TEST REPORT

FCC ID	: SJ8-M420WF
Applicant	: RDI Technology (Shenzhen) Co., Ltd.
Address	: Building C1 Xintang Industrial Park, East Baishixia, Fuyong, Baoan, Shenzhen, China
Manufacturer	: The same as above
Address	: The same as above

Equipment Under Test (EUT) :

Product Name	: Wi-Fi cradle
Model No.	: M420WF
Rules	: FCC CFR47 Part 15 C Section 15.247:2010
Date of Test	: May 16~30, 2013
Date of Issue	: June 14, 2013
Test Result	: PASS*

Remark:

* The sample detailed above has been tested to the requirements of FCC rules mentioned above.

The test results have been reviewed against the directives above and found to meet their essential requirements.

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

PERPARED BY:
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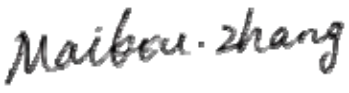
Compiled by:



Zero Zhou / Project Engineer

Approved by:

Philo Zhong / Manager

2 Test Summary

Test Items	Test Requirement	Result
Radiated Emissions	15.205(a) 15.209(a)	PASS
Conducted Emissions	15.207(a)	PASS
6dB Bandwidth	15.247(a)(2)	PASS
Maximum Peak Output Power	15.247(b)(3),(4)	PASS
Power Spectral Density	15.247(e)	PASS
Band Edge	15.247(d)	PASS
Emissions from out of band	15.247(d)	PASS
Emissions from the restricted bands	15.247(d)	PASS
Antenna Requirement	15.203	PASS
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

3 Contents

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4 General Information

4.1 General Description of E.U.T.

Product Name	: Wi-Fi cradle
Model No.	: M420WF
Model Difference	: N/A
Operation Frequency	: 2412MHz ~ 2462MHz
Oscillator	: Crystal 24MHz for CPU, 40MHz for RF module
Antenna Gain	: 2dBi
Type of modulation	: IEEE 802.11b (CCK/QPSK/BPSK,11Mbps max.) IEEE 802.11g (BPSK/QPSK/16QAM/64QAM, 54Mbps max.) IEEE 802.11n (BPSK/QPSK/16QAM/64QAM,HT20:72Mbps max., HT40:150Mbps max.)
Note	: All the modulation modes were tested, all the test data deeply conform to the rules and the data of the worst mode are recorded in the following pages.

4.2 Details of E.U.T.

Technical Data	:DC 5V, 1.5A powered from adapter (Input: 100 ~ 240VAC, 50/60Hz,500mA)
Adapter	: Manufacturer:Csec, M/N:CS9C050150FUF

4.3 Description of Support Units

Table 1 Tests Carried Out Under FCC part 15.247

Test Items	Mode	Data Rate	Channel	TX
Maximum Peak Output Power	802.11b	11 Mbps	1/6/11	TX
	802.11g	54 Mbps	1/6/11	TX
	802.11n HT20	72 Mbps	1/6/11	TX
	802.11n HT40	150 Mbps	3/6/9	TX
Power Spectral Density	802.11b	11 Mbps	1/6/11	TX
	802.11g	54 Mbps	1/6/11	TX
	802.11n HT20	72 Mbps	1/6/11	TX
	802.11n HT40	150 Mbps	3/6/9	TX
6 dB Bandwidth	802.11b	11 Mbps	1/11	TX
	802.11g	54 Mbps	1/11	TX
	802.11n HT20	72 Mbps	1/11	TX
	802.11n HT40	150 Mbps	3/6/9	TX
Band Emissions	802.11b	11 Mbps	1/6/11	TX
	802.11g	54 Mbps	1/6/11	TX
	802.11n HT20	72 Mbps	1/6/11	TX
	802.11n HT40	150 Mbps	3/6/9	TX
Transmitter Spurious Emissions	802.11b	11 Mbps	1/6/11	TX
	802.11g	54 Mbps	1/6/11	TX
	802.11n HT20	72 Mbps	1/6/11	TX
	802.11n HT40	150 Mbps	3/6/9	TX

Note :Parameters set by test software during channel & power tests,the software provided by the customer was used to set the operating channels as well as the output power level. The RF output power set is the power expected by the manufacturer and is going to be fixed on the firmware of the final product .

Table 2 Tests Carried Out Under FCC part 15.207 & FCC part 15.209

Test Item	Test Mode
Radiation Emission, 9KHz ~ 1GHz	Wifi Mode, Internet Mode
Conduction Emission, 0.15MHz to 30MHz	Wifi Mode

4.4 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A**

  Waltek Services(Shenzhen) Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A, July 12, 2012.

- **FCC – Registration No.: 880581**

  Waltek Services(Shenzhen) Co., Ltd. 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 880581, May 26, 2011.

4.5 Test Location

Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd.,Songgang Street, Baoan District, Shenzhen, China

4.6 General condition

Ambient Condition: 25.5 ℃ 58 %RH

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

The follow condition is applicable for adapter:

Test Voltage	Input voltage (Adapter)
Rated voltage-15%	AC 102V
normal	AC 120V
Rated voltage+15%	AC 138V

The follow condition is not applicable.

Test voltage	Test Voltage
Rated voltage	DC V

5 Equipment Used during Test

5.1 Equipments List

Conducted Emissions						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	100947	Aug. 13,2012	Aug. 12,2013
2.	LISN	R&S	ENV216	101215	Aug. 13,2012	Aug. 12,2013
3.	Cable	Top	TYPE16(3.5M)	-	Aug.14,2012	Aug. 13,2013
3m Semi-anechoic Chamber for Radiation Emissions						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMC Analyzer	Agilent	E7405A	MY45114943	Aug. 13,2012	Aug. 12,2013
2.	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Aug. 13,2012	Aug. 12,2013
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr. 20,2013	Apr. 19,2014
4.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr. 20,2013	Apr. 19,2014
5.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	399	Aug. 13,2012	Aug. 12,2013
6.	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Apr.07,2013	Apr.06,2014
7.	Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-148	Aug. 13,2012	Aug. 12,2013
8.	Cable	Top	EWO2014-7	-	Apr. 20,2013	Apr. 19,2014
9.	Cable	Top	TYPE16(13M)	-	Aug. 13,2012	Aug. 12,2013
Associated Equipment						
1	Monitor	Rdi	M420C	-		

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	± 1 x 10^{-6}
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (Bilog antenna 30M~1000MHz)
	± 4.74 dB (Horn antenna 1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

6 Conducted Emission

Test Requirement:	FCC CFR 47 Part 15 Section 15.207
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dBμV between 0.15MHz & 0.5MHz 56 dBμV between 0.5MHz & 5MHz 60 dBμV between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 E.U.T. Operation

Operating Environment:

Temperature: 25.5 °C
Humidity: 51 % RH
Atmospheric Pressure: 1010 mbar

EUT Operation:

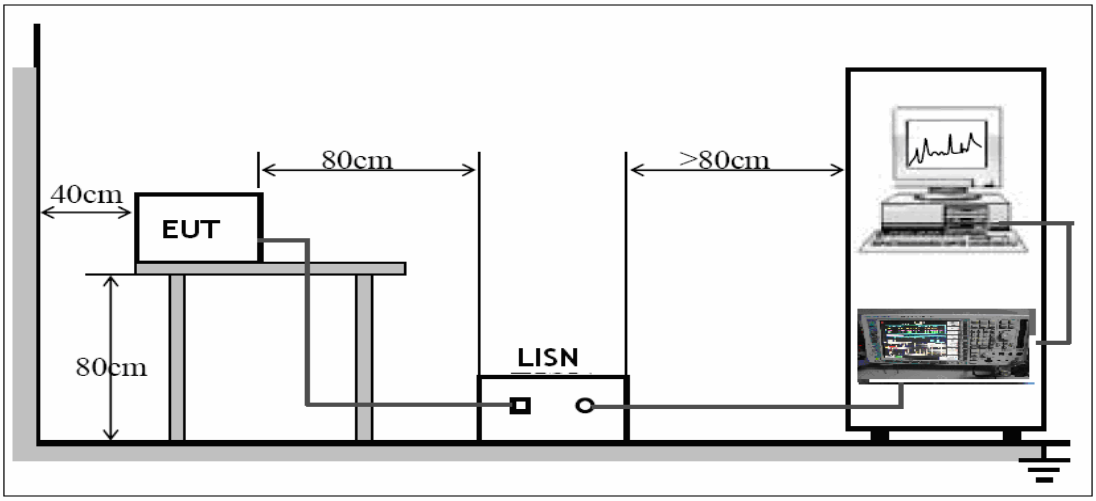
The EUT was tested in wifi mode(with Monitor M420C),the data were shown as follow.

The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003.

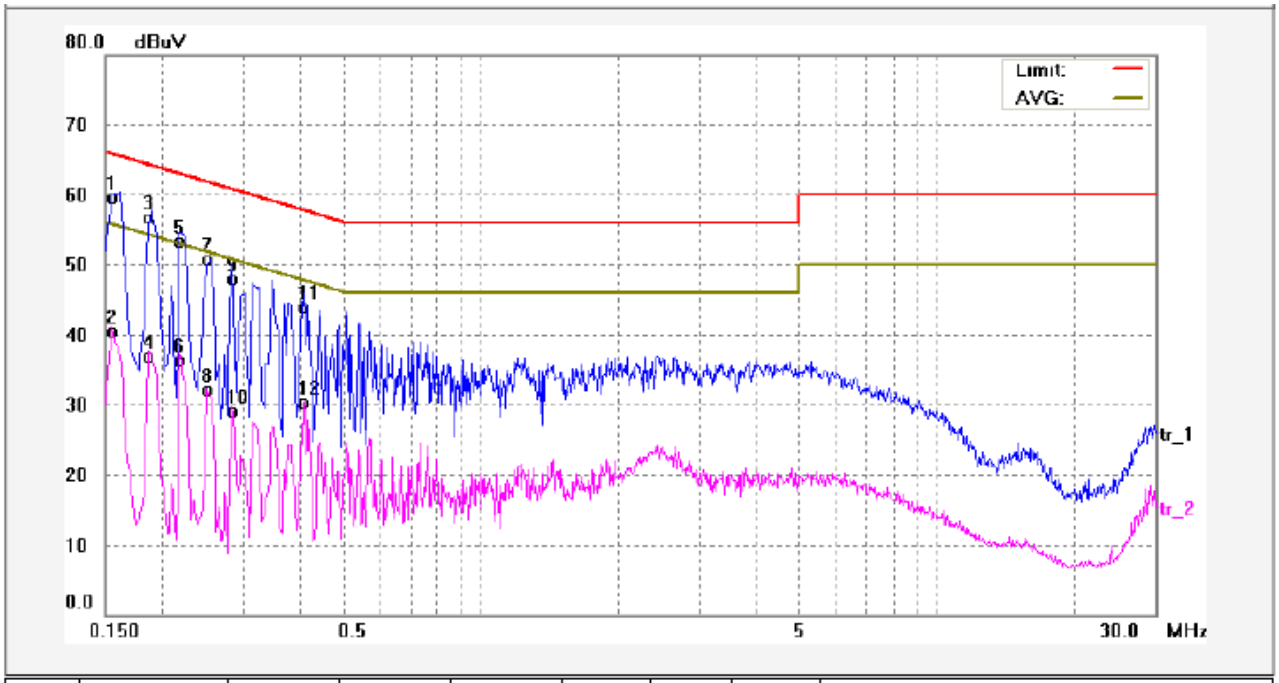


6.3 Conducted Emission Test Result

An initial pre-scan was performed on the live and neutral lines.

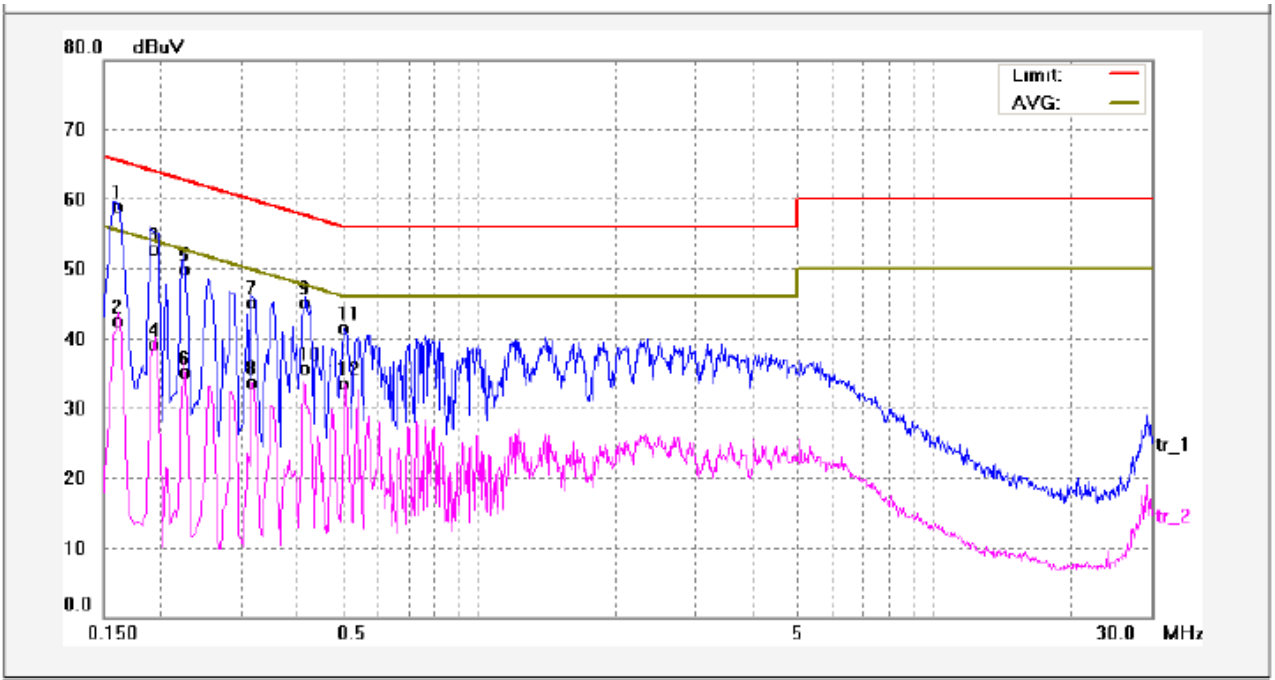
Test Mode: Wifi Mode

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1539	48.91	9.80	58.71	65.78	-7.07	QP	
2	0.1539	29.91	9.80	39.71	55.78	-16.07	AVG	
3	0.1860	46.07	9.83	55.90	64.21	-8.31	QP	
4	0.1860	26.33	9.83	36.16	54.21	-18.05	AVG	
5	0.2180	42.64	9.85	52.49	62.89	-10.40	QP	
6	0.2180	25.75	9.85	35.60	52.89	-17.29	AVG	
7	0.2500	40.05	9.85	49.90	61.75	-11.85	QP	
8	0.2500	21.44	9.85	31.29	51.75	-20.46	AVG	
9	0.2860	37.15	9.87	47.02	60.64	-13.62	QP	
10	0.2860	18.38	9.87	28.25	50.64	-22.39	AVG	
11	0.4100	33.16	9.90	43.06	57.65	-14.59	QP	
12	0.4100	19.70	9.90	29.60	47.65	-18.05	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1620	48.32	9.81	58.13	65.36	-7.23	QP	
2	0.1620	31.84	9.81	41.65	55.36	-13.71	AVG	
3	0.1940	42.16	9.84	52.00	63.86	-11.86	QP	
4	0.1940	28.38	9.84	38.22	53.86	-15.64	AVG	
5	0.2260	39.34	9.85	49.19	62.59	-13.40	QP	
6	0.2260	24.43	9.85	34.28	52.59	-18.31	AVG	
7	0.3180	34.34	9.88	44.22	59.76	-15.54	QP	
8	0.3180	23.05	9.88	32.93	49.76	-16.83	AVG	
9	0.4140	34.32	9.90	44.22	57.57	-13.35	QP	
10	0.4140	24.98	9.90	34.88	47.57	-12.69	AVG	
11	0.5100	30.85	9.93	40.78	56.00	-15.22	QP	
12	0.5100	22.72	9.93	32.65	46.00	-13.35	AVG	

7 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: ANSI C63.4:2003

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

7.1 EUT Operation :

Operating Environment:

Temperature: 25.5 °C

Humidity: 51 % RH

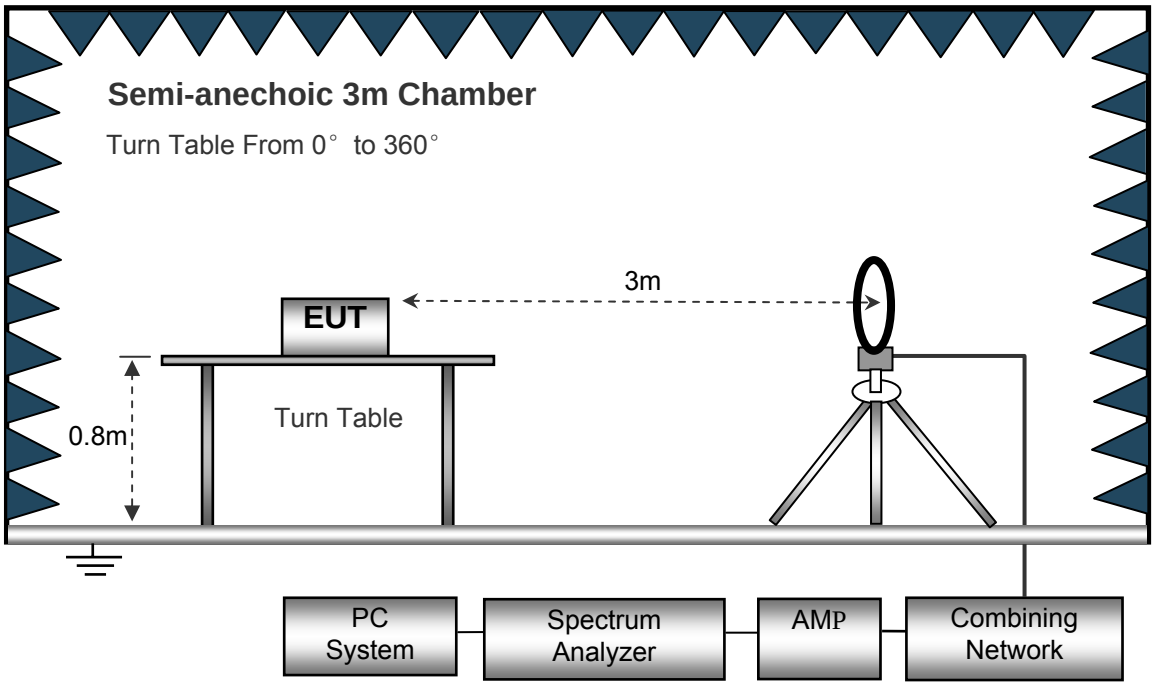
Atmospheric Pressure:1012 mbar

EUT Operation:

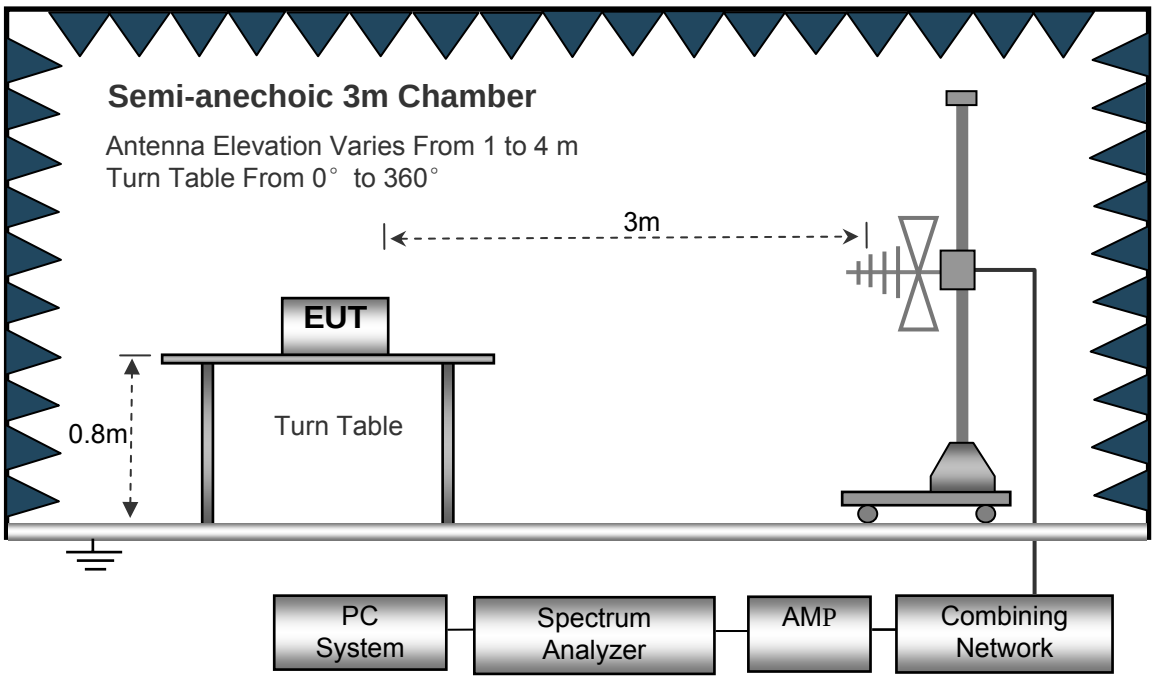
The pre-test was performed in wifi(with Monitor M420C), the data were shown as follow.

7.2 Test Setup

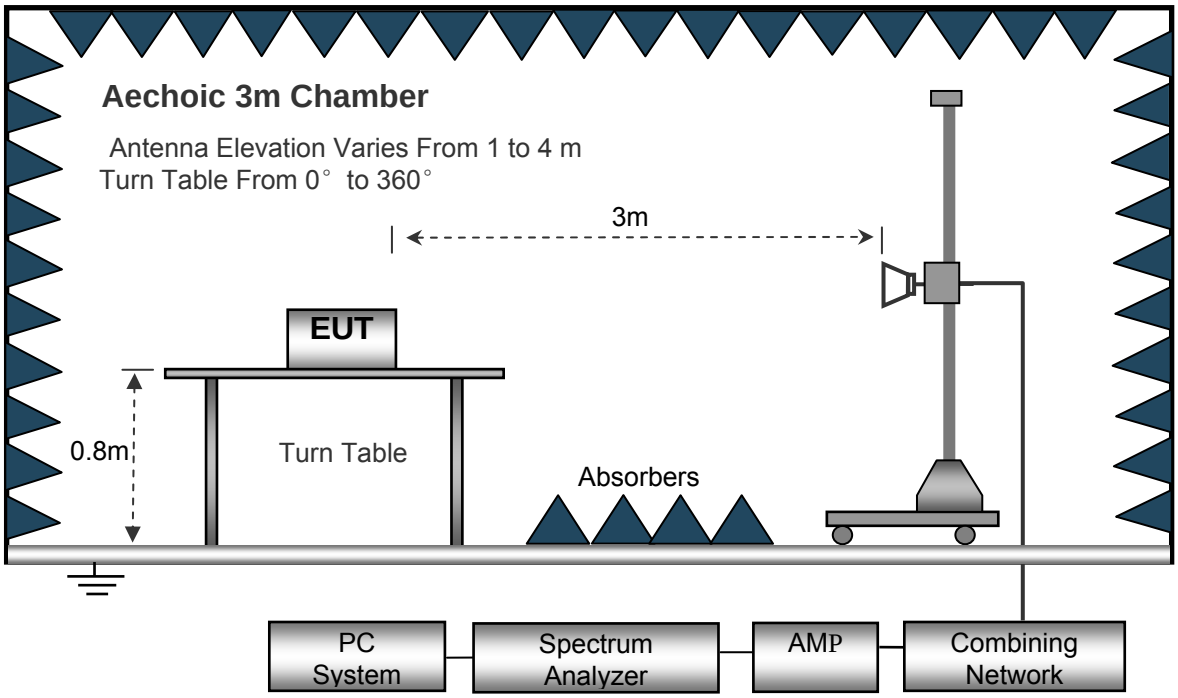
The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4: 2003.
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



7.3 Spectrum Analyzer Setup

According to FCC Part15 Rules, the system was tested from 9KHz to 25000MHz.

Below 30MHz

Sweep Speed .....Auto
IF Bandwidth.....10KHz
Video Bandwidth.....10KHz
Resolution Bandwidth.....10KHz

30MHz ~ 1GHz

Sweep Speed .....Auto
IF Bandwidth.....120 KHz
Video Bandwidth.....100KHz
Quasi-Peak Adapter Bandwidth .....120 KHz
Quasi-Peak Adapter Mode .....Normal
Resolution Bandwidth.....100KHz

Above 1GHz

Sweep Speed .....Auto
IF Bandwidth.....120 KHz
Video Bandwidth.....3MHz
Quasi-Peak Adapter Bandwidth .....120 KHz
Quasi-Peak Adapter Mode .....Normal
Resolution Bandwidth.....1MHz

7.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in X axis,so the worst data were shown as follow.

7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit

7.6 Summary of Test Results

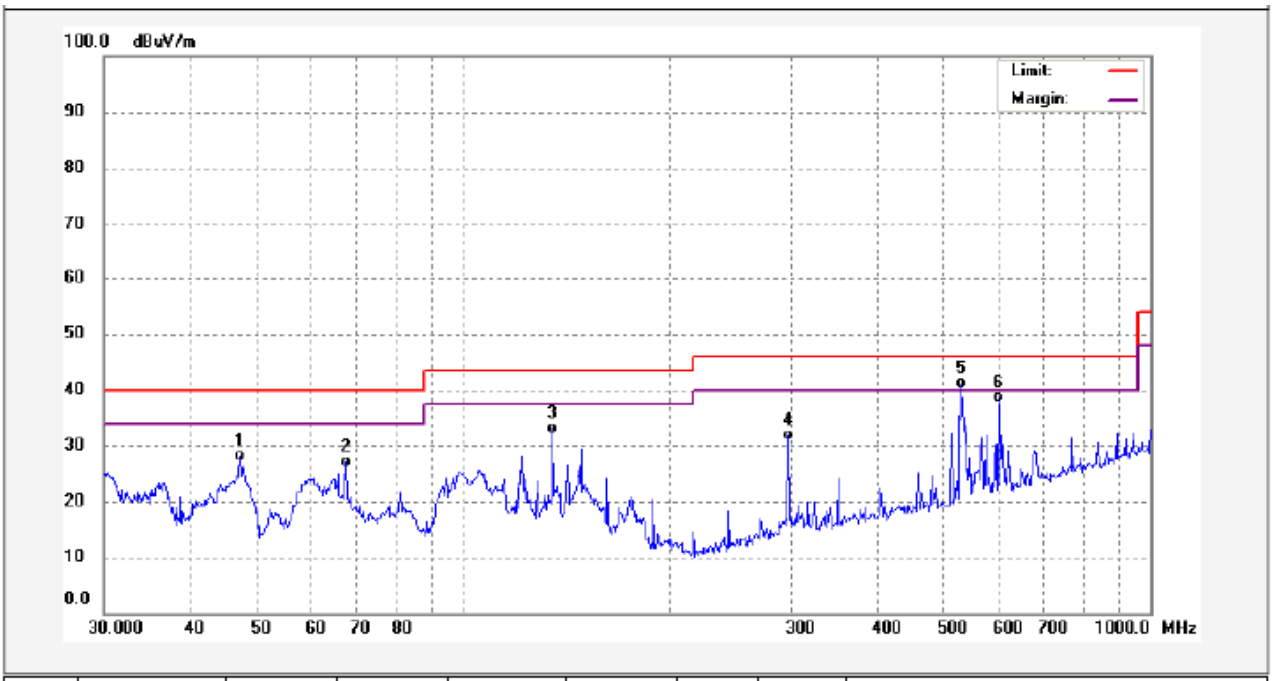
Test Frequency : Below 30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency : 30MHz ~ 1000MHz

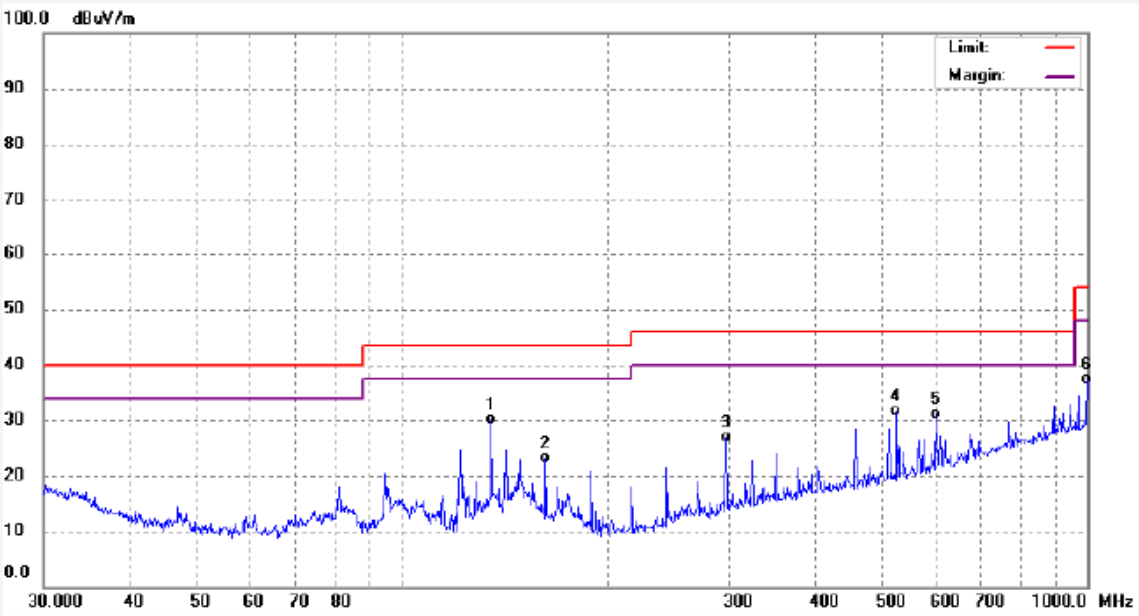
Test Worst Mode: Wifi Mode

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	47.3255	50.59	-22.54	28.05	40.00	-11.95	QP	
2	67.4382	50.42	-23.23	27.19	40.00	-12.81	QP	
3	135.0319	54.95	-21.92	33.03	43.50	-10.47	QP	
4	297.2241	51.71	-19.76	31.95	46.00	-14.05	QP	
5	530.1014	54.71	-13.48	41.23	46.00	-4.77	QP	
6	601.4265	50.06	-11.41	38.65	46.00	-7.35	QP	

Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	135.0319	51.81	-21.72	30.09	43.50	-13.41	QP	
2	162.0414	43.95	-20.80	23.15	43.50	-20.35	QP	
3	297.2241	46.70	-19.74	26.96	46.00	-19.04	QP	
4	526.3967	45.45	-13.74	31.71	46.00	-14.29	QP	
5	601.4265	42.60	-11.42	31.18	46.00	-14.82	QP	
6	1000.0000	41.42	-4.01	37.41	54.00	-16.59	QP	

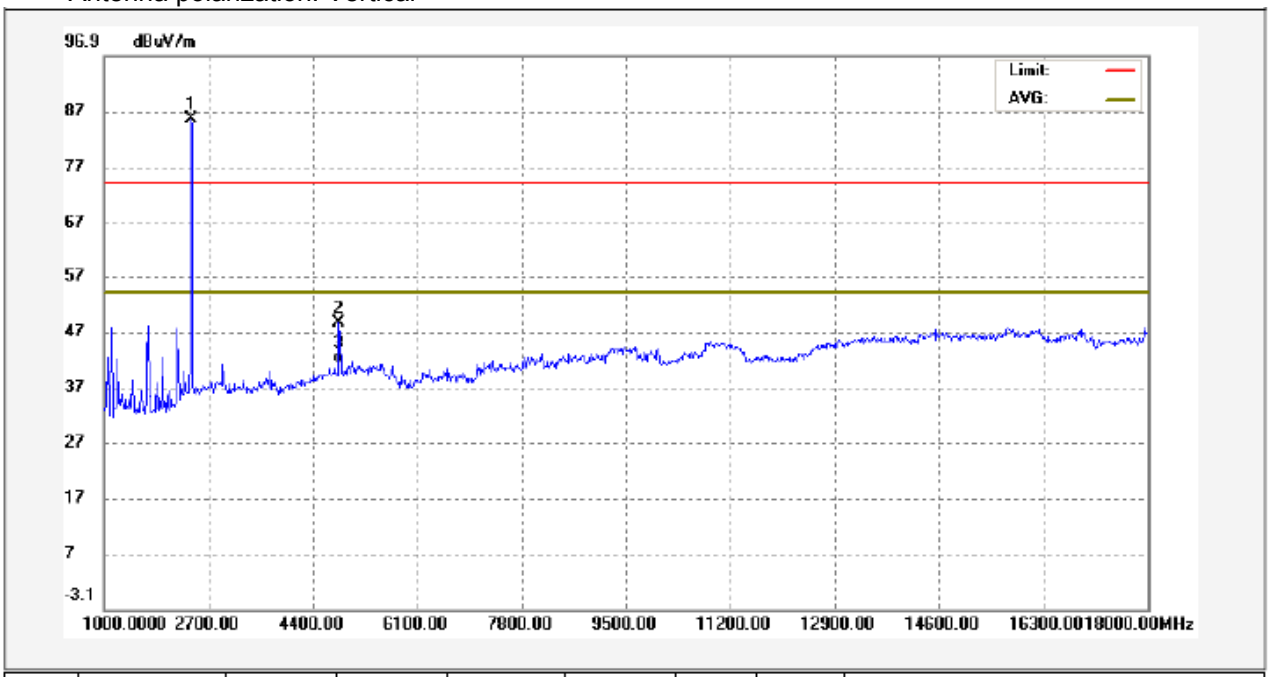
Test Frequency: From 1GHz -18GHz

The pre-test was performed at TX 11b, TX 11g, TX 11n HT20 and TX 11n HT40 mode, the data were shown as follow.

Test mode: Continuously Transmit

Modulation:TX 11b, Test Channel: 2412MHz

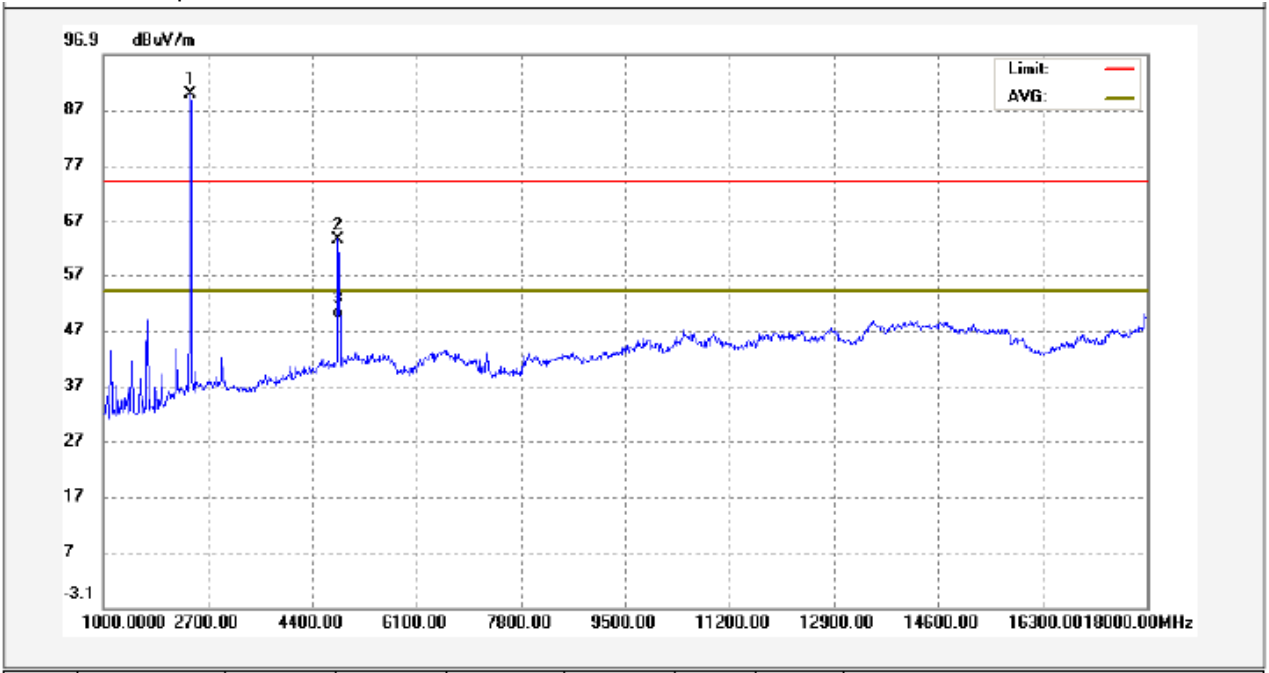
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2412.000	94.84	-9.29	85.55	74.00	11.55	peak	
2	4824.000	51.71	-3.14	48.57	74.00	-25.43	peak	
3	4824.000	45.32	-3.14	42.18	54.00	-11.82	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

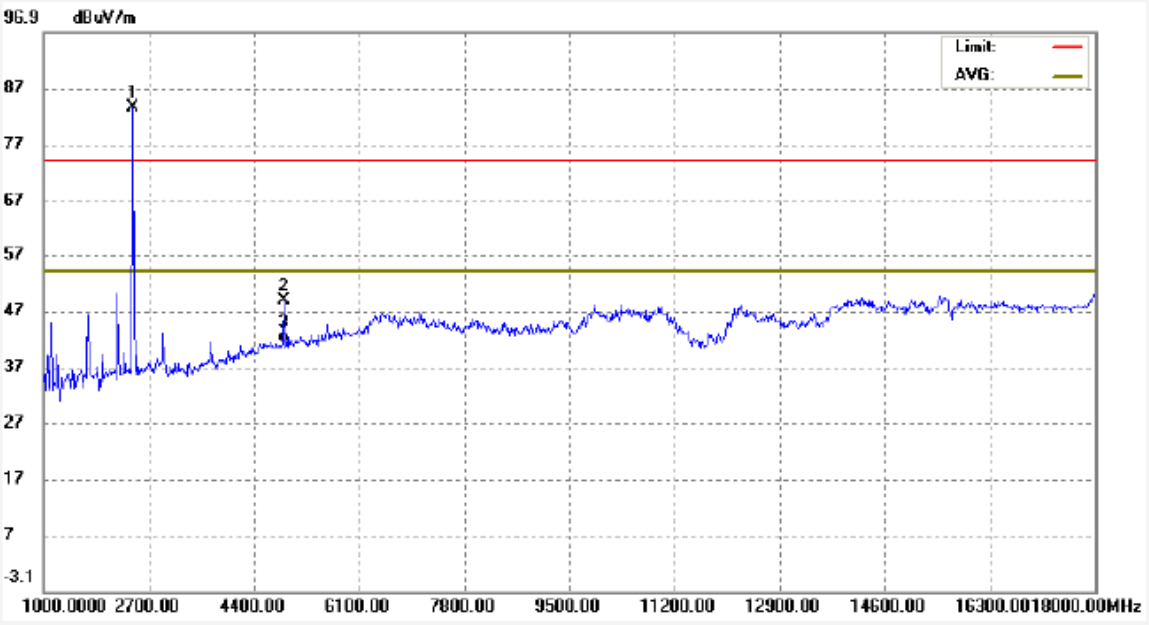


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2412.000	99.19	-9.29	89.90	74.00	15.90	peak	
2	4824.000	66.79	-3.14	63.65	74.00	-10.35	peak	
3	4824.000	53.26	-3.14	50.12	54.00	-3.88	AVG	

Remark:the marker 1 is the fundamental

Modulation:TX 11b, Test Channel: 2437MHz

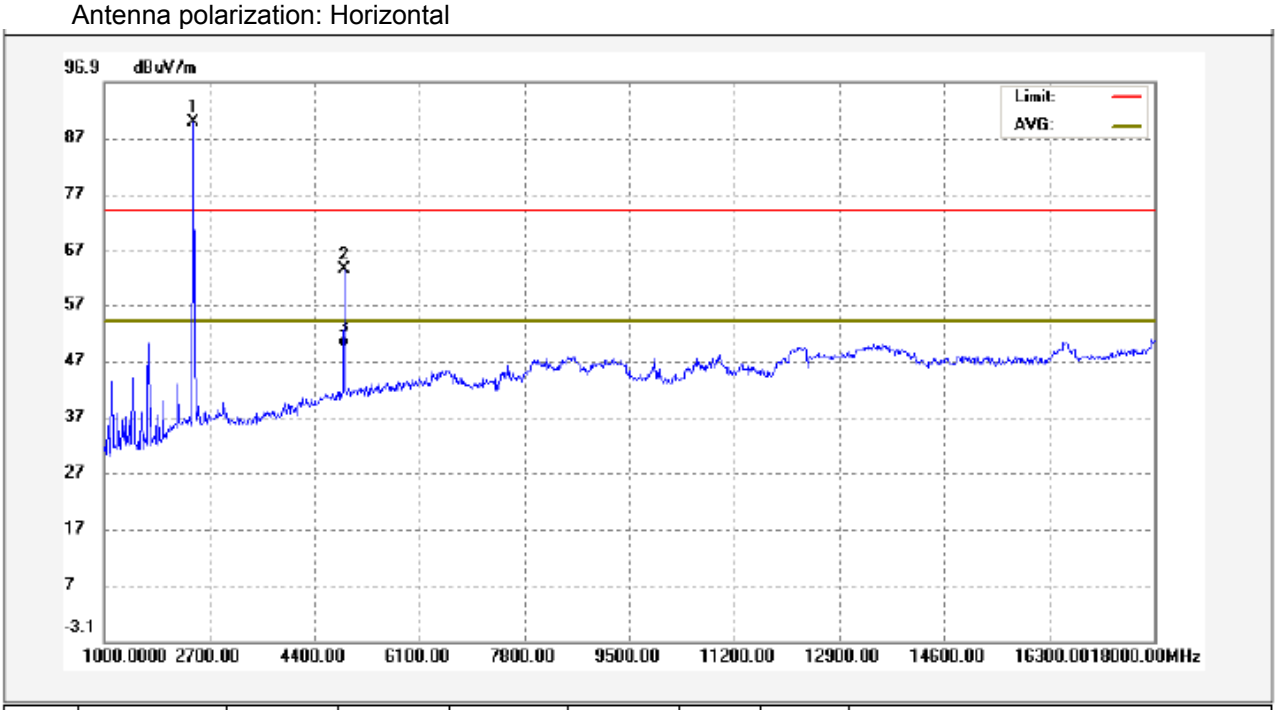
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2437.000	92.86	-9.31	83.55	74.00	9.55	peak	
2	4874.000	51.93	-3.06	48.87	74.00	-25.13	peak	
3	4874.000	45.26	-3.06	42.20	54.00	-11.80	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

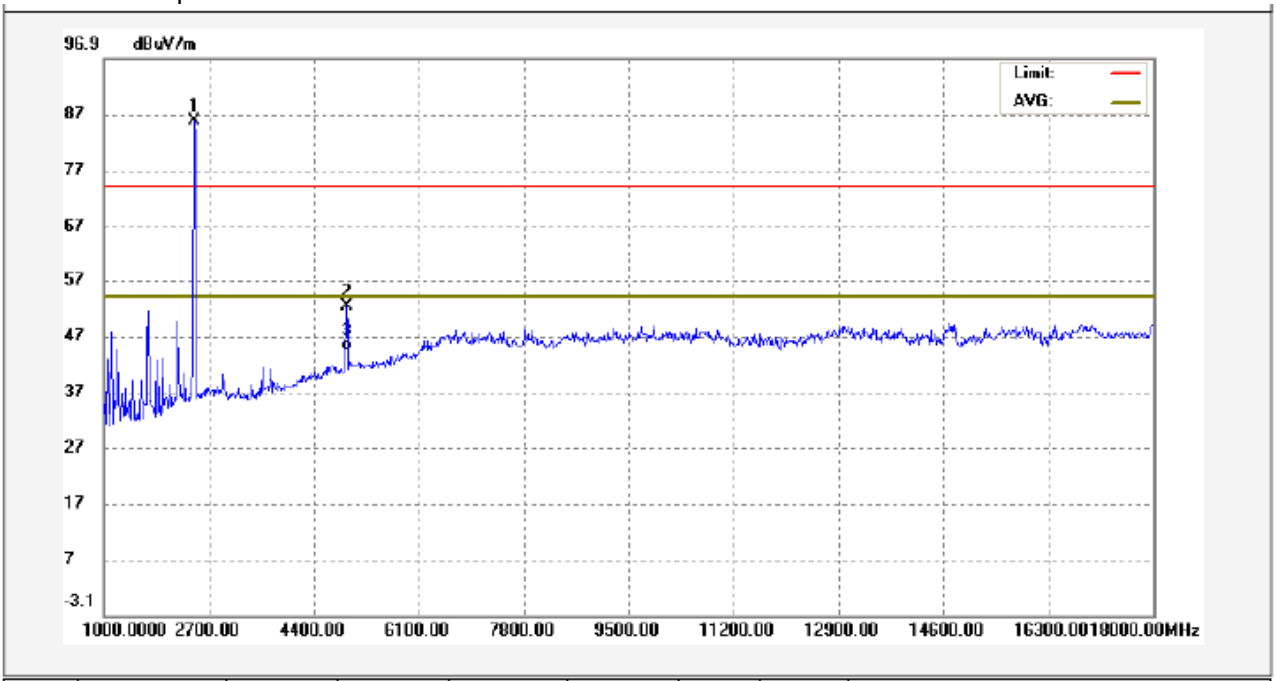


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2437.000	99.15	-9.31	89.84	74.00	15.84	peak	
2	4874.000	66.64	-3.06	63.58	74.00	-10.42	peak	
3	4874.000	53.27	-3.06	50.21	54.00	-3.79	AVG	

Remark:the marker 1 is the fundamental

Modulation:TX 11b, Test Channel: 2462MHz

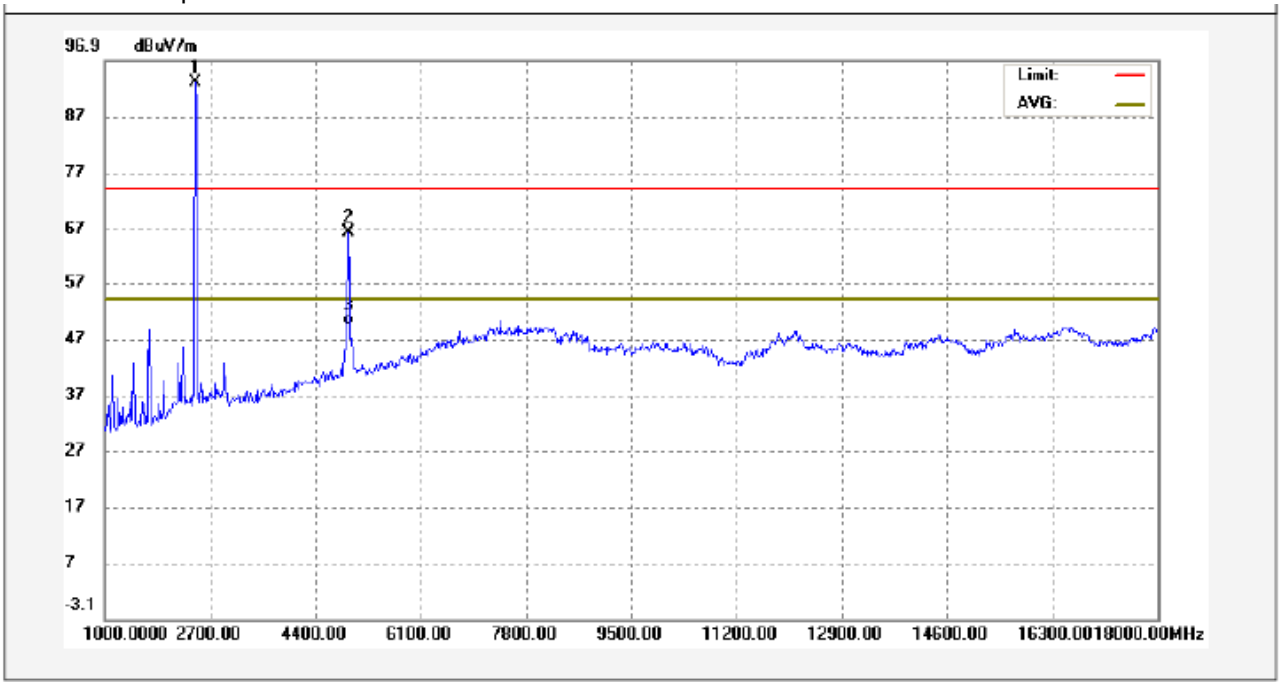
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.000	95.05	-9.28	85.77	74.00	11.77	peak	
2	4924.000	55.28	-2.91	52.37	74.00	-21.63	peak	
3	4924.000	48.26	-2.91	45.35	54.00	-8.65	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

