

TEST REPORT

Product : Wireless mouse
Trade mark : MINISO
Model/Type reference : Look at page 2
Test Model No. : CM880PRO
Serial Number : N/A
Report Number : EED32N80217701
FCC ID : 2AMSRM880PRO
Date of Issue : May 20, 2021
Test Standards : 47 CFR Part 15 Subpart C
Test result : PASS

Prepared for:

Dongguan Couso Technology Co.,Ltd
No.26 minye road, tangxia town, Dongguan City,
Guangdong Province, China

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385



Compiled by:

Martin Lee

Martin Lee

Approved by:

David Wang

David Wang

Reviewed by:

Aaron Ma

Aaron Ma

Date:

May 20, 2021

Check No.:9114120421

Version No.	Date	Description
00	May 20, 2021	Original

All Model No.:

CS1000, CS1100, CS1200, CS1300, CS1400, CS1500, CS1600, CS1700, CS1800, CS1900, CS2000, CS2100, CS2200, CS2300, CS2400, CS2500, CS2600, CS2700, CS2800, CS2900, CS3000, CS3100, CS3200, CS3300, CS3400, CS3500, CS3600, CS3610, CS3620, CS3630, CS3640, CS3650, CS3660, CS3670, CS3680, CS3690, CS3700, CS3710, CS3720, CS3730, CS3740, CS3750, CS3760, CS3770, CS3780, CS3790, CS3800, CS3810, CS3820, CS3830, CS3840, CS3850, CS3860, CS3870, CS3880, CS3890, CS4000, CS4100, CS4200, CS4300, CS4400, CS4500, CS4570, CS4380, CS4550, CS4600, CS4650, CS4700, CS4800, CS4900, CS5000, CS5100, CS5200, CS5300, CS5400, CS5500, CS5600, CS5700, CS5800, CS5900, CS6000, CS6100, CS6200, CS6300, CS6400, CS6500, CS6600, CS6700, CS6800, CS6900, CS7000, CS7100, CS7200, CS7300, CS7400, CS7500, CS7600, CS7700, CS7800, CS7900, CS8000, CS8100, CS8200, CS8300, CS8400, CS8500, CS8600, CS8700, CS8800, CS8900, CS9000, CS9100, CS9200, CS9300, CS9400, CS9500, CS9600, CS9700, CS9800, CS9900, CK300, CK310, CK320, CK330, CK340, CK350, CK360, CK370, CK380, CK390, CK400, CK410, CK420, CK430, CK440, CK450, CK455, CK465, CK460, CK470T, CK480, CK490, CK500, CK510, CK520, CK530, CK540, CK550, CK560, CK570, CK580, CK590, CK600, CK601, CK700, CK710, CK720, CK730, CK740, CK750, CK760, CK770, CK780, CK790, CK800, CK801, CK802, CK803, CK804, CK805, CK806, CK807, CK808, CK809, CK900, CK910, CK920, CK921, CK923, CK925, CK926, CK927, CK928, CK929, CK930, CK940, CK950, CK960, CK970, CK980, CK990, CG10, CG16, CG20, CG30, CG40, CG50, CG60, CG70, CG80, CG90, V10, V11, V20, V30, V40, V50, V60, V70, V80, V90, CM610, CM611, CM612, CM613, CM614, CM615, CM616, CM617, CM618, CM619, CM620, CM621, CM622, CM623, CM624, CM625, CM626, CM627, CM628, CM629, CM630, CM631, CM632, CM633, CM634, CM635, CM636, CM637, CM638, CM639, CM640, CM650, CM660, CM665, CM670, CM675, CM680, CM685, CM690, CM695, CM800, CM810, CM815, CM820, CM830, CM840, CM850, CM860, CM870, CM880, CM881, CM890, CM891, CM892, CM892W, CM893, CM894, CM895, CM896, CM897, CM898, CM899, CM898L, CM880 PLUS, CM880PRO

Only the model CM880PRO was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	N/A
Field Strength of the Fundamental Signal	47 CFR Part 15 Subpart C Section 15.249 (a)	ANSI C63.10-2013	PASS
Spurious Emissions	47 CFR Part 15 Subpart C Section 15.249 (a)/15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15 Subpart C Section 15.249(a)/15.205	ANSI C63.10-2013	PASS
20dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.215 (c)	ANSI C63.10-2013	PASS

Remark:

N/A: The EUT powered by AA battery, So Not Applicable

Company Name and Address shown on Report, the sample(s) and sample Information were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

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4 General Information

4.1 Client Information

Applicant:	Dongguan Couso Technology Co.,Ltd
Address of Applicant:	No.26 minye road, tangxia town, Dongguan City, Guangdong Province, China
Manufacturer:	Dongguan Couso Technology Co.,Ltd
Address of Manufacturer:	No.26 minye road, tangxia town, Dongguan City, Guangdong Province, China
Factory:	Dongguan Couso Technology Co.,Ltd
Address of Factory:	No.26 minye road, tangxia town, Dongguan City, Guangdong Province, China

