FCC Part 15 Subpart C Test Report

for DSSS System

Product Name : Android Moblie Data Terminal
Model Name : Z-220X

Prepared for:
ZEBEX INDUSTRIES INC.
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Prepared by:
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Report Number : UL32220141104FCC003-1
Date of Report : 05-01-2015
Date of Test : 05-11-2014~04-01-2015

Notes：
The test results only relate to these samples which have been tested.
Partly using this report will not be admitted unless been allowed by Unilab.
Unilab is only responsible for the complete report with the reported stamp of Unilab.

Applicant:	ZEBEX INDUSTRIES INC.
	B1-1,NO.207 SEC3,BEIXIN ED,XINDIAN DIST,NEW TAIPEI CITY 23142,TAIWAN
Manufacturer:	Mexxen Technology(ShangHai)INC.
	Unit B,12F,Building 11,No. 518,xinzhuan Rd., Songjiang District,Shanghai,China
Product Name:	Android Moblie Data Terminal
Brand Name:	ZEBEX
Model Name:	Z-220X
FCC ID:	JNF-Z-220X
Serial Number:	N/A
EUT Voltage:	AC input for adapter: AC 100~240V 50/60Hz Battery: 3.6V~4.2V
Date of Receipt:	04-11-2014
Date of Test:	05-11-2014~04-01-2015
Test Standard:	FCC CFR Tile 47 Part 15 Subpart C ANSI C 63.4: 2009 KDB 558074 D01 v03r02
Test Result:	PASS

Prepared by : Andy Wei
(Technical Engineer: Andy Wei)

Reviewed by : Forest Cao
(Senior Engineer: Forest Cao)

Approved by : Eva Wang
(Supervisor: Eva Wang)

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1. GENERAL INFORMATION

1.1 EUT DESCRIPTION

Product Name:	Android Moblie Data Terminal
Model Name:	Z-220X
Hardware Version:	V3.0
Software Version:	GST_A81_M20_4500XXXX_MUL_V03_20141201
RF Exposure Environment:	Uncontrolled
WIFI	
Frequency Range:	2400MHz~2483.5MHz
Type of Modulation:	DSSS(BPSK/QPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM) MIMO-OFDM(BPSK/QPSK/16QAM/64QAM)
Channel Number:	11
Antenna Type:	Internal
Antenna Peak Gain:	3.0dBi
Component	
AC Adapter:	Model Name: TS22-501000U
	Input: AC 100-240V 50/60Hz 0.2A
	Output: DC 5V/1A
Note:The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	

1.2 TEST MODE

Unilab has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: 802.11b CH1
Mode 2: 802.11b CH6
Mode 3: 802.11b CH11
Mode 4: 802.11g CH1
Mode 5: 802.11g CH6
Mode 6: 802.11g CH11
Mode 7: 802.11n CH1
Mode 8: 802.11n CH6
Mode 9: 802.11n CH11

Note:

1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. For the radiated emission test, every axis (X, Y, Z) was verified, and show the worst result on this report.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application

2.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

2.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2009 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2009.

2.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12

8.41425 - 8.41475 12.29 - 12.293 12.51975 - 12.52025 12.57675 - 12.57725 13.36 - 13.41	162.0125 - 167.17 167.72 - 173.2 240 - 285 322 - 335.4	3260 - 3267 3332 - 3339 3345.8 - 3358 3600 - 4400	23.6 - 24.0 31.2 - 31.8 36.43 - 36.5 (2)

1 Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

2 Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

2.5 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

After verification, all tests were carried out with the worst case test modes as shown below

IEEE802.11b mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 11Mbps data rate were chosen for full testing.

IEEE802.11g mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 54Mbps data rate were chosen for full testing.

IEEE802.11n mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 65Mbps data rate were chosen for full testing.

3. TECHNIACL SUMMARY

3.1 SUMMARY OF STANDARDS AND TEST RESULTS

The EUT have been tested according to the applicable standards as referenced below:

Test Item	FCC	Result
Occupied Bandwidth	§15.247 (a)	P
6 dB bandwidth	§15.247 (a)	P
Power spectral density	§15.247 (e)	P
Peak Output Power (Conduction)	§15.247 (b)	P
Spurious Emissions (Conduction)	§15.247 (d)	P
Band edge measurement	§15.247 (d)	P
Spurious Emissions (Radiation)	§15.247 (d) §15.35 (b) §15.209 (a)	P
AC Power Line Conducted Emissions	§15.207 (a)	P

Note: P means pass, F means failure, N/A means not applicable

3.2 TEST UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted disturbance	3.4
Radiated disturbance	4.2

3.3 TEST EQUIPMENT LIST

Equipment	Manufacturer	Model	Serial No.	Due Date	Cal interval
Receiver	Agilent	N9038A	MY51210142	26/12/2015	1 year
Power meter	R&S	NRP2	101607	19/02/2015	1 year
LISN	R&S	ENV216	100069	22/08/2015	1 year
3m Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	CT-0000336	26/11/2017	3 years
Microwave Preamplifier	EM Electronics	EM30180	3008A02425	28/02/2015	1 year
Power Splitter	Agilent	11667C/52401	MY53806148	28/02/2015	1 year
Loop Antenna	Schwarzbeck	FMZB1519	1519-020	25/03/2016	2 years
Biconilog Antenna	Schwarzbeck	VULB 9160	3316	19/09/2016	2 years
Horn Antenna	Schwarzbeck	BBHA9120D	942	19/09/2016	2 years
Horn Antenna	Schwarzbeck	BBHA9120D	943	19/09/2016	2 years
Horn Antenna(18-40GHz)	ETS	3116	00070497	18/07/2016	2 years

3.4 TEST FACILITY

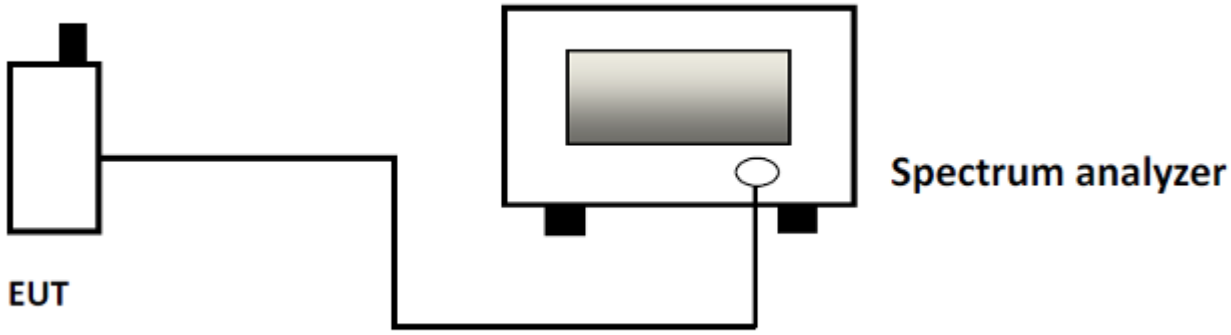
All test facilities used to collect the test data are located at No. 1350, Lianxi Rd. Pudong New District, Shanghai, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4: 2009, CISPR 16-1-1 and other equivalent standards. The laboratory is compliance with the requirements of the ISO/IEC/E 17025.

3.5 TEST SETUP CONFIGURATION

The information contained within this report is intended to show verification of compliance of the EUT to the requirements of CFR 47 FCC Part 15.247. Unilab has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report.

4. OCCUPIED BANDWIDTH

4.1 TEST SETUP



4.2 LIMITS

Limits	≥25 kHz or 2 to 3 times the 20 dB bandwidth

4.3 TEST PROCEDURE

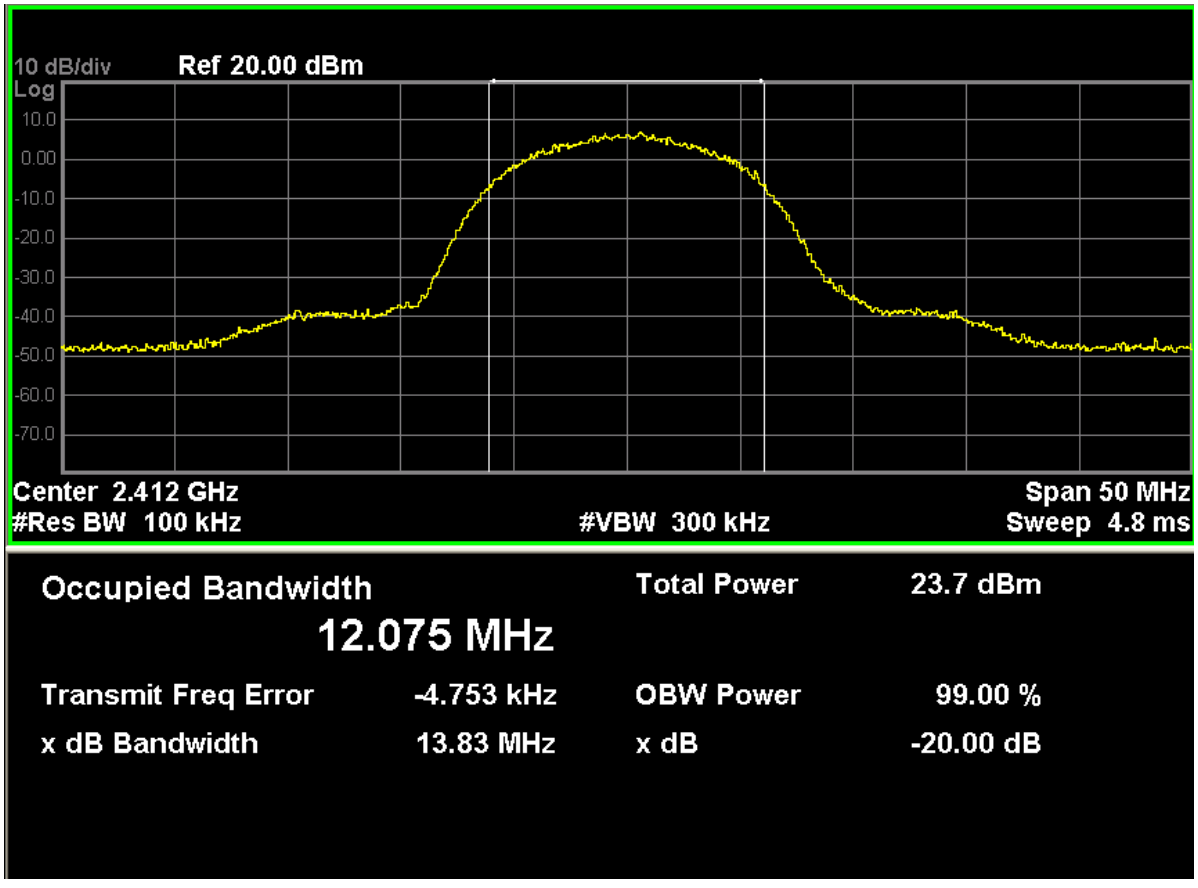
Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to spectrum analyzer. The loss between RF output port of the EUT and the input port of the tester will be taken into consideration.
The measurement will be conducted at three channels.
WIFI: Low(1), Middle(6) and High (11).
Using occupied BW measurement function of spectrum analyzer and settings are:
XdB = -20dB
RBW = 100KHz
VBW ≥ 3 x RBW
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a channel
Sweep = auto
Detector function = peak
Trace = max hold

4.4 TEST RESULTS

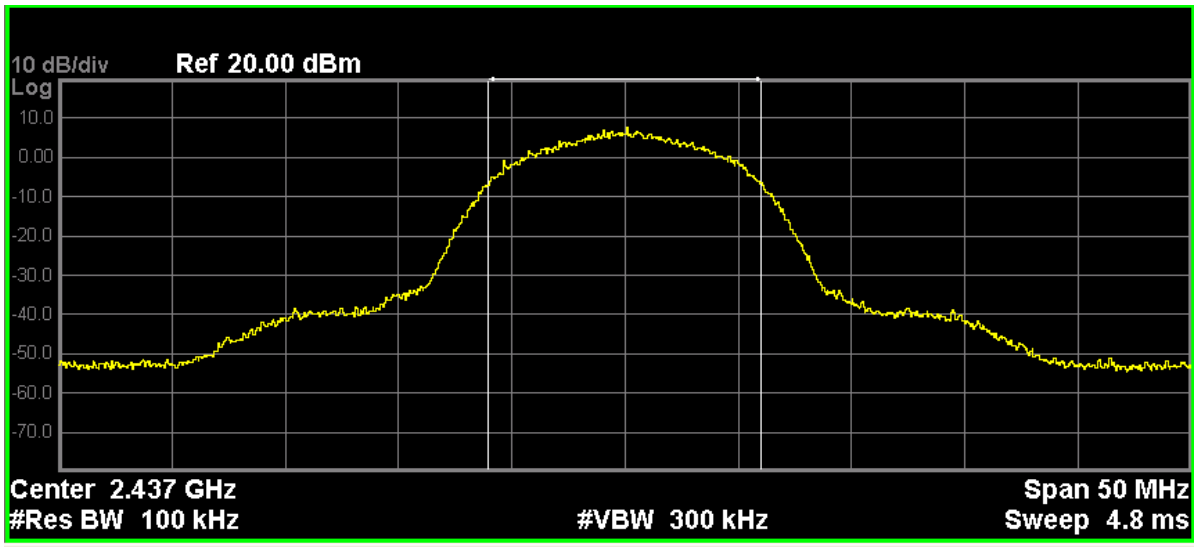
Channel	20dB bandwidth (MHz)	99% bandwidth (MHz)
802.11b		
802.11b CH1	13.83	12.075
802.11b CH6	13.65	12.024
802.11b CH11	13.69	11.948
802.11g		
802.11g CH1	17.56	16.381
802.11g CH6	17.66	16.468
802.11g CH11	17.82	16.558
802.11n		
802.11n CH1	18.32	17.555
802.11n CH6	18.37	17.625
802.11nCH11	18.39	17.668

802.11b

802.11b channel 1

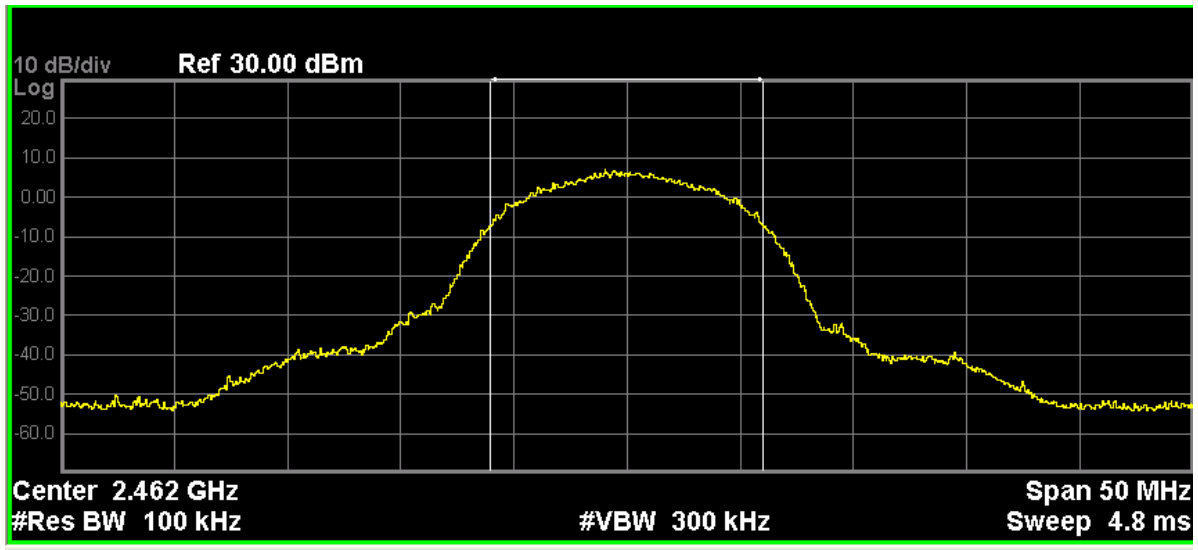


802.11b channel 6



Occupied Bandwidth		Total Power	23.7 dBm
12.024 MHz			
Transmit Freq Error	3.083 kHz	OBW Power	99.00 %
x dB Bandwidth	13.65 MHz	x dB	-20.00 dB

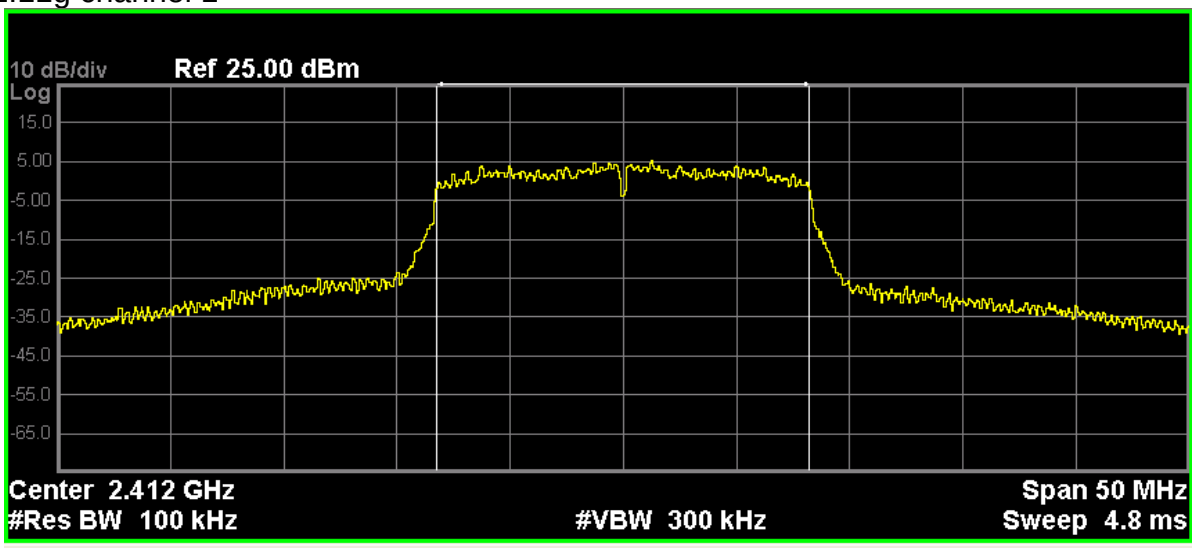
802.11b channel 11



Occupied Bandwidth		Total Power	23.7 dBm
11.948 MHz			
Transmit Freq Error	15.390 kHz	OBW Power	99.00 %
x dB Bandwidth	13.69 MHz	x dB	-20.00 dB

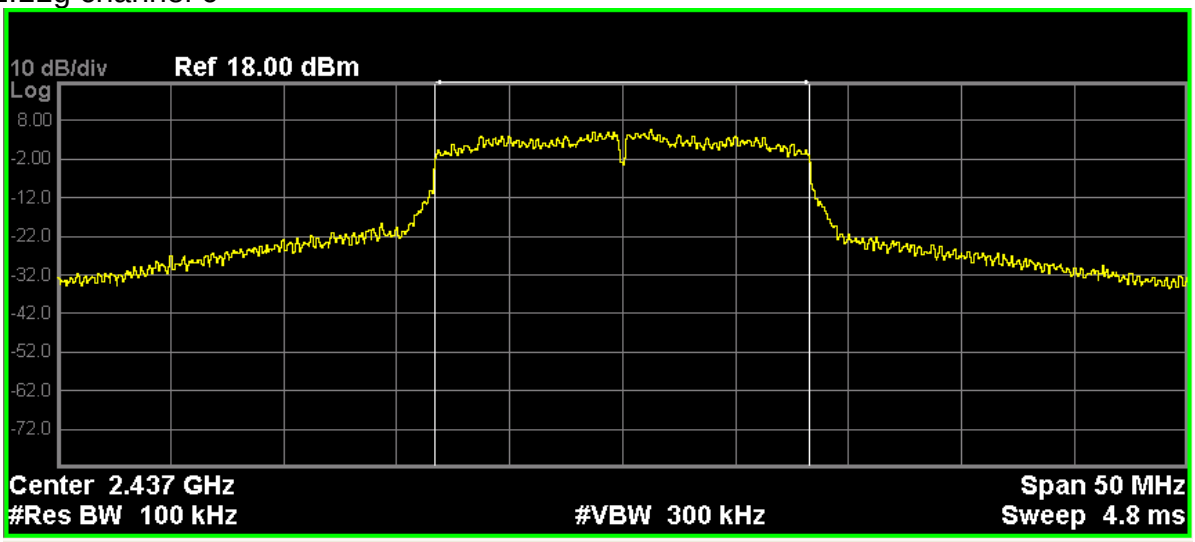
802.11g

802.11g channel 1



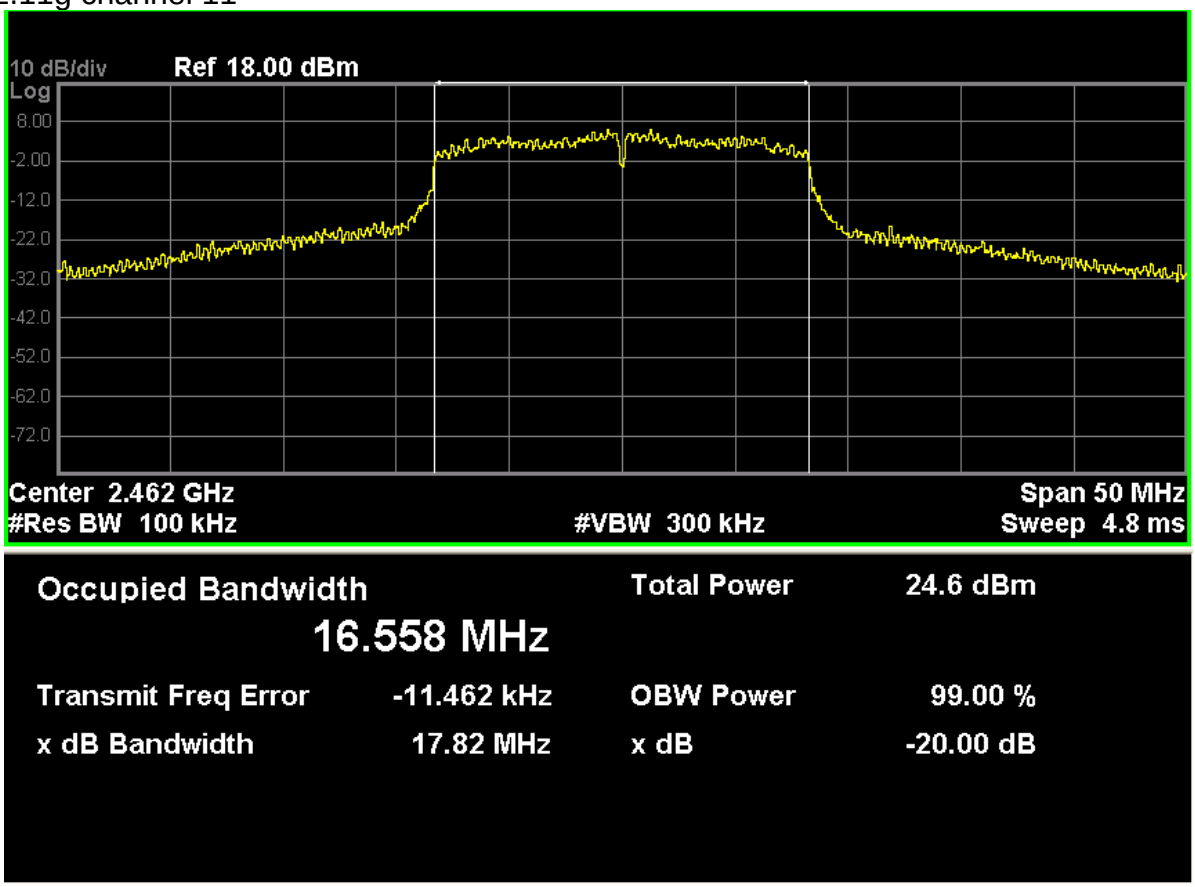
Occupied Bandwidth		Total Power	23.8 dBm
16.381 MHz			
Transmit Freq Error	745 Hz	OBW Power	99.00 %
x dB Bandwidth	17.56 MHz	x dB	-20.00 dB

802.11g channel 6



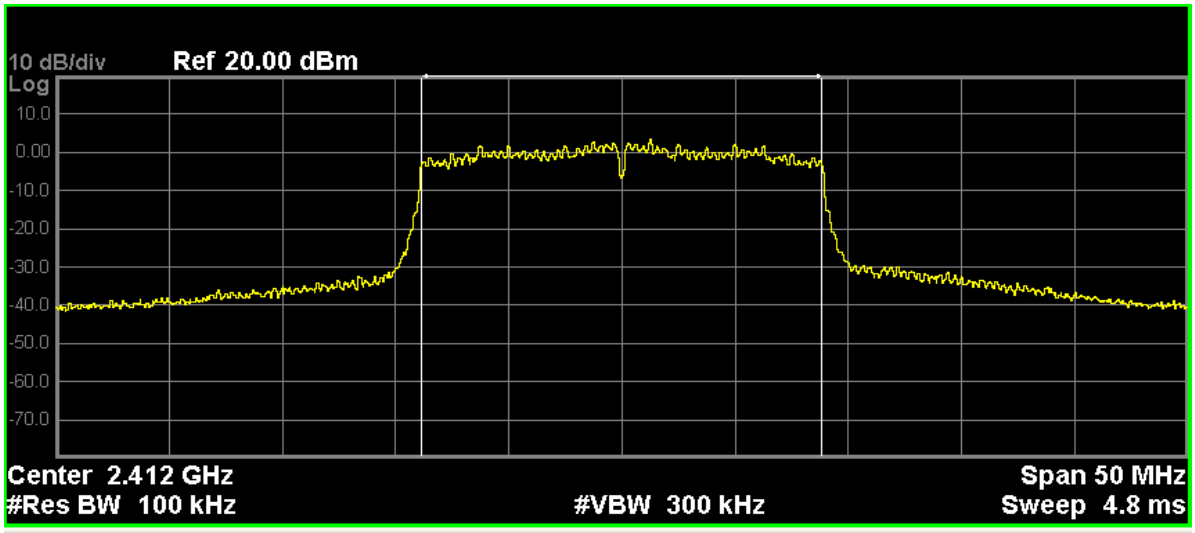
Occupied Bandwidth		Total Power	24.3 dBm
16.468 MHz			
Transmit Freq Error	-3.734 kHz	OBW Power	99.00 %
x dB Bandwidth	17.66 MHz	x dB	-20.00 dB

802.11g channel 11



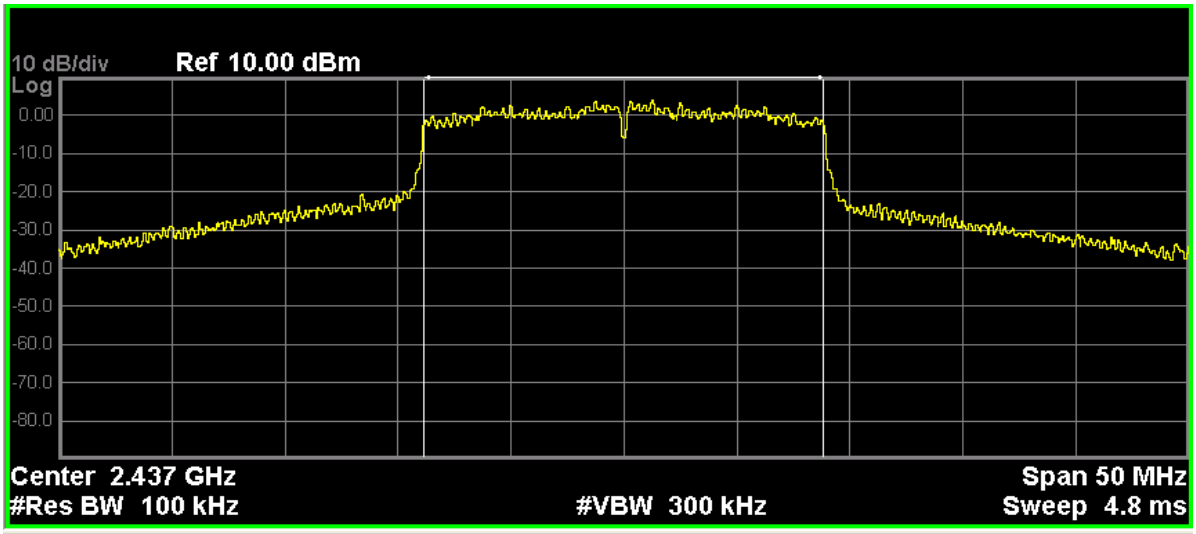
802.11n

802.11n channel 1



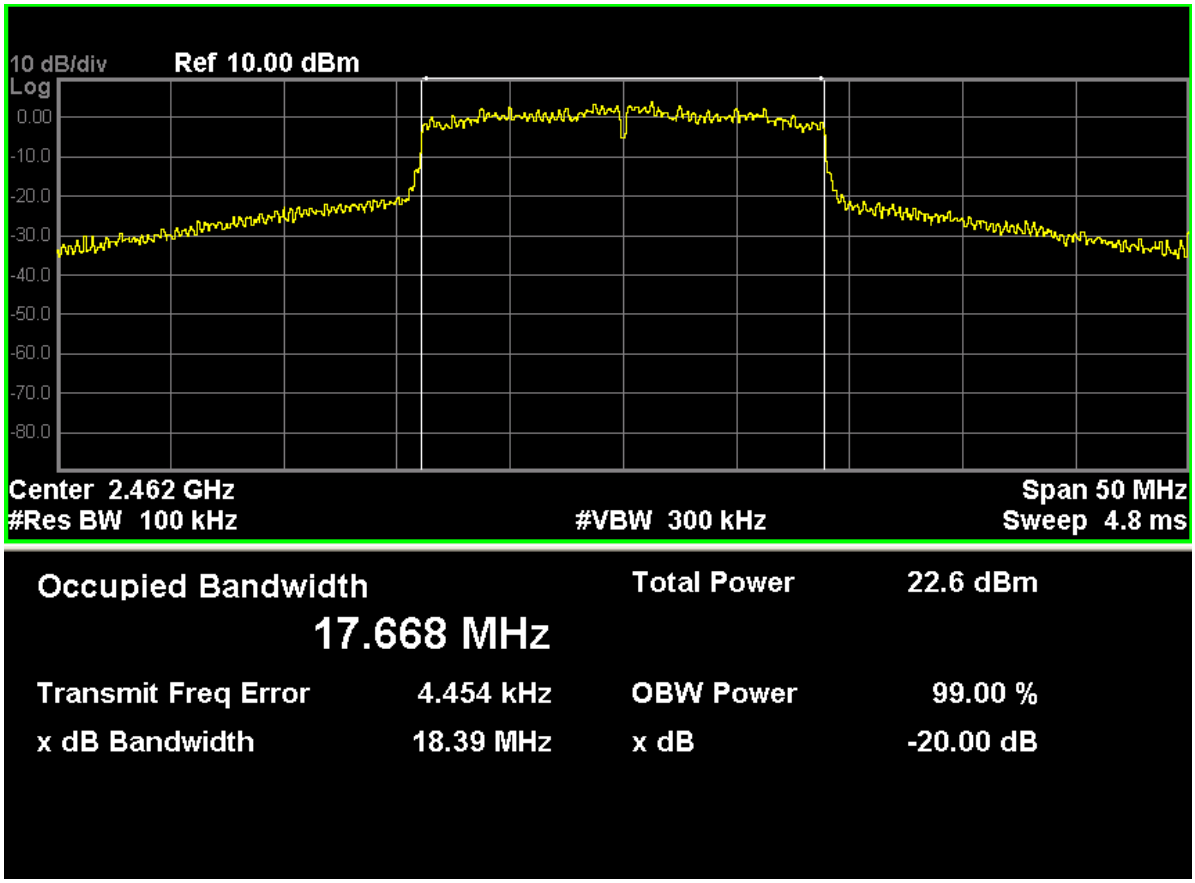
Occupied Bandwidth		Total Power	21.8 dBm
17.555 MHz			
Transmit Freq Error	11.188 kHz	OBW Power	99.00 %
x dB Bandwidth	18.32 MHz	x dB	-20.00 dB

