SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park,

Shenzhen, Guangdong, China 518057

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Email: ee.shenzhen@sgs.com

FCC REPORT

Application No:	SZEM1702000979CR
Applicant:	SZ DJI TECHNOLOGY CO., LTD
Manufacturer:	SZ DJI TECHNOLOGY CO., LTD
Factory:	SZ DJI TECHNOLOGY CO., LTD
Product Name:	Phantom 4 Advanced
Model No.(EUT):	WM332A
Trade Mark:	DJI
FCC ID:	SS3-WM332A1702
Standards:	47 CFR Part 15, Subpart C (2016)
Date of Receipt:	2017-02-23
Date of Test:	2017-02-24 to 2017-03-09
Date of Issue:	2017-03-14
Test Result:	**PASS ***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2017-03-14		Original

Authorized for issue by:				
Tested By		Hank Yan		2017-03-14
		(Hank Yan) /Project Engineer		**Date**
Checked By		Eric Fu		2017-03-14
		(Eric Fu) /Reviewer		**Date**

3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203/15.247 (c)	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
Conducted Peak Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(3)	ANSI C63.10 2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(2)	ANSI C63.10 2013	PASS
Power Spectral Density	47 CFR Part 15, Subpart C Section 15.247 (e)	ANSI C63.10 2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
Radiated Spurious Emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS

4 Contents

5 General Information

5.1 Client Information

Applicant:	SZ DJI TECHNOLOGY CO., LTD
Address of Applicant:	14th floor, West Wing, Skyworth Semiconductor Design Building NO.18 Gaoxin South 4th Ave, Nanshan District, Shenzhen, China
Manufacturer:	SZ DJI TECHNOLOGY CO., LTD
Address of Manufacturer:	14th floor, West Wing, Skyworth Semiconductor Design Building NO.18 Gaoxin South 4th Ave, Nanshan District, Shenzhen, China
Factory:	SZ DJI TECHNOLOGY CO., LTD
Address of Factory:	14th floor, West Wing, Skyworth Semiconductor Design Building NO.18 Gaoxin South 4th Ave, Nanshan District, Shenzhen, China

5.2 General Description of EUT

Product Name:	Phantom 4 Advanced
Model No.:	WM332A
Trade Mark:	DJI
Operation Frequency:	2406.5MHz~2476.5MHz
Modulation Type:	OFDM
Number of Channel:	8
Sample Type:	Mobile production
Antenna Type:	Integral Antenna
Antenna Gain:	1.6dBi (2 antennas)
Power Supply:	DC 15.2V Li-ion Battery

EUT channels and frequencies list:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2406.5	5	2446.5
2	2416.5	6	2456.5
3	2426.5	7	2466.5
4	2436.5	8	2476.5

Test software configuration and channel selection:

Test software	DJI RF Certification		
Frequency (MHz)	2406.5	2416.5 to 2466.5	2476.5
Software power setting	**15**	**21**	**10**

According to 47 CFR Part 15.31(m), while the operating frequency range over 10MHz, the test shall to be performed at the lowest, middle and highest channels. The selected test channels are below:

Test Channel	**Frequency (MHz)**
The lowest channel (CH1)	2406.5
The middle channel (CH5)	2446.5
The highest channel (CH8)	2476.5
Note: Due to the different power setting on each channels, the output power and radiated band edge test was performed at additional channels CH2 and CH7	

5.3 Test Environment

Operating Environment:	
Temperature:	25.0 °C
Humidity:	53 % RH
Atmospheric Pressure:	1010mbar

5.4 Description of Support Units

The EUT has been tested independent unit.

5.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch
No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.
Tel: +86 755 2601 2053 Fax: +86 755 2671 0594
No tests were sub-contracted.

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

• **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.

5.10 Equipment List

RE in Chamber						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
1	3m Chamber	ETS-LINDGREN	N/A	SEM001-01	2016-05-13	2017-05-13
2	EMI Test Receiver	Agilent Technologies	N9038A	SEM004-05	2016-10-09	2017-10-09
3	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2014-11-01	2017-11-01
4	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEM003-11	2015-10-17	2018-10-17
5	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEM003-12	2014-11-24	2017-11-24
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2016-04-25	2017-04-25
7	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A
8	DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2016-10-09	2017-10-09
9	Loop Antenna	Beijing Daze	ZN30401	SEM003-09	2015-05-13	2018-05-13

RE in Chamber						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
1	3m Chamber	AUDIX	N/A	SEM001-02	2016-05-13	2017-05-13
2	EXA Spectrum Analyzer	Agilent Technologies Inc	N9010A	SEM004-09	2016-07-19	2017-07-19
3	BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-02	2014-11-15	2017-11-15
4	Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2016-10-09	2017-10-09
5	Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2015-06-14	2018-06-14
6	Horn Antenna (18-26GHz)	ETS-Lindgren	3160	SEM003-12	2014-11-24	2017-11-24
7	Horn Antenna(26GHz-40GHz)	A.H.Systems, inc.	SAS-573	SEM003-13	2015-02-12	2018-02-12
8	Low Noise Amplifier	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2016-10-09	2017-10-09
9	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A

RF connected test						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
1	DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2016-10-09	2017-10-09
2	Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2016-10-09	2017-10-09
3	Signal Generator	Rohde & Schwarz	SML03	SEM006-02	2016-04-25	2017-04-25
4	Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2016-10-09	2017-10-09

6 Test results and Measurement Data

6.1 Antenna Requirement

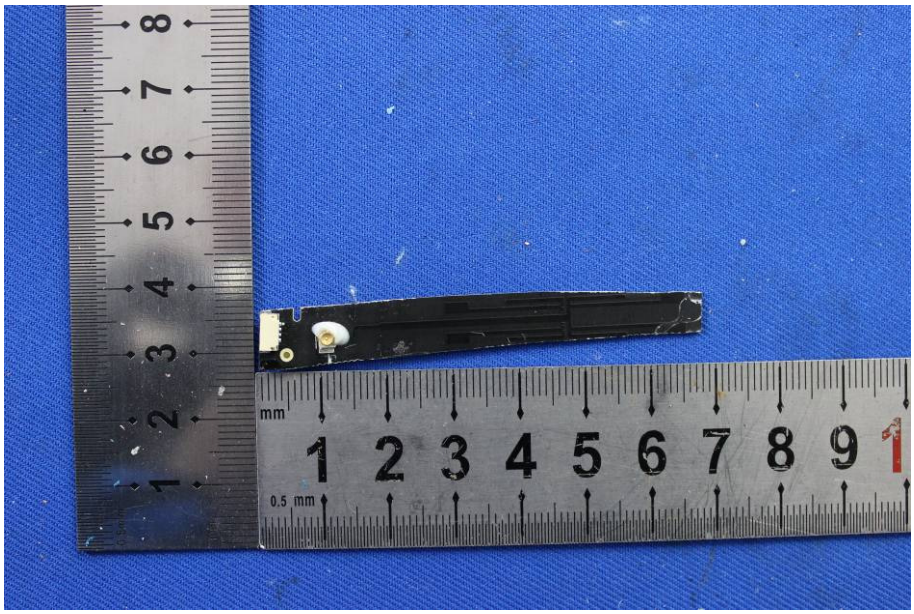
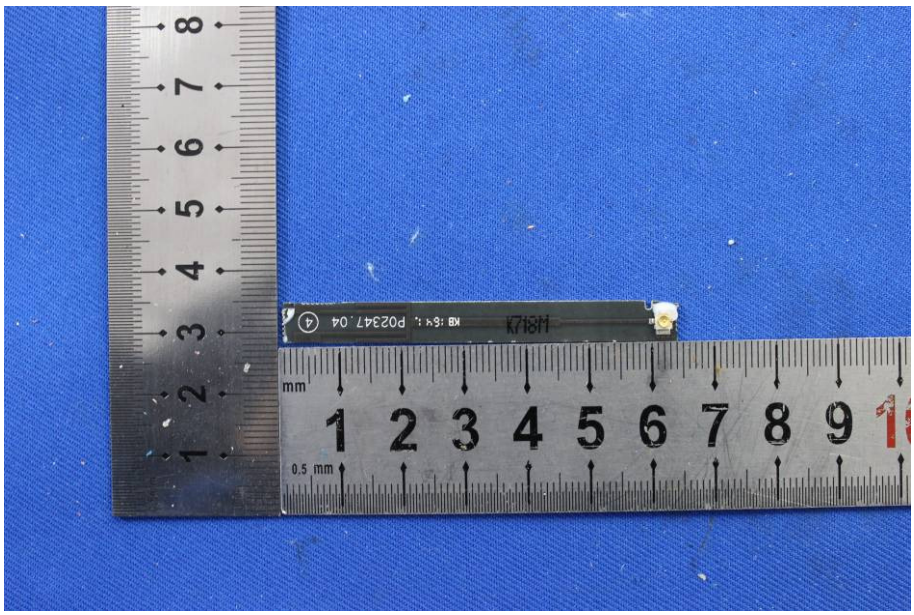
Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)

15.203 requirement:

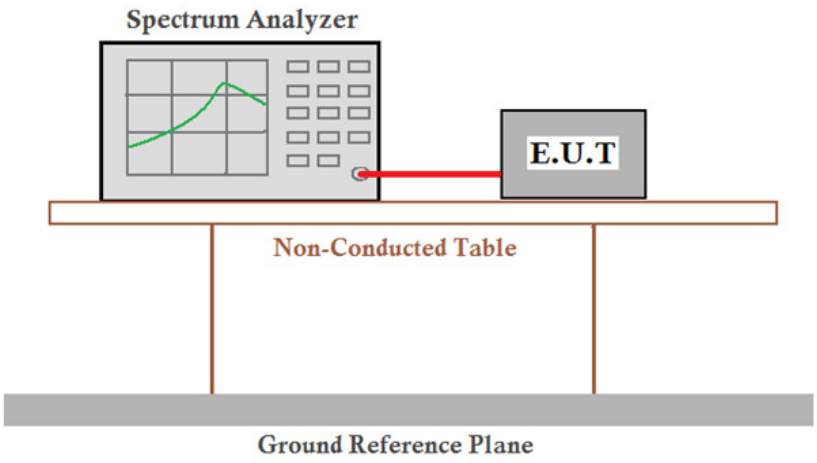
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:	Antenna 1  Antenna 2 
The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1.6dBi. And both antennas are completely uncorrelated with each other.	

6.2 Conducted Peak Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(1)
Test Method:	ANSI C63.10 :2013 Section 11.9.2.2.2
Test Setup:	
Limit:	30dBm
Test Mode:	Transmitting with OFDM modulation at the highest power level.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass

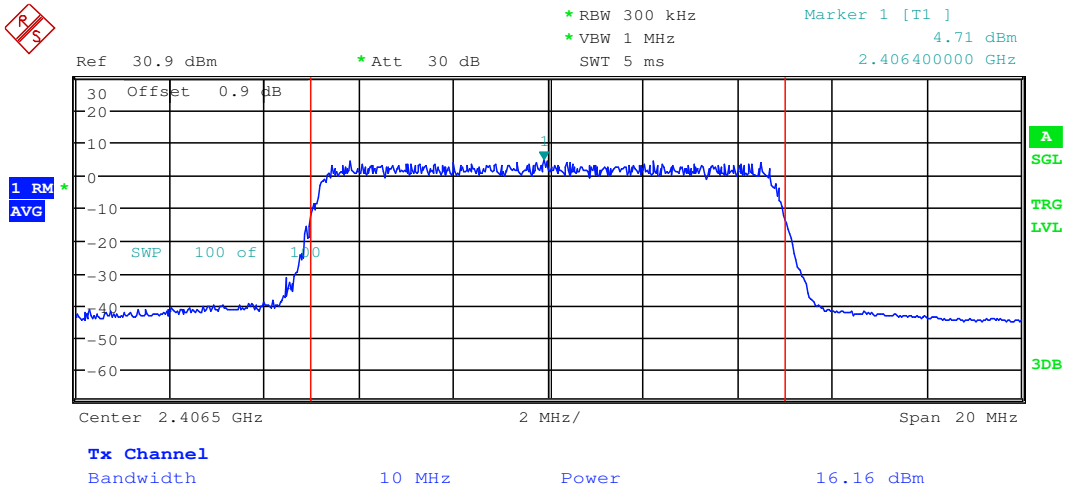
Measurement Data

Test channel	Average Output Power (dBm)			Limit (dBm)	Result
	Antenna 1	Antenna 2	Total		
Lowest (CH1)	16.16	15.20	18.72	30.00	Pass
CH2	19.21	18.19	21.74	30.00	Pass
Middle (CH5)	19.59	18.65	22.16	30.00	Pass
CH7	17.76	16.86	20.34	30.00	Pass
Highest (CH8)	4.70	3.81	7.29	30.00	Pass

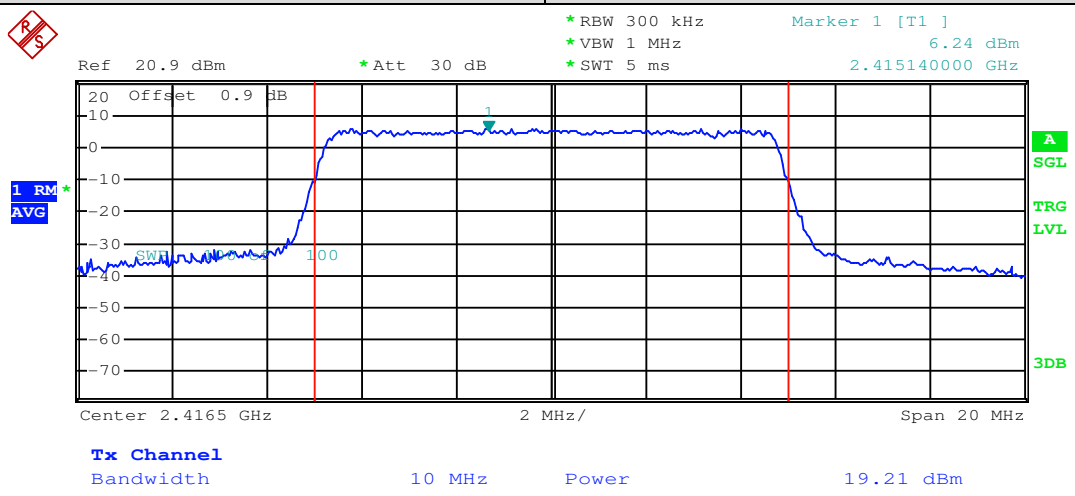
Test plot as follows:

Antenna 1:

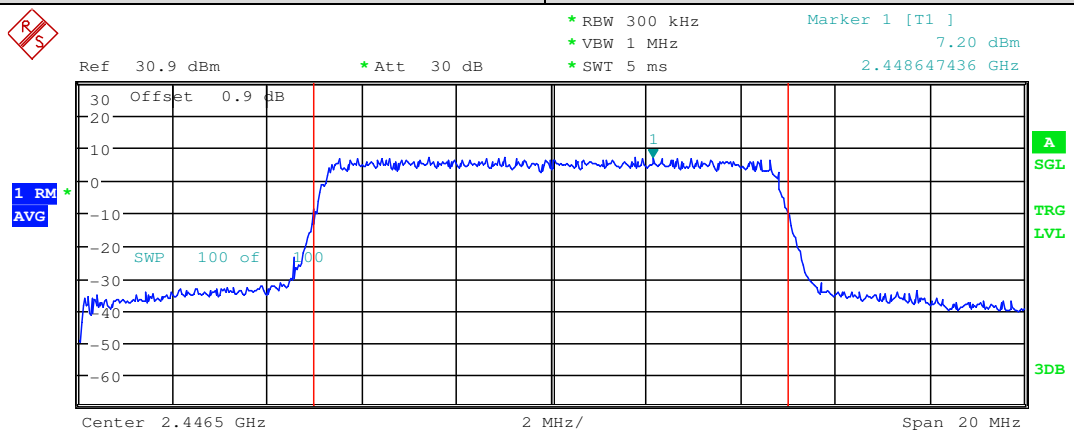
Test Channel:	CH1



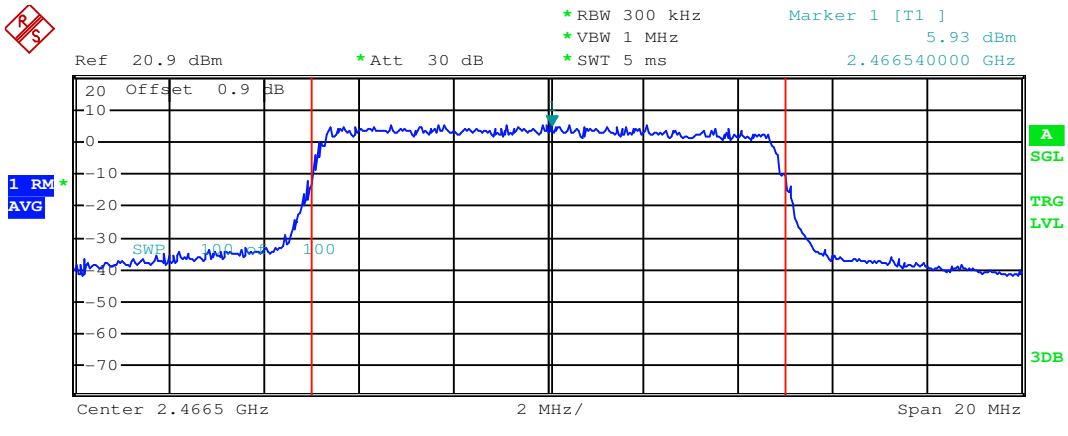
Test Channel:	CH2



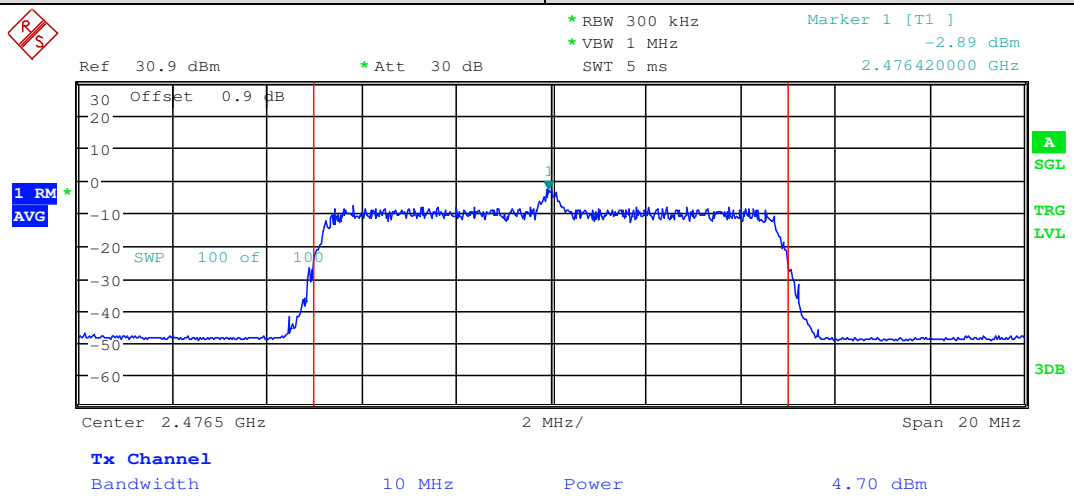
Test Channel:	CH5



Test Channel:	CH7

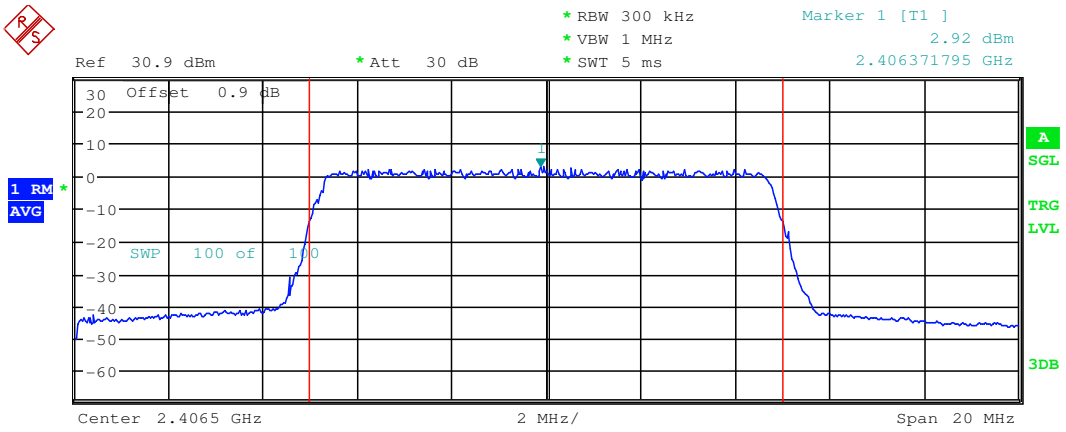


Test Channel:	CH8



Antenna 2:

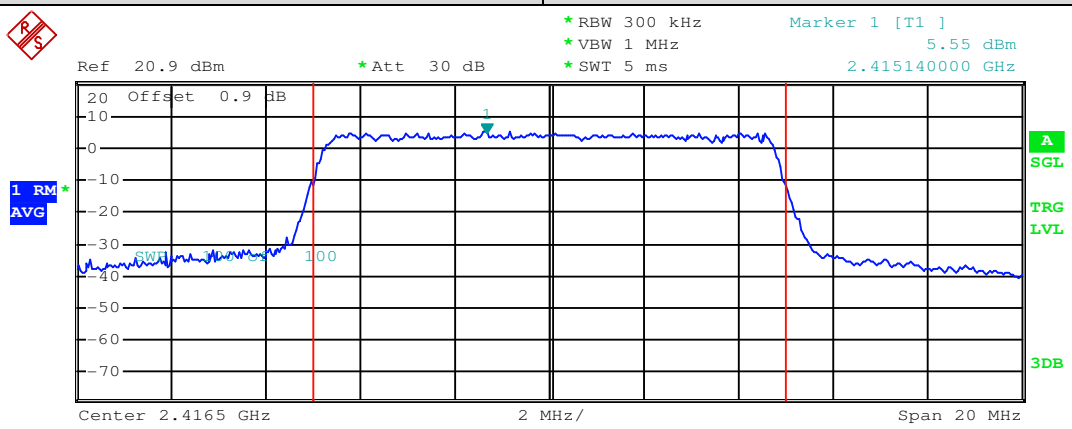
Test Channel:	CH1



Tx Channel

Bandwidth 10 MHz Power 15.20 dBm

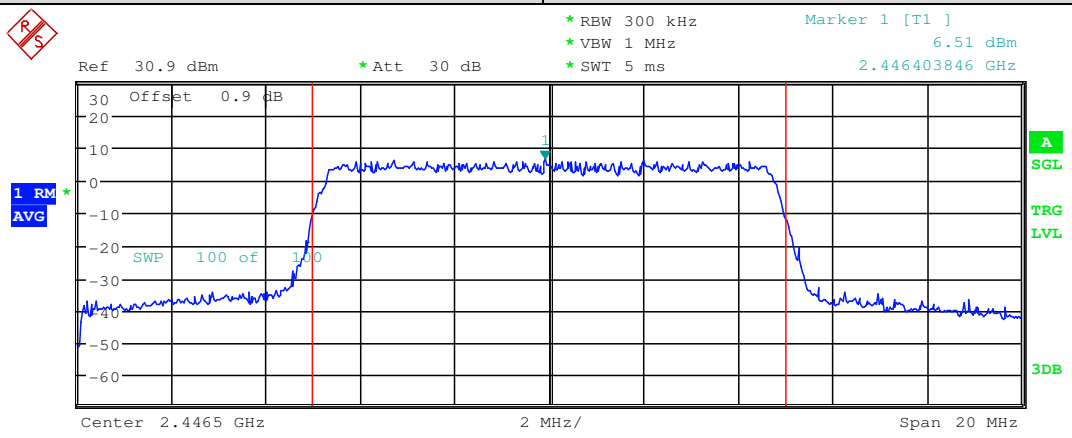
Test Channel:	CH2



Tx Channel

Bandwidth 10 MHz Power 18.19 dBm

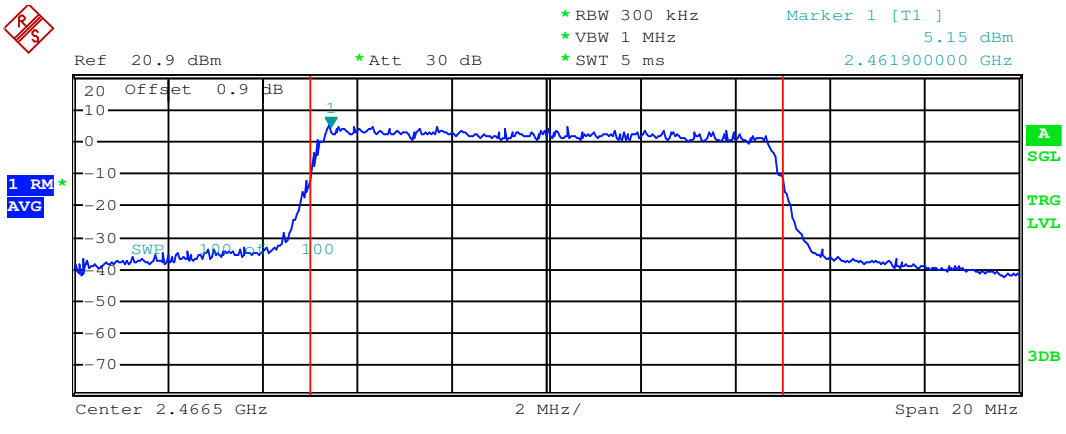
Test Channel:	CH5



Tx Channel

Bandwidth 10 MHz Power 18.65 dBm

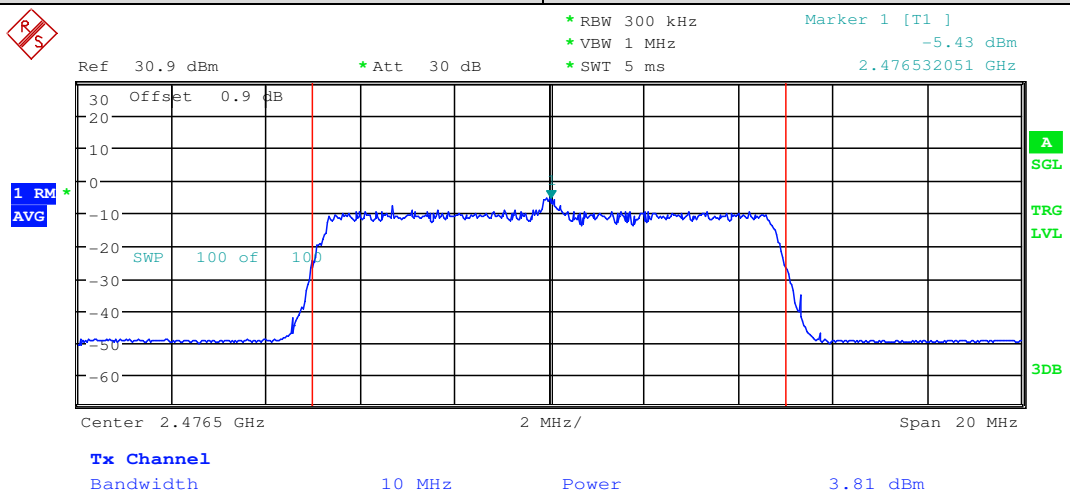
Test Channel:	CH7



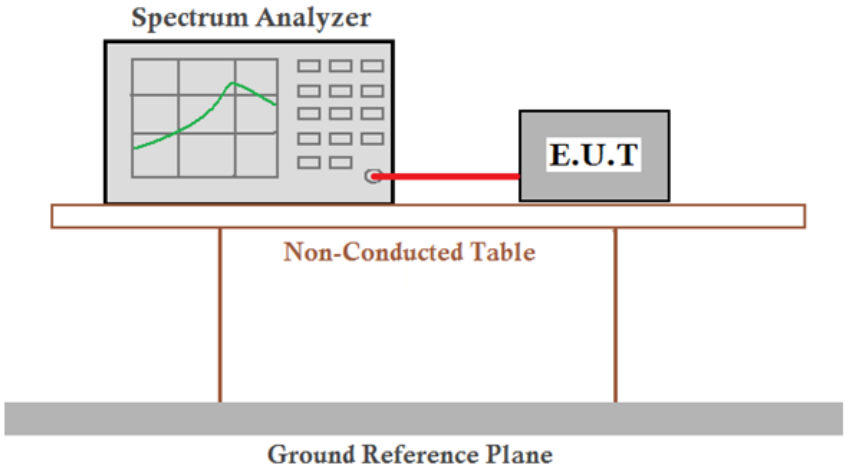
Tx Channel

Bandwidth 10 MHz Power 16.86 dBm

Test Channel:	CH8



6.3 6dB Occupy Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10: 2013 Section 11.8
Test Setup:	
Limit:	≥ 500 kHz
Test Mode:	Transmitting with modulation.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass

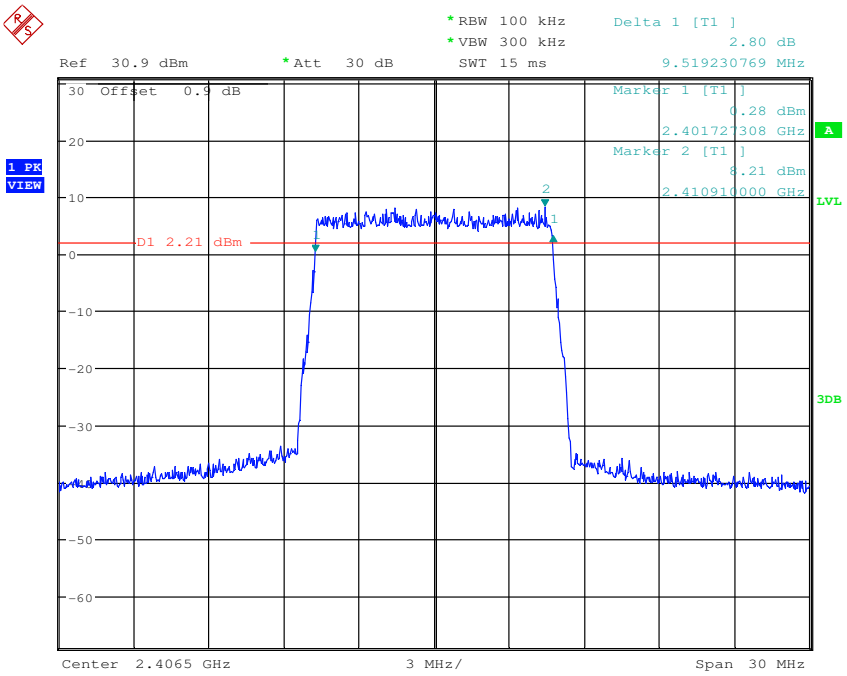
Measurement Data

Test channel	6dB Occupy Bandwidth (MHz)		Limit (kHz)	Result
	Antenna 1	Antenna 2		
Lowest	9.52	9.52	≥500	Pass
Middle	9.51	9.52	≥500	Pass
Highest	9.39	9.47	≥500	Pass

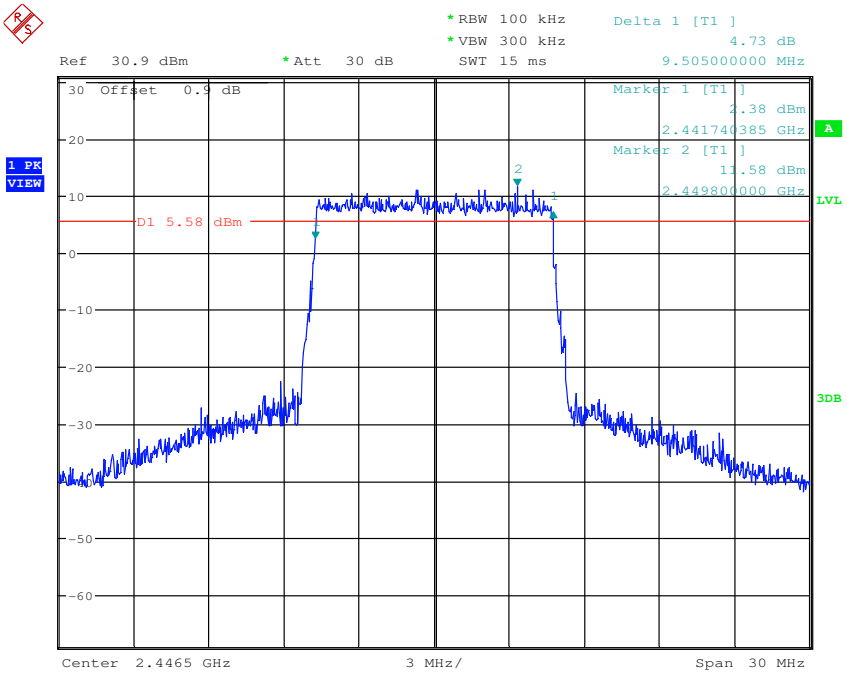
Test plot as follows:

Antenna 1:

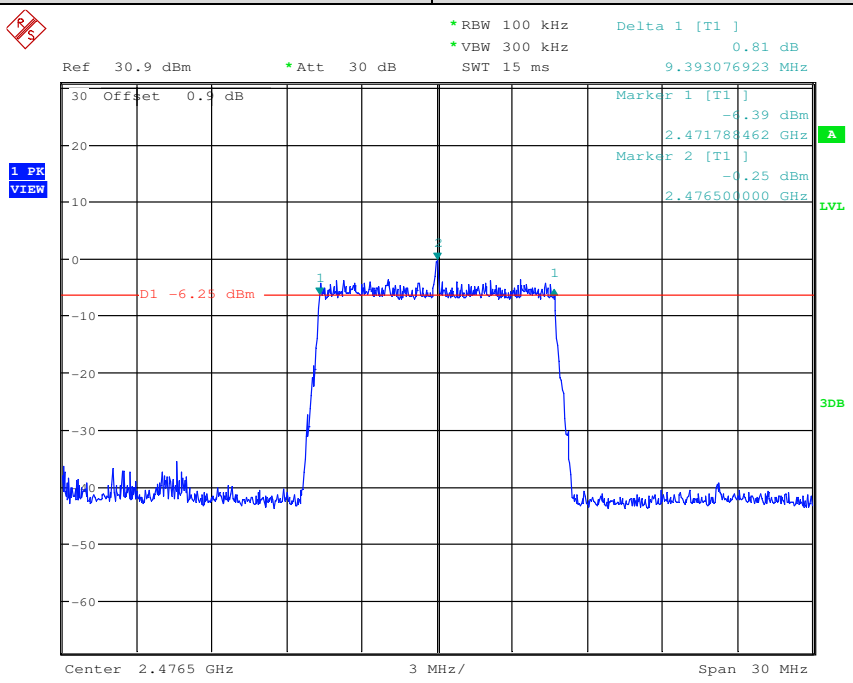
Test Channel:	CH1



Test Channel:	CH5

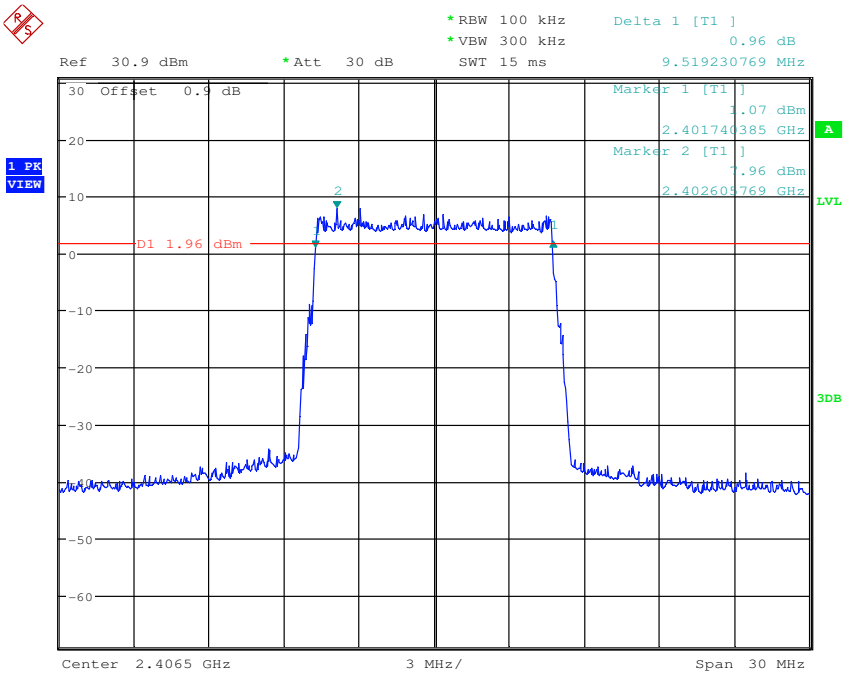


Test Channel:	CH8

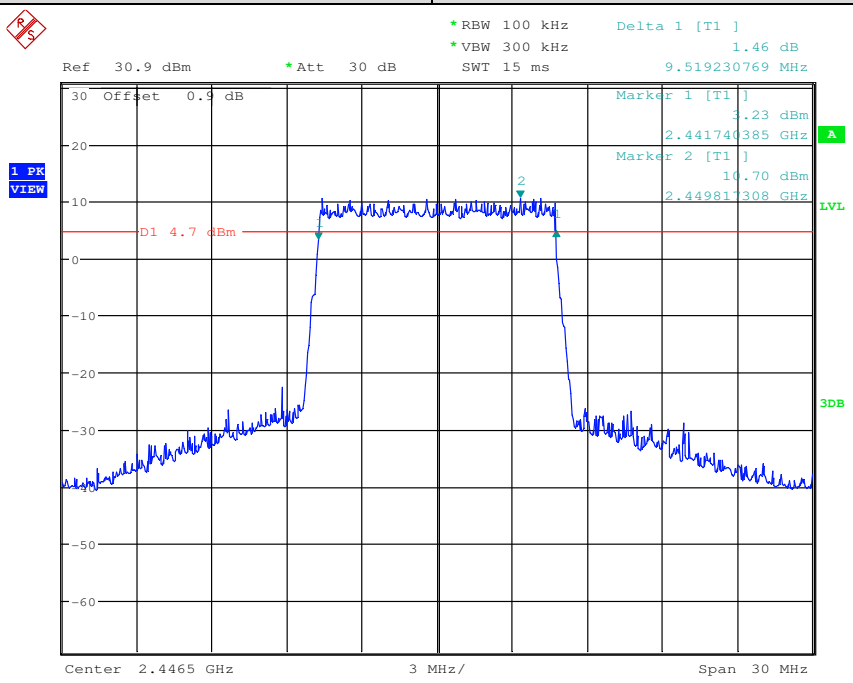


Antenna 2:

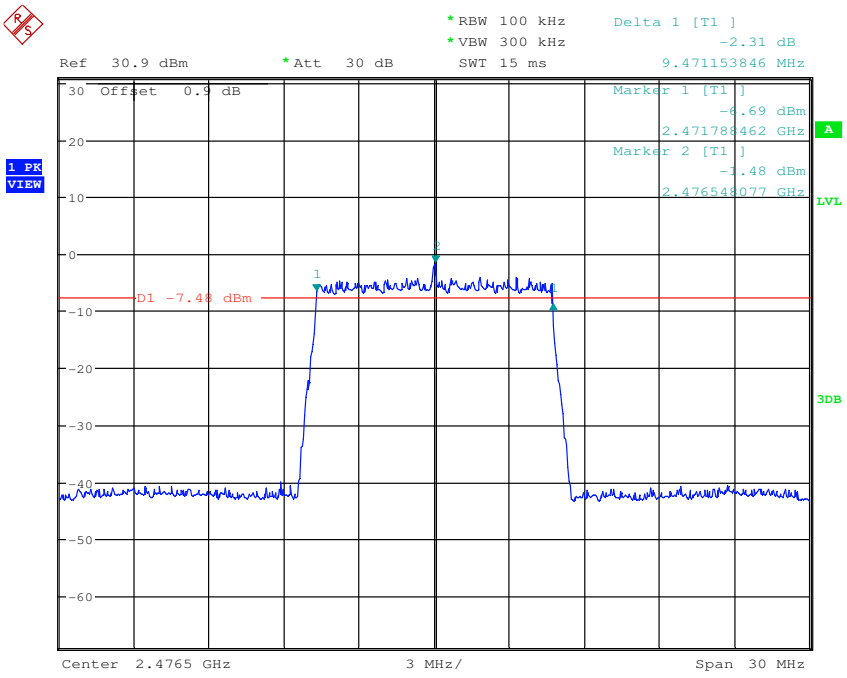
Test Channel:	CH1



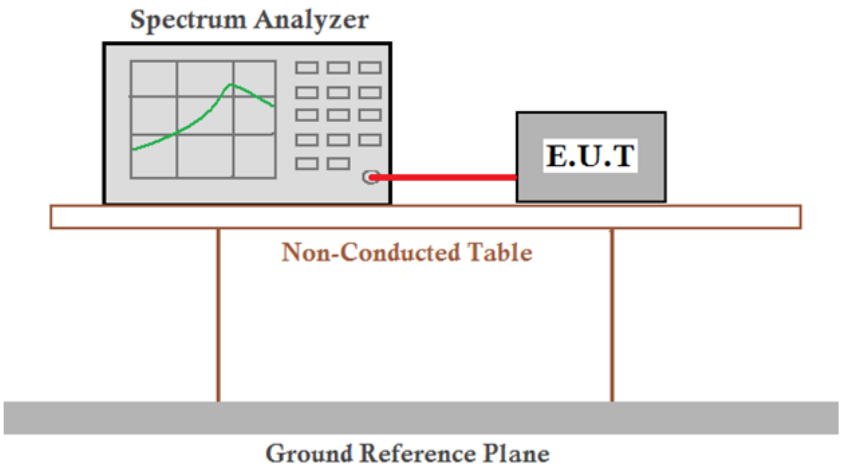
Test Channel:	CH5



Test Channel:	CH8



6.4 Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10 :2013 Section 11.10.2
Test Setup:	
Limit:	≤8.00dBm/3kHz
Test Mode:	Transmitting with modulation.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass

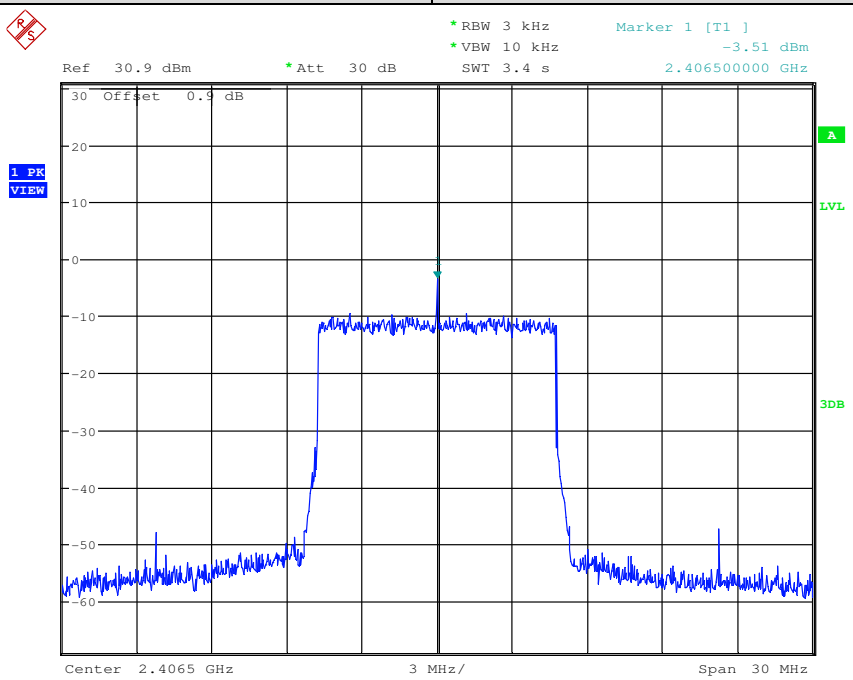
Measurement Data

Test channel	Power Spectral Density (dBm/3kHz)			Limit (dBm/3kHz)	Result
	Antenna 1	Antenna 2	Total		
Lowest	-3.51	-7.16	-1.95	≤8.00	Pass
Middle	-4.03	-7.36	-2.37	≤8.00	Pass
Highest	-4.55	-8.04	-2.94	≤8.00	Pass

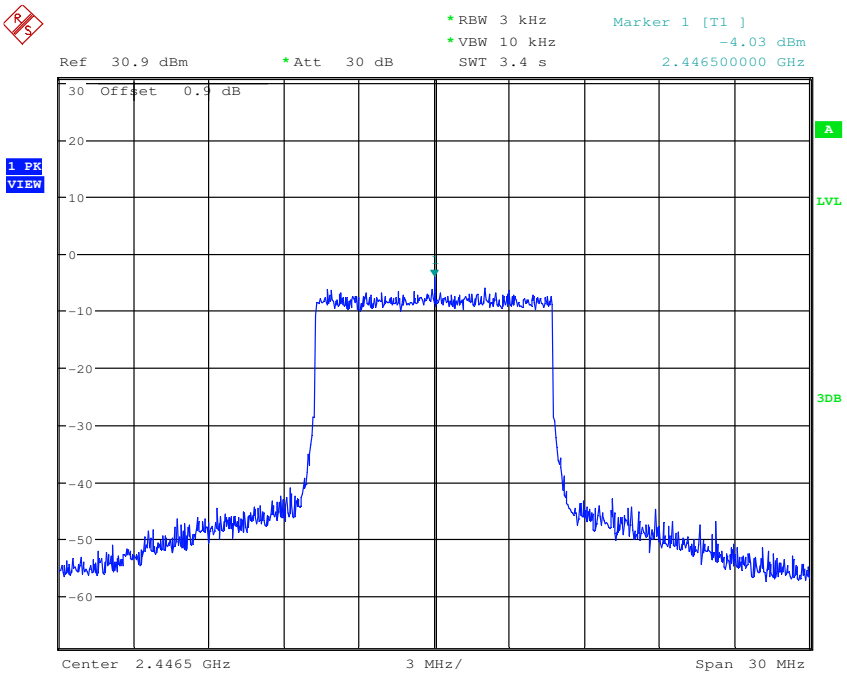
Test plot as follows:

Antenna 1:

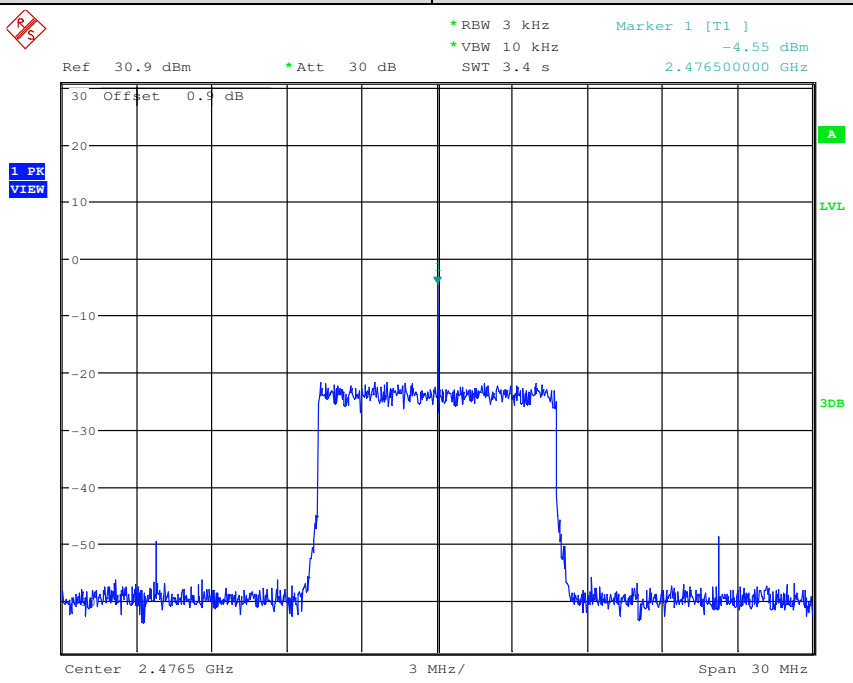
Test Channel:	CH1



Test Channel:	CH5

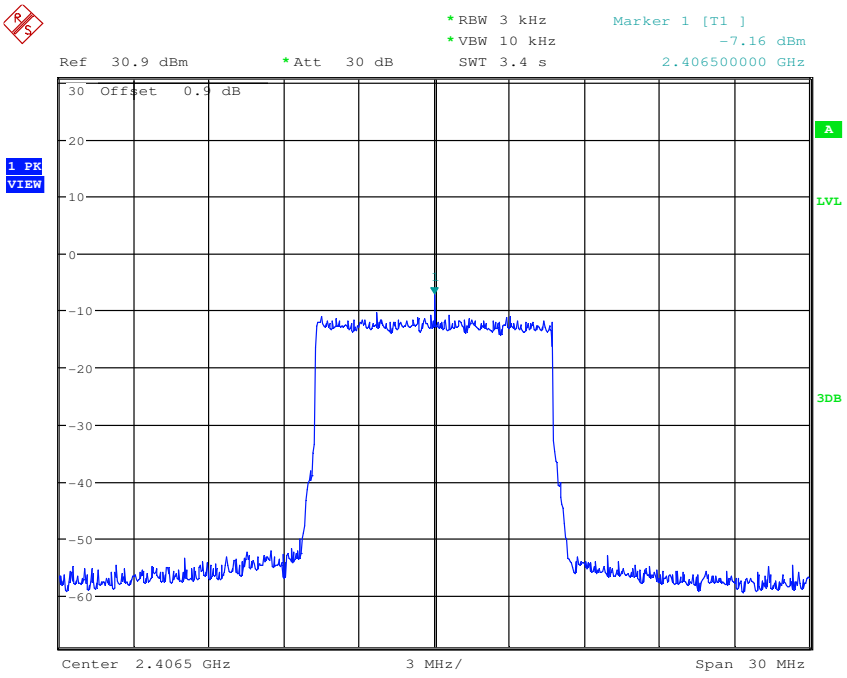


Test Channel:	CH8

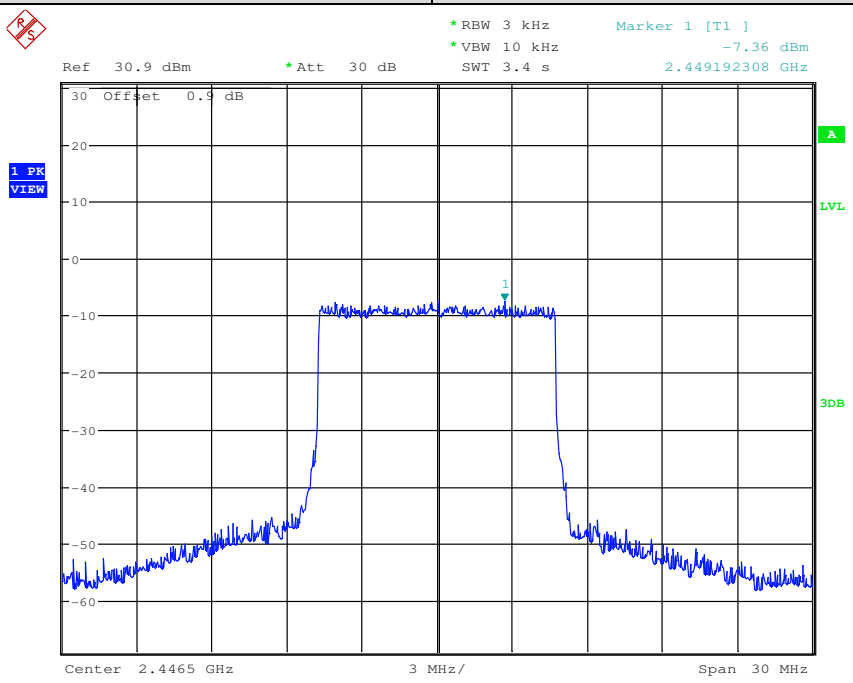


Antenna 2:

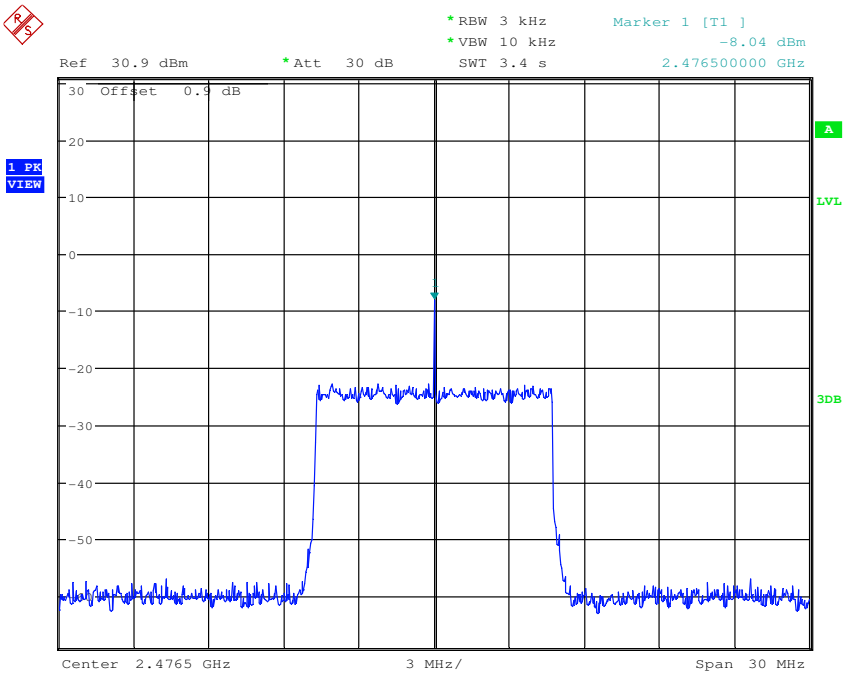
Test Channel:	CH1



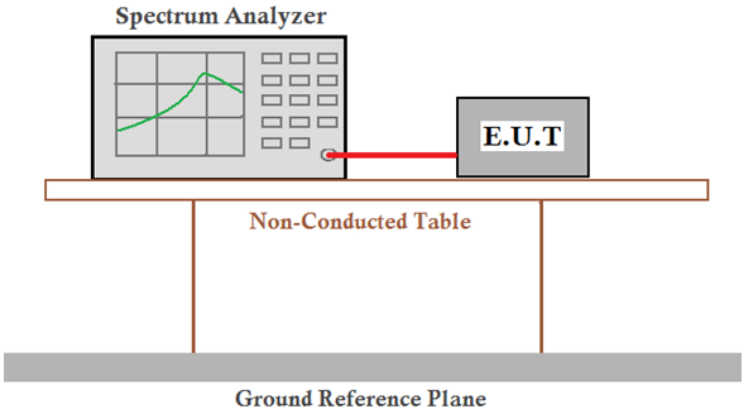
Test Channel:	CH5



Test Channel:	CH8



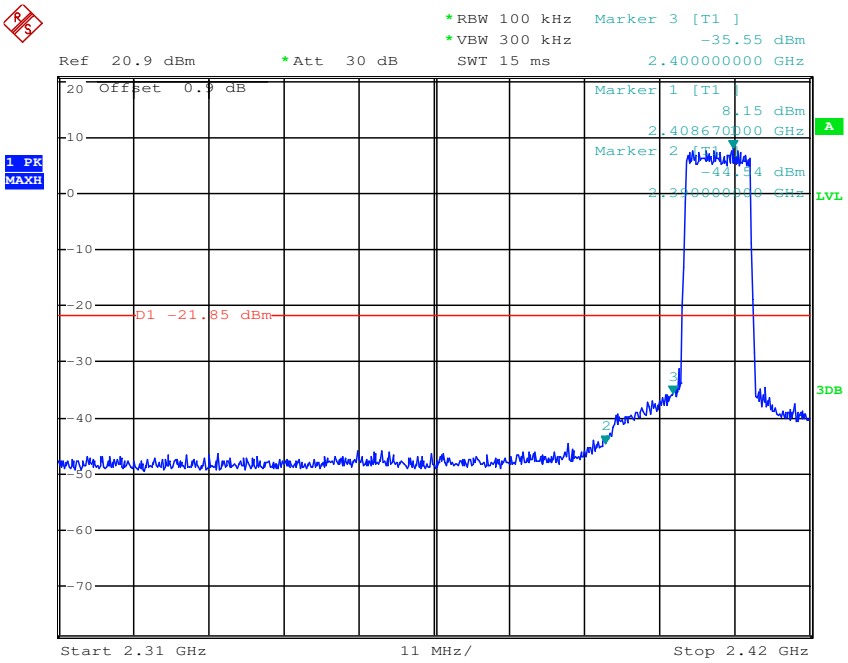
6.5 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013 Section 11.13
Test Setup:	
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB
Test Mode:	Transmitting with modulation.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass

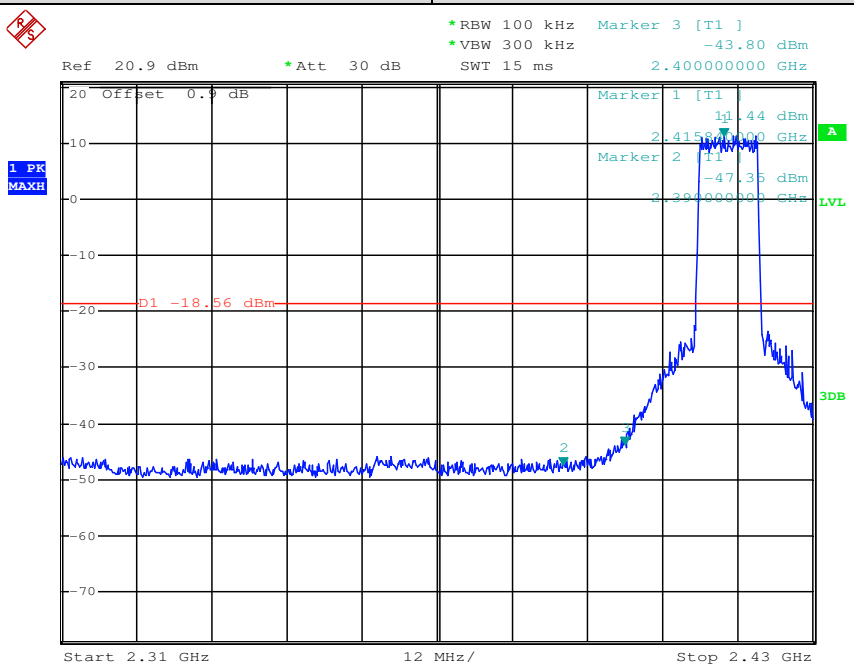
Test plot as follows:

Antenna 1:

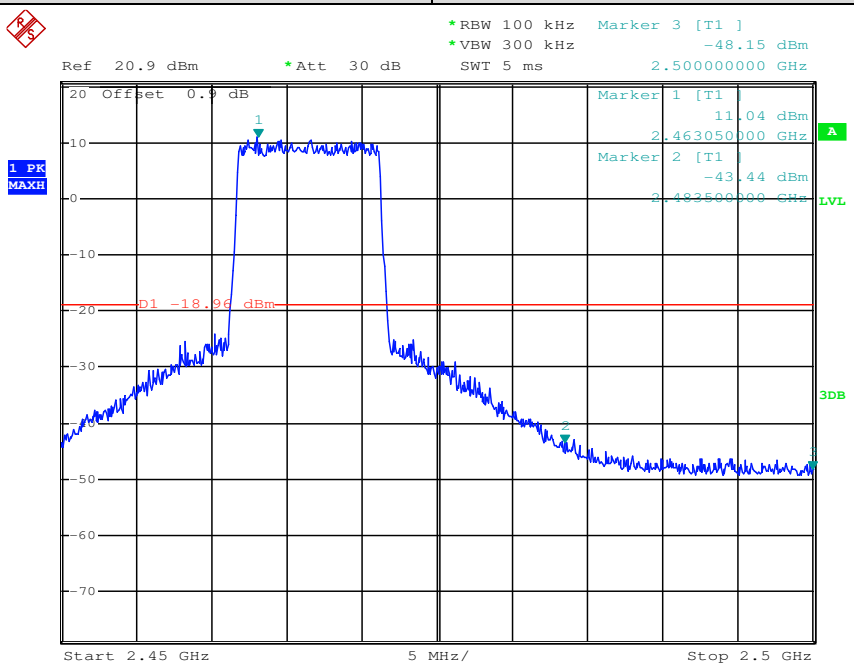
Test Channel:	CH1



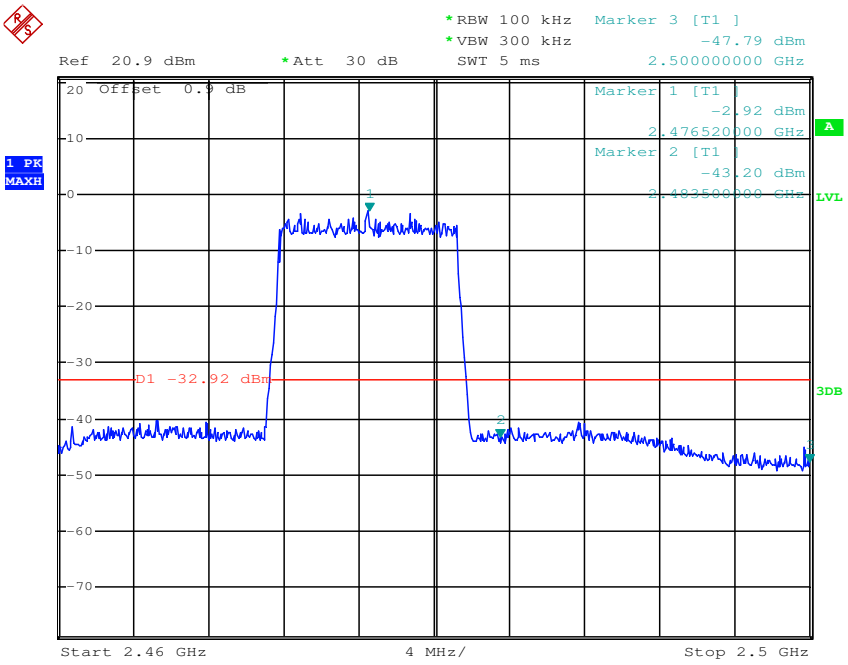
Test Channel:	CH2



Test Channel:	CH7

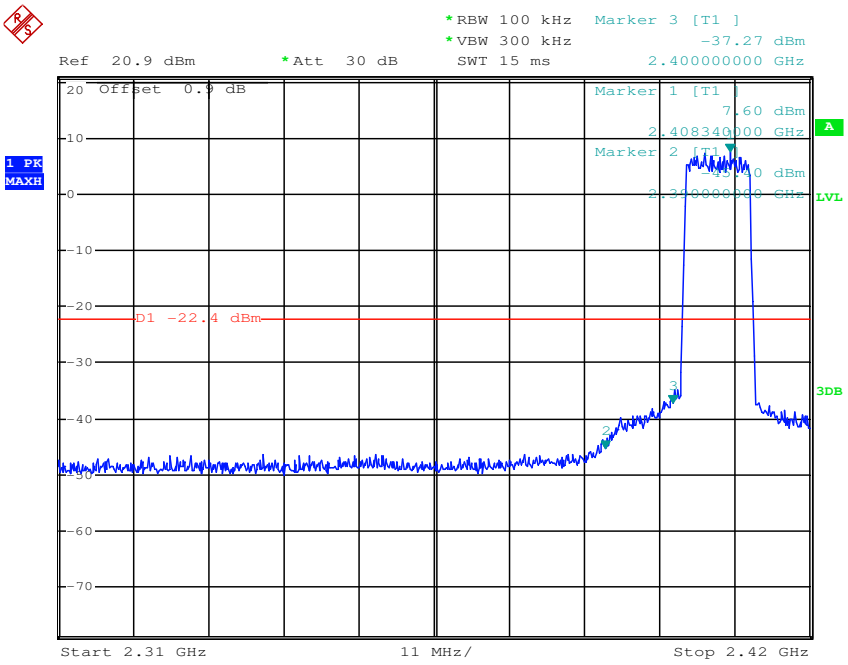


Test Channel:	CH8

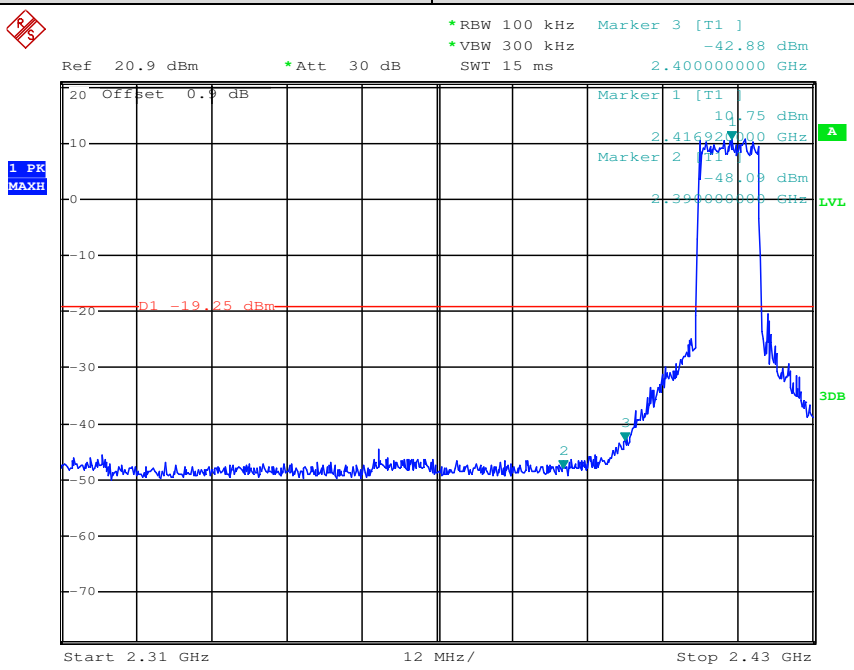


Antenna 2:

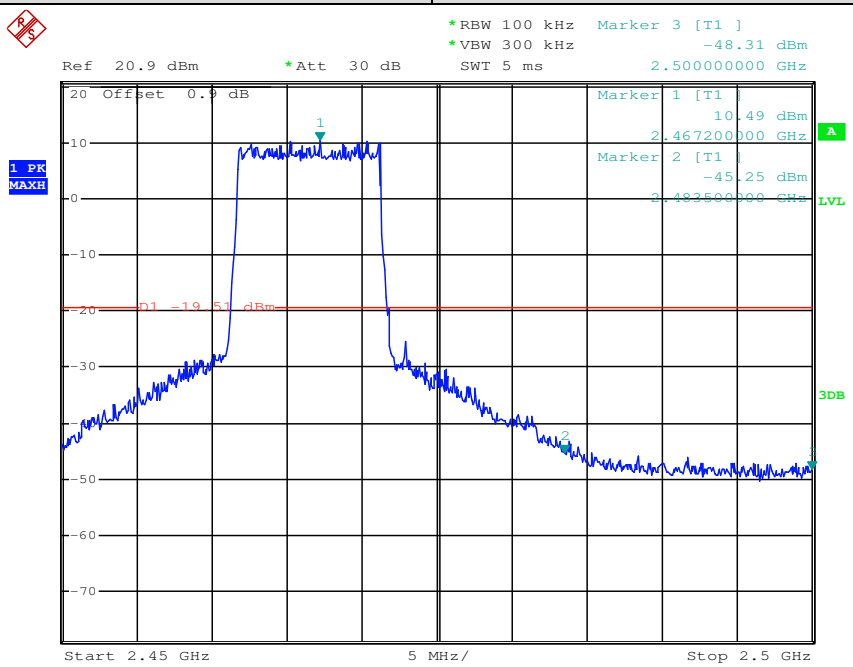
Test Channel:	CH1



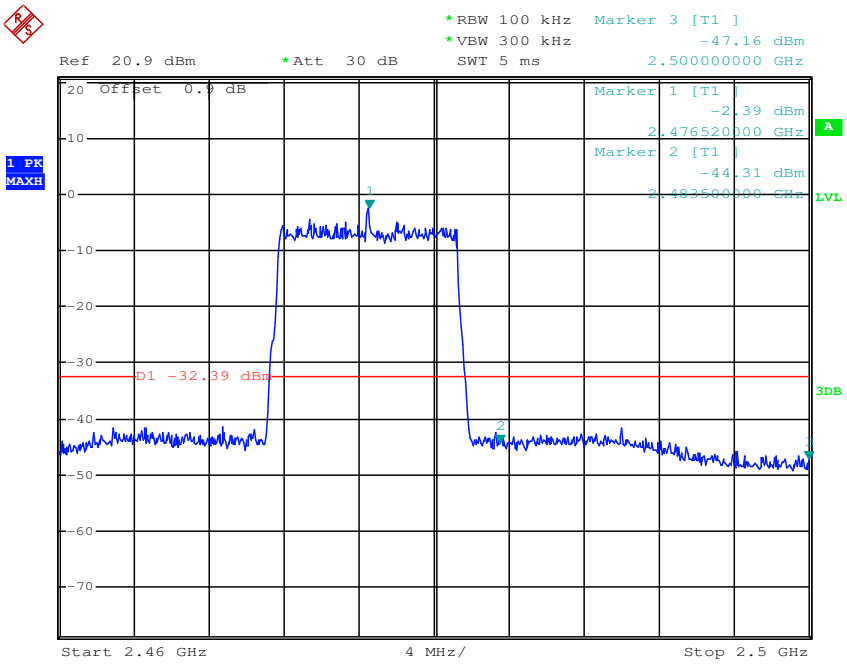
Test Channel:	CH2



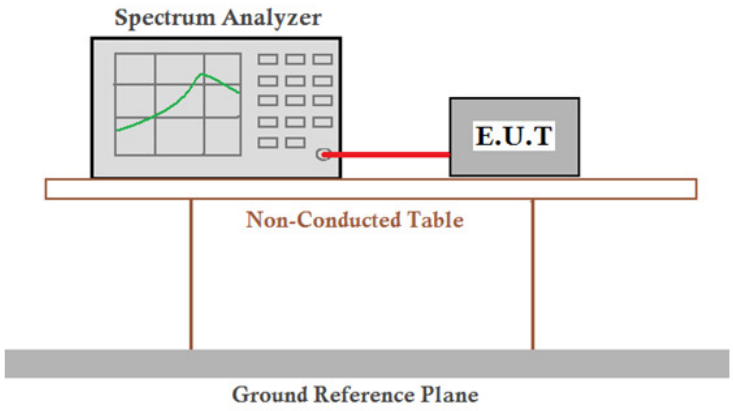
Test Channel:	CH7



Test Channel:	CH8

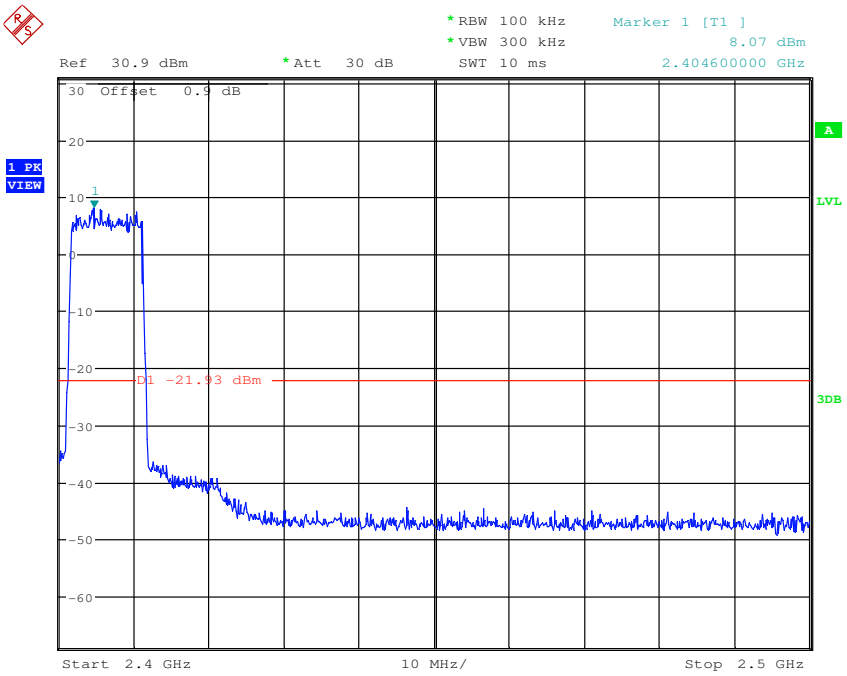


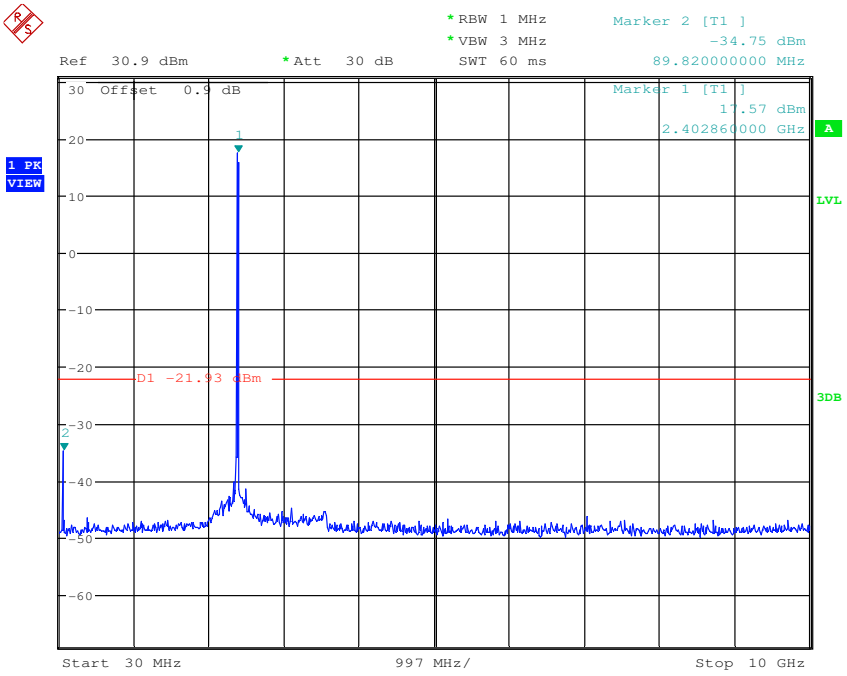
6.6 Spurious RF Conducted Emissions

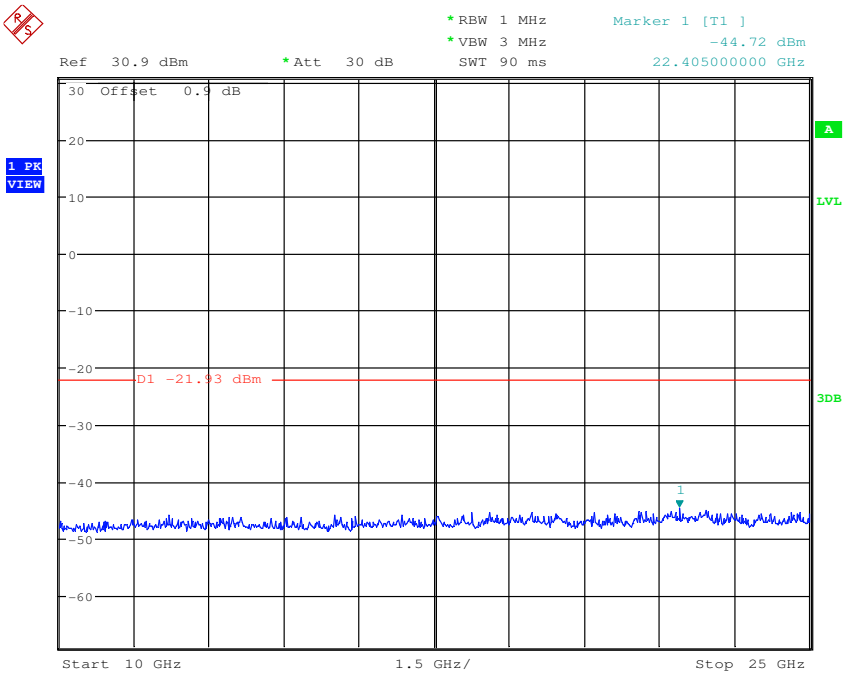
Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013 Section 11.11
Test Setup:	
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB
Test Mode:	Transmitting with modulation.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass

Test plot as follows:

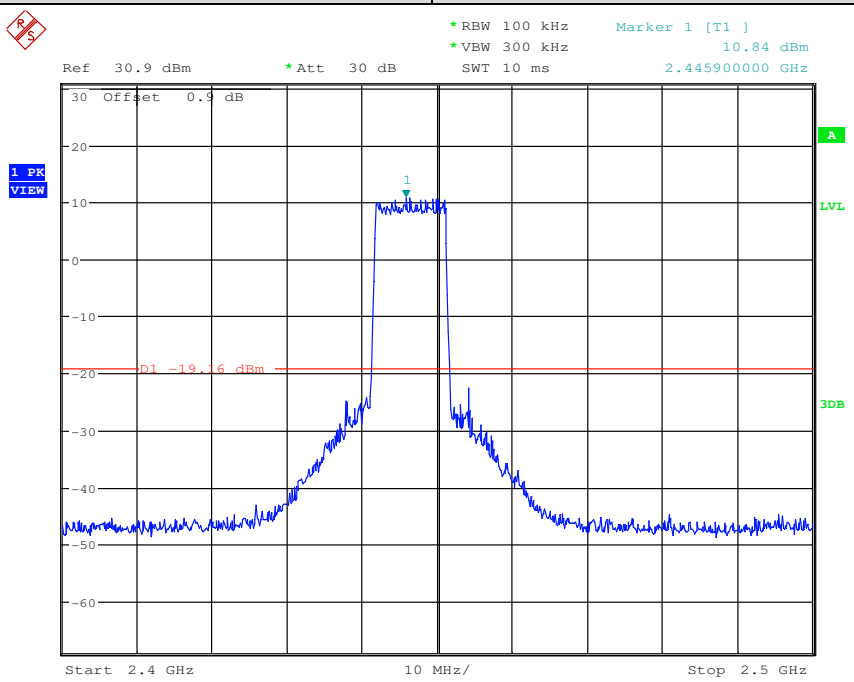
Test Channel:	CH1

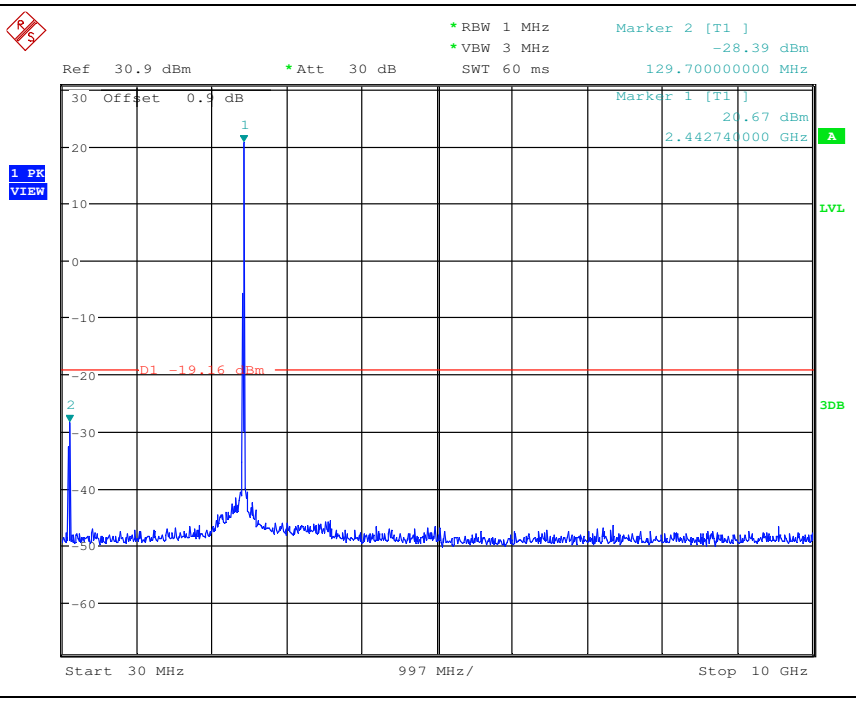


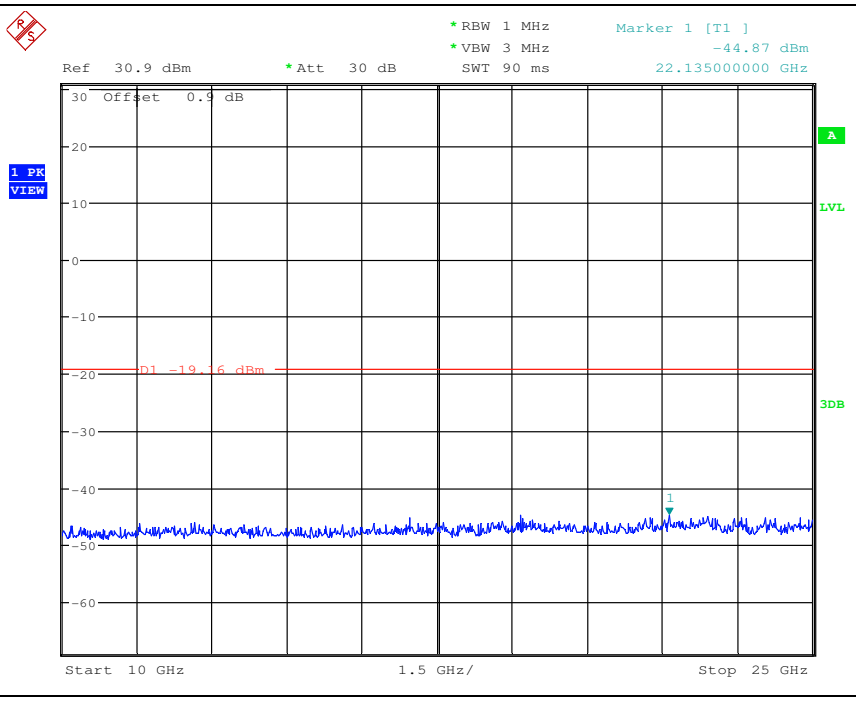




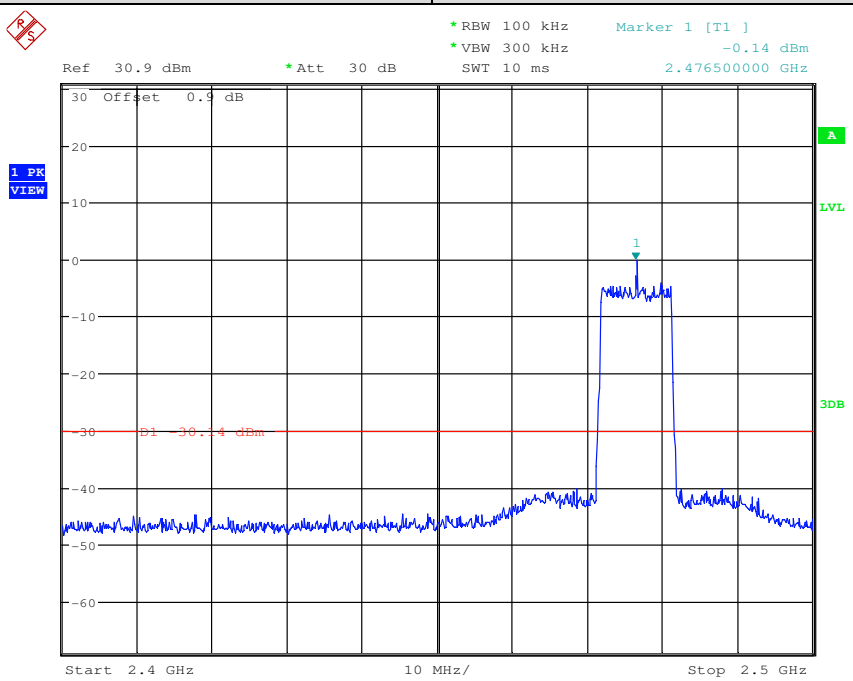
Test Channel:	CH5

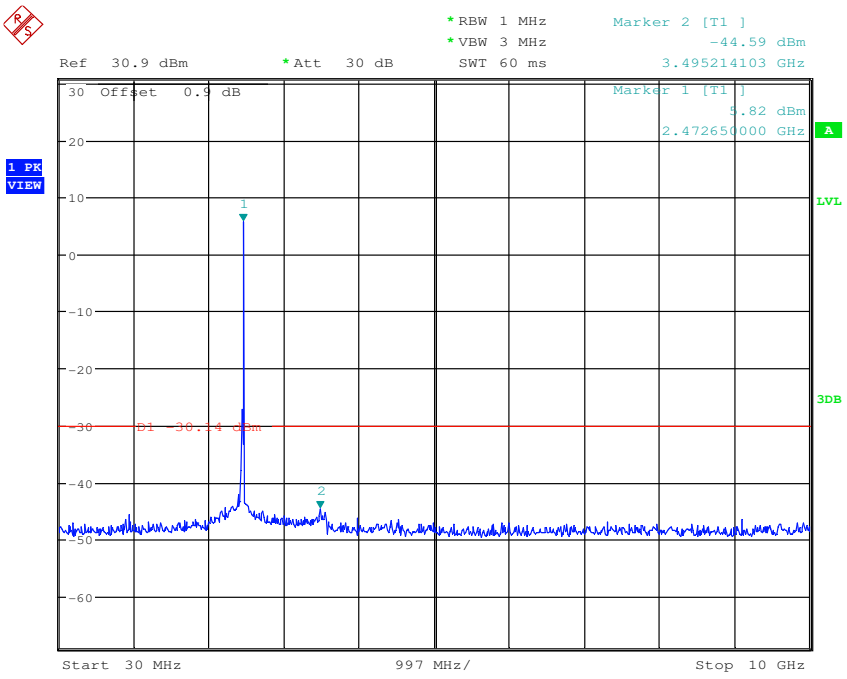


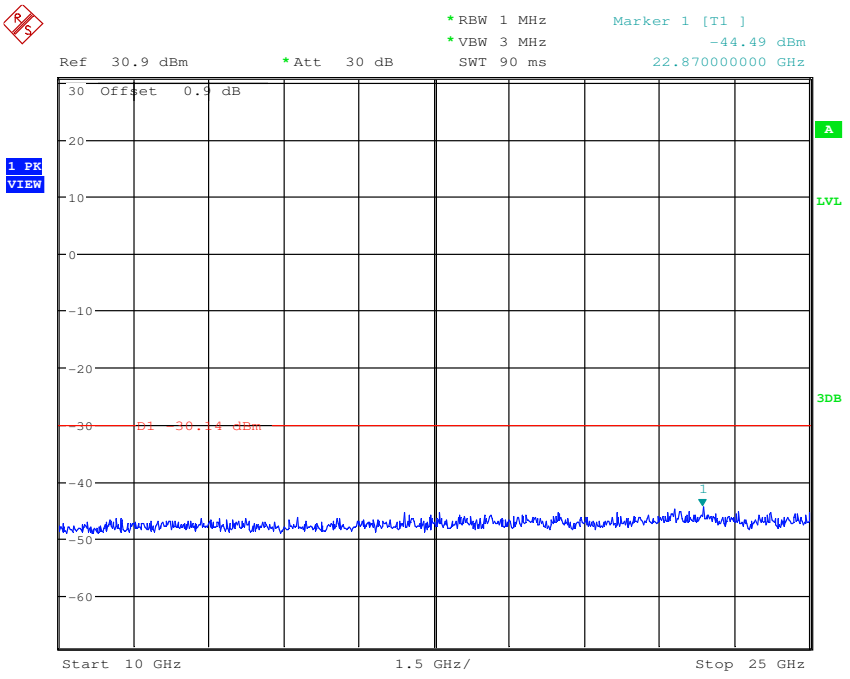




Test Channel:	CH8

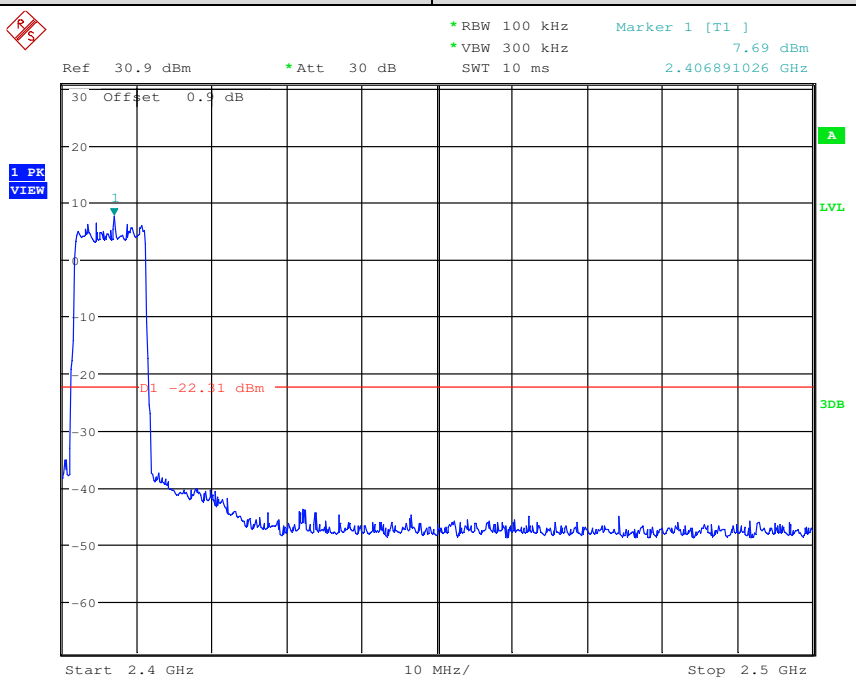


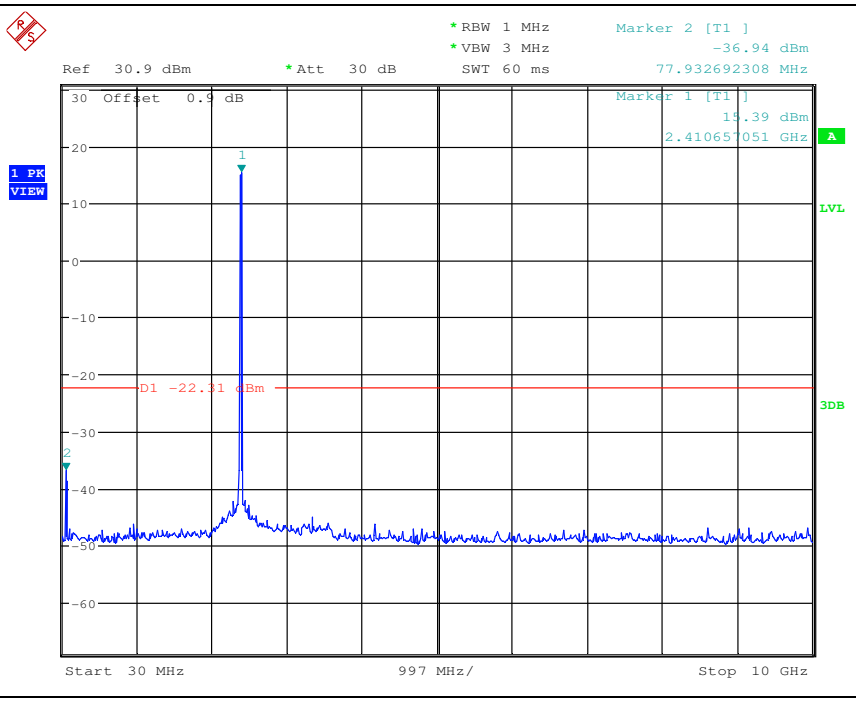


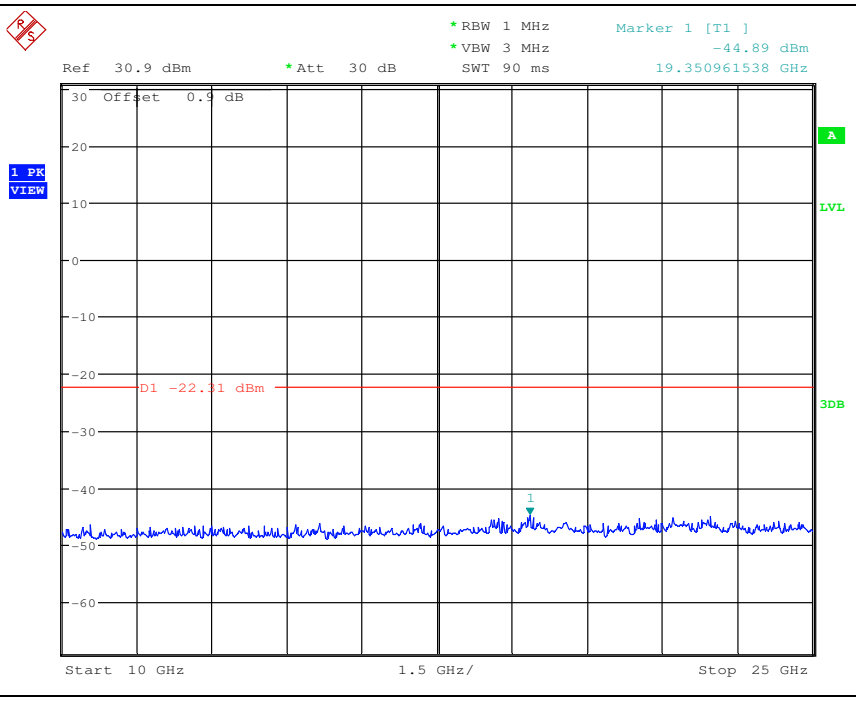


Antenna 2

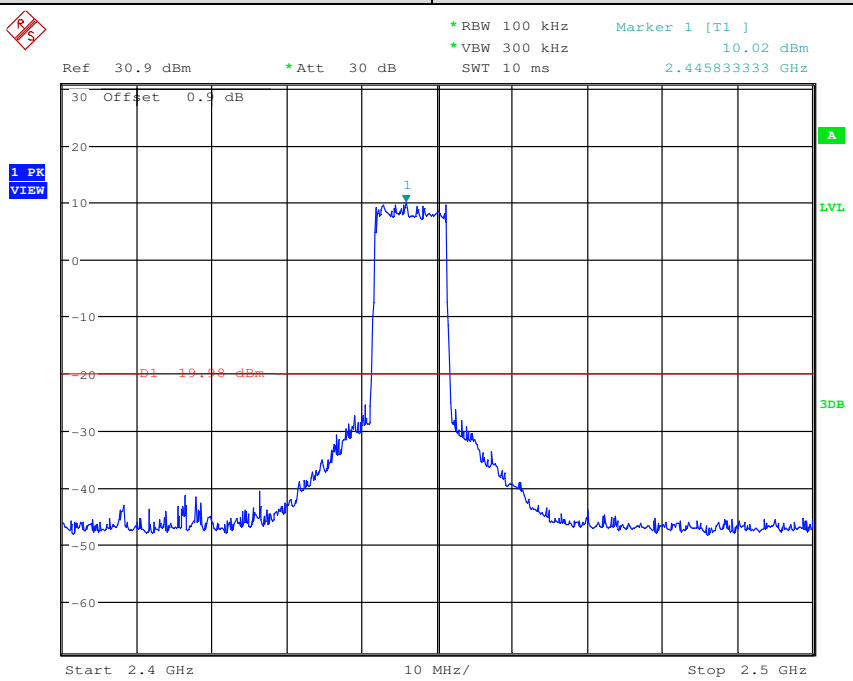
Test Channel:	CH1

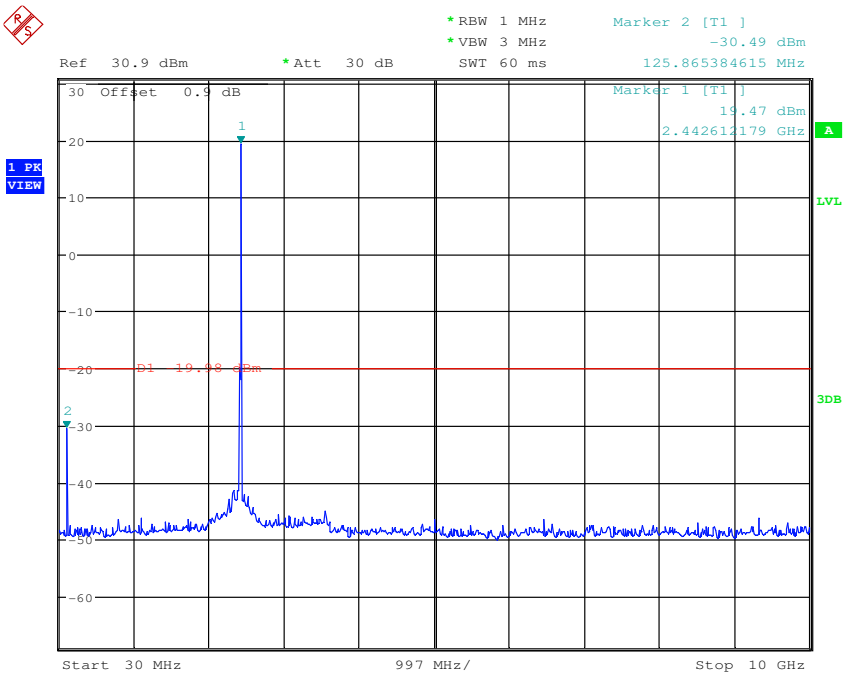


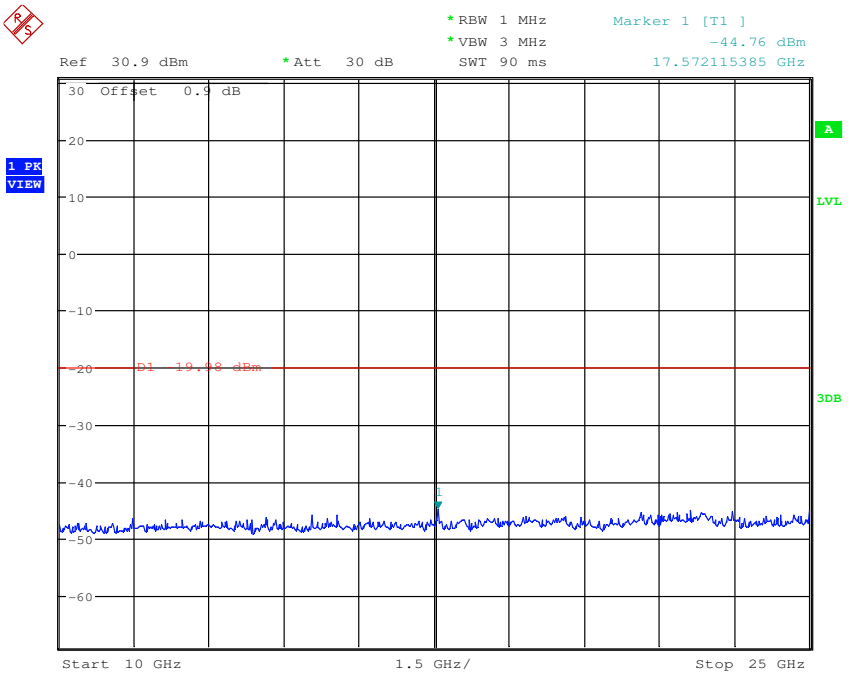




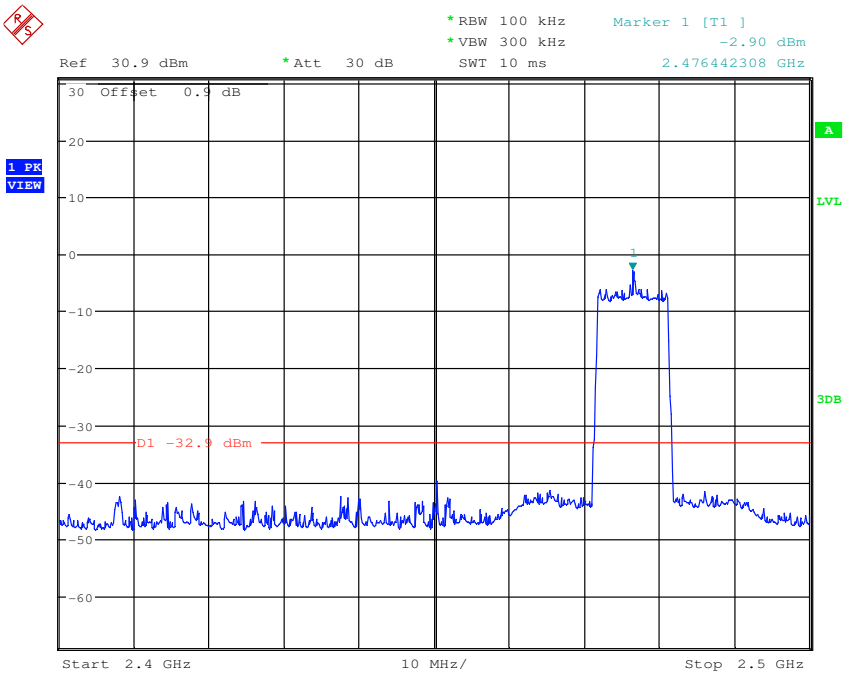
Test Channel:	CH5

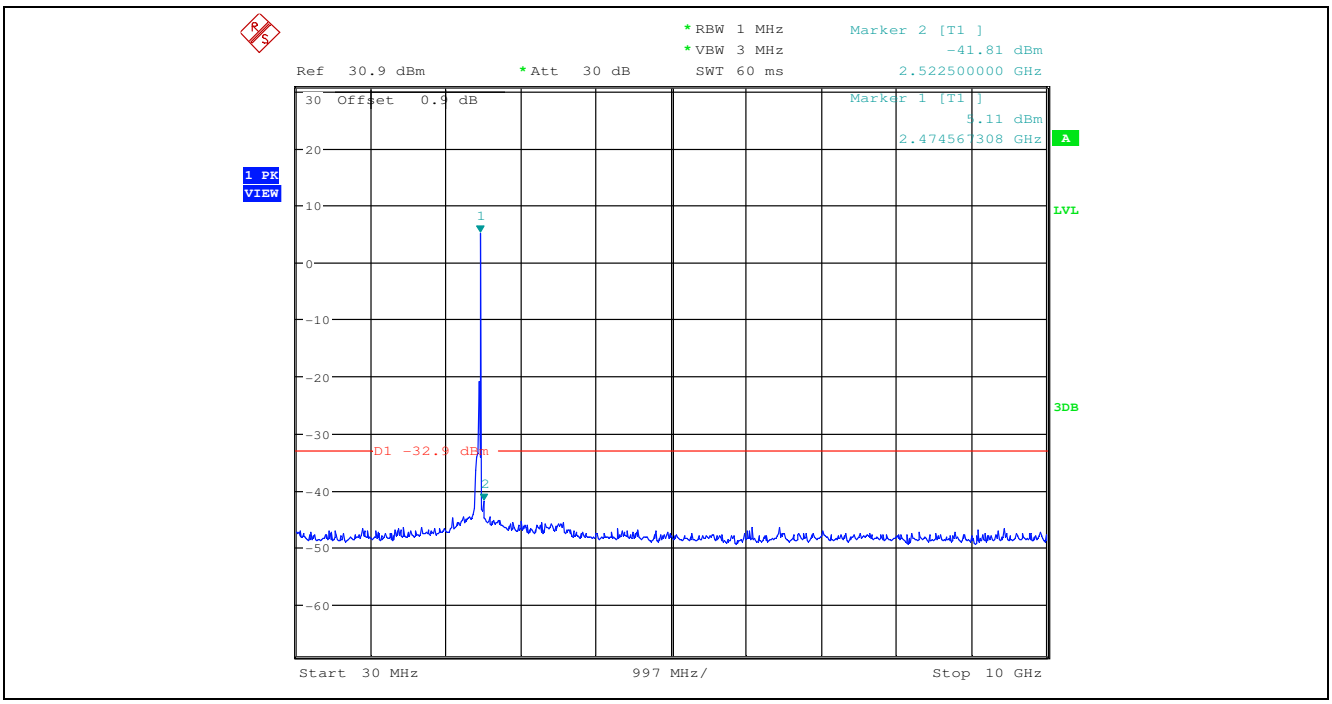


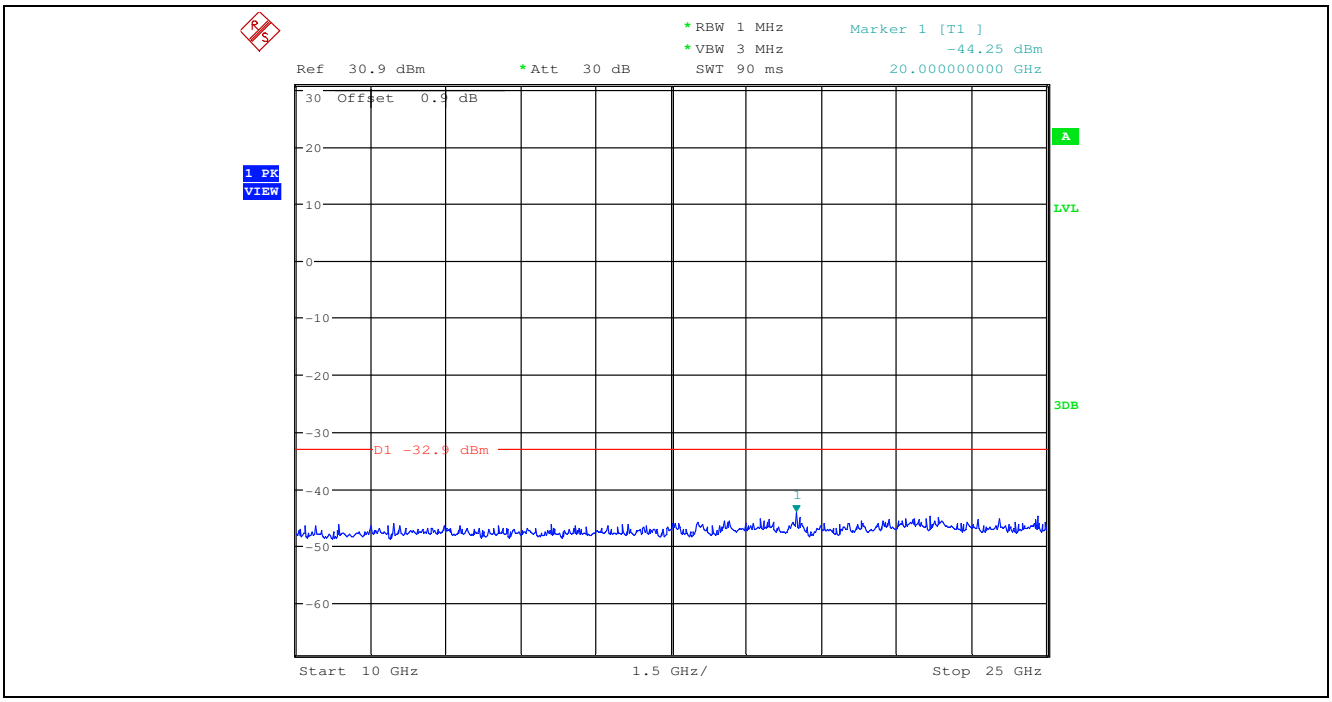




Test Channel:	CH8