4.2 General Description of EUT

Product Name:	Wireless mouse
Model No.:	Look at page 2
Test Model No.:	CM880PRO
Trade Mark:	MINISO
Product Type:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location
Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK
Number of Channel:	79
Antenna Type:	PCB antenna
Antenna Gain:	-0.61dBi
Power Supply:	AA battery, DC 1.5V
Test Voltage:	DC 1.5V
Sample Received Date:	Apr. 14, 2021
Sample tested Date:	Apr. 14, 2021 to Apr. 26, 2021

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
6	2408MHz	26	2428MHz	46	2448MHz	66	2468MHz
7	2409MHz	27	2429MHz	47	2449MHz	67	2469MHz
8	2410MHz	28	2430MHz	48	2450MHz	68	2470MHz
9	2411MHz	29	2431MHz	49	2451MHz	69	2471MHz
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
12	2414MHz	32	2434MHz	52	2454MHz	72	2474MHz
13	2415MHz	33	2435MHz	53	2455MHz	73	2475MHz
14	2416MHz	34	2436MHz	54	2456MHz	74	2476MHz
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest channel(CH0)	2402MHz
The Middle channel(CH39)	2441MHz
The Highest channel(CH78)	2480MHz

Test Environment and Mode

Operating Environment:			
Radiated Spurious Emissions:			
Temperature:	22~25.0 °C		
Humidity:	50~55 % RH		
Atmospheric Pressure:	1010mbar		
RF Conducted:			
Temperature:	22~25.0 °C		
Humidity:	50~55 % RH		
Atmospheric Pressure:	1010mbar		
Test mode:			
Test Mode	Modulation	Channel	Frequency(MHz)
Mode a	GFSK	CH0	2402
Mode b	GFSK	CH39	2441
Mode c	GFSK	CH78	2480

4.3 Description of Support Units

The EUT has been tested with associated equipment below.

1) support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Notebook	DELL	DELL 3490	FCC ID and DOC	CTI

2) cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	/	/

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

4.8 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9 x 10 ⁻⁸
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	3.3dB (9kHz-30MHz)
		4.3dB (30MHz-1GHz)
		4.5dB (1GHz-18GHz)
		3.4dB (18GHz-40GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

RF test system					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Spectrum Analyzer	R&S	FSV40	101200	09-02-2020	09-01-2021
Signal Generator	Keysight	N5182B	MY53051549	12-28-2020	12-27-2021
Temperature/ Humidity Indicator	biaozhi	HM10	1804186	06-29-2020	06-28-2021
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	---	---
High-pass filter	MICRO- TRONICS	SPA-F-63029-4	---	---	---
DC Power	Keysight	E3642A	MY56376072	12-28-2020	12-27-2021
PC-1	Lenovo	R4960d	---	---	---
Power unit	R&S	OSP120	101374	12-28-2020	12-27-2021
RF control unit	JS Tonscend	JS0806-2	158060006	12-28-2020	12-27-2021
BT&WI-FI Automatic test software	JS Tonscend	JS1120-3	---	---	---

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05-24-2019	05-23-2022
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	05-16-2020	05-15-2021
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-25-2018 04-25-2021	04-24-2021 04-24-2024
Receiver	R&S	ESC17	100938-003	10-16-2020	10-15-2021
Multi device Controller	maturo	NCD/070/10711 112	---	---	---
Temperature/ Humidity Indicator	Shanghai qixiang	HM10	1804298	06-29-2020	06-28-2021
Cable line	Fulai(7M)	SF106	5219/6A	---	---
Cable line	Fulai(6M)	SF106	5220/6A	---	---
Cable line	Fulai(3M)	SF106	5216/6A	---	---
Cable line	Fulai(3M)	SF106	5217/6A	---	---

3M full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
RSE Automatic test software	JS Tonscend	JS36-RSE	10166	---	---
Receiver	Keysight	N9038A	MY57290136	03-04-2021	03-03-2022
Spectrum Analyzer	Keysight	N9020B	MY57111112	03-04-2021	03-03-2022
Spectrum Analyzer	Keysight	N9030B	MY57140871	03-04-2021	03-03-2022
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-25-2018 04-24-2021	04-24-2021 04-23-2024
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-15-2021	04-14-2024
Horn Antenna	ETS-LINDGREN	3117	00057407	07-10-2018	07-09-2021
Preamplifier	EMCI	EMC184055SE	980596	05-20-2020	05-19-2021
Preamplifier	EMCI	EMC001330	980563	04-22-2020 04-22-2021	04-21-2021 04-21-2022
Preamplifier	JS Tonscend	980380	EMC051845 SE	12-31-2020	12-30-2021
Temperature/ Humidity Indicator	biaozhi	GM1360	EE1186631	04-27-2020	04-26-2021
Fully Anechoic Chamber	TDK	FAC-3	---	01-09-2021	01-08-2024
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	---	---
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	---	---
Cable line	Times	EMC104-NMNM-1000	SN160710	---	---
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	---	---
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	---	---
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	---	---
Cable line	Times	HF160-KMKM-3.00M	393493-0001	---	---

6 Test results and Measurement Data

6.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203
<p>15.203 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, 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.</p>	
EUT Antenna:	Please see Internal photos
The antenna is PCB antenna. The best case gain of the antenna is -0.61dBi.	