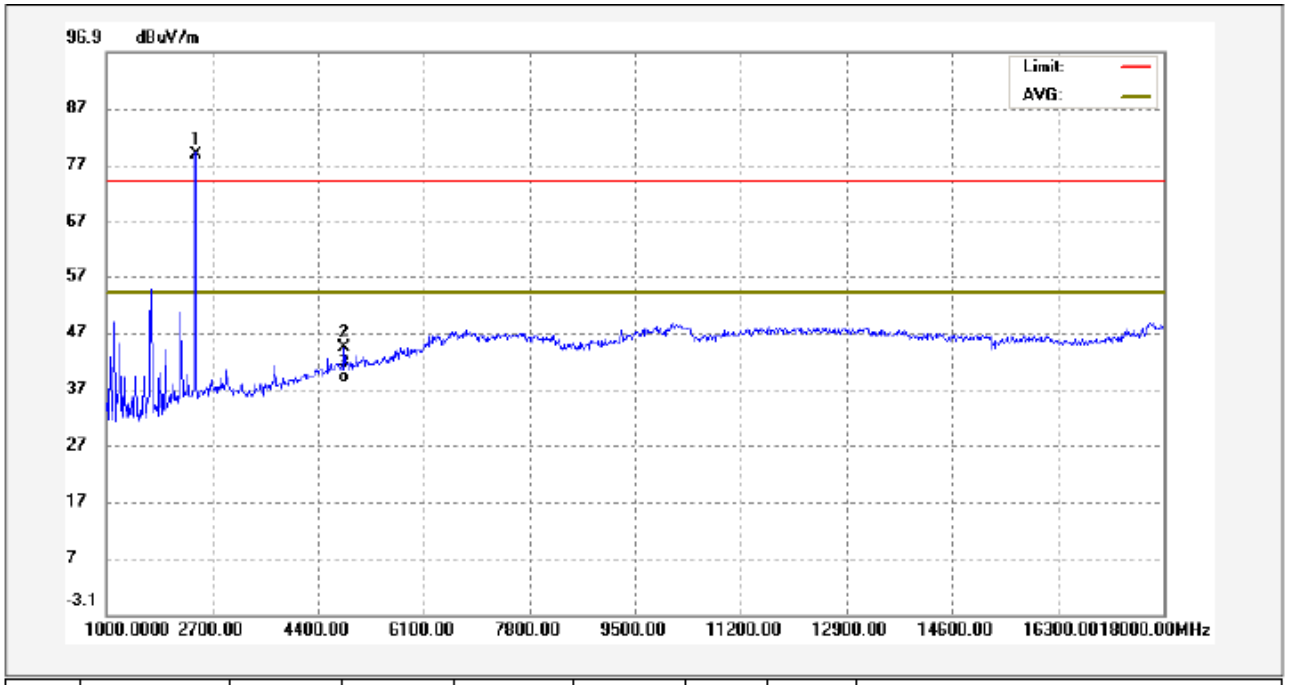


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.000	102.40	-9.28	93.12	74.00	19.12	peak	
2	4924.000	69.20	-2.91	66.29	74.00	-7.71	peak	
3	4924.000	53.24	-2.91	50.33	54.00	-3.67	AVG	

Remark:the marker 1 is the fundamental

Modulation:TX 11g Test Channel: 2412MHz

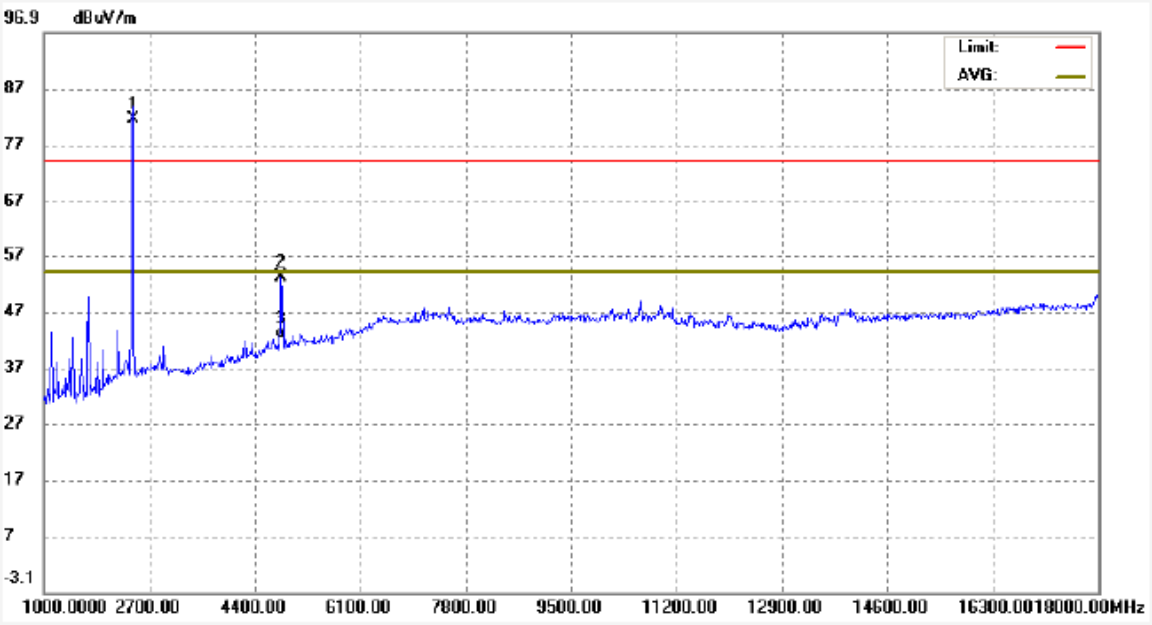
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2412.000	88.02	-9.29	78.73	74.00	4.73	peak	
2	4824.000	47.47	-3.14	44.33	74.00	-29.67	peak	
3	4824.000	42.12	-3.14	38.98	54.00	-15.02	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

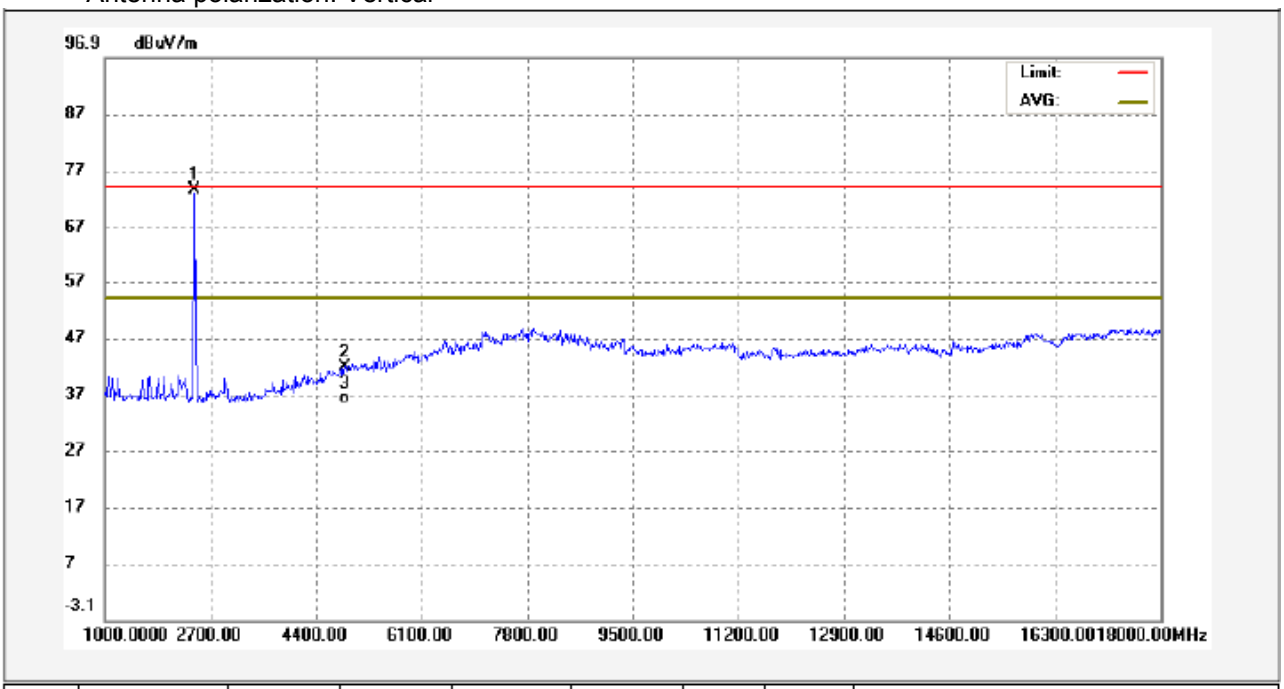


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2412.000	90.78	-9.29	81.49	74.00	7.49	peak	
2	4824.000	56.13	-3.14	52.99	74.00	-21.01	peak	
3	4824.000	46.25	-3.14	43.11	54.00	-10.89	AVG	

Remark:the marker 1 is the fundamental

Modulation:TX 11g Test Channel: 2437MHz

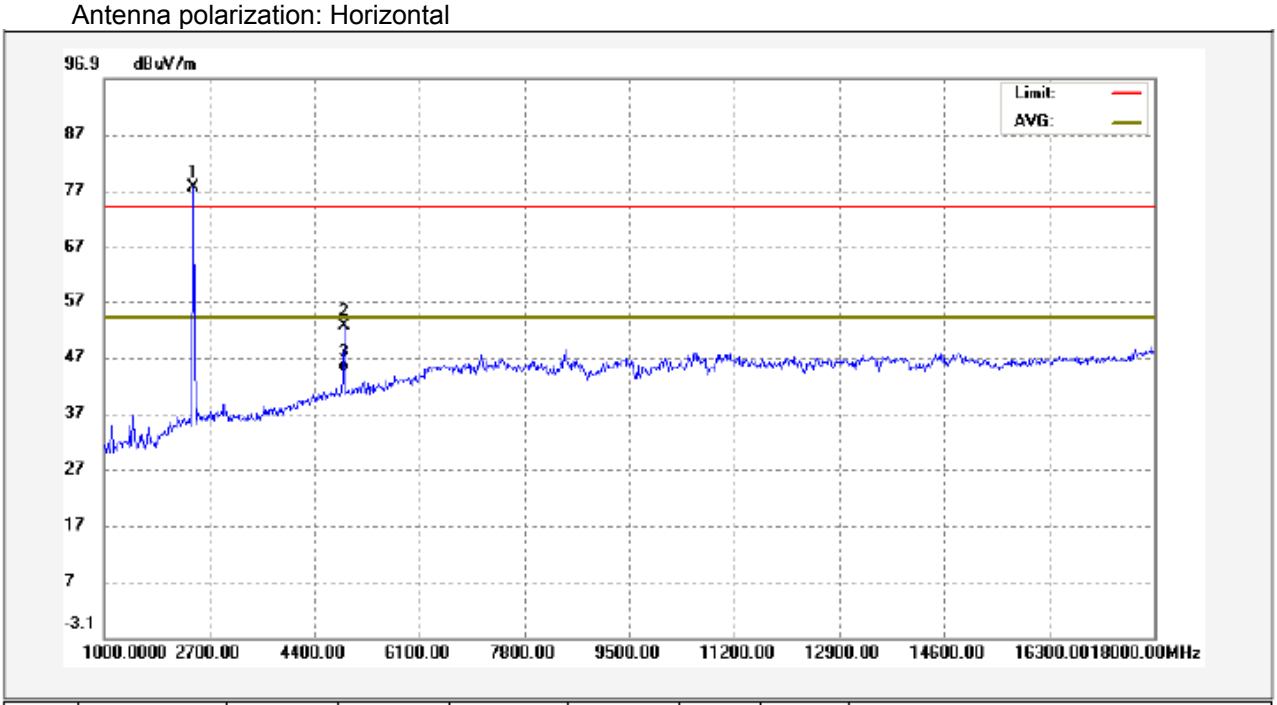
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2437.000	82.84	-9.31	73.53	74.00	-0.47	peak	
2	4874.000	44.94	-3.06	41.88	74.00	-32.12	peak	
3	4874.000	39.25	-3.06	36.19	54.00	-17.81	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

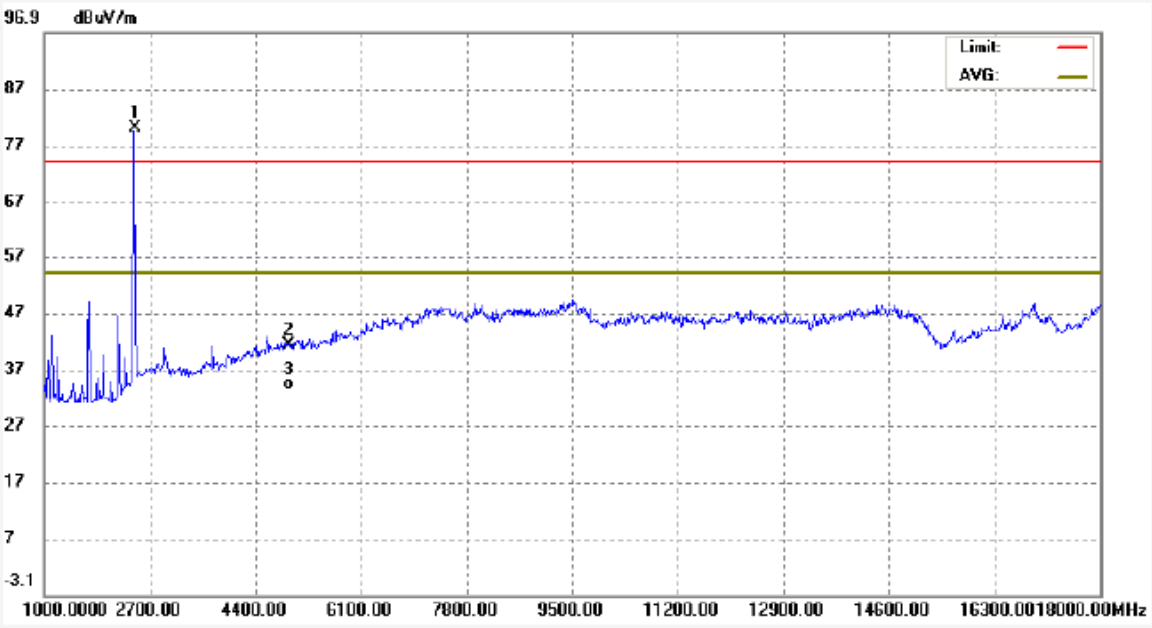


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2437.000	86.91	-9.31	77.60	74.00	3.60	peak	
2	4874.000	55.48	-3.06	52.42	74.00	-21.58	peak	
3	4874.000	48.24	-3.06	45.18	54.00	-8.82	AVG	

Remark:the marker 1 is the fundamental

Modulation:TX 11g Test Channel: 2462MHz

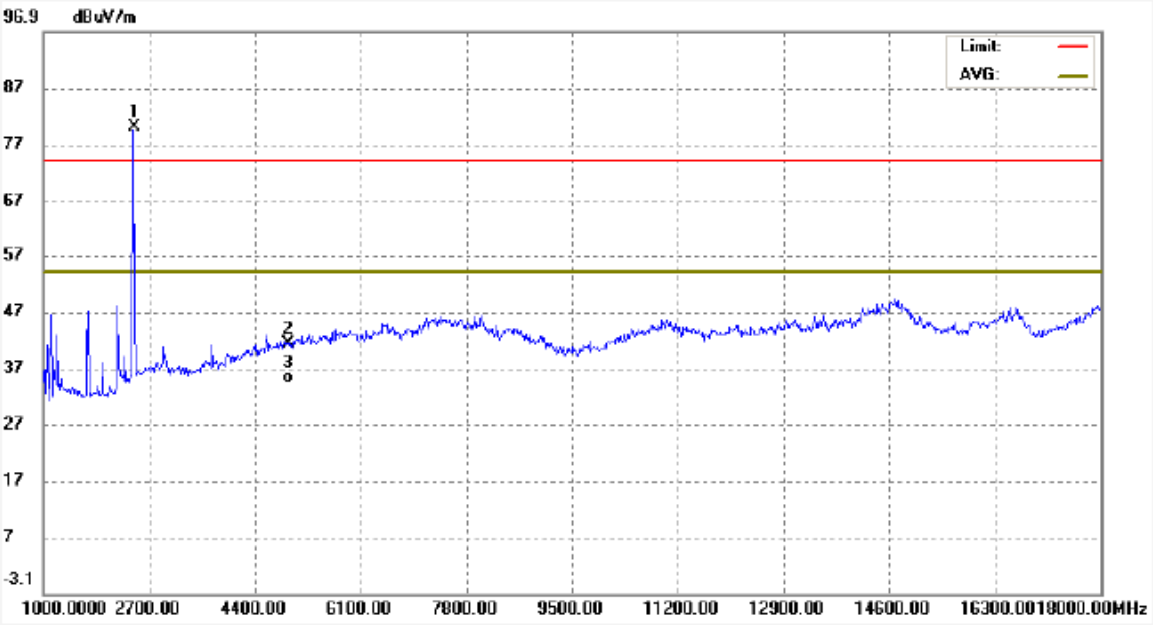
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.000	89.35	-9.28	80.07	74.00	6.07	peak	
2	4924.000	44.25	-2.91	41.34	74.00	-32.66	peak	
3	4924.000	37.24	-2.91	34.33	54.00	-19.67	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

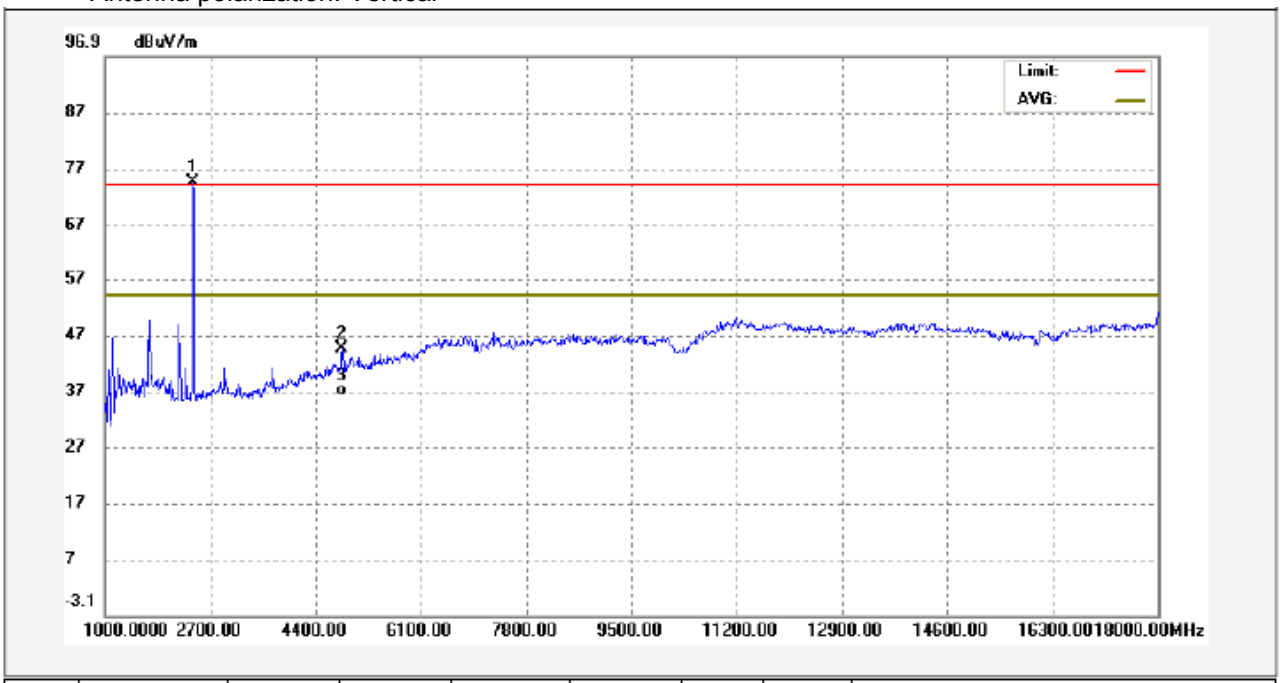


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.000	89.35	-9.28	80.07	74.00	6.07	peak	
2	4924.000	44.25	-2.91	41.34	74.00	-32.66	peak	
3	4924.000	38.26	-2.91	35.35	54.00	-18.65	AVG	

Remark:the marker 1 is the fundamental

Modulation:TX 11n HT20 Test Channel: 2412MHz

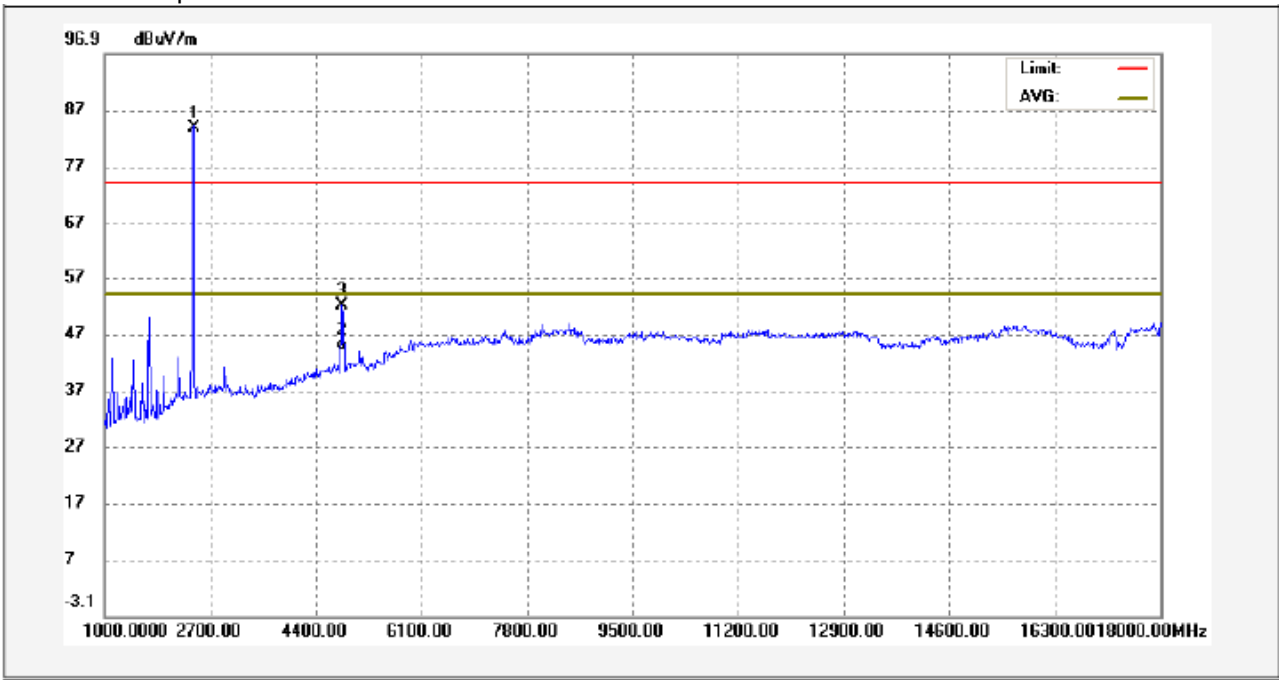
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2412.000	83.92	-9.29	74.63	74.00	0.63	peak	
2	4824.000	47.55	-3.14	44.41	74.00	-29.59	peak	
3	4824.000	40.20	-3.14	37.06	54.00	-16.94	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

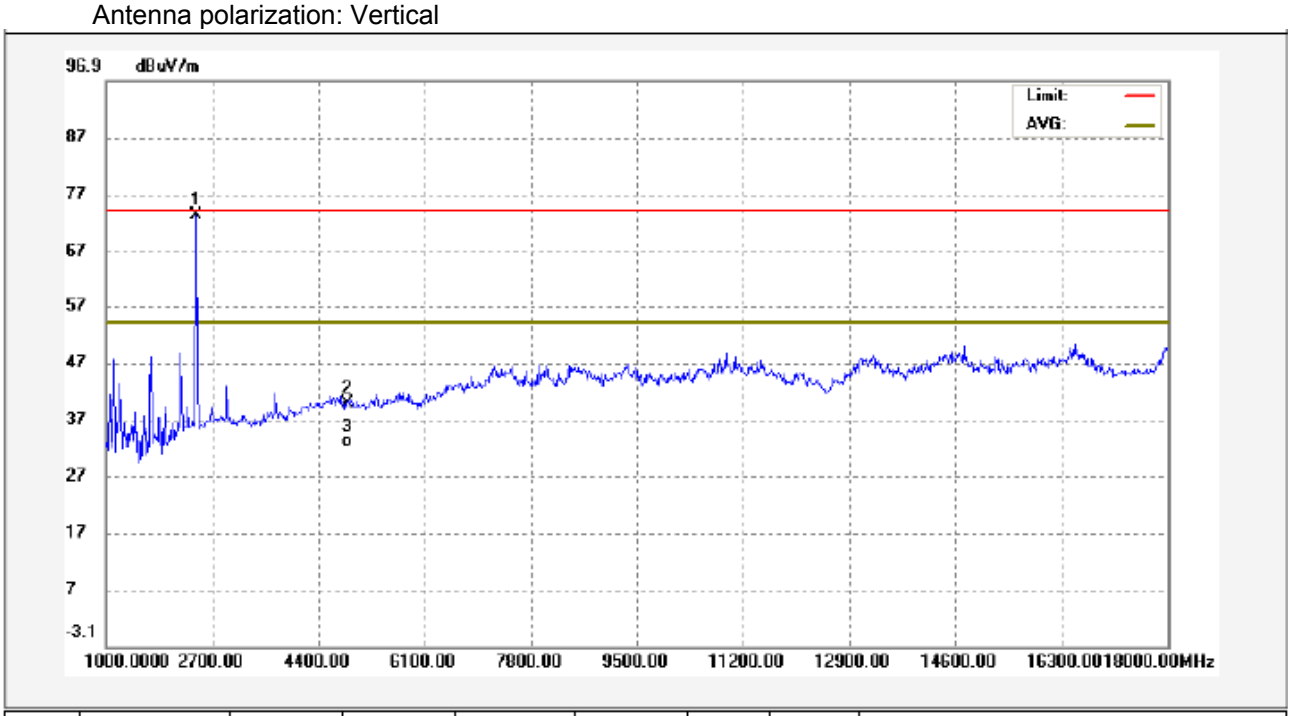


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2412.000	93.07	-9.29	83.78	74.00	9.78	peak	
2	4824.000	48.24	-3.14	45.10	54.00	-8.90	AVG	
3	4825.000	55.12	-3.14	51.98	74.00	-22.02	peak	

Remark:the marker 1 is the fundamental

Modulation:TX 11n HT20 Test Channel: 2437MHz

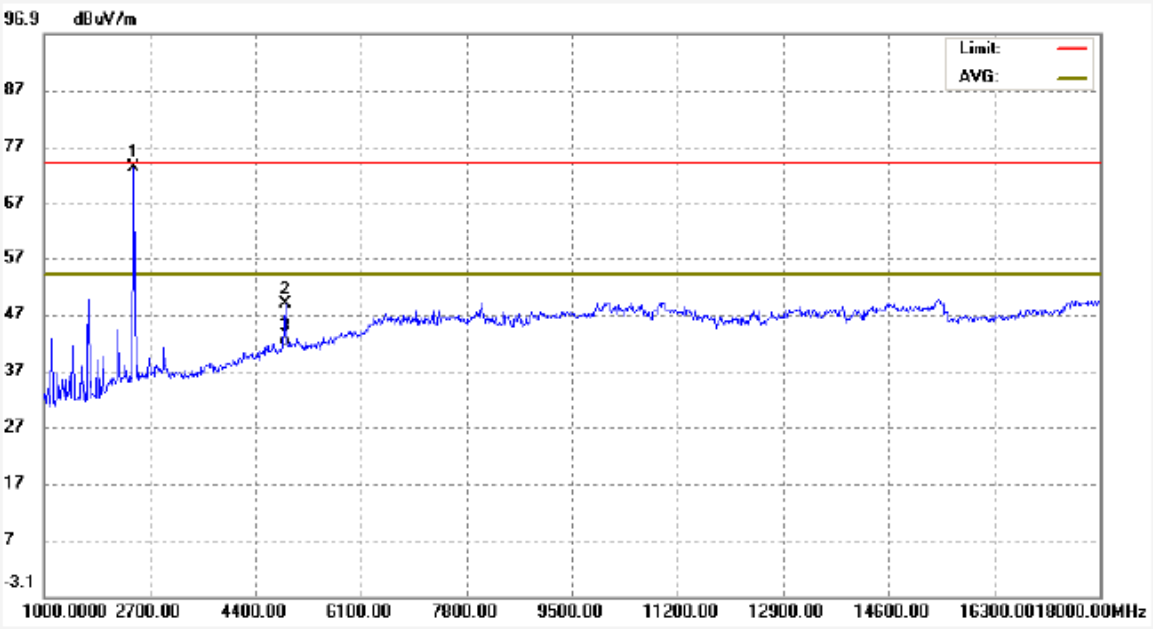
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2437.000	82.52	-9.31	73.21	74.00	-0.79	peak	
2	4874.000	42.93	-3.06	39.87	74.00	-34.13	peak	
3	4874.000	36.21	-3.06	33.15	54.00	-20.85	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

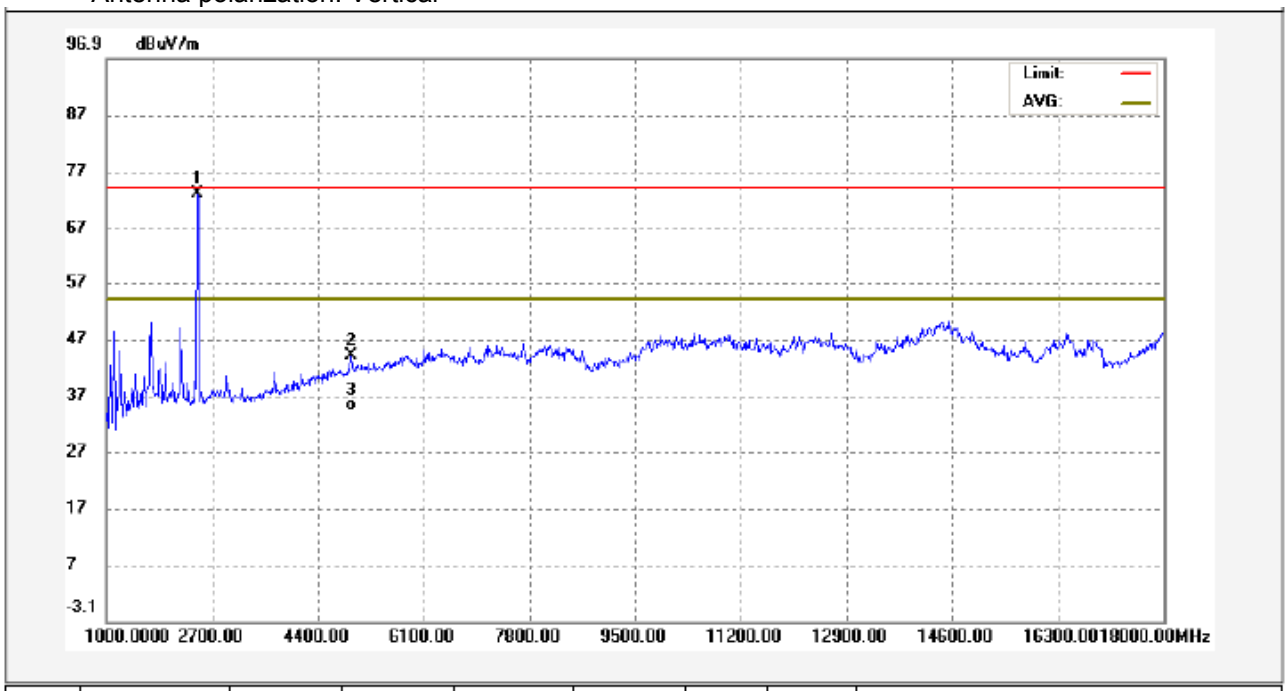


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2437.000	82.52	-9.31	73.21	74.00	-0.79	peak	
2	4874.000	51.85	-3.06	48.79	74.00	-25.21	peak	
3	4874.000	45.25	-3.06	42.19	54.00	-11.81	AVG	

Remark:the marker 1 is the fundamental

Modulation:TX 11n HT20 Test Channel: 2437MHz

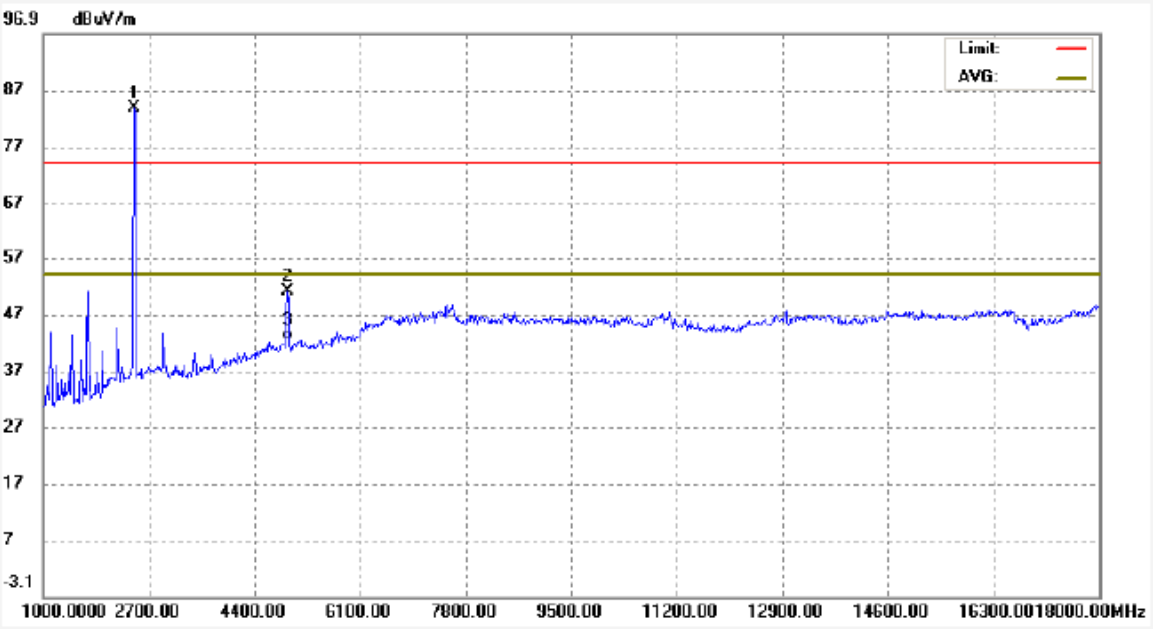
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.000	82.40	-9.28	73.12	74.00	-0.88	peak	
2	4924.000	46.98	-2.91	44.07	74.00	-29.93	peak	
3	4924.000	38.26	-2.91	35.35	54.00	-18.65	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

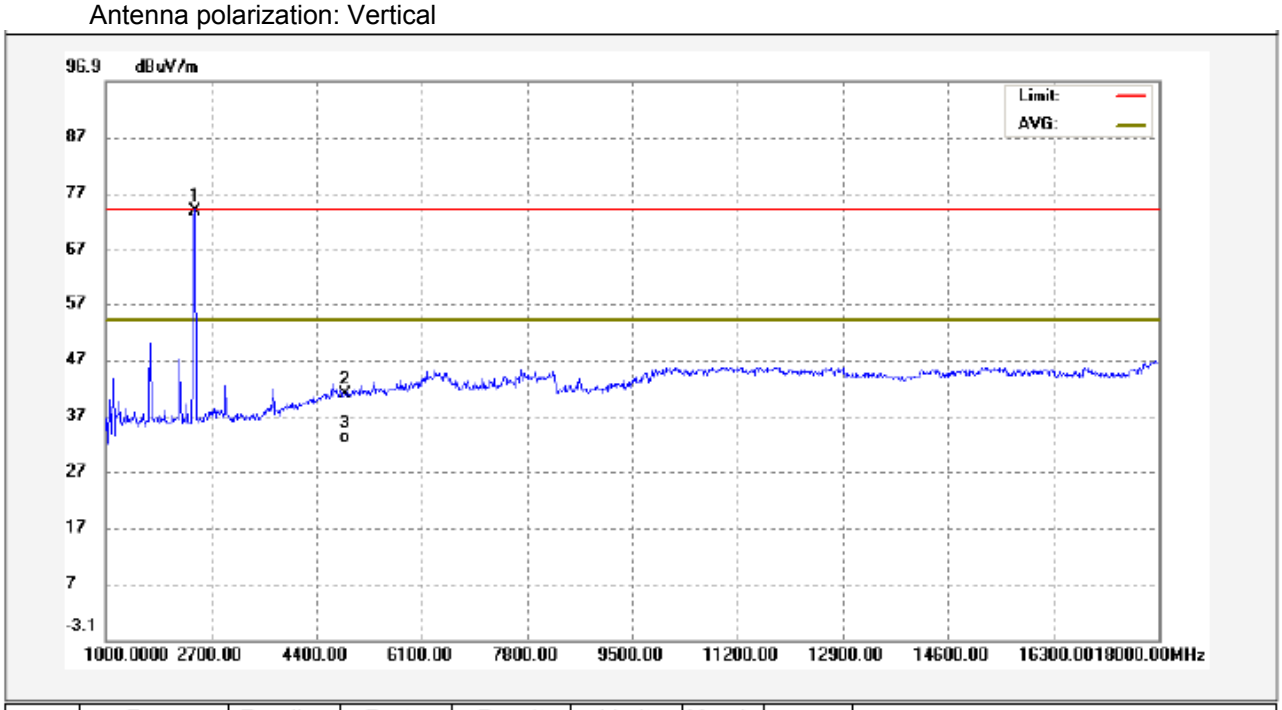


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.000	93.17	-9.28	83.89	74.00	9.89	peak	
2	4924.000	53.98	-2.91	51.07	74.00	-22.93	peak	
3	4924.000	46.21	-2.91	43.30	54.00	-10.70	AVG	

Remark:the marker 1 is the fundamental

Modulation:TX 11n HT40 Test Channel: 2422MHz

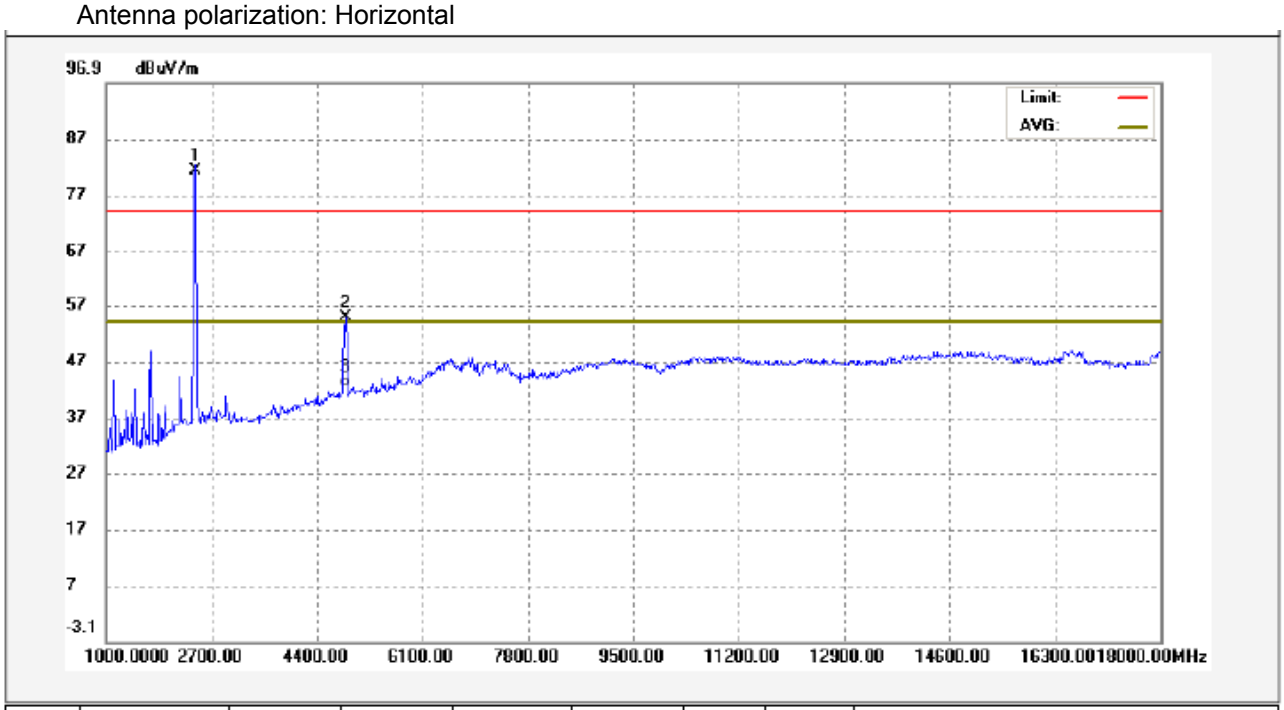
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2422.000	83.14	-9.30	73.84	74.00	-0.16	peak	
2	4844.000	43.84	-3.10	40.74	74.00	-33.26	peak	
3	4844.000	36.24	-3.10	33.14	54.00	-20.86	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

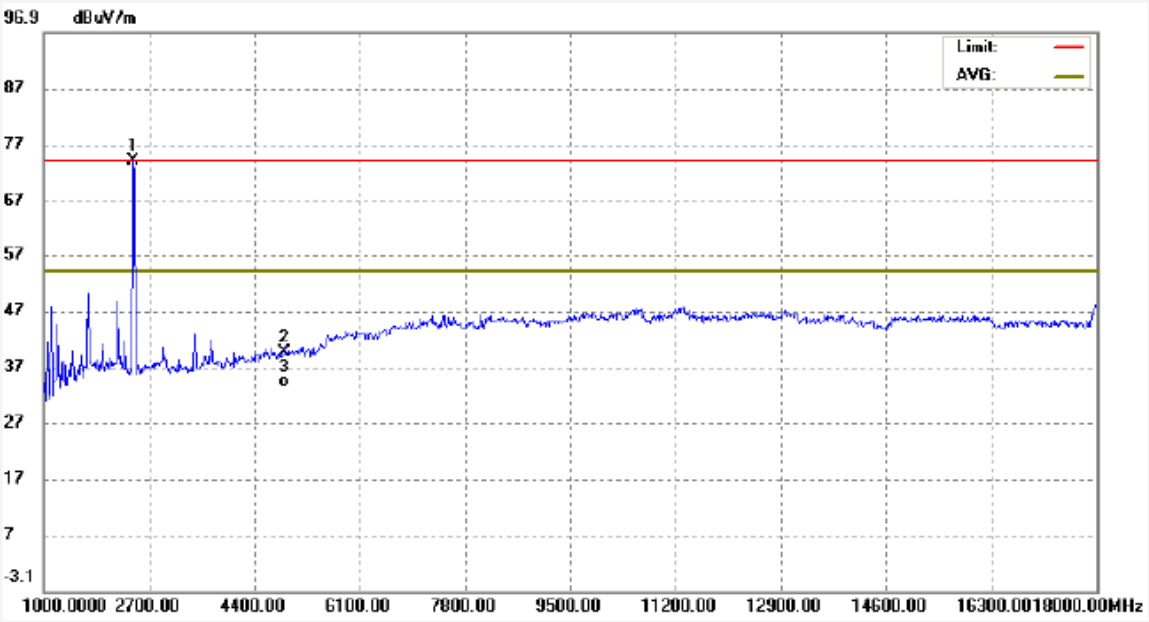


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2422.000	90.65	-9.30	81.35	74.00	7.35	peak	
2	4844.000	57.87	-3.10	54.77	74.00	-19.23	peak	
3	4844.000	46.26	-3.10	43.16	54.00	-10.84	AVG	

Remark:the marker 1 is the fundamental

Modulation:TX 11n HT40 Test Channel: 2437MHz

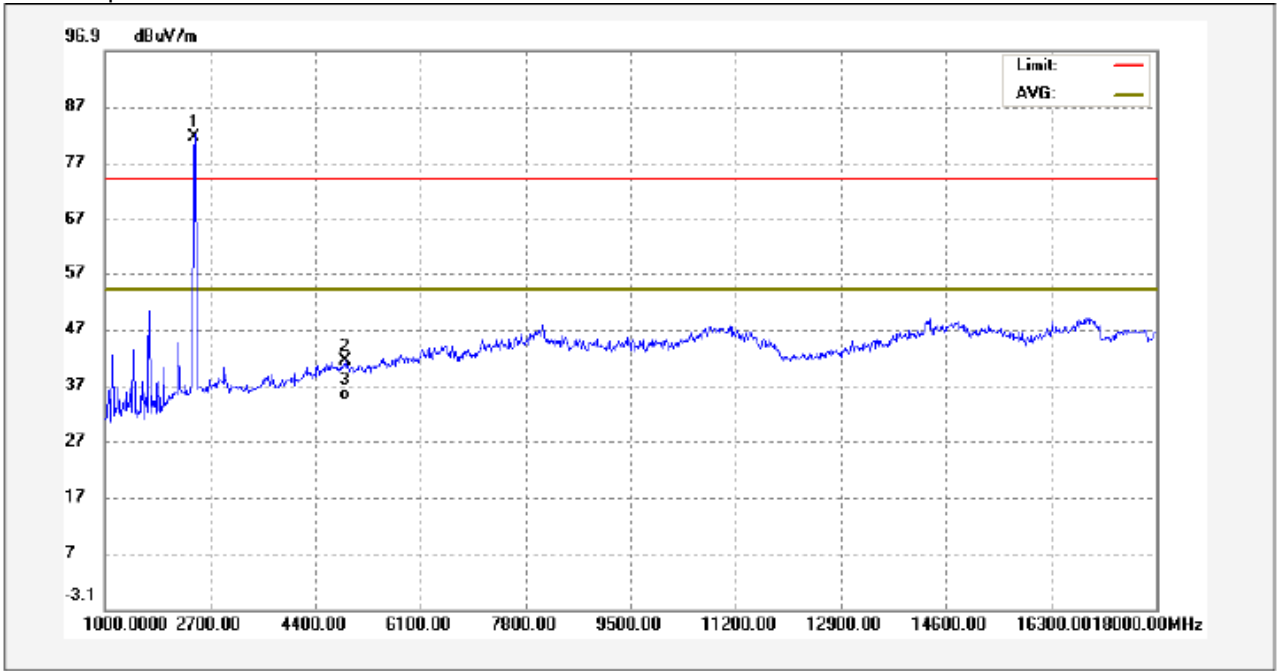
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2437.000	83.44	-9.31	74.13	74.00	0.13	peak	
2	4874.000	42.52	-3.06	39.46	74.00	-34.54	peak	
3	4874.000	37.28	-3.06	34.22	54.00	-19.78	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal

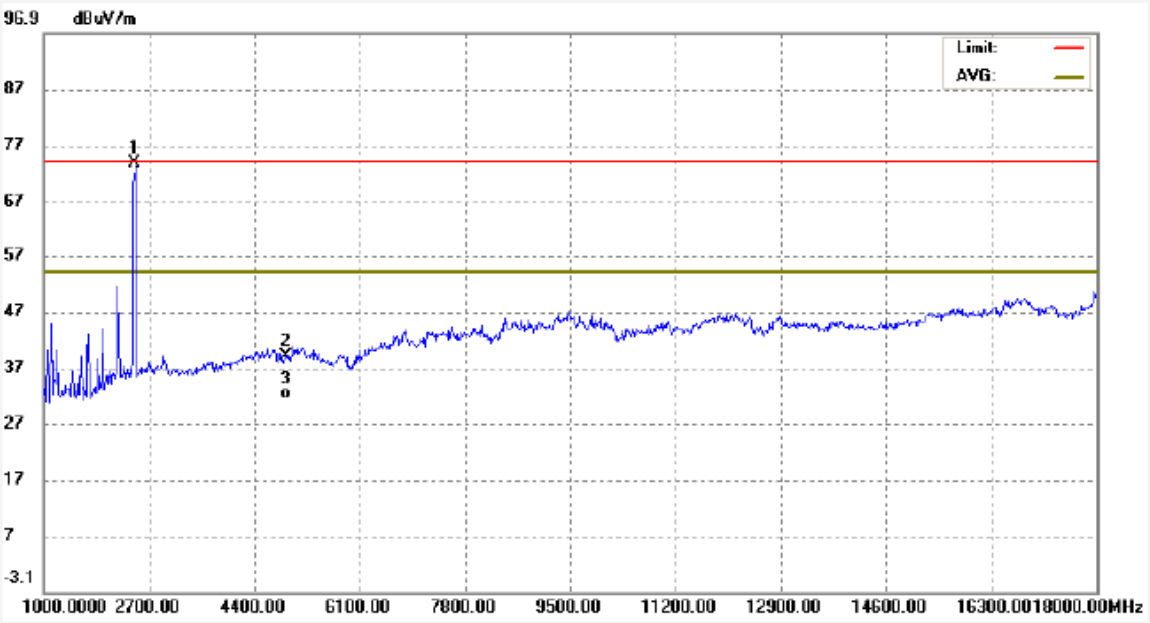


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2437.000	90.82	-9.31	81.51	74.00	7.51	peak	
2	4874.000	44.24	-3.06	41.18	74.00	-32.82	peak	
3	4874.000	38.26	-3.06	35.20	54.00	-18.80	AVG	

Remark:the marker 1 is the fundamental

Modulation:TX 11n HT40 Test Channel: 2452MHz

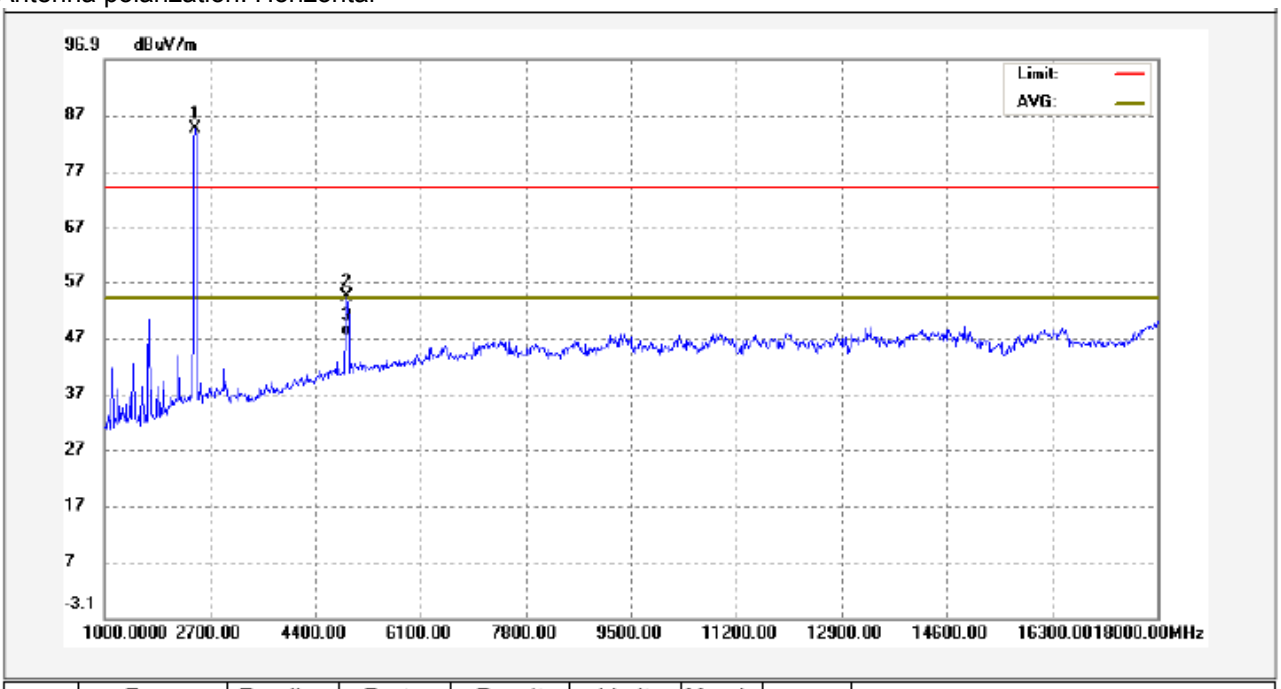
Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2452.000	83.07	-9.32	73.75	74.00	-0.25	peak	
2	4904.000	42.02	-2.97	39.05	74.00	-34.95	peak	
3	4904.000	35.24	-2.97	32.27	54.00	-21.73	AVG	

Remark:the marker 1 is the fundamental

Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2452.000	93.90	-9.32	84.58	74.00	10.58	peak	
2	4904.000	57.37	-2.97	54.40	74.00	-19.60	peak	
3	4904.000	51.29	-2.97	48.32	54.00	-5.68	AVG	

Remark:the marker 1 is the fundamental

Test Frequency: Above 18GHz

The measurements were more than 20 dB below the limit and not reported.