802.11n channel 6



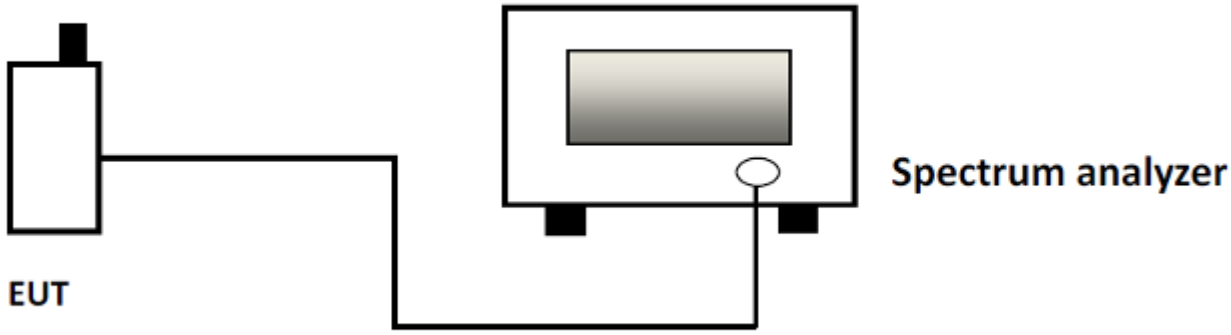
Occupied Bandwidth		Total Power	22.7 dBm
17.625 MHz			
Transmit Freq Error	-2.333 kHz	OBW Power	99.00 %
x dB Bandwidth	18.37 MHz	x dB	-20.00 dB

802.11n channel 11



5. 6 DB BANDWIDTH

5.1 TEST SETUP



5.2 LIMITS

Limit	≥500 kHz

5.3 TEST PROCEDURE

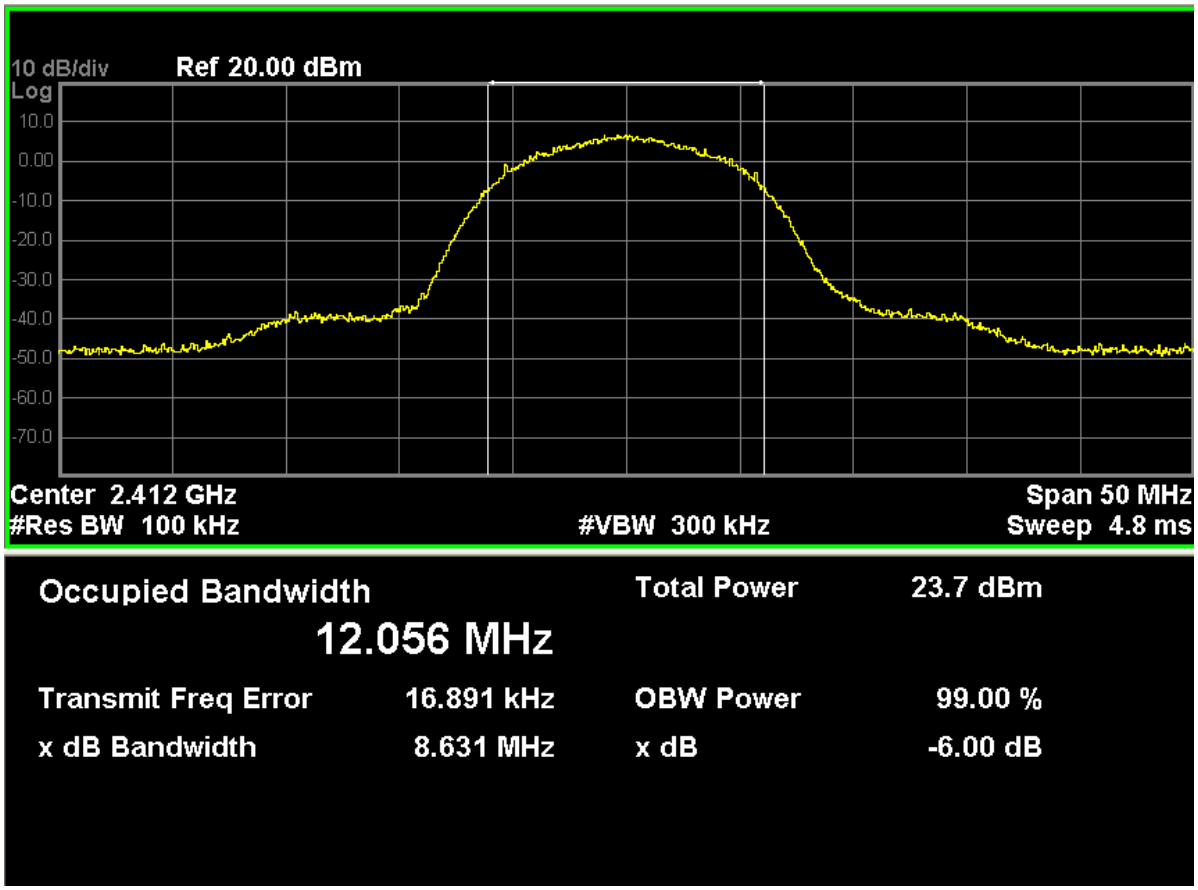
Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to spectrum analyzer.
The loss between RF output port of the EUT and the input port of the tester will be taken into consideration.
The measurement will be conducted at three channels.
WIFI: Low(1), Middle(6) and High (11).
Using occupied BW measurement function of spectrum analyzer and settings are:
XdB = -6dB
RBW = 100KHz
VBW ≥ 3 x RBW
Span = approximately 2 to 3 times the 6 dB bandwidth, centered on a channel
Sweep = auto
Detector function = peak
Trace = max hold

5.4 RESULTS & PERFORMANCE

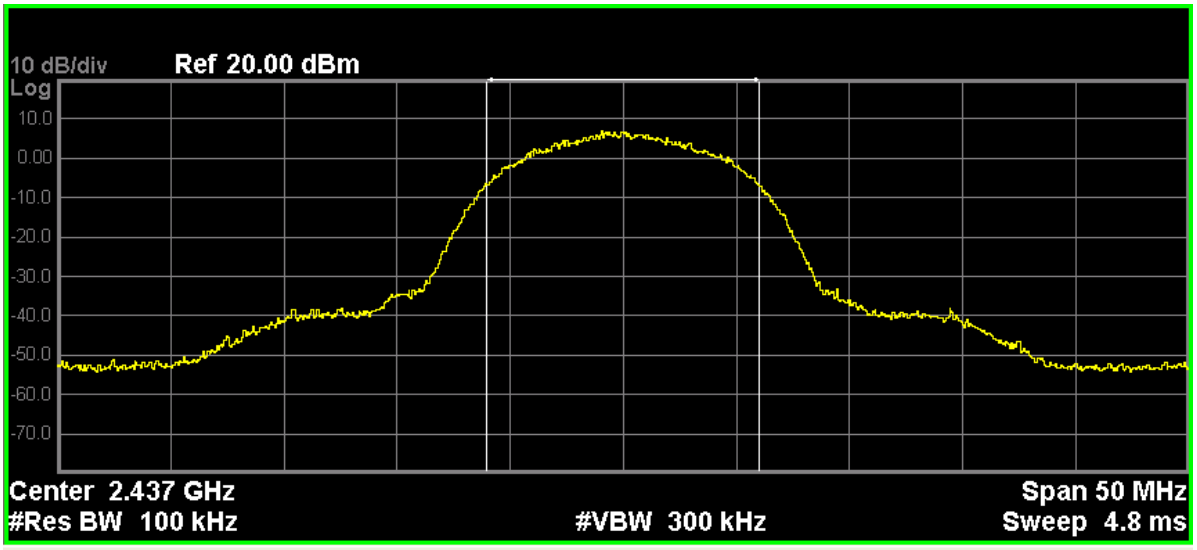
Channel	Measured 6dB bandwidth (MHz)	Limit (MHz)	Result
802.11b			
802.11b CH1	8.631	≥0.5	PASS
802.11b CH6	8.530	≥0.5	PASS
802.11b CH11	8.039	≥0.5	PASS
802.11g			
802.11g CH1	16.33	≥0.5	PASS
802.11g CH6	16.38	≥0.5	PASS
802.11g CH11	15.74	≥0.5	PASS
802.11n			
802.11g CH1	17.59	≥0.5	PASS
802.11g CH6	17.61	≥0.5	PASS
802.11g CH11	17.60	≥0.5	PASS

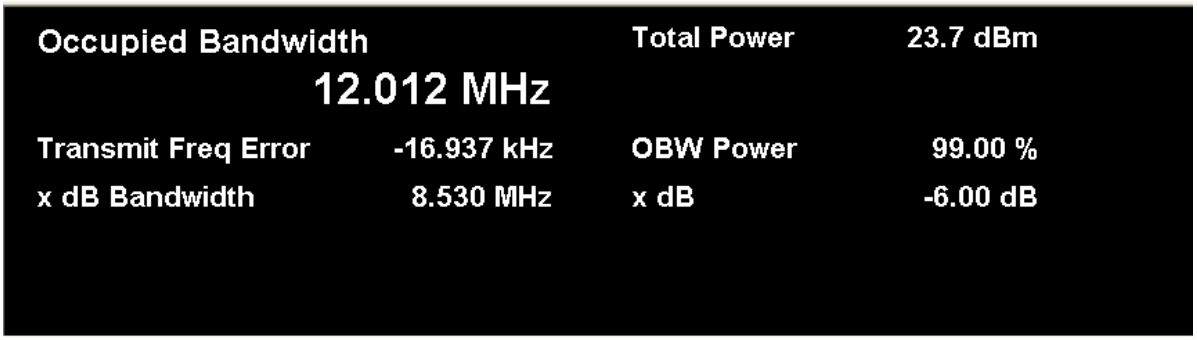
802.11b

802.11b channel 1

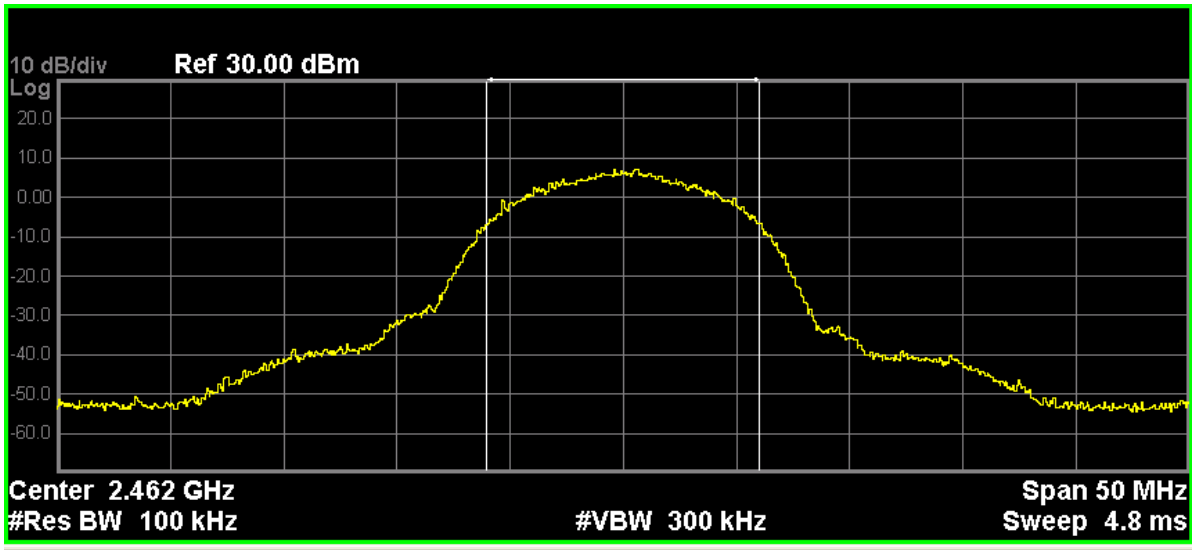


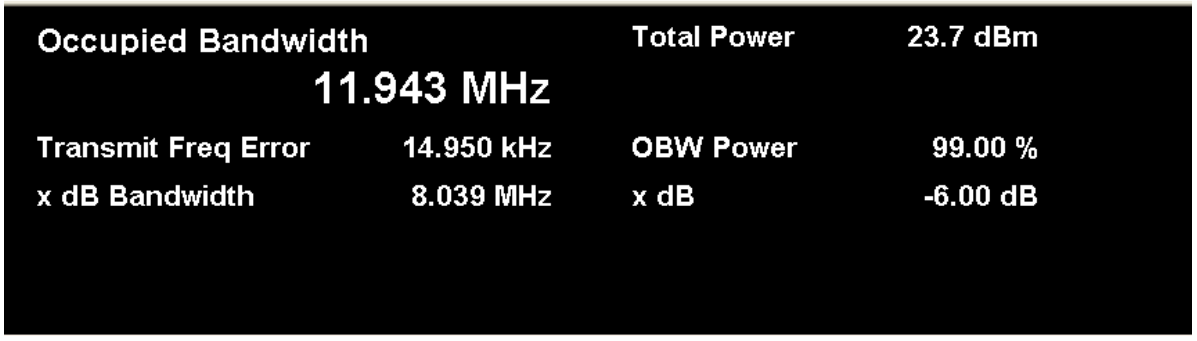
802.11b channel 6





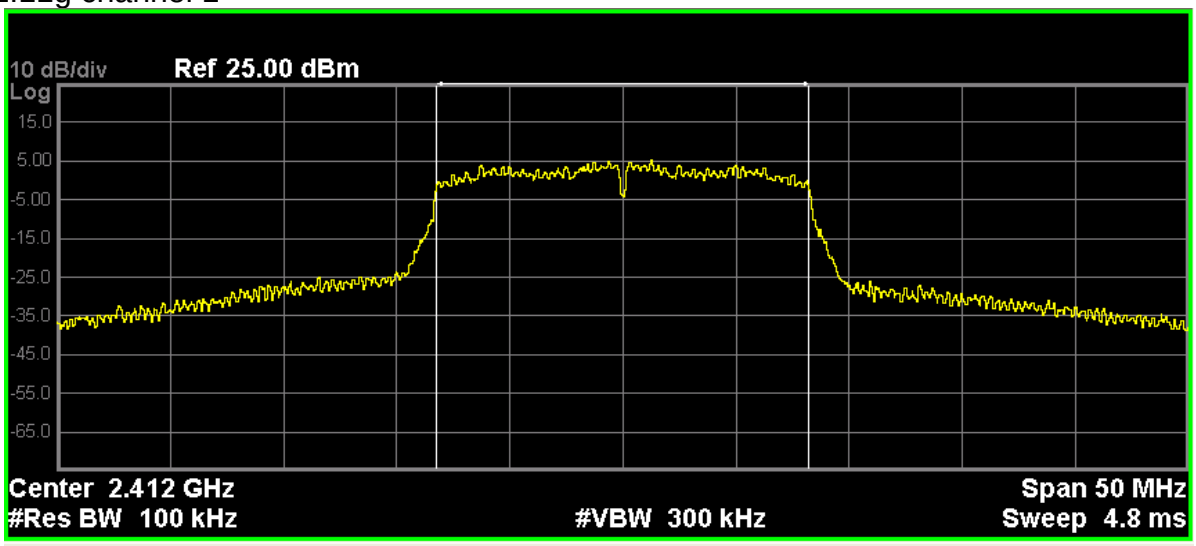
802.11b channel 11





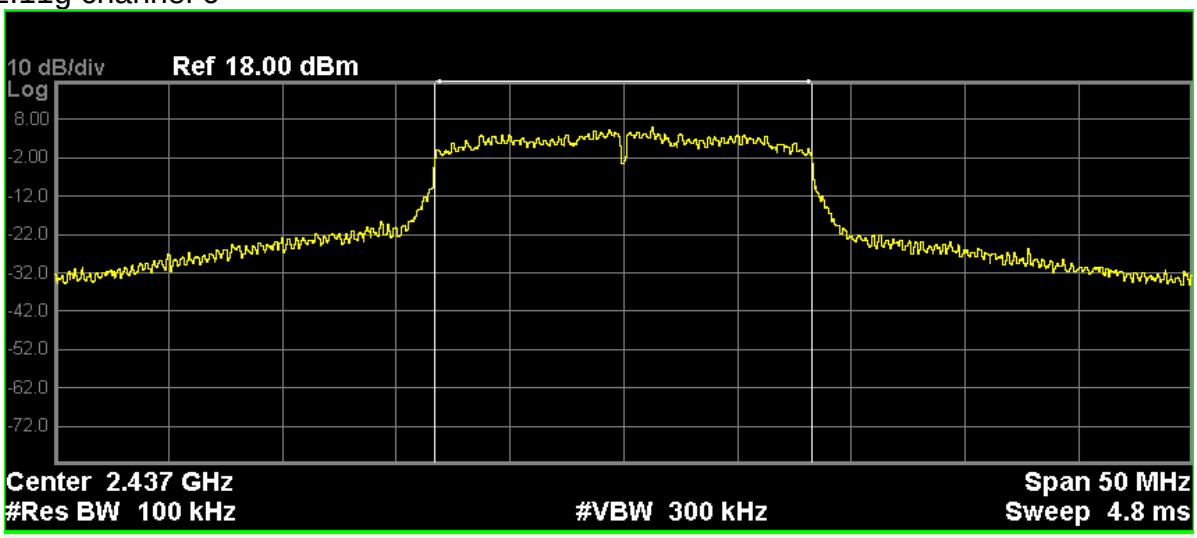
802.11g

802.11g channel 1



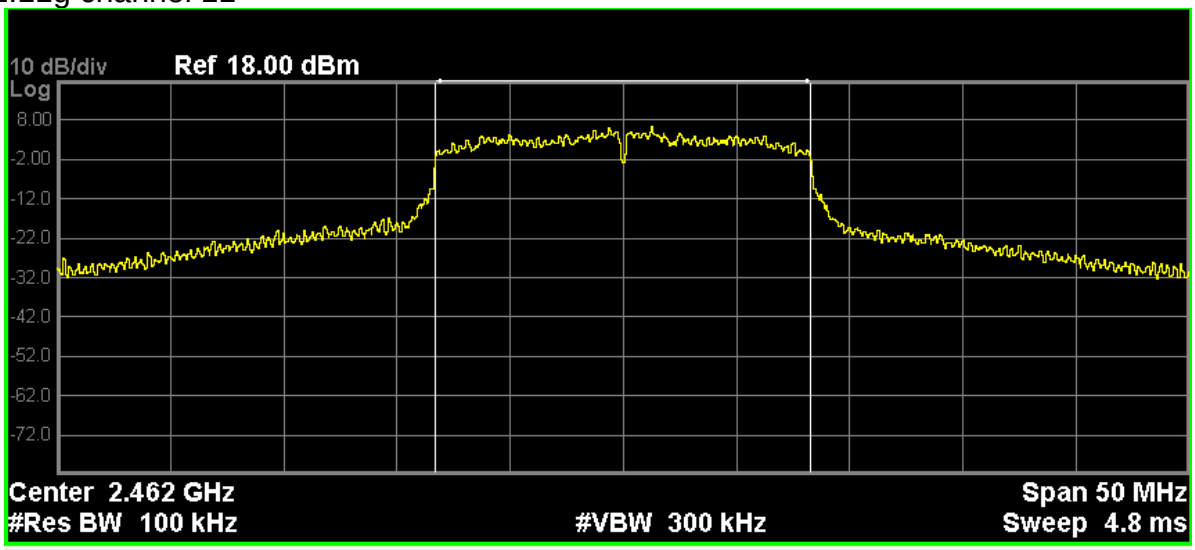
Occupied Bandwidth		Total Power	23.9 dBm
16.384 MHz			
Transmit Freq Error	4.502 kHz	OBW Power	99.00 %
x dB Bandwidth	16.33 MHz	x dB	-6.00 dB

802.11g channel 6



Occupied Bandwidth		Total Power	24.4 dBm
16.458 MHz			
Transmit Freq Error	-6.319 kHz	OBW Power	99.00 %
x dB Bandwidth	16.38 MHz	x dB	-6.00 dB

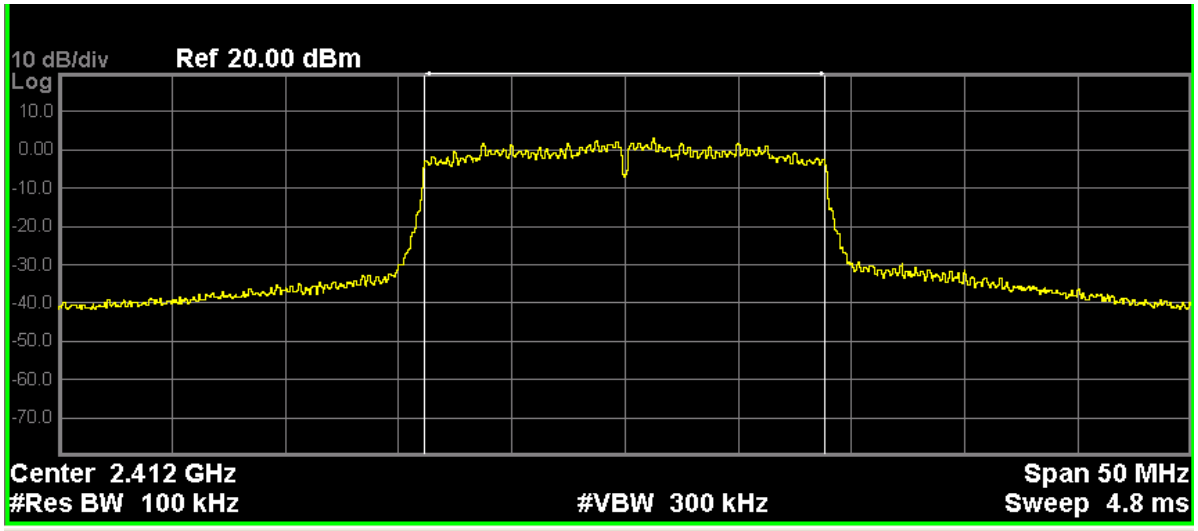
802.11g channel 11



Occupied Bandwidth		Total Power	24.7 dBm
16.559 MHz			
Transmit Freq Error	-5.741 kHz	OBW Power	99.00 %
x dB Bandwidth	15.74 MHz	x dB	-6.00 dB

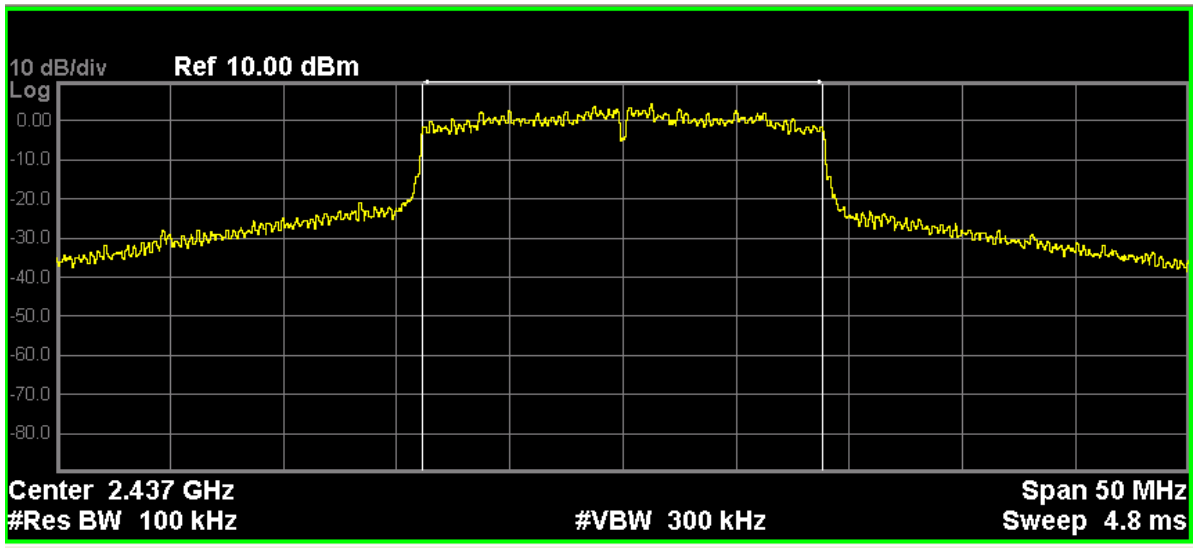
802.11n

802.11n channel 1



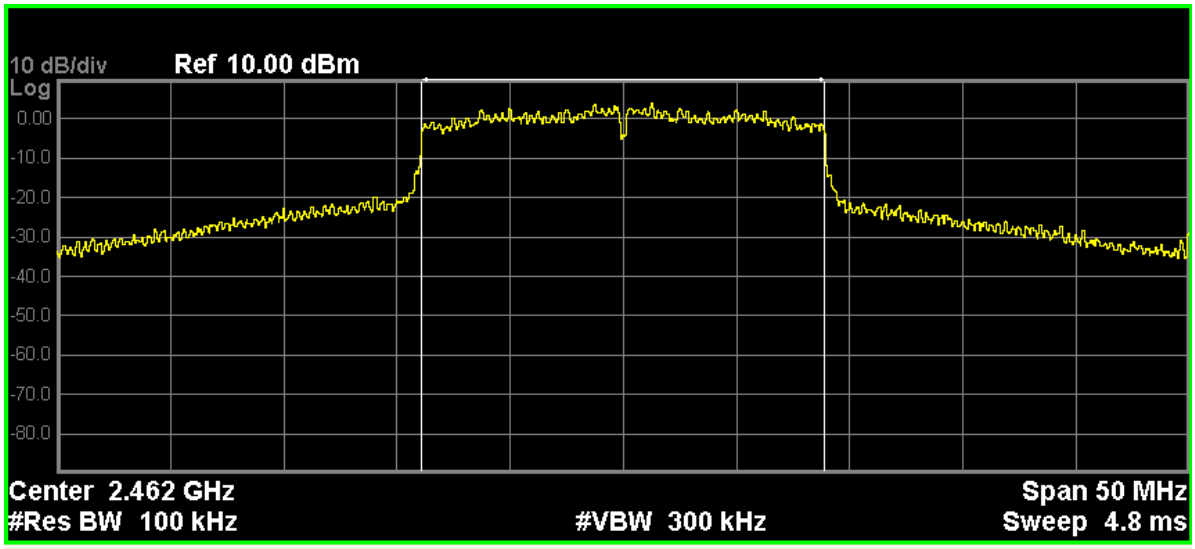
Occupied Bandwidth		Total Power	21.5 dBm
17.556 MHz			
Transmit Freq Error	12.382 kHz	OBW Power	99.00 %
x dB Bandwidth	17.59 MHz	x dB	-6.00 dB

802.11n channel 6



Occupied Bandwidth		Total Power	22.5 dBm
17.620 MHz			
Transmit Freq Error	-1.547 kHz	OBW Power	99.00 %
x dB Bandwidth	17.61 MHz	x dB	-6.00 dB

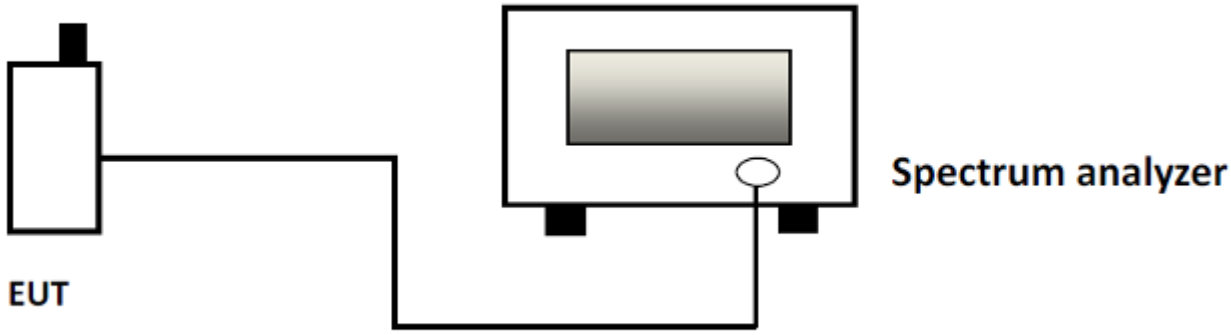
802.11n channel 11



Occupied Bandwidth		Total Power	22.6 dBm
17.680 MHz			
Transmit Freq Error	1.514 kHz	OBW Power	99.00 %
x dB Bandwidth	17.60 MHz	x dB	-6.00 dB

6. POWER SPECTRAL DENSITY

6.1 TEST SETUP



6.2 LIMITS

Limits	≤8dBm/3KHz

6.3 TEST PROCEDURE

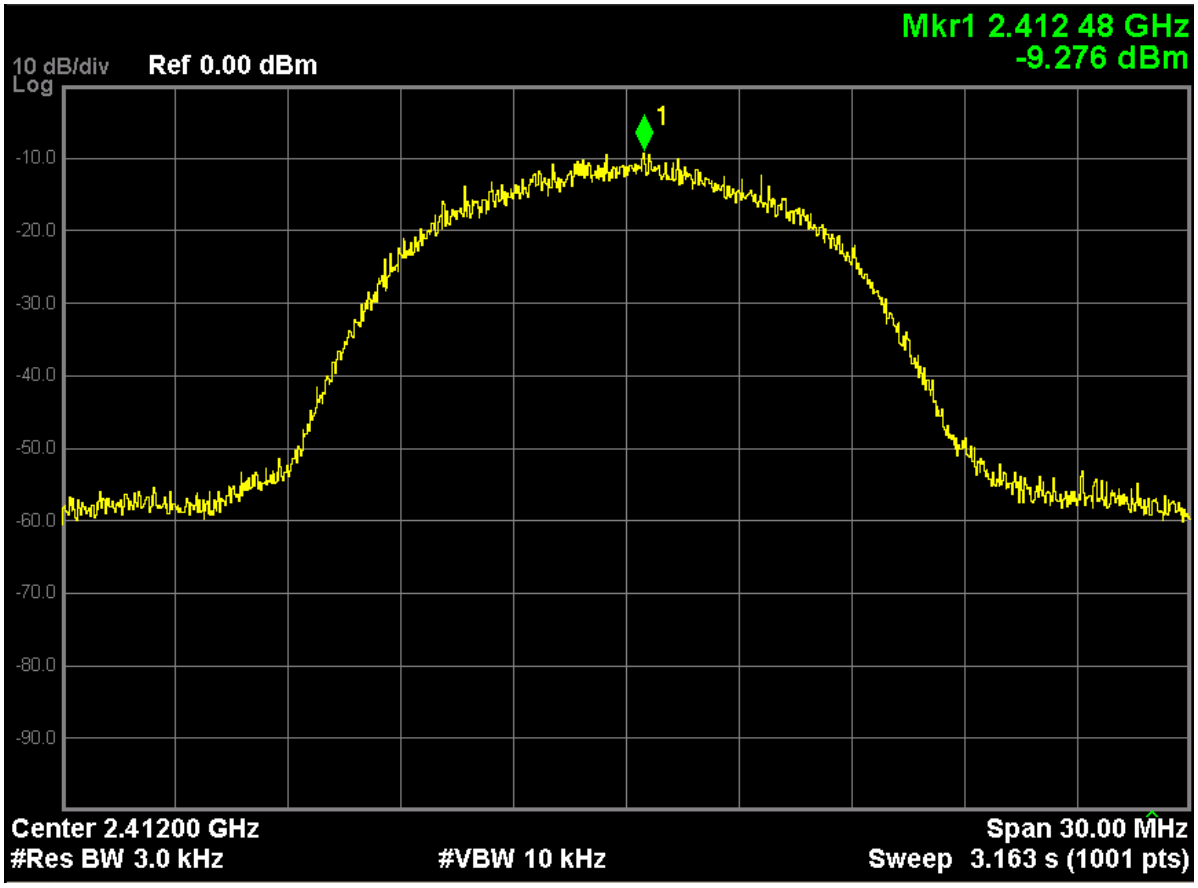
Set analyzer center frequency to DTS channel center frequency.
Set the span to 1.5 times the DTS bandwidth.
Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
Set the VBW ≥ 3xRBW.
Detector = peak.
Sweep time = auto couple.
Trace mode = max hold.
Allow trace to fully stabilize.
Use the peak marker function to determine the maximum amplitude level within the RBW.
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

