

Mode	Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)
GFSK	2441	0.999	≥ 25kHz or two-thirds of 20dB bandwidth
8-DPSK	2441	0.993	

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Figure 39: Hopping Frequency Separation, Hopping Mode, GFSK

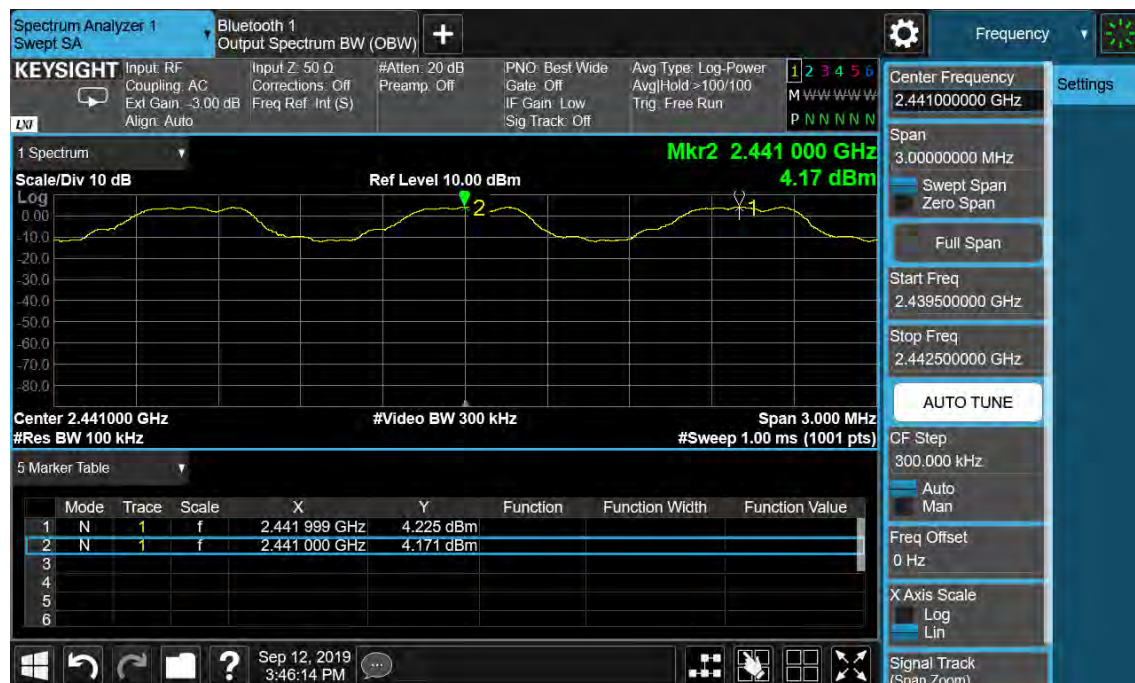


Figure 40: Hopping Frequency Separation, Hopping Mode, 8DPSK



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4.1.9 Number of Hopping Frequency

RESULT:

PASS

Test standard : FCC Part 15.247(a)(1)(iii)
RSS-247 5.1(4)
Requirement : ANSI C63.10-2013
Kind of test site : Shielded room

Test setup

Test Channel : Hopping
Operation Mode : A.1.a.iv
Ambient temperature : 25°C
Relative humidity : 52%

Table 5: Number of Hopping Frequency

Mode	Frequency Range	Measured Quantity of Hopping Channel	Limit
GFSK	2400 – 2483.5	79	≥15
8-DPSK	2400 – 2483.5	79	≥15