8 Band Edge Measurement

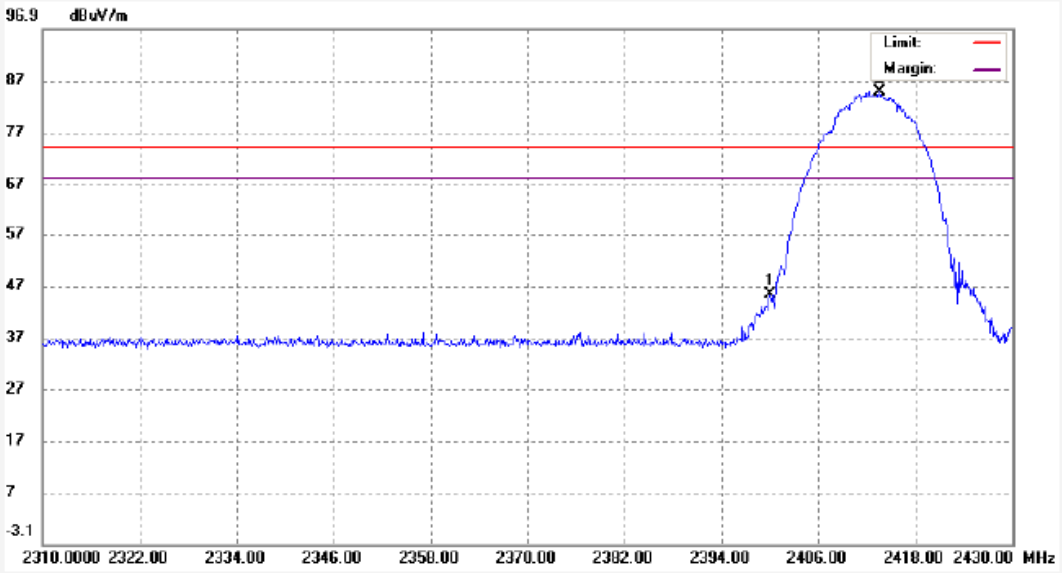
Test Requirement:	Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) and 15.205(c).
Test Method:	KDB558074 D01 V03 R01 04/09/2013
Measurement Distance:	3m
Detector:	For Peak value: RBW = 1MHz VBW =3MHz; Sweep = auto Detector function = peak Trace = max hold For Average value: RBW = 1MHz VBW=10Hz; Sweep = auto Detector function = Average Trace = max hold

8.1 Test Produce

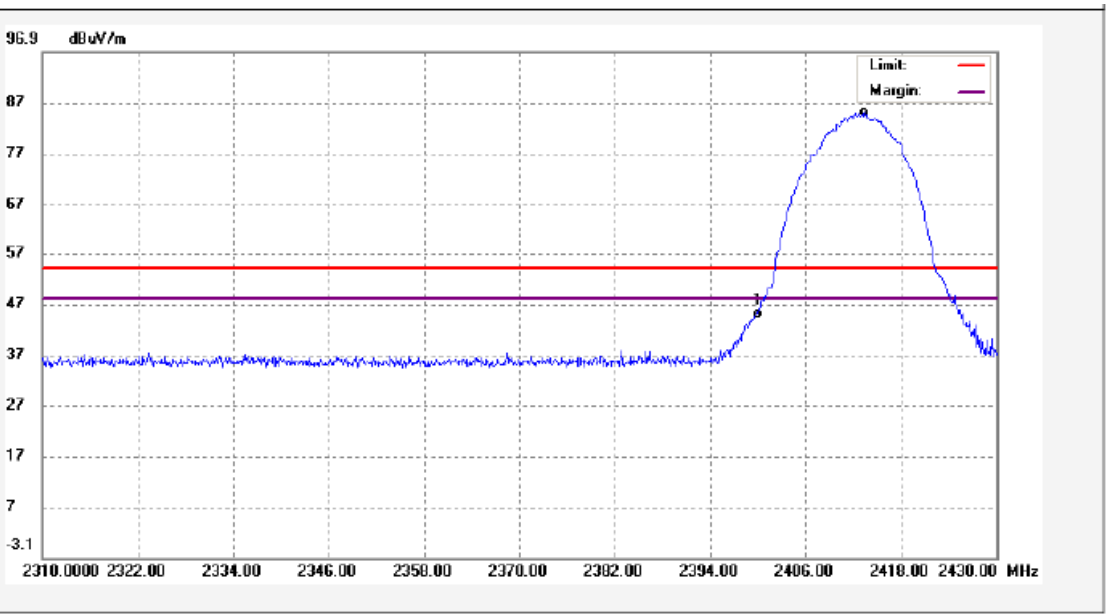
1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

8.2 Test Result

Mode: TX 11b channel 1 **Antenna Polarization:Horizontal**

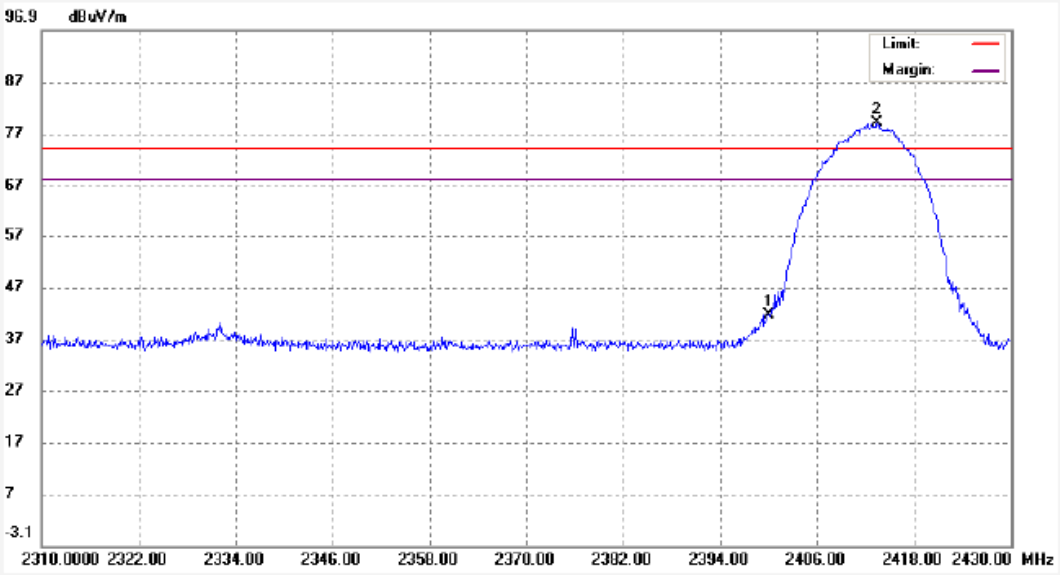


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	54.60	-9.28	45.32	74.00	-28.68	peak	
2	2413.560	94.06	-9.29	84.77	74.00	10.77	peak	

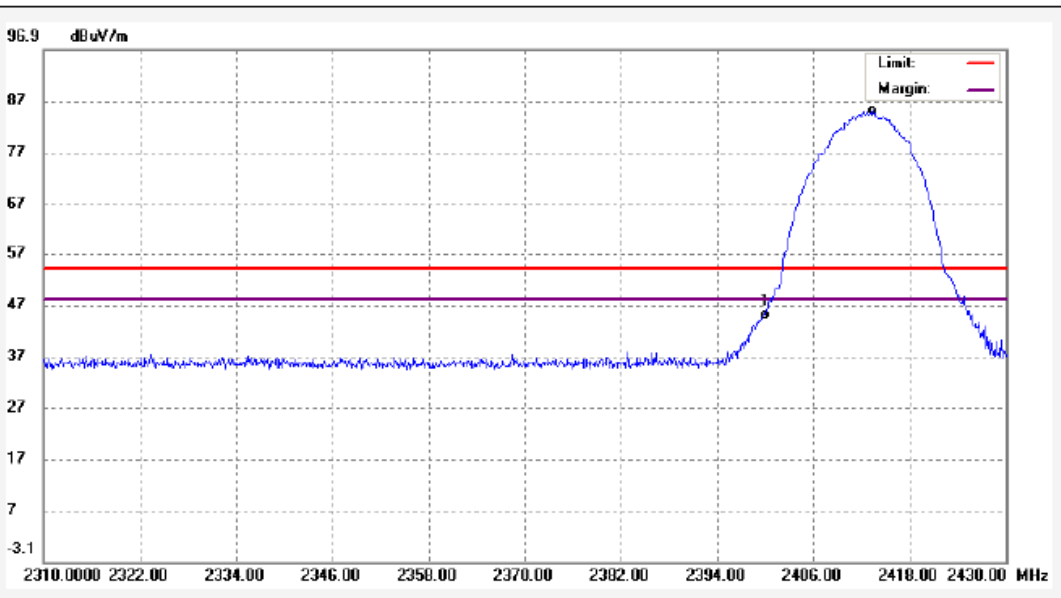


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	54.33	-9.28	45.05	54.00	-8.95	AVG	
2	2413.440	94.30	-9.29	85.01	54.00	31.01	AVG	

Mode: TX 11b channel 1 **Antenna Polarization:Vertical**

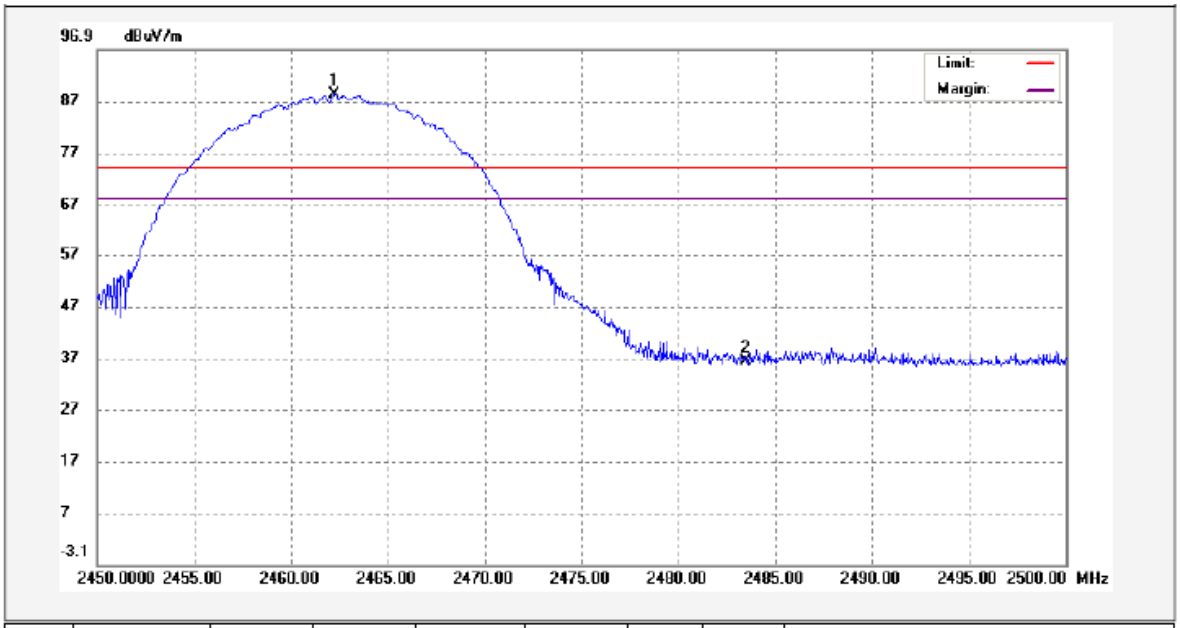


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	50.73	-9.28	41.45	74.00	-32.55	peak	
2	2413.440	88.30	-9.29	79.01	74.00	5.01	peak	

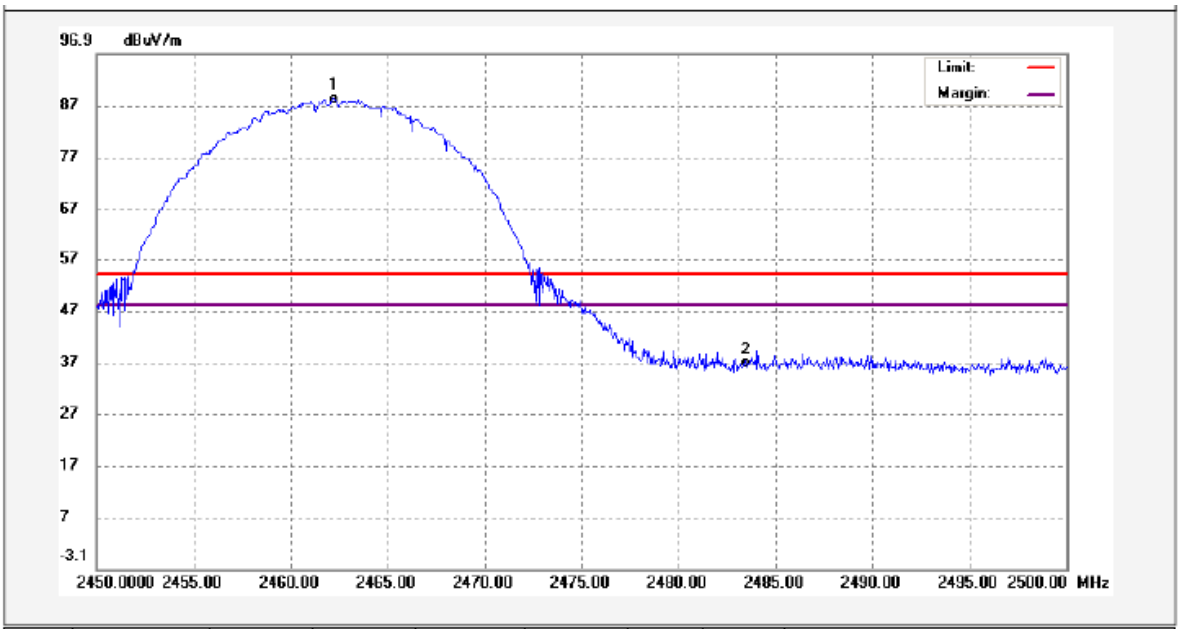


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	54.33	-9.28	45.05	54.00	-8.95	AVG	
2	2413.440	94.30	-9.29	85.01	54.00	31.01	AVG	

Mode: TX 11b channel 11 **Antenna Polarization:Horizontal**

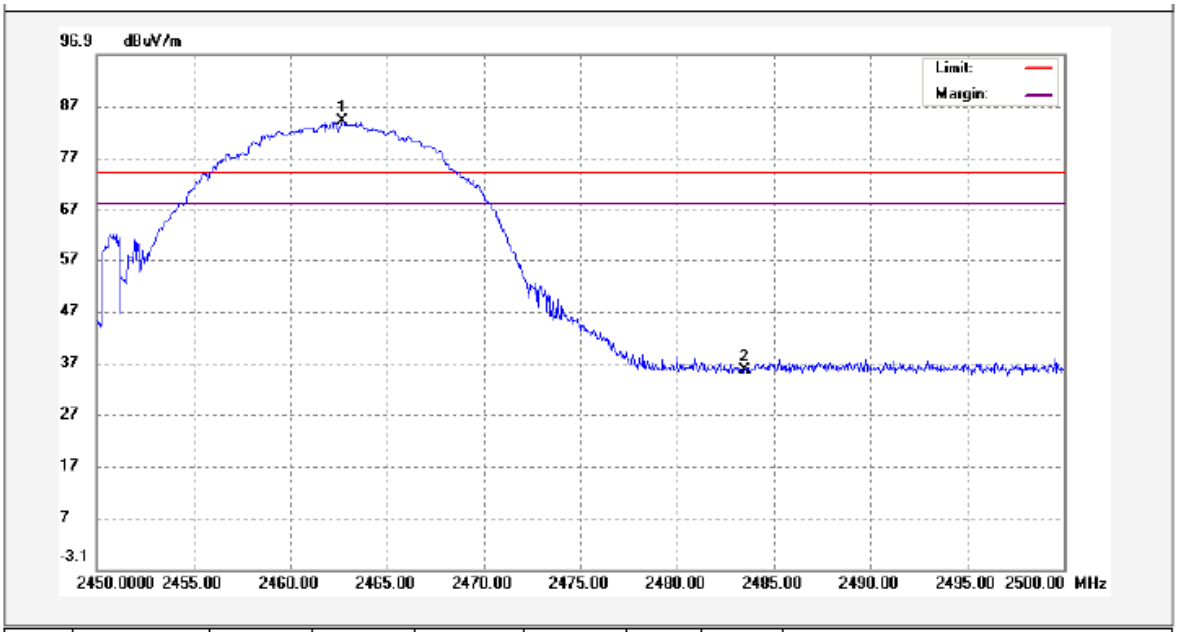


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.200	97.47	-9.28	88.19	74.00	14.19	peak	
2	2483.500	45.46	-9.20	36.26	74.00	-37.74	peak	

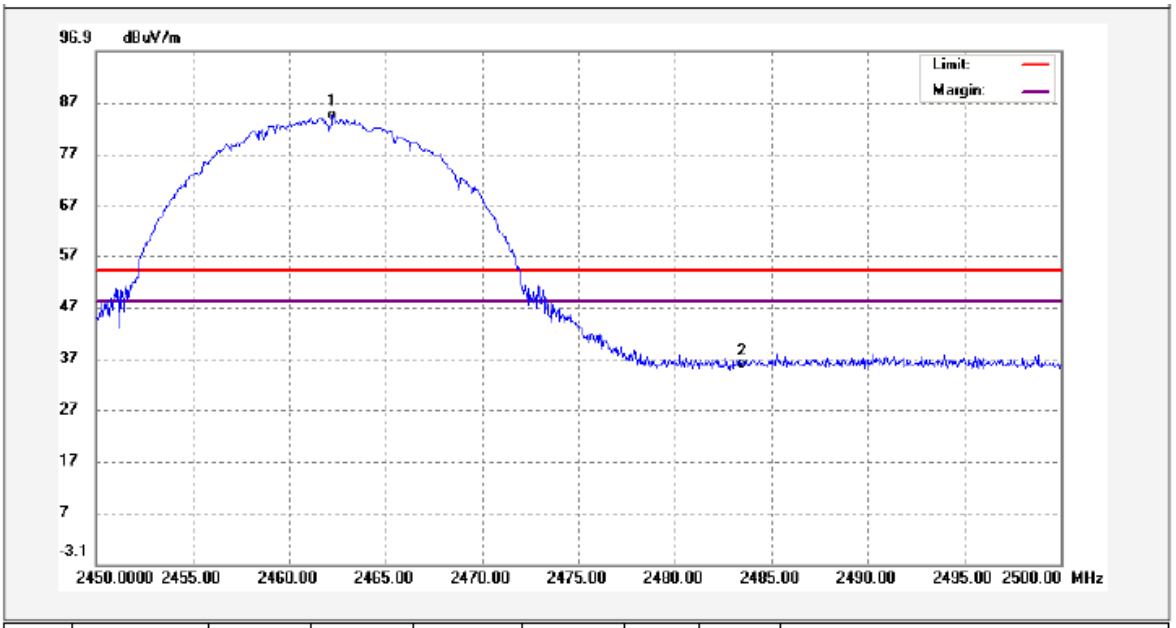


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.200	97.56	-9.28	88.28	54.00	34.28	AVG	
2	2483.500	45.93	-9.20	36.73	54.00	-17.27	AVG	

Mode: TX 11b channel 11 Antenna Polarization:Vertical

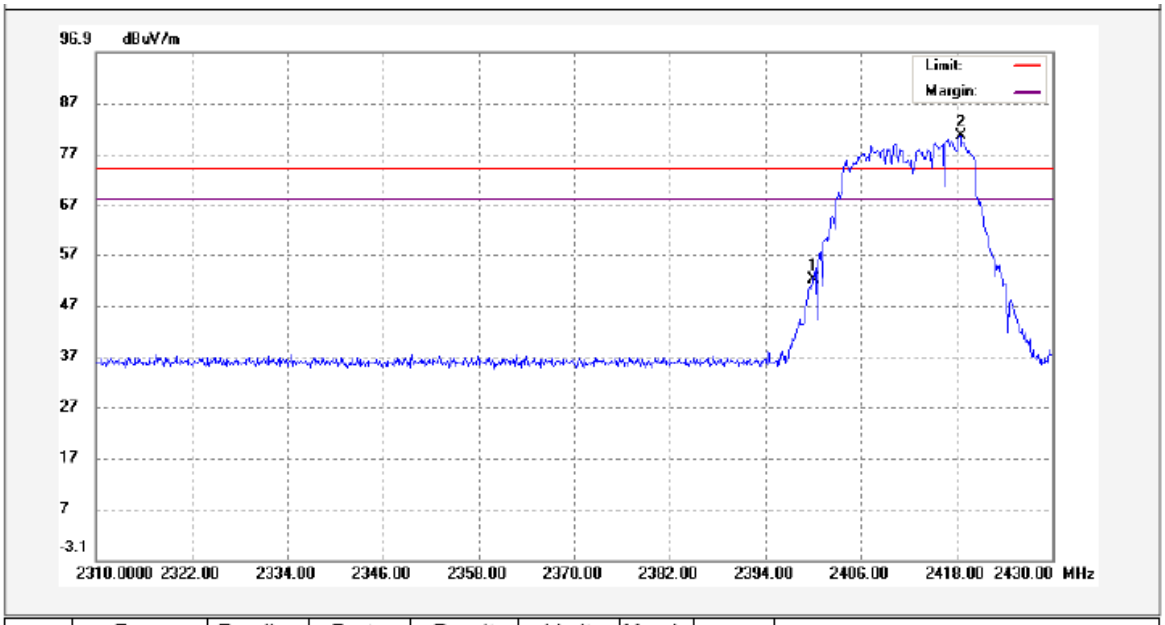


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.700	93.25	-9.28	83.97	74.00	9.97	peak	
2	2483.500	44.70	-9.20	35.50	74.00	-38.50	peak	

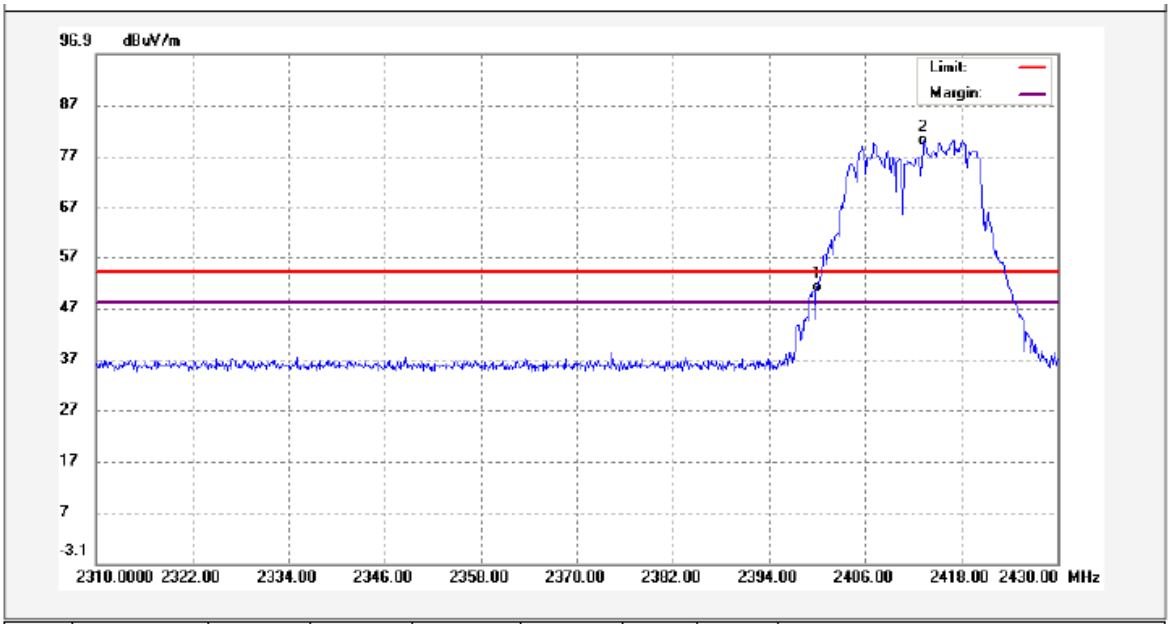


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.250	93.78	-9.28	84.50	54.00	30.50	AVG	
2	2483.500	44.98	-9.20	35.78	54.00	-18.22	AVG	

Mode: TX 11g channel 1 **Antenna Polarization:Horizontal**

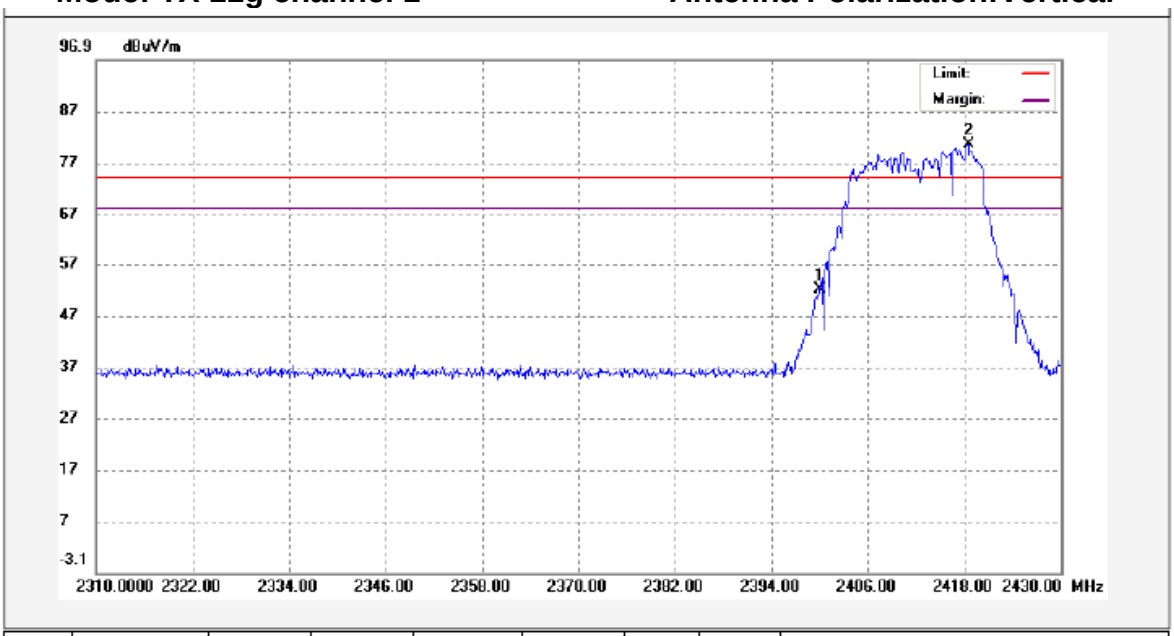


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	61.39	-9.28	52.11	74.00	-21.89	peak	
2	2418.480	89.88	-9.29	80.59	74.00	6.59	peak	

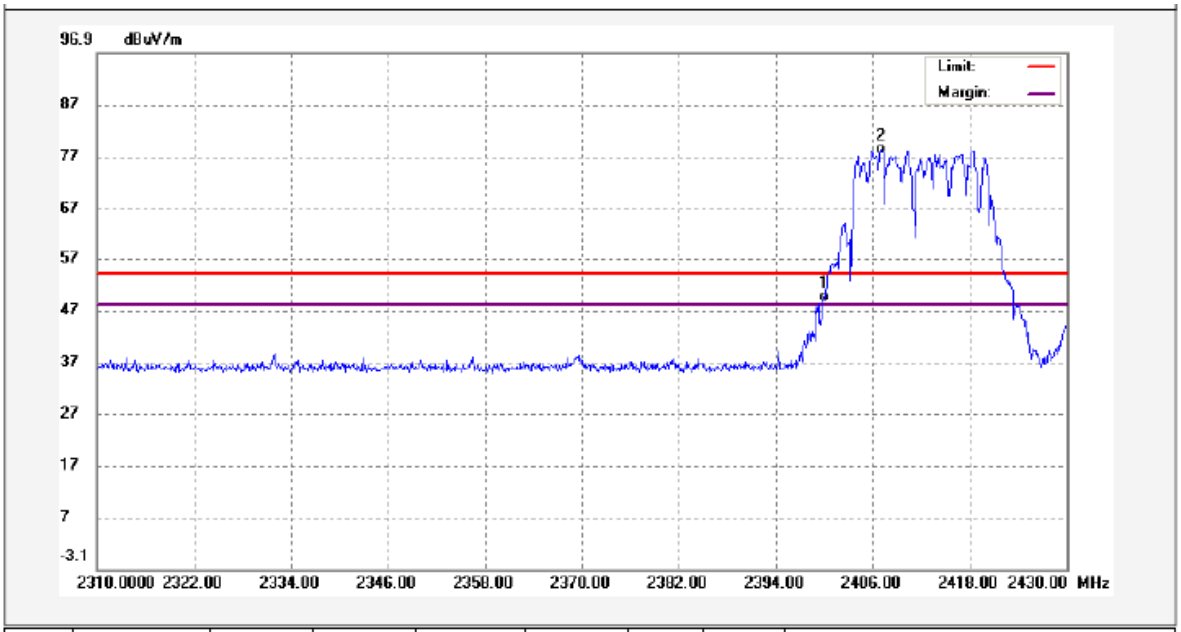


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	60.34	-9.28	51.06	54.00	-2.94	AVG	
2	2413.320	89.34	-9.29	80.05	54.00	26.05	AVG	

Mode: TX 11g channel 1 **Antenna Polarization:Vertical**

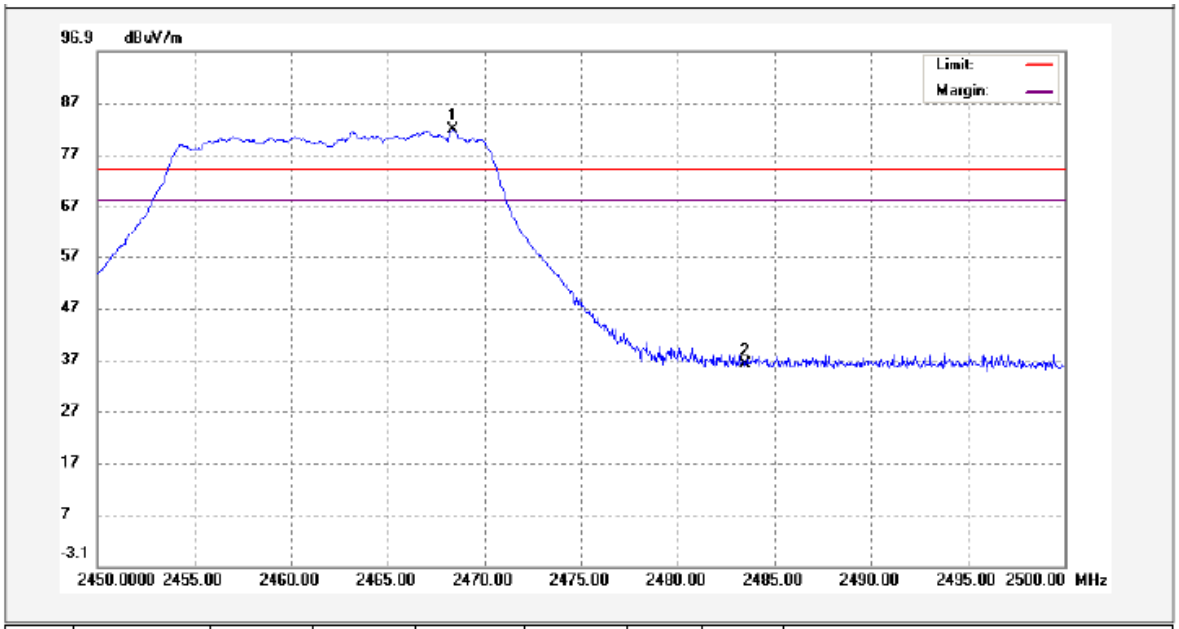


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	61.39	-9.28	52.11	74.00	-21.89	peak	
2	2418.480	89.88	-9.29	80.59	74.00	6.59	peak	

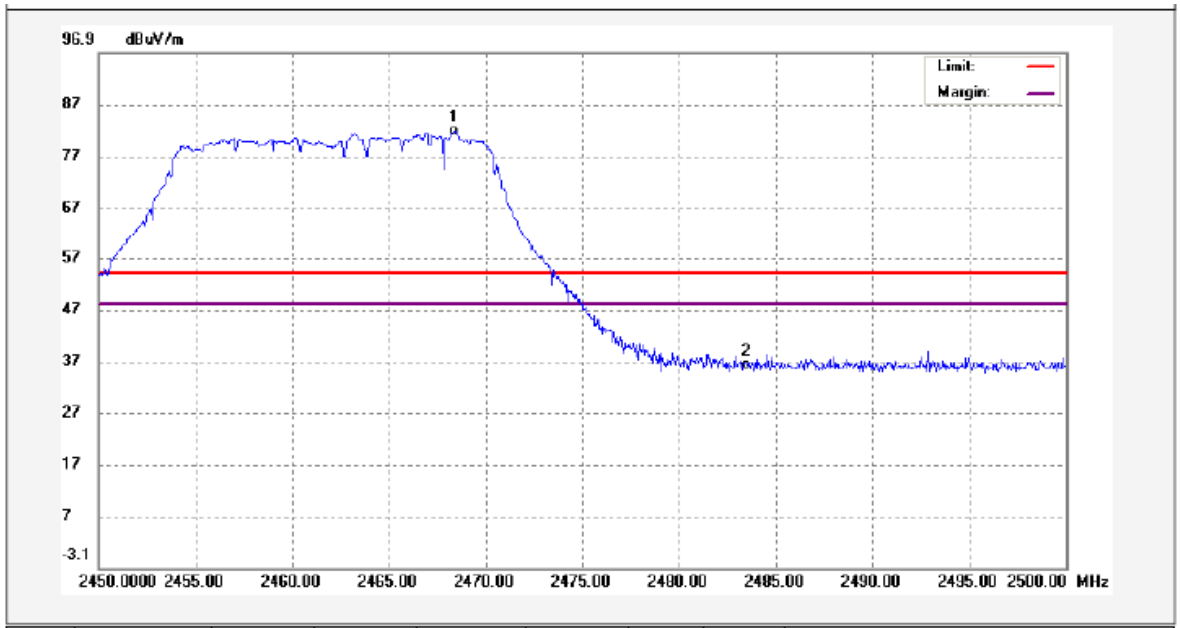


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	58.81	-9.28	49.53	54.00	-4.47	AVG	
2	2407.080	87.60	-9.29	78.31	54.00	24.31	AVG	

Mode: TX 11g channel 11 **Antenna Polarization:Horizontal**

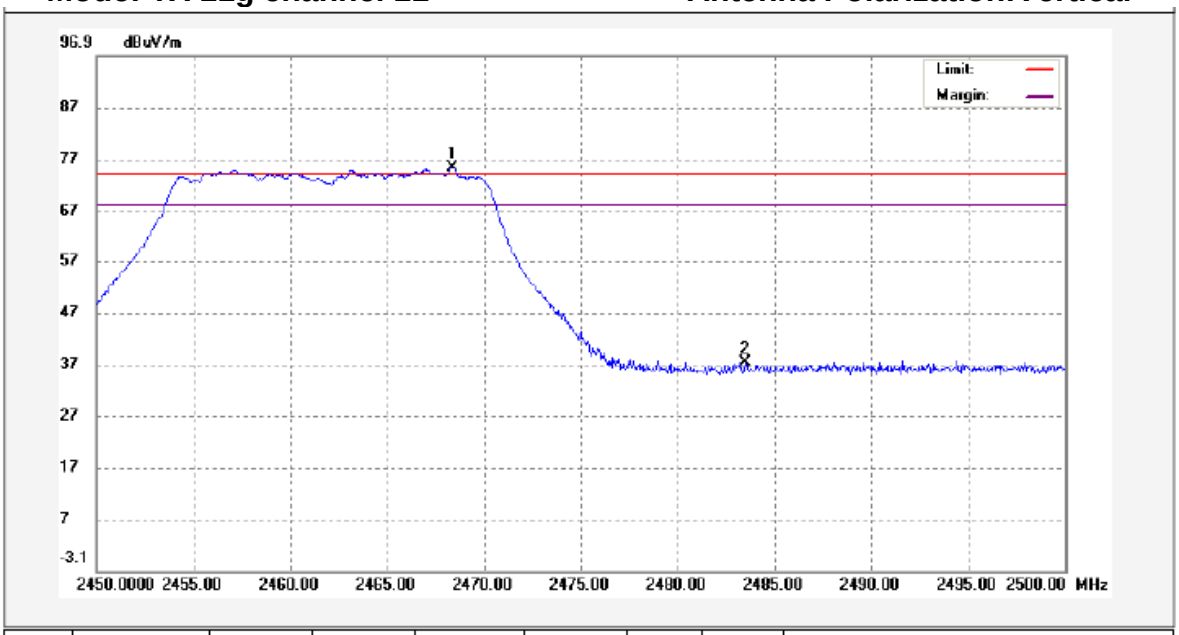


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2468.350	90.94	-9.26	81.68	74.00	7.68	peak	
2	2483.500	45.28	-9.20	36.08	74.00	-37.92	peak	

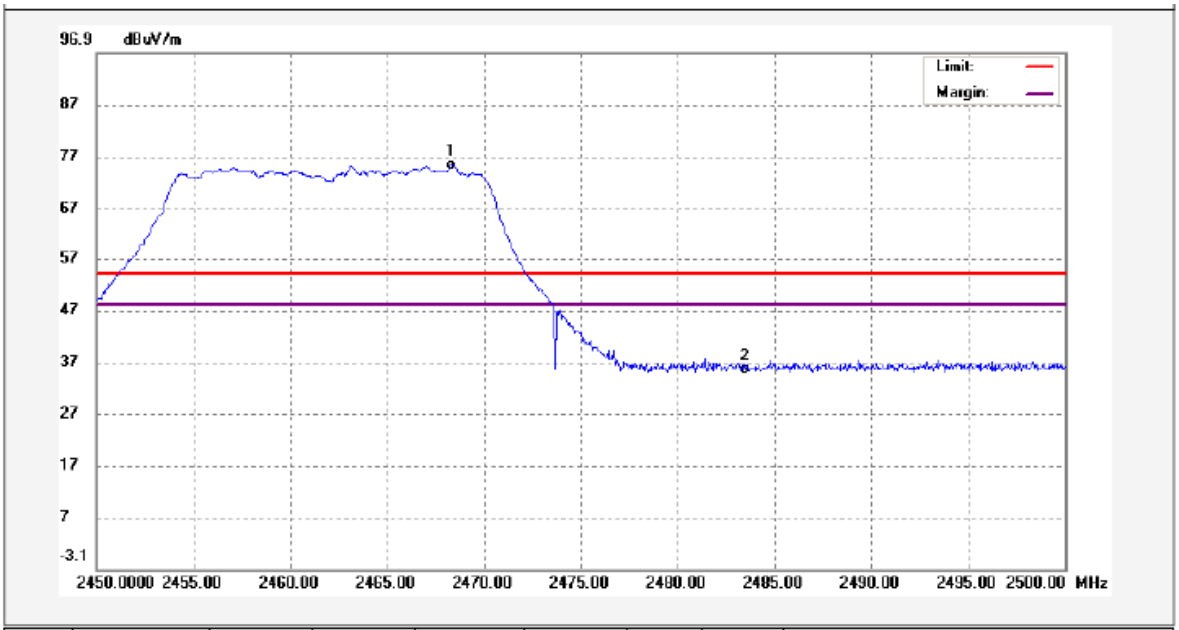


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2468.350	90.99	-9.26	81.73	54.00	27.73	AVG	
2	2483.500	45.54	-9.20	36.34	54.00	-17.66	AVG	

Mode: TX 11g channel 11 **Antenna Polarization:Vertical**

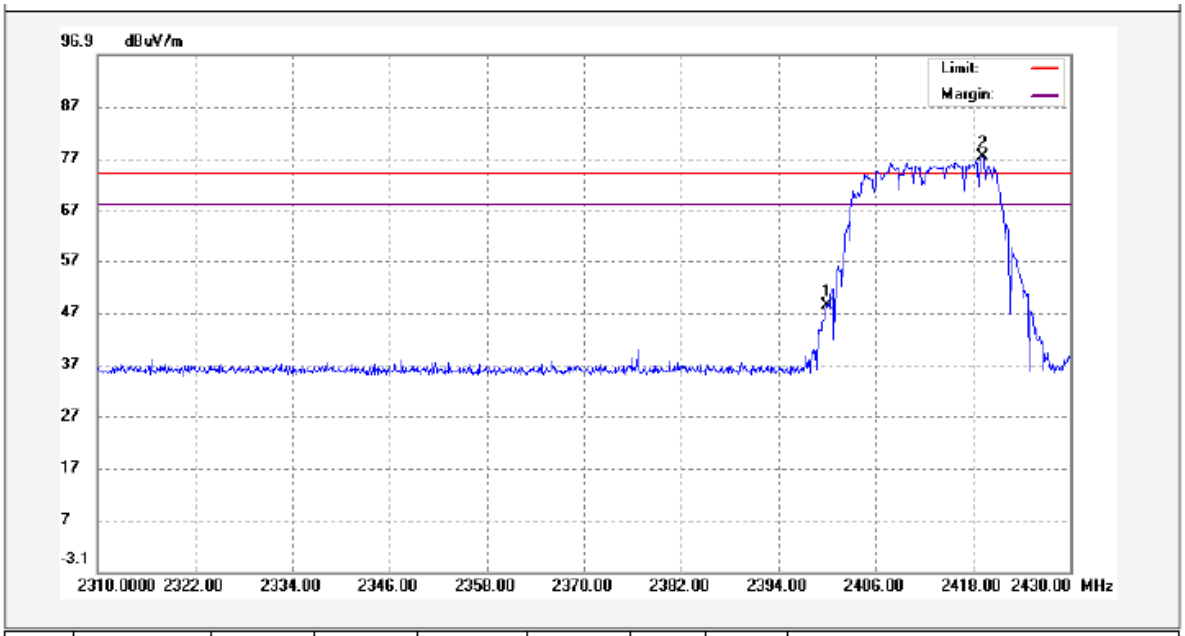


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2468.350	84.50	-9.26	75.24	74.00	1.24	peak	
2	2483.500	46.52	-9.20	37.32	74.00	-36.68	peak	