6.4 RESULTS & PERFORMANCE

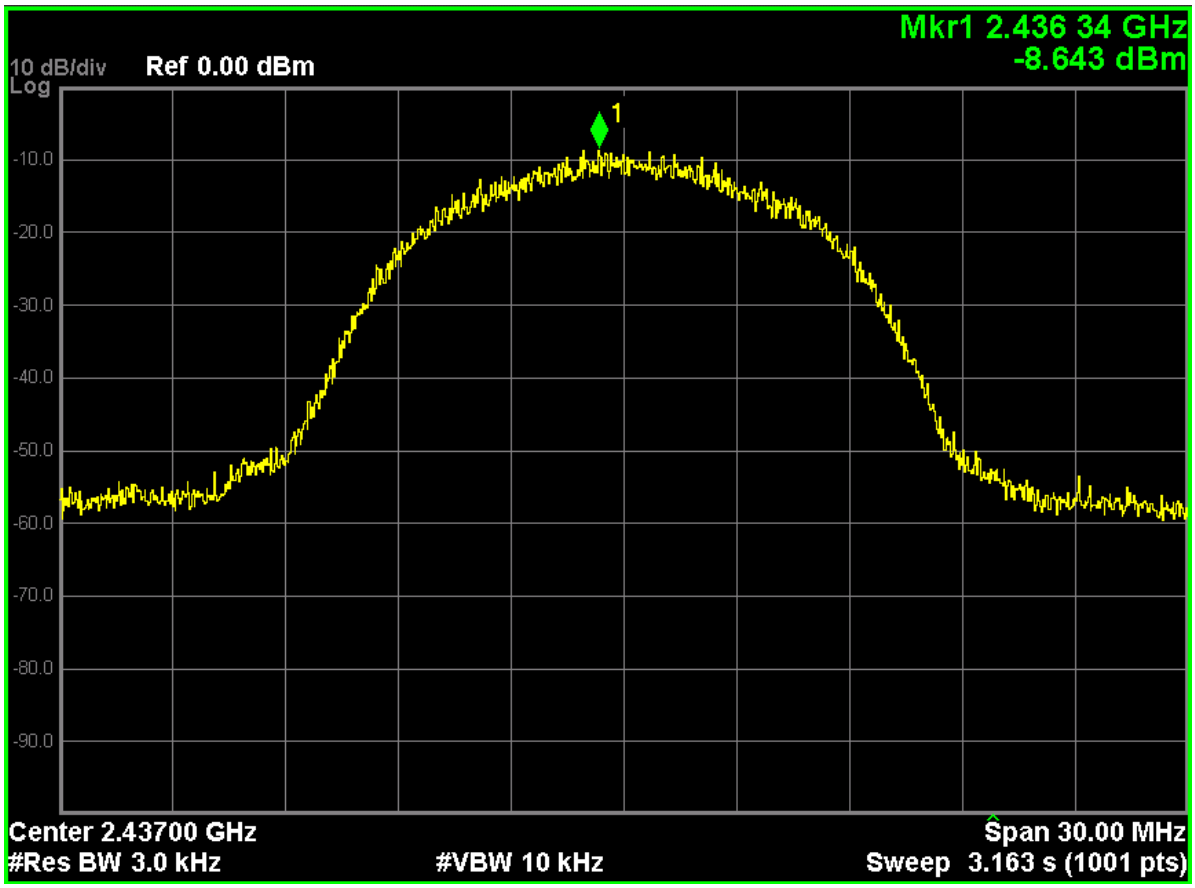
Channel	Mode	Measured level (dBm/3KHz)	Limit (dBm/3KHz)	Result
1 (2412MHz)	802.11b	-9.276	≤8.00	Pass
	802.11g	-9.343	≤8.00	Pass
	802.11n	-12.217	≤8.00	Pass
6 (2437 MHz)	802.11b	-8.643	≤8.00	Pass
	802.11g	-8.836	≤8.00	Pass
	802.11n	-12.643	≤8.00	Pass
11 (2462 MHz)	802.11b	-8.595	≤8.00	Pass
	802.11g	-8.429	≤8.00	Pass
	802.11n	-10.522	≤8.00	Pass

802.11b

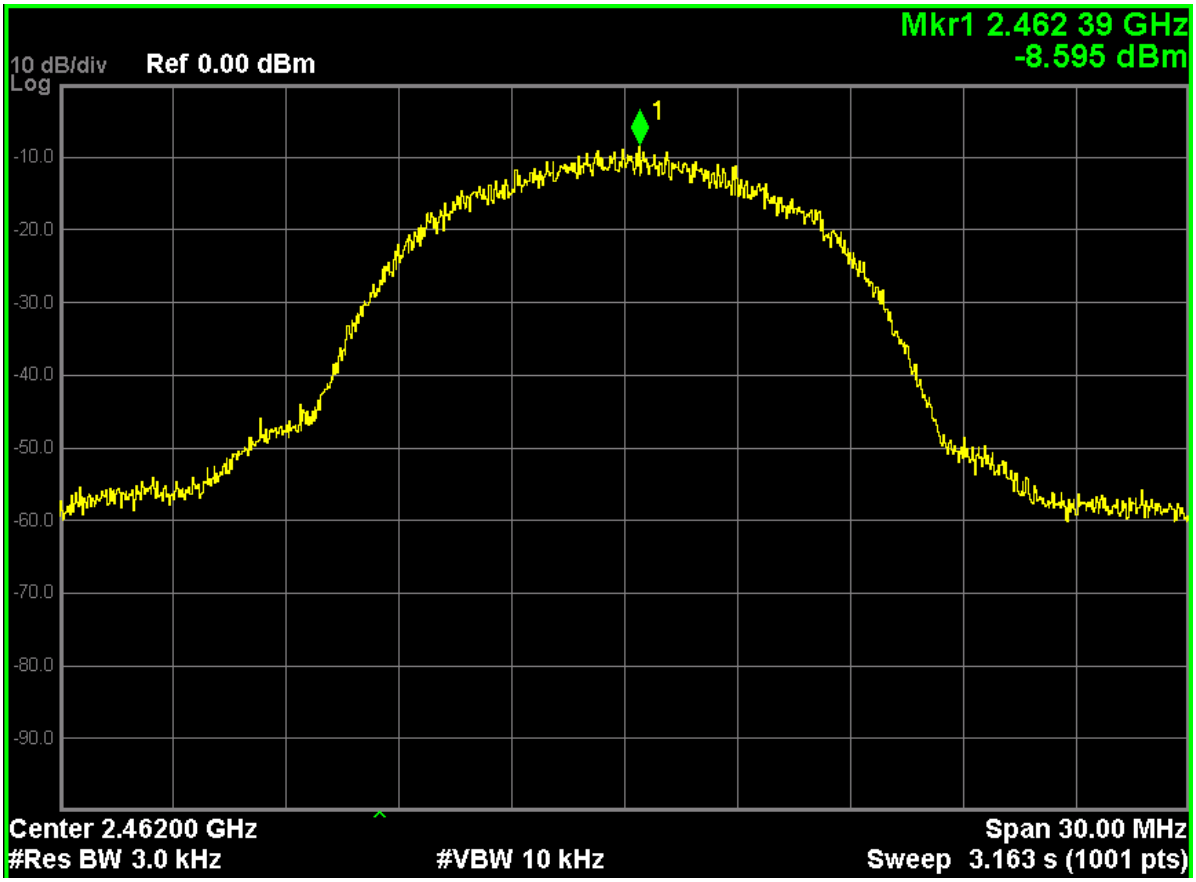
802.11b channel 1



802.11b channel 6

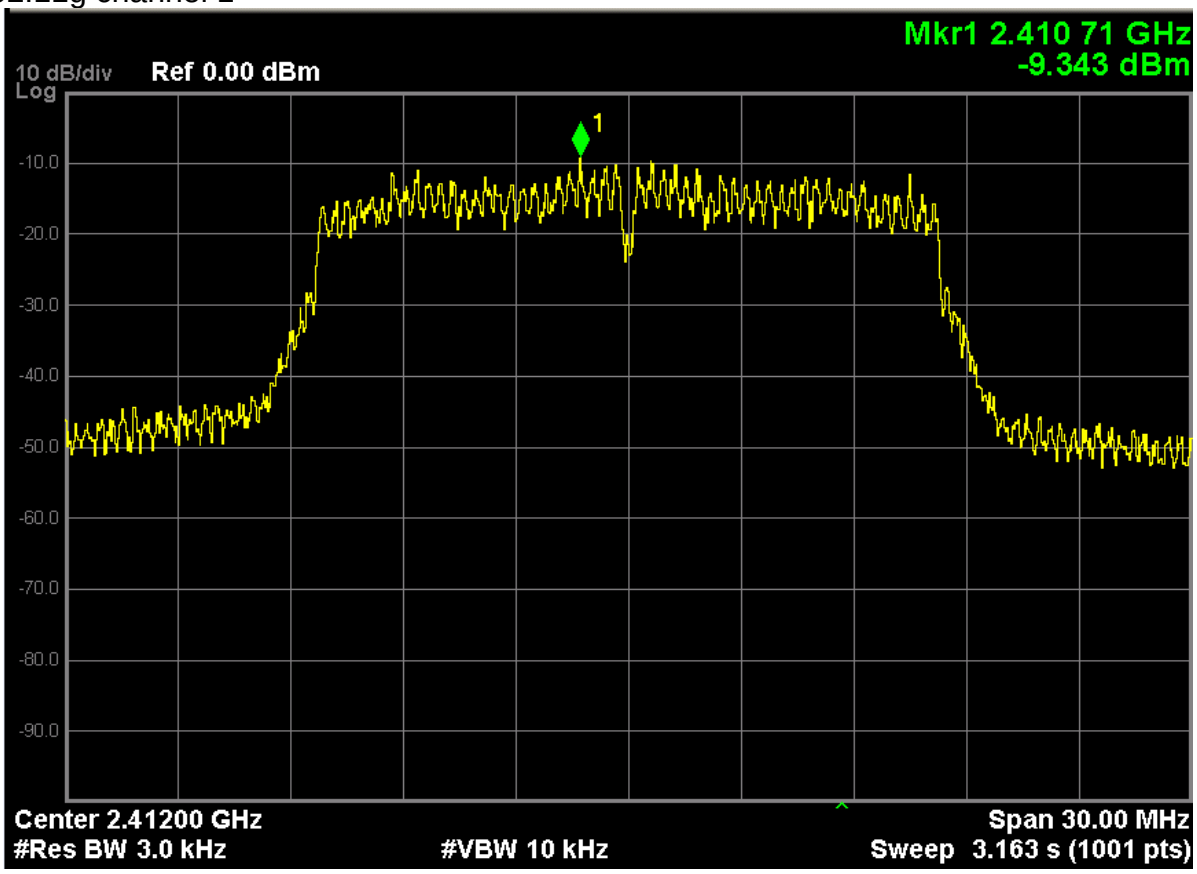


802.11b channel 11

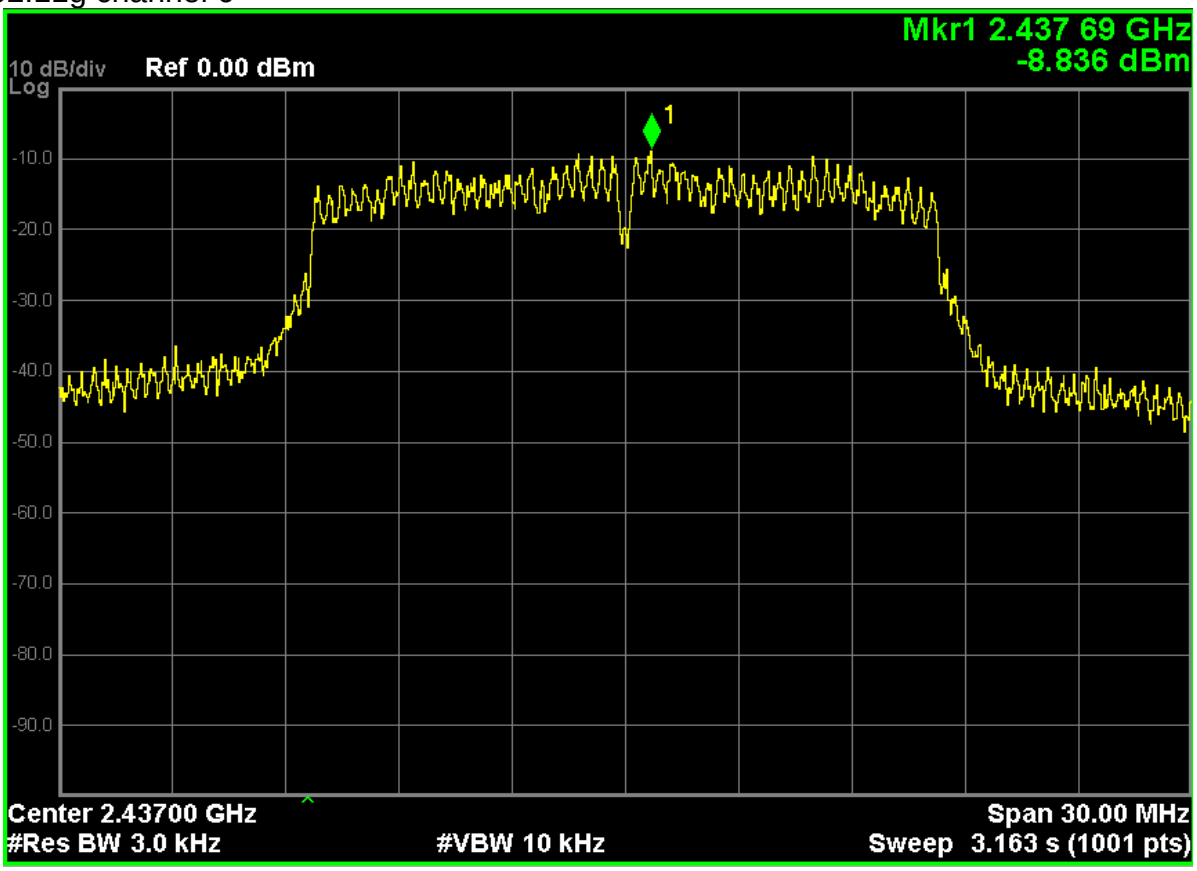


802.11g

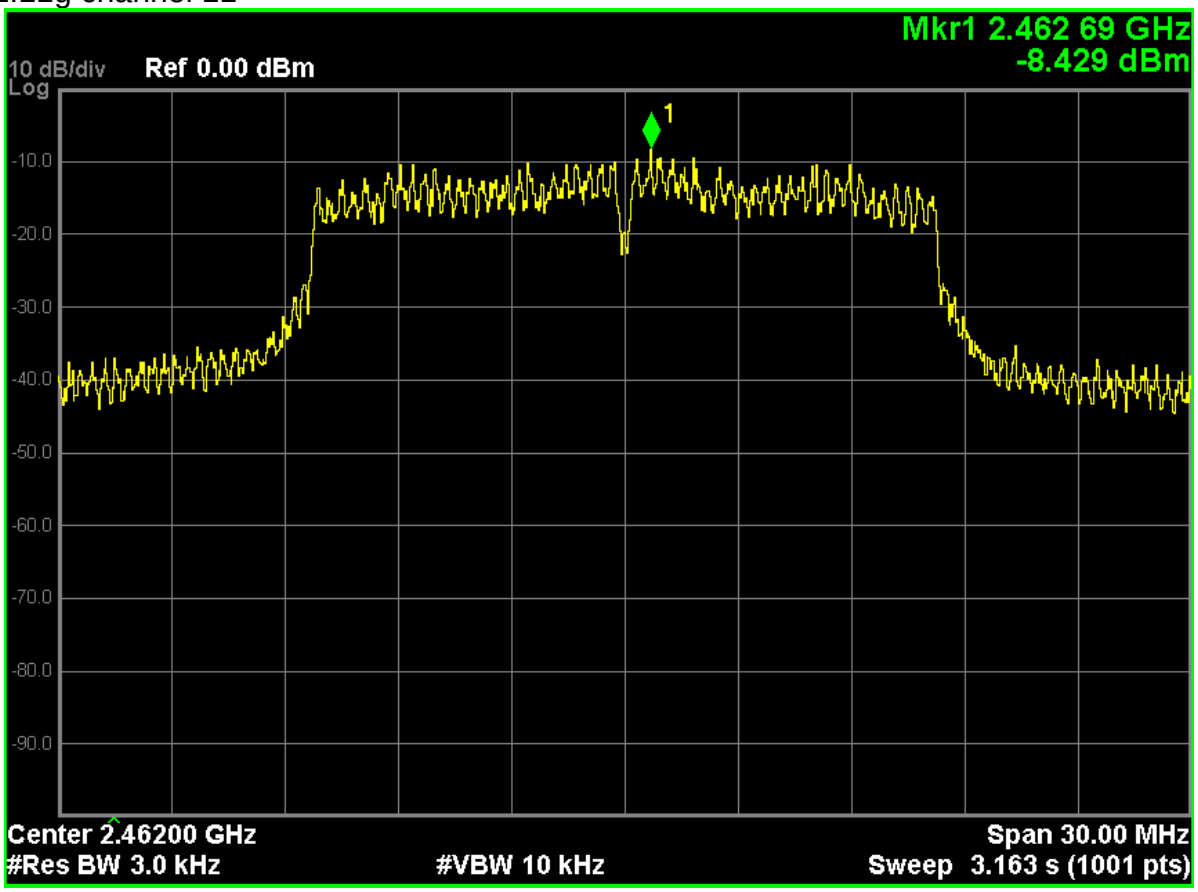
802.11g channel 1



802.11g channel 6

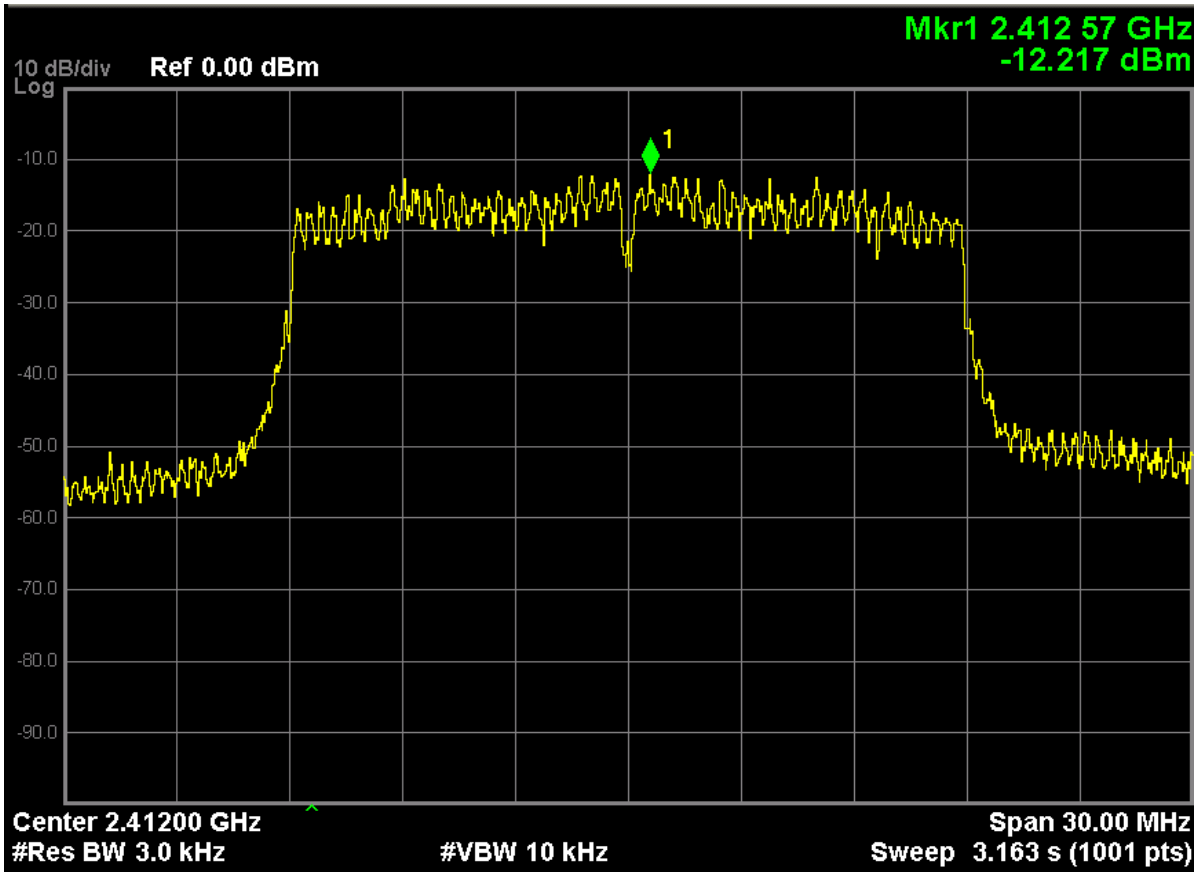


802.11g channel 11

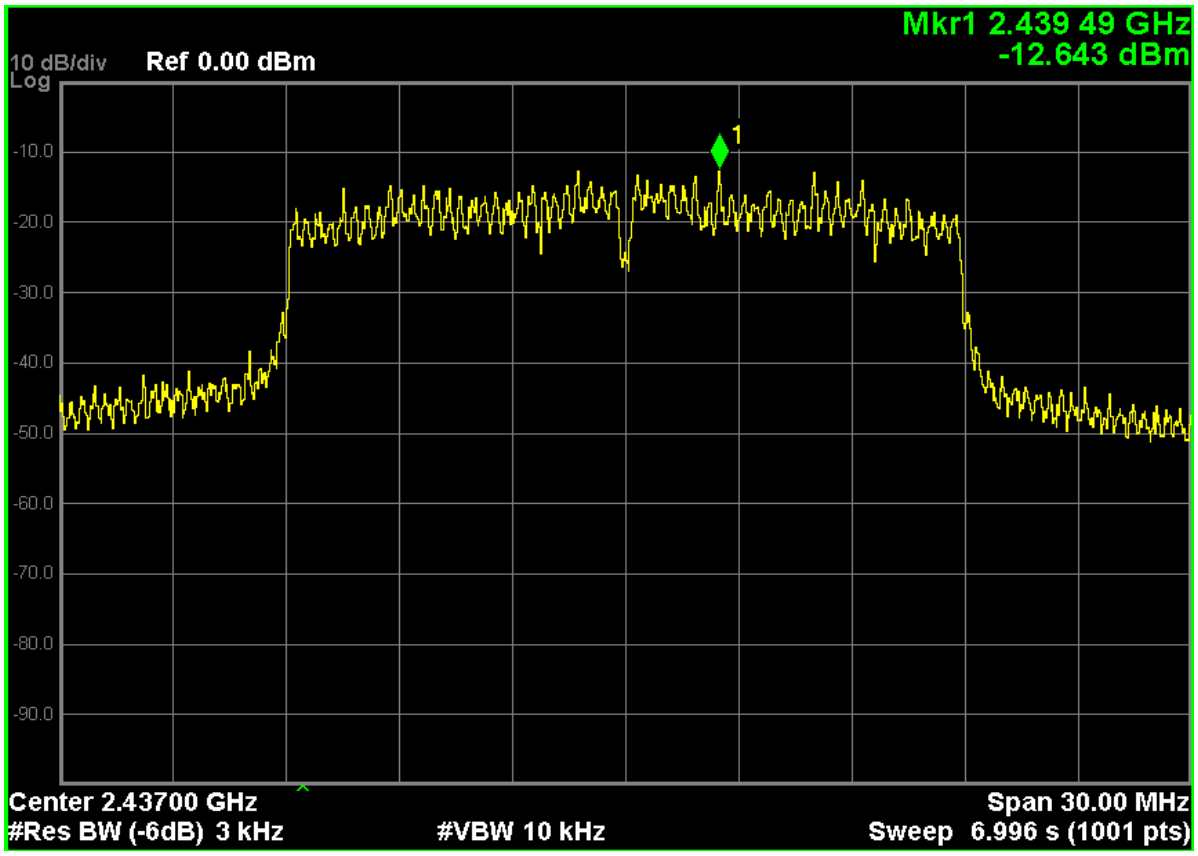


802.11n

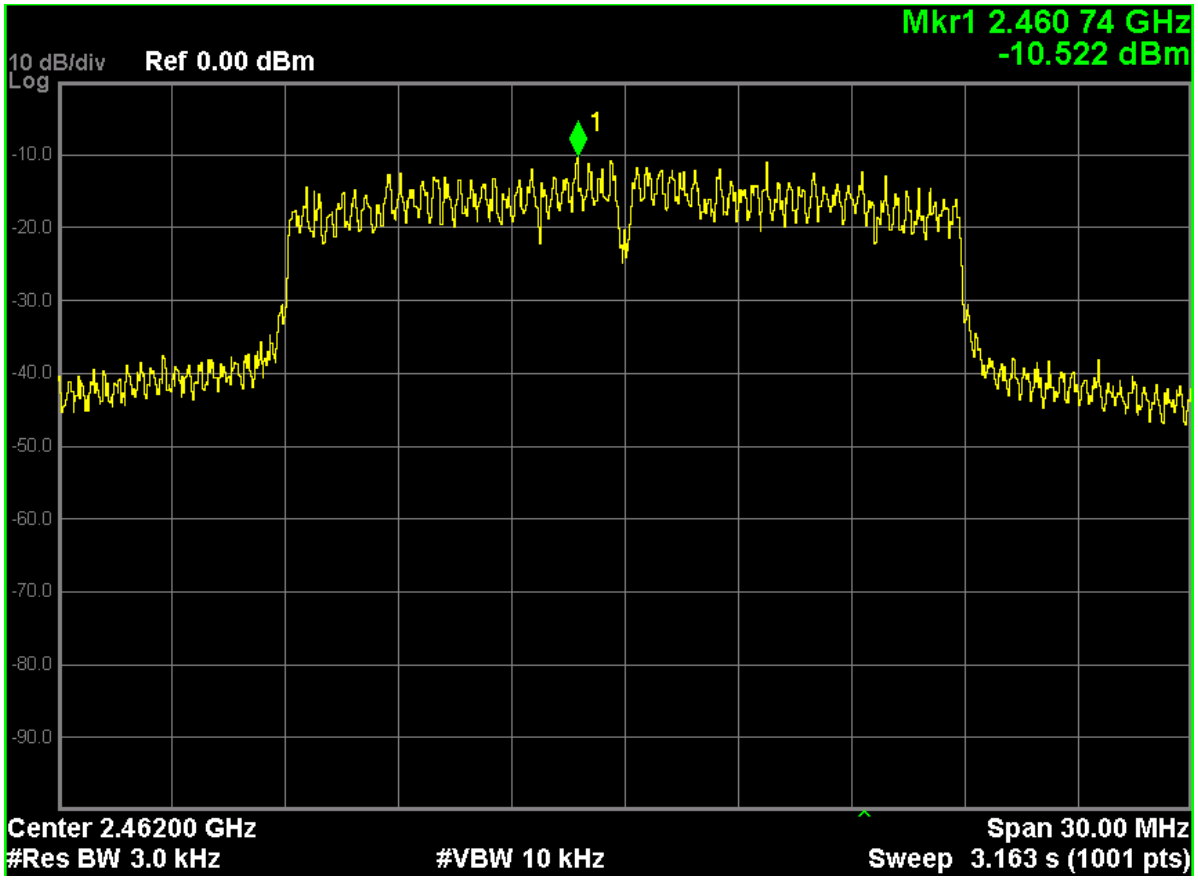
802.11n channel 1



802.11n channel 6

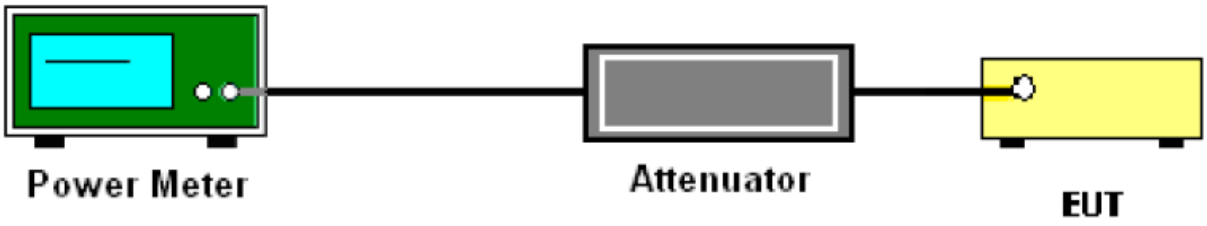


802.11n channel 11



7. PEAK OUTPUT POWER (CONDUCTION)

7.1 TEST SETUP



7.2 LIMITS

Limits	<30dBm

7.3 TEST PROCEDURE

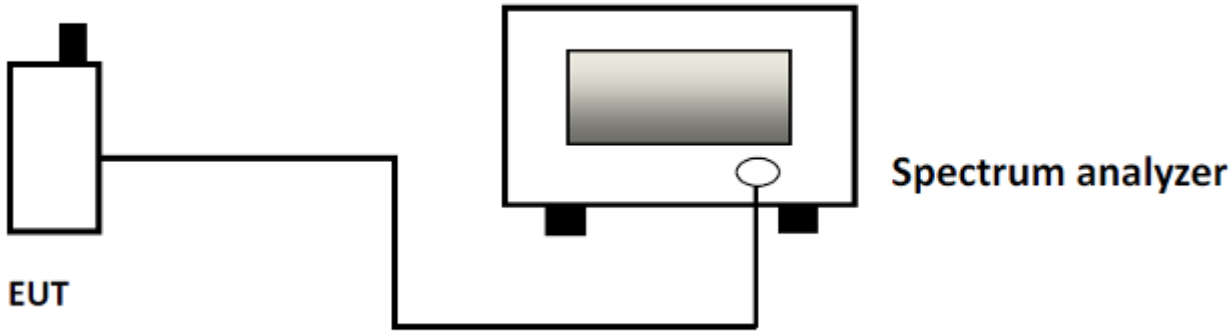
Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to power meter.
The loss between RF output port of the EUT and the input port of the tester will be taken into consideration.
The measurement will be conducted at three channels.
WIFI: Low(1), Middle(6) and High (11).