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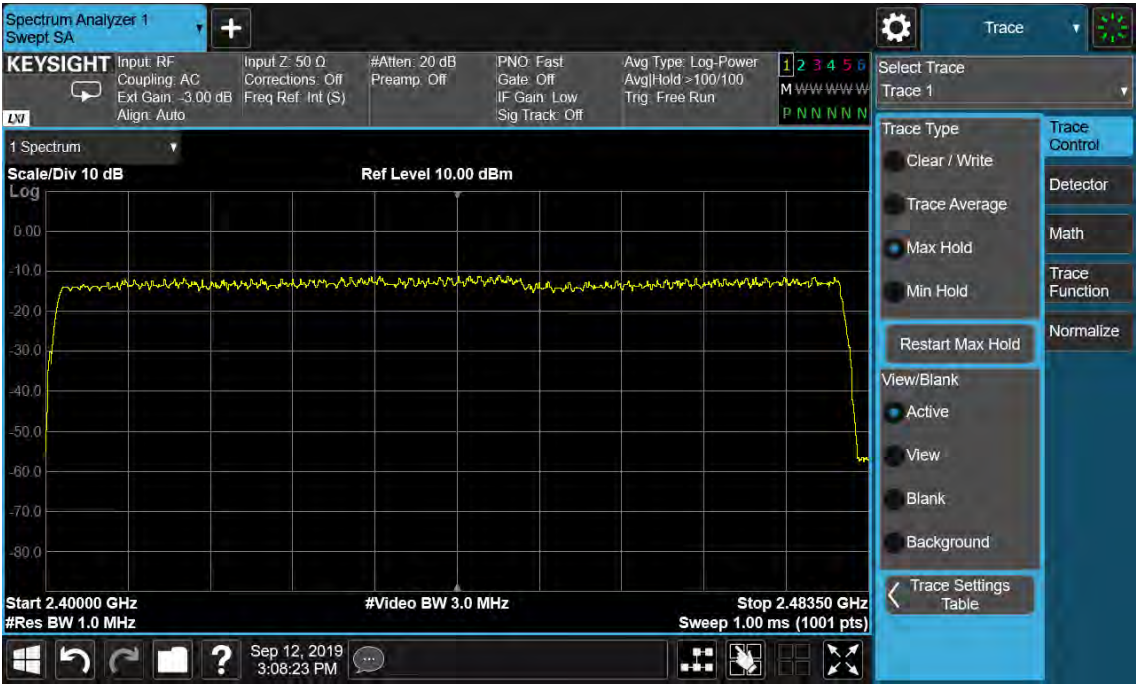
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Figure 41: Number of Hopping Frequency, Hopping Mode, GFSK



Figure 42: Number of Hopping Frequency, Hopping Mode, 8-DPSK



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4.1.10 Time of Occupancy

RESULT:

PASS

Test standard : FCC Part 15.247(a)(1)(iii)
RSS-247 5.1(4)
Requirement : ANSI C63.10-2013
Kind of test site : Shielded room

Test setup

Test Channel : Middle
Operation Mode : A.1.a
Ambient temperature : 25°C
Relative humidity : 52%

Table 6: Time of Occupancy

Mode	Packet Type	Pulse Time (ms)	Total of Dwell (ms)	Limit (s)
GFSK	DH1	0.383	122.656	0.4
	DH3	1.840	294.400	0.4
	DH5	3.093	329.920	0.4
8-DPSK	DH1	0.453	145.056	0.4
	DH3	1.840	294.400	0.4
	DH5	3.093	329.920	0.4

Note:

For DH1 package type:

Total of Dwell = Pulse Time*(1600/2)/Number of Hopping Frequency*Period

Period = 0.4* Number of Hopping Frequency

For DH3 package type:

Total of Dwell = Pulse Time*(1600/4)/Number of Hopping Frequency*Period

Period = 0.4* Number of Hopping Frequency

For DH5 package type:

Total of Dwell = Pulse Time*(1600/6)/Number of Hopping Frequency*Period

Period = 0.4* Number of Hopping Frequency

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Figure 43: Time of Occupancy, 2441MHz, GFSK DH1