6.2 Radiated Spurious Emissions

Test Requirement: 47 CFR Part 15C Section 15.249 and 15.209 and 15.205
Test Method: ANSI C63.10
Test Site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10kHz	Average

Limit:
(Spurious Emissions)

Frequency	Field strength (microvolt/meter)	Limit (dB μ V/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Limit:
(Field strength of the fundamental signal)

Frequency	Limit (dB μ V/m @3m)	Remark
2400MHz-2483.5MHz	94.0	Average Value
	114.0	Peak Value

Test Setup:

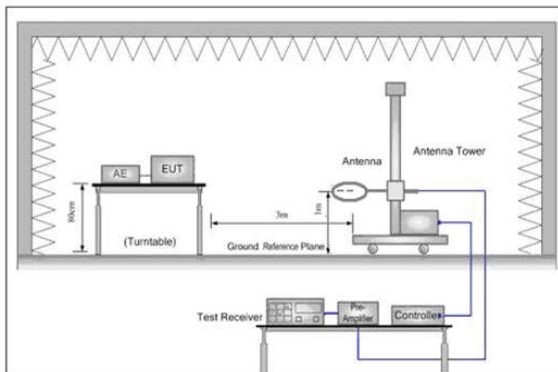


Figure 1. Below 30MHz

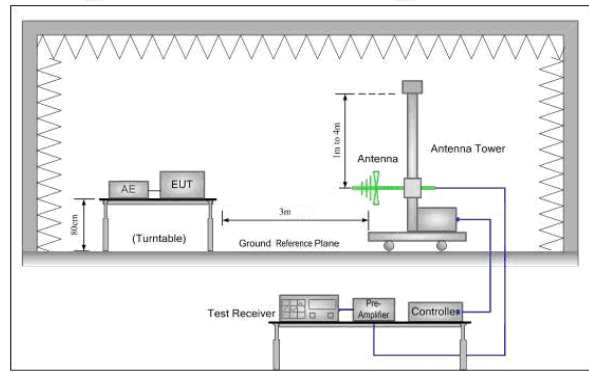


Figure 2. 30MHz to 1GHz

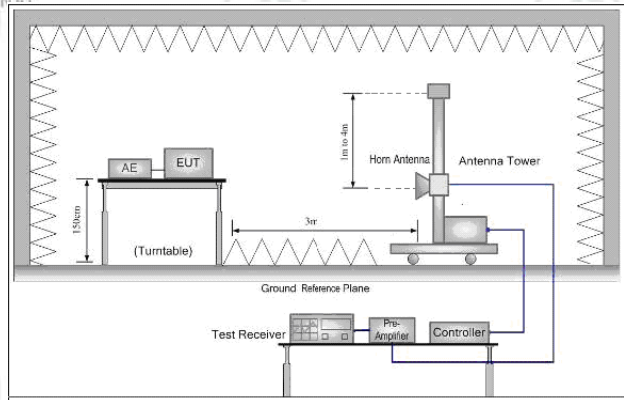


Figure 3. Above 1GHz

Test Procedure:

Below 1GHz test procedure as below:

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.

The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).

Test the EUT in the lowest channel ,middle channel, the Highest channel

The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.

Repeat above procedures until all frequencies measured was complete.

Transmitting mode

Exploratory Test Mode:

Final Test Mode:

For below 1GHz part, through pre-scan, the worst case is the lowest channel.

Only the worst case is recorded in the report.

Test Results:

Pass

Measurement Data

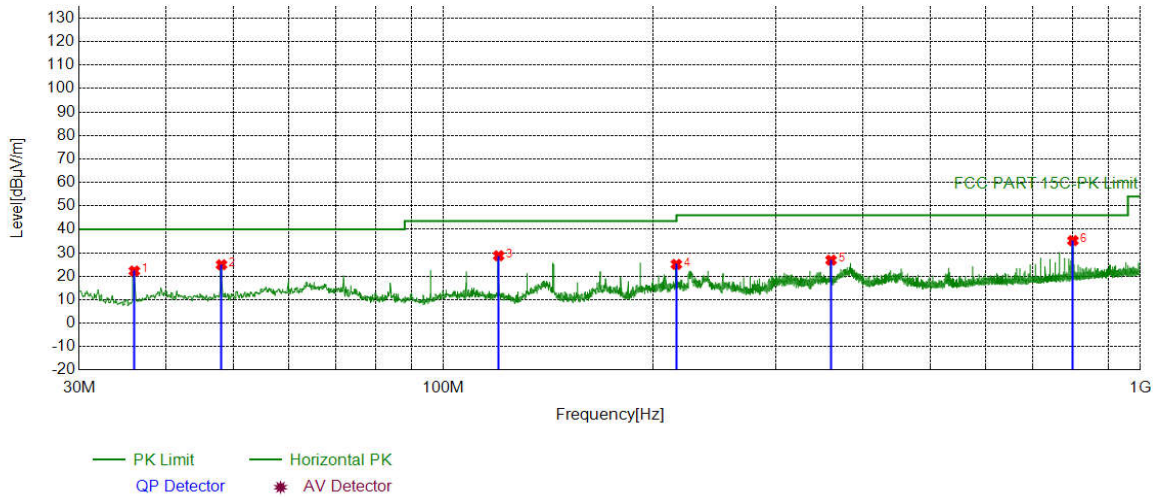
Field Strength Of The Fundamental Signal:

Frequency (MHz)	Factor [dB]	Reading [dB μ V]	Level (dB μ V/m)	Limit (dB μ V/m)	Margin [dB]	Over Limit (dB)	Antenna Polaxis	Remark
2402	17.34	74.8	92.14	114.00	21.86	Pass	H	PK
2402	17.34	69.92	87.26	94.00	6.74	Pass	H	AV
2402	17.34	73.24	90.58	114.00	23.42	Pass	V	PK
2402	17.34	67.69	85.03	94.00	8.97	Pass	V	AV
2441	22.09	69.32	91.41	114.00	22.59	Pass	H	PK
2441	22.09	63.12	85.21	94.00	8.79	Pass	H	AV
2441	22.09	66.87	88.96	114.00	25.04	Pass	V	PK
2441	22.09	61.56	83.65	94.00	10.35	Pass	V	AV
2480	20.85	69.84	90.69	114.00	23.31	Pass	H	PK
2480	20.85	64.57	85.42	94.00	8.58	Pass	H	AV
2480	20.85	67.87	88.72	114.00	25.28	Pass	V	PK
2480	20.85	62.6	83.45	94.00	10.55	Pass	V	AV

Radiated Spurious Emission below 1GHz:

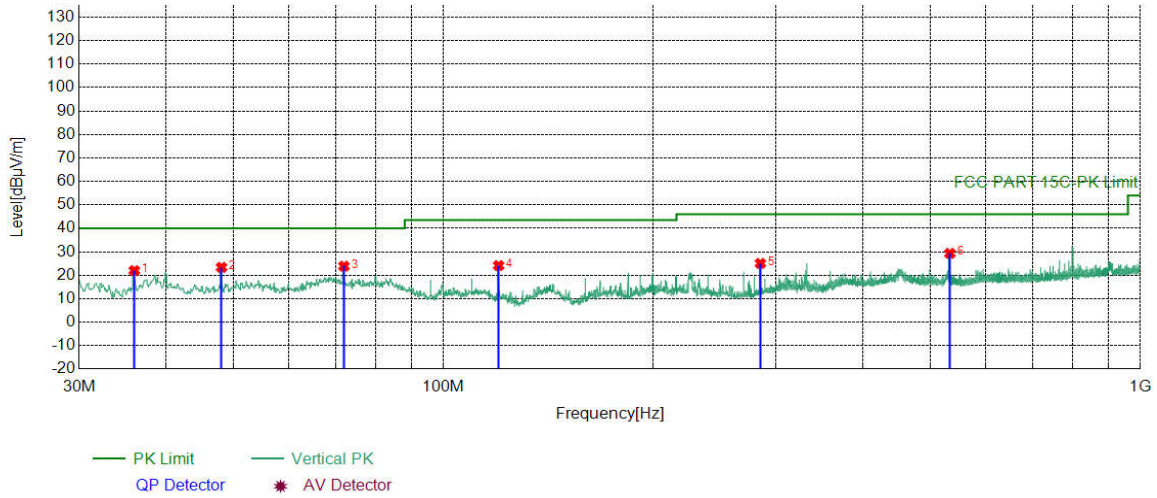
During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes, only the worst case mode a was recorded in the report.

Test Graph



NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	36.0146	-19.29	41.52	22.23	40.00	17.77	PASS	Horizontal	PK
2	48.0438	-17.17	42.08	24.91	40.00	15.09	PASS	Horizontal	PK
3	120.025	-20.08	48.83	28.75	43.50	14.75	PASS	Horizontal	PK
4	215.967	-17.42	42.49	25.07	43.50	18.43	PASS	Horizontal	PK
5	360.027	-13.80	40.65	26.85	46.00	19.15	PASS	Horizontal	PK
6	800.645	-6.58	41.78	35.20	46.00	10.80	PASS	Horizontal	PK

Test Graph



NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	36.0146	-19.29	41.29	22.00	40.00	18.00	PASS	Vertical	Peak
2	48.0438	-17.17	40.54	23.37	40.00	16.63	PASS	Vertical	Peak
3	72.0052	-21.15	45.02	23.87	40.00	16.13	PASS	Vertical	Peak
4	120.0250	-20.08	44.21	24.13	43.50	19.37	PASS	Vertical	Peak
5	285.0385	-15.83	40.88	25.05	46.00	20.95	PASS	Vertical	Peak
6	533.1893	-10.18	39.50	29.32	46.00	16.68	PASS	Vertical	Peak

Radiated Spurious Emission above 1GHz:

Mode:			GFSK Transmitting			Channel:		2402 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dB μ V]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Result	Polarity	Remark
1	2132.9133	4.52	45.36	49.88	74.00	24.12	Pass	H	PK
2	3203.0135	-20.33	71.28	50.95	74.00	23.05	Pass	H	PK
3	4803.1202	-16.23	70.25	54.02	74.00	19.98	Pass	H	PK
4	4805.1203	-16.23	63.53	47.30	54.00	6.70	Pass	H	AV
5	5604.1736	-14.26	61.60	47.34	74.00	26.66	Pass	H	PK
6	10345.4897	-6.38	53.30	46.92	74.00	27.08	Pass	H	PK
7	12573.6382	-4.30	53.54	49.24	74.00	24.76	Pass	H	PK
8	1644.2644	2.58	42.95	45.53	74.00	28.47	Pass	V	PK
9	3203.0135	-20.33	71.69	51.36	74.00	22.64	Pass	V	PK
10	4258.0839	-17.56	65.89	48.33	74.00	25.67	Pass	V	PK
11	4804.1203	-16.23	67.81	51.58	74.00	22.42	Pass	V	PK
12	9129.4086	-8.45	54.08	45.63	74.00	28.37	Pass	V	PK
13	12581.6388	-4.24	52.51	48.27	74.00	25.73	Pass	V	PK

Mode:			GFSK Transmitting			Channel:		2441 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dB μ V]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Result	Polarity	Remark
1	2131.1131	4.54	43.80	48.34	74.00	25.66	Pass	H	PK
2	3307.0205	-19.83	68.57	48.74	74.00	25.26	Pass	H	PK
3	4133.0755	-18.13	67.33	49.20	74.00	24.80	Pass	H	PK
4	4960.1307	-15.97	66.14	50.17	74.00	23.83	Pass	H	PK
5	6613.2409	-12.78	56.80	44.02	74.00	29.98	Pass	H	PK
6	10158.4772	-7.08	53.23	46.15	74.00	27.85	Pass	H	PK
7	1808.0808	3.34	42.16	45.50	74.00	28.50	Pass	V	PK
8	3255.0170	-20.05	69.83	49.78	74.00	24.22	Pass	V	PK
9	4881.1254	-16.21	66.55	50.34	74.00	23.66	Pass	V	PK
10	6382.2255	-12.87	57.64	44.77	74.00	29.23	Pass	V	PK
11	9340.4227	-7.97	53.71	45.74	74.00	28.26	Pass	V	PK
12	14401.7601	1.19	48.79	49.98	74.00	24.02	Pass	V	PK

Mode:		GFSK Transmitting				Channel:		2480 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1994.2994	4.52	41.90	46.42	74.00	27.58	Pass	H	PK
2	3306.0204	-19.82	66.57	46.75	74.00	27.25	Pass	H	PK
3	4133.0755	-18.13	65.68	47.55	74.00	26.45	Pass	H	PK
4	4960.1307	-15.97	65.86	49.89	74.00	24.11	Pass	H	PK
5	7353.2902	-11.59	54.82	43.23	74.00	30.77	Pass	H	PK
6	11961.5974	-5.47	53.11	47.64	74.00	26.36	Pass	H	PK
7	1683.2683	2.83	41.69	44.52	74.00	29.48	Pass	V	PK
8	3306.0204	-19.82	70.63	50.81	74.00	23.19	Pass	V	PK
9	4133.0755	-18.13	64.81	46.68	74.00	27.32	Pass	V	PK
10	4960.1307	-15.97	65.65	49.68	74.00	24.32	Pass	V	PK
11	7550.3034	-11.16	54.46	43.30	74.00	30.70	Pass	V	PK
12	10916.5278	-6.34	53.25	46.91	74.00	27.09	Pass	V	PK

Remark:

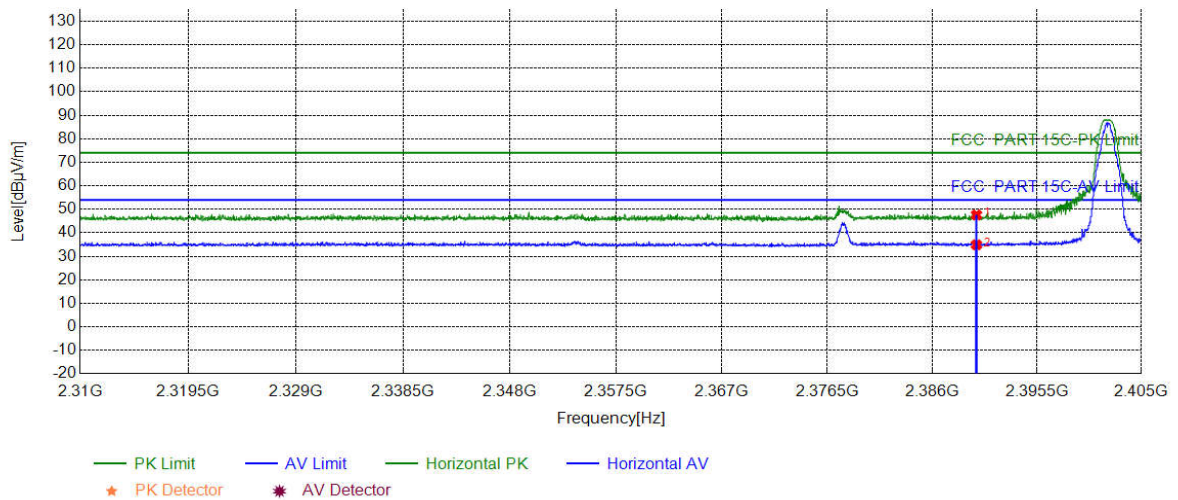
- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
 Final Test Level = Receiver Reading + Factor
 Factor = Antenna Factor + Cable Factor – Preamplifier Factor
- 2) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