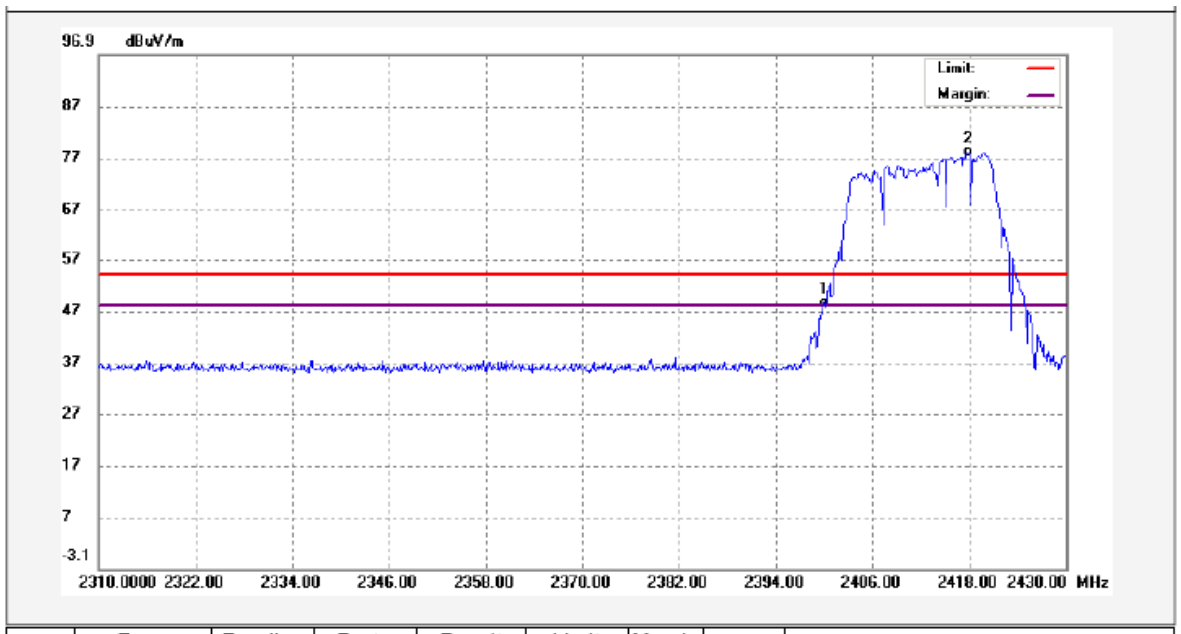


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2468.300	84.60	-9.26	75.34	54.00	21.34	AVG	
2	2483.500	44.83	-9.20	35.63	54.00	-18.37	AVG	

Mode: TX 11n HT 20 channel 1 **Antenna Polarization:Horizontal**

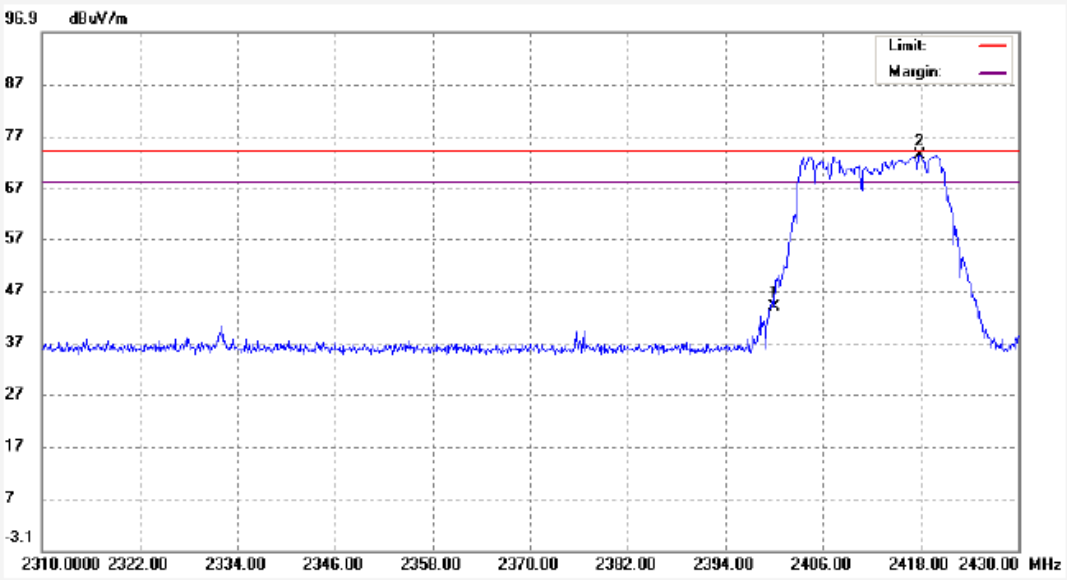


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	57.68	-9.28	48.40	74.00	-25.60	peak	
2	2419.200	86.50	-9.30	77.20	74.00	3.20	peak	

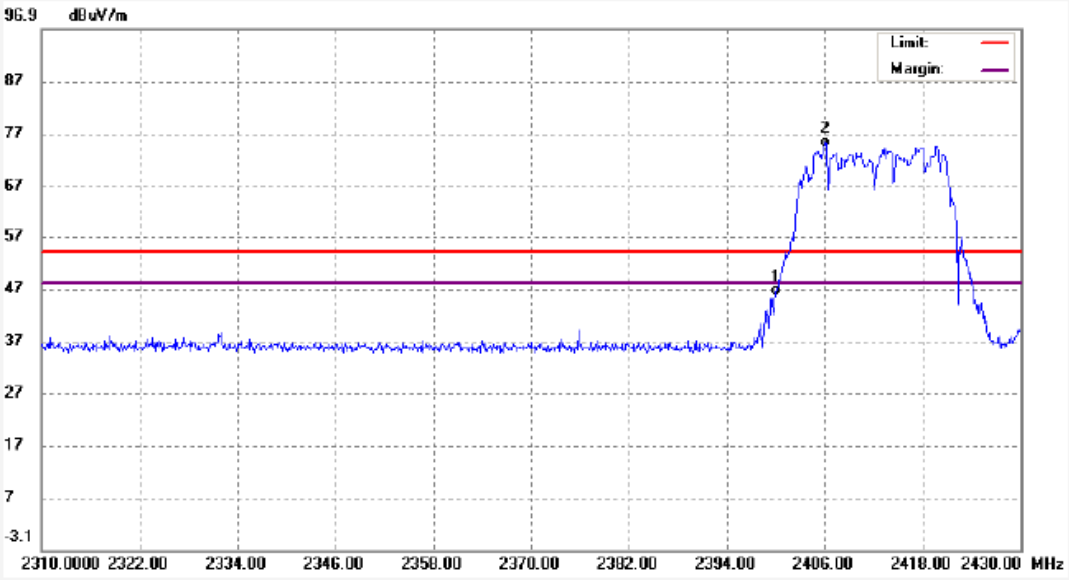


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	57.88	-9.28	48.60	54.00	-5.40	AVG	
2	2417.880	87.22	-9.29	77.93	54.00	23.93	AVG	

Mode: TX 11n HT 20 channel 1 **Antenna Polarization:Vertical**



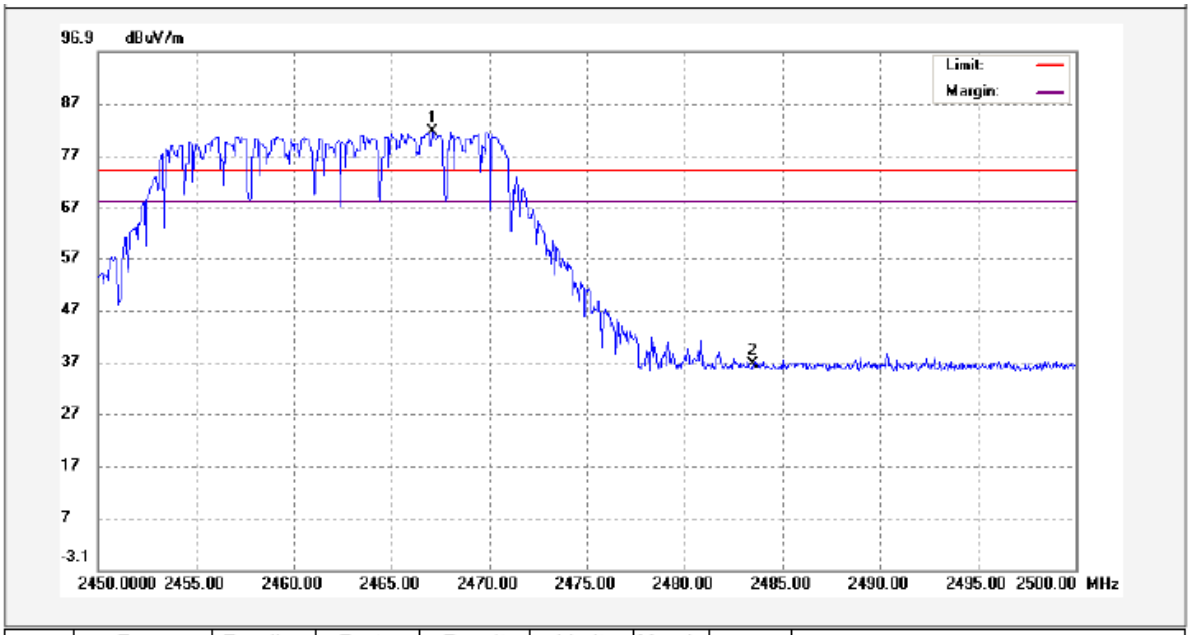
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	52.97	-9.28	43.69	74.00	-30.31	peak	
2	2417.880	82.66	-9.29	73.37	74.00	-0.63	peak	



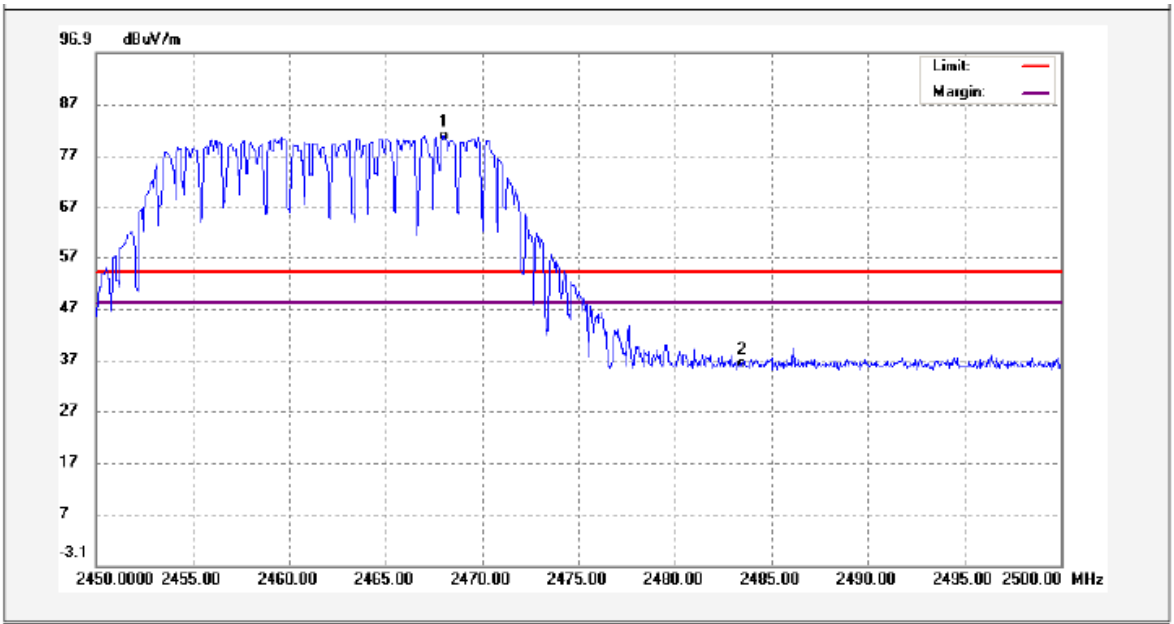
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	55.85	-9.28	46.57	54.00	-7.43	AVG	
2	2406.120	84.50	-9.28	75.22	54.00	21.22	AVG	

.

Mode: TX 11n HT 20 channel 11 **Antenna Polarization:Horizontal**

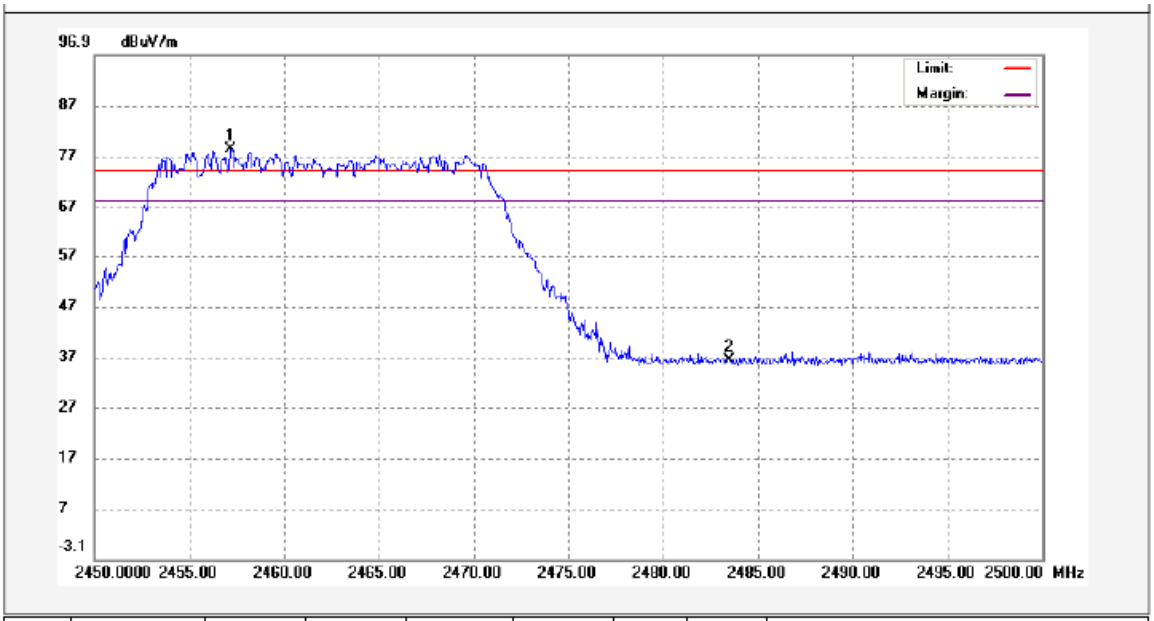


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2467.100	90.74	-9.27	81.47	74.00	7.47	peak	
2	2483.500	45.65	-9.20	36.45	74.00	-37.55	peak	

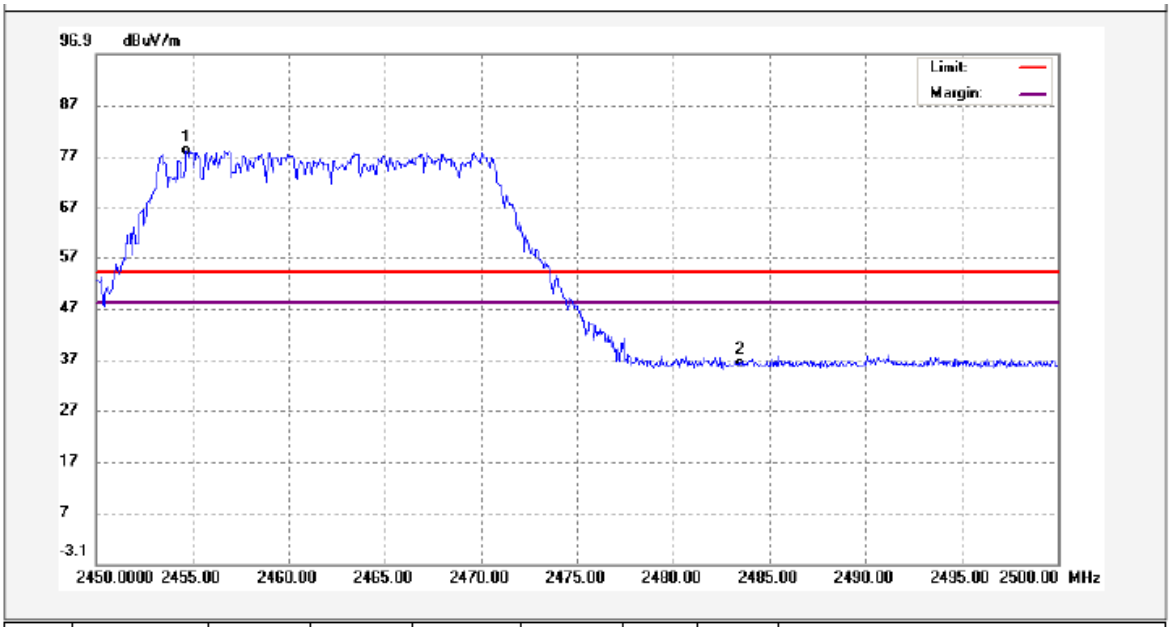


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2468.000	90.10	-9.26	80.84	54.00	26.84	AVG	
2	2483.500	45.41	-9.20	36.21	54.00	-17.79	AVG	

Mode: TX 11n HT 20 channel 11 **Antenna Polarization:Vertical**



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2457.150	87.48	-9.30	78.18	74.00	4.18	peak	
2	2483.500	45.40	-9.20	36.20	74.00	-37.80	peak	



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2454.700	87.35	-9.30	78.05	54.00	24.05	AVG	
2	2483.500	45.44	-9.20	36.24	54.00	-17.76	AVG	

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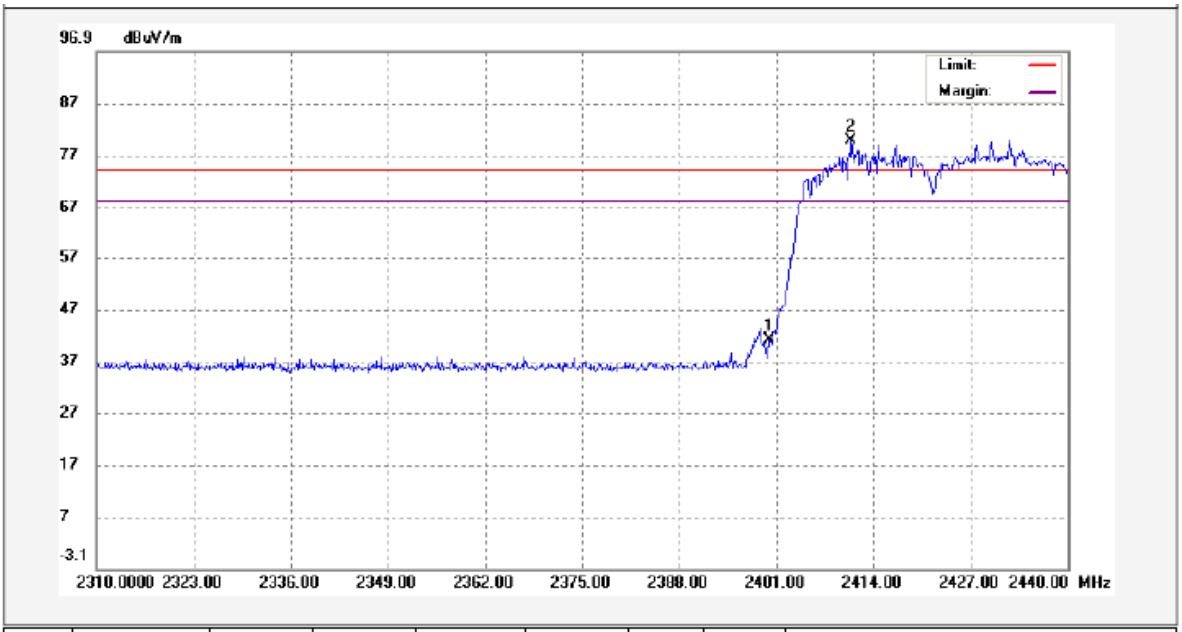
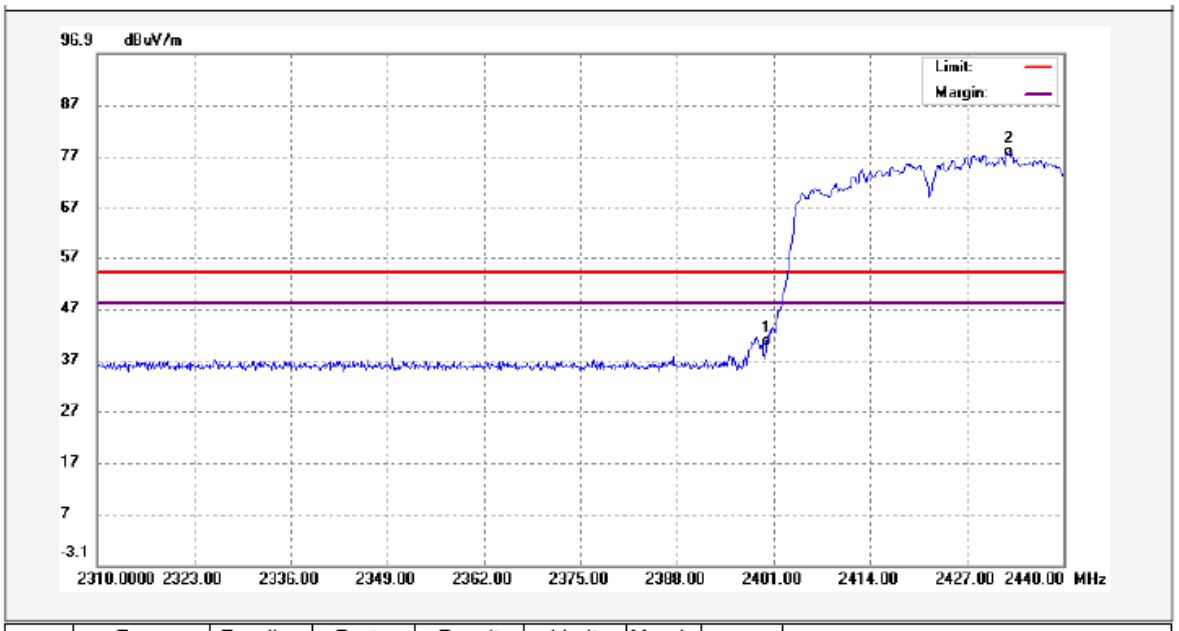
Mode: TX 11n HT 40 channel 3 **Antenna Polarization:Horizontal**

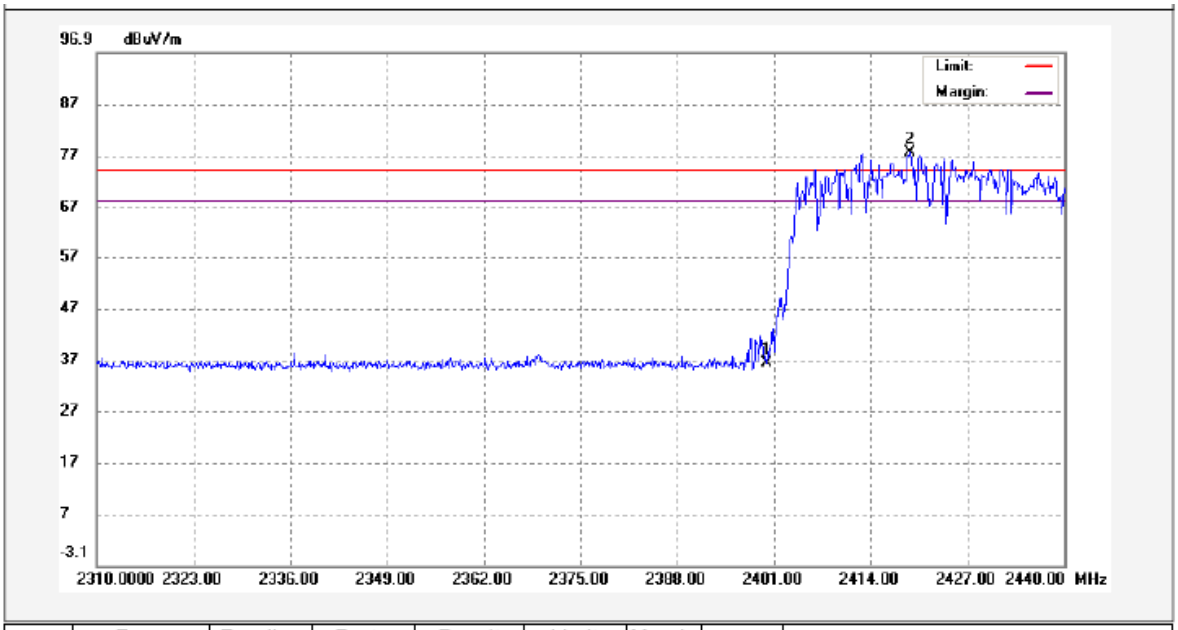


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	50.41	-9.28	41.13	74.00	-32.87	peak	
2	2411.010	89.13	-9.29	79.84	74.00	5.84	peak	

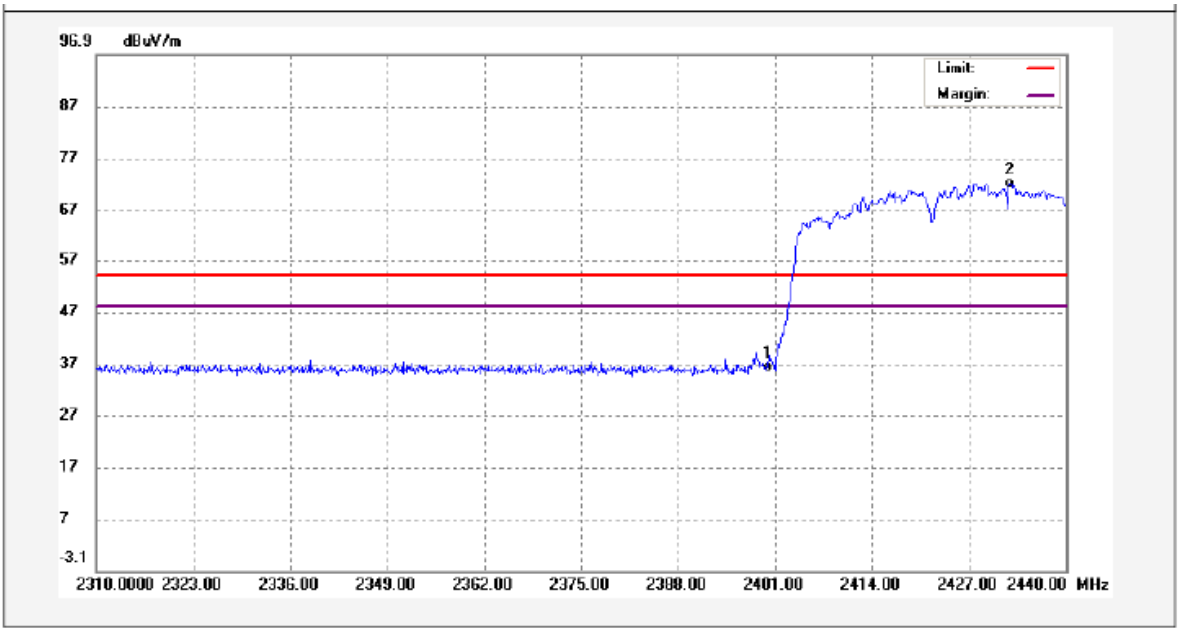


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	49.78	-9.28	40.50	54.00	-13.50	AVG	
2	2432.590	87.05	-9.30	77.75	54.00	23.75	AVG	

Mode: TX 11n HT 40 channel 3 **Antenna Polarization:Vertical**

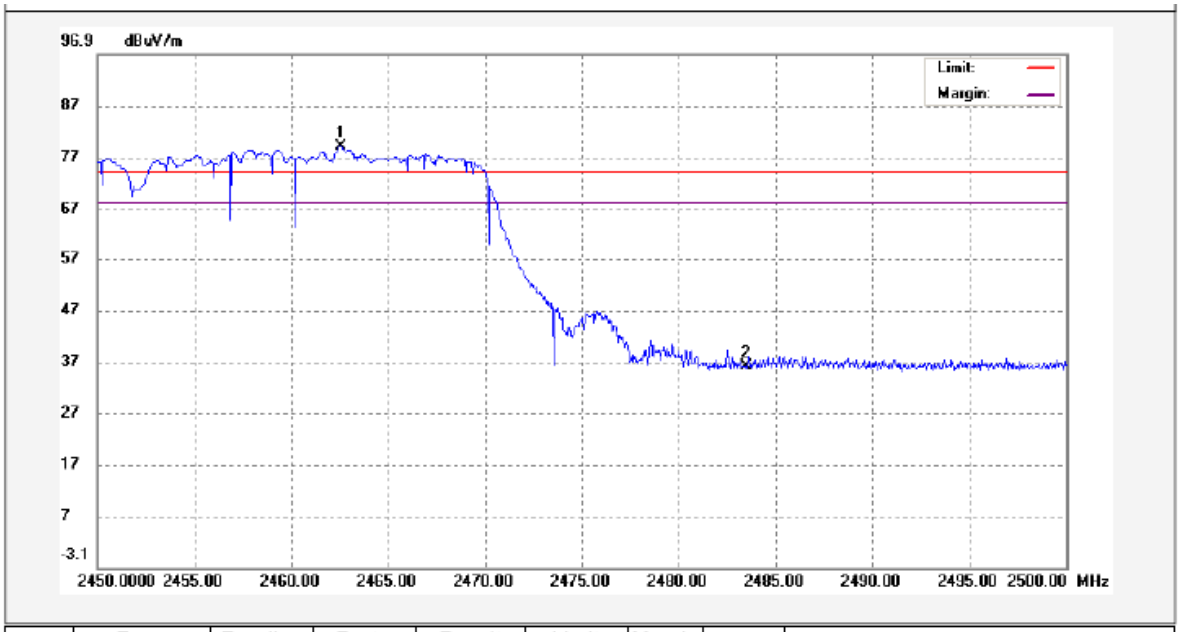


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	45.65	-9.28	36.37	74.00	-37.63	peak	
2	2419.200	86.95	-9.30	77.65	74.00	3.65	peak	

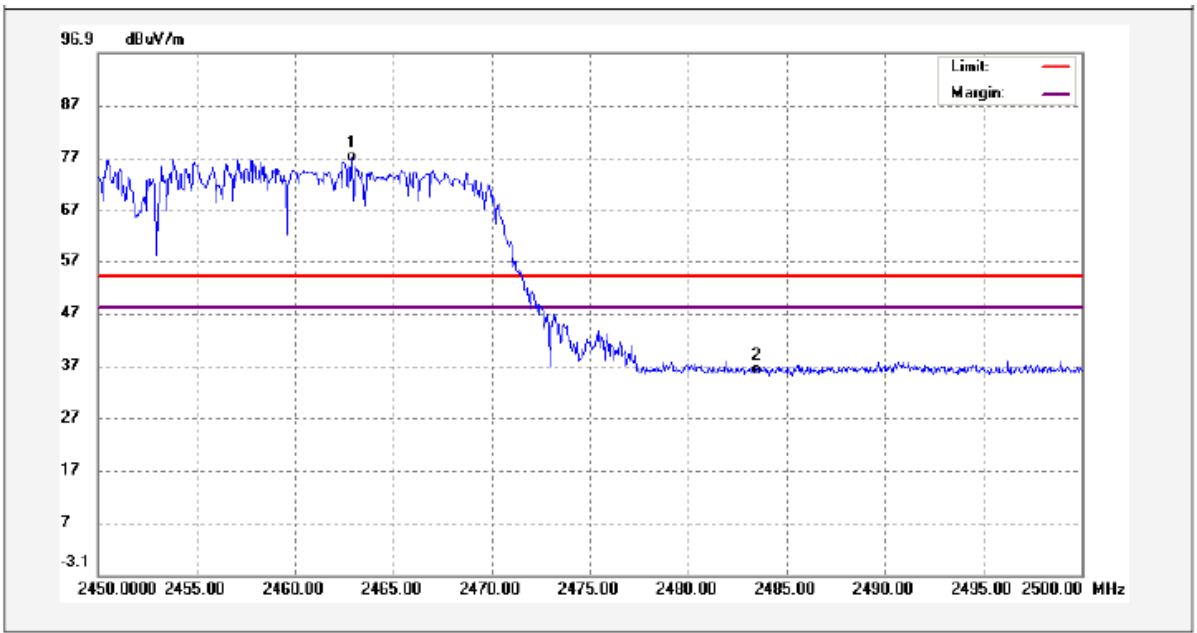


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2400.000	45.44	-9.28	36.16	54.00	-17.84	AVG	
2	2432.460	81.31	-9.31	72.00	54.00	18.00	AVG	

Mode: TX 11n HT 40 channel 9 **Antenna Polarization:Horizontal**

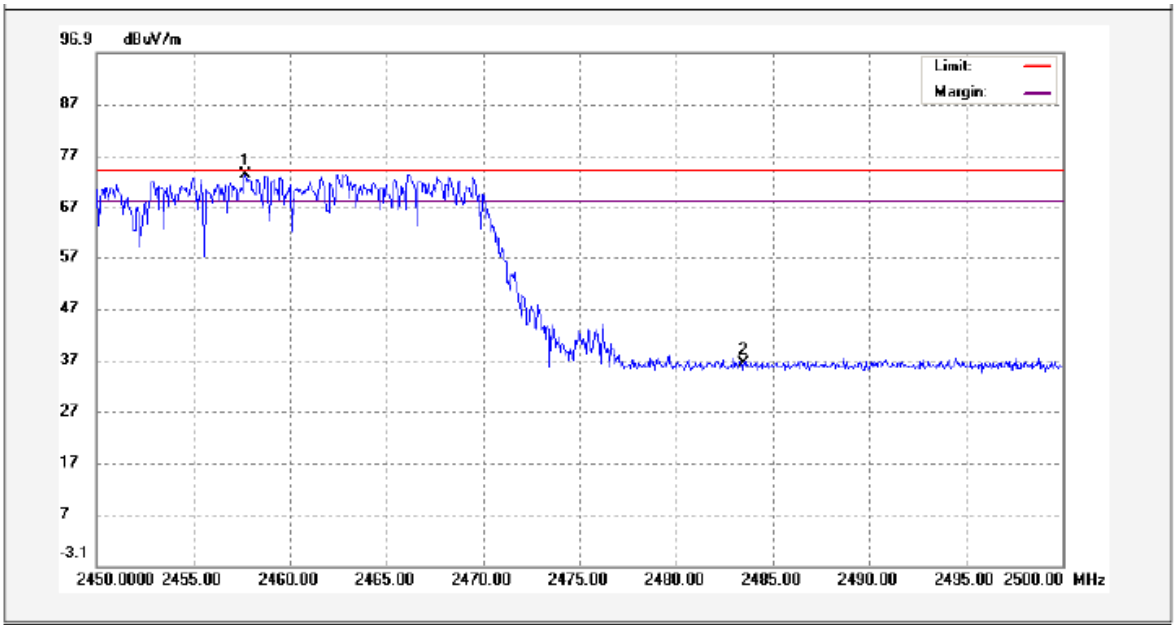


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.550	88.23	-9.28	78.95	74.00	4.95	peak	
2	2483.500	45.22	-9.20	36.02	74.00	-37.98	peak	

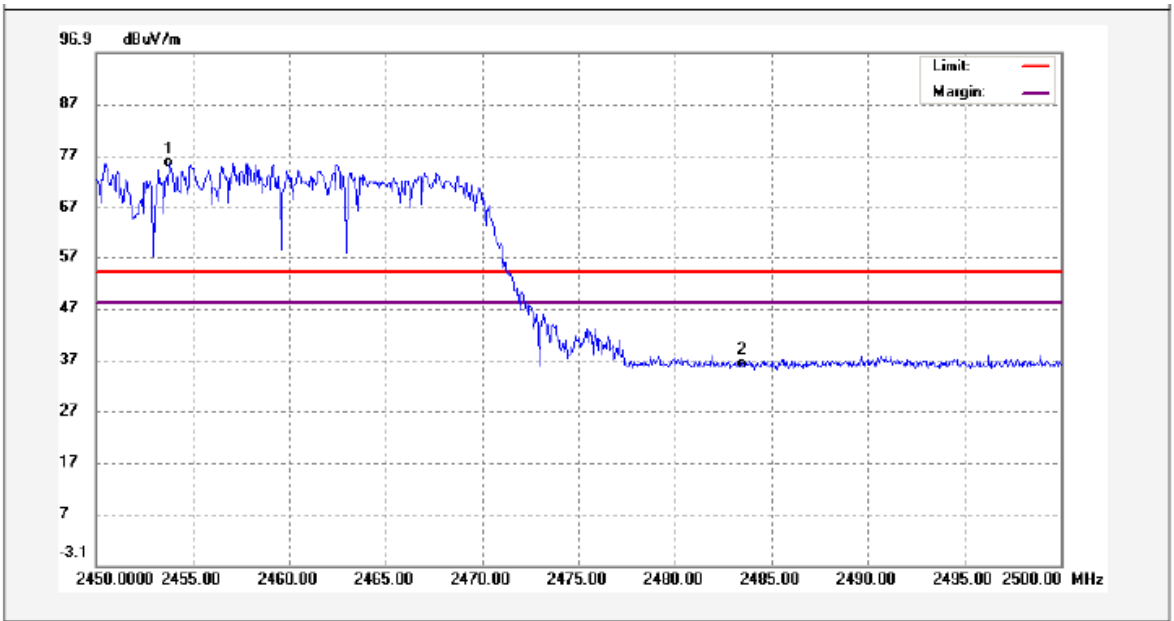


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2462.900	86.29	-9.28	77.01	54.00	23.01	AVG	
2	2483.500	45.36	-9.20	36.16	54.00	-17.84	AVG	

Mode: TX 11n HT 40 channel 9 **Antenna Polarization:Vertical**



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2457.700	82.61	-9.29	73.32	74.00	-0.68	peak	
2	2483.500	45.60	-9.20	36.40	74.00	-37.60	peak	



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2453.750	84.83	-9.30	75.53	54.00	21.53	AVG	
2	2483.500	45.36	-9.20	36.16	54.00	-17.84	AVG	

9 6 dB Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB558074 D01 V03 R01 04/09/2013

9.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

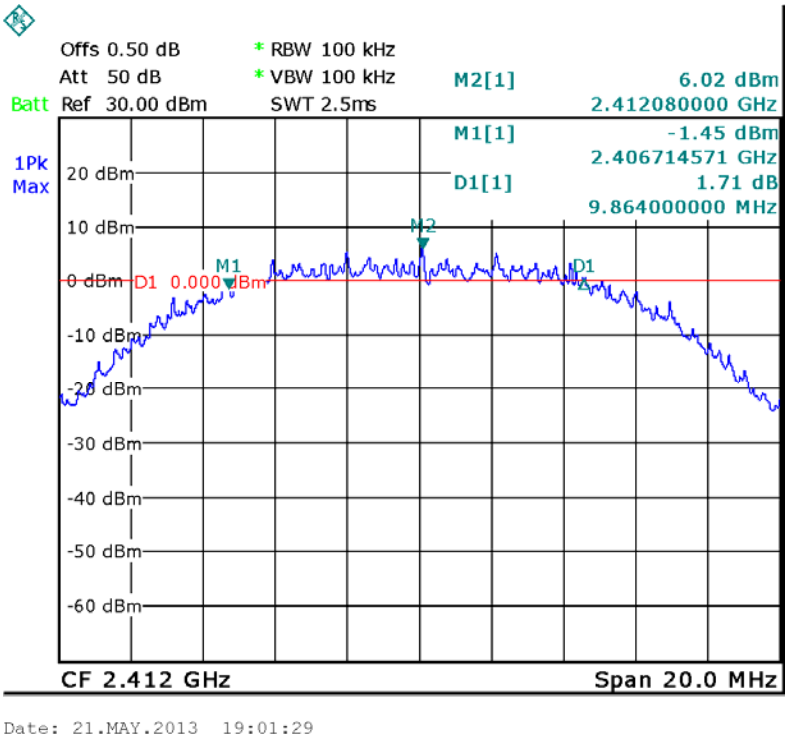
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 100kHz

9.2 Test Result:

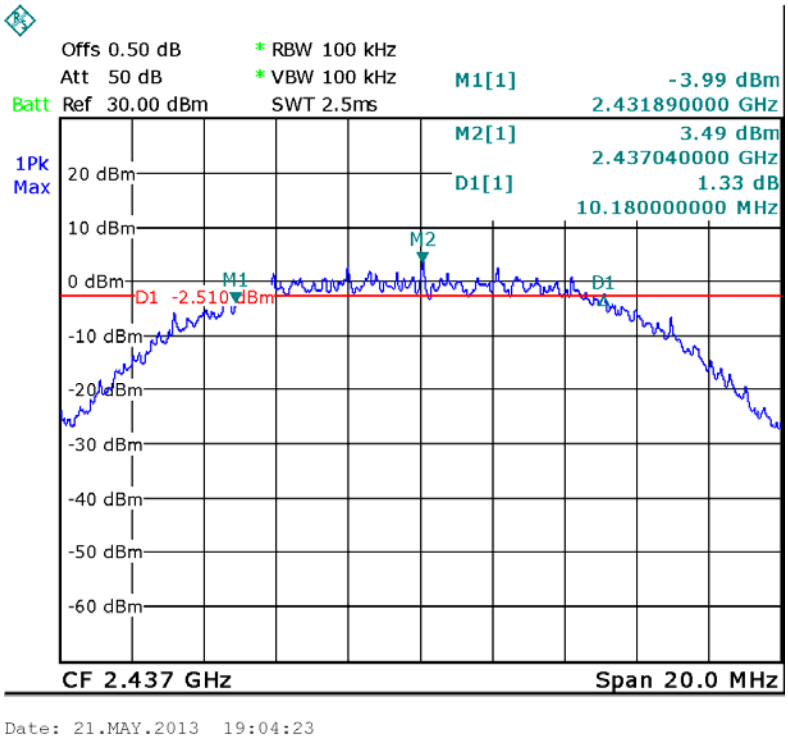
Operation mode	Bandwidth (MHz)		
TX 11b	**Channel 1**	**Channel 6**	**Channel 11**
	9.864	10.180	10.739
TX 11g	**Channel 1**	**Channel 6**	**Channel 11**
	16.459	16.503	16.503
TX 11n HT 20	**Channel 1**	**Channel 6**	**Channel 11**
	17.230	17.230	17.437
TX 11n HT 40	**Channel 3**	**Channel 6**	**Channel 9**
	35.93	35.570	35.890

Test result plot as follows:

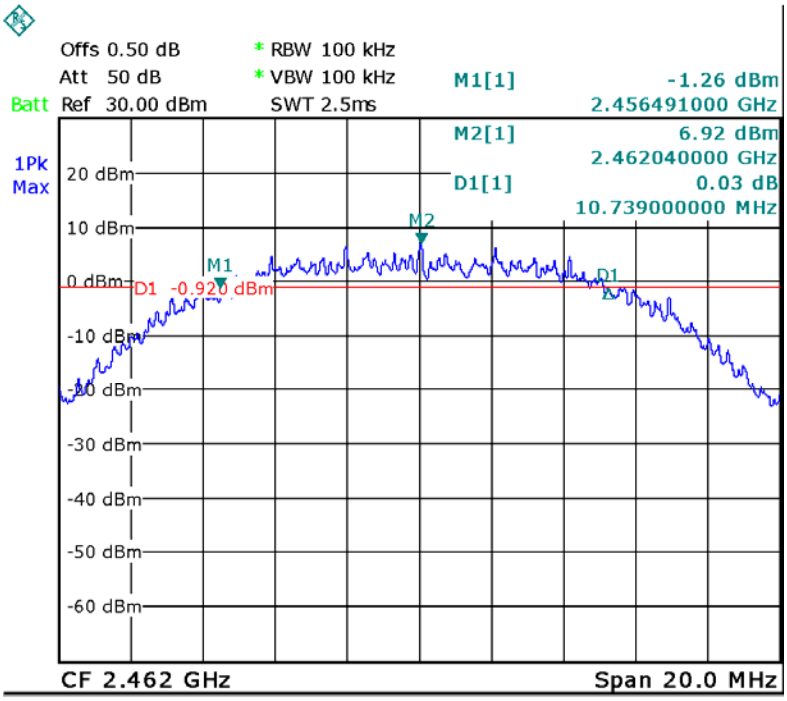
Mode: TX 11b channel 1



Mode: TX 11b channel 6

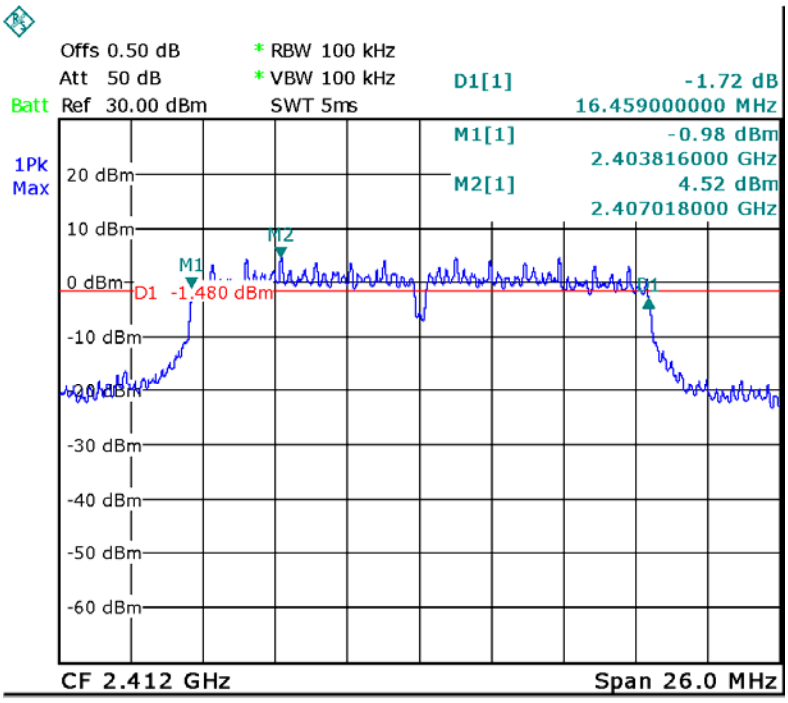


Mode: TX 11b channel 11



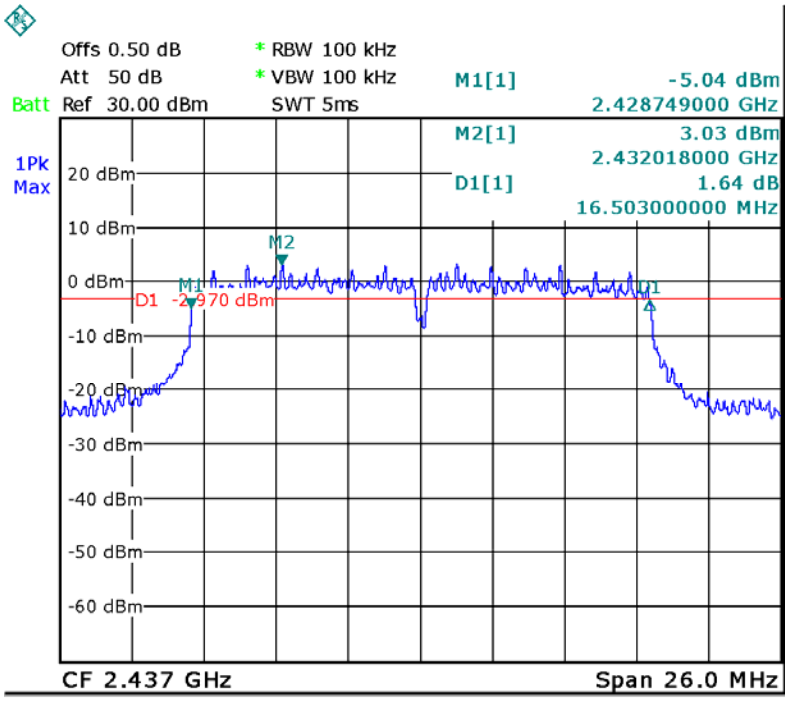
Date: 21.MAY.2013 19:19:35

Mode: TX 11g channel 1

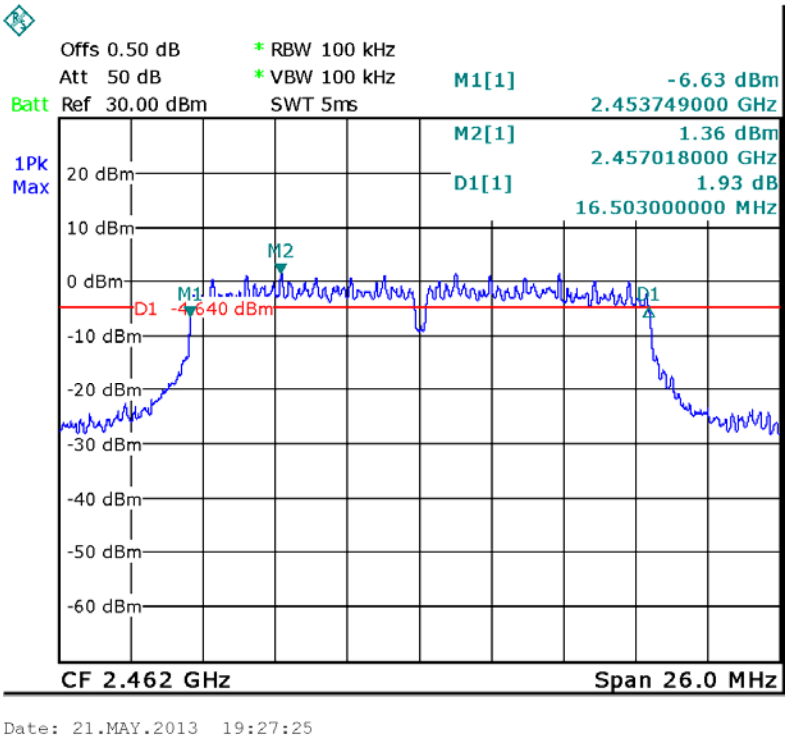


Date: 21.MAY.2013 19:23:10

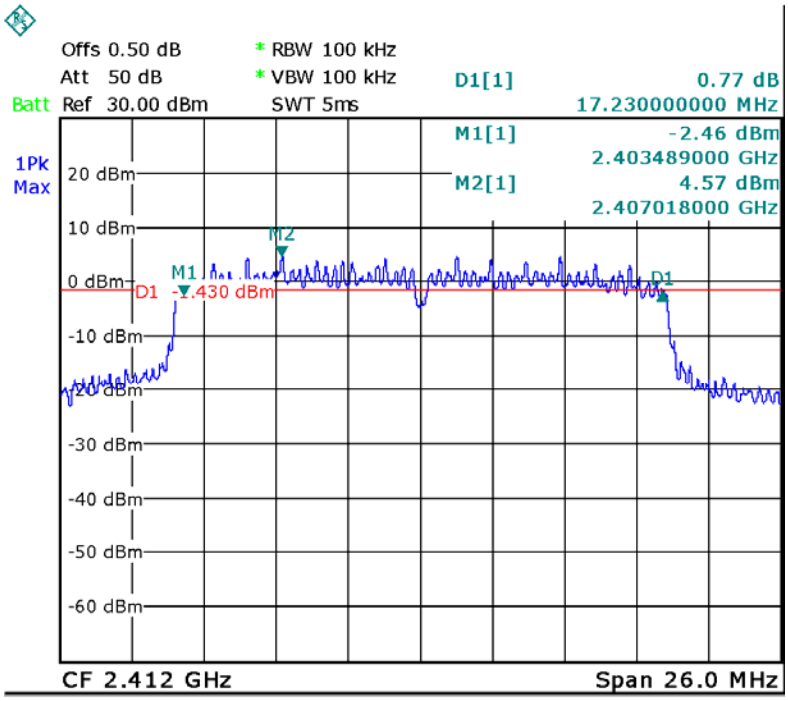
Mode: TX 11g channel 6



Mode: TX 11g channel 11

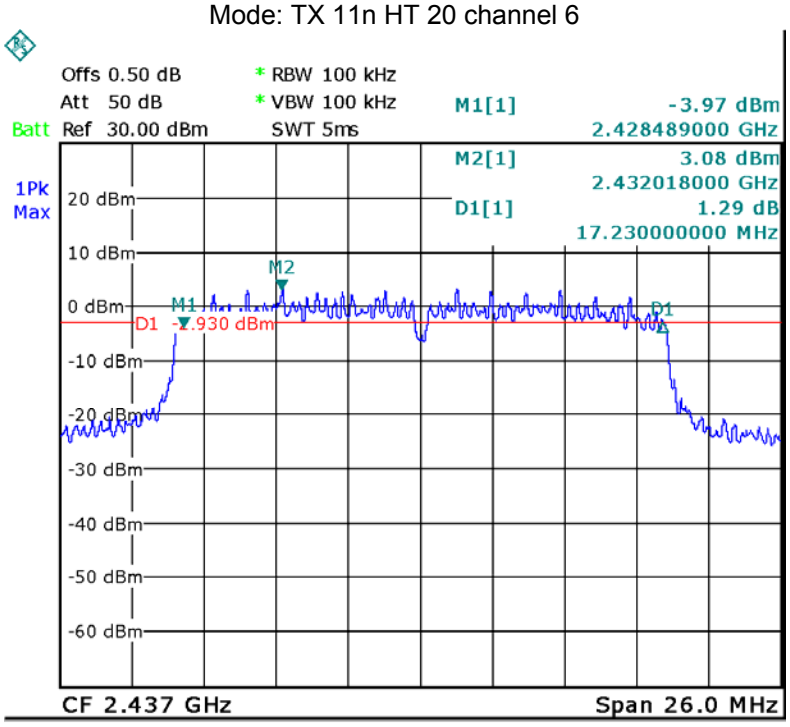


Mode: TX 11n HT 20 channel 1



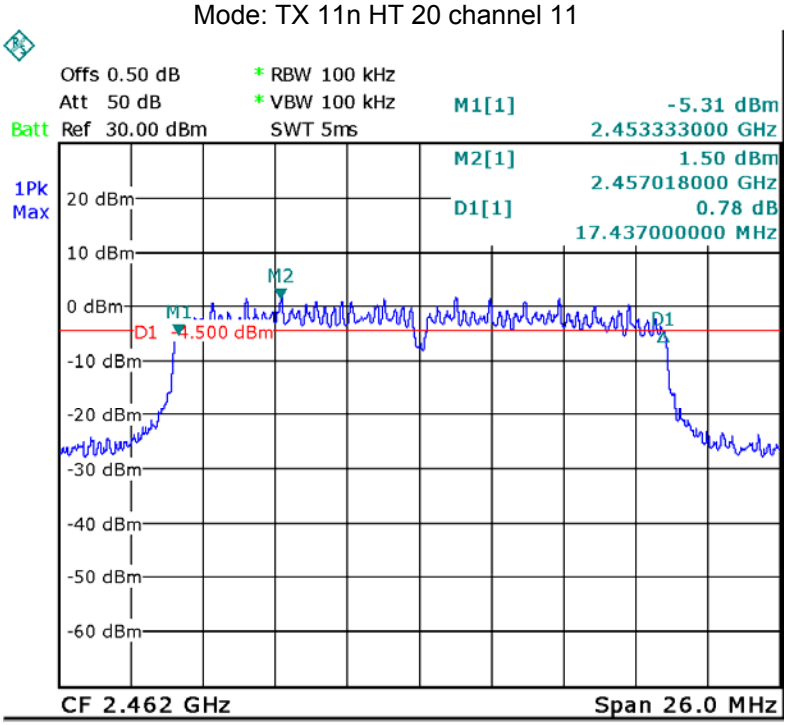
Date: 21.MAY.2013 19:31:15

Mode: TX 11n HT 20 channel 6



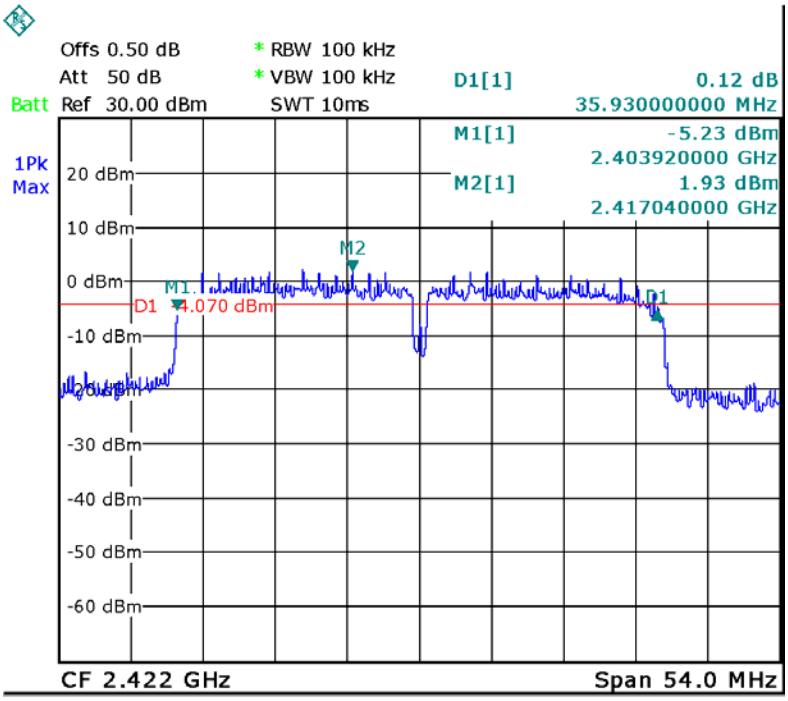
Date: 21.MAY.2013 19:42:22

Mode: TX 11n HT 20 channel 11



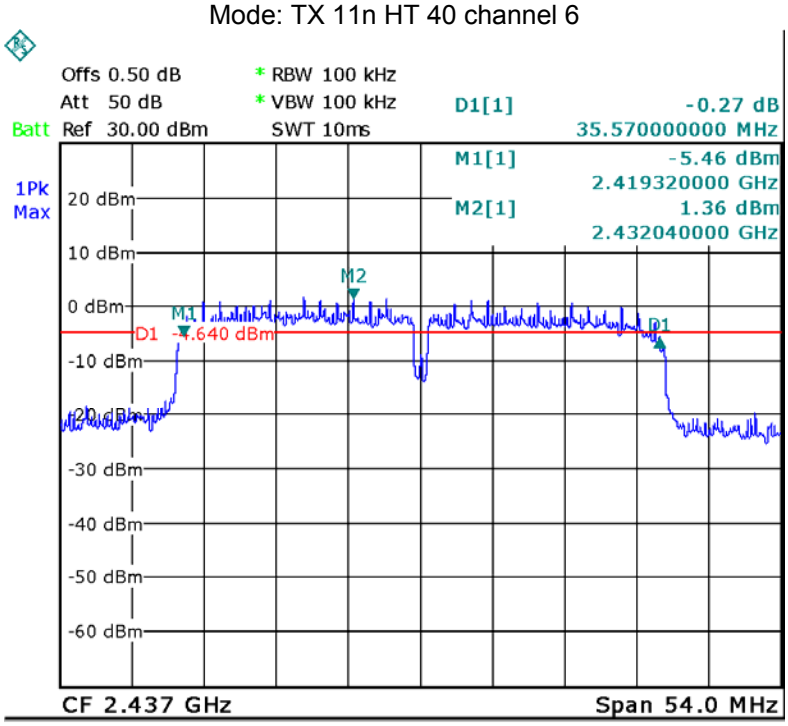
Date: 21.MAY.2013 19:44:31

Mode: TX 11n HT 40 channel 3



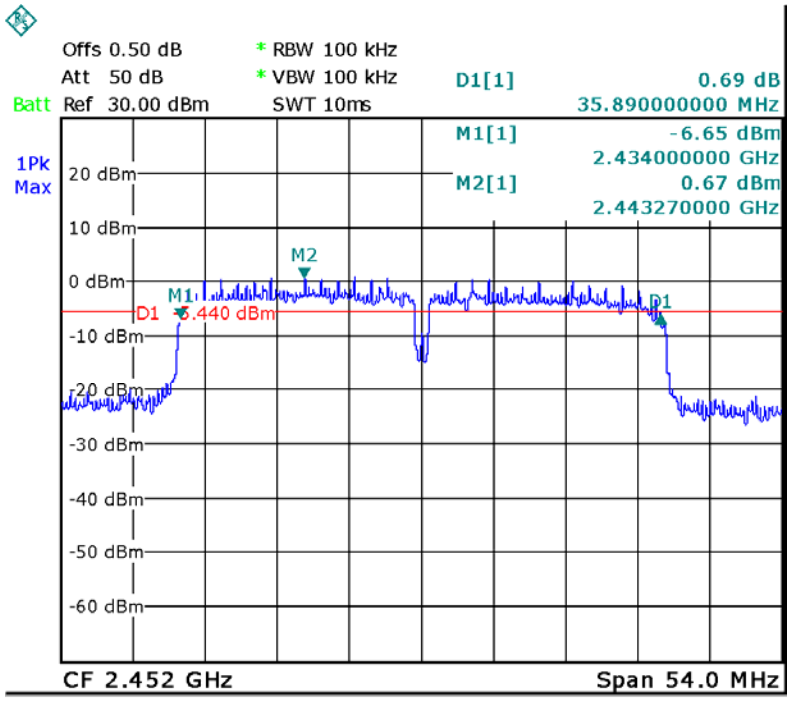
Date: 21.MAY.2013 19:48:13

Mode: TX 11n HT 40 channel 6



Date: 21.MAY.2013 19:50:26

Mode: TX 11n HT 40 channel 9



Date: 21.MAY.2013 19:52:31

10 Maximum Peak Output Power

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB558074 D01 V03 R01 04/09/2013

10.1 Test Procedure:

KDB558074 D01 V03 R01 04/09/2013

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer: RBW = 1MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak, Set the span to fully encompass the DTS bandwidth.

3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

10.2 Test Result:

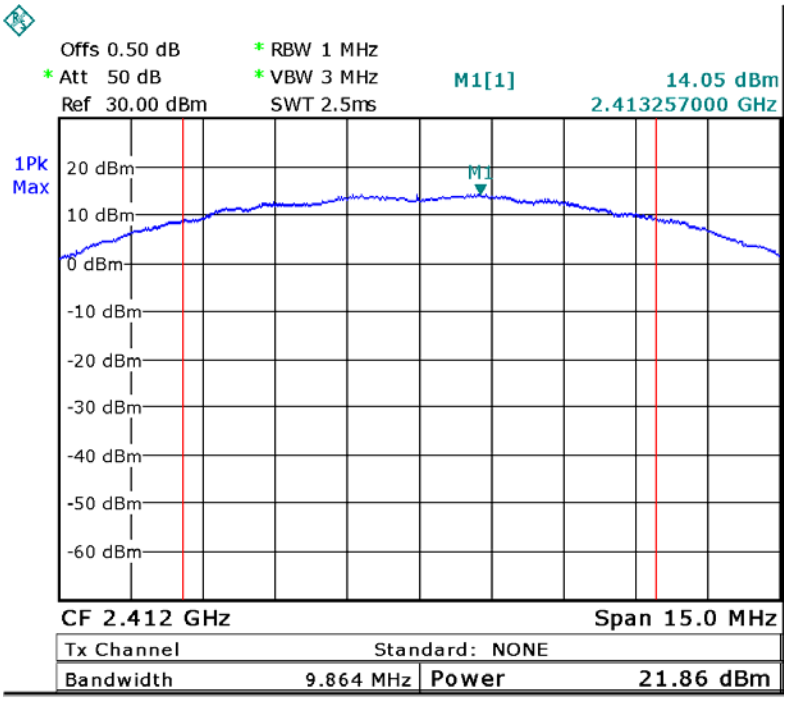
Test mode :TX 11b		
10 Maximum Peak Output Power (dBm)		
2412MHz	2437MHz	2462MHz
21.86	23.20	24.72
Limit		
1W/30dBm		

Test mode :TX 11g		
10 Maximum Peak Output Power (dBm)		
2412MHz	2437MHz	2462MHz
19.87	21.09	22.46
Limit		
1W/30dBm		

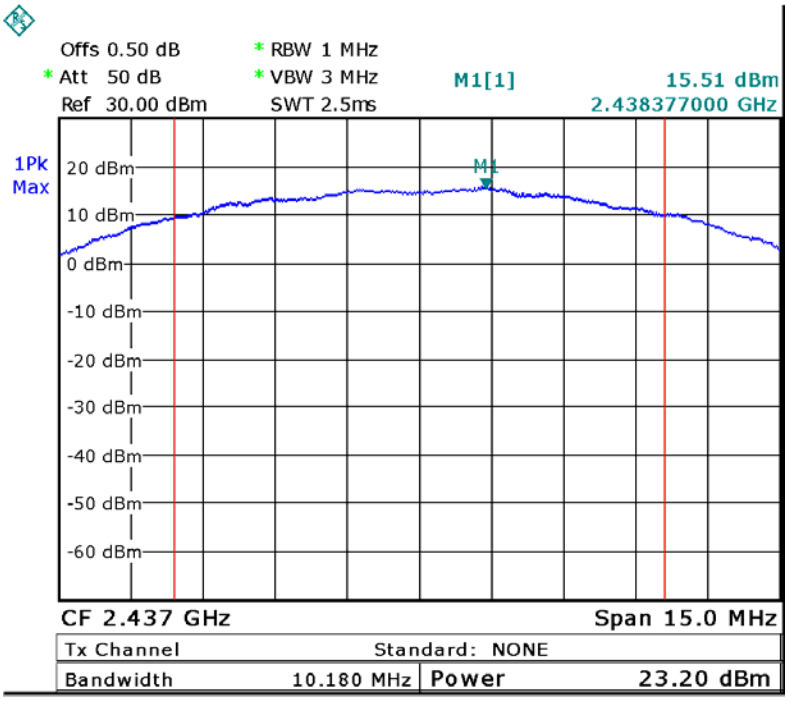
Test mode :TX 11n HT 20		
10 Maximum Peak Output Power (dBm)		
2412MHz	2437MHz	2462MHz
19.54	20.83	22.20
Limit		
1W/30dBm		

Test mode :TX 11n HT 40		
10 Maximum Peak Output Power (dBm)		
2422MHz	2437MHz	2452MHz
21.12	21.9	22.72
Limit		
1W/30dBm		