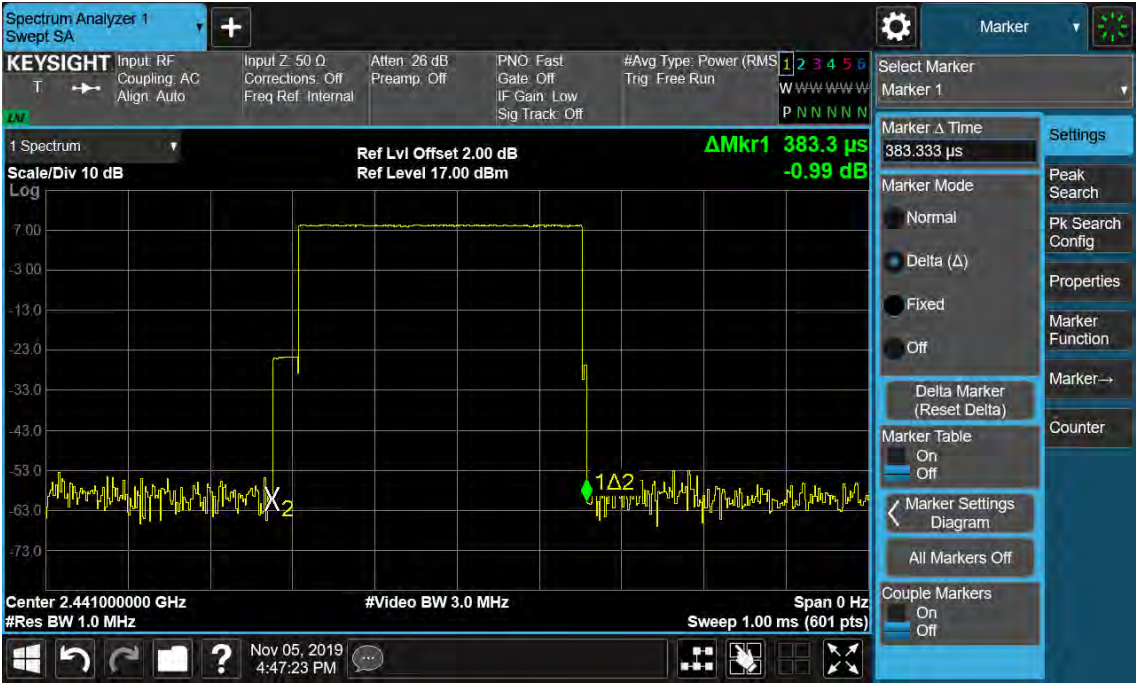


Figure 44: Time of Occupancy, 2441MHz, GFSK DH3



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Figure 45: Time of Occupancy, 2441MHz, GFSK DH5



Figure 46: Time of Occupancy, 2441MHz, 8-DPSK DH1



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Figure 47: Time of Occupancy, 2441MHz, 8-DPSK DH3



Figure 48: Time of Occupancy, 2441MHz, 8-DPSK DH5



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4.2 Mains Emissions

4.2.1 Conducted Emission on AC Mains

RESULT:

PASS

Test standard	:	FCC Part 15.207(a) RSS-Gen 8.8
Requirement	:	ANSI C63.10-2013
Kind of test site	:	Shielded room

Test setup

Input Voltage	:	AC 120V, 60Hz; AC 240V, 50Hz
Operation Mode	:	A.1.a
Earthing	:	Not Connected
Ambient temperature	:	25°C
Relative humidity	:	52%

For details refer to following test plot.

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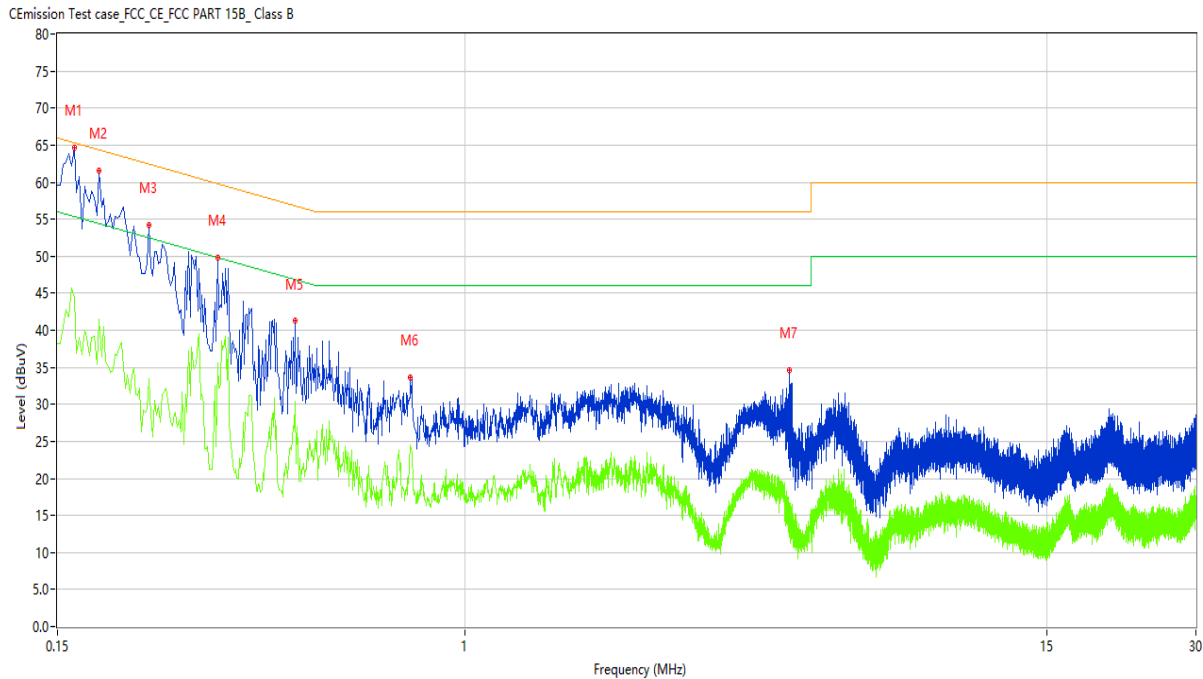
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Note:

The all configurations were tested respectively, but only the worst configuration shown here.