Remark:

Use 100kHz RBW to determine the relative limit in the band 2.4GHz to 2.5GHz, and Use 1MHz RBW to measure spurious emissions in the band 30MHz to 10GHz and 10GHz to 25GHz. The sweep points set to 30001.

6.7 Radiated Spurious Emission

6.7.1 Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205
Test Method:	ANSI C63.10 :2013 Section 11.12
Test Site:	Measurement Distance: 3m

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	100 kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBuV/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.

Test Setup:	

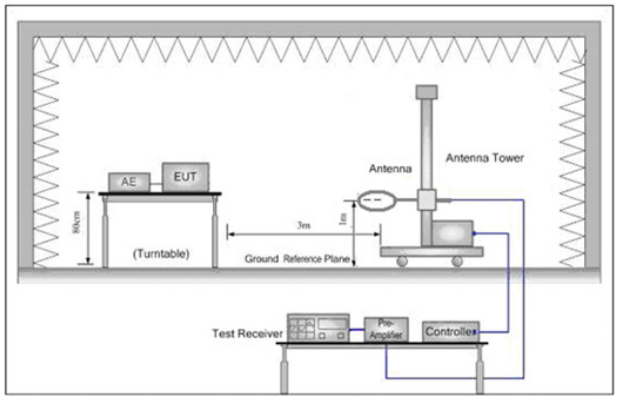


Figure 1. Below 30MHz

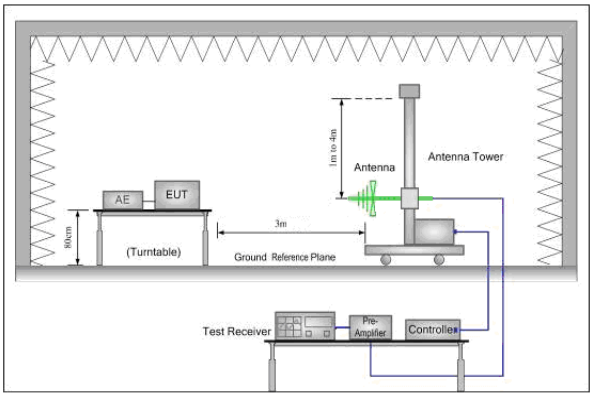


Figure 2. 30MHz to 1GHz

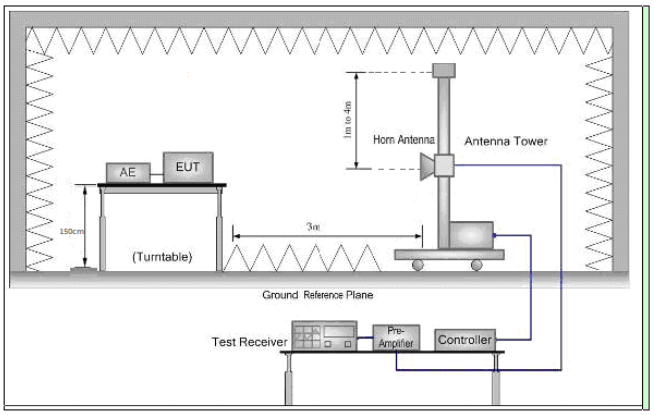
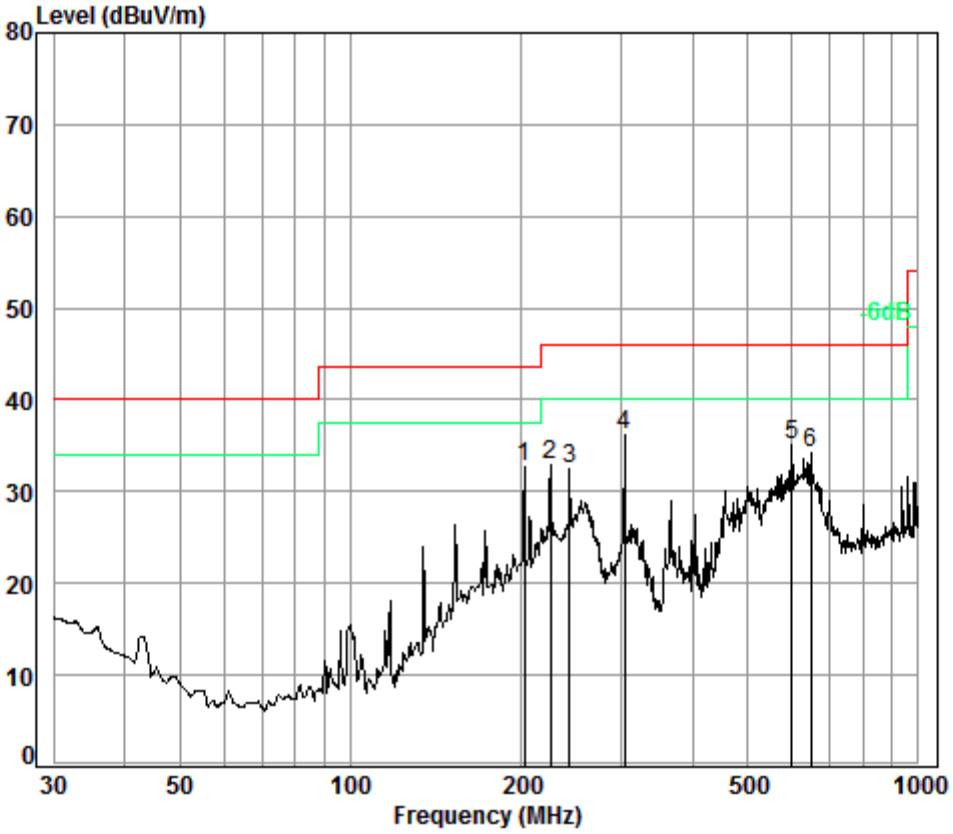