7.4 RESULTS & PERFORMANCE

802.11b			
Channel	Peak power (dBm)	Limit (dBm)	Margin (dB)
1 (2412MHz)	20.15	30	9.85
6 (2437MHz)	20.23	30	9.77
11 (2462MHz)	20.59	30	9.41
802.11g			
Channel	Peak power (dBm)	Limit (dBm)	Margin (dB)
1 (2412MHz)	23.46	30	6.54
6 (2437MHz)	23.57	30	6.43
11 (2462MHz)	23.81	30	6.19
802.11n			
Channel	Peak power (dBm)	Limit (dBm)	Margin (dB)
1 (2412MHz)	21.54	30	8.46
6 (2437MHz)	21.62	30	8.38
11 (2462MHz)	21.31	30	8.69

8. SPURIOUS EMISSIONS (CONDUCTION)

8.1 TEST SETUP



8.2 LIMITS

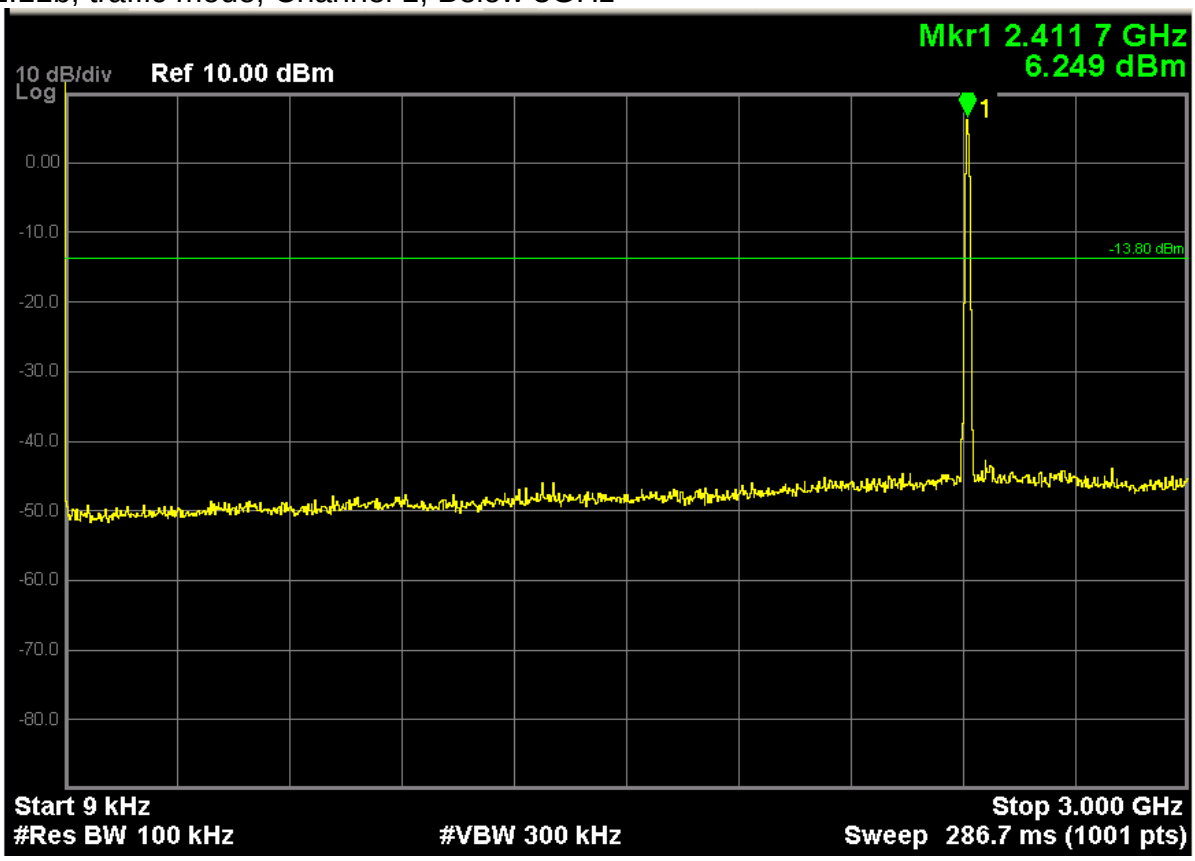
Limit	<(P-20dB)
Note: P is the highest level of the desired power	

8.3 TEST PROCEDURE

The EUT was connected to Spectrum Analyzer and Base Station via power divider. Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
RBW = 100 kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold
Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section.

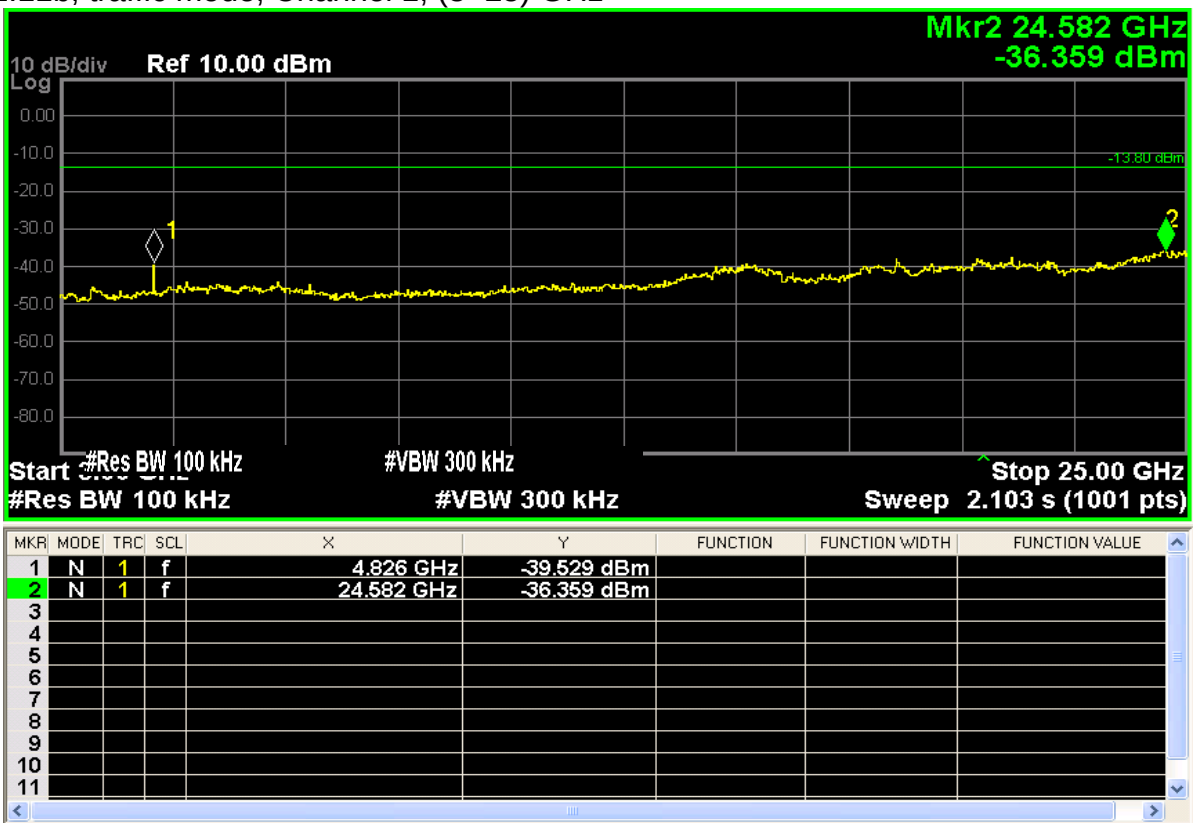
8.4 RESULTS & PERFORMANCE

802.11b, traffic mode; Channel 1; Below 3GHz



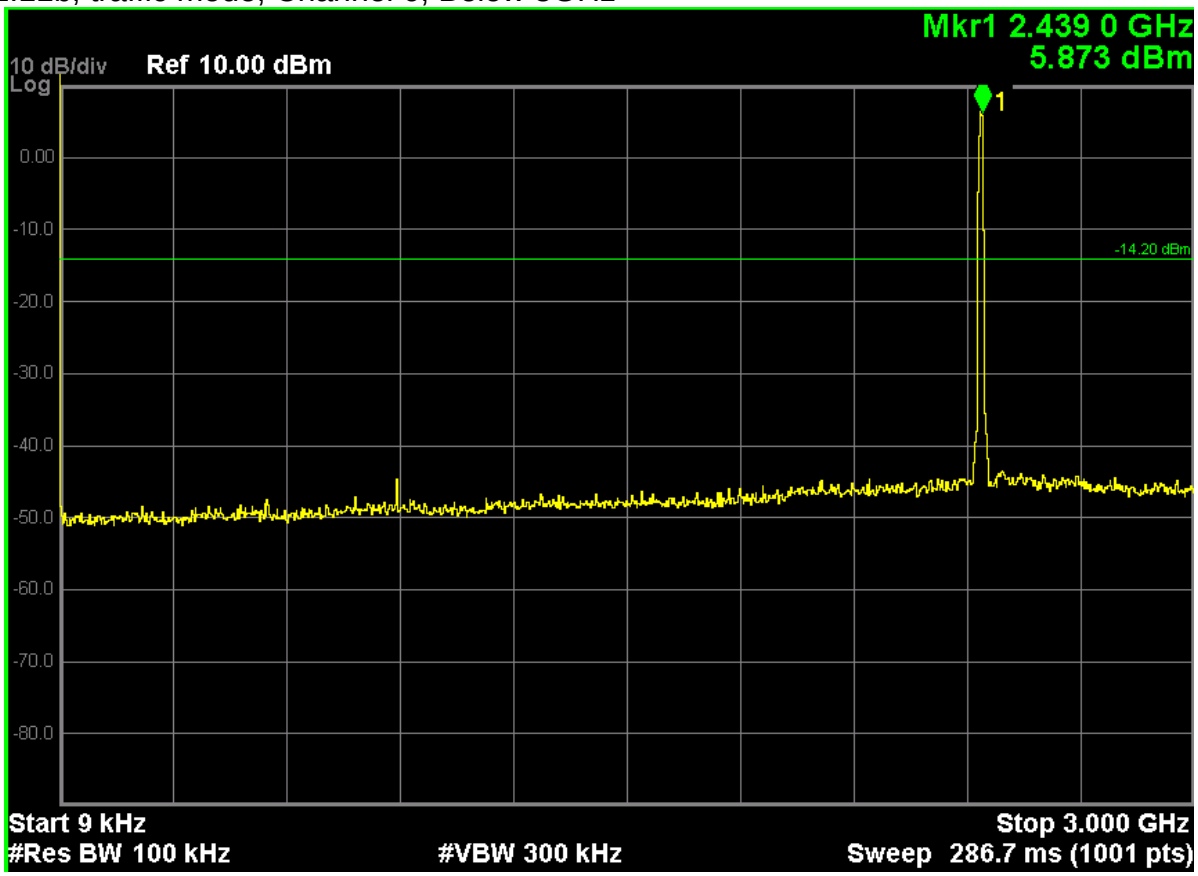
Note: The point mark1 is carrier.

802.11b, traffic mode; Channel 1; (3~25) GHz



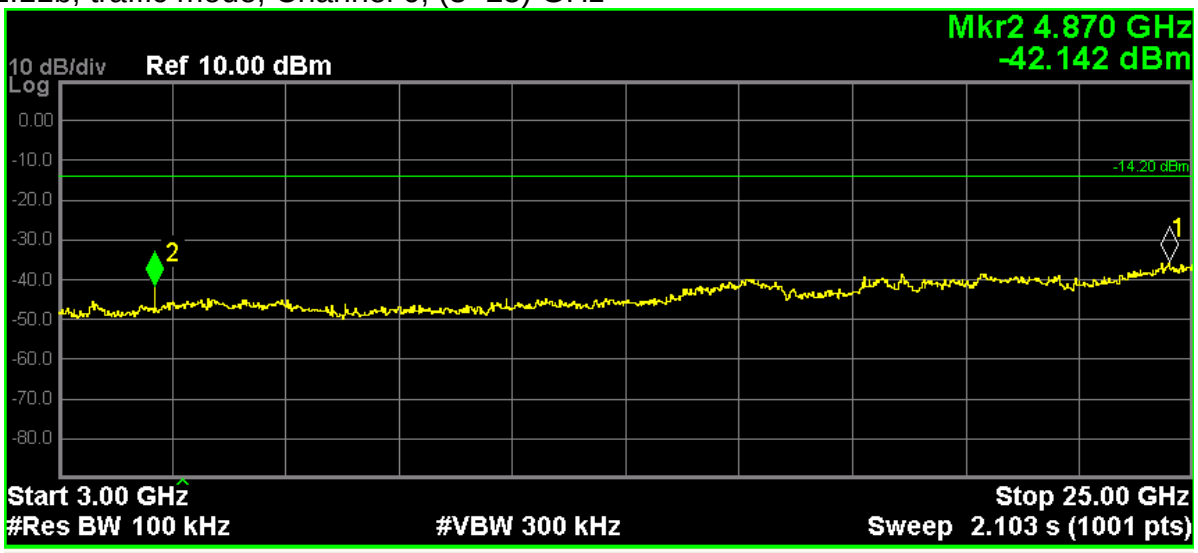
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	4.826 GHz	-39.529 dBm			
2	N	1	f	24.582 GHz	-36.359 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

802.11b, traffic mode; Channel 6; Below 3GHz



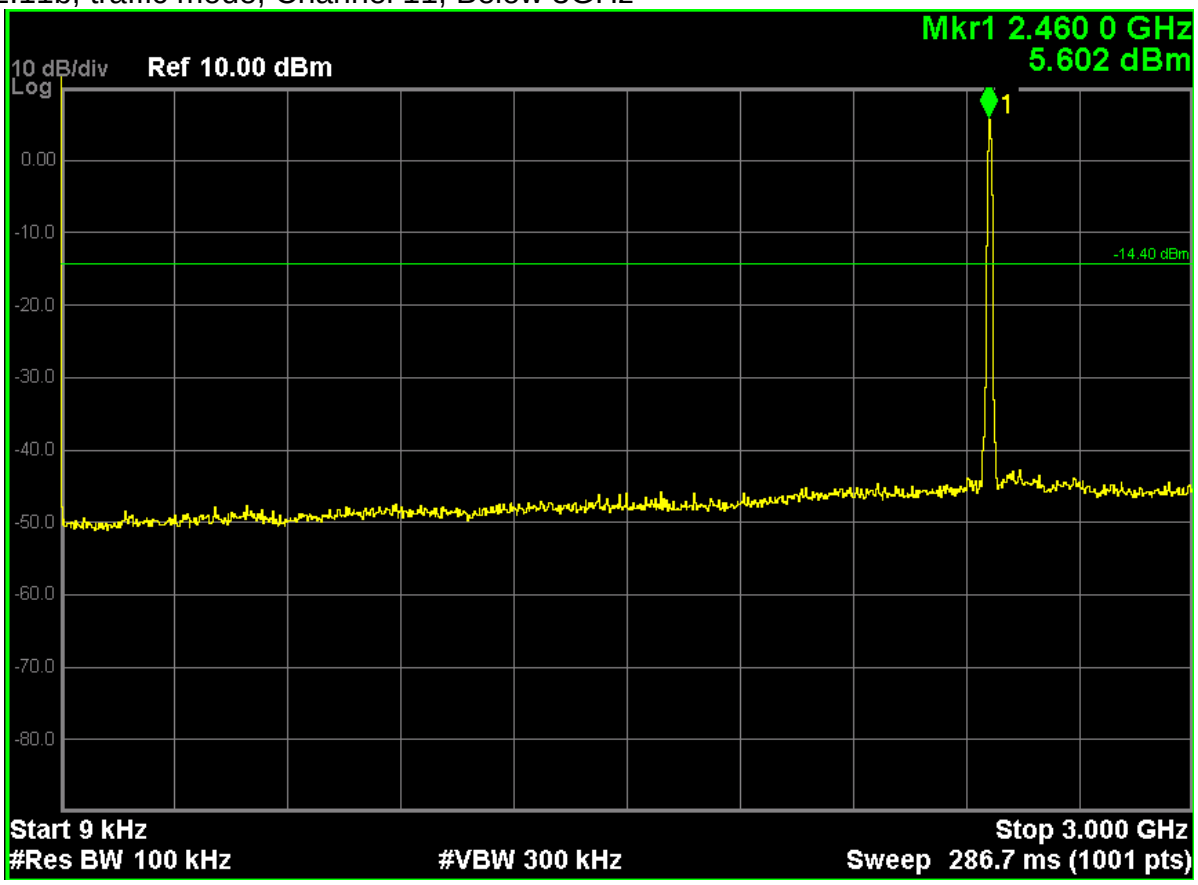
Note: The point mark1 is carrier.

802.11b, traffic mode; Channel 6; (3~25) GHz



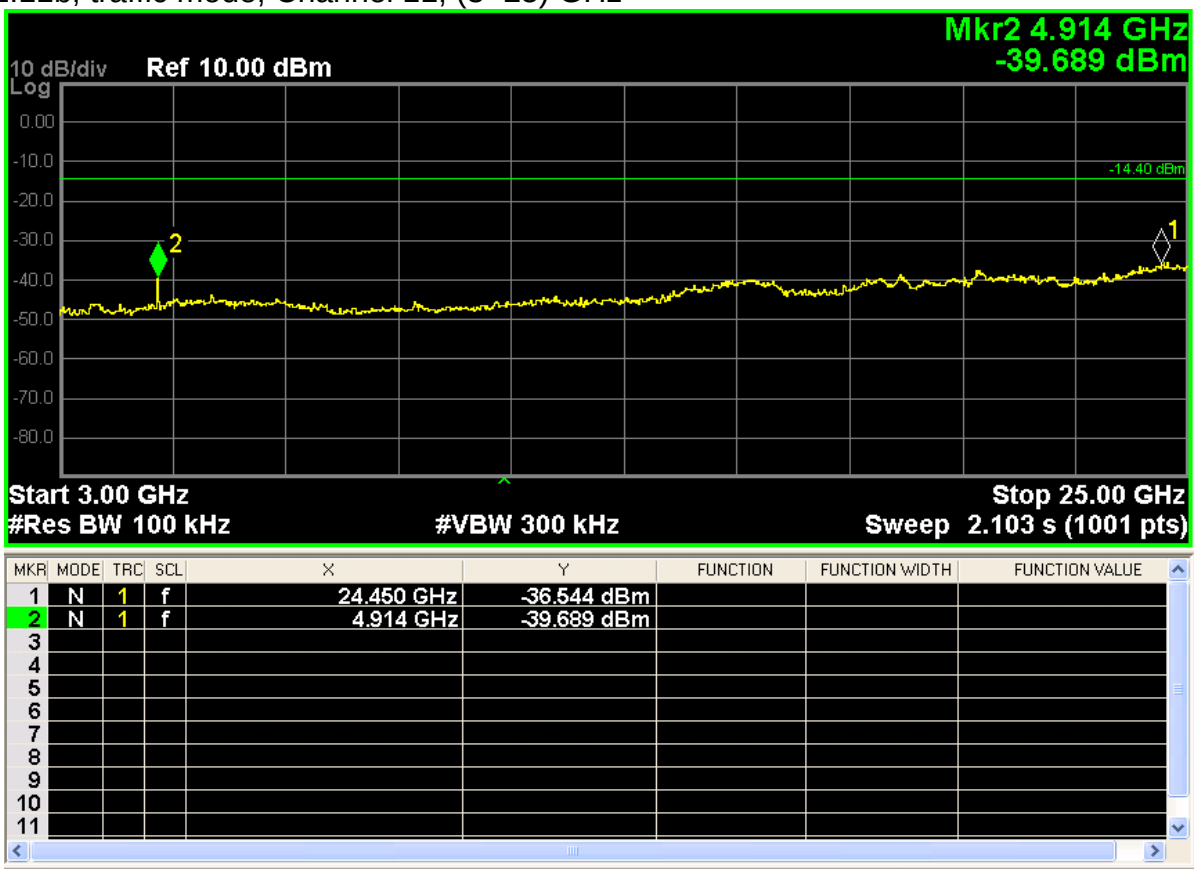
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	24.538 GHz	-35.940 dBm			
2	N	1	f	4.870 GHz	-42.142 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

802.11b, traffic mode; Channel 11; Below 3GHz



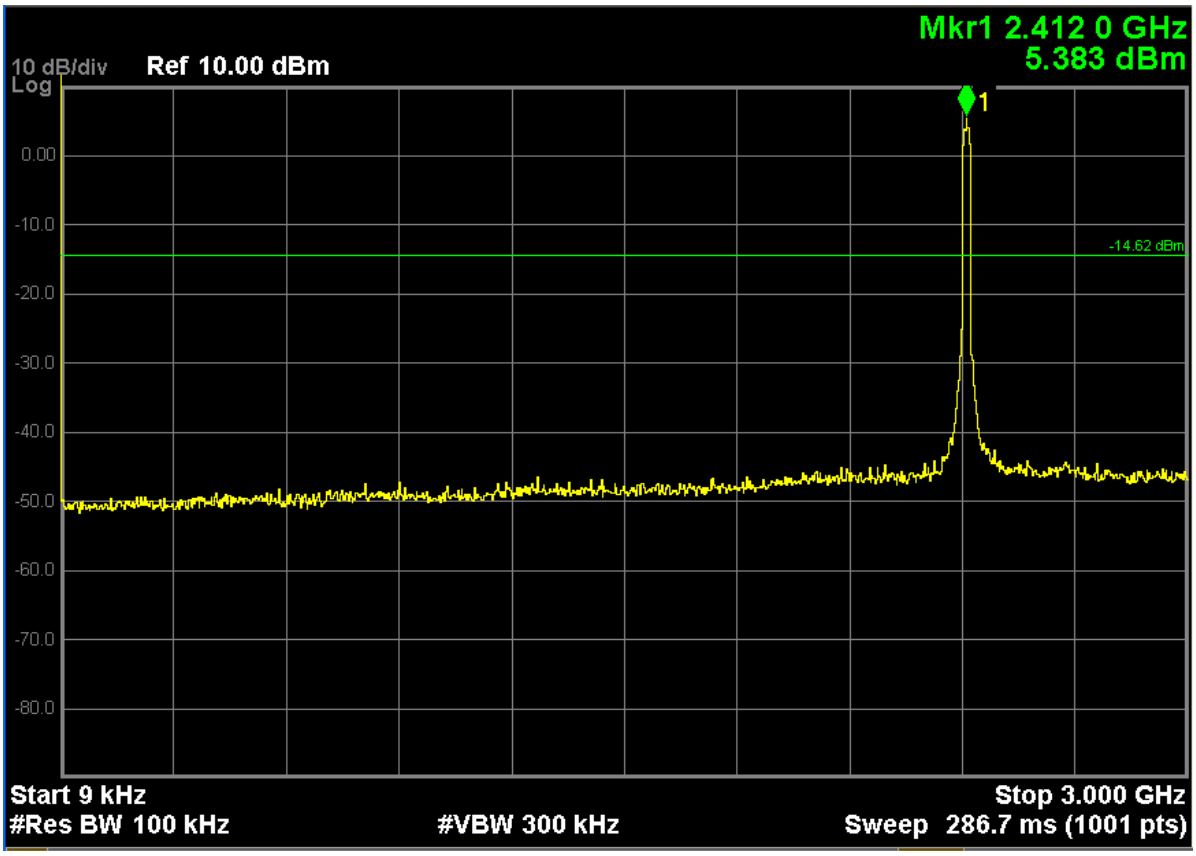
Note: The point mark1 is carrier.

802.11b, traffic mode; Channel 11; (3~25) GHz



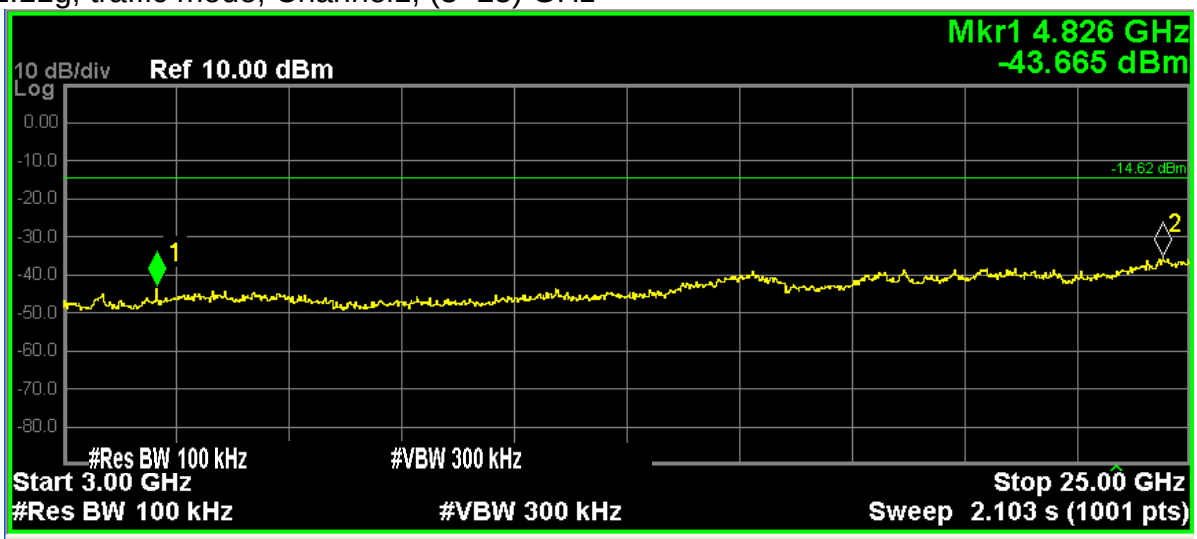
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	24.450 GHz	-36.544 dBm			
2	N	1	f	4.914 GHz	-39.689 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

802.11g, traffic mode; Channel 1; Below 3GHz



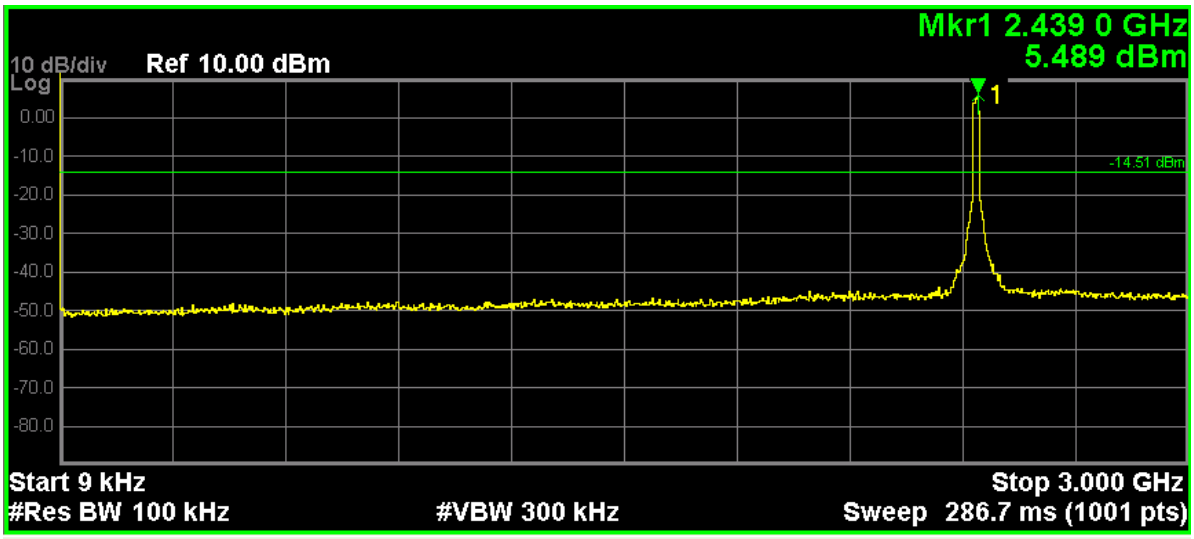
Note: The point mark1 is carrier.

802.11g, traffic mode; Channel1; (3~25) GHz



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	4.826 GHz	-43.665 dBm			
2	N	1	f	24.472 GHz	-35.703 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

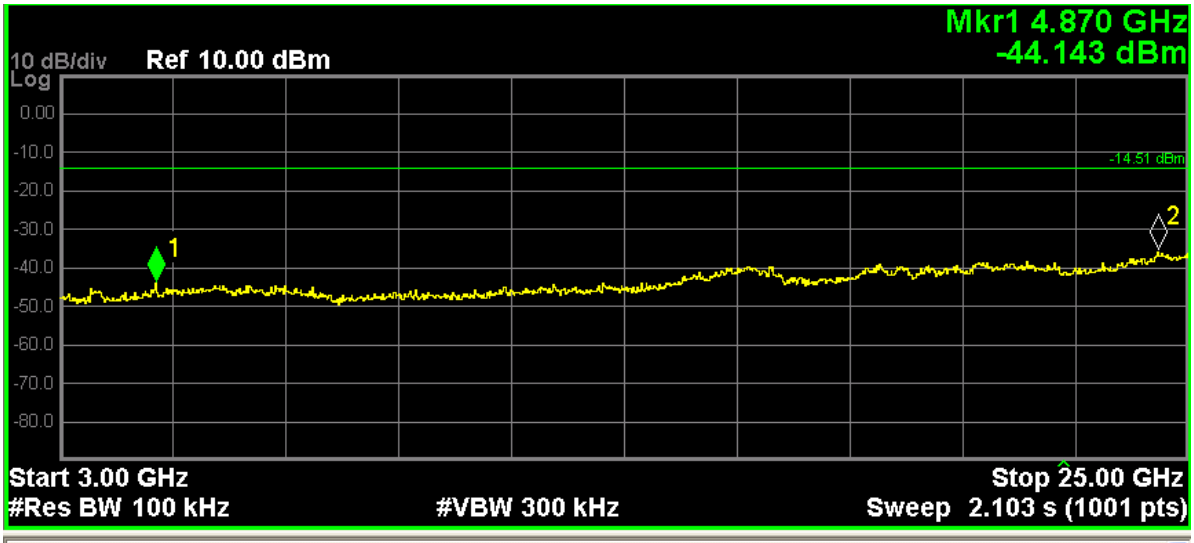
802.11g, traffic mode; Channel 6; Below 3GHz



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.439 0 GHz	5.489 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

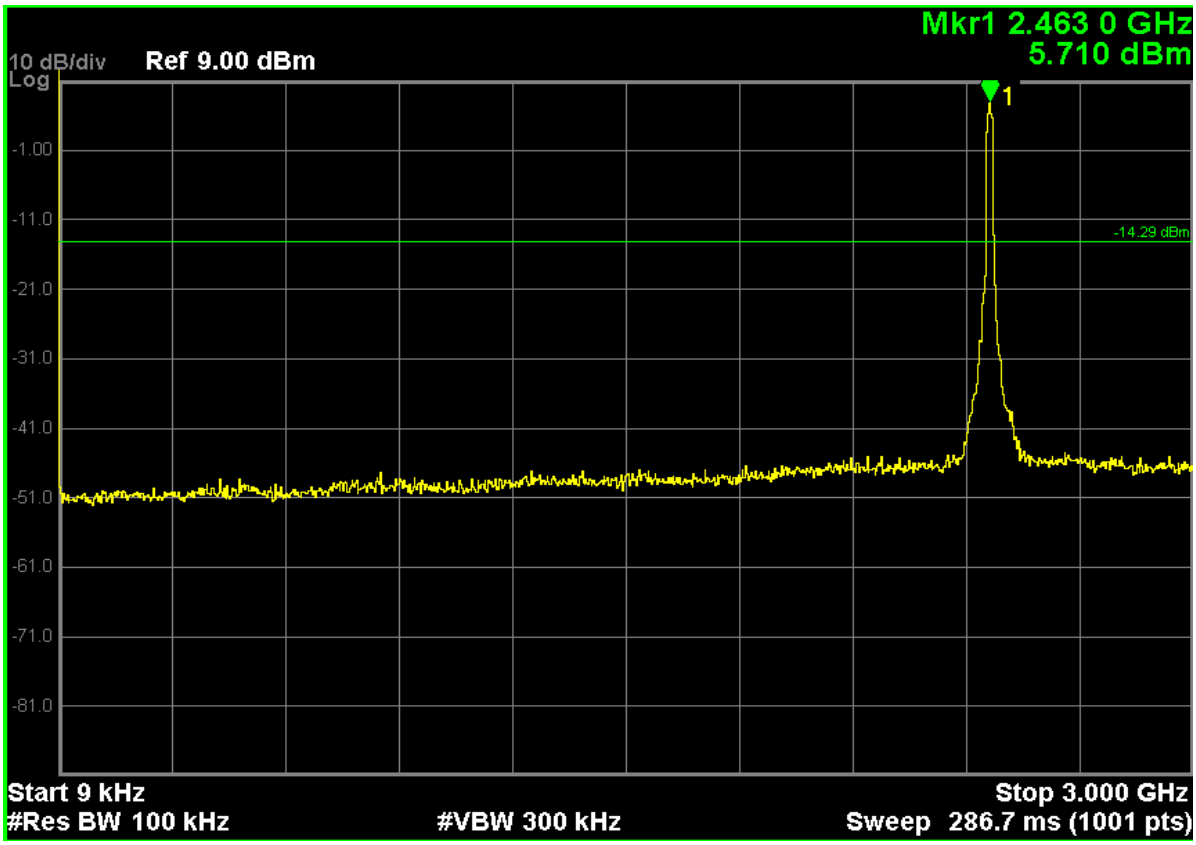
Note: The point mark1 is carrier.