Restricted bands:

Test plot as follows:

Mode:	GFSK Transmitting	Channel:	2402 MHz
Remark:			

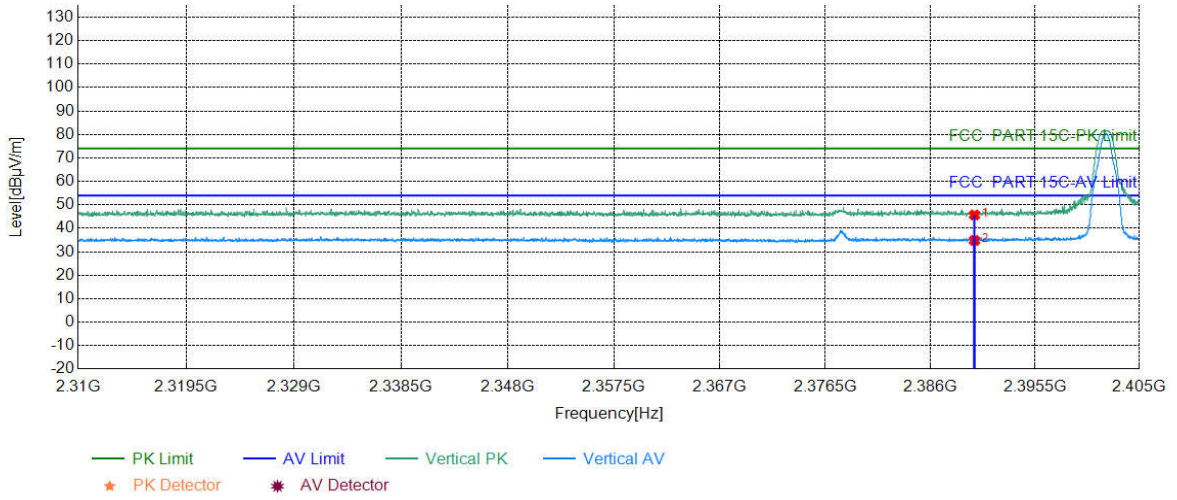
Test Graph



NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2390.0000	5.77	41.83	47.60	74.00	26.40	PASS	Horizontal	PK
2	2390.0000	5.77	29.12	34.89	54.00	19.11	PASS	Horizontal	AV

Mode:	GFSK Transmitting	Channel:	2402 MHz
Remark:			

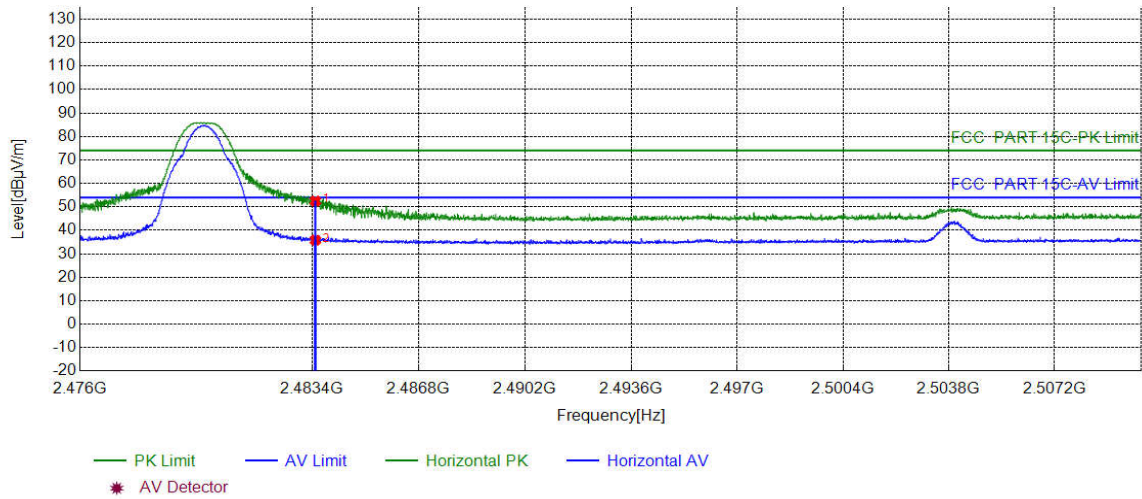
Test Graph



NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2390.0000	5.77	39.93	45.70	74.00	28.30	PASS	Vertical	PK
2	2390.0000	5.77	29.06	34.83	54.00	19.17	PASS	Vertical	AV

Mode:	GFSK Transmitting	Channel:	2480 MHz
Remark:			