Figure 3. Above 1 GHz

Test Procedure:	a. For below 1GHz, 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. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. 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. e. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. 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. h. Test the EUT in the lowest channel, the middle channel and the Highest channel. i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. j. Repeat above procedures until all frequencies measured was complete.
Final Test Mode:	Transmitting with modulation. For below 1GHz part, through pre-scan, the worst case is the lowest channel. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass

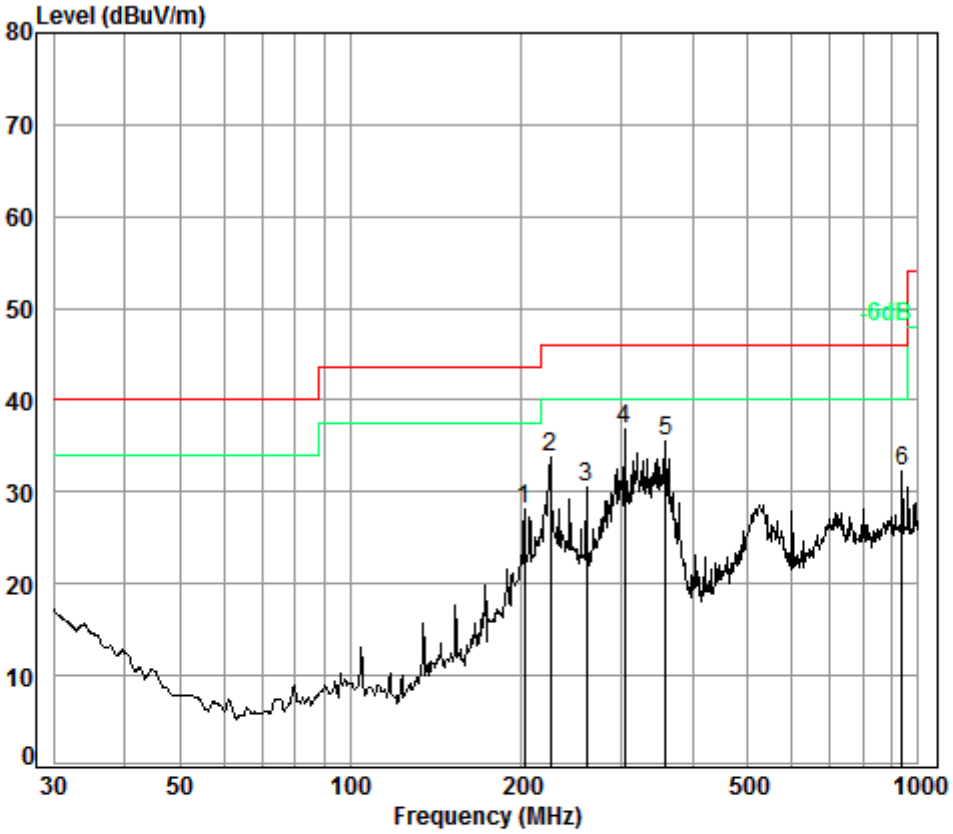
Radiated Emission below 1GHz		
30MHz~1GHz (QP)		
Test mode:	Transmitting mode	Vertical



Condition: 3m VERTICAL
Job No. : 979CR
Test mode: TX mode

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	202.81	1.42	10.35	26.69	47.54	32.62	43.50	-10.88
2	225.31	1.55	11.51	26.61	46.48	32.93	46.00	-13.07
3	243.38	1.64	12.09	26.55	45.25	32.43	46.00	-13.57
4 pp	303.54	1.91	14.03	26.42	46.69	36.21	46.00	-9.79
5	599.32	2.70	19.78	27.54	40.26	35.20	46.00	-10.80
6	647.39	2.80	20.59	27.48	38.31	34.22	46.00	-11.78

Test mode:	Transmitting mode	Horizontal



Condition: 3m HORIZONTAL
Job No. : 979CR
Test mode: TX mode

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	202.81	1.42	10.35	26.69	42.94	28.02	43.50	-15.48
2	225.31	1.55	11.51	26.61	47.44	33.89	46.00	-12.11
3	260.14	1.72	12.50	26.51	42.82	30.53	46.00	-15.47
4 pp	303.54	1.91	14.03	26.42	47.29	36.81	46.00	-9.19
5	359.19	2.09	14.67	26.85	45.68	35.59	46.00	-10.41
6	935.55	3.64	23.30	26.61	31.98	32.31	46.00	-13.69

Transmitter Emission above 1GHz

Test channel:		Lowest (CH1)			Detector:		Peak	
Frequency (MHz)	Antenna factors (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1498.781	25.80	4.47	38.05	49.84	42.54	74.00	-31.46	Vertical
3025.306	31.35	5.95	37.90	44.52	45.00	74.00	-29.00	Vertical
4813.000	34.17	7.74	38.41	43.55	47.44	74.00	-26.56	Vertical
7219.500	36.41	9.66	37.10	41.99	51.21	74.00	-22.79	Vertical
9626.000	37.53	11.08	35.09	38.04	52.01	74.00	-21.99	Vertical
12397.740	38.84	12.99	36.55	37.75	53.67	74.00	-20.33	Vertical
1792.937	27.04	4.80	38.02	44.58	39.07	74.00	-34.93	Horizontal
3318.471	31.89	6.17	37.93	45.00	45.72	74.00	-28.28	Horizontal
4813.000	34.17	7.74	38.41	43.60	47.49	74.00	-26.51	Horizontal
7219.500	36.41	9.66	37.10	42.35	51.57	74.00	-22.43	Horizontal
9626.000	37.53	11.08	35.09	38.57	52.54	74.00	-21.46	Horizontal
12255.220	38.75	12.78	36.21	37.28	53.29	74.00	-20.71	Horizontal

Test channel:		Middle (CH5)			Detector:		Peak	
Frequency (MHz)	Antenna factors (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1560.673	26.08	4.54	38.04	44.22	37.29	74.00	-36.71	Vertical
3016.575	31.33	5.94	37.90	44.18	44.66	74.00	-29.34	Vertical
4893.000	34.32	7.85	38.45	43.48	47.61	74.00	-26.39	Vertical
7339.500	36.36	9.74	36.99	41.79	51.13	74.00	-22.87	Vertical
9786.000	37.56	11.23	35.01	38.00	52.24	74.00	-21.76	Vertical
14325.370	39.99	14.68	38.97	37.34	53.59	74.00	-20.41	Vertical
1335.141	25.11	4.27	38.07	46.41	38.22	74.00	-35.78	Horizontal
3308.894	31.87	6.17	37.93	45.62	46.32	74.00	-27.68	Horizontal
4893.000	34.32	7.85	38.45	42.62	46.75	74.00	-27.25	Horizontal
7339.500	36.36	9.74	36.99	42.20	51.54	74.00	-22.46	Horizontal
9786.000	37.56	11.23	35.01	38.95	53.19	74.00	-20.81	Horizontal
14330.240	39.99	14.68	38.97	36.85	52.55	74.00	-21.45	Horizontal

Test channel:		Highest (CH8)			Detector:		Peak	
Frequency (MHz)	Antenna factors (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1813.786	27.12	4.83	38.02	43.31	37.97	74.00	-36.03	Vertical
3308.894	31.87	6.17	37.93	44.56	45.26	74.00	-28.74	Vertical
4953.000	34.42	7.94	38.48	43.98	48.29	74.00	-25.71	Vertical
7429.500	36.33	9.80	36.91	41.98	51.42	74.00	-22.58	Vertical
9906.000	37.58	11.35	34.95	37.80	52.24	74.00	-21.76	Vertical
12651.130	38.87	13.21	37.16	38.31	53.79	74.00	-20.21	Vertical
1335.141	25.11	4.27	38.07	47.54	39.35	74.00	-34.65	Horizontal
2956.155	31.15	5.89	37.90	45.50	45.98	74.00	-28.02	Horizontal
4953.000	34.42	7.94	38.48	44.05	48.36	74.00	-25.64	Horizontal
7429.500	36.33	9.80	36.91	41.83	51.27	74.00	-22.73	Horizontal
9906.000	37.58	11.35	34.95	37.92	52.36	74.00	-21.64	Horizontal
13638.490	38.77	14.24	38.64	38.16	53.01	74.00	-20.99	Horizontal

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 + Antenna Factor + Cable Factor – Preamplifier Factor
2) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3) 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. Since the peak level is even lower than the average limit, only the peak measurements were shown in the report.

6.8 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205
Test Method:	ANSI C63.10: 2013 Section 11.12
Test Site:	Measurement Distance: 3m

Limit:

Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test Setup:

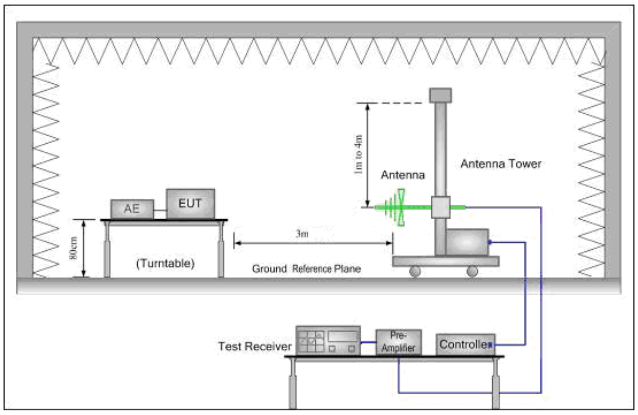


Figure 1. 30MHz to 1GHz

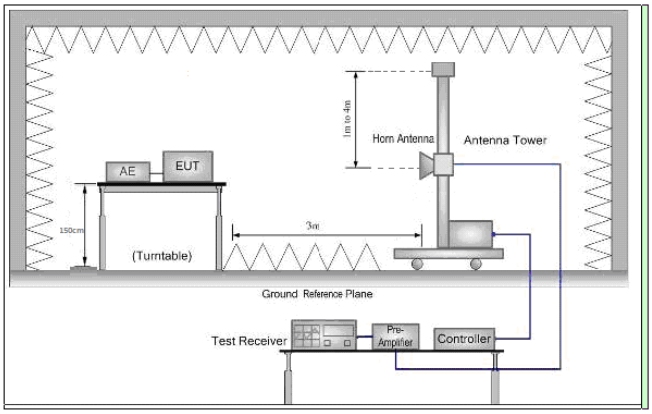


Figure 2. Above 1 GHz

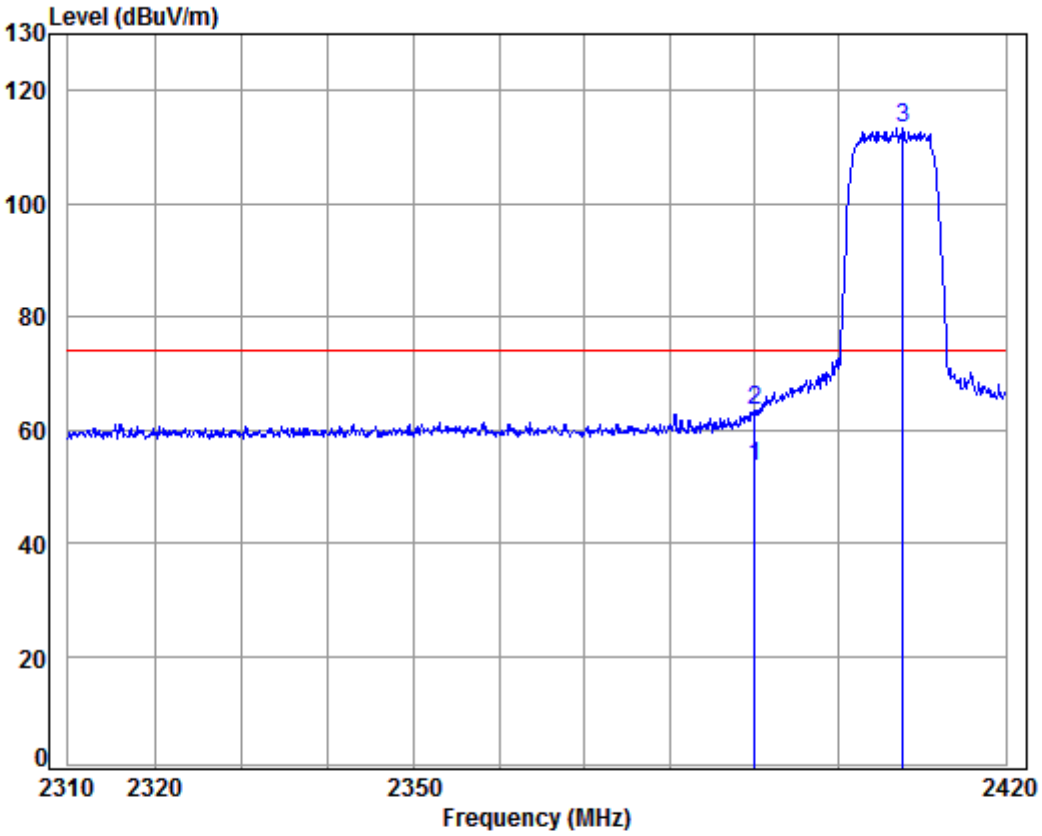
Test Procedure:

a. For below 1GHz, 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.
b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
d. 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.
e. 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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel
h. Test the EUT in the lowest channel , the Highest channel
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

	j. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Transmitting with modulation.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass

Test plot as follows:

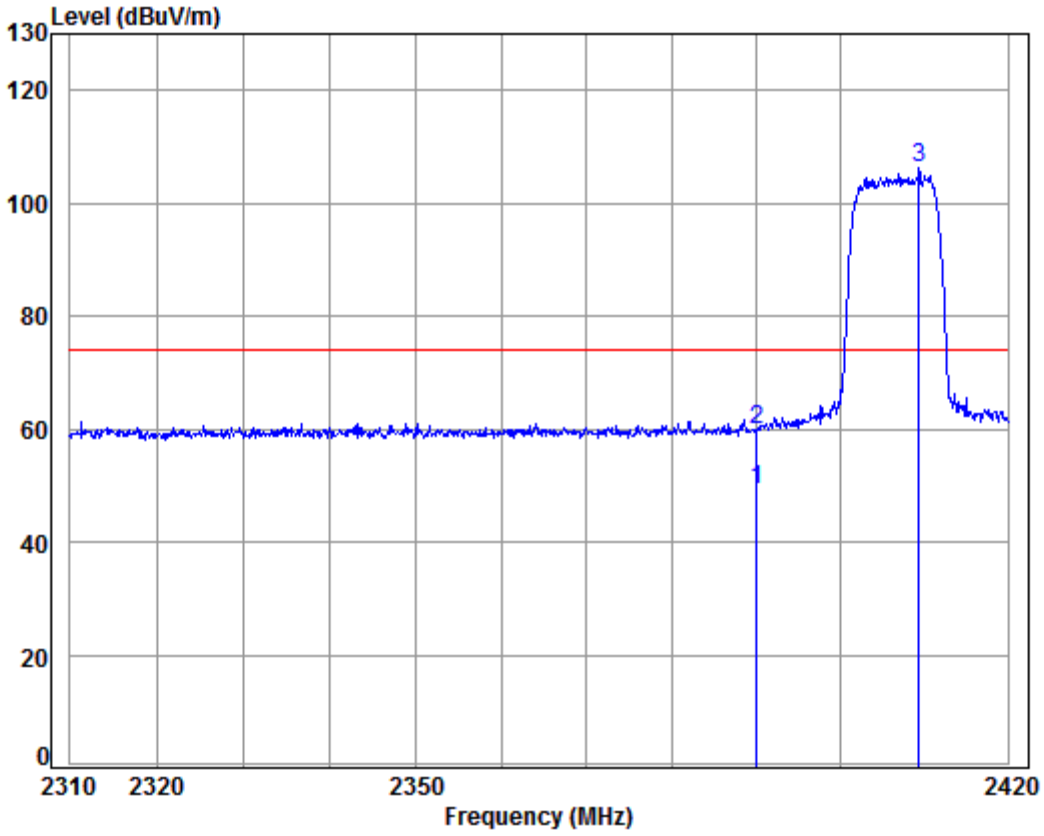
Test channel:	CH1	Remark:	Peak	Vertical



Condition: 3m VERTICAL
Job No: : 00979CR
Mode: : L Bandedge (2406.5MHz)

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	av 2390.000	3.33	29.08	0.00	21.25	53.66	54.00	-0.34	Average
2	pk 2390.000	3.33	29.08	0.00	31.16	63.57	74.00	-10.43	Peak
3	pp 2407.648	3.34	29.13	0.00	80.99	113.46	74.00	39.46	

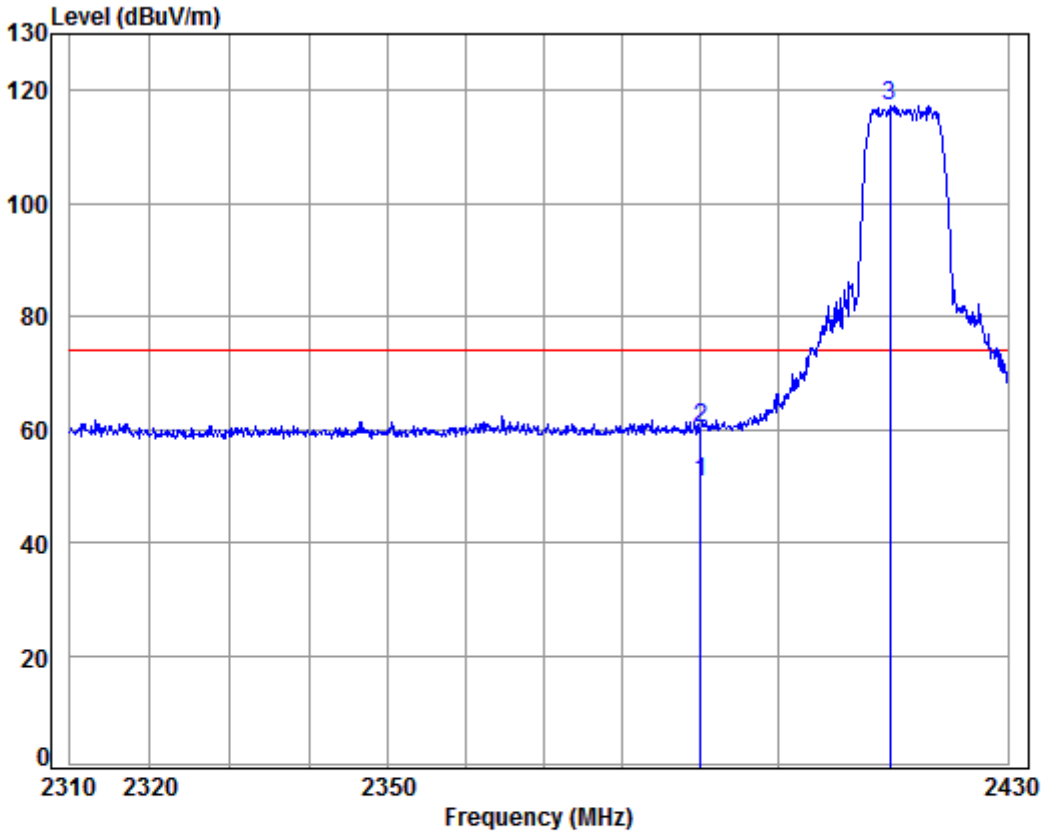
Test channel:	CH1	Remark:	Peak	Horizontal