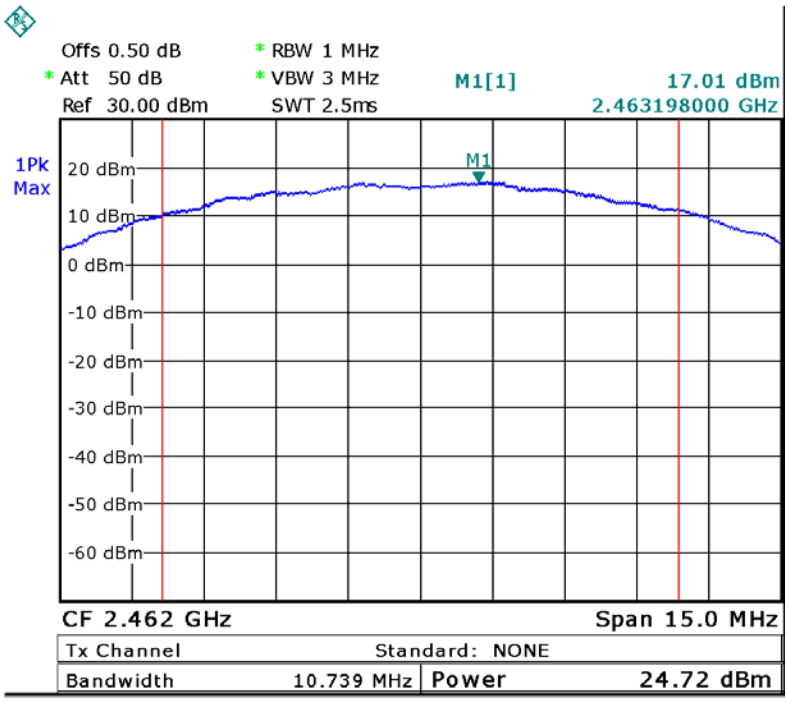
Test mode :TX 11b



Date: 21.JUN.2013 21:32:17

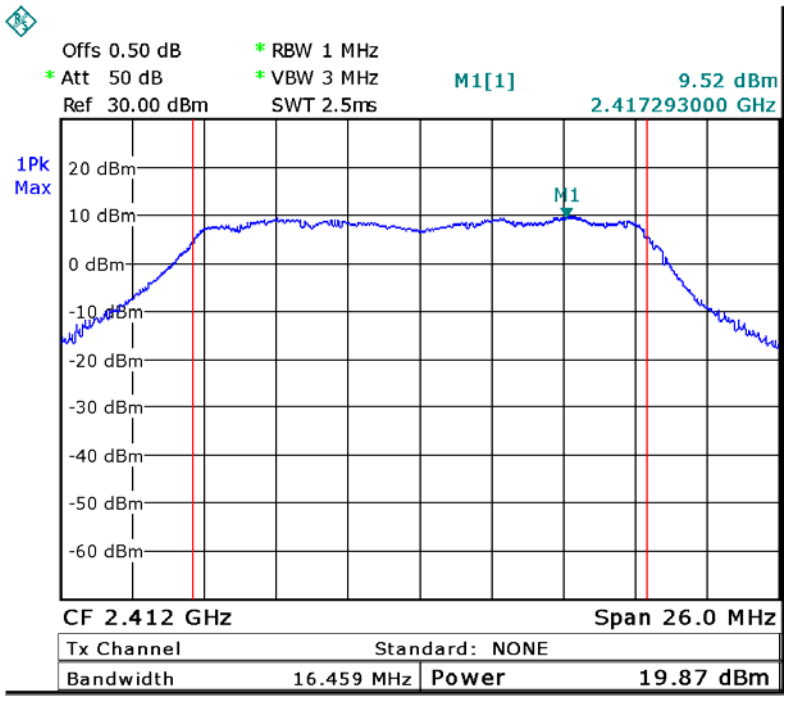


Date: 21.JUN.2013 21:35:18

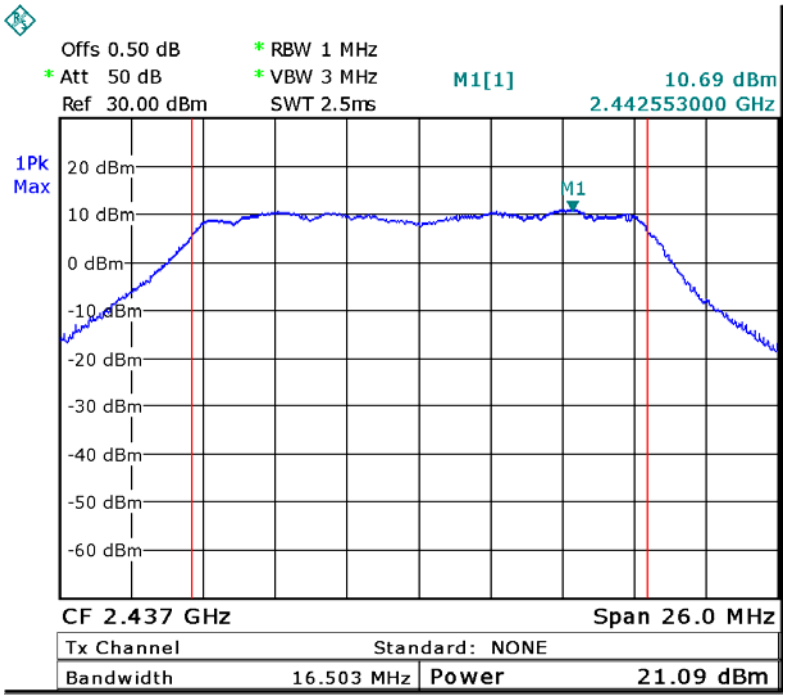


Date: 21.JUN.2013 21:36:15

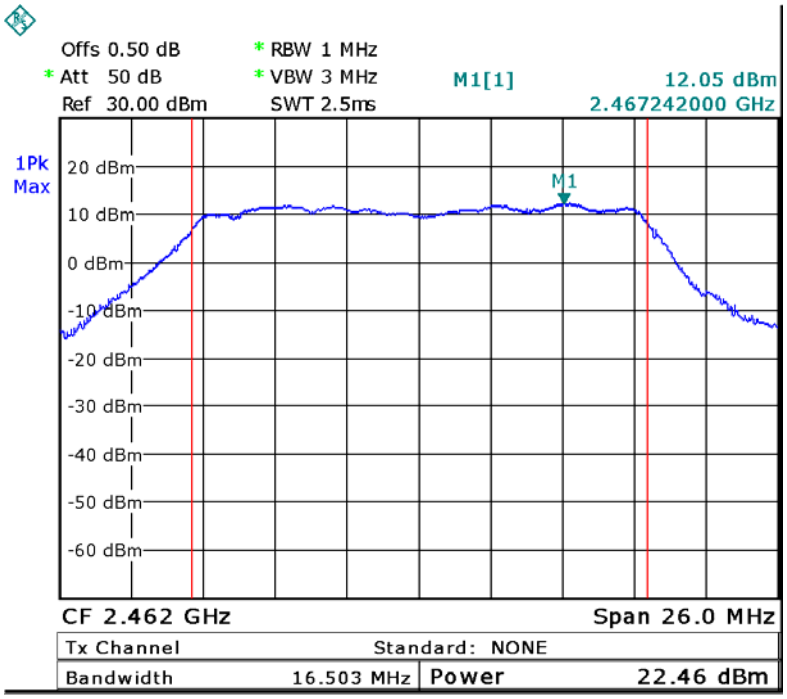
Test mode :TX 11g



Date: 21.JUN.2013 21:45:03

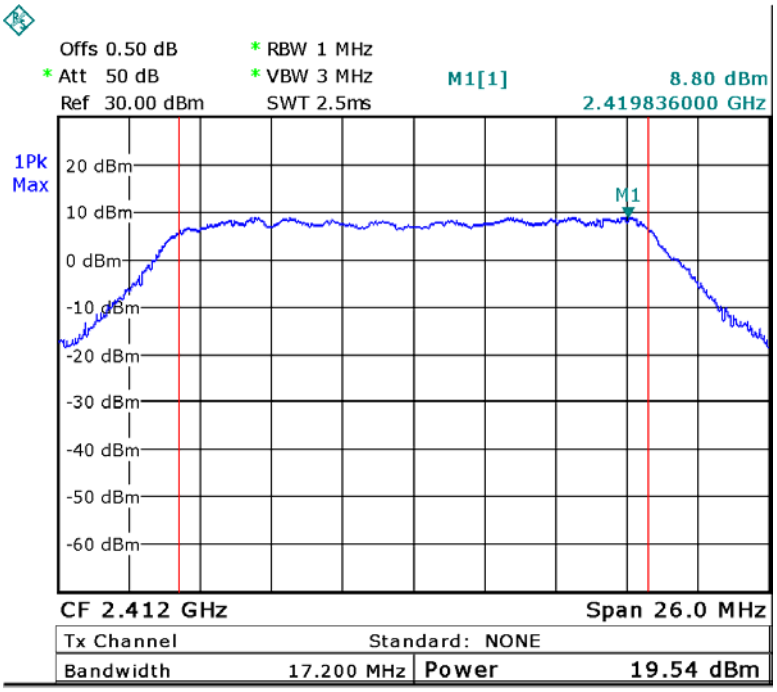


Date: 21.JUN.2013 21:43:19

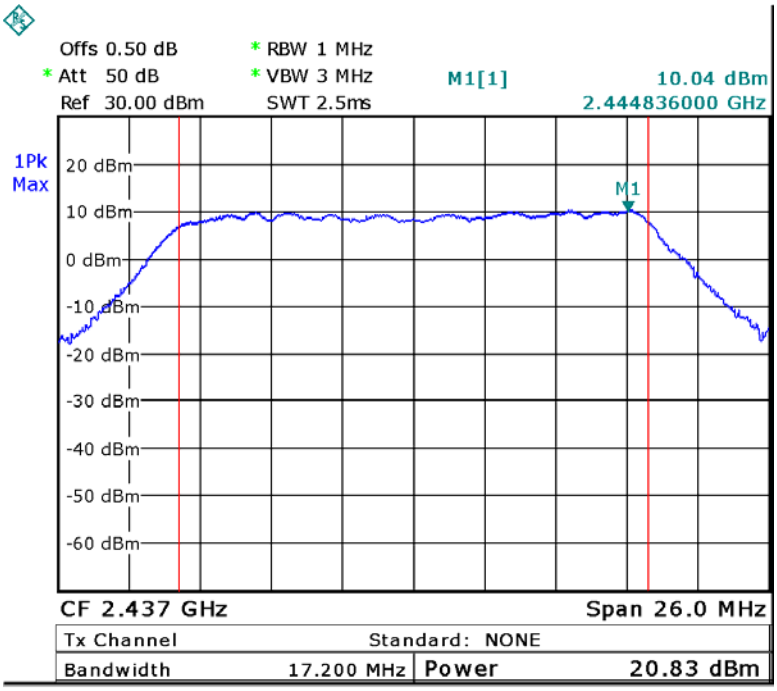


Date: 21.JUN.2013 21:42:28

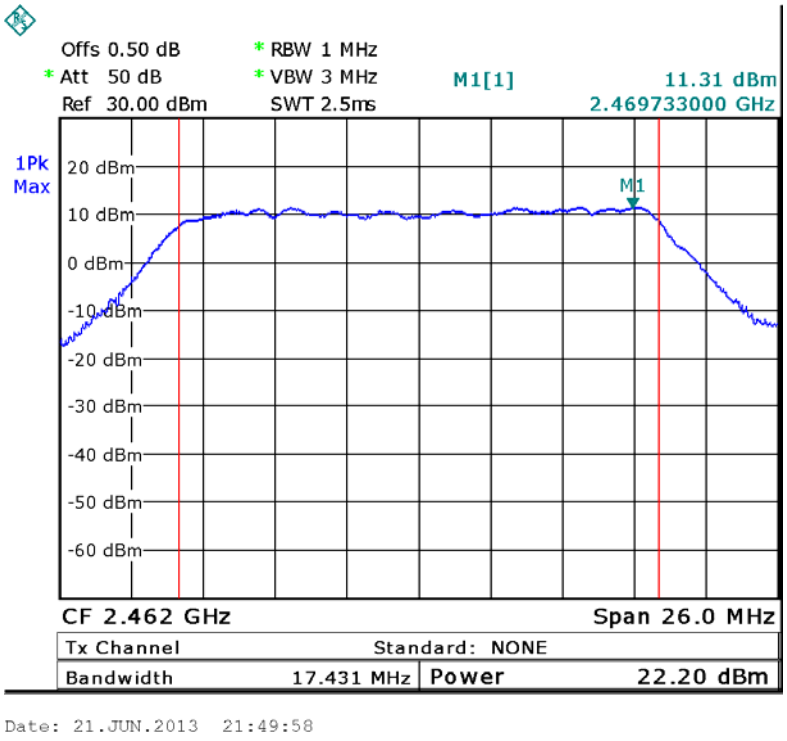
Test mode :TX 11n HT 20



Date: 21.JUN.2013 21:47:10

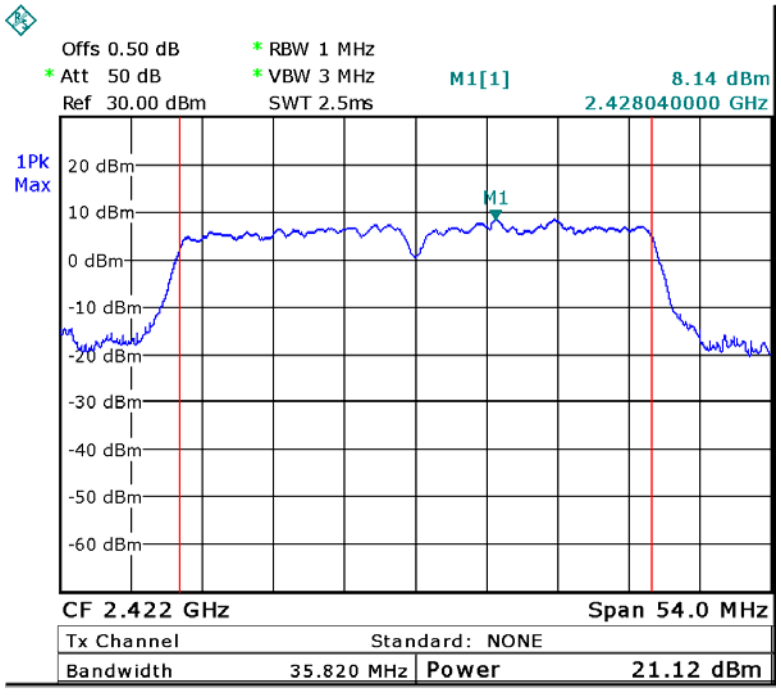


Date: 21.JUN.2013 21:48:19

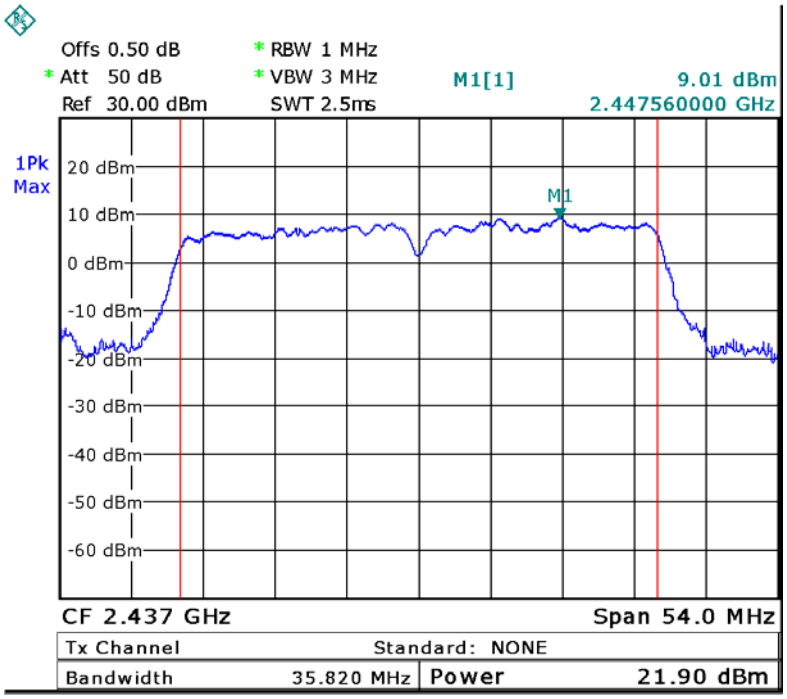


Date: 21.JUN.2013 21:49:58

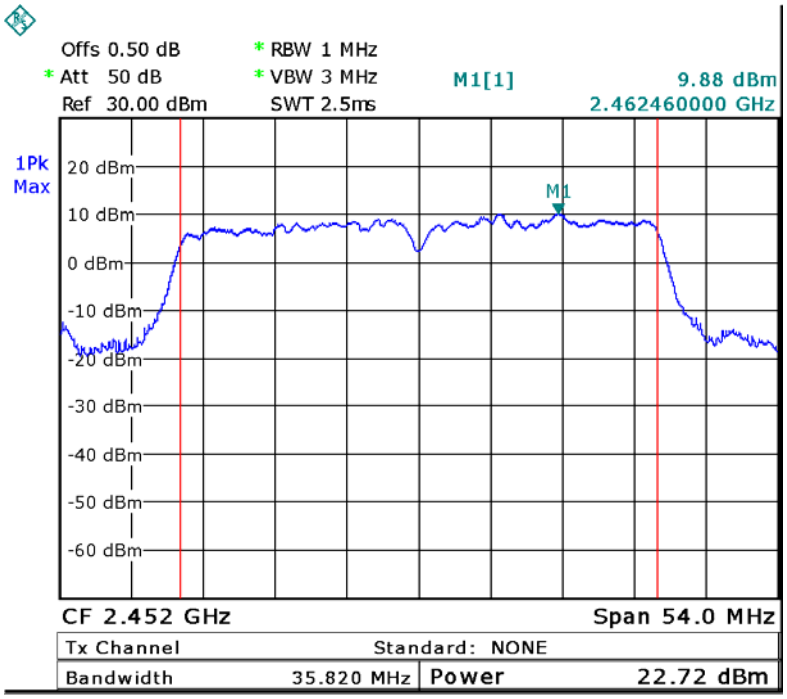
Test mode :TX 11n HT 40



Date: 21.JUN.2013 22:01:27

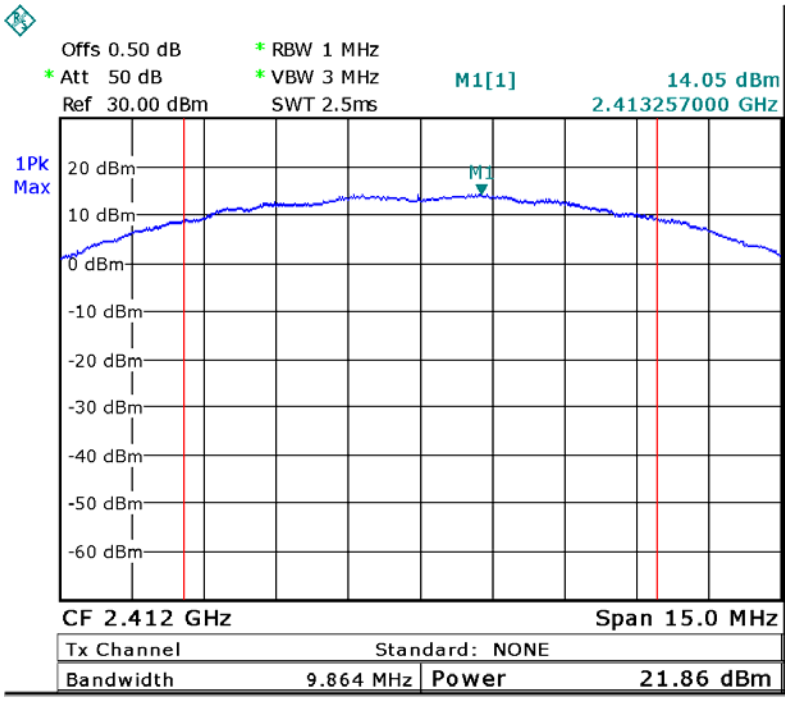


Date: 21.JUN.2013 21:59:28

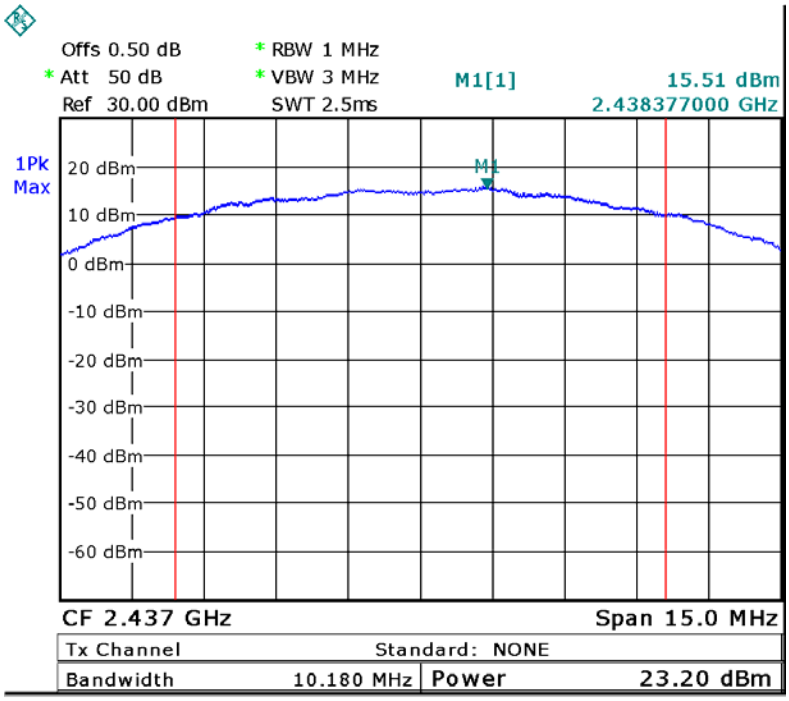


Date: 21.JUN.2013 22:00:46

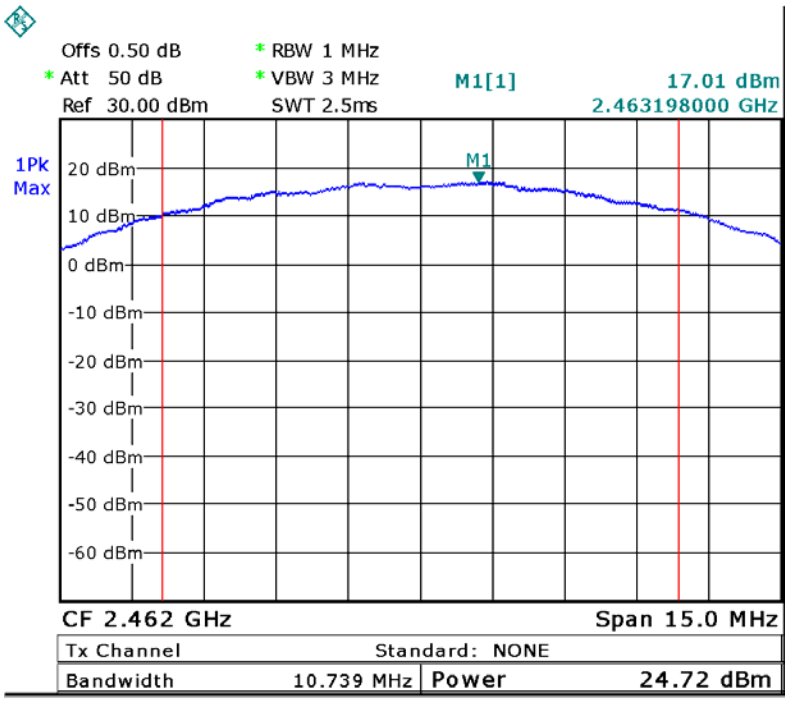
Test mode :TX 11b



Date: 21.JUN.2013 21:32:17

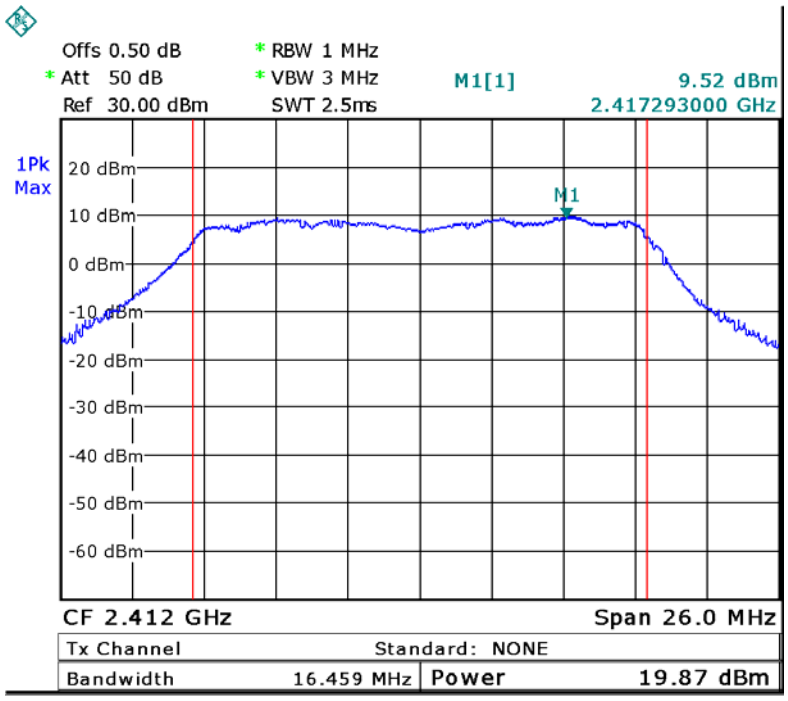


Date: 21.JUN.2013 21:35:18

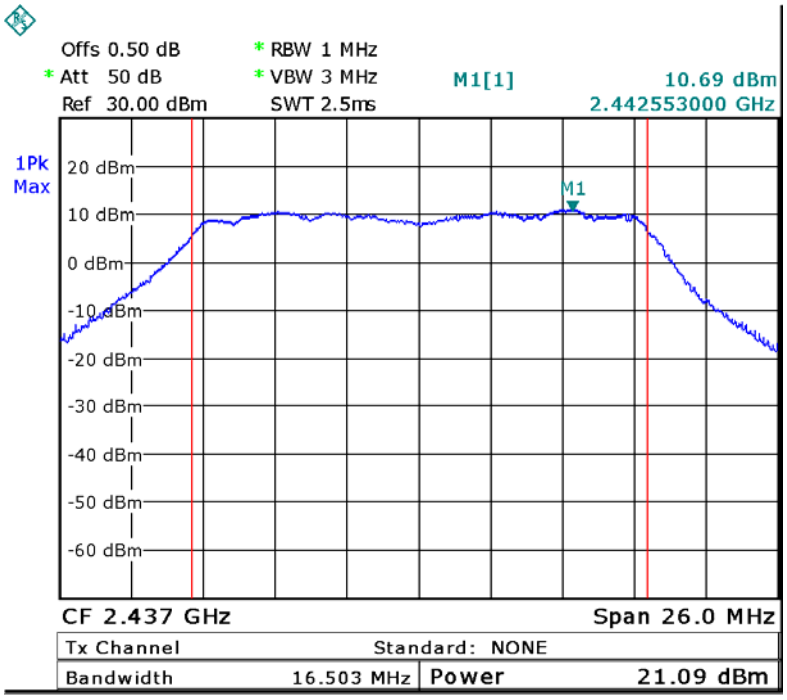


Date: 21.JUN.2013 21:36:15

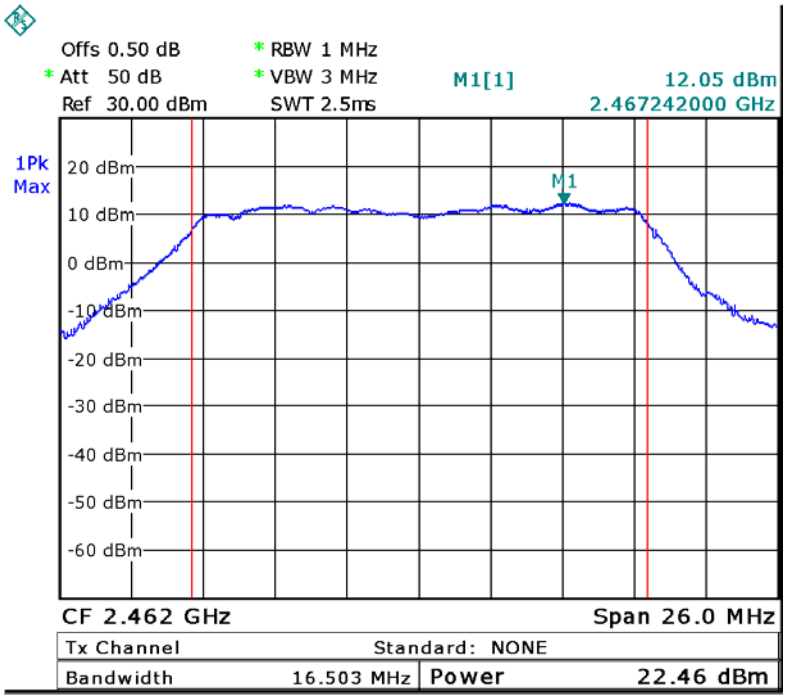
Test mode :TX 11g



Date: 21.JUN.2013 21:45:03

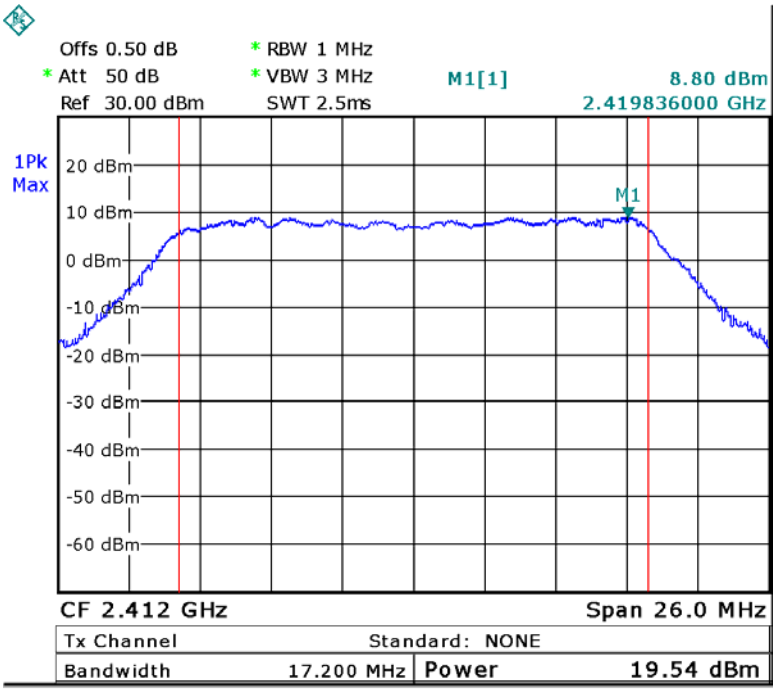


Date: 21.JUN.2013 21:43:19

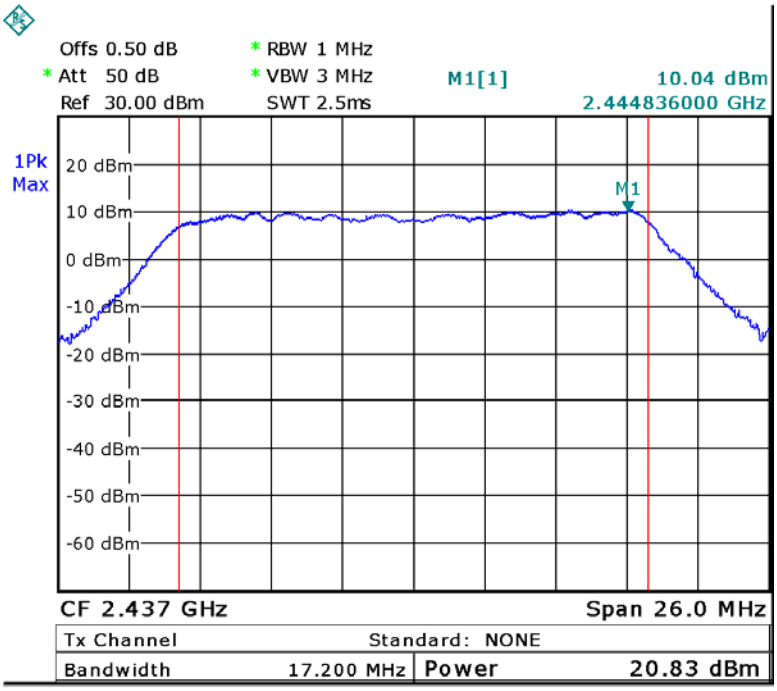


Date: 21.JUN.2013 21:42:28

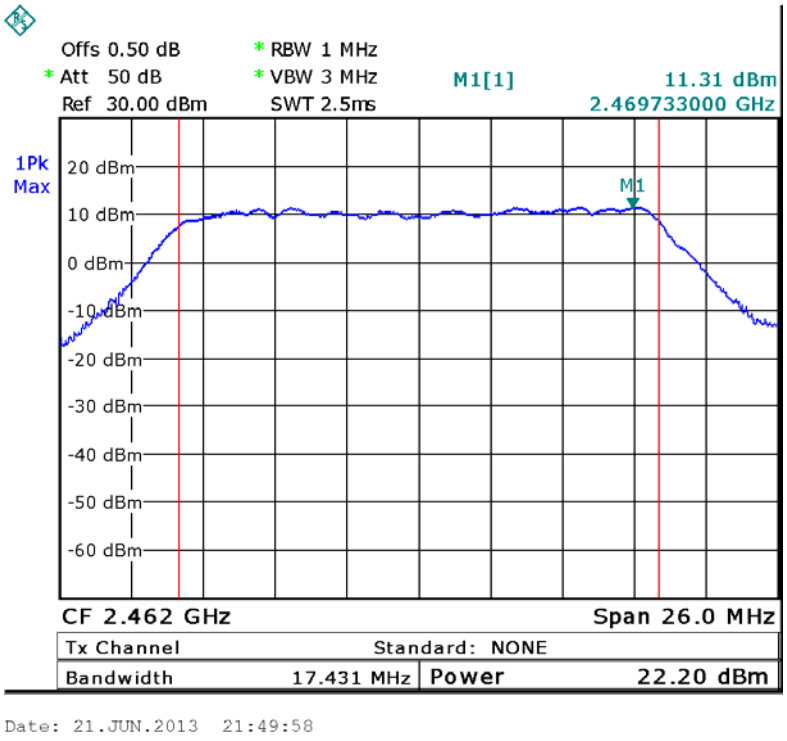
Test mode :TX 11n HT 20



Date: 21.JUN.2013 21:47:10

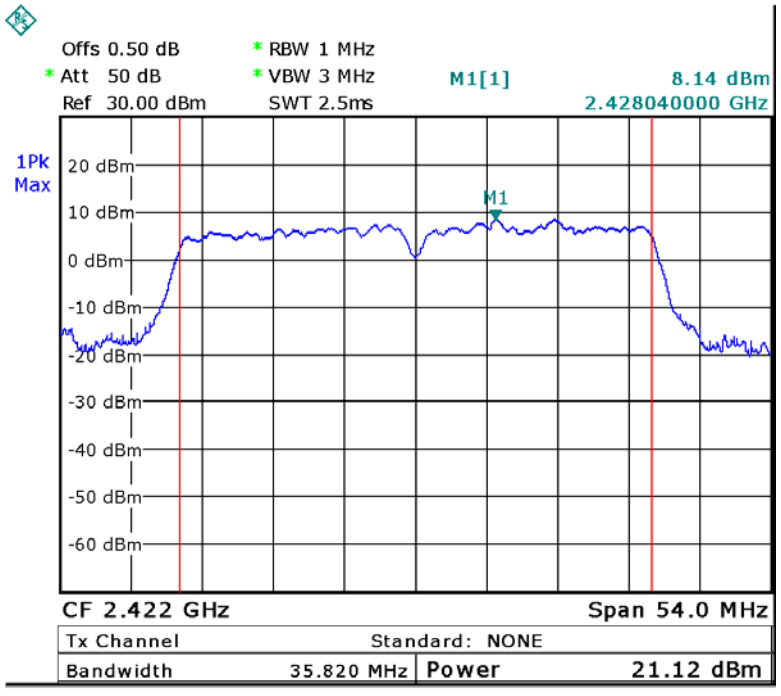


Date: 21.JUN.2013 21:48:19

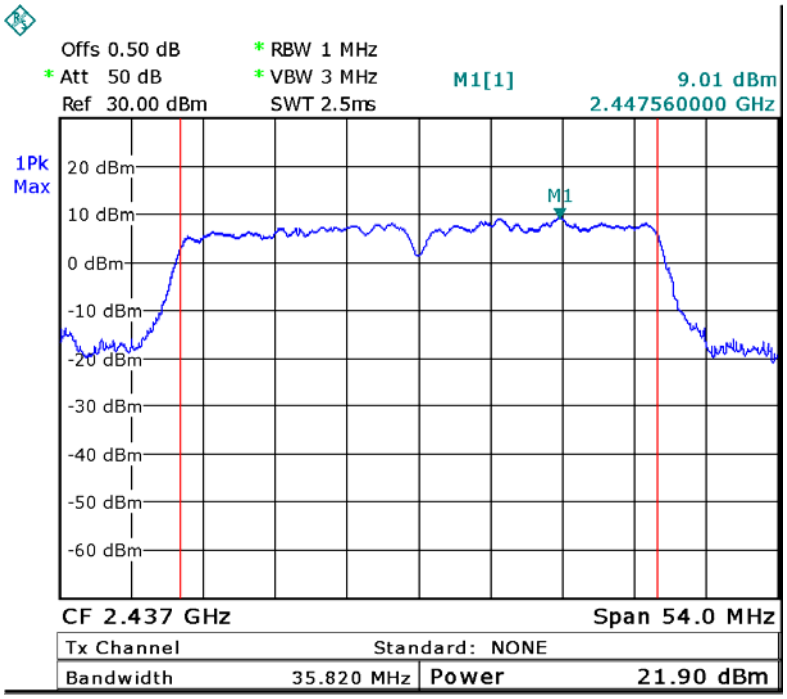


Date: 21.JUN.2013 21:49:58

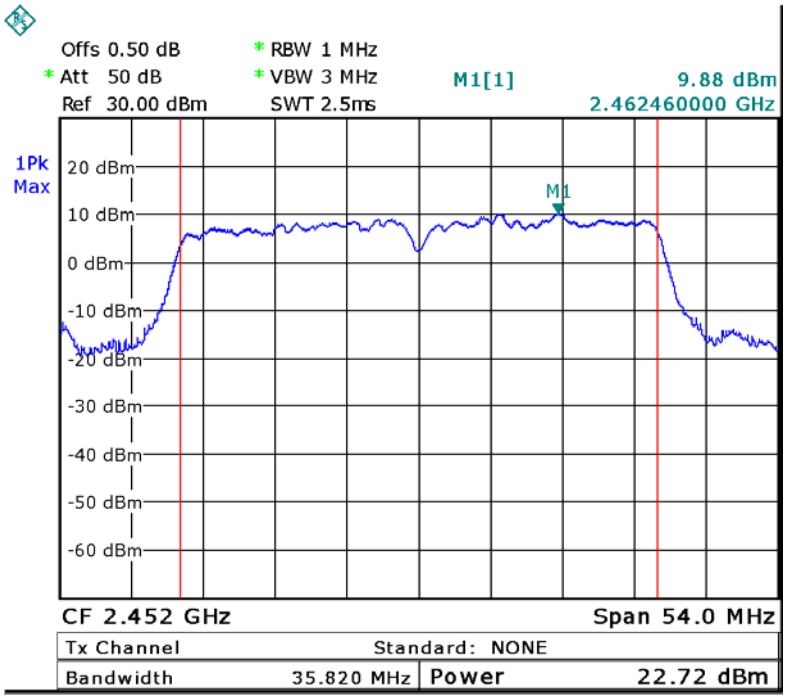
Test mode :TX 11n HT 40



Date: 21.JUN.2013 22:01:27



Date: 21.JUN.2013 21:59:28



Date: 21.JUN.2013 22:00:46

11 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB558074 D01 V03 R01 04/09/2013

11.1 Test Procedure:

KDB558074 D01 V03 R01 04/09/2013

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

11.2 Test Result:

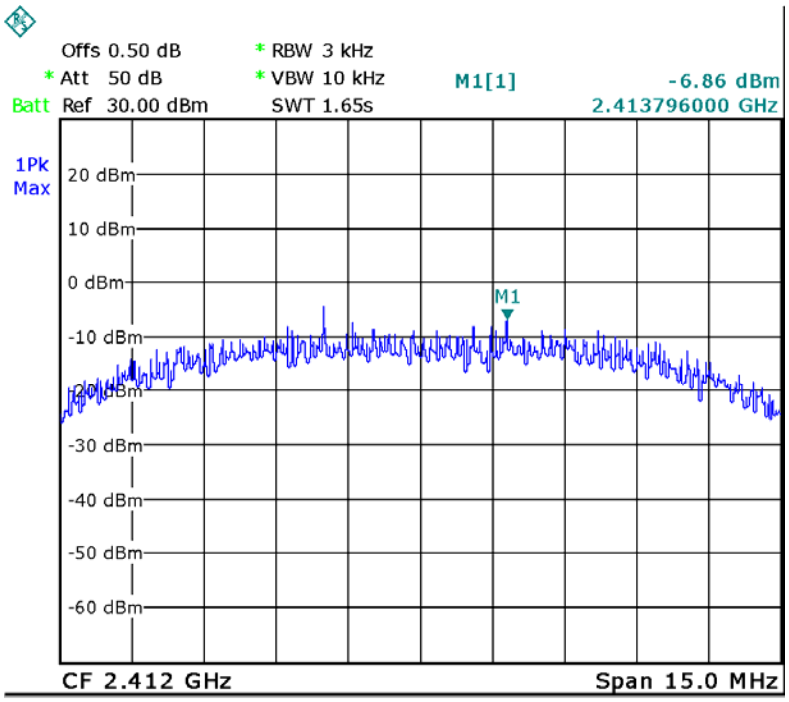
Test mode :TX 11b		
10 Maximum Peak Output Power (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-6.86	-2.43	-6.95
Limit		
8dBm per 3kHz		

Test mode :TX 11g		
10 Maximum Peak Output Power (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-12.81	-12.94	-14.66
Limit		
8dBm per 3kHz		

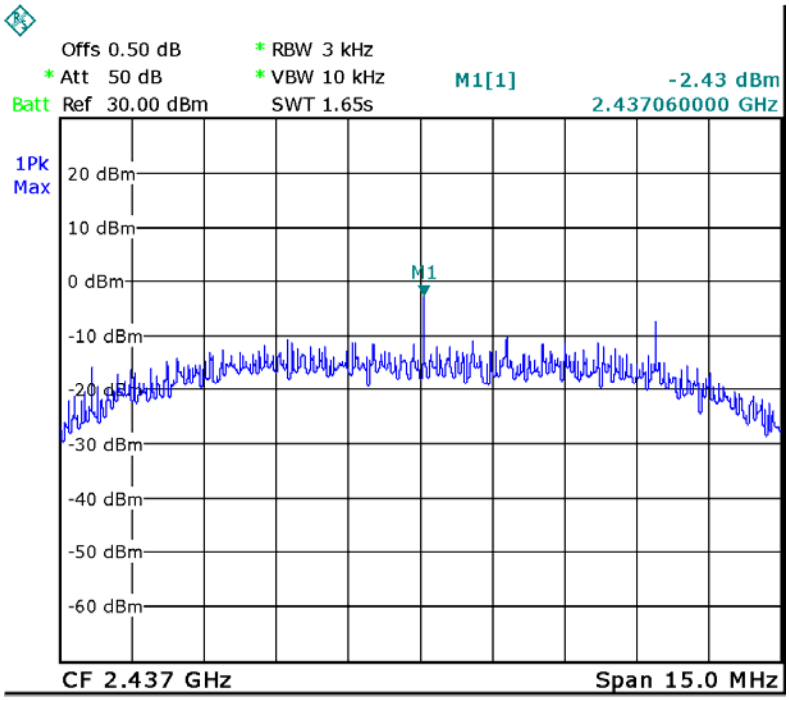
Test mode :TX 11n HT 20		
10 Maximum Peak Output Power (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-11.57	-12.09	-13.12
Limit		
8dBm per 3kHz		

Test mode :TX 11n HT 40		
10 Maximum Peak Output Power (dBm per 3kHz)		
2422MHz	2437MHz	2452MHz
-15.12	-15.60	-15.64
Limit		
8dBm per 3kHz		

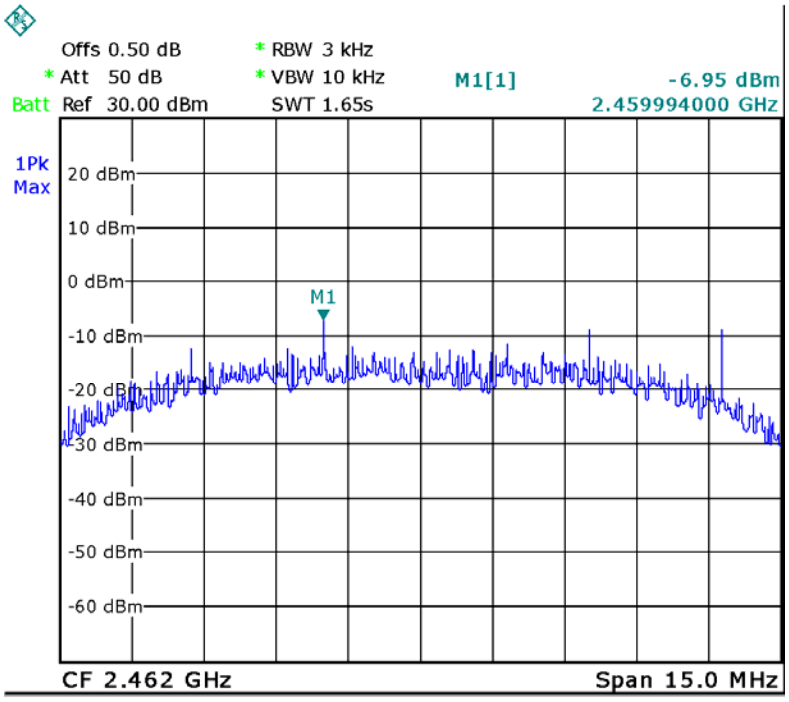
Test mode :TX 11b



Date: 22.MAY.2013 01:11:17

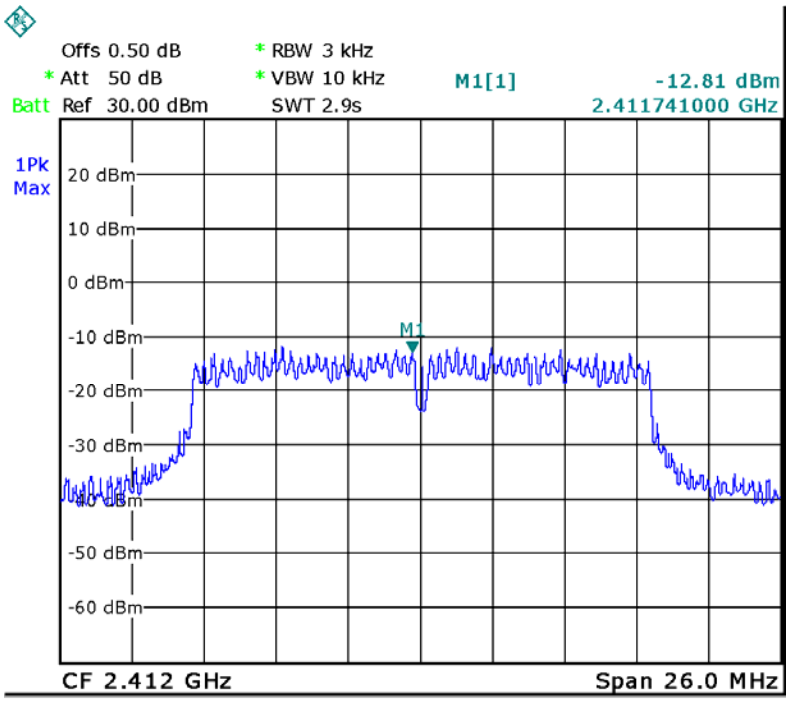


Date: 22.MAY.2013 01:12:18

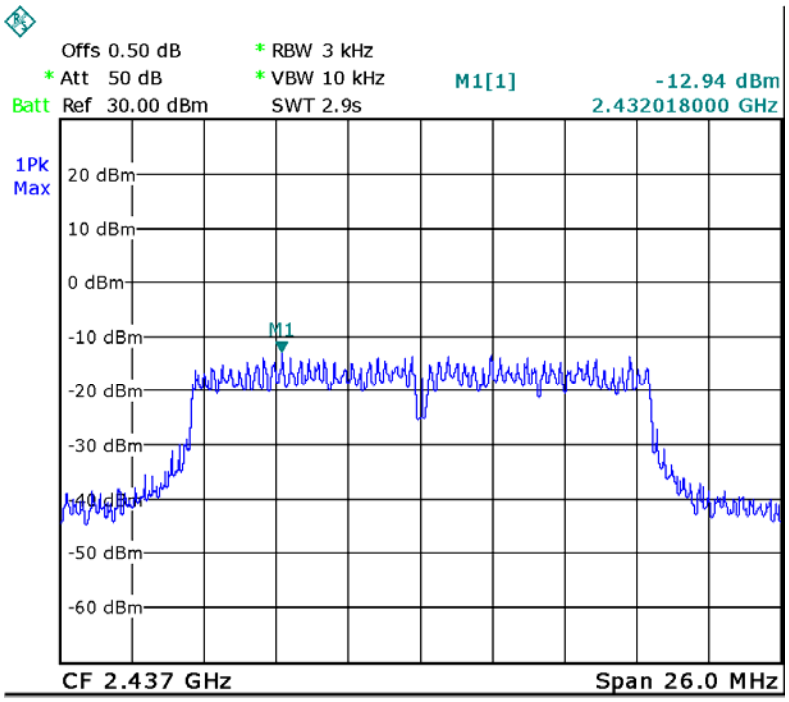


Date: 22.MAY.2013 01:13:13

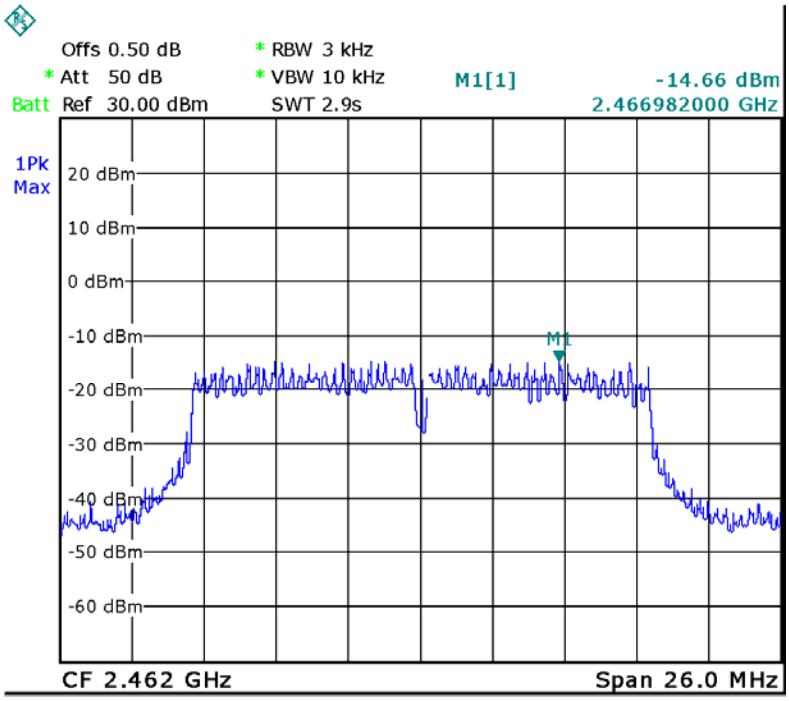
Test mode :TX 11g



Date: 22.MAY.2013 01:15:15

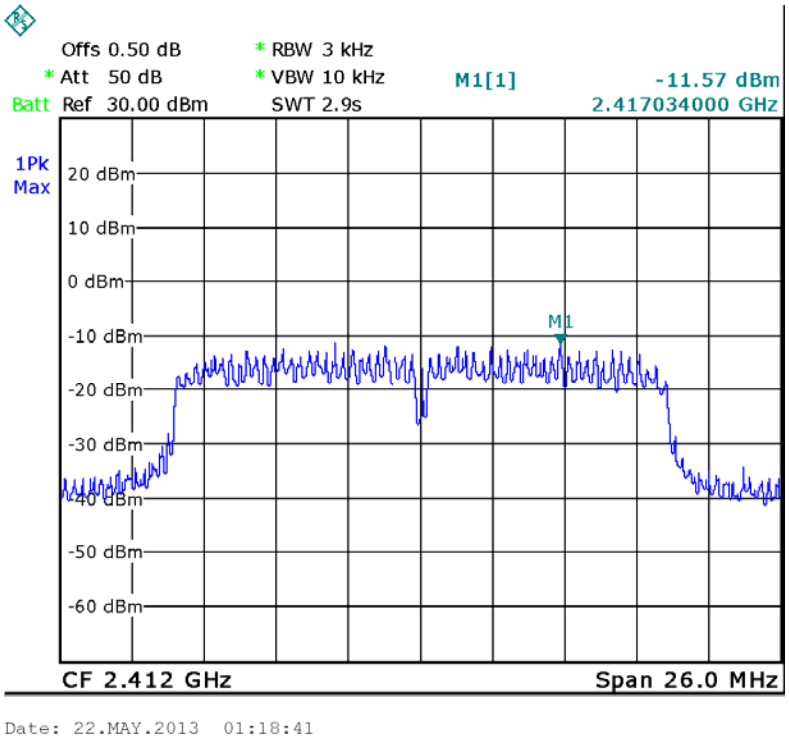


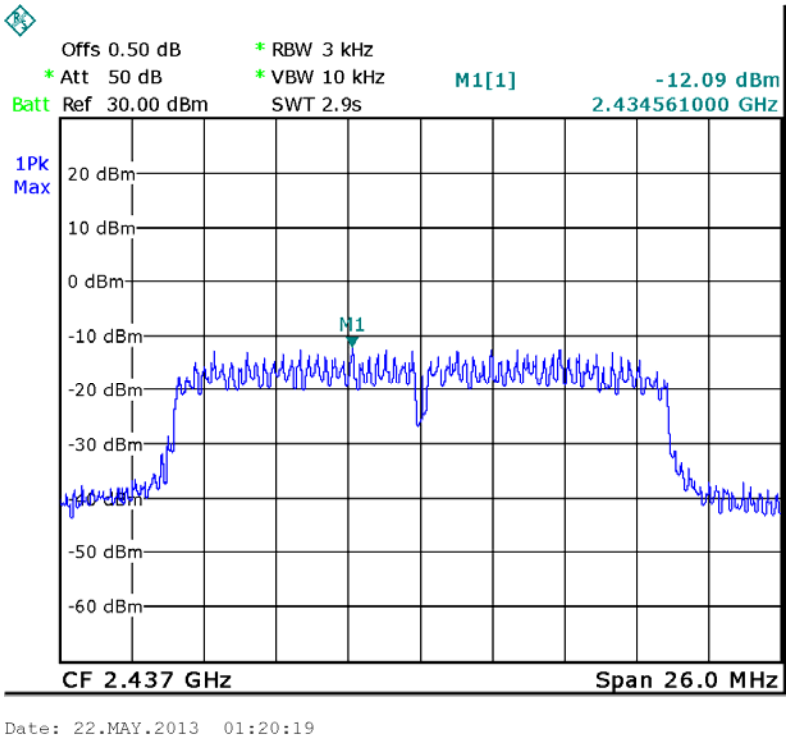
Date: 22.MAY.2013 01:16:23

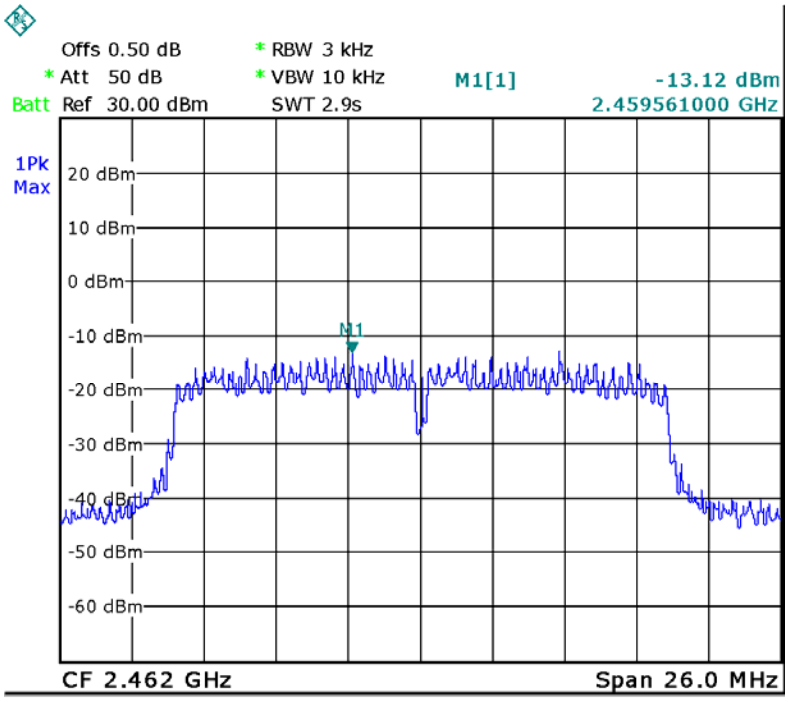


Date: 22.MAY.2013 01:17:23

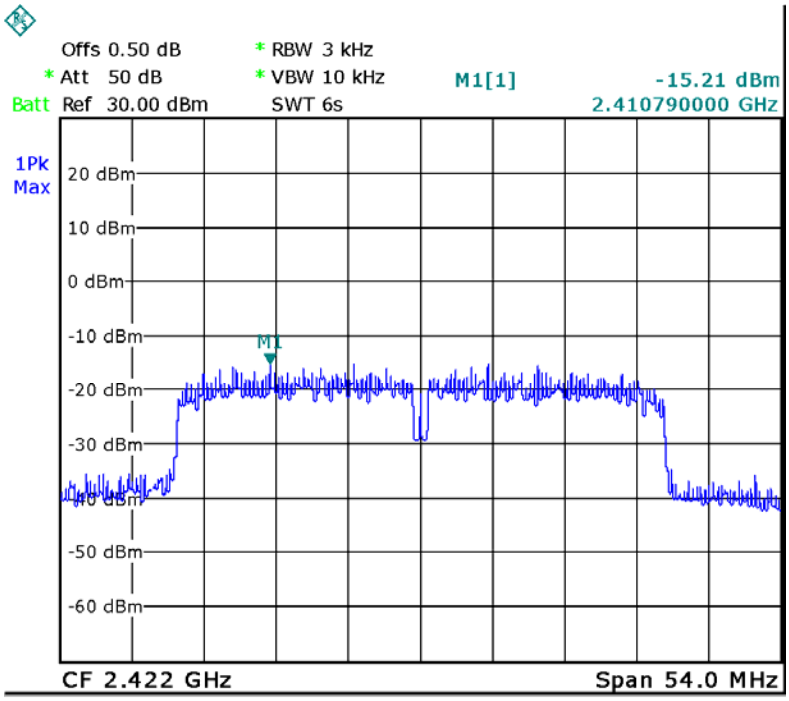
Test mode :TX 11n HT 20

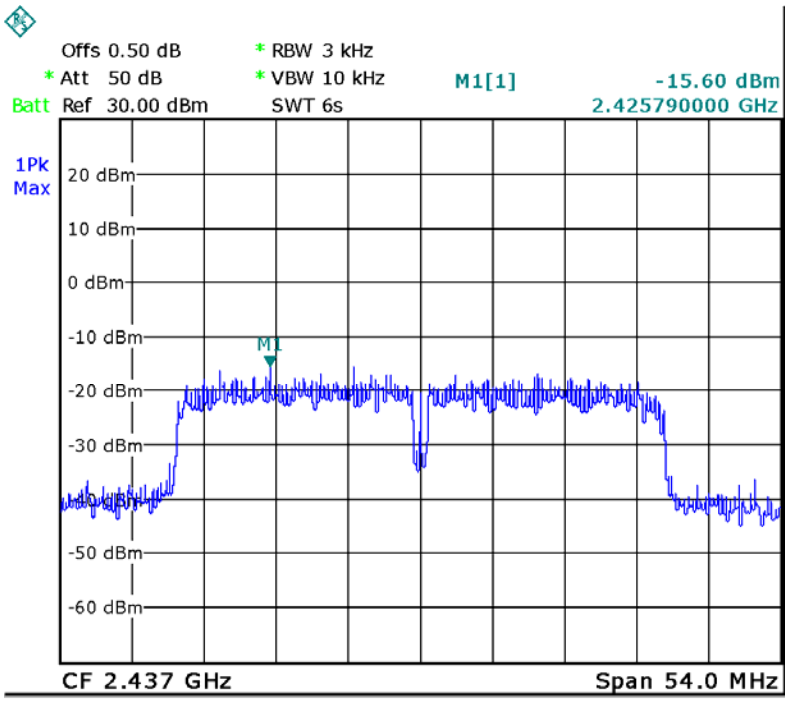




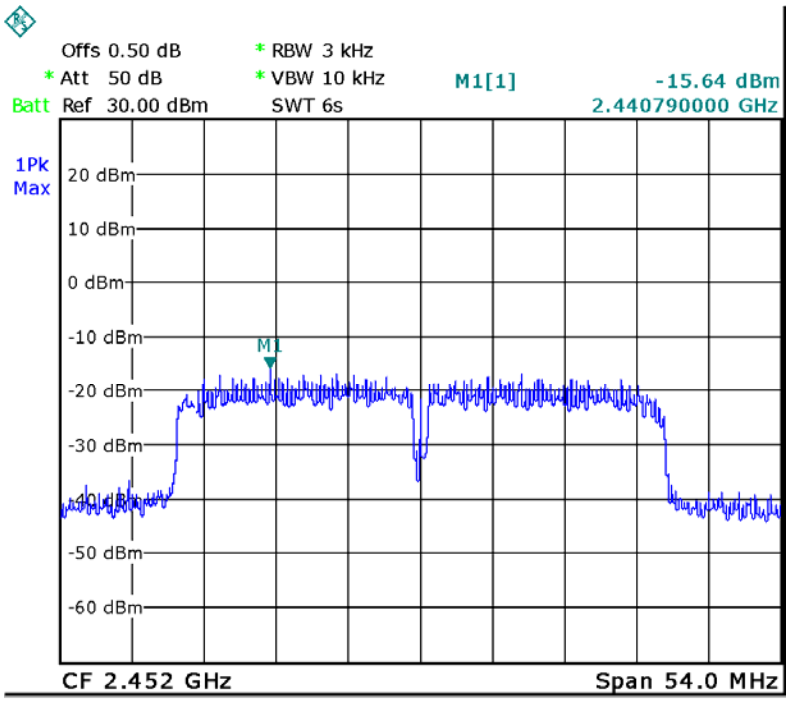


Test mode :TX 11n HT 40





Date: 22.MAY.2013 01:25:10



Date: 22.MAY.2013 01:26:51

12 Emissions from out of band

Test Requirement:	FCC CFR47 Part 15 Section 15.247(d)
Test Method:	KDB558074 D01 V03 R01 04/09/2013
Test Limit:	Emissions produced by the device outside the authorized frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the fundamental.
Test Mode:	Test in fixing operating frequency at lower, middle, upper channel.

12.1 Test Procedure:

KDB558074 D01 V03 R01 04/09/2013
The maximum peak conducted output power procedure was used to demonstrate compliance to 15.247(b)(3) requirements, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz. This measurement was performed over a frequency range that spans from the lowest frequency generated in the device up to and including the tenth harmonic of the highest fundamental frequency.

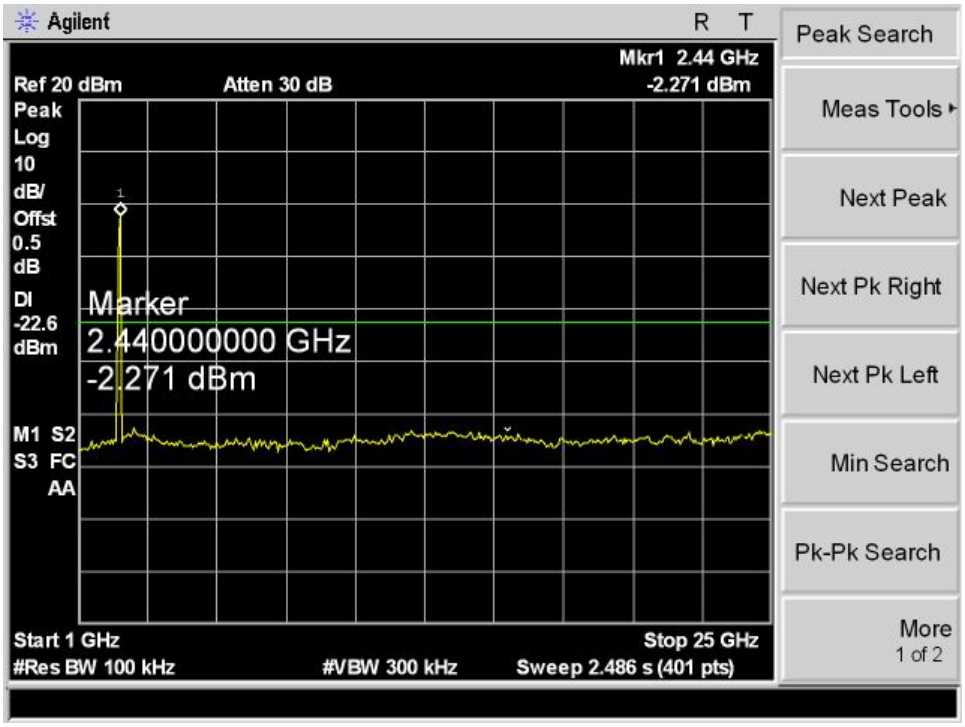
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set to span from the lowest frequency generated in the device up to and including the tenth harmonic of the highest fundamental frequency
3. For below 1GHz,Set RBW = 100kHz and VBW = 100kHz.Sweep =auto. For above1GHz,Set RBW = 1MHz and VBW = 1MHz.Sweep =auto.
4. mark the worst point and record.

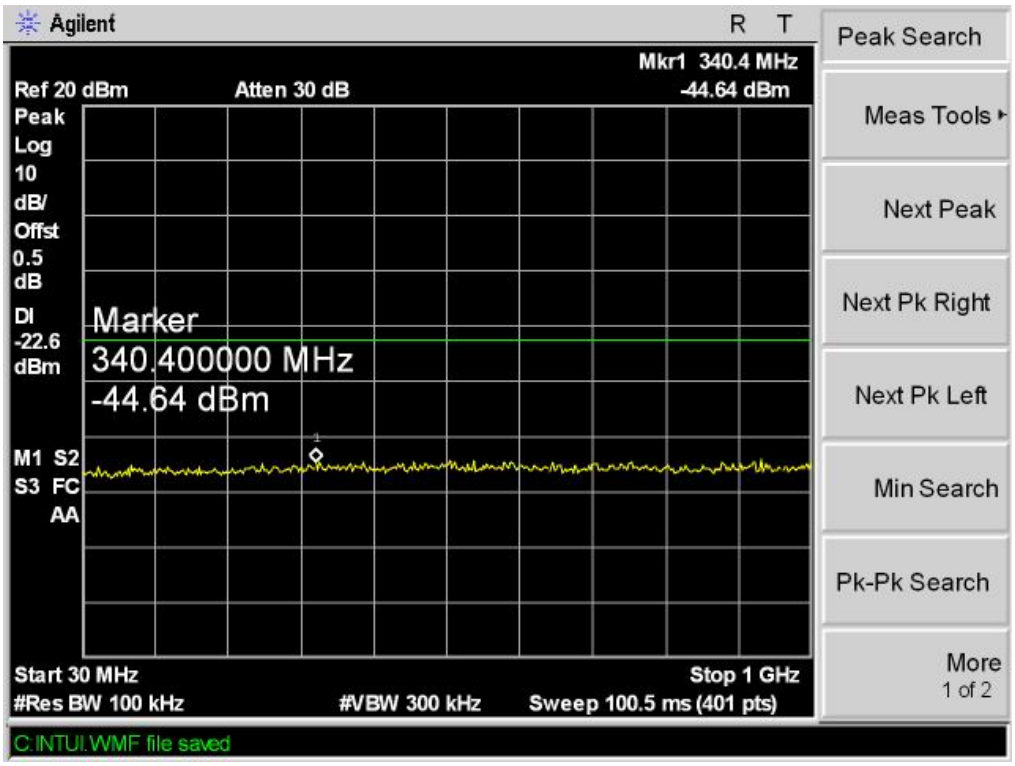
12.2 Test Result:

Test Frequency : Below 30MHz
Remark:For emissions below 30MHz,no emission higher than background level,so the data does not show in the report.