Figure 49: Conducted Emission on AC Mains, L Phase



No.	Frequency(MHz)	Results (dBuV)	Factor(dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.162	63.53	10.15	65.36	-1.83	Peak	L	Pass
1*	0.162	59.53	10.15	65.36	-5.83	QP	L	Pass
1**	0.162	44.43	10.15	55.36	-10.93	AV	L	Pass
2	0.182	60.65	10.15	64.39	-3.74	Peak	L	Pass
2*	0.182	56.66	10.15	64.39	-7.73	QP	L	Pass
2**	0.182	41.51	10.15	54.39	-12.88	AV	L	Pass
3	0.230	53.43	10.14	62.45	-9.02	Peak	L	Pass
3*	0.230	49.11	10.14	62.45	-13.34	QP	L	Pass
3**	0.230	33.52	10.14	52.45	-18.93	AV	L	Pass
4	0.316	49.81	10.14	59.81	-10.00	Peak	L	Pass
4*	0.316	44.16	10.14	59.81	-15.65	QP	L	Pass
4**	0.316	35.67	10.14	49.81	-14.14	AV	L	Pass
5	0.454	40.38	10.15	56.80	-16.42	Peak	L	Pass
5*	0.454	34.84	10.15	56.80	-21.96	QP	L	Pass
5**	0.454	30.32	10.15	46.80	-16.48	AV	L	Pass
6	0.776	33.67	10.15	56.00	-22.33	Peak	L	Pass
6**	0.776	24.49	10.15	46.00	-21.51	AV	L	Pass
7	4.530	34.64	10.25	56.00	-21.36	Peak	L	Pass
7**	4.530	15.82	10.25	46.00	-30.18	AV	L	Pass

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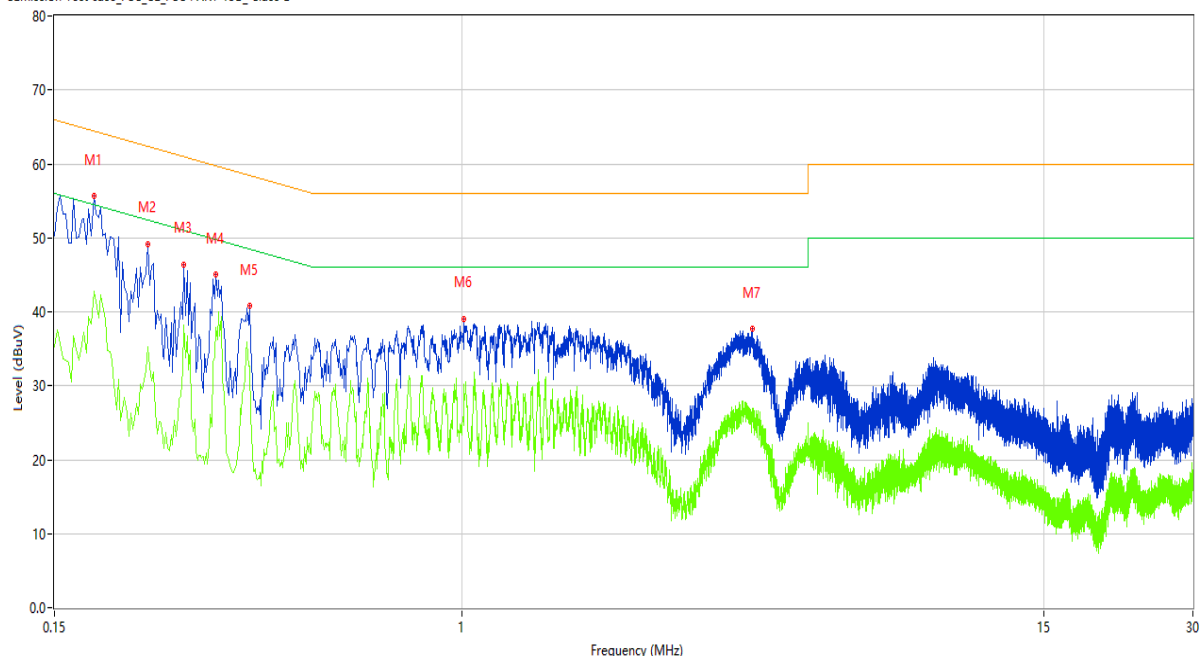
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Figure 50: Conducted Emission on AC Mains, N Phase