Condition: 3m HORIZONTAL
Job No: : 00979CR
Mode: : L Bandedge (2406.5MHz)

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	av 2390.000	3.33	29.08	0.00	16.88	49.29	54.00	-4.71	Average
2	pk 2390.000	3.33	29.08	0.00	27.43	59.84	74.00	-14.16	Peak
3	pp 2409.329	3.35	29.14	0.00	73.91	106.40	74.00	32.40	

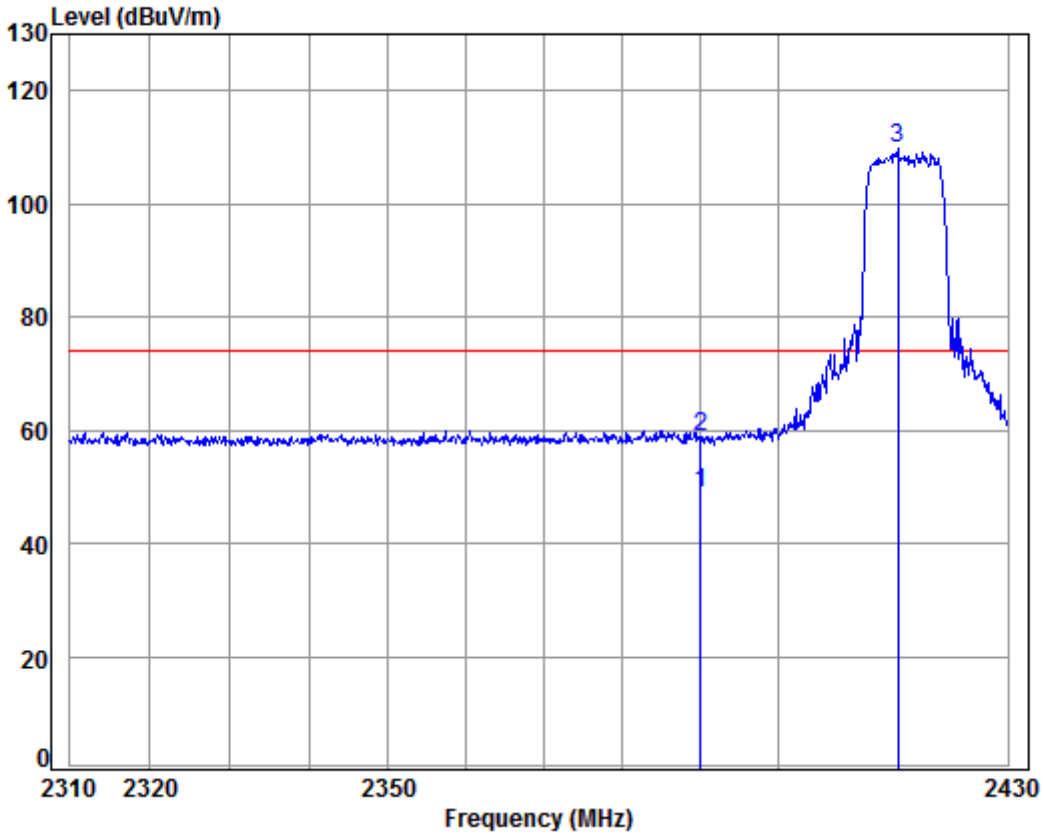
Test channel:	CH2	Remark:	Peak	Vertical



Condition: 3m VERTICAL
Job No: : 00979CR
Mode: : L Bandedge (2416.5MHz)

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	av 2390.000	3.33	29.08	0.00	18.34	50.75	54.00	-3.25	Average
2	pk 2390.000	3.33	29.08	0.00	27.96	60.37	74.00	-13.63	Peak
3	pp 2414.543	3.35	29.15	0.00	84.92	117.42	74.00	43.42	

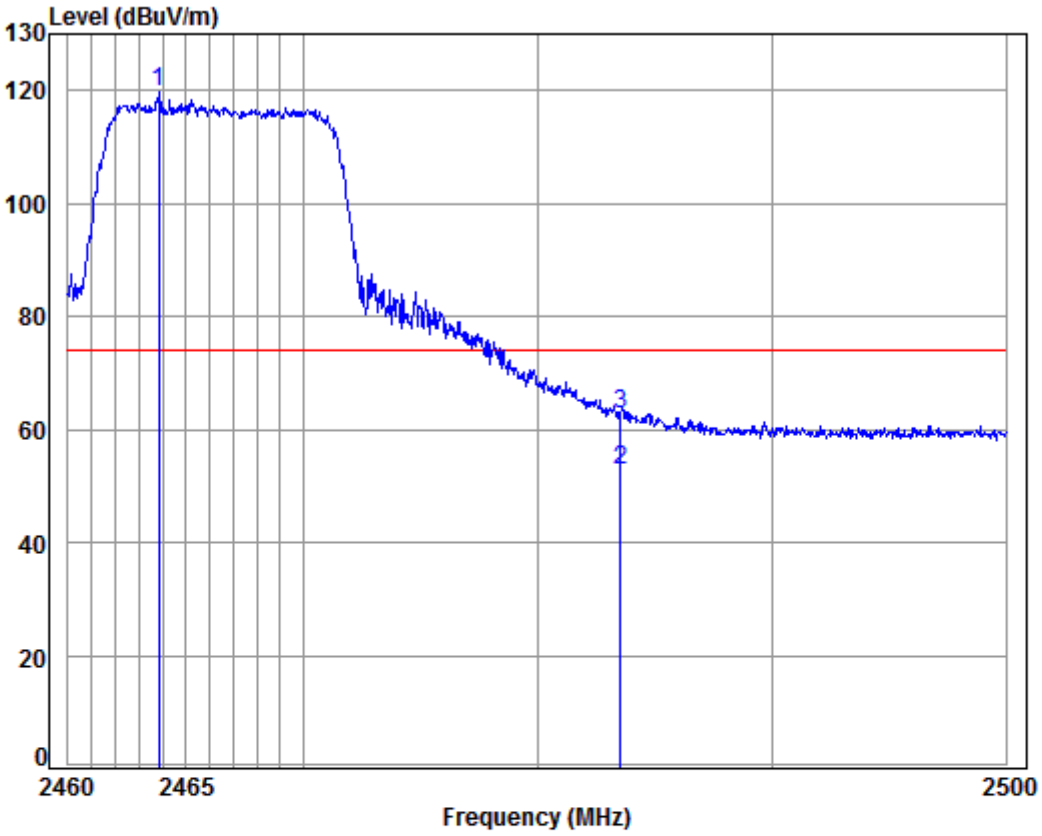
Test channel:	CH2	Remark:	Peak	Horizontal



Condition: 3m HORIZONTAL
Job No: : 00979CR
Mode: : L Bandedge (2416.5MHz)

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	av 2390.000	3.33	29.08	0.00	16.46	48.87	54.00	-5.13	Average
2	pk 2390.000	3.33	29.08	0.00	26.30	58.71	74.00	-15.29	Peak
3	pp 2415.644	3.35	29.15	0.00	77.34	109.84	74.00	35.84	

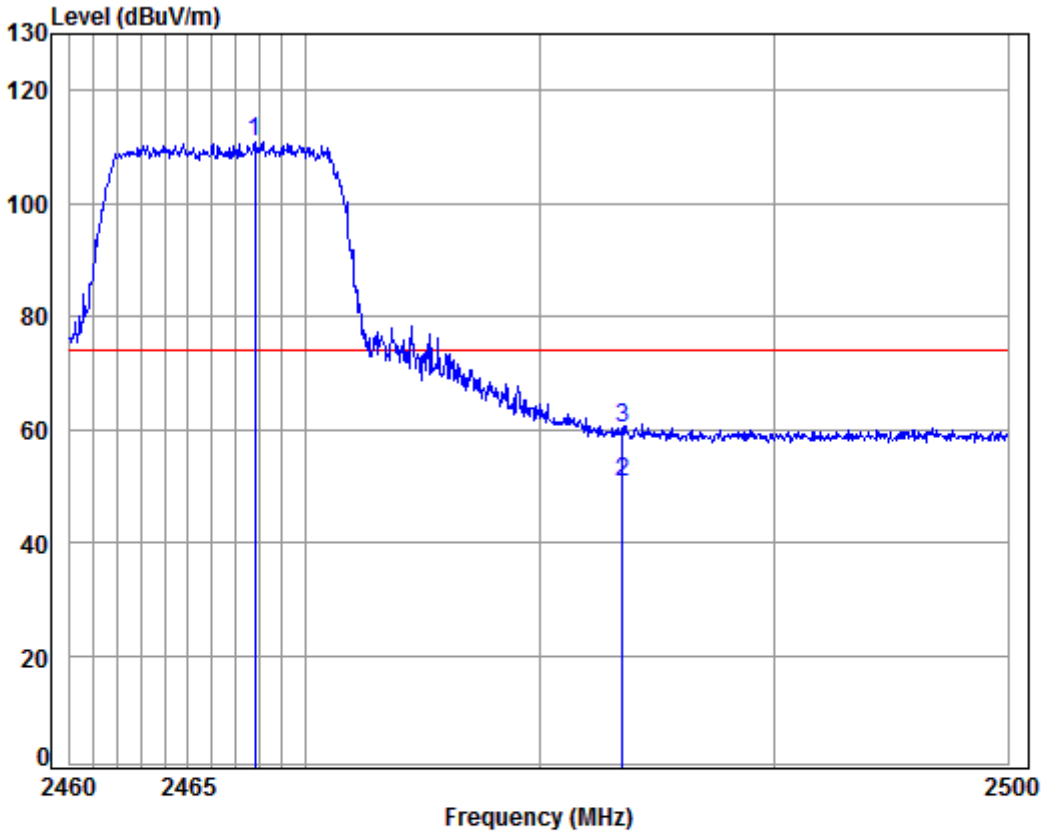
Test channel:	CH7	Remark:	Peak	Vertical



Condition: 3m VERTICAL
Job No: : 00979CR
Mode: : H Bandedge (2466.5MHz)

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	pp 2463.852	3.39	29.30	0.00	86.92	119.61	74.00	45.61	
2	av 2483.500	3.41	29.35	0.00	20.05	52.81	54.00	-1.19	Average
3	pk 2483.500	3.41	29.35	0.00	30.01	62.77	74.00	-11.23	Peak

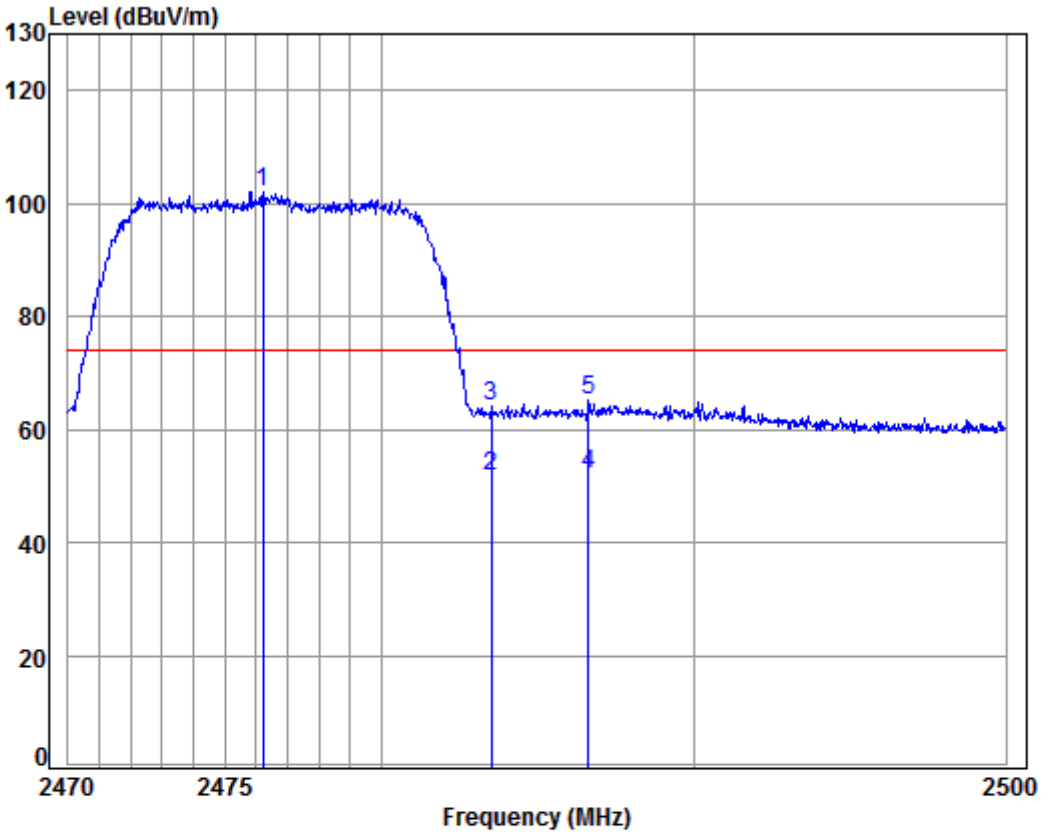
Test channel:	CH7	Remark:	Peak	Horizontal



Condition: 3m HORIZONTAL
Job No: : 00979CR
Mode: : H Bandedge (2466.5MHz)

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	pp 2467.829	3.39	29.31	0.00	78.10	110.80	74.00	36.80	
2	av 2483.500	3.41	29.35	0.00	17.76	50.52	54.00	-3.48	Average
3	pk 2483.500	3.41	29.35	0.00	27.58	60.34	74.00	-13.66	Peak

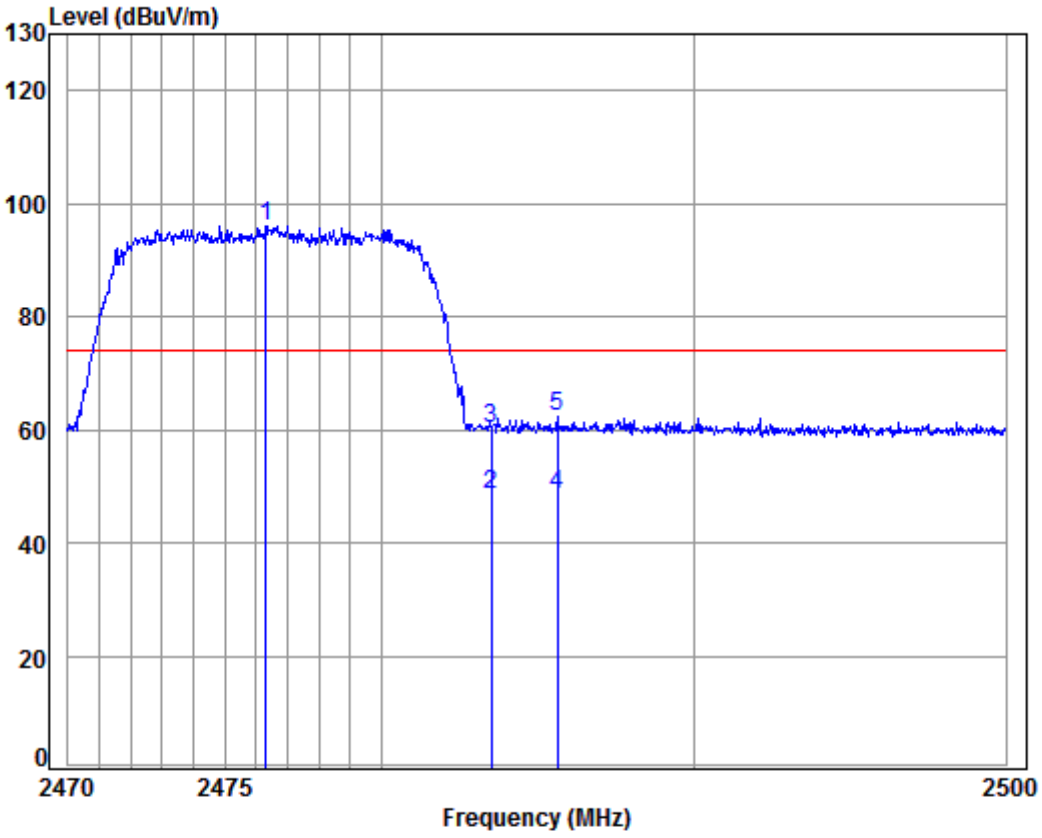
Test channel:	CH8	Remark:	Peak	Vertical



Condition: 3m VERTICAL
Job No: : 00979CR
Mode: : H Bandedge (2476.5MHz)

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2476.210	3.40	29.33	0.00	69.46	102.19	74.00	28.19	
2	2483.500	3.41	29.35	0.00	19.02	51.78	54.00	-2.22	Average
3	2483.500	3.41	29.35	0.00	31.22	63.98	74.00	-10.02	Peak
4 av	2486.605	3.41	29.36	0.00	19.31	52.08	54.00	-1.92	Average
5 pk	2486.605	3.41	29.36	0.00	32.38	65.15	74.00	-8.85	Peak

Test channel:	CH8	Remark:	Peak	Horizontal



Condition: 3m HORIZONTAL
Job No: : 00979CR
Mode: : H Bandedge (2476.5MHz)

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2476.300	3.40	29.33	0.00	63.42	96.15	74.00	22.15	
2	2483.500	3.41	29.35	0.00	15.68	48.44	54.00	-5.56	Average
3	2483.500	3.41	29.35	0.00	27.32	60.08	74.00	-13.92	Peak
4 av	2485.615	3.41	29.36	0.00	15.69	48.46	54.00	-5.54	Average
5 pk	2485.615	3.41	29.36	0.00	29.44	62.21	74.00	-11.79	Peak

Note:
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 + Antenna Factor + Cable Factor – Preamplifier Factor