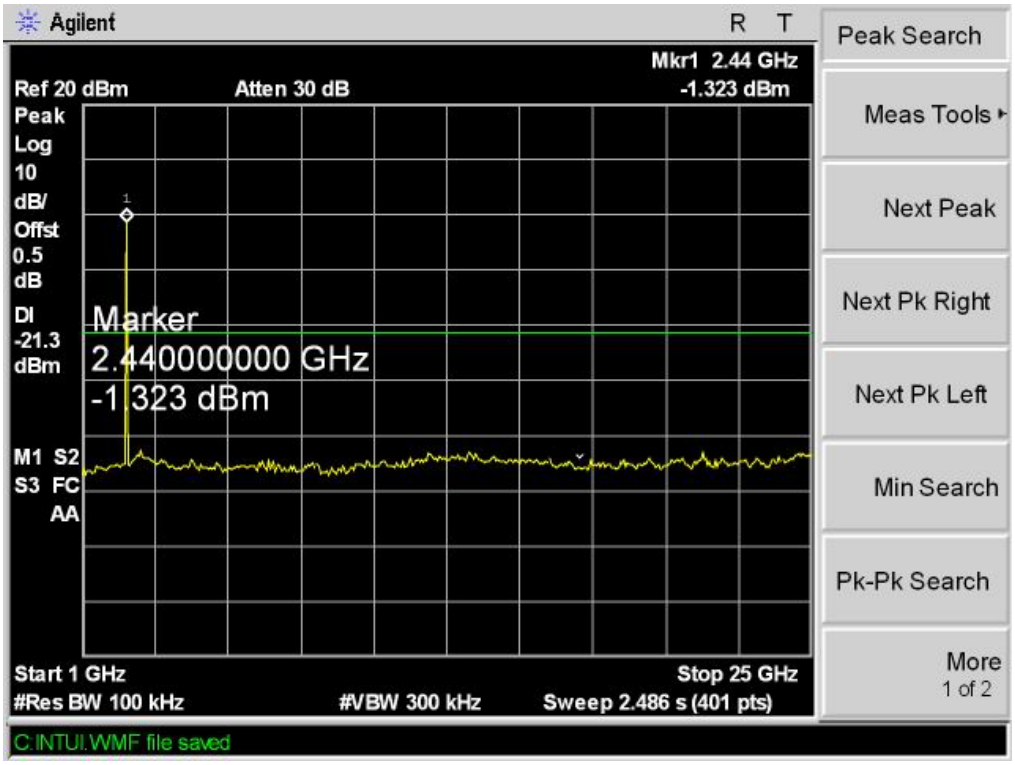
Test Frequency : 1GHz ~25GHz

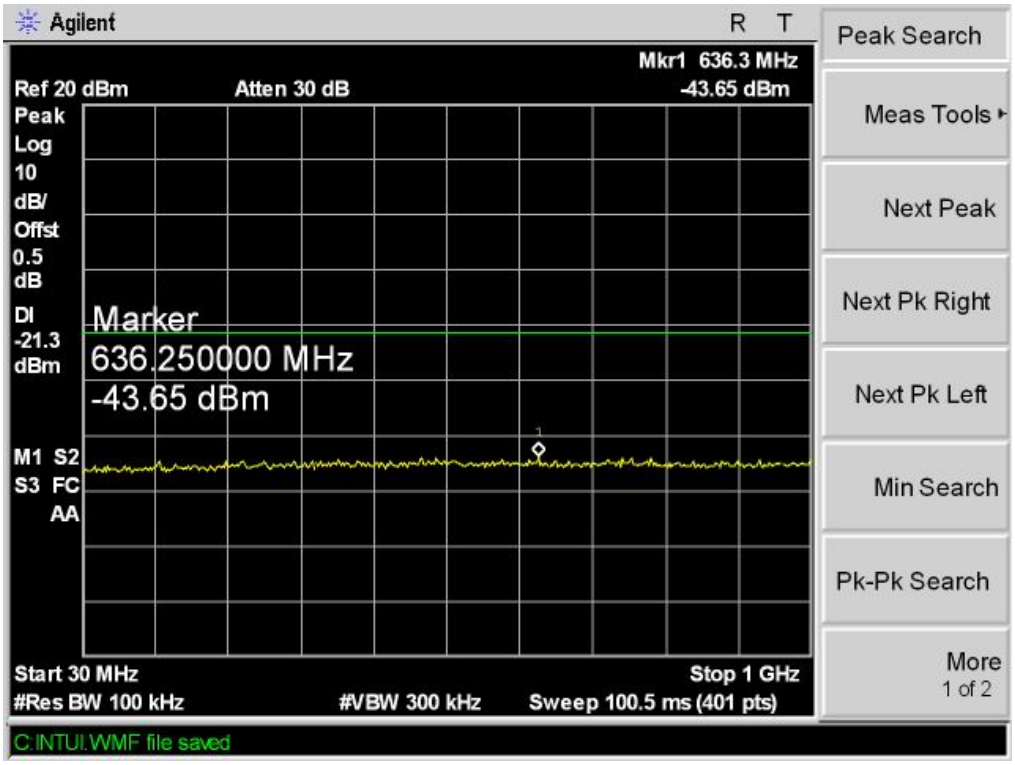
Test mode :TX 11b Lower channel



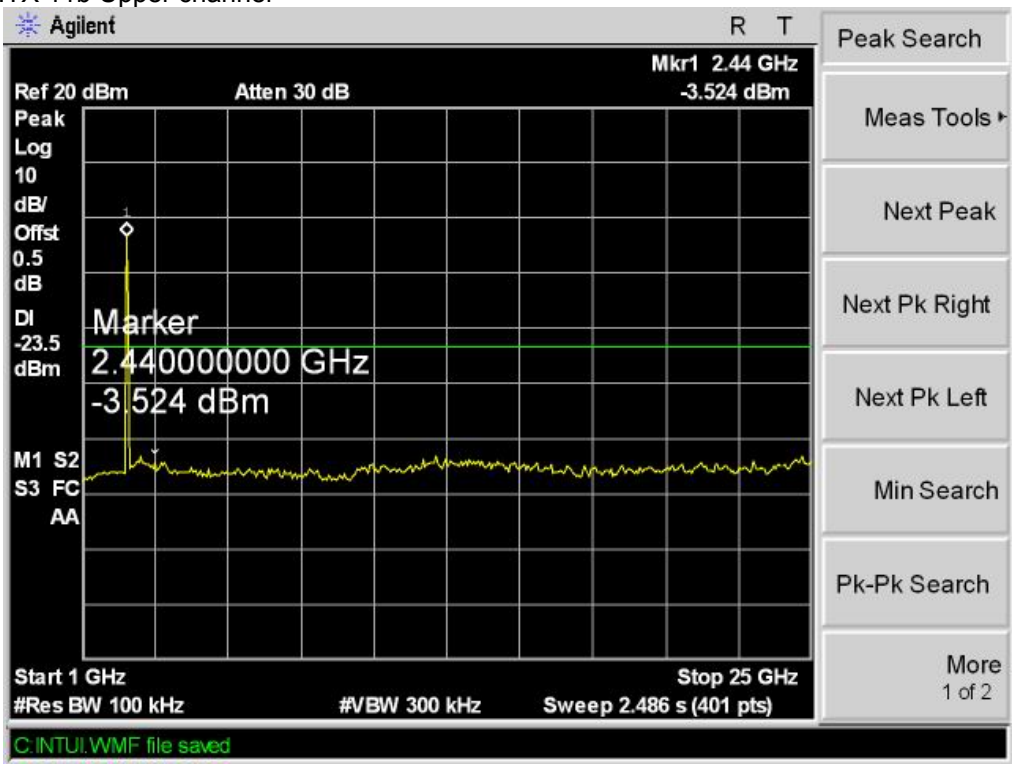


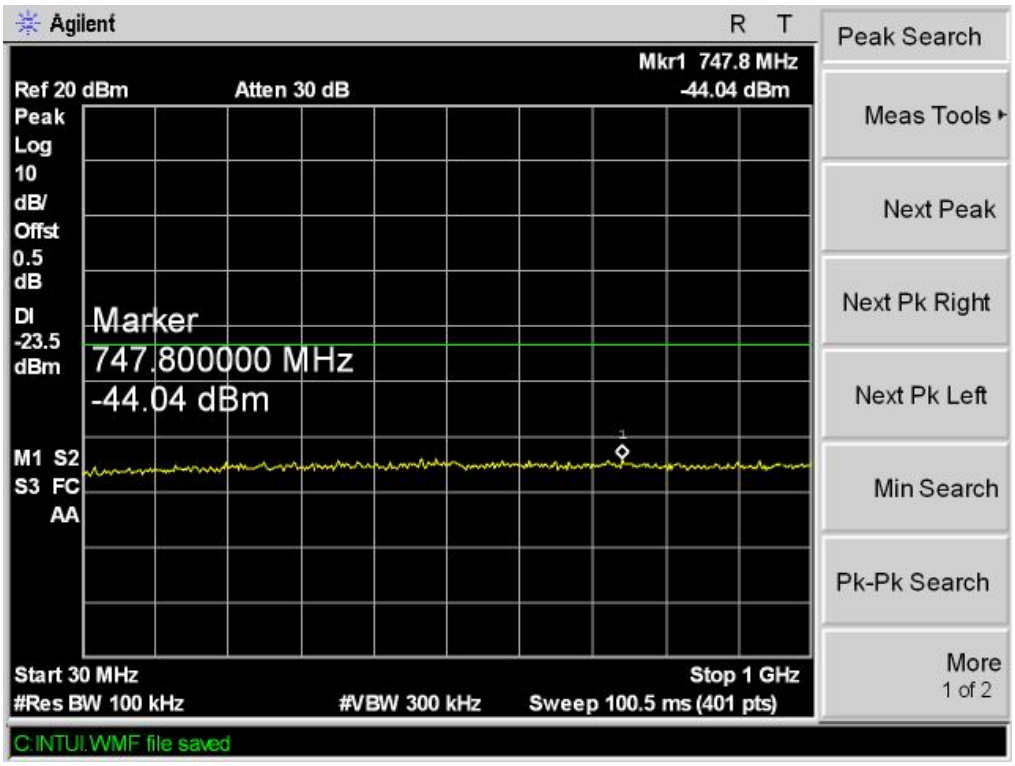
Test mode :TX 11b Middle channel



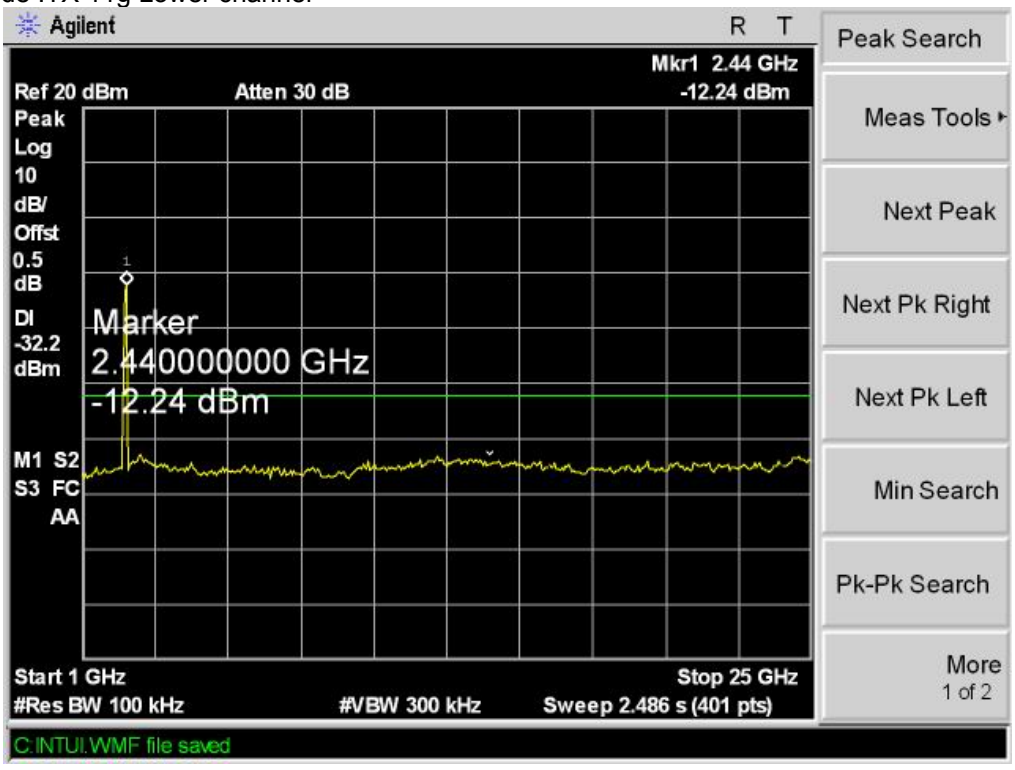


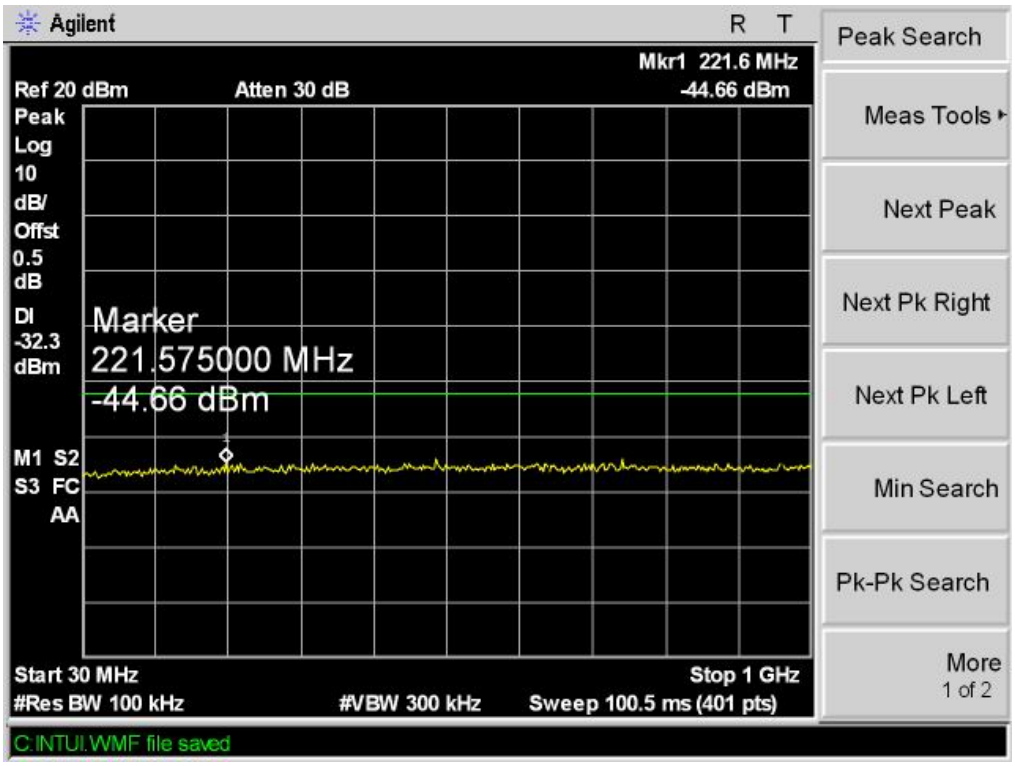
Test mode :TX 11b Upper channel



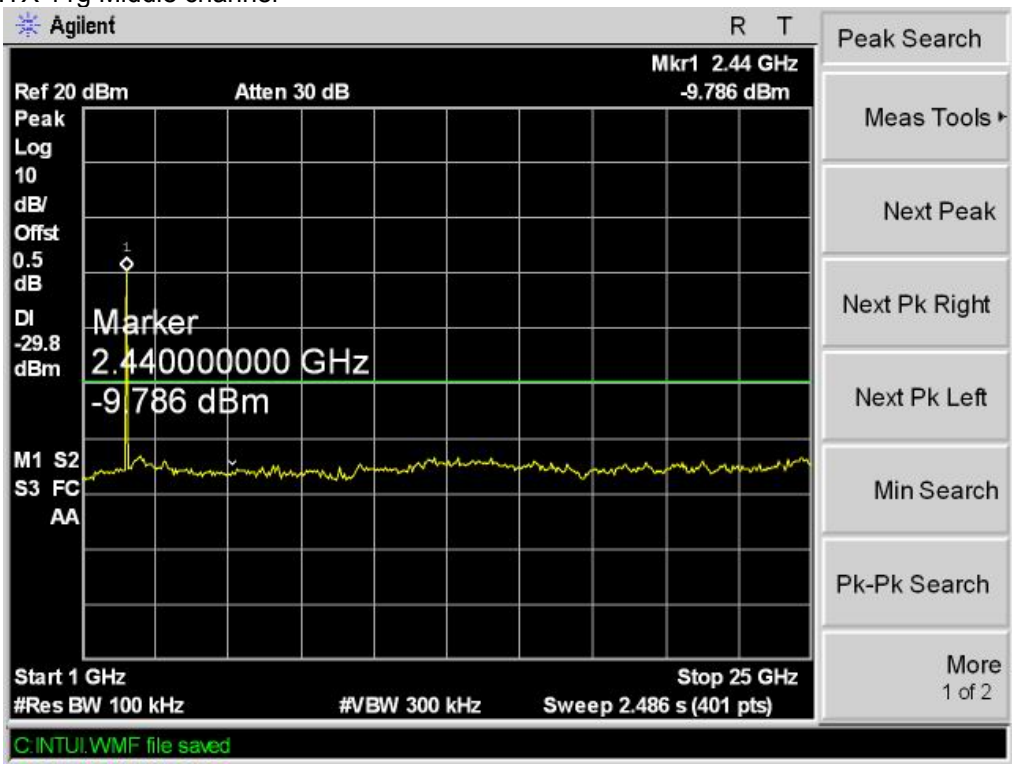


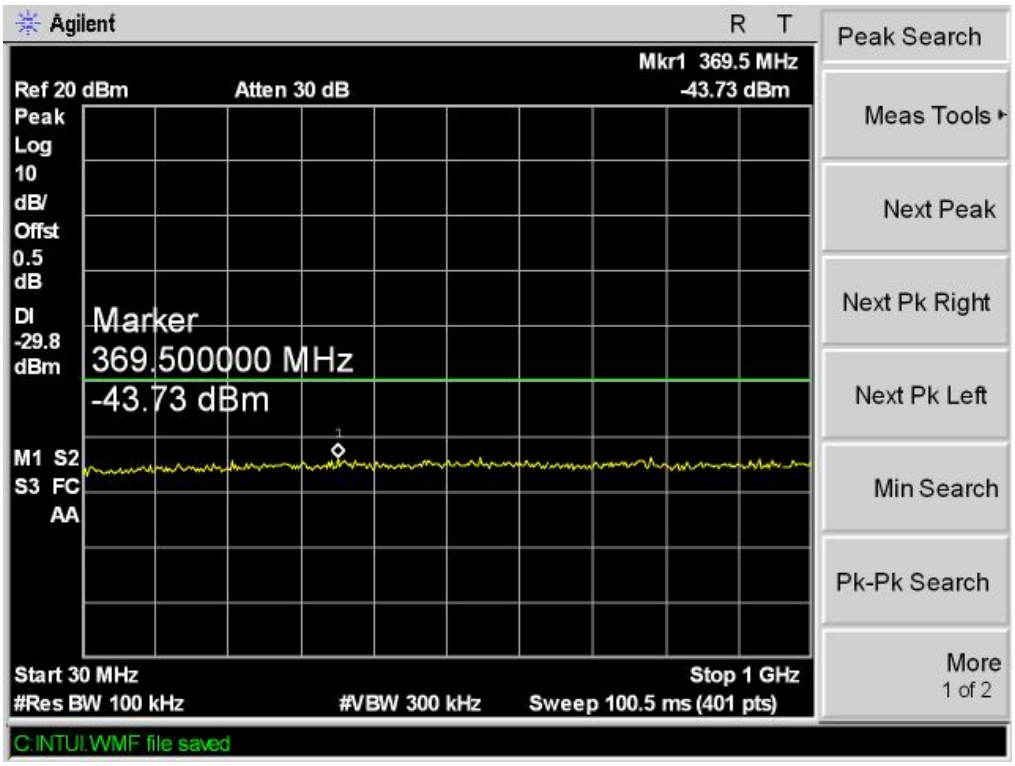
Test mode :TX 11g Lower channel



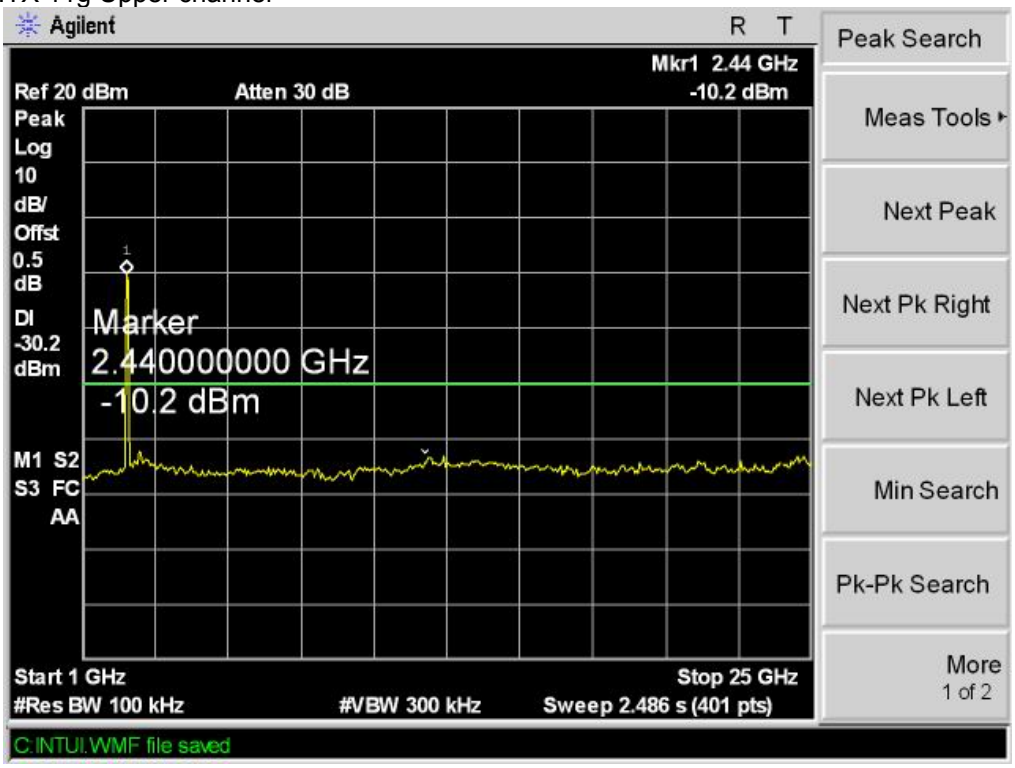


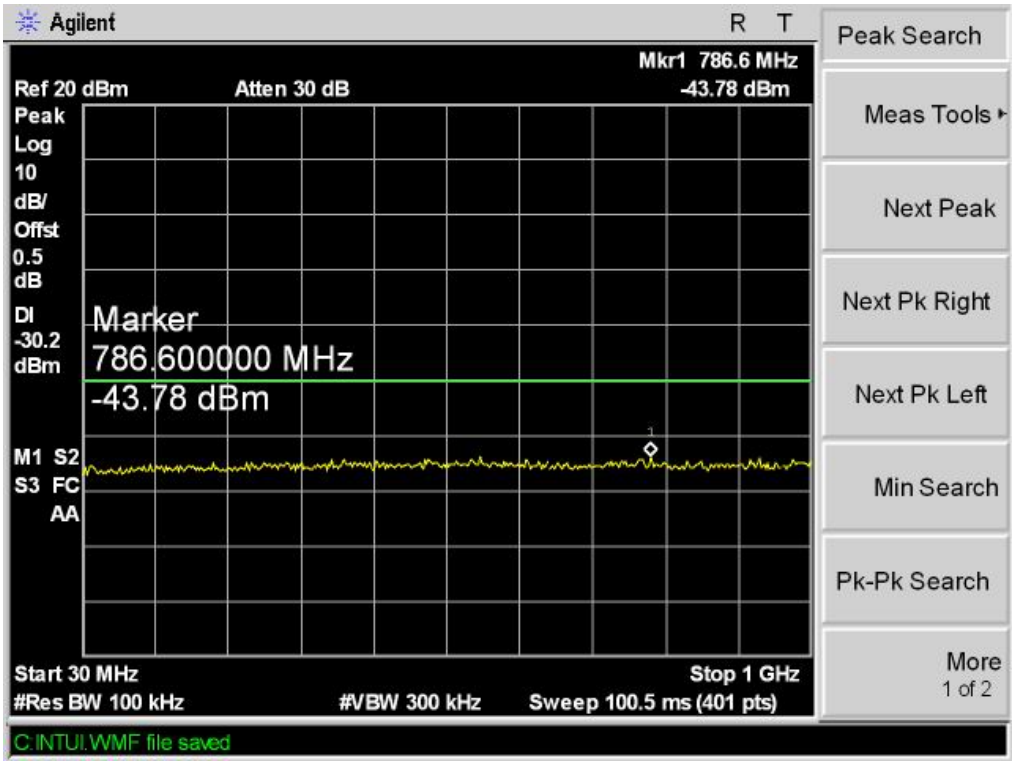
Test mode :TX 11g Middle channel



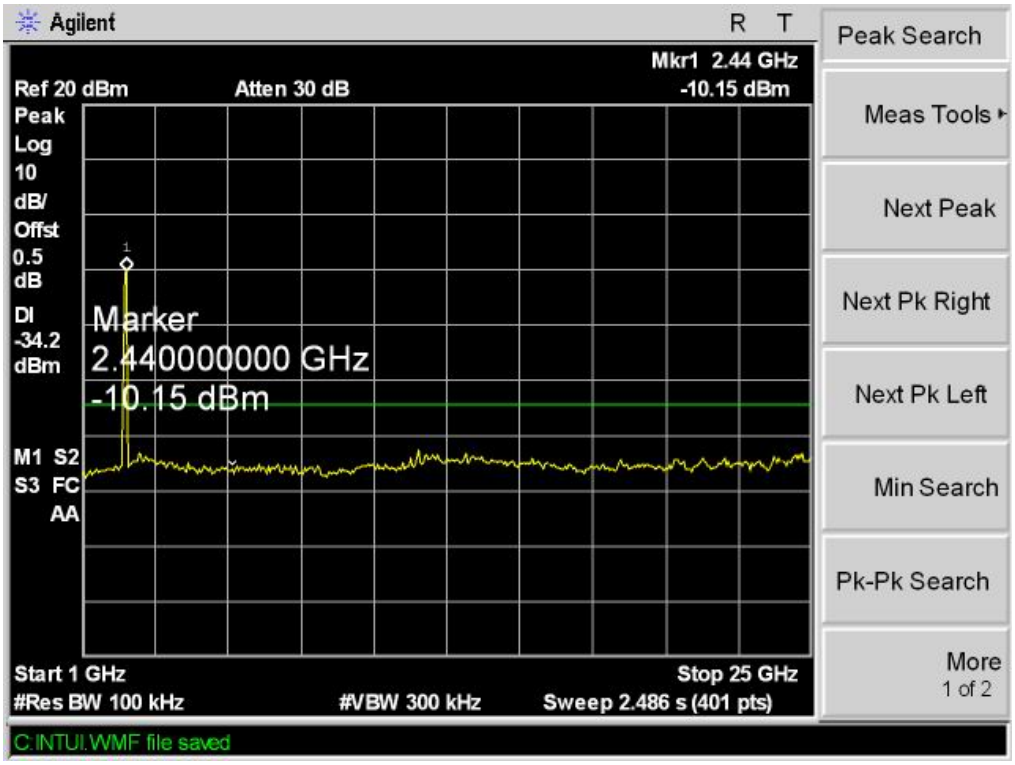


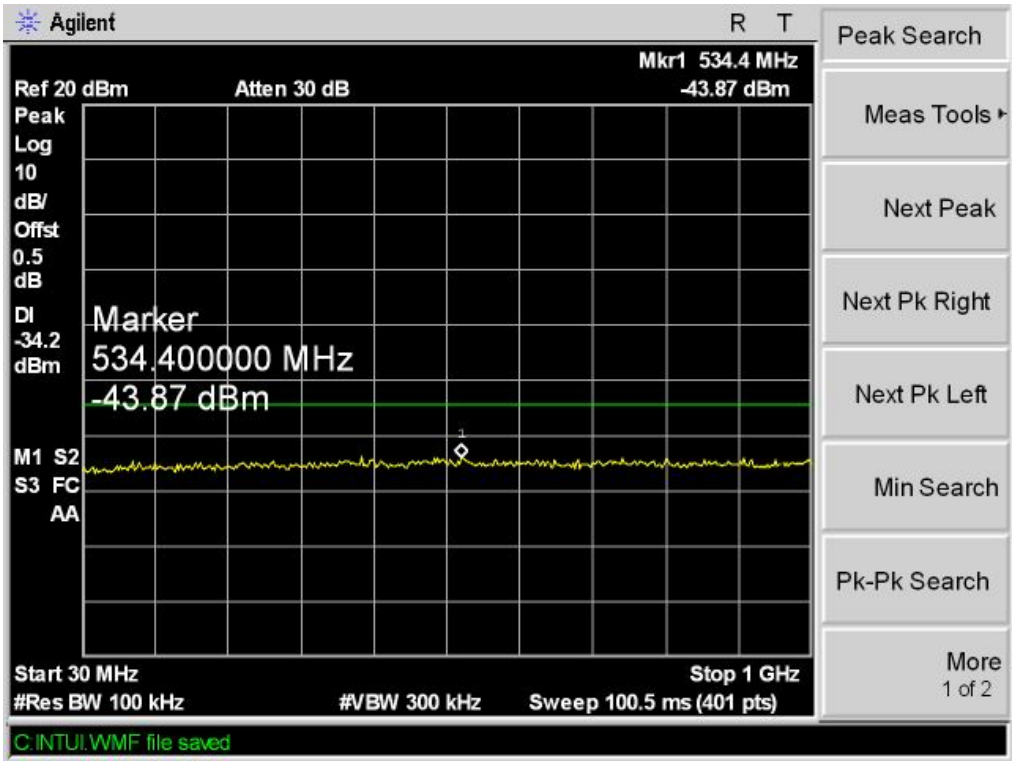
Test mode :TX 11g Upper channel



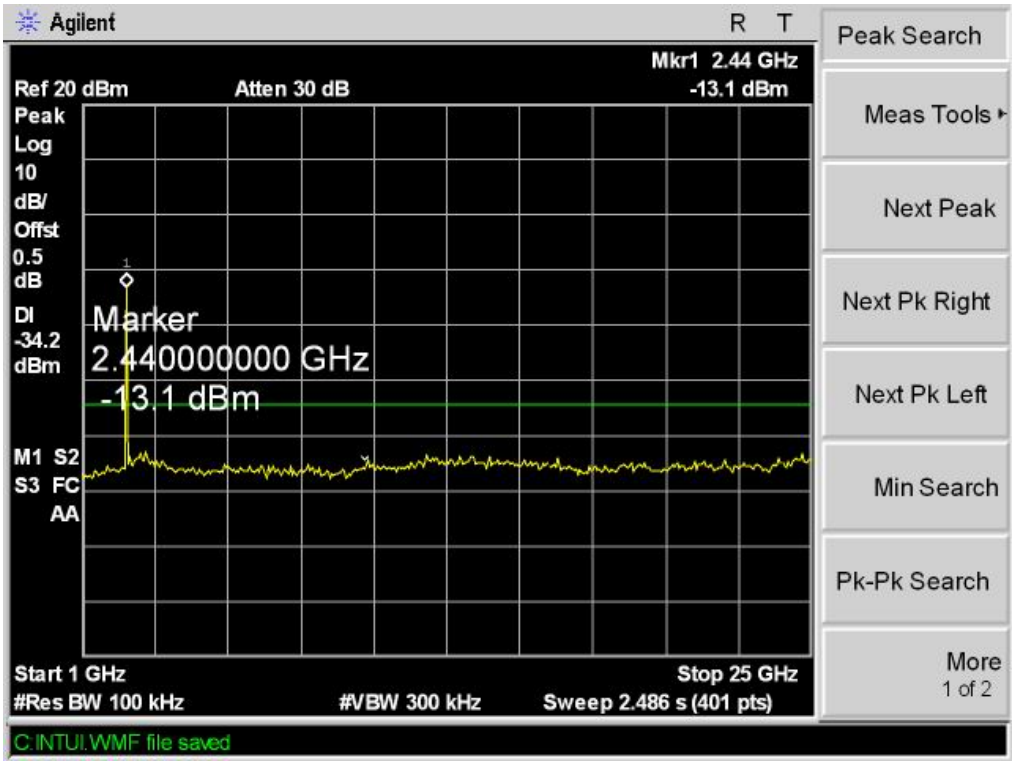


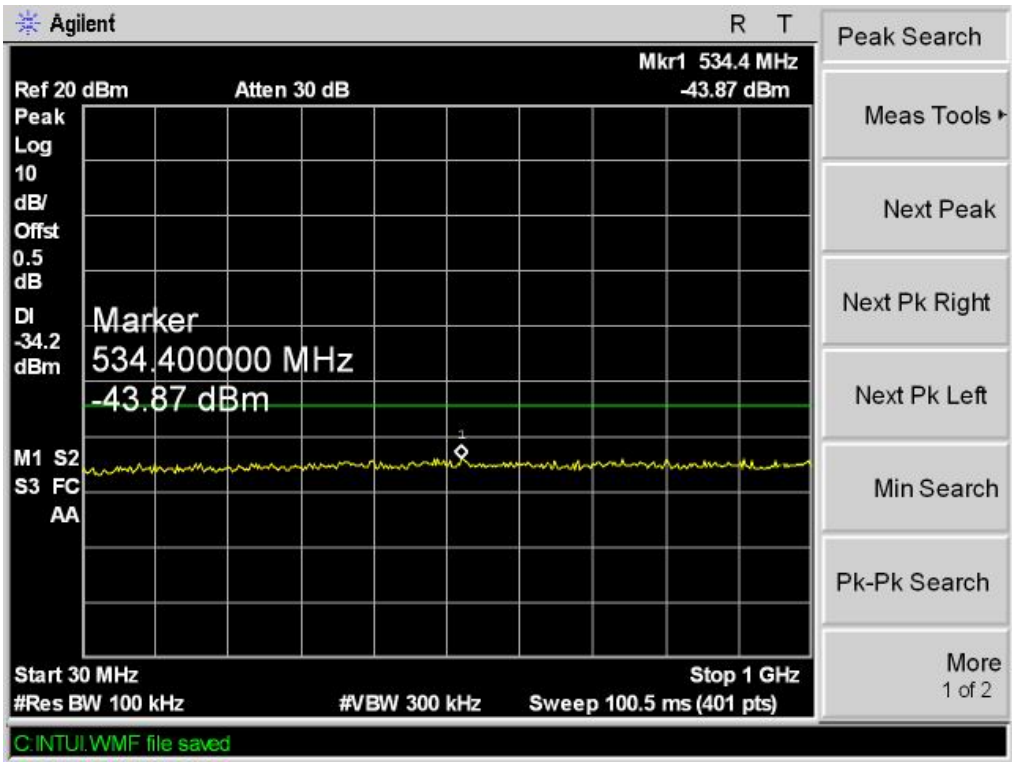
Test mode :TX 11n HT20 Lower channel



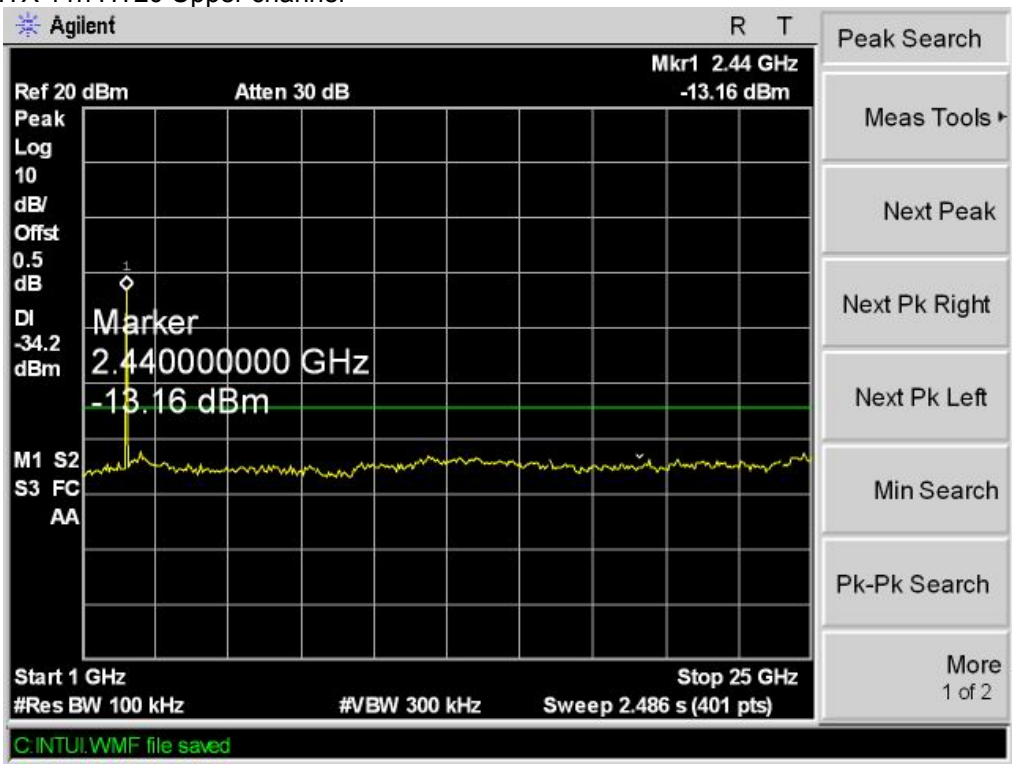


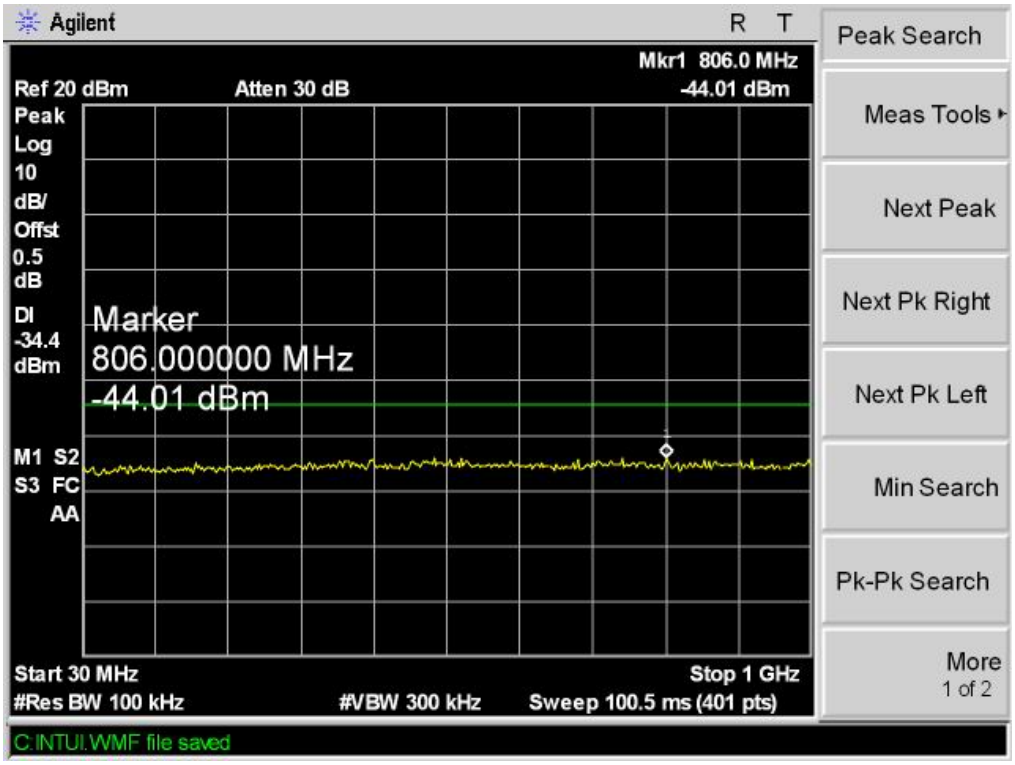
Test mode :TX 11n HT20 Middle channel



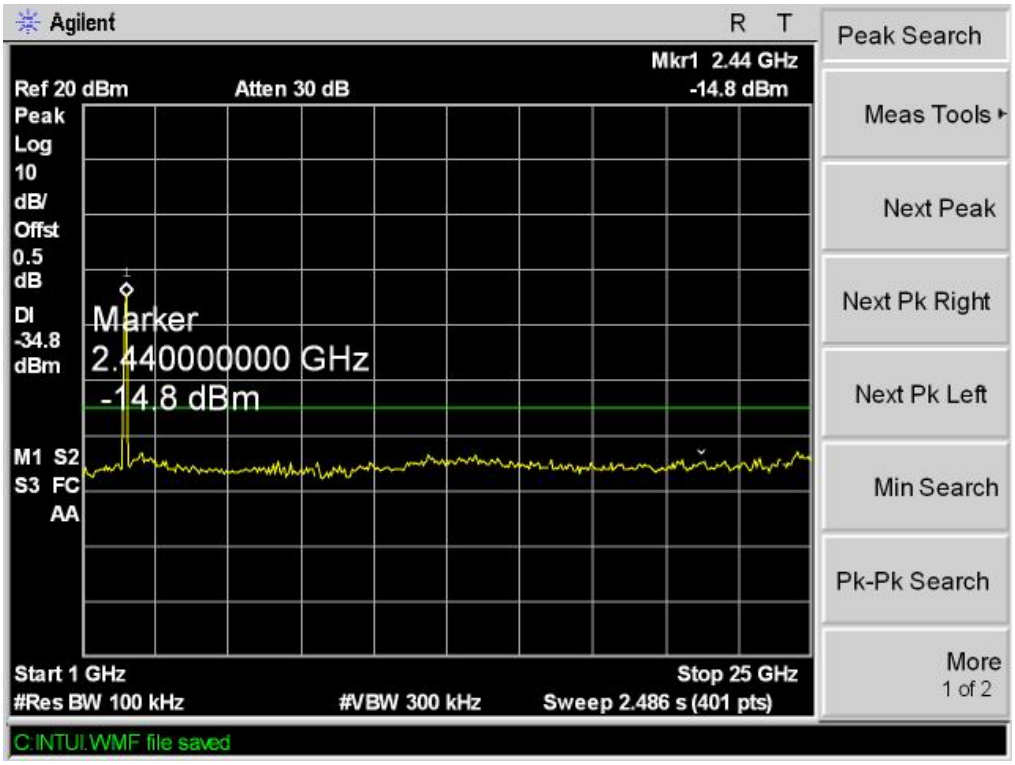


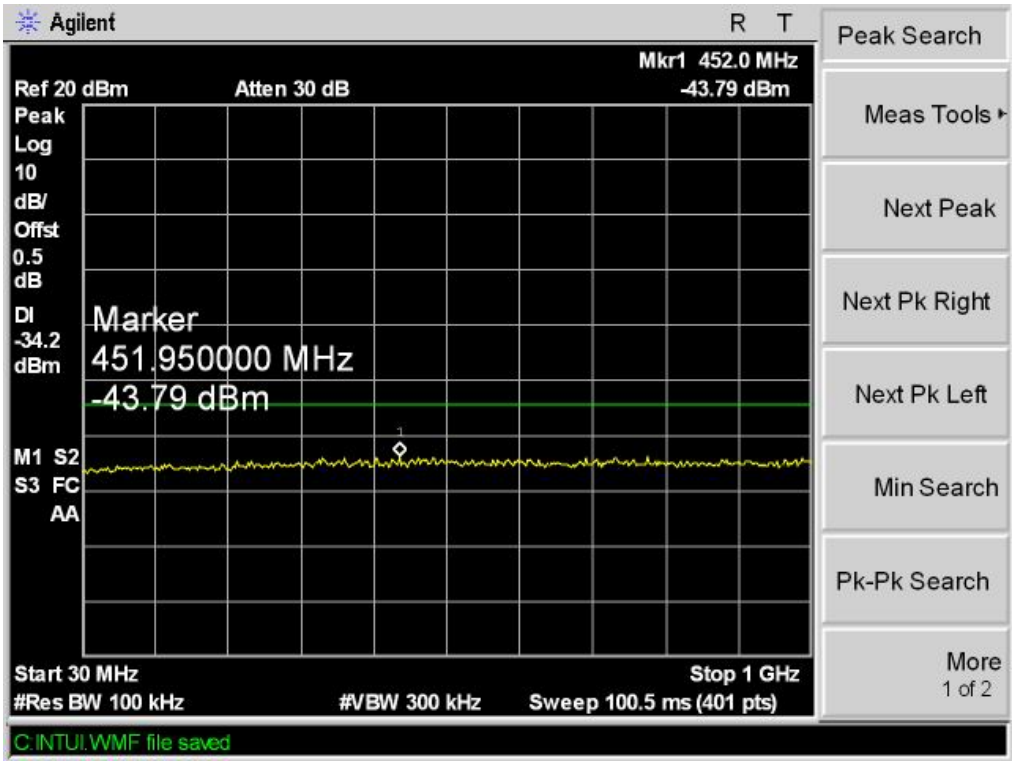
Test mode :TX 11n HT20 Upper channel



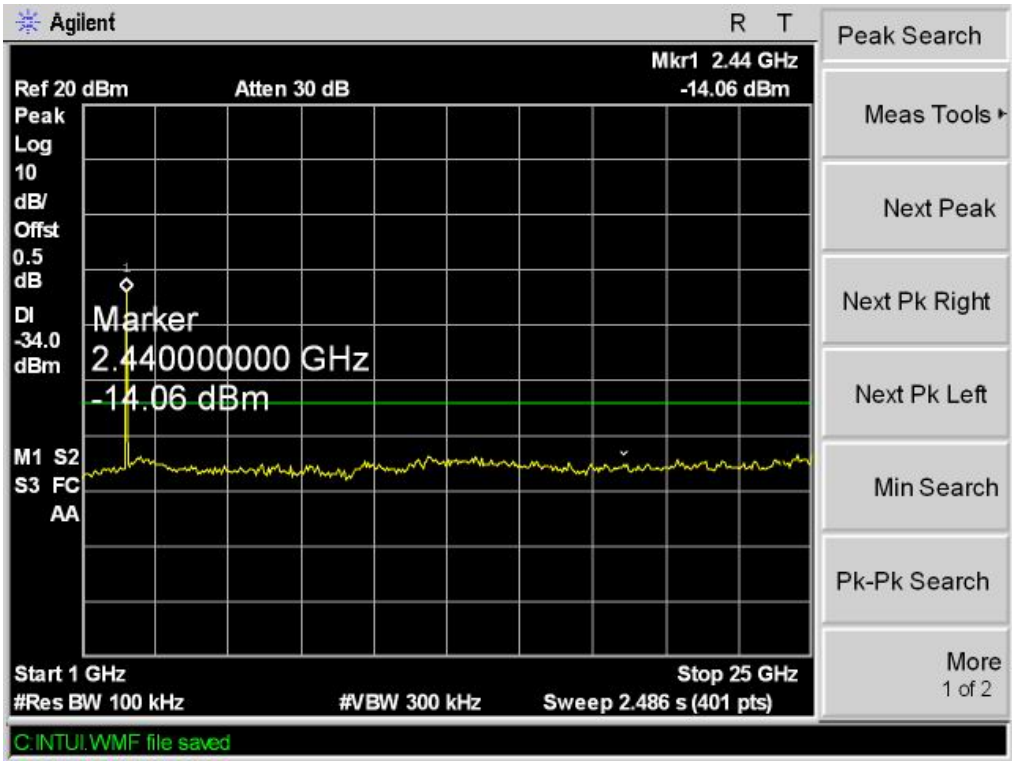


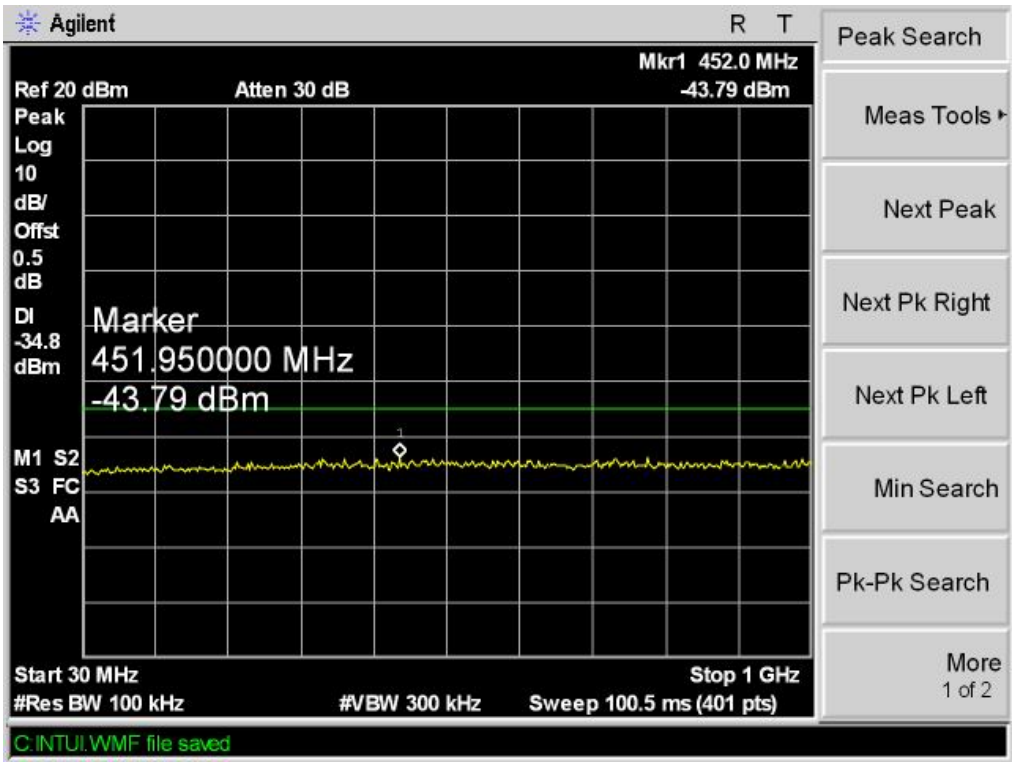
Test mode :TX 11n HT40 Lower channel



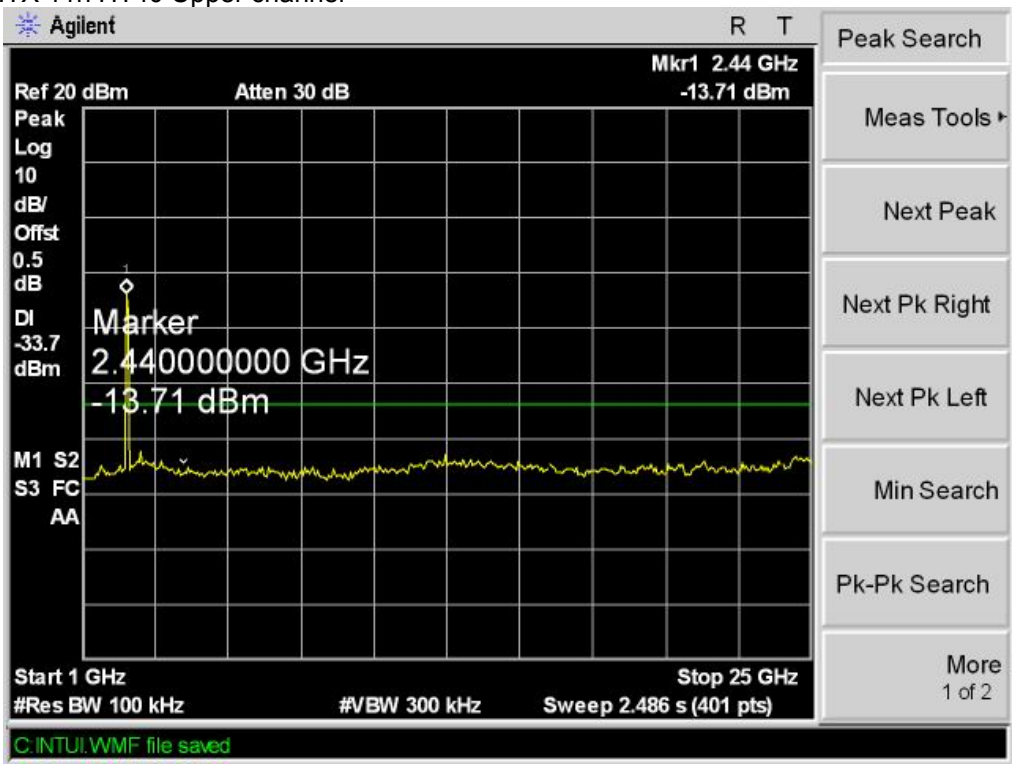


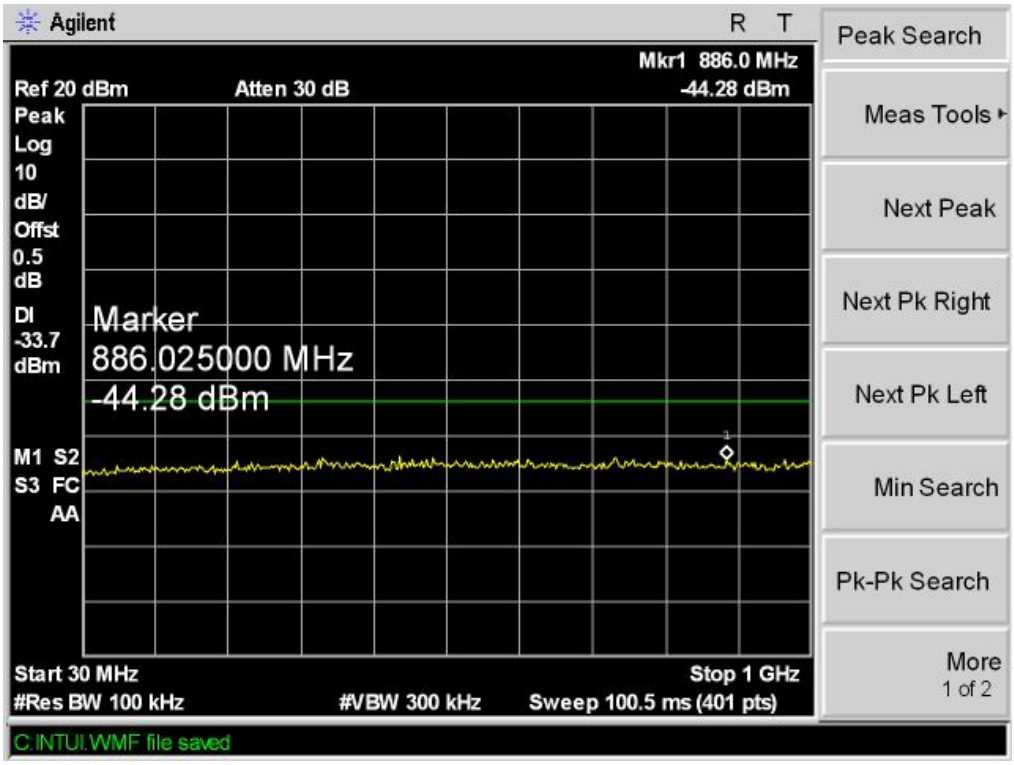
Test mode :TX 11n HT40 Middle channel





Test mode :TX 11n HT40 Upper channel




Agilent
R T
Mkr1 886.0 MHz
-44.28 dBm
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
Offst
0.5
dB
Dl
-33.7
dBm
Marker
886.025000 MHz
-44.28 dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (401 pts)
C.INTUI.WMF file saved
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

13 Emissions from the restricted bands

Test Requirement:	FCC CFR47 Part 15 Section 15.247(d)
Test Method:	KDB558074 D01 V03 R01 04/09/2013
Test Limit:	15.205&15.209 Converting the above equation to the logarithmic equivalent yields: EIRP = E + 20log(d) – 104.8,for example:E=74dBuV/m(PK),then the caculated EIRP is -21.26dBm(PK).If E=54dBuV/m(AV),then the caculated EIRP is -41.26dBm(AV). This relationship can be used to determine correspondent field strength levels from EIRP levels measured at the distances specified in §15.209(a).
Test Mode:	Test in fixing operating frequency at lower, middle, upper channel.