CEmission Test case_FCC_CE_FCC PART 15B_Class B



No.	Frequency(MHz)	Results (dBuV)	Factor(dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.180	56.67	10.15	64.49	-7.82	Peak	N	Pass
1*	0.180	51.48	10.15	64.49	-13.01	QP	N	Pass
1**	0.180	42.75	10.15	54.49	-11.74	AV	N	Pass
2	0.232	49.77	10.14	62.38	-12.61	Peak	N	Pass
2*	0.232	45.06	10.14	62.38	-17.32	QP	N	Pass
2**	0.232	35.34	10.14	52.38	-17.04	AV	N	Pass
3	0.274	46.64	10.14	61.00	-14.36	Peak	N	Pass
3*	0.274	42.48	10.14	61.00	-18.52	QP	N	Pass
3**	0.274	38.19	10.14	51.00	-12.81	AV	N	Pass
4	0.318	45.53	10.14	59.76	-14.23	Peak	N	Pass
4*	0.318	41.69	10.14	59.76	-18.07	QP	N	Pass
4**	0.318	37.96	10.14	49.76	-11.80	AV	N	Pass
5	0.372	42.18	10.14	58.46	-16.28	Peak	N	Pass
5*	0.372	37.69	10.14	58.46	-20.77	QP	N	Pass
5**	0.372	32.66	10.14	48.46	-15.80	AV	N	Pass
6	1.010	39.10	10.15	56.00	-16.90	Peak	N	Pass
6**	1.010	29.12	10.15	46.00	-16.88	AV	N	Pass
7	3.858	37.72	10.24	56.00	-18.28	Peak	N	Pass
7**	3.858	25.96	10.24	46.00	-20.04	AV	N	Pass

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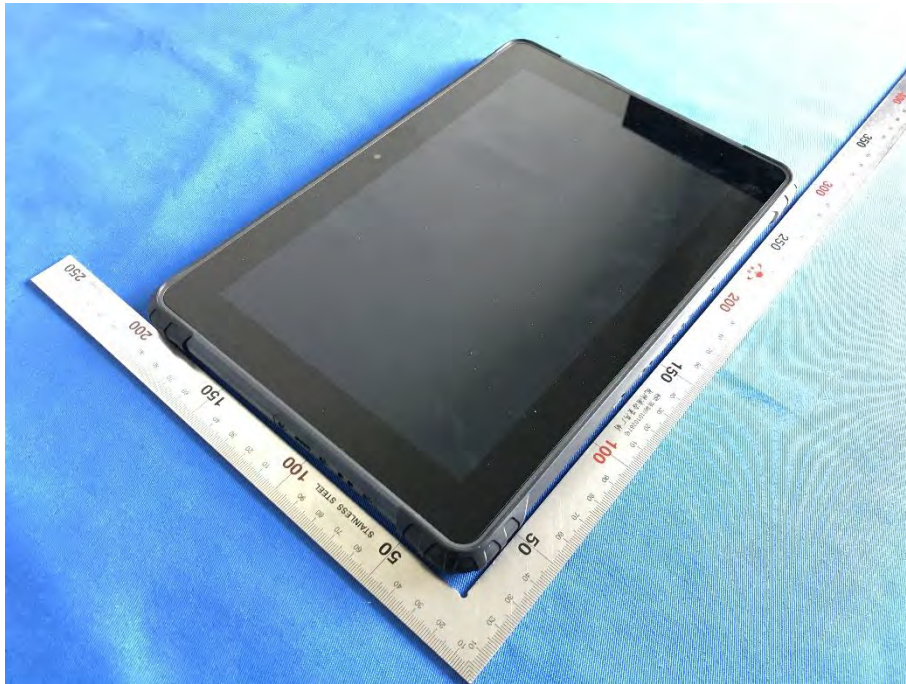
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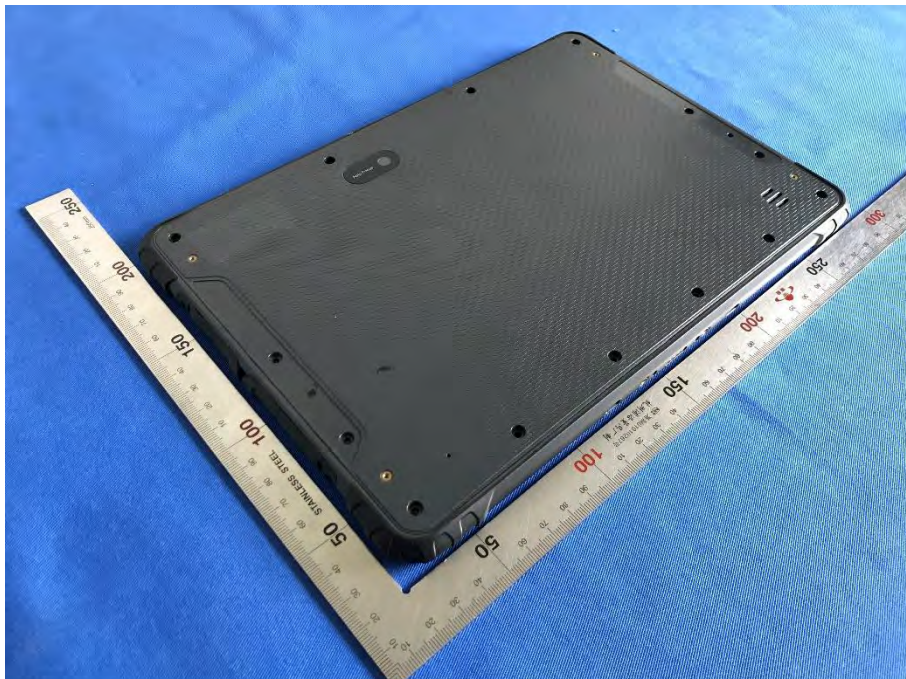
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5 Appendixes