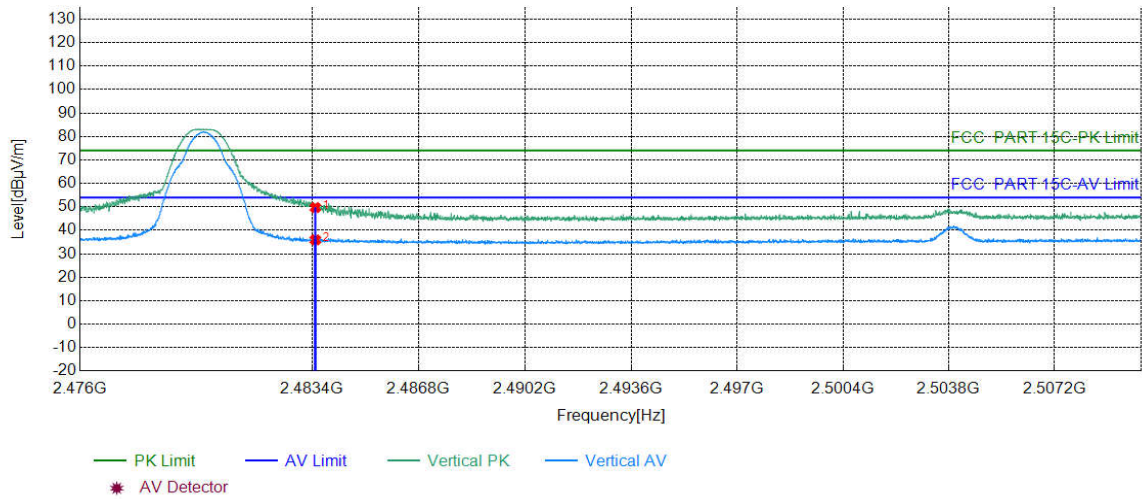
Test Graph



NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2483.5000	6.57	45.91	52.48	74.00	21.52	PASS	Horizontal	PK
2	2483.5000	6.57	29.24	35.81	54.00	18.19	PASS	Horizontal	AV

Mode:	GFSK Transmitting	Channel:	2480 MHz
Remark:			

Test Graph



NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2483.5000	6.57	43.14	49.71	74.00	24.29	PASS	Vertical	PK
2	2483.5000	6.57	29.37	35.94	54.00	18.06	PASS	Vertical	AV

Note:

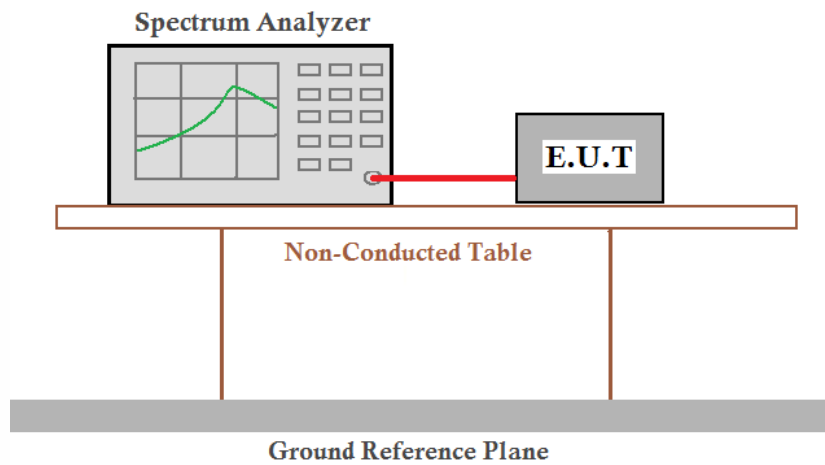
The field strength is calculated by adding the Antenna Factor, Cable Factor & Pre-amplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Factor

Factor = Antenna Factor + Cable Factor – Pre-amplifier Factor

Test Requirement: 47 CFR Part 15C Section 15.215
Test Method: ANSI C63.10: 2013

Test Setup:



Remark: Offset=Cable loss+ attenuation factor.

Test Procedure:

- 1) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 2) Set to the maximum power setting and enable the EUT transmit continuously.
- 3) Use the following spectrum analyzer settings for 20dB Bandwidth measurement.
 Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a test channel; $1\% \leq RBW \leq 5\%$ of the 20 dB bandwidth; $VBW \geq 3RBW$; Sweep = auto; Detector function = peak; Trace = max hold.
- 4) Measure and record the results in the test report.

Limit:

N/A

Test Mode:

Transmitter mode

Test Results:

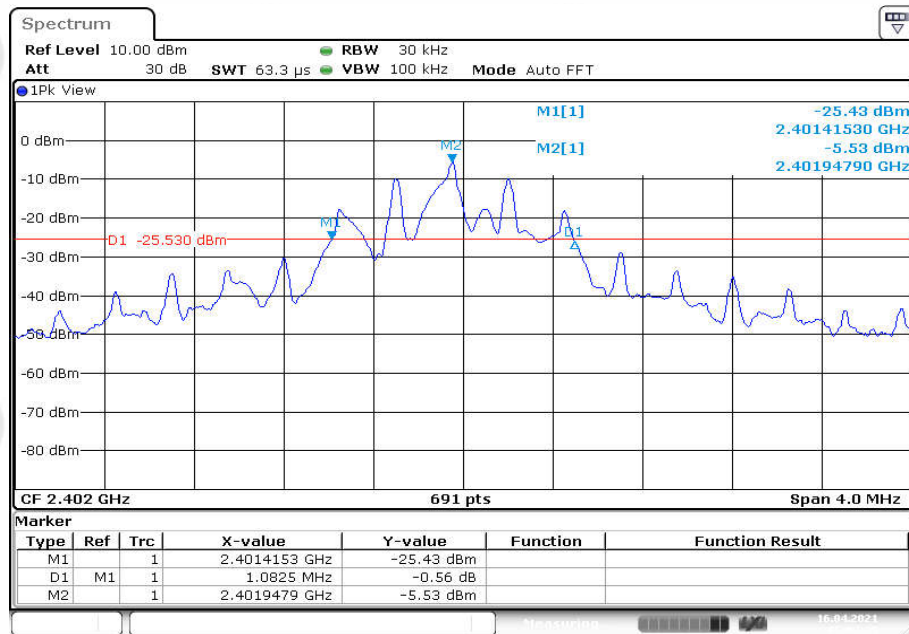
Pass

Measurement Data

Test Channel	20dB bandwidth (MHz)	Results
Lowest	1.0825	Pass
Middle	1.0825	Pass
Highest	1.0883	Pass

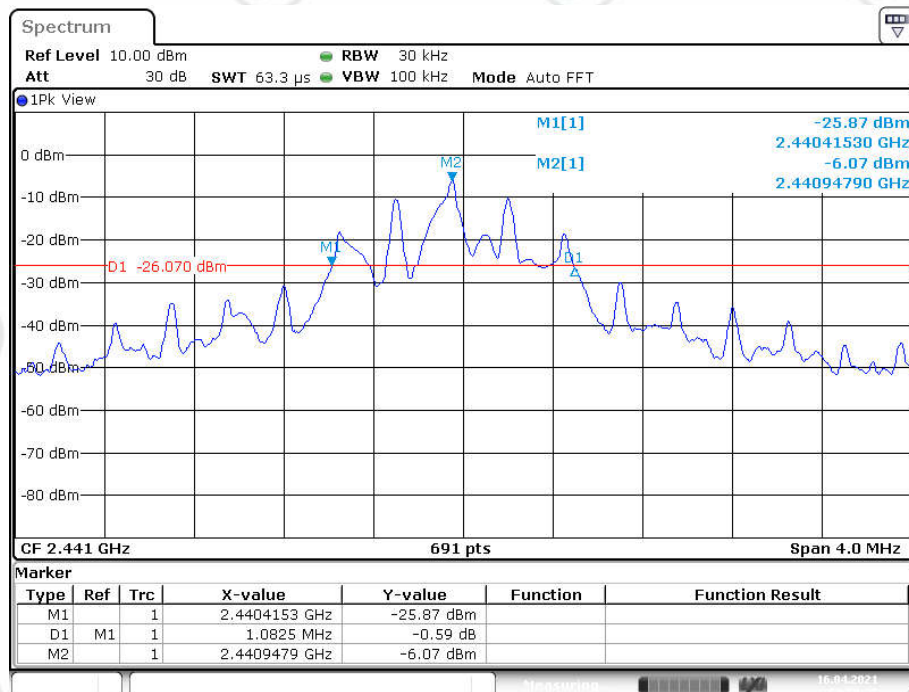
Test plot as follows:

Test channel:	Lowest
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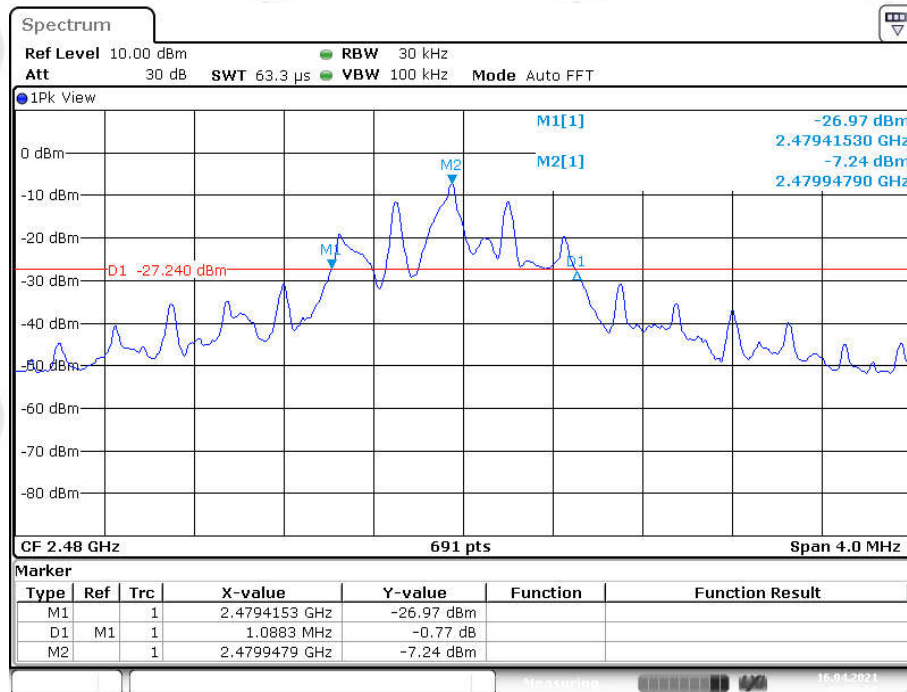
Date: 16 APR 2021 05:02:35

Test channel:	Middle
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Date: 16 APR 2021 04:59:21

Test channel:	Highest
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Date: 16 APR 2021 04:56:58