802.11g, traffic mode; Channel 6; (3~25) GHz



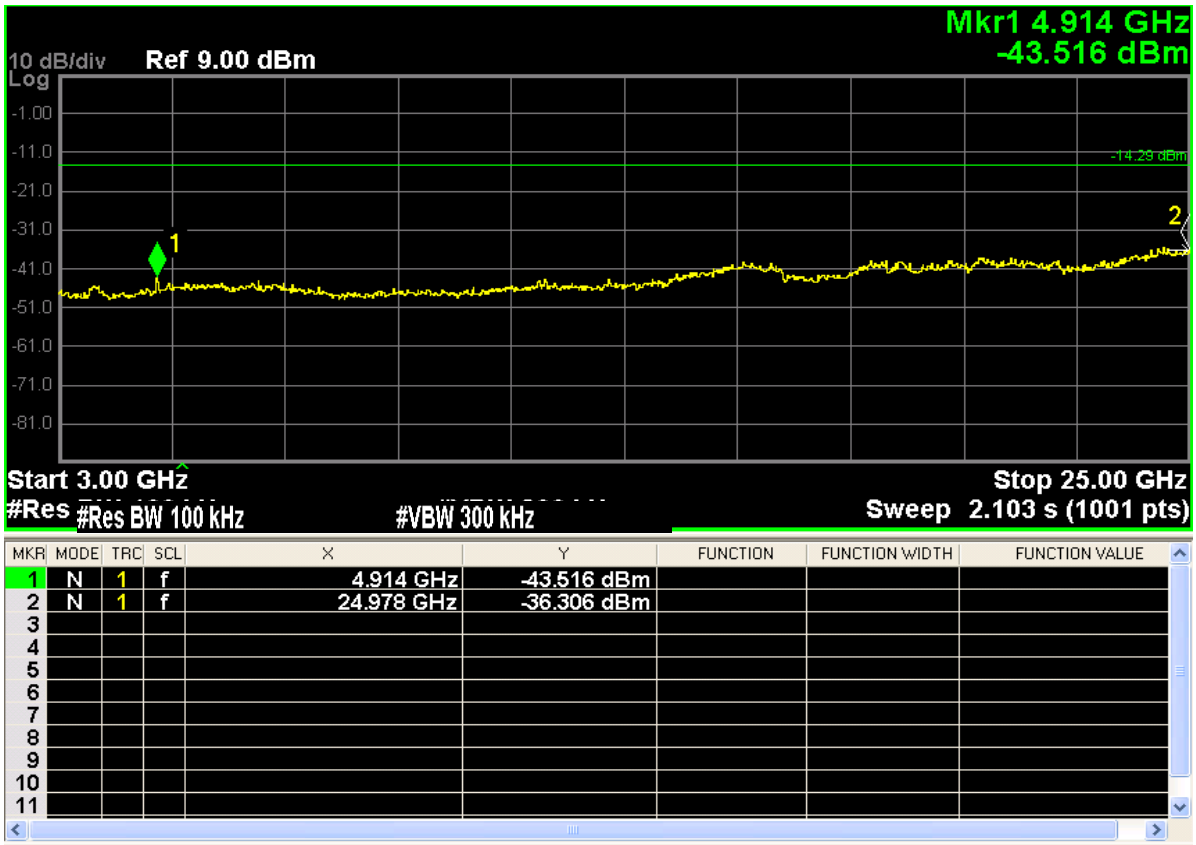
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	4.870 GHz	-44.143 dBm			
2	N	1	f	24.406 GHz	-35.886 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

802.11g, traffic mode; Channel 11; Below 3GHz



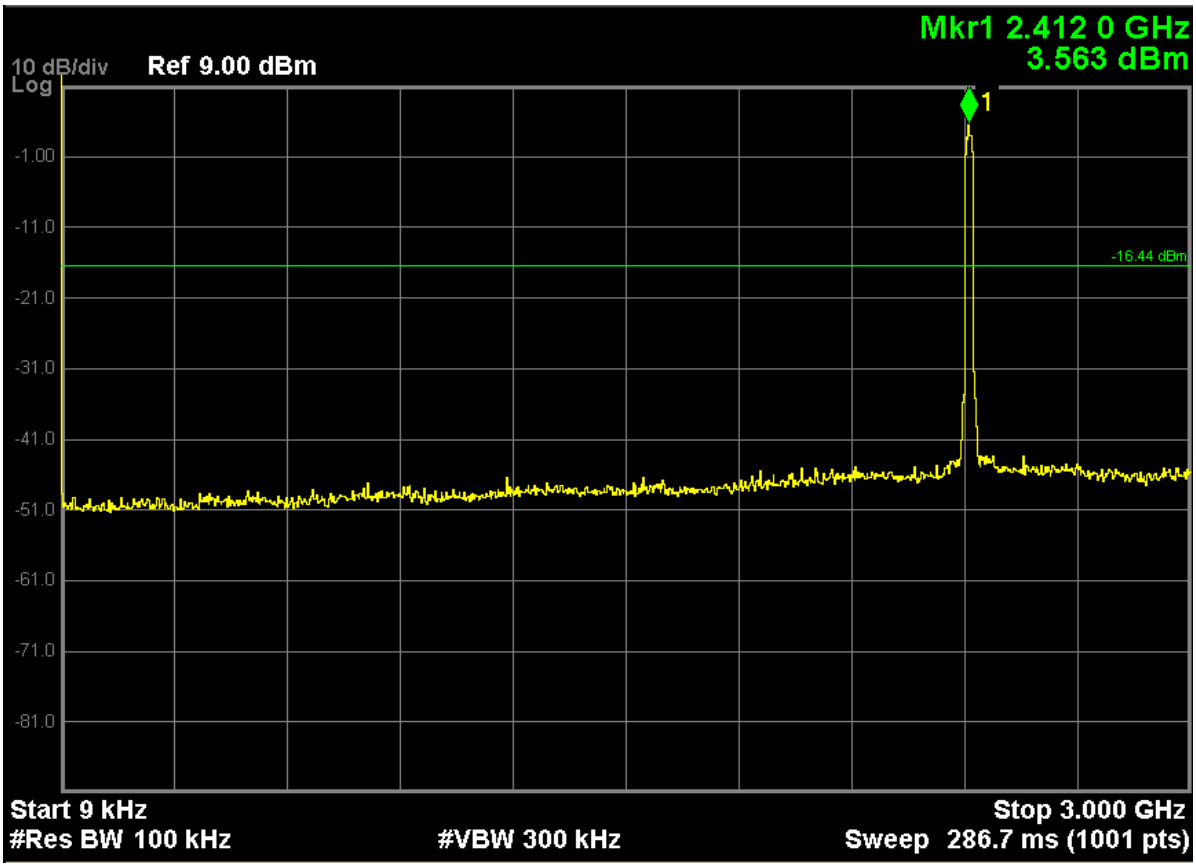
Note: The point mark1 is carrier.

802.11g, traffic mode; Channel 11; (3~25) GHz



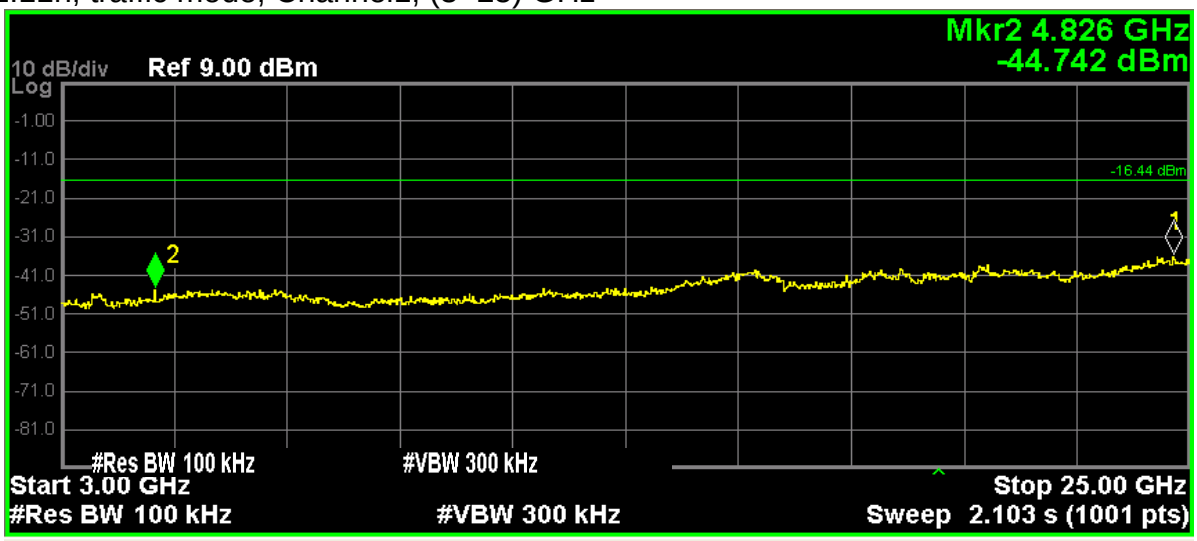
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	4.914 GHz	-43.516 dBm			
2	N	1	f	24.978 GHz	-36.306 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

802.11n, traffic mode; Channel 1; Below 3GHz



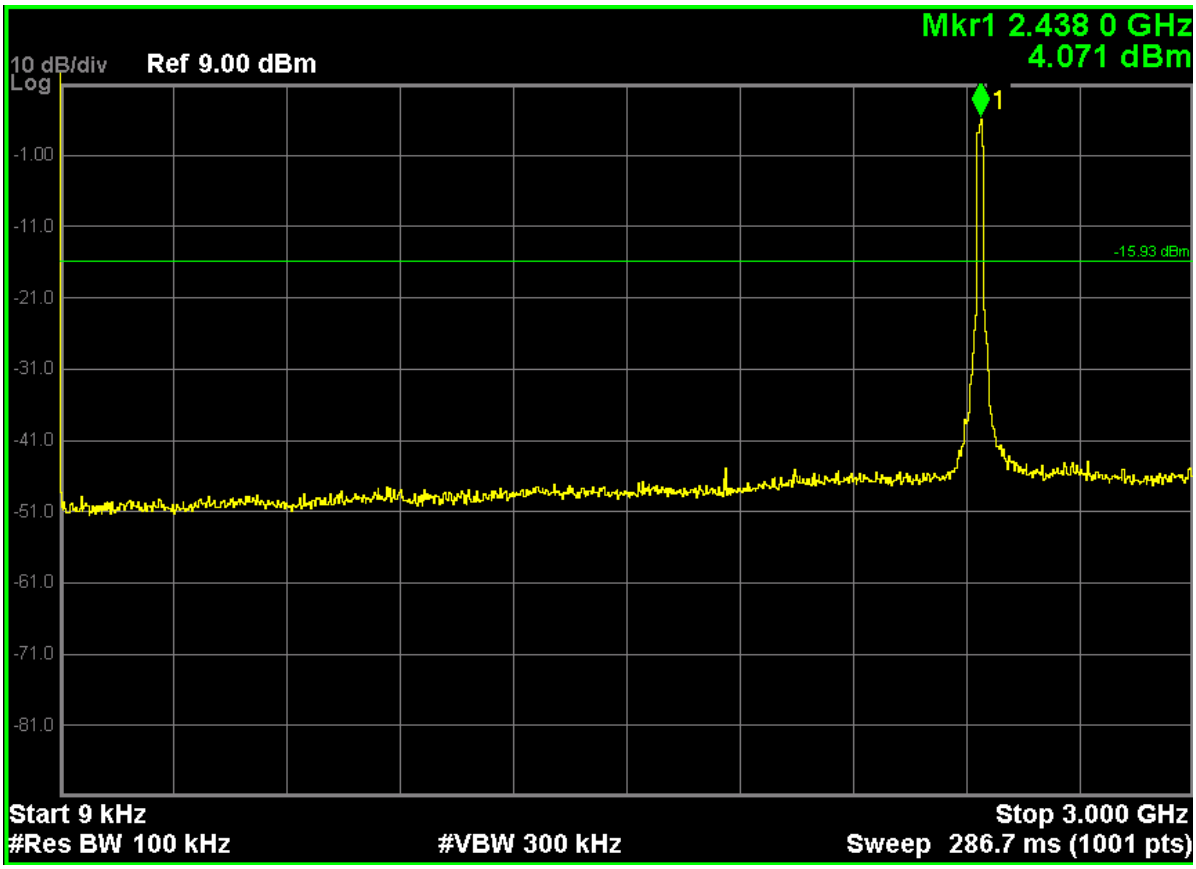
Note: The point mark1 is carrier.

802.11n, traffic mode; Channel1; (3~25) GHz



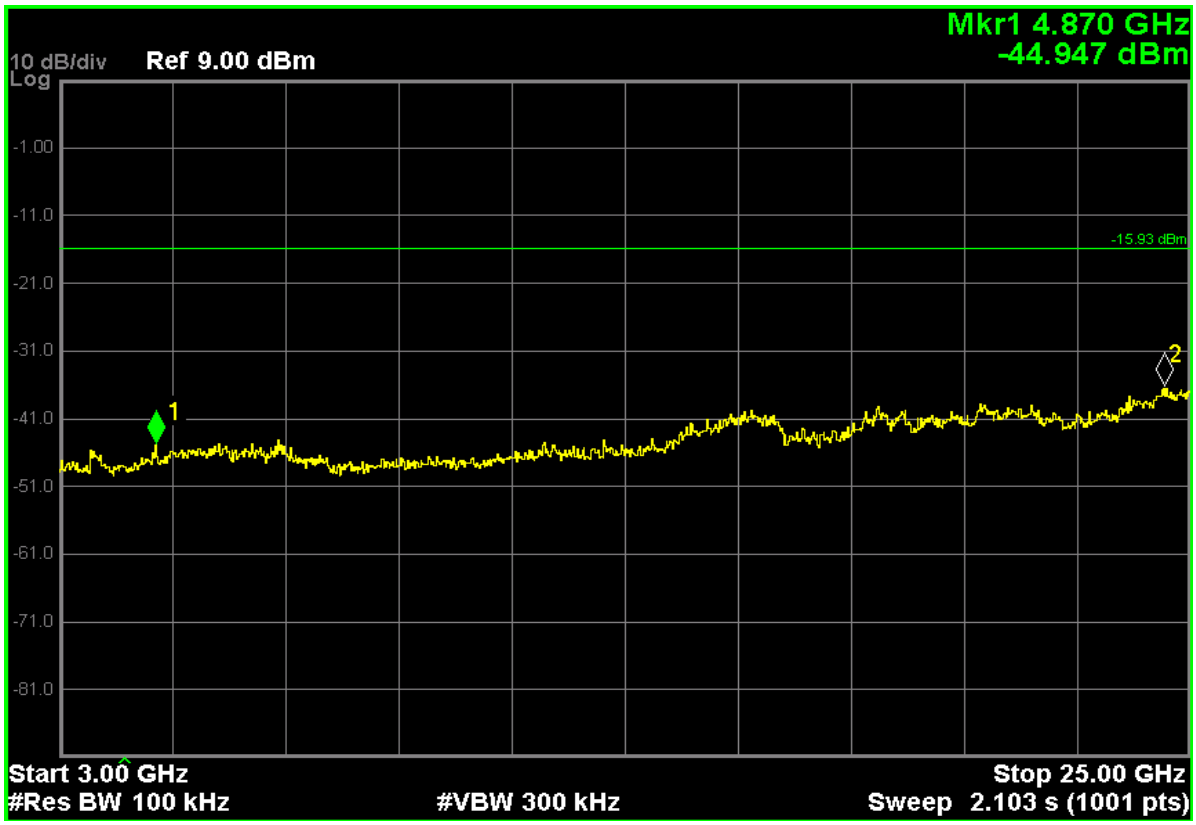
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	24.670 GHz	-36.110 dBm			
2	N	1	f	4.826 GHz	-44.742 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

802.11n, traffic mode; Channel 6; Below 3GHz

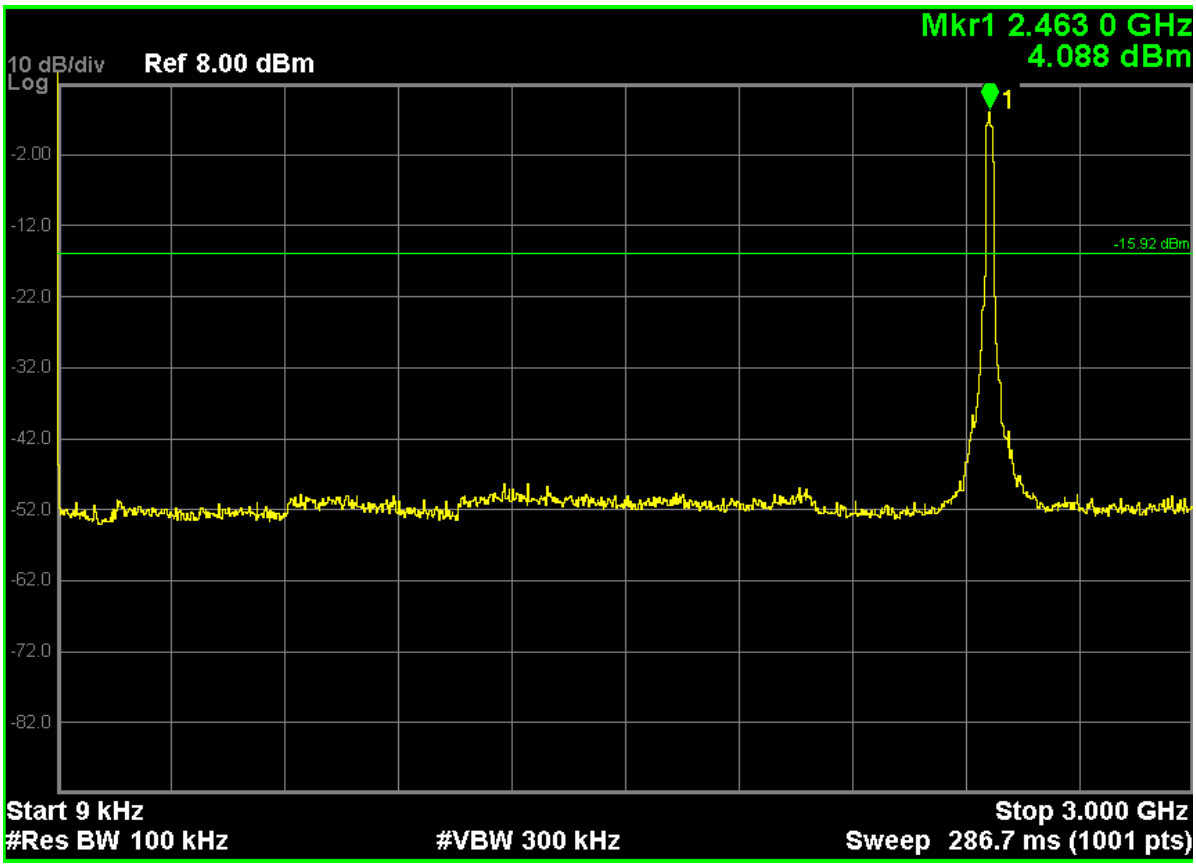


Note: The point mark1 is carrier.

802.11n, traffic mode; Channel6; (3~25) GHz

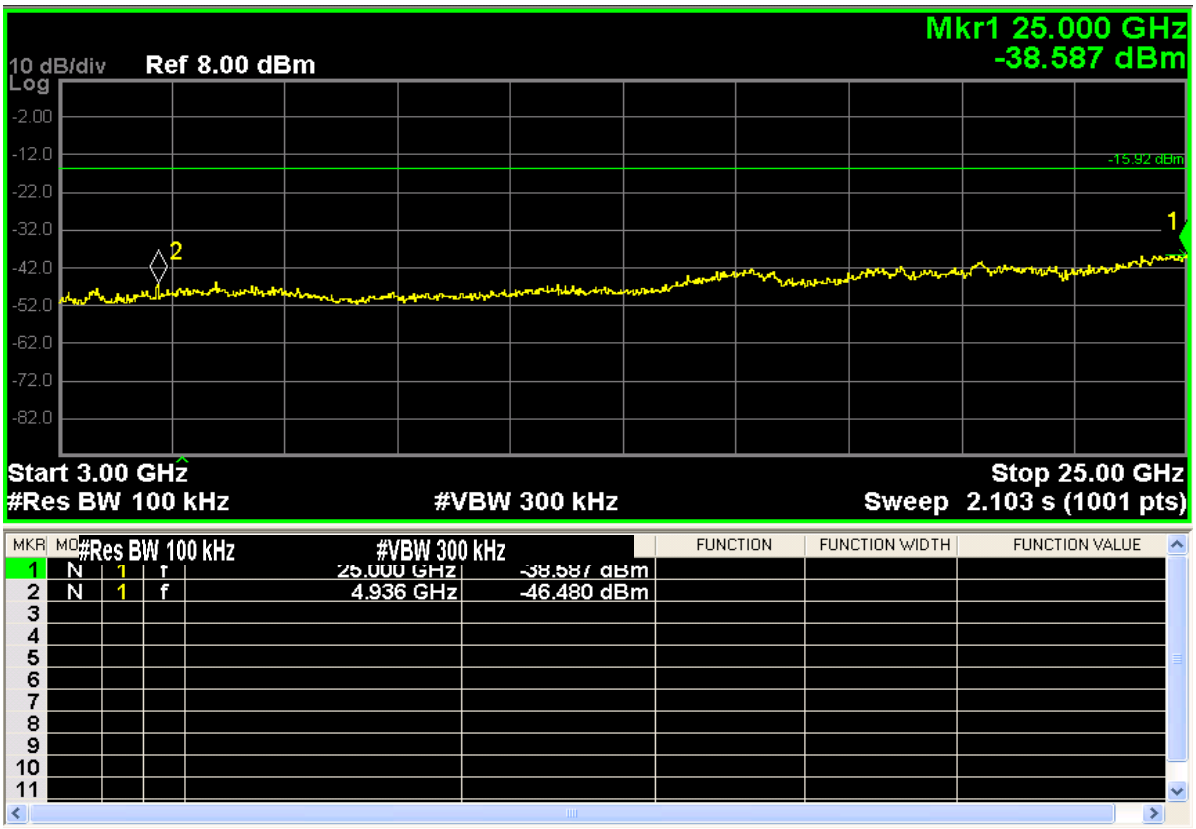


802.11n, traffic mode; Channel 11; Below 3GHz



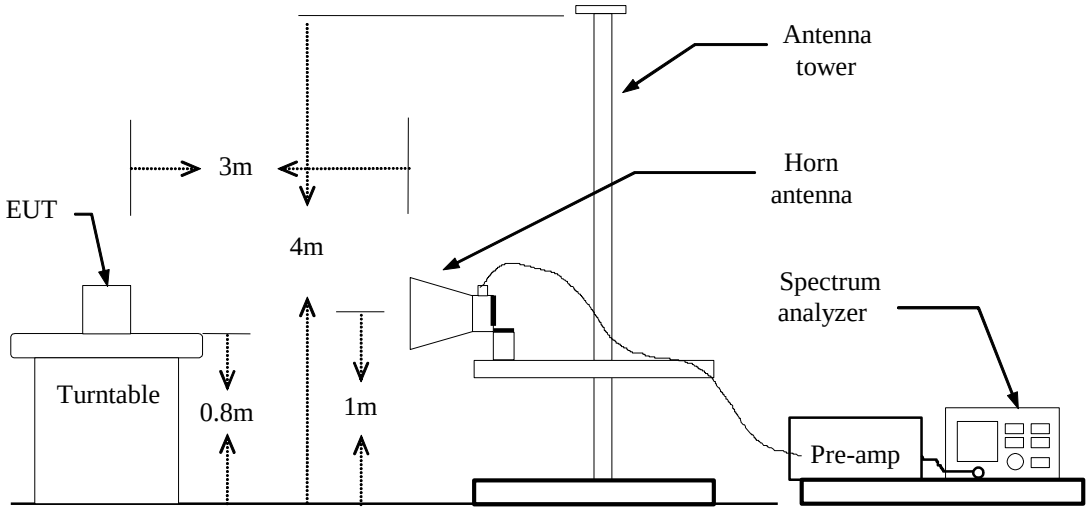
Note: The point mark1 is carrier.

802.11n, traffic mode; Channel11; (3~25) GHz



9. BAND EDGE MEASUREMENT

9.1 TEST SETUP



9.2 LIMITS

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in15.209(a).

9.3 TEST PROCEDURE

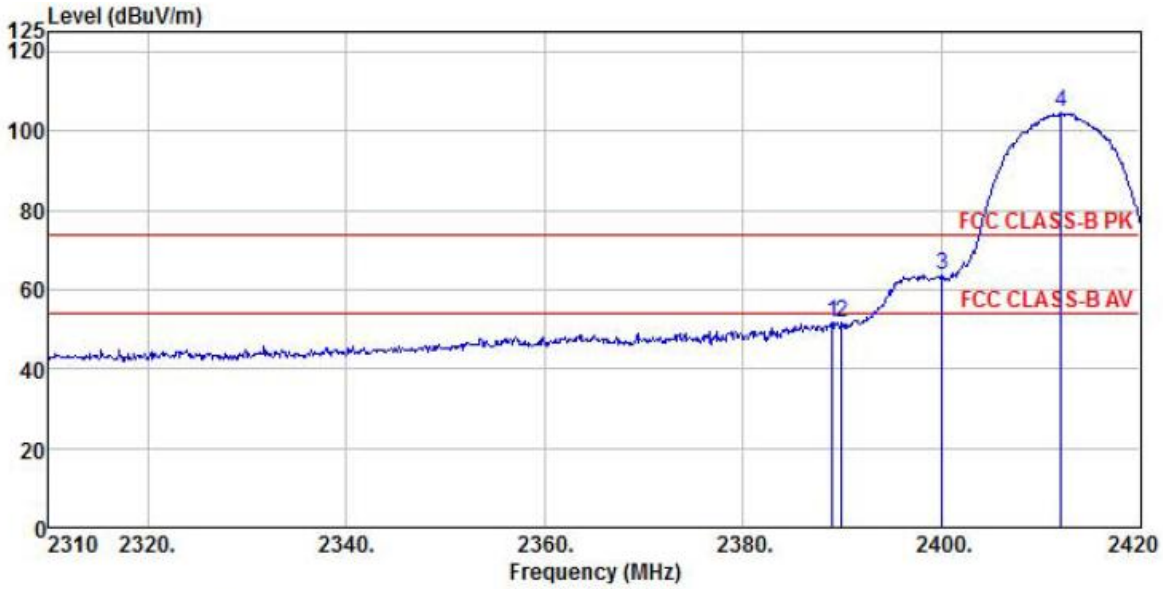
The EUT is placed on a turntable, which is 0.8m above the ground plane.
The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
PEAK: RBW=VBW=1MHz / Sweep=AUTO
AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

9.4 RESULTS & PERFORMANCE

Radiated Band Edge:

802.11b (Ch1)

Detector mode: Peak Polarity: Horizontal

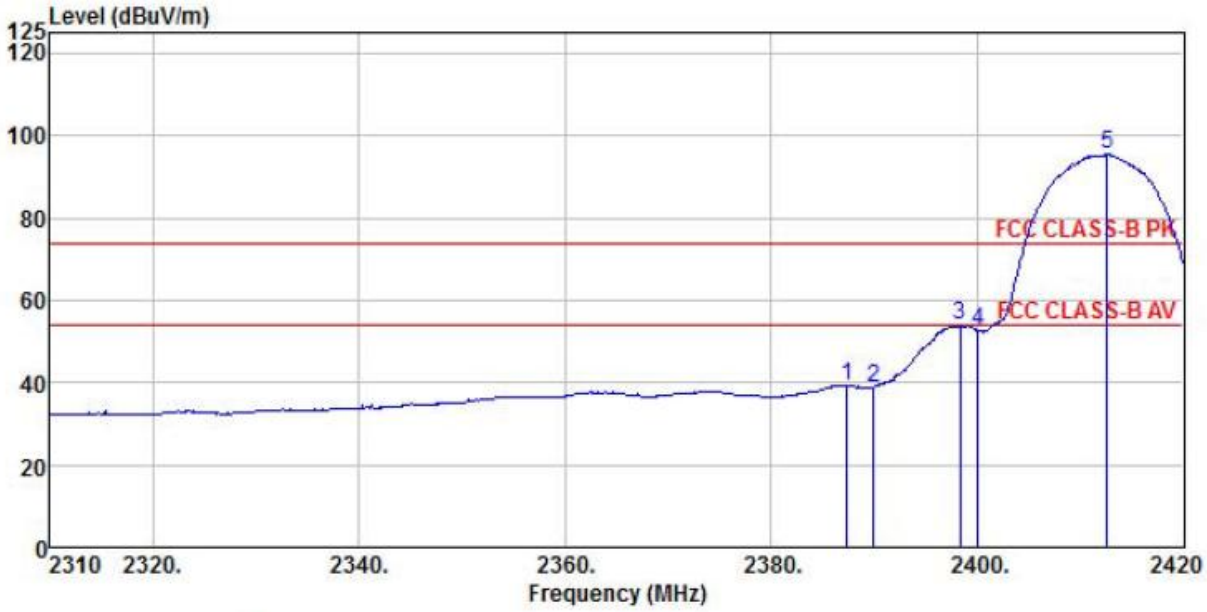


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch1
Memo :

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2388.98	55.36	27.58	7.13	38.34	51.73	74.00	-22.27	Peak
2	2389.97	55.26	27.58	7.13	38.34	51.63	74.00	-22.37	Peak
3	2400.09	67.12	27.58	7.13	38.34	63.49	74.00	-10.51	Peak
4 pp	2412.08	108.13	27.54	7.21	38.34	104.54	74.00	30.54	Peak