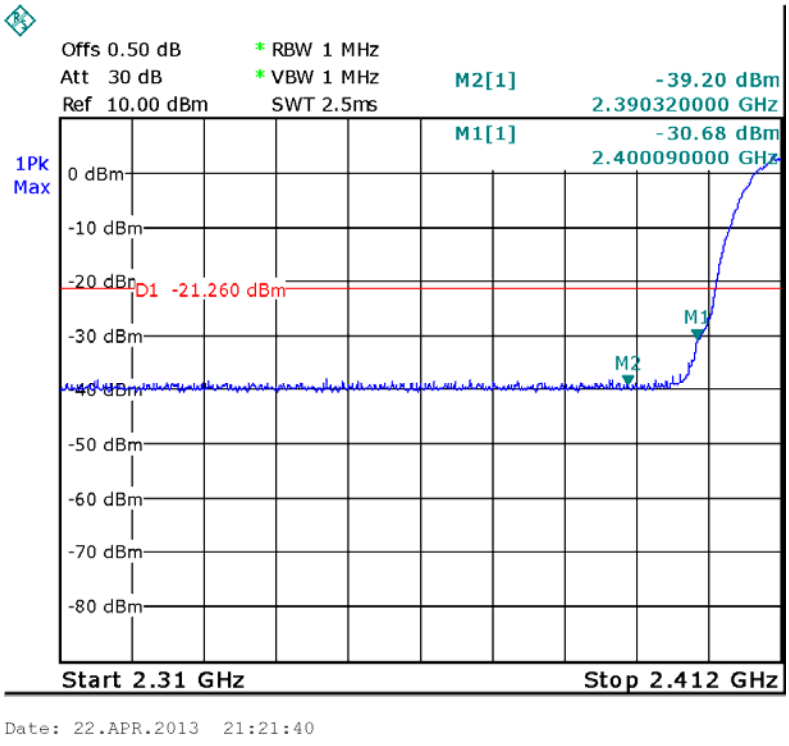
13.1 Test Procedure:

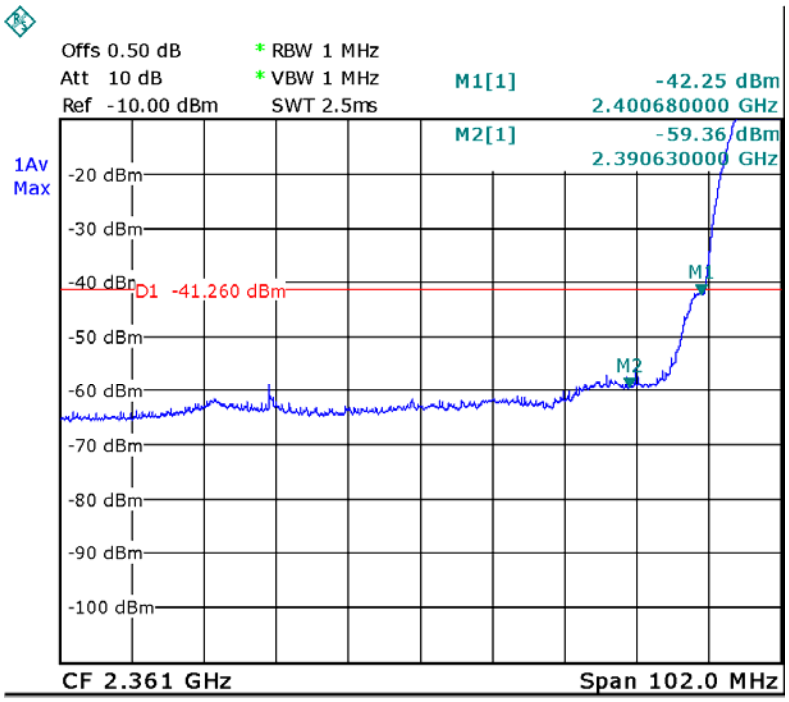
KDB558074 D01 V03 R01 04/09/2013

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set to span from the lowest frequency generated in the device up to and including the tenth harmonic of the highest fundamental frequency
3. Set RBW = 100kHz and VBW = 300kHz.Sweep =auto.
4. mark the worst point and record.

13.2 Test Result:

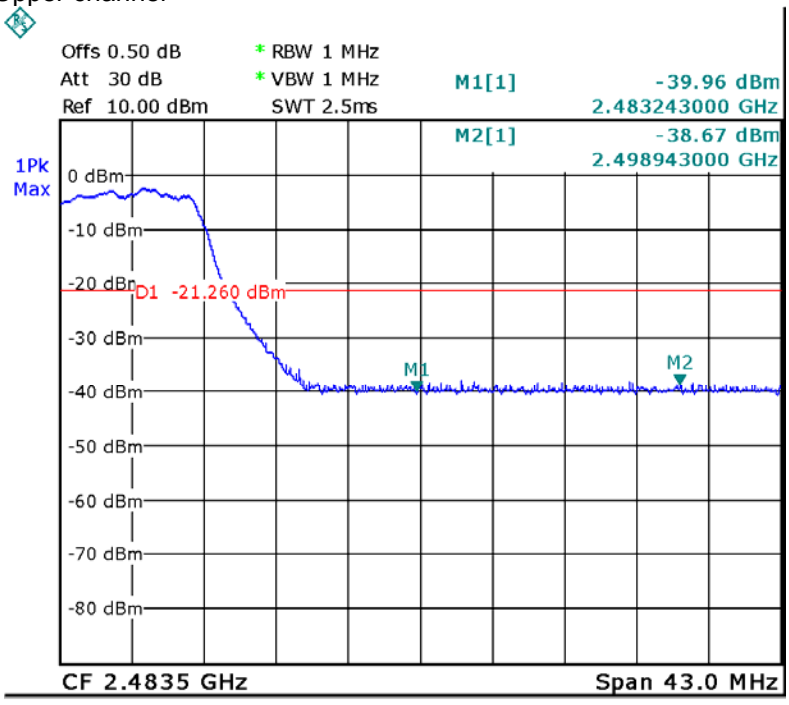
Test mode : TX 11b Lower channel



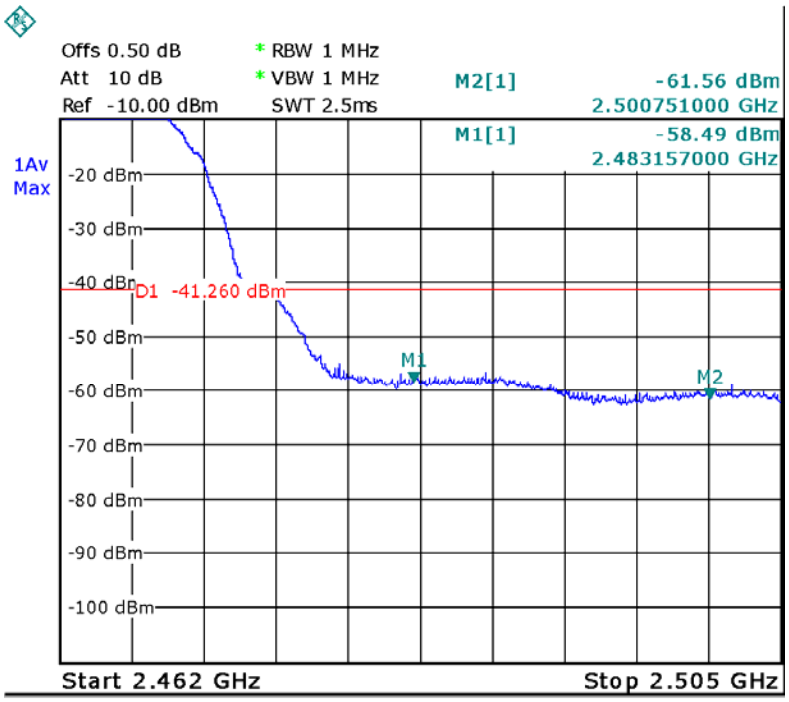


Date: 22.APR.2013 21:31:28

Test mode : TX 11b Upper channel

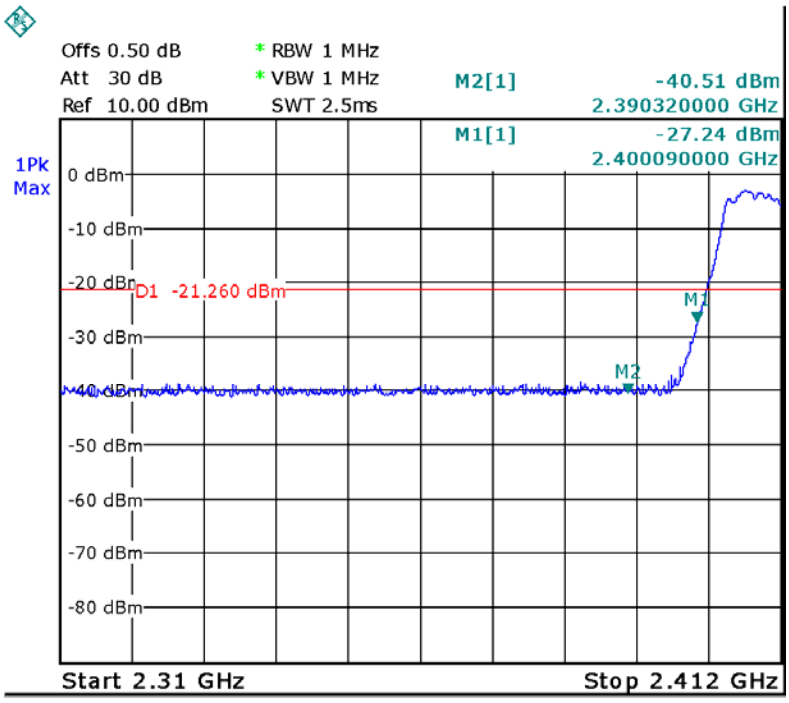


Date: 22.APR.2013 21:40:12

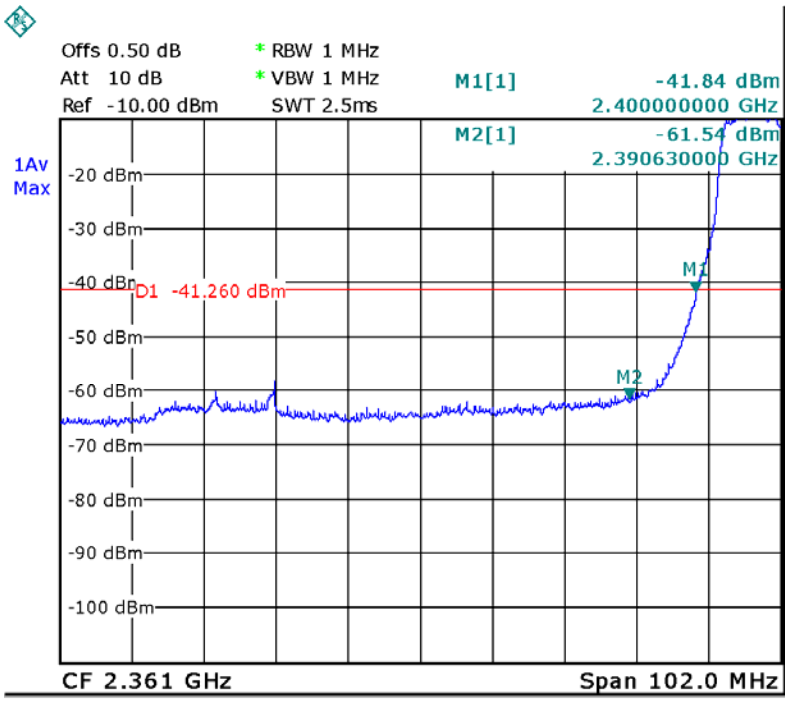


Date: 22.APR.2013 21:33:17

Test mode : TX 11g Lower channel

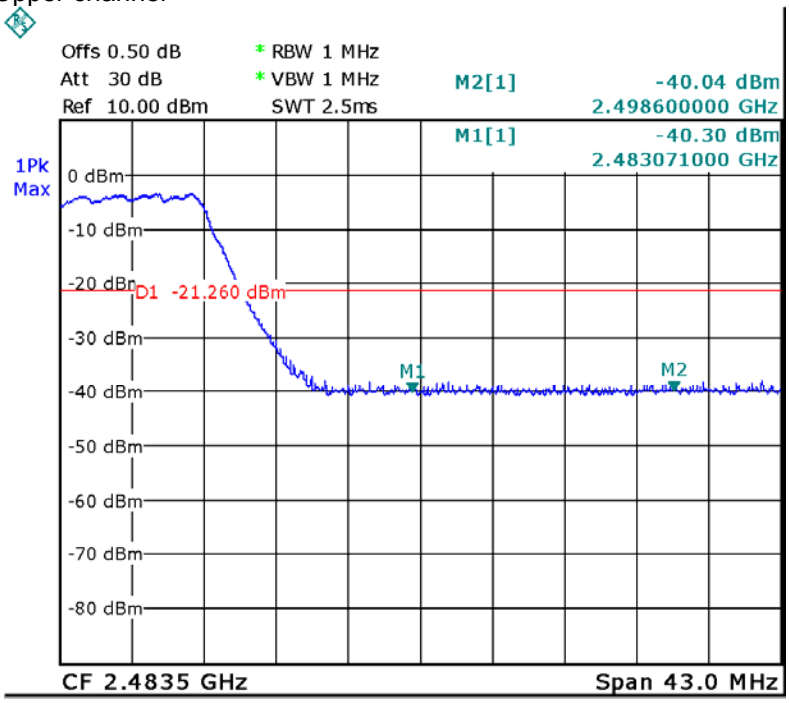


Date: 22.APR.2013 21:22:36

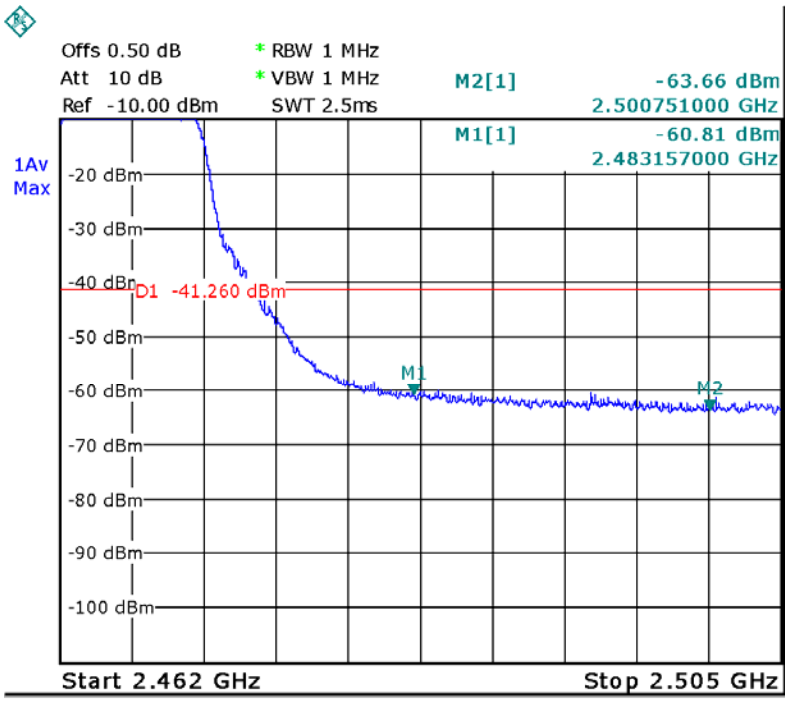


Date: 22.APR.2013 21:30:09

Test mode : TX 11g Upper channel

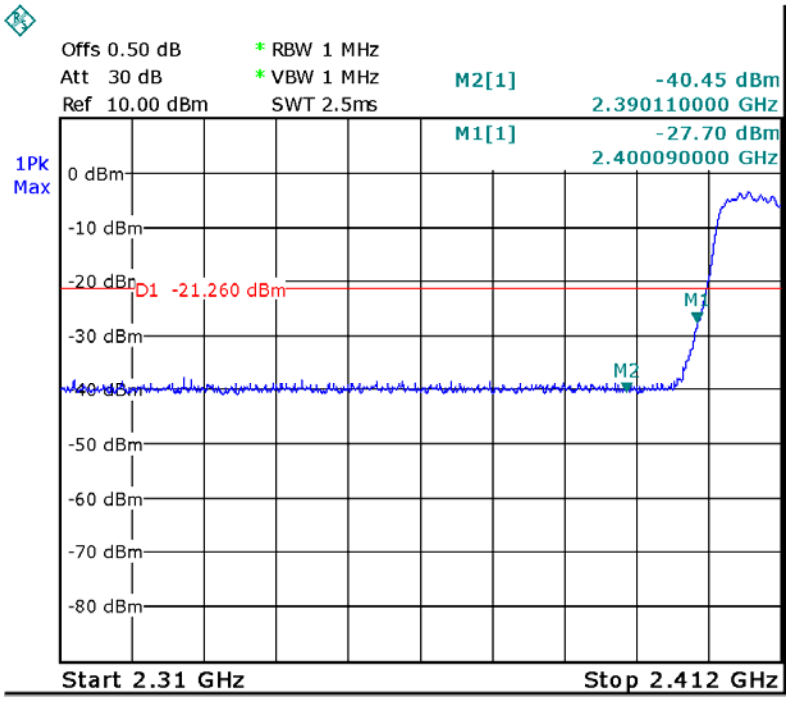


Date: 22.APR.2013 21:39:38

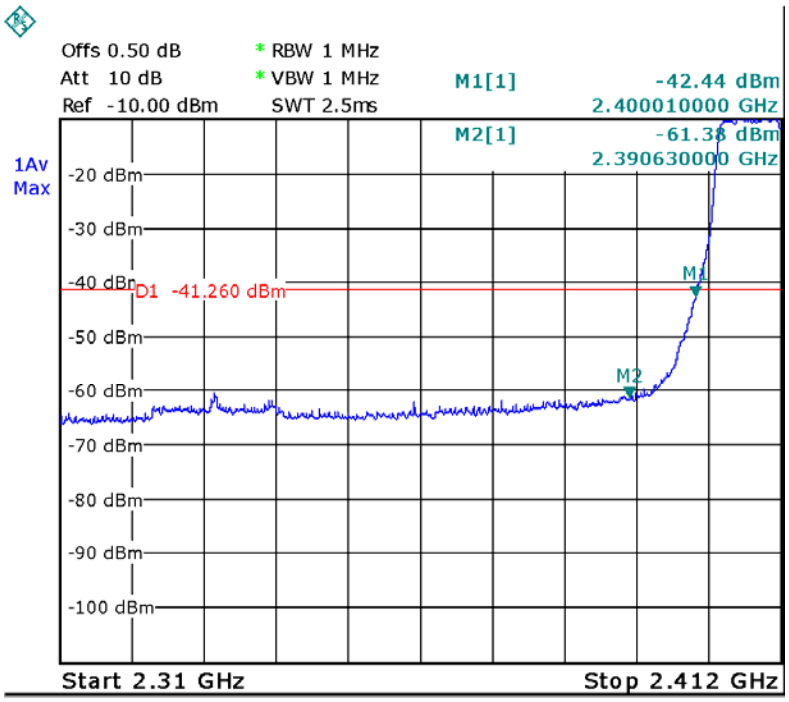


Date: 22.APR.2013 21:34:21

Test mode : TX 11n HT20 Lower channel

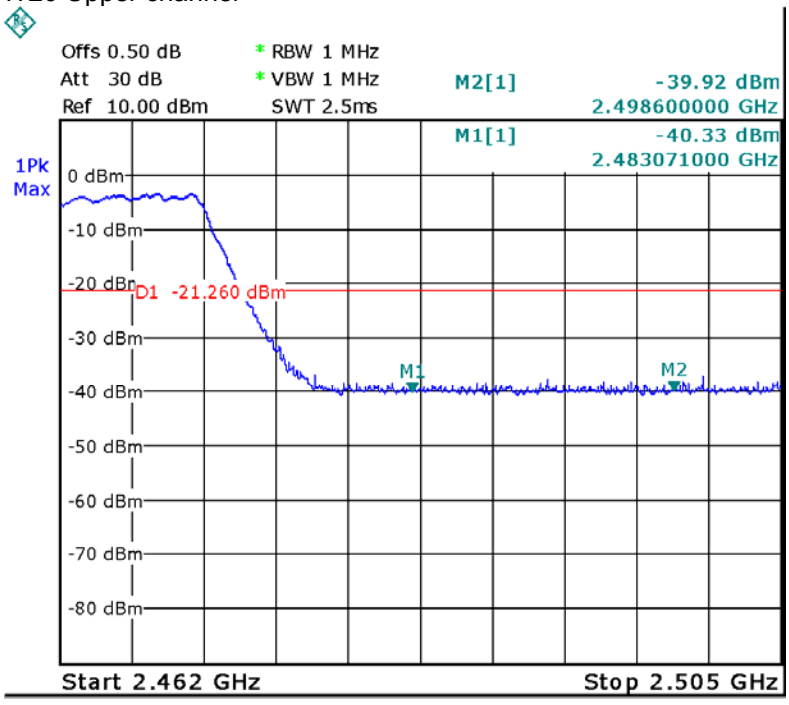


Date: 22.APR.2013 21:23:30

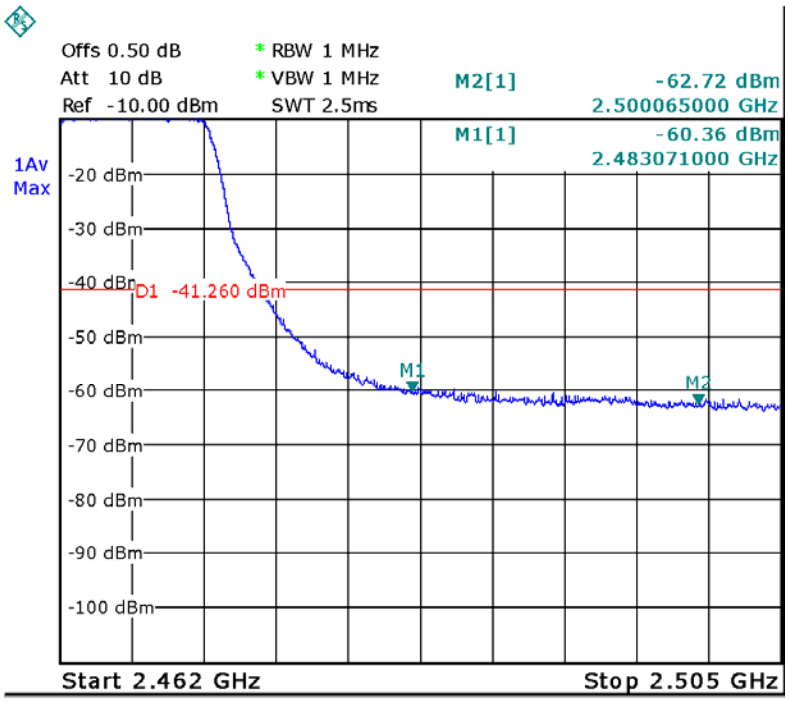


Date: 22.APR.2013 21:29:21

Test mode : TX 11n HT20 Upper channel

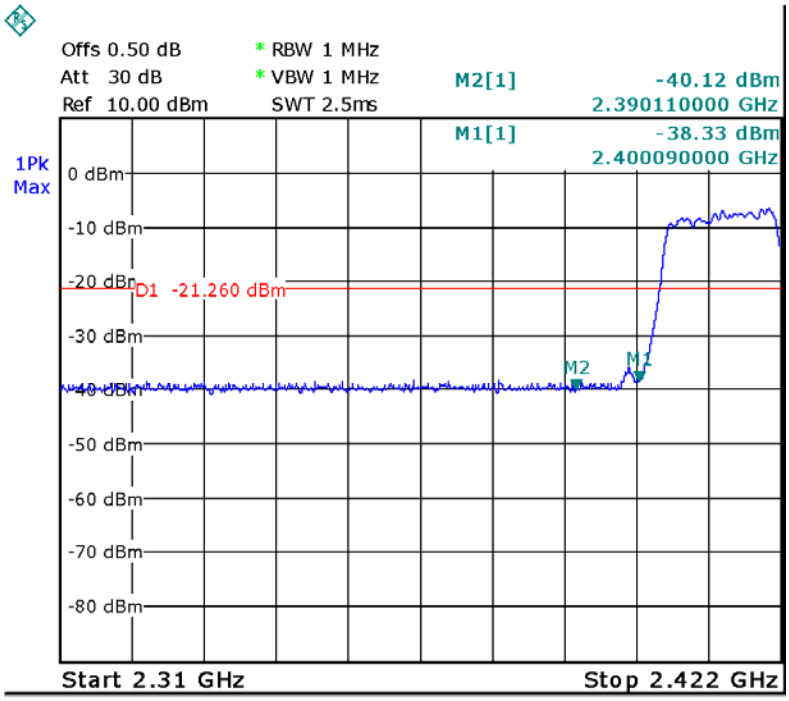


Date: 22.APR.2013 21:39:09

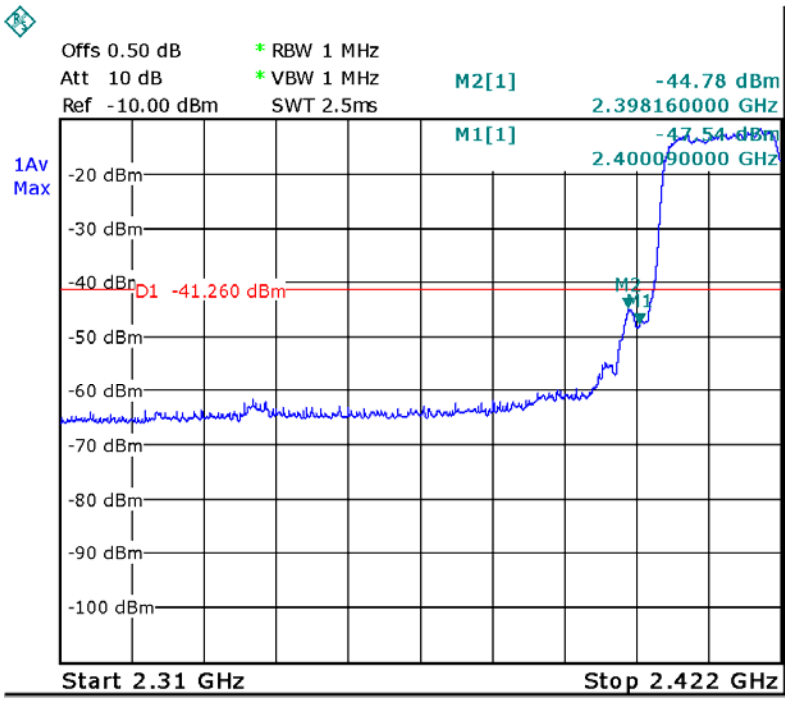


Date: 22.APR.2013 21:36:14

Test mode : TX 11n HT40 Lower channel

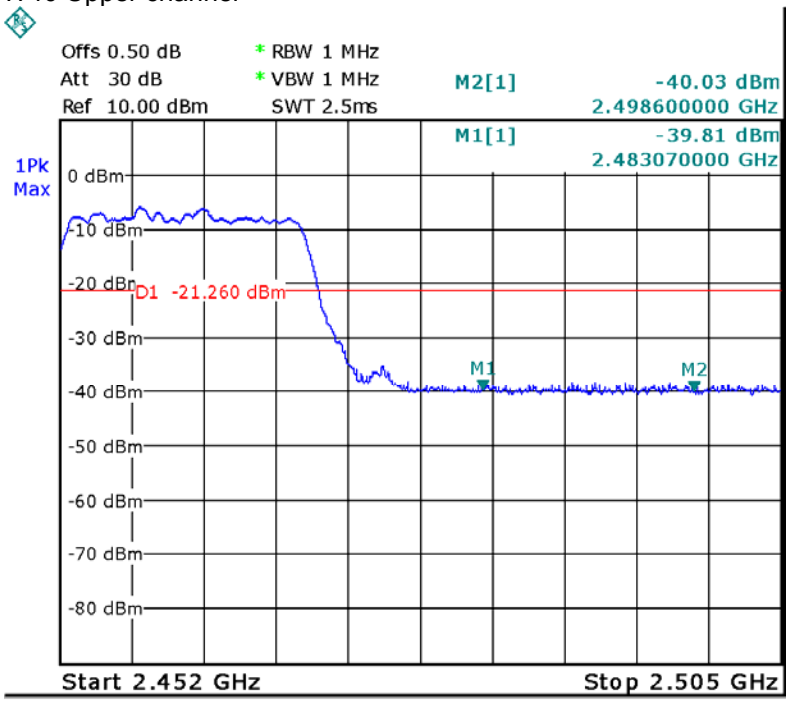


Date: 22.APR.2013 21:24:50

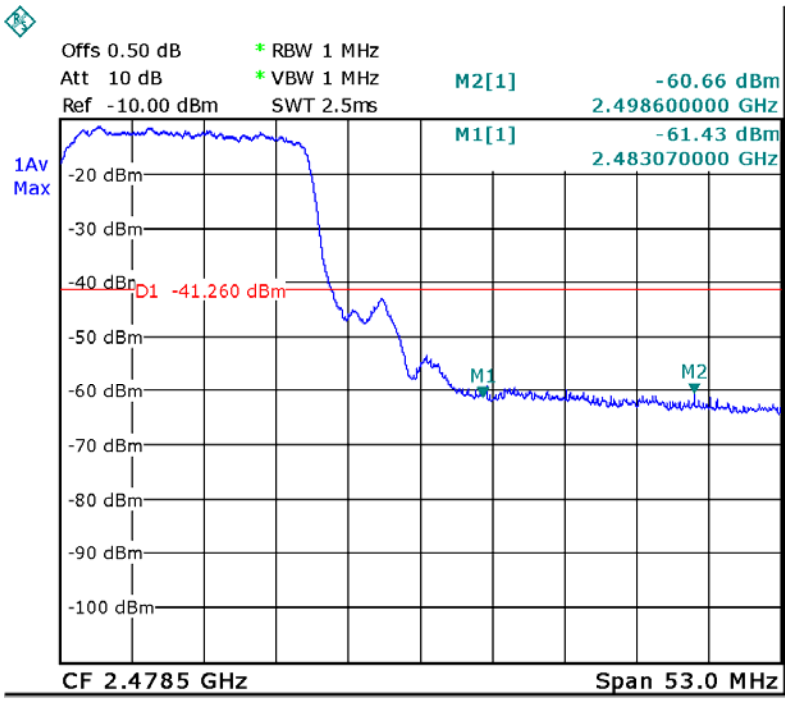


Date: 22.APR.2013 21:25:54

Test mode : TX 11n HT40 Upper channel



Date: 22.APR.2013 21:38:31


Offs 0.50 dB
Att 10 dB
Ref -10.00 dBm
* RBW 1 MHz
* VBW 1 MHz
SWT 2.5ms
M2[1]
-60.66 dBm
2.498600000 GHz
M1[1]
-61.43 dBm
2.483070000 GHz
1Av
Max
-20 dBm
-30 dBm
-40 dBm
D1 -41.260 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
M1
M2
CF 2.4785 GHz
Span 53.0 MHz
Date: 22.APR.2013 21:37:46

14 Antenna Requirement

According to the FCC Part 15 Paragraph 15.203, 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.This product has a internal permanent antenna, fulfill the requirement of this section.

15 RF Exposure

Test Requirement: FCC Part 1.1307

Test Mode: The EUT work in test mode(Tx).

15.1 Requiments:

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

15.2 The procedures / limit

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm^2)	Averaging Time $\|E\|^2$,$\|H\|^2$or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm^2)	Averaging Time $\|E\|^2$,$\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

15.3 MPE Calculation Method

$$\text{E (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m²)} = \frac{E^2}{377}$$

E = Electric field (V/m)
P = Peak RF output power (W)
G = EUT Antenna numeric gain (numeric)
d = Separation distance between radiator and human body (m)
The formula can be changed to

$$\boldsymbol{Pd} = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

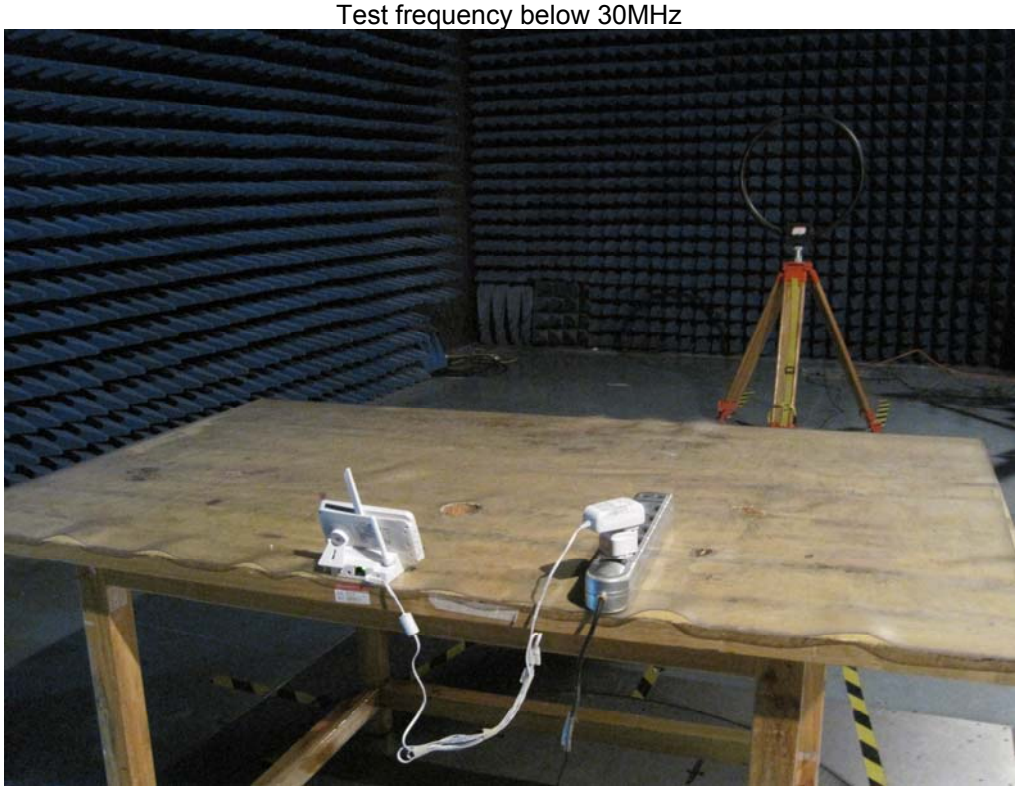
Operation Mode	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm2)	Limit of Power Density (mW/cm2)
802.11b	1.585	24.72	296.48	0.093	1
802.11g	1.585	22.46	176.20	0.056	1
802.11n HT 20	1.585	22.20	165.96	0.052	1
802.11n HT 40	1.585	22.72	187.07	0.059	1

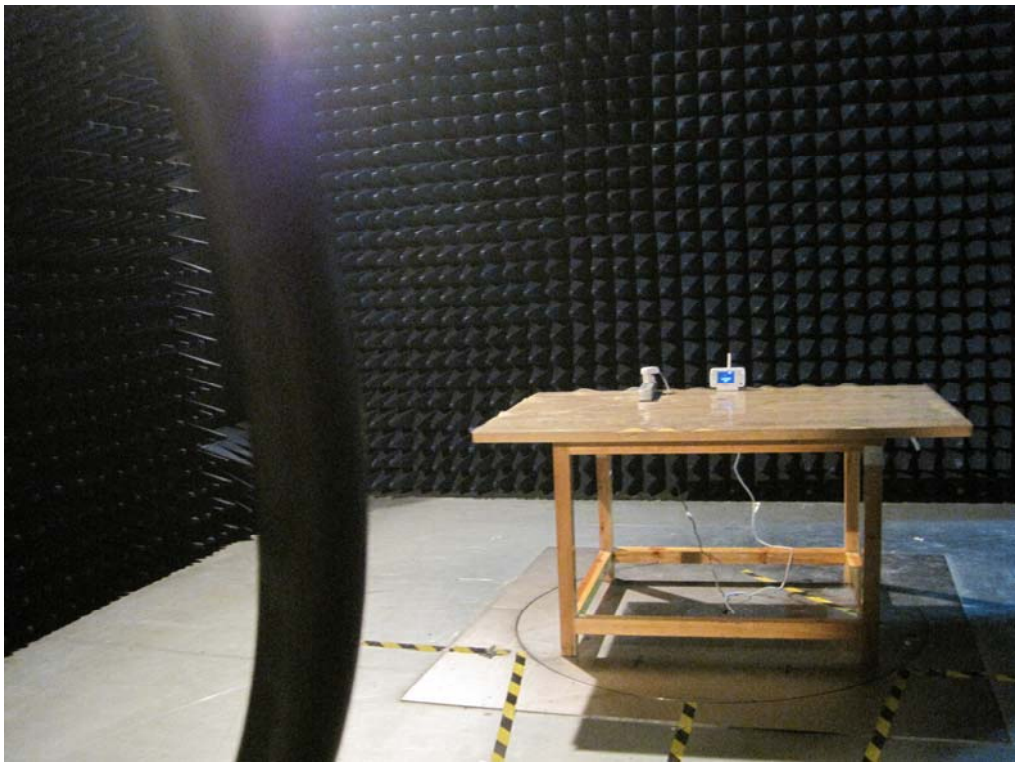
16 Photographs – Test Setup

16.1 Conducted Emission

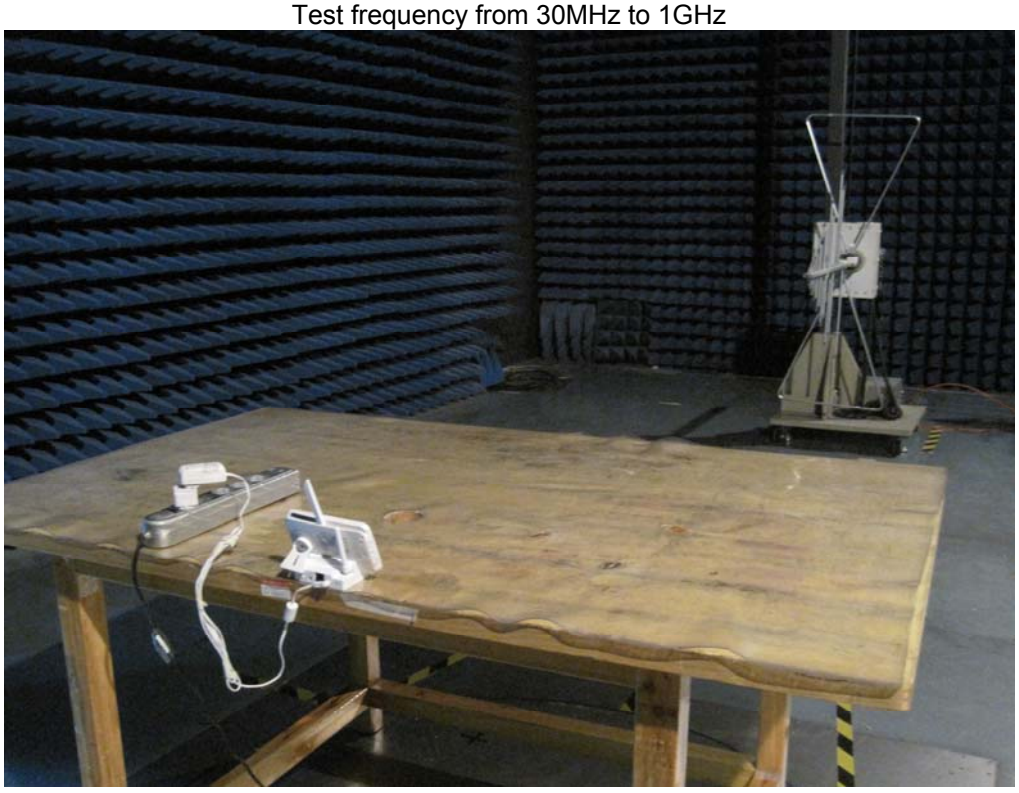
16.2 Radiated Emission

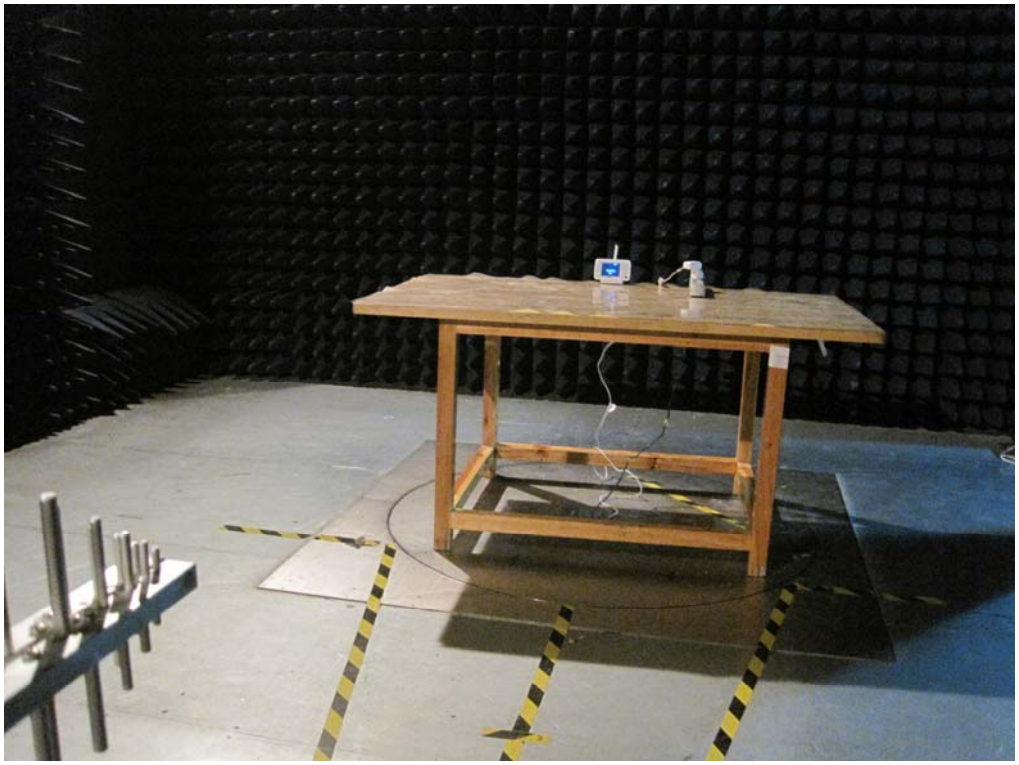
Test frequency below 30MHz





Test frequency from 30MHz to 1GHz





Test frequency above 1GHz

17 Photographs - Constructional Details

17.1 EUT – External View

Detail reference to “M420WF_FCC&IC_Externalphotos”

17.2 EUT- Internal View

Detail reference to “M420WF_FCC&IC_ Internalphotos Rev1”

17.3 Adapter- View

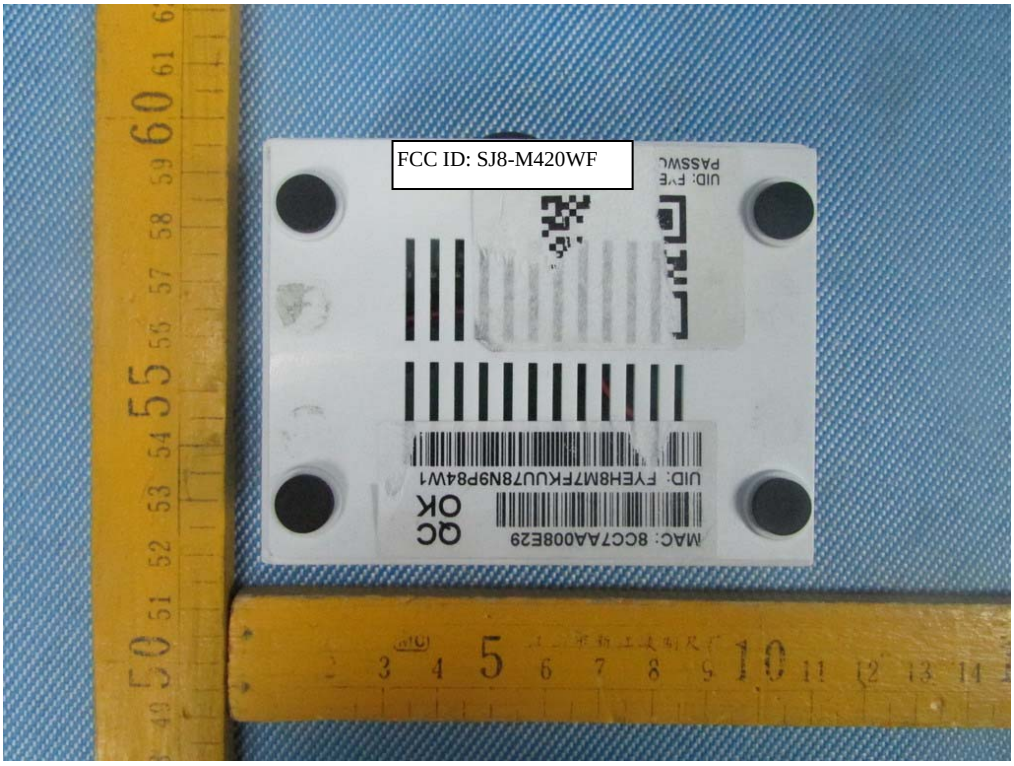
17.4 FCC ID Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference,and (2) this device must accept any interference received, including interference that may cause undesired operation

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT

EUT Bottom View/proposed FCC Label Location



==End of test report==