5.1 Photographs of the Sample



Front of the sample



Rear of the sample

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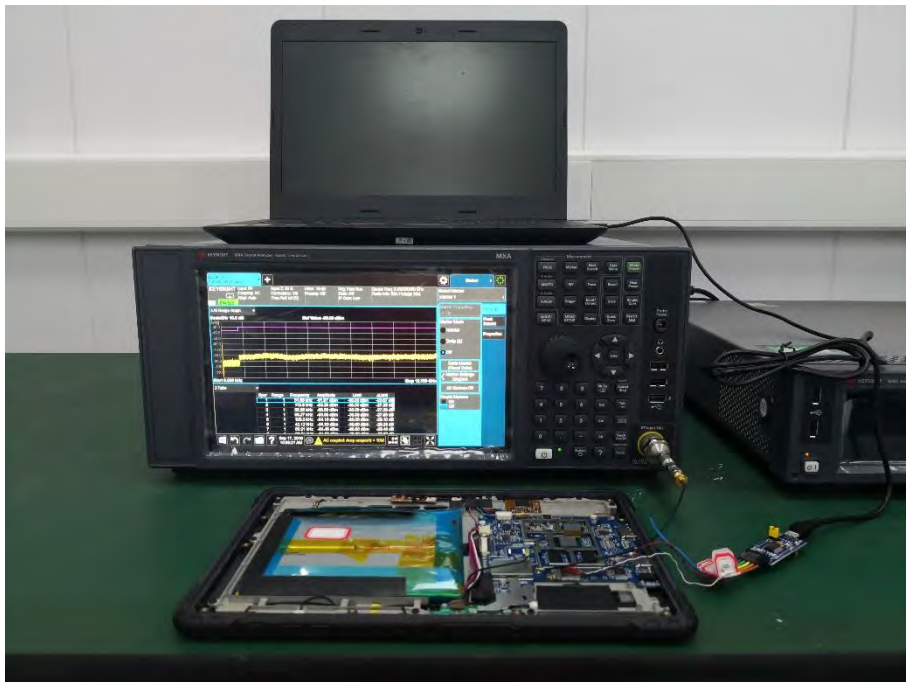
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5.2 Set-up for Conducted Emissions



5.3 Set-up for Conducted RF test at Antenna Port



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5.4 Set-up for Spurious Emissions below 1GHz



Below 1 GHz

5.5 Set-up for Spurious Emissions above 1GHz



Above 1GHz

End of the report