Detector mode: Average

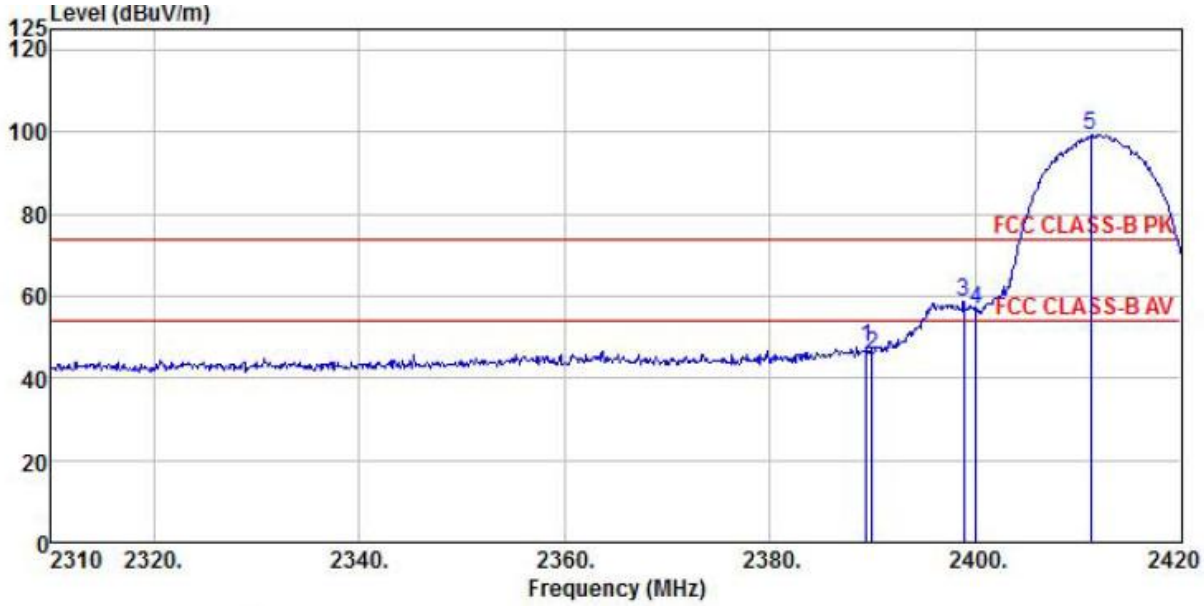
Polarity: Horizontal



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2387.33	42.94	27.58	7.13	38.34	39.31	54.00	-14.69	Average
2	2389.97	42.56	27.58	7.13	38.34	38.93	54.00	-15.07	Average
3	2398.33	57.53	27.58	7.13	38.34	53.90	54.00	-0.10	Average
4	2400.09	56.10	27.58	7.13	38.34	52.47	54.00	-1.53	Average
5 pp	2412.63	98.90	27.54	7.21	38.34	95.31	54.00	41.31	Average

Detector mode: Peak Polarity: Vertical

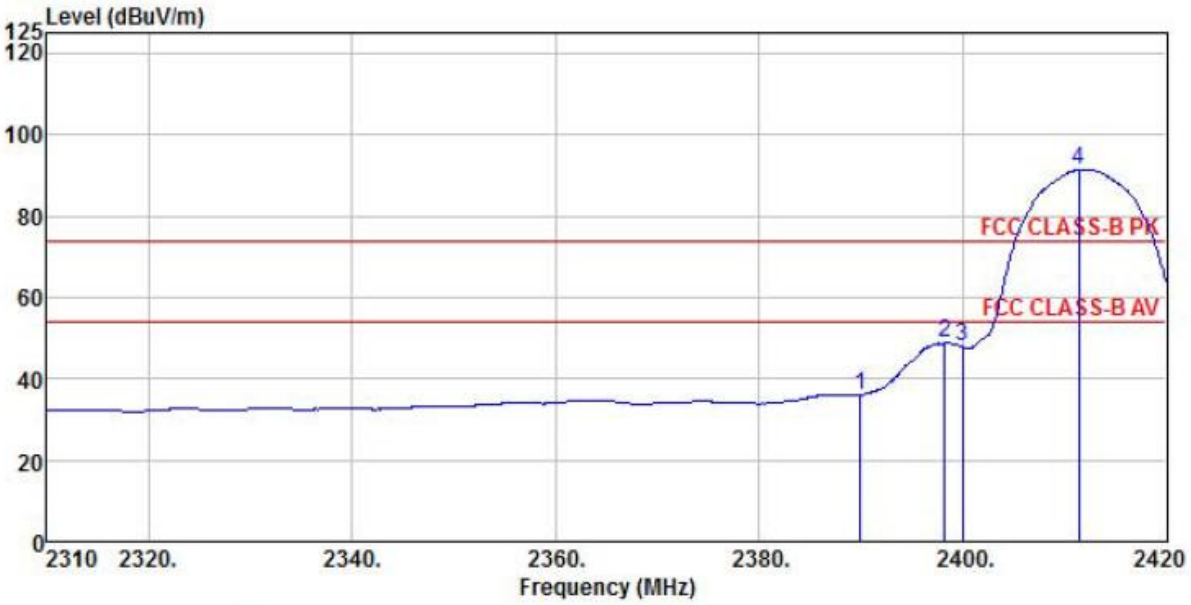


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.42	51.31	27.58	7.13	38.34	47.68	74.00	-26.32	Peak
2	2389.97	49.42	27.58	7.13	38.34	45.79	74.00	-28.21	Peak
3	2398.88	62.09	27.58	7.13	38.34	58.46	74.00	-15.54	Peak
4	2400.09	60.41	27.58	7.13	38.34	56.78	74.00	-17.22	Peak
5 pp	2411.20	102.92	27.54	7.21	38.34	99.33	74.00	25.33	Peak

Detector mode: Average

Polarity: Vertical

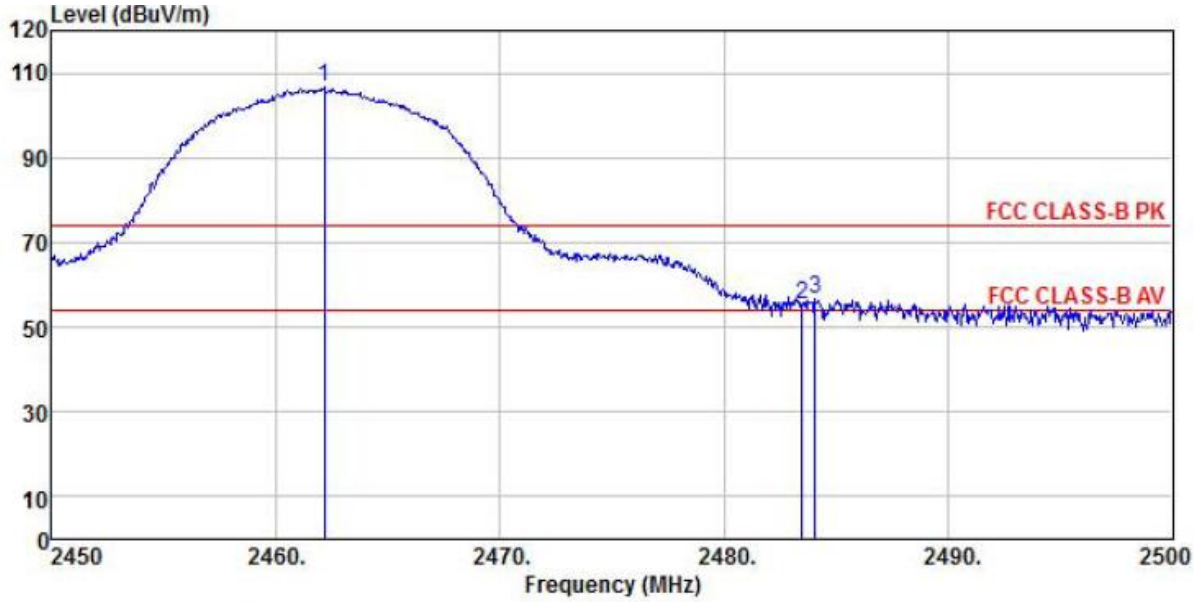


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch1
Memo :

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.97	39.58	27.58	7.13	38.34	35.95	54.00	-18.05	Average
2	2398.22	52.33	27.58	7.13	38.34	48.70	54.00	-5.30	Average
3	2399.98	51.44	27.58	7.13	38.34	47.81	54.00	-6.19	Average
4 pp	2411.42	95.09	27.54	7.21	38.34	91.50	54.00	37.50	Average

802.11b (Ch11)

Detector mode: Peak Polarity: Horizontal

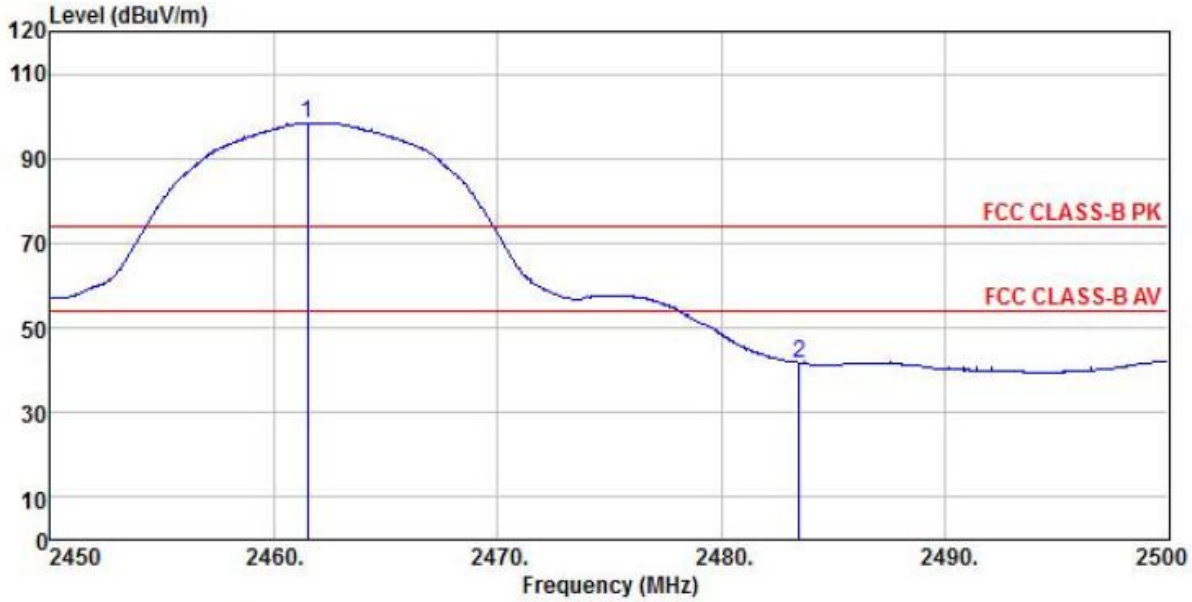


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2462.15	110.09	27.49	7.39	38.32	106.65	74.00	32.65	Peak
2	2483.50	58.55	27.52	7.41	38.31	55.17	74.00	-18.83	Peak
3	2484.05	60.06	27.52	7.41	38.31	56.68	74.00	-17.32	Peak

Detector mode: Average

Polarity: Horizontal

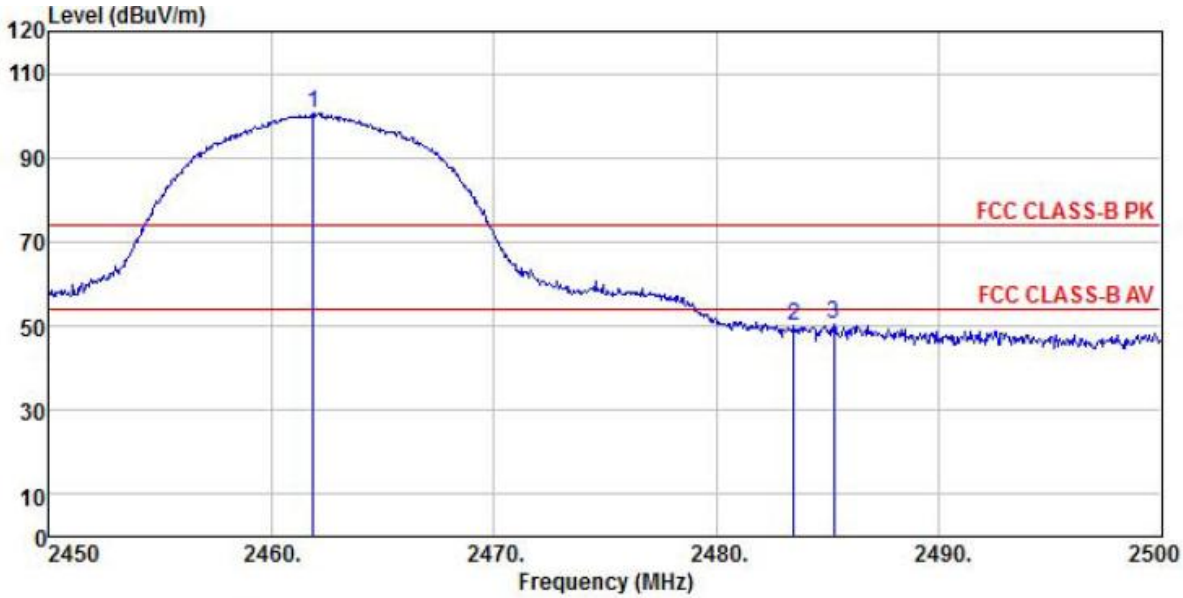


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2461.50	101.91	27.49	7.39	38.32	98.47	54.00	44.47	Average
2	2483.50	45.11	27.52	7.41	38.31	41.73	54.00	-12.27	Average

Detector mode: Peak

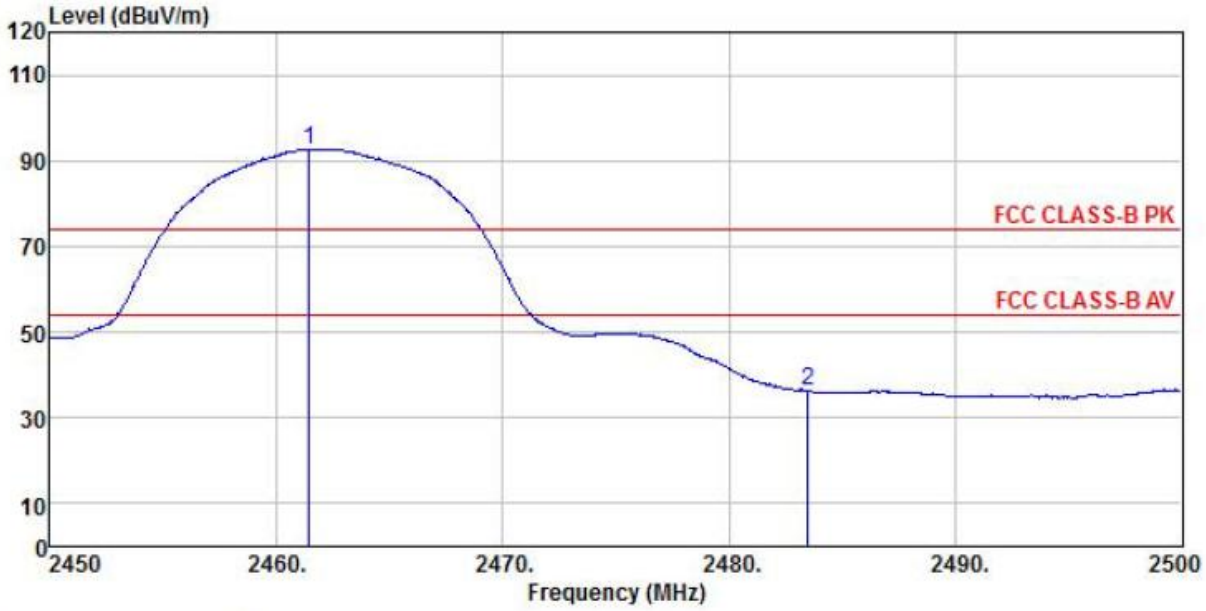
Polarity: Vertical



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2461.85	103.91	27.49	7.39	38.32	100.47	74.00	26.47	Peak
2	2483.50	53.46	27.52	7.41	38.31	50.08	74.00	-23.92	Peak
3	2485.30	53.70	27.52	7.41	38.31	50.32	74.00	-23.68	Peak

Detector mode: Average Polarity: Vertical

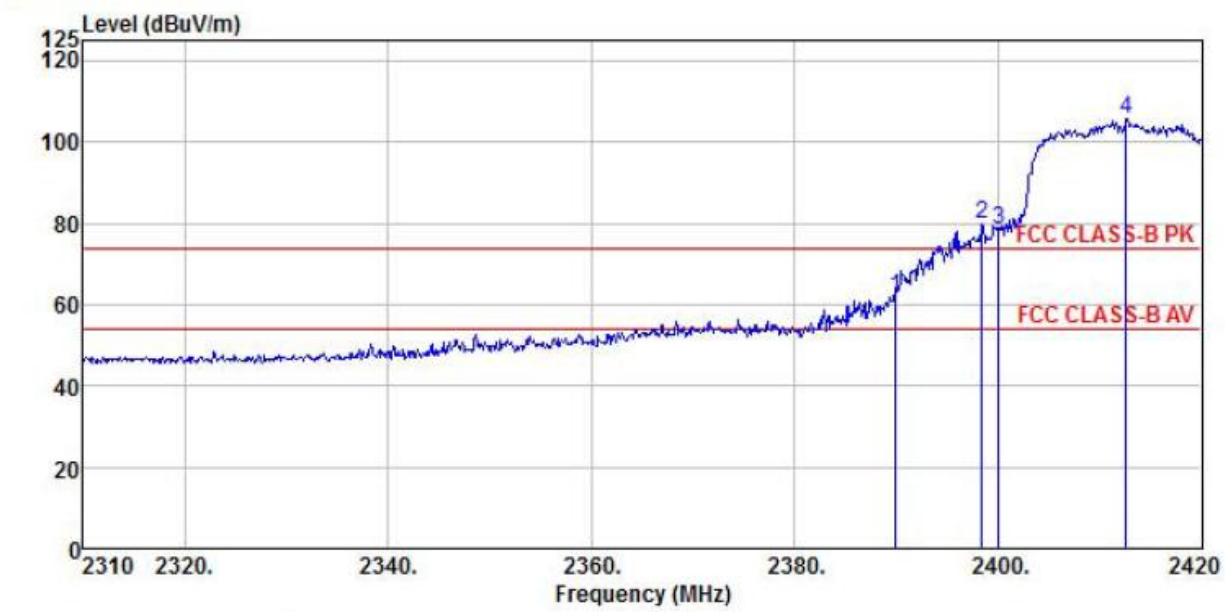


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch11
Memo :

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2461.45	96.17	27.49	7.39	38.32	92.73	54.00	38.73	Average
2	2483.50	39.57	27.52	7.41	38.31	36.19	54.00	-17.81	Average

802.11g (Ch1)

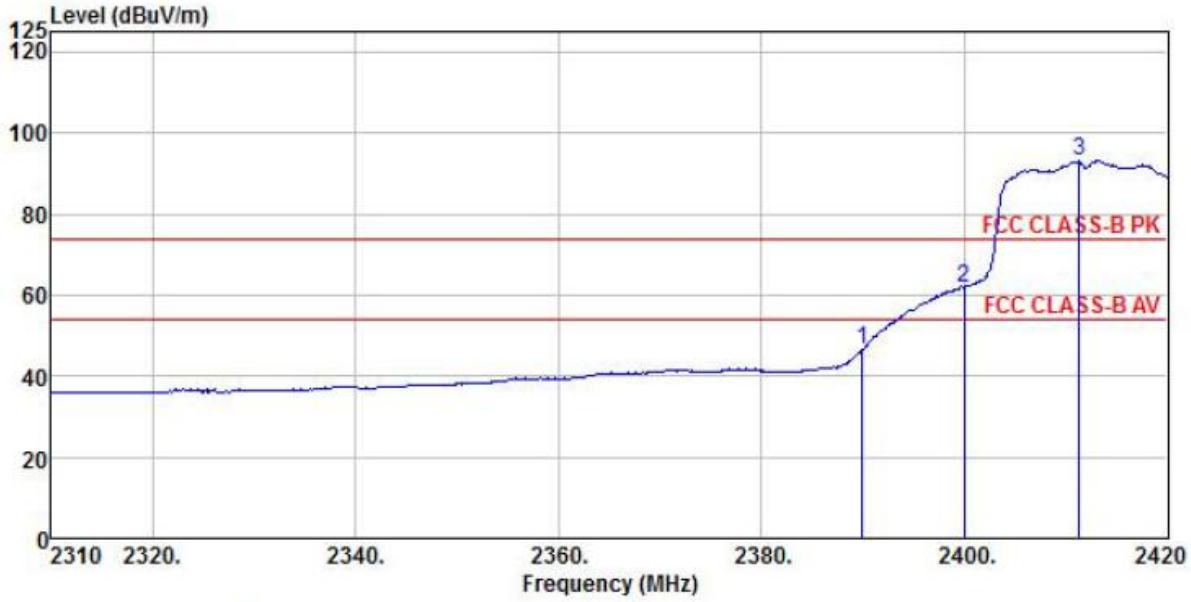
Detector mode: Peak Polarity: Horizontal



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.97	65.22	27.58	7.13	38.34	61.59	74.00	-12.41	Peak
2 *	2398.44	83.36	27.58	7.13	38.34	79.73	74.00	5.73	Peak
3 *	2400.09	81.82	27.58	7.13	38.34	78.19	74.00	4.19	Peak
4 pp	2412.63	109.31	27.54	7.21	38.34	105.72	74.00	31.72	Peak

Detector mode: Average Polarity: Horizontal

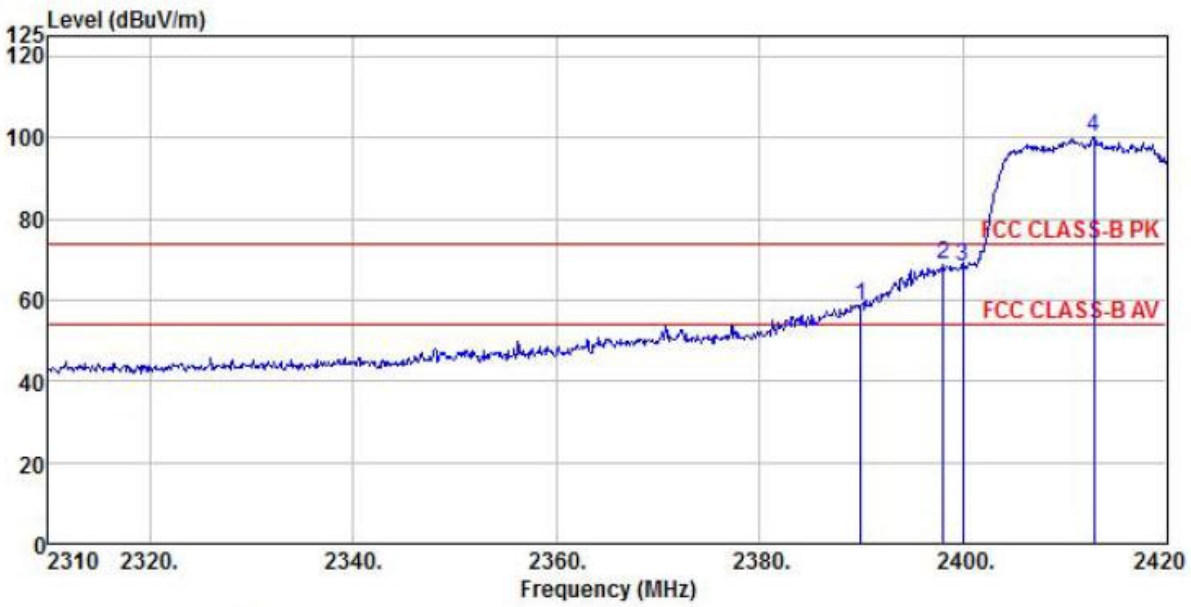


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.97	50.13	27.58	7.13	38.34	46.50	54.00	-7.50	Average
2 *	2399.98	65.62	27.58	7.13	38.34	61.99	54.00	7.99	Average
3 pp	2411.31	96.62	27.54	7.21	38.34	93.03	54.00	39.03	Average

Detector mode: Peak

Polarity: Vertical

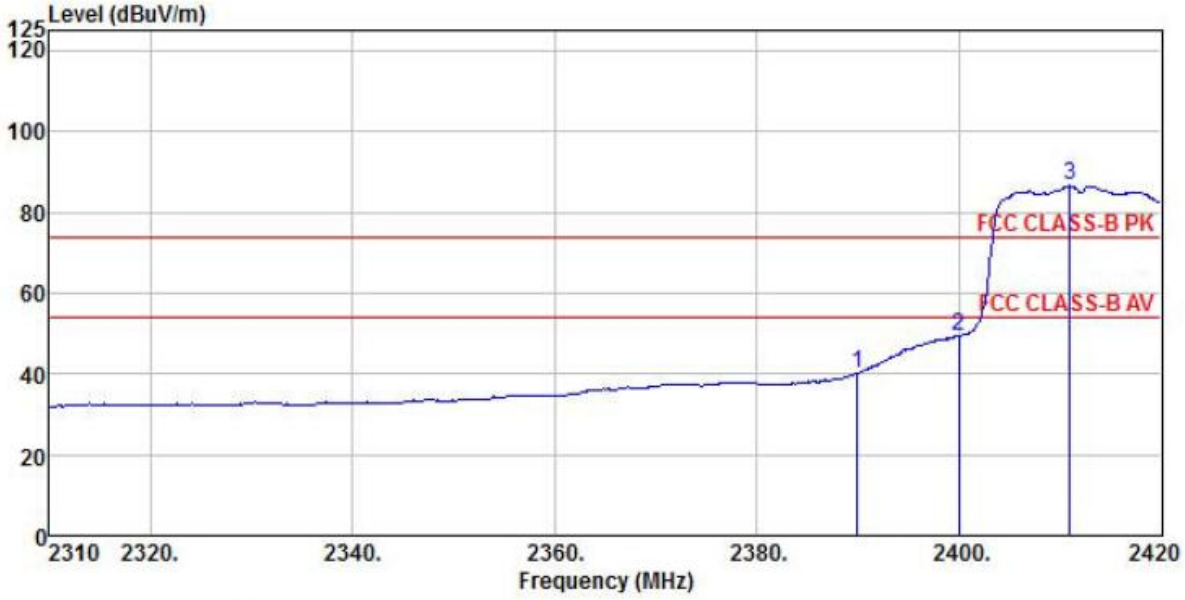


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch1
Memo :

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.97	62.33	27.58	7.13	38.34	58.70	74.00	-15.30	Peak
2	2398.00	72.53	27.58	7.13	38.34	68.90	74.00	-5.10	Peak
3	2399.98	71.73	27.58	7.13	38.34	68.10	74.00	-5.90	Peak
4 pp	2412.85	103.56	27.54	7.21	38.34	99.97	74.00	25.97	Peak

Detector mode: Average

Polarity: Vertical

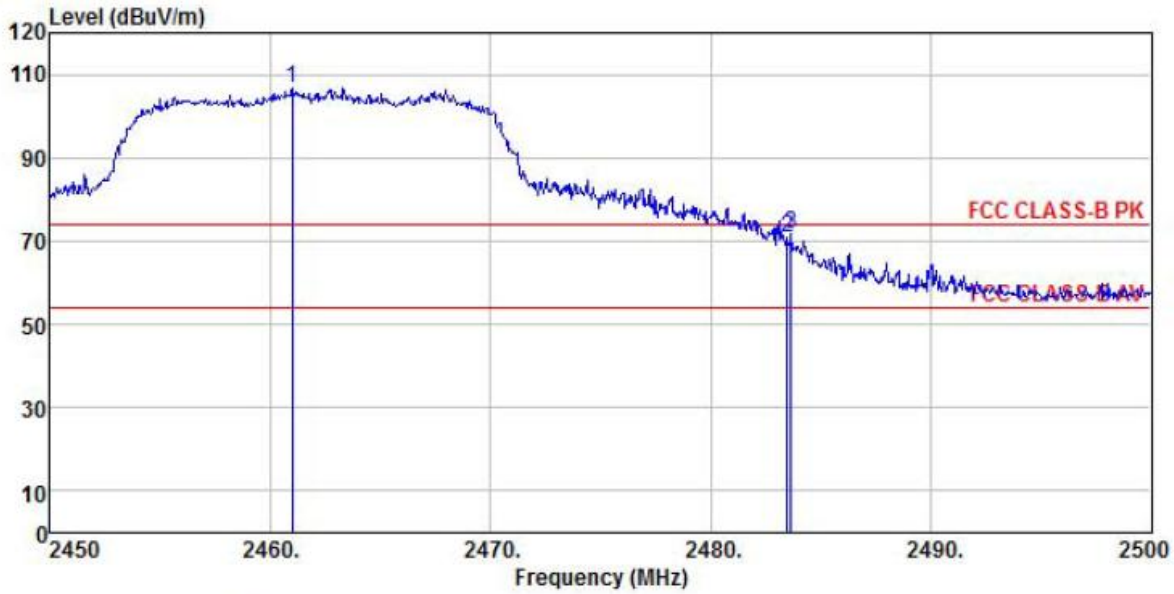


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.97	43.80	27.58	7.13	38.34	40.17	54.00	-13.83	Average
2	2399.98	53.00	27.58	7.13	38.34	49.37	54.00	-4.63	Average
3 pp	2410.98	90.35	27.54	7.21	38.34	86.76	54.00	32.76	Average

802.11g (Ch11)

Detector mode: Peak Polarity: Horizontal

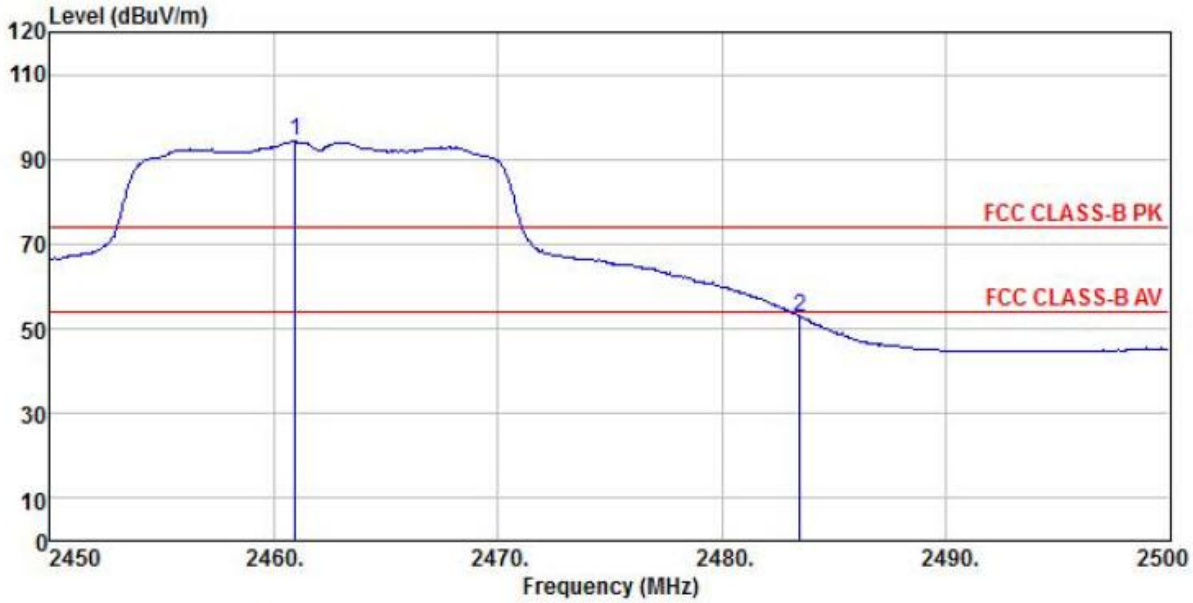


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch11
Memo :

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2461.00	110.35	27.49	7.39	38.32	106.91	74.00	32.91	Peak
2	2483.50	74.11	27.52	7.41	38.31	70.73	74.00	-3.27	Peak
3	2483.65	74.90	27.52	7.41	38.31	71.52	74.00	-2.48	Peak

Detector mode: Average

Polarity: Horizontal

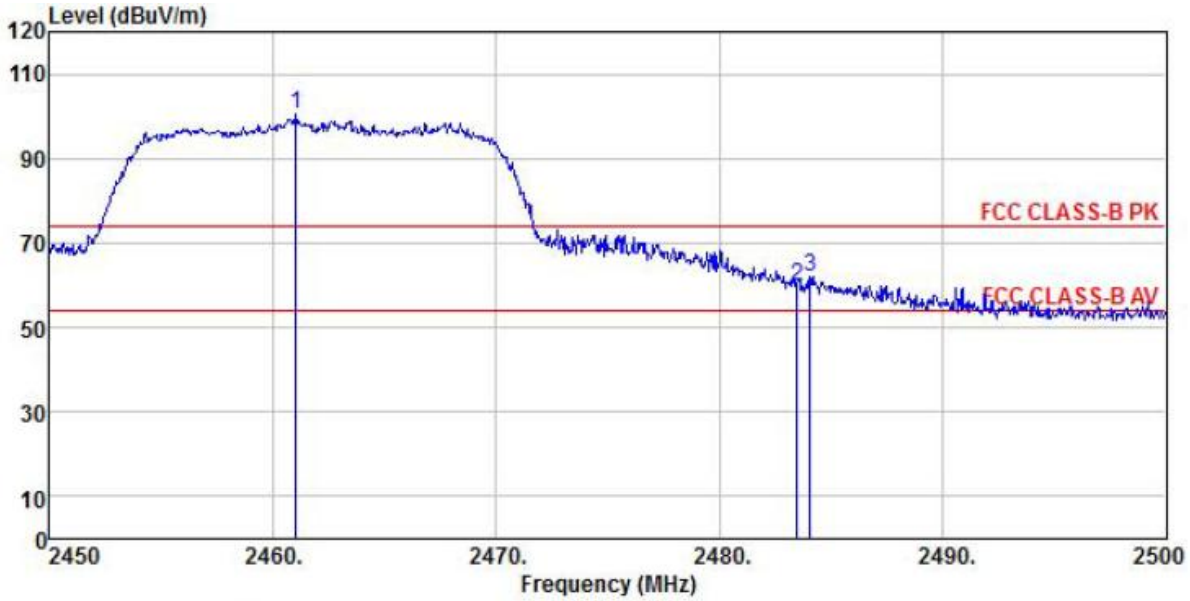


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2460.95	97.58	27.49	7.39	38.32	94.14	54.00	40.14	Average
2	2483.50	56.27	27.52	7.41	38.31	52.89	54.00	-1.11	Average

Detector mode: Peak

Polarity: Vertical

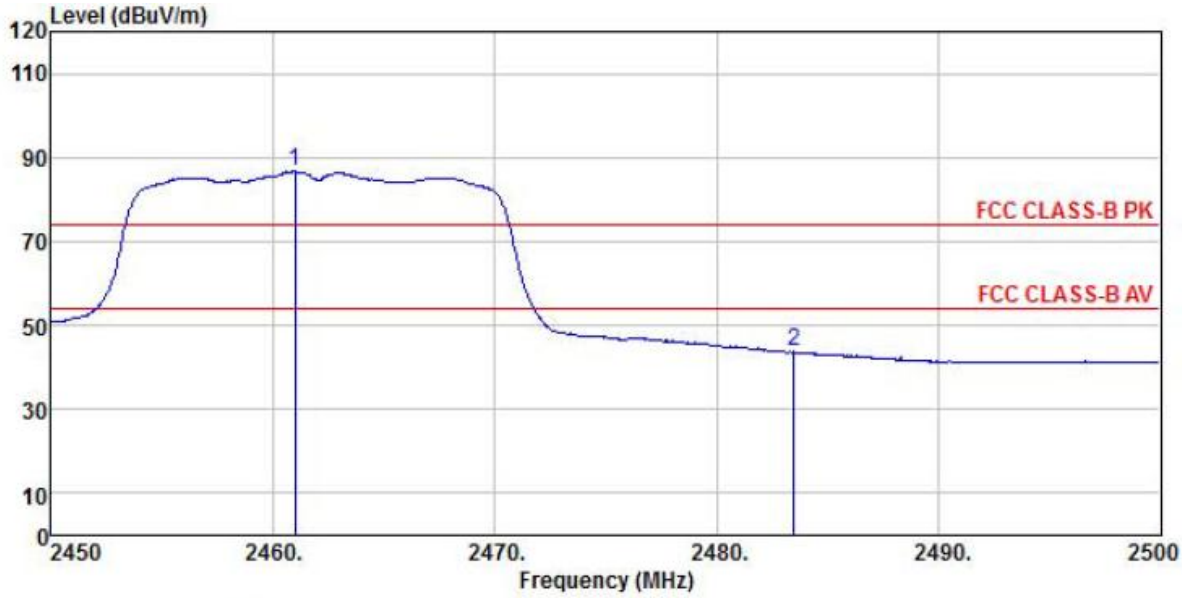


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2461.05	103.91	27.49	7.39	38.32	100.47	74.00	26.47	Peak
2	2483.50	63.32	27.52	7.41	38.31	59.94	74.00	-14.06	Peak
3	2484.05	65.48	27.52	7.41	38.31	62.10	74.00	-11.90	Peak

Detector mode: Average

Polarity: Vertical

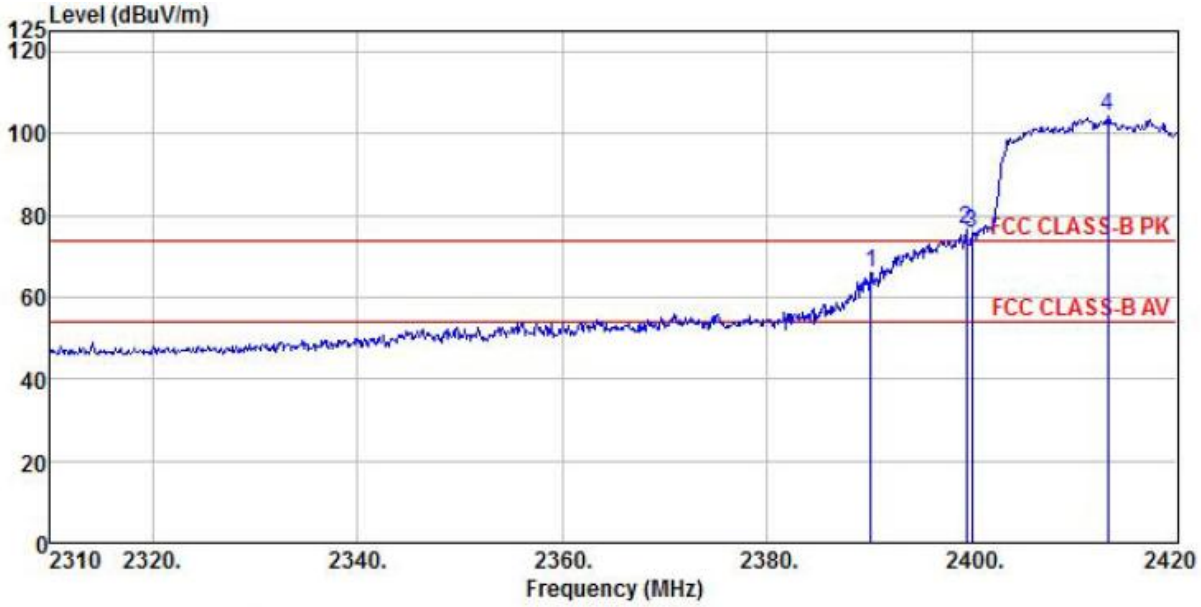


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2461.00	90.12	27.49	7.39	38.32	86.68	54.00	32.68	Average
2	2483.50	47.21	27.52	7.41	38.31	43.83	54.00	-10.17	Average

802.11n (Ch1)

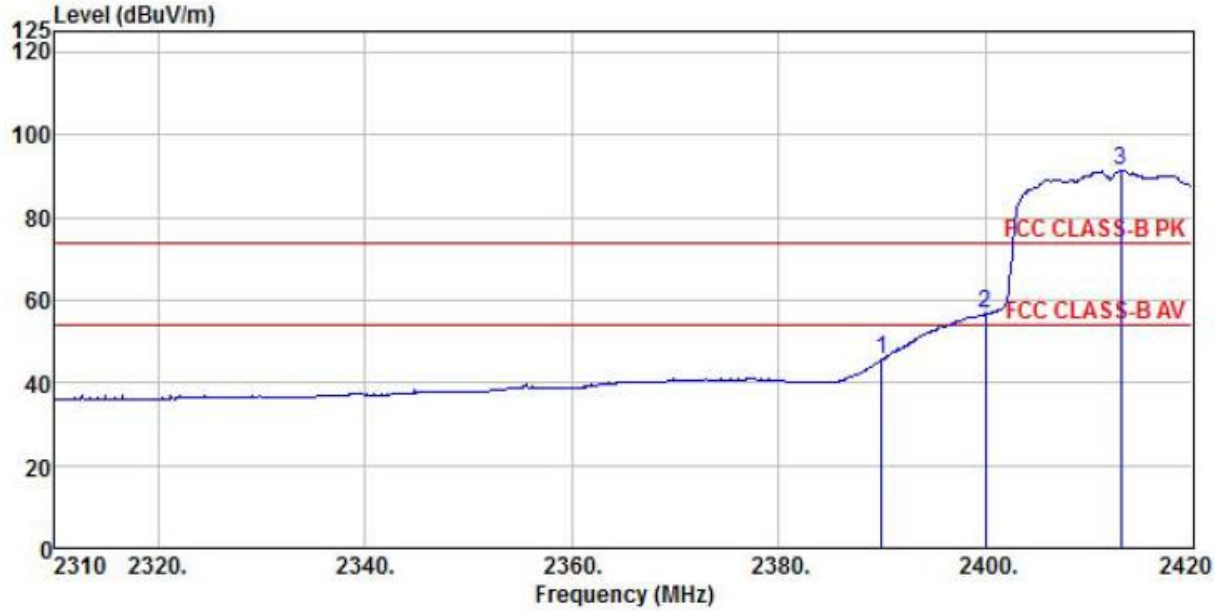
Detector mode: Peak Polarity: Horizontal



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch1
Memo :

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.08	69.66	27.58	7.13	38.34	66.03	74.00	-7.97	Peak
2 *	2399.43	80.02	27.58	7.13	38.34	76.39	74.00	2.39	Peak
3 *	2399.98	79.42	27.58	7.13	38.34	75.79	74.00	1.79	Peak
4 pp	2413.29	107.92	27.54	7.21	38.34	104.33	74.00	30.33	Peak

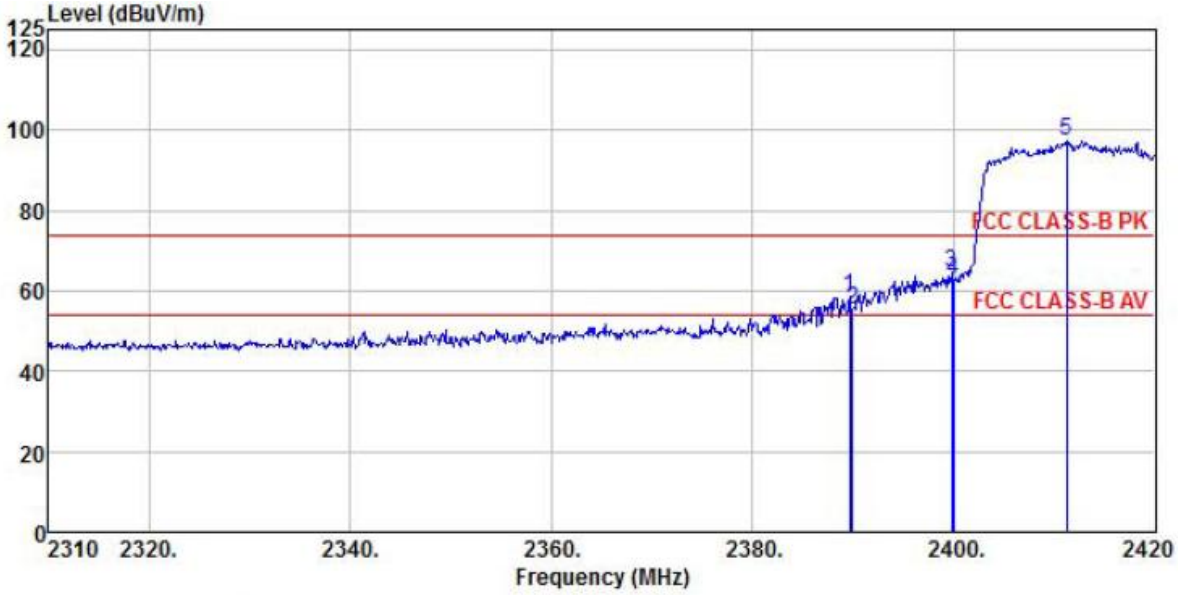
Detector mode: Average Polarity: Horizontal



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.97	49.16	27.58	7.13	38.34	45.53	54.00	-8.47	Average
2 *	2399.98	60.23	27.58	7.13	38.34	56.60	54.00	2.60	Average
3 pp	2413.07	95.00	27.54	7.21	38.34	91.41	54.00	37.41	Average

Detector mode: Peak Polarity: Vertical

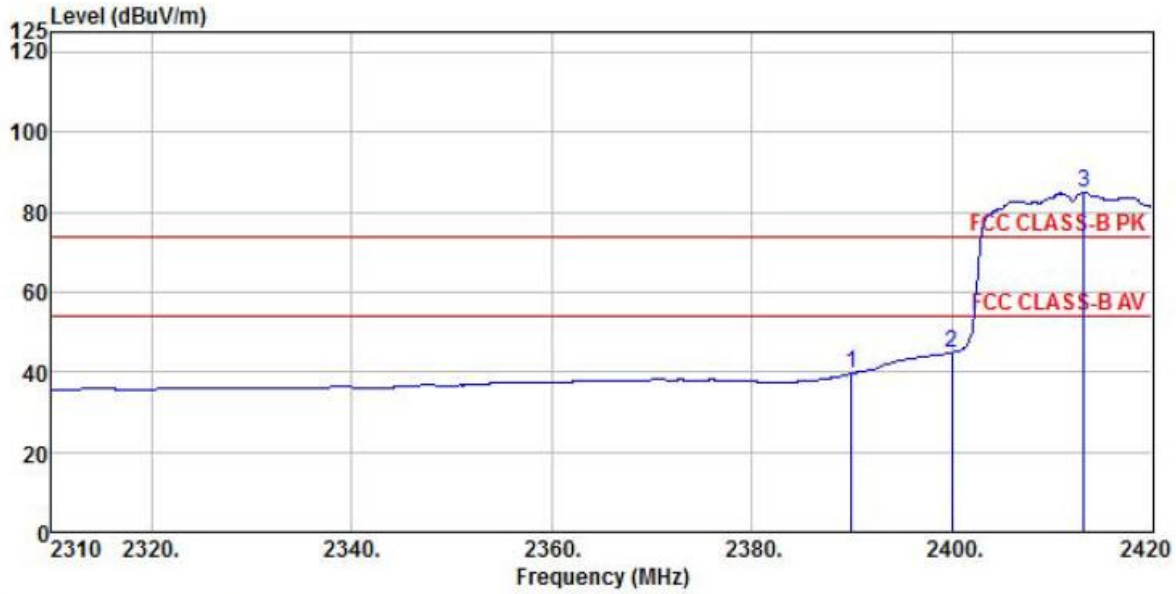


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch1
Memo :

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.64	62.16	27.58	7.13	38.34	58.53	74.00	-15.47	Peak
2	2389.97	58.87	27.58	7.13	38.34	55.24	74.00	-18.76	Peak
3	2399.76	68.20	27.58	7.13	38.34	64.57	74.00	-9.43	Peak
4	2399.98	66.17	27.58	7.13	38.34	62.54	74.00	-11.46	Peak
5 pp	2411.20	100.96	27.54	7.21	38.34	97.37	74.00	23.37	Peak

Detector mode: Average

Polarity: Vertical

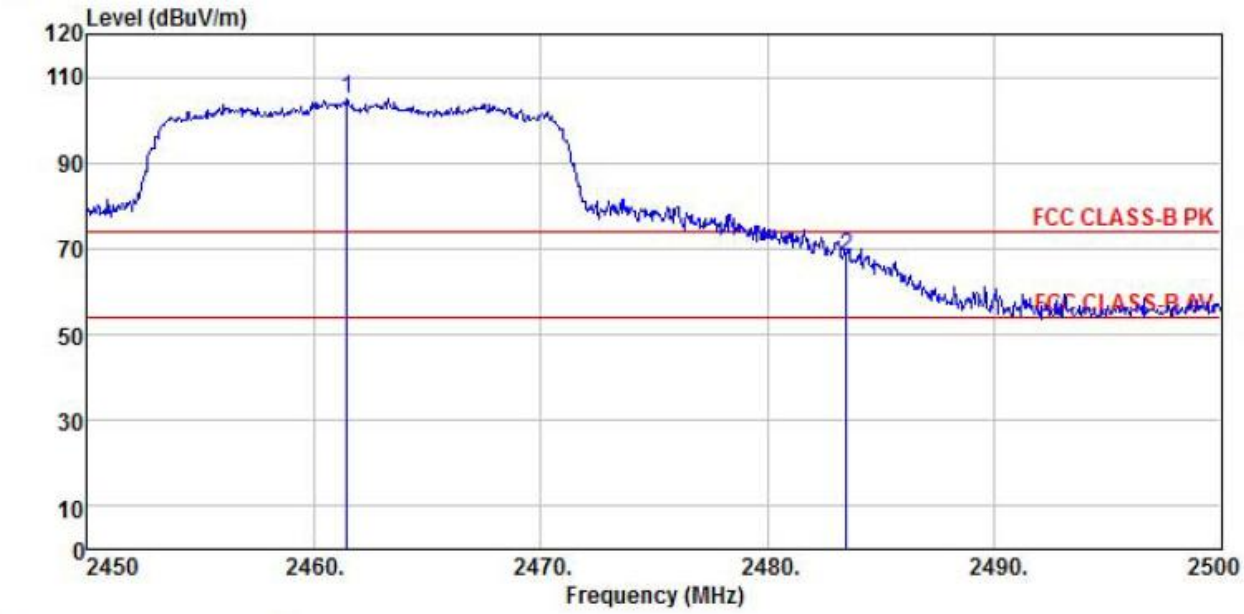


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.97	43.21	27.58	7.13	38.34	39.58	54.00	-14.42	Average
2	2399.98	48.60	27.58	7.13	38.34	44.97	54.00	-9.03	Average
3 pp	2413.18	88.53	27.54	7.21	38.34	84.94	54.00	30.94	Average

802.11n (Ch11)

Detector mode: Peak Polarity: Horizontal

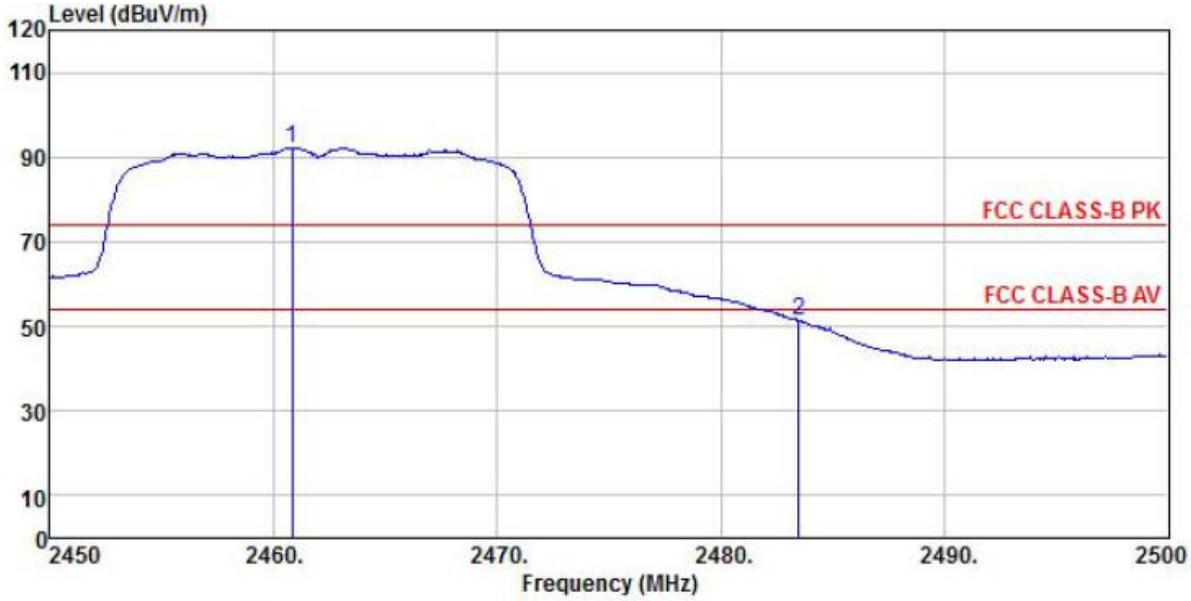


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(942) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2461.45	108.47	27.49	7.39	38.32	105.03	74.00	31.03	Peak
2	2483.50	71.63	27.52	7.41	38.31	68.25	74.00	-5.75	Peak

Detector mode: Average

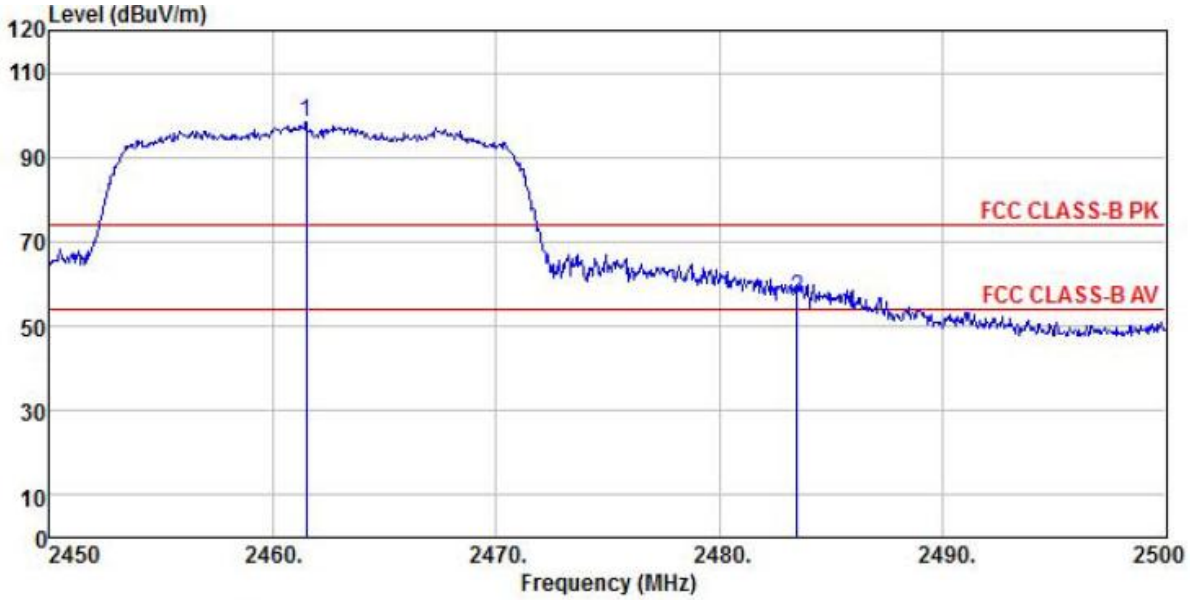
Polarity: Horizontal



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(942) HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/1'	dB	
1 pp	2460.80	95.62	27.49	7.39	38.32	92.18	54.00	38.18	Average
2	2483.50	54.72	27.52	7.41	38.31	51.34	54.00	-2.66	Average

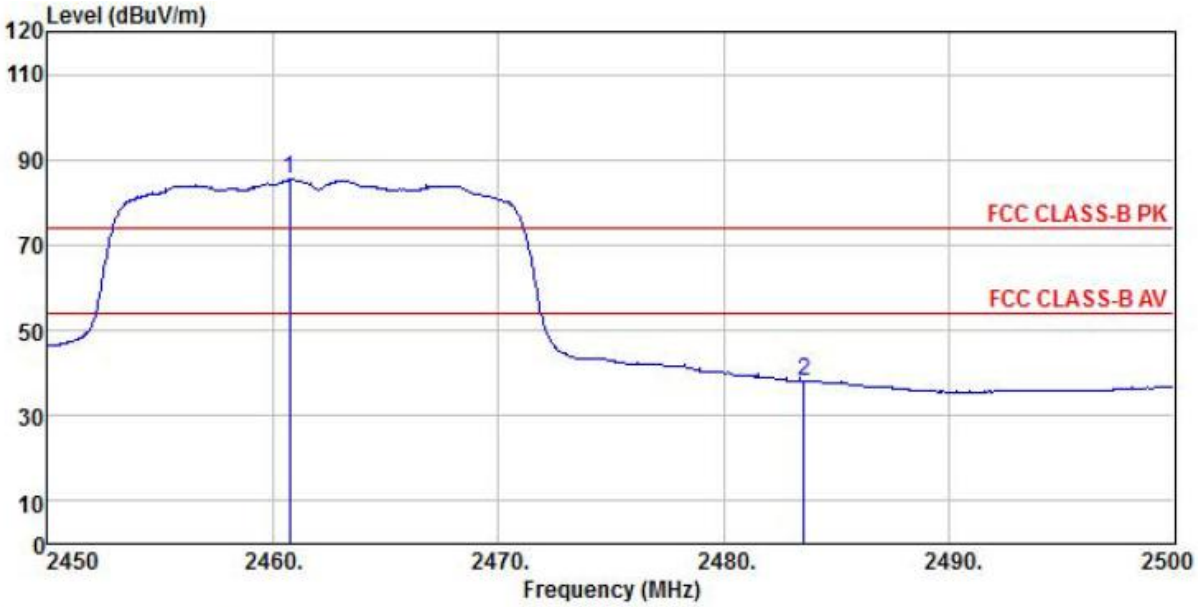
Detector mode: Peak Polarity: Vertical



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2461.50	101.65	27.49	7.39	38.32	98.21	74.00	24.21	Peak
2	2483.50	60.03	27.52	7.41	38.31	56.65	74.00	-17.35	Peak

Detector mode: Average Polarity: Vertical

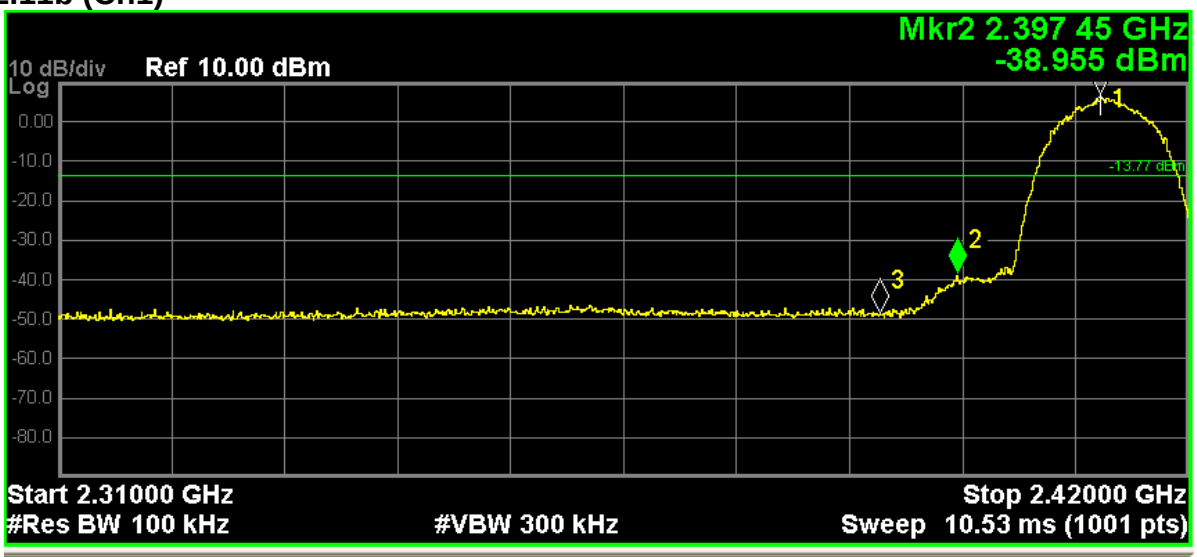


Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(943) VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	2460.75	88.75	27.49	7.39	38.32	85.31	54.00	31.31	Average
2	2483.55	41.61	27.52	7.41	38.31	38.23	54.00	-15.77	Average

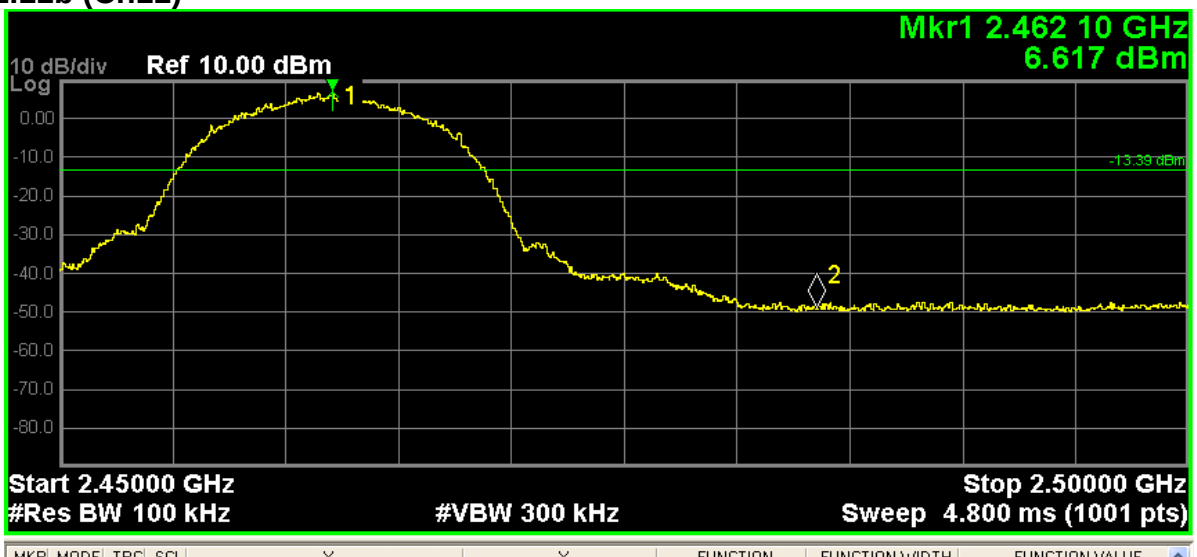
Conducted Band Edge:

802.11b (Ch1)



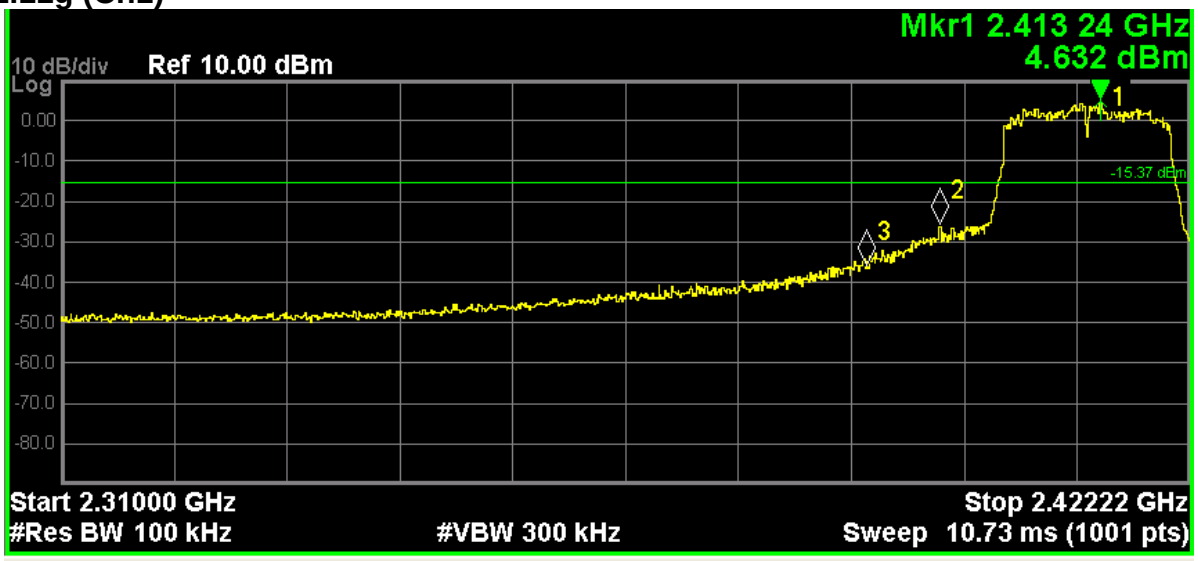
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.411 42 GHz	6.407 dBm			
2	N	1	f	2.397 45 GHz	-38.955 dBm			
3	N	1	f	2.390 00 GHz	-49.016 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

802.11b (Ch11)



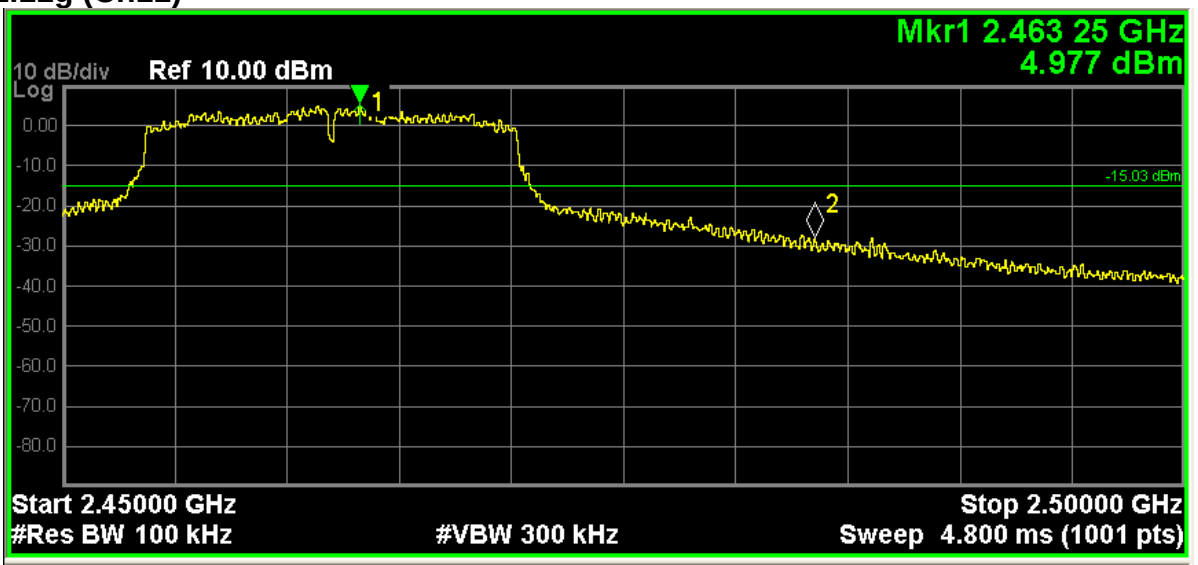
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.462 10 GHz	6.617 dBm			
2	N	1	f	2.483 50 GHz	-49.309 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

802.11g (Ch1)



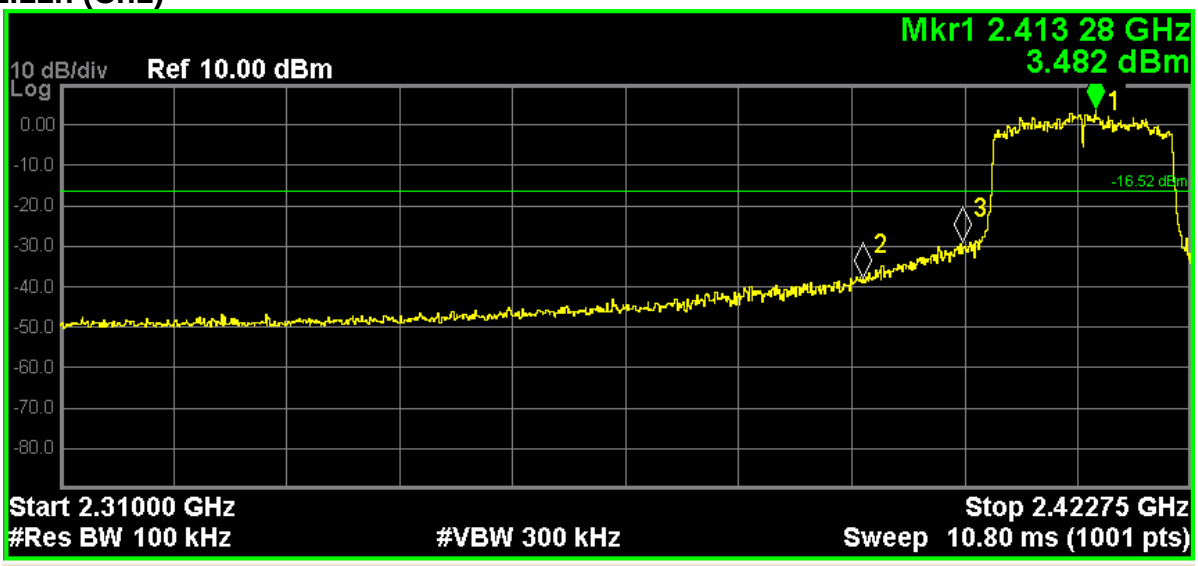
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.413 24 GHz	4.632 dBm			
2	N	1	f	2.397 31 GHz	-26.298 dBm			
3	N	1	f	2.390 00 GHz	-36.567 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

802.11g (Ch11)



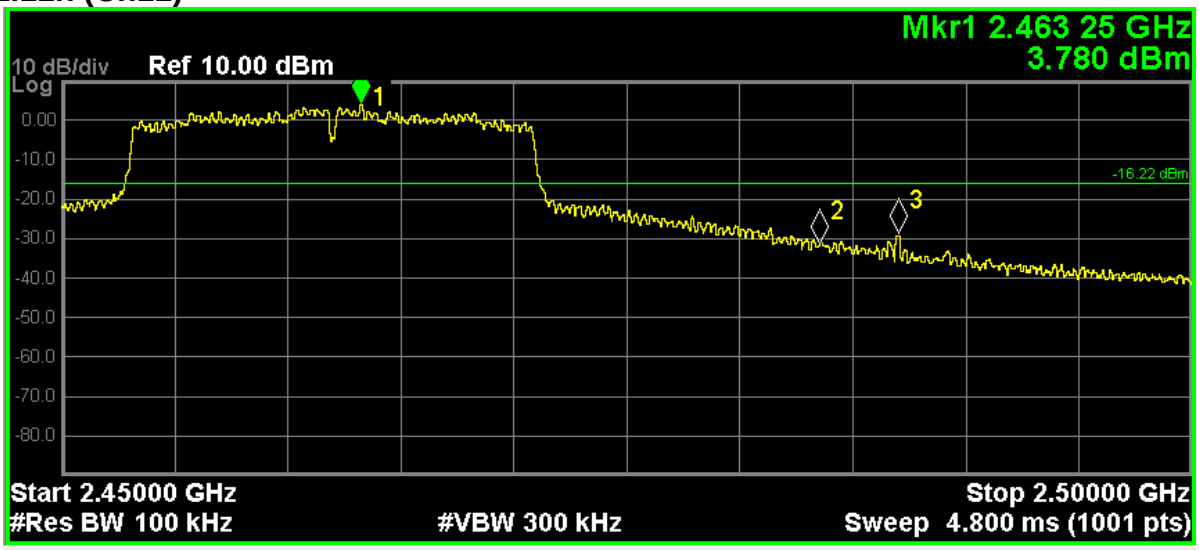
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.463 25 GHz	4.977 dBm			
2	N	1	f	2.483 50 GHz	-28.488 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

802.11n (Ch1)



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.413 28 GHz	3.482 dBm			
2	N	1	f	2.390 00 GHz	-38.594 dBm			
3	N	1	f	2.399 89 GHz	-29.510 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

802.11n (Ch11)

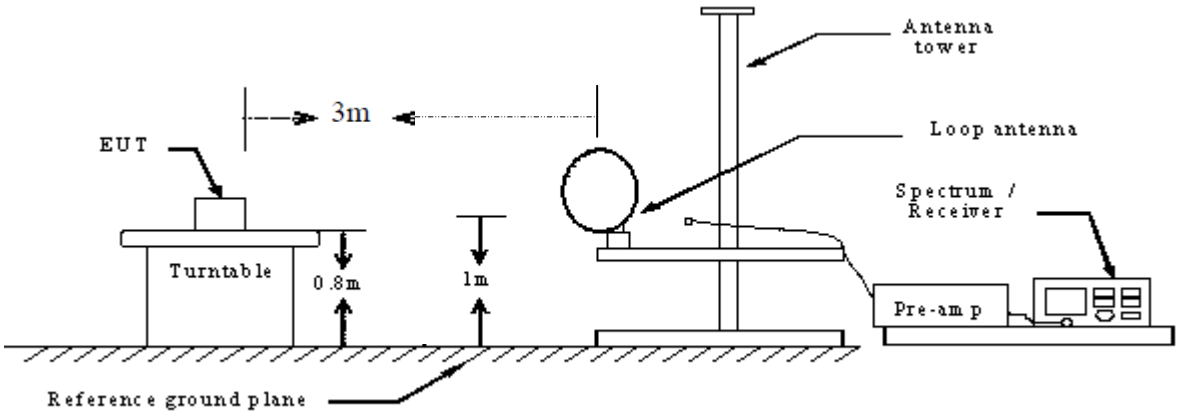


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.463 25 GHz	3.780 dBm			
2	N	1	f	2.483 50 GHz	-31.859 dBm			
3	N	1	f	2.487 00 GHz	-29.229 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

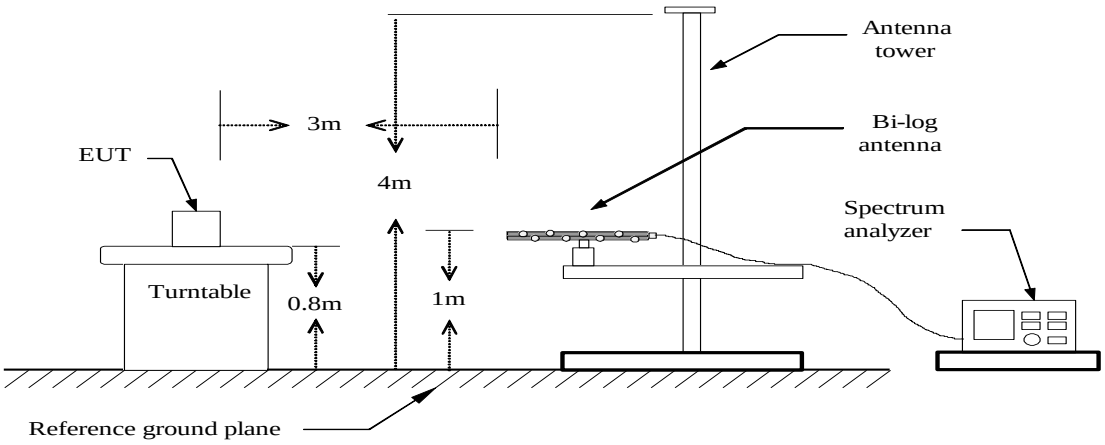
10. SPURIOUS EMISSIONS (RADIATION)

10.1 TEST SETUP

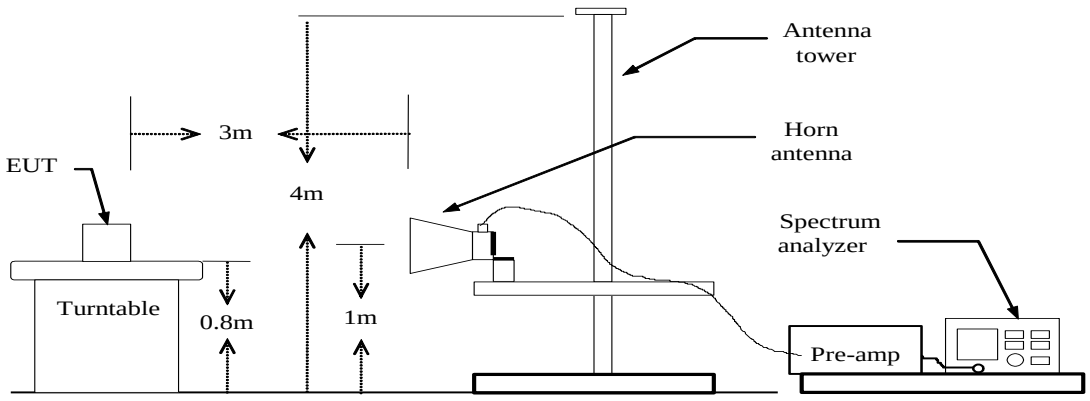
Radiated Spurious Measurement: below 30MHz



Radiated Spurious Measurement: below 1GHz



Radiated Spurious Measurement: above 1GHz



10.2 LIMITS

Frequency (MHz)	Limits (uV/m)	Measurement Distance (Meters)	Limits(dBuV/m) at 3m
0.009-0.490	2400/F(KHz)	300	128.5~93.80
0.490-1.705	24000/F(KHz)	30	73.80~63.00
1.705-30.0	30	30	69.5
30~88	100	3	40
88~216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Notes: the calculate formula for below 30MHz
L2 = 20lg (L1) + 40lg (d1/d2)
L2: is the specified limit in dB microvolts per metre at distance d2.
L1: is the specified limit in microvolts per metre at distance d1.
For example:
L1 = 2400/9 (μV/m), d1 = 300 (m), d2 = 3 (m), so L2 as follows:
20lg（2400/9）+40lg(300/3) = 128.5(dBμV/m)

10.3 TEST PROCEDURE

Radiated Emission (9 kHz – 30 MHz) :
Spurious emissions from the EUT are measured in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The antenna was positioned 3 meters horizontally from the EUT.The RBW of the spectrum analyzer is set to 200Hz(measured frequency range was 9KHz~150KHz) or 9KHz(measured frequency range was 150KHz~30MHz).Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions. The emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz(these two bands employing a average detector).

Radiated Emission (30 MHz – 1000 MHz) :
According to description of ANSI C63.4: 2009 sec.13.4, the preliminary radiated emissions measurement were carried out. The preliminary radiated measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT. The EUT configuration (in X, Y and Z axis), cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for the final radiated emissions measurements. The measurement is carried out using a spectrum analyzer or receiver. The Quasi-peak detector is used and RBW is set to 120kHz .The antenna height and turn table rotation is adjusted until the maximum power value is founded on spectrum analyzer or receiver.

Radiated Emission (Above 1 GHz) :

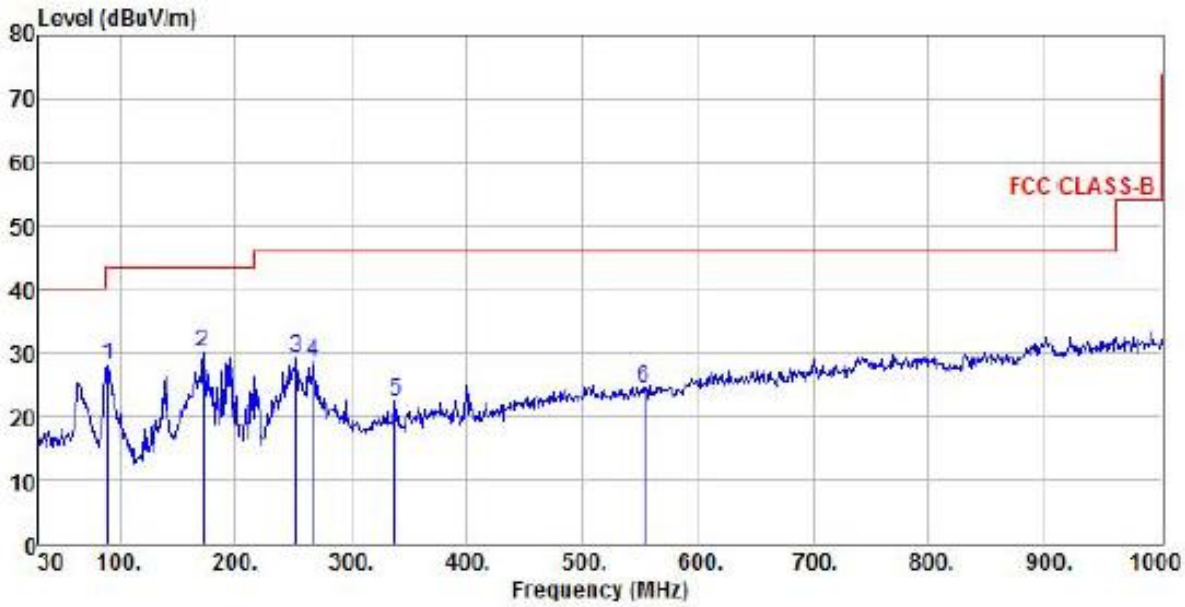
According to description of ANSI C63.4: 2009 sec.13.4, the preliminary radiated emissions measurement were carried out. The preliminary radiated measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT. The EUT configuration (in X, Y and Z axis), cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for the final radiated emissions measurements. The measurement is carried out using a spectrum analyzer or receiver. The spectrum analyzer scans from 1GHz to 25GHz (higher than the 10^{th} harmonic of the carrier). The peak detector is used for Peak limit and RBW is set to 1MHz ,VBW ≥ 3RBW. The peak detector is used for Average limit and RBW is set to 1MHz ,VBW is 10Hz(when test mode was 802.11b) or not smaller than 1/T, T = to the shortest pulse width(VBW=1KHz when test mode was 802.11g and 802.11n). The antenna height and turn table rotation is adjusted until the maximum power value is founded on spectrum analyzer or receiver.

10.4 RESULTS & PERFORMANCE

From 9KHz to 30MHz:
The test data was 20dB lower than the permissible limit was not recorded in the report.

From 30MHz to 1GHz:

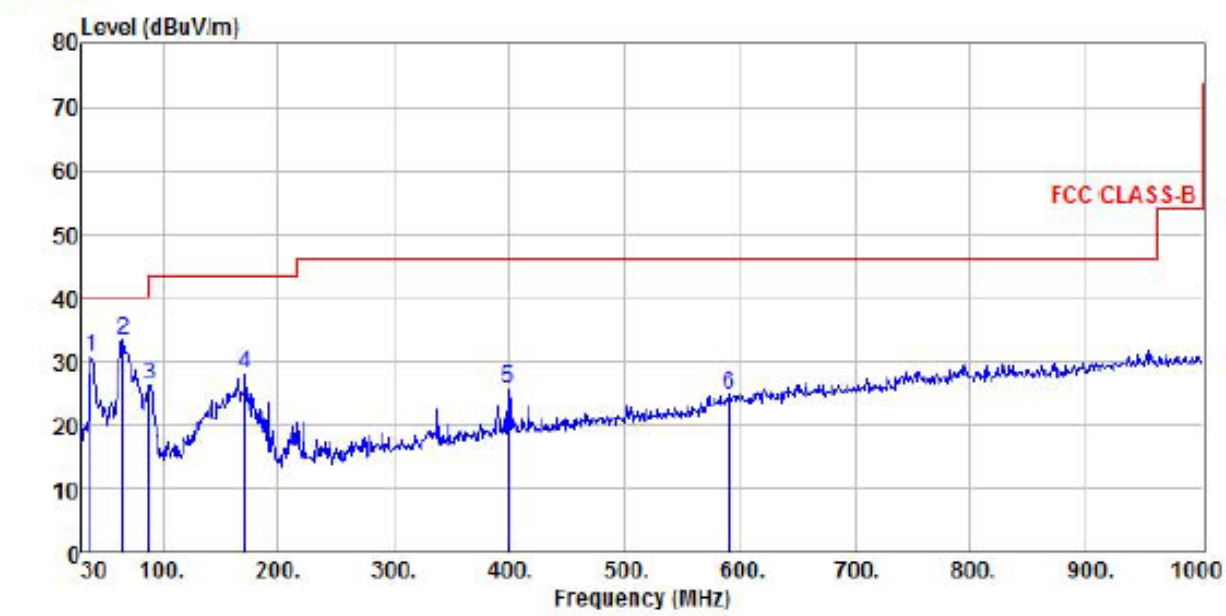
802.11b; traffic mode; Ch1
Antenna Polarity :Horizontal



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	89.17	17.95	9.09	1.09	0.00	28.13	43.50	-15.37	Peak
2 pp	171.62	15.00	13.15	1.86	0.00	30.01	43.50	-13.49	Peak
3	252.13	15.06	11.96	2.16	0.00	29.18	46.00	-16.82	Peak
4	267.65	14.04	12.40	2.21	0.00	28.65	46.00	-17.35	Peak
5	338.46	5.76	14.09	2.51	0.00	22.36	46.00	-23.64	Peak
6	553.80	3.31	18.02	3.20	0.00	24.53	46.00	-21.47	Peak

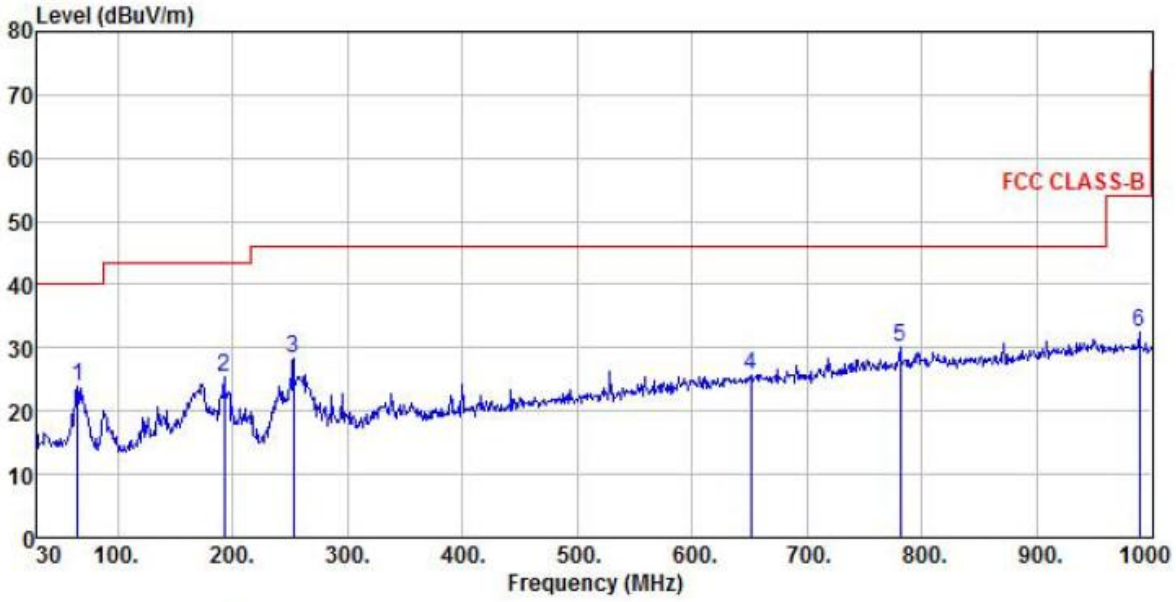
802.11b; traffic mode; Ch1
Antenna Polarity : Vertical



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	37.76	17.51	12.51	0.79	0.00	30.81	40.00	-9.19	Peak
2 pp	64.92	19.85	12.34	1.08	0.00	33.27	40.00	-6.73	Peak
3	88.20	16.24	9.09	1.09	0.00	26.42	43.50	-17.08	Peak
4	170.65	12.92	13.15	1.86	0.00	27.93	43.50	-15.57	Peak
5	399.57	7.72	15.32	2.65	0.00	25.69	46.00	-20.31	Peak
6	590.66	2.55	18.89	3.33	0.00	24.77	46.00	-21.23	Peak

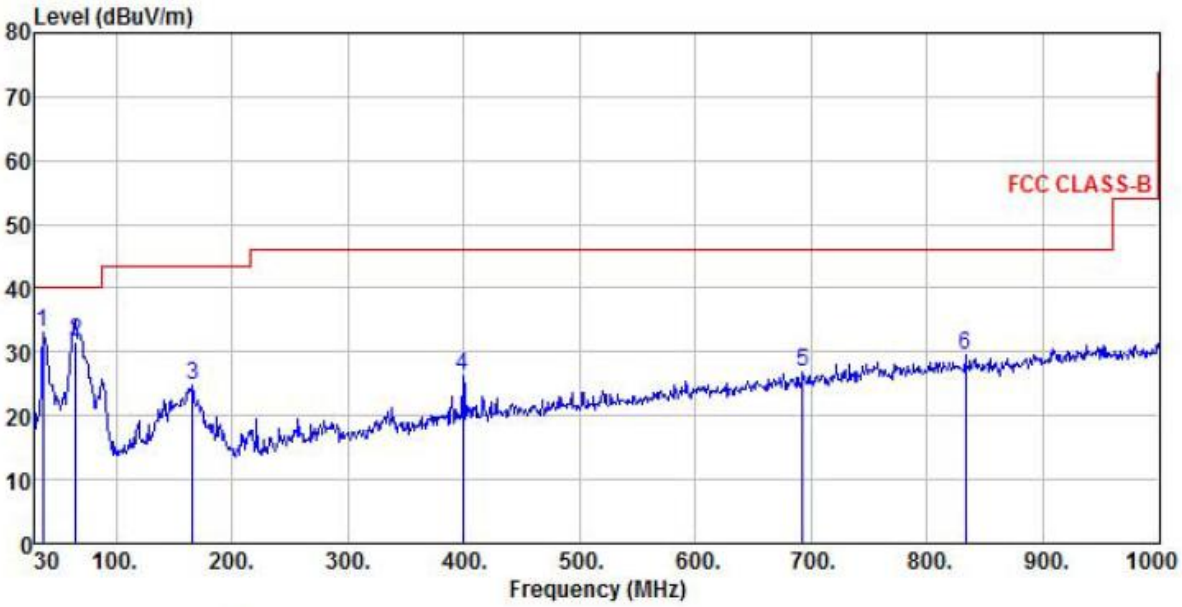
802.11b; traffic mode; Ch6
Antenna Polarity :Horizontal



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch6
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	64.92	10.35	12.34	1.08	0.00	23.77	40.00	-16.23	Peak
2	192.96	12.56	10.96	1.89	0.00	25.41	43.50	-18.09	Peak
3	253.10	14.08	11.96	2.16	0.00	28.20	46.00	-17.80	Peak
4	650.80	2.54	19.61	3.52	0.00	25.67	46.00	-20.33	Peak
5 pp	780.78	4.73	21.50	3.82	0.00	30.05	46.00	-15.95	Peak
6	989.33	4.70	23.44	4.33	0.00	32.47	54.00	-21.53	Peak

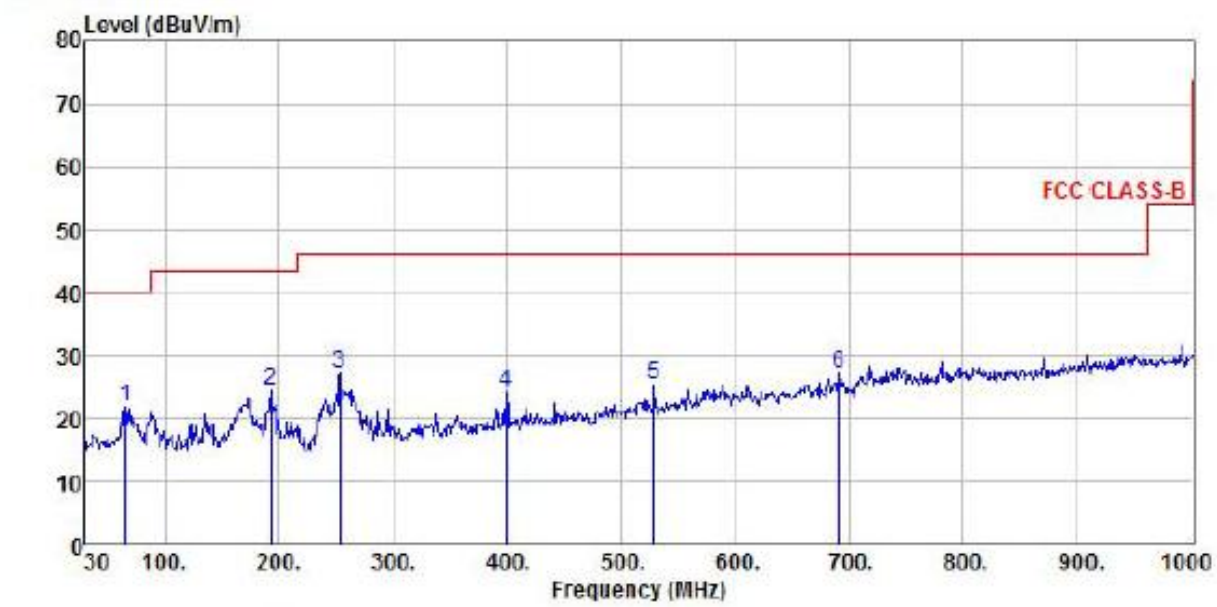
802.11b; traffic mode; Ch6
Antenna Polarity : Vertical



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch6
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	36.79	19.78	12.51	0.77	0.00	33.06	40.00	-6.94	Peak
2 qp	64.85	18.29	12.34	1.08	0.00	31.71	40.00	-8.29	QP
3	165.80	9.33	13.55	1.77	0.00	24.65	43.50	-18.85	Peak
4	399.57	8.28	15.32	2.65	0.00	26.25	46.00	-19.75	Peak
5	692.51	3.29	20.04	3.61	0.00	26.94	46.00	-19.06	Peak
6	833.16	3.56	21.97	3.95	0.00	29.48	46.00	-16.52	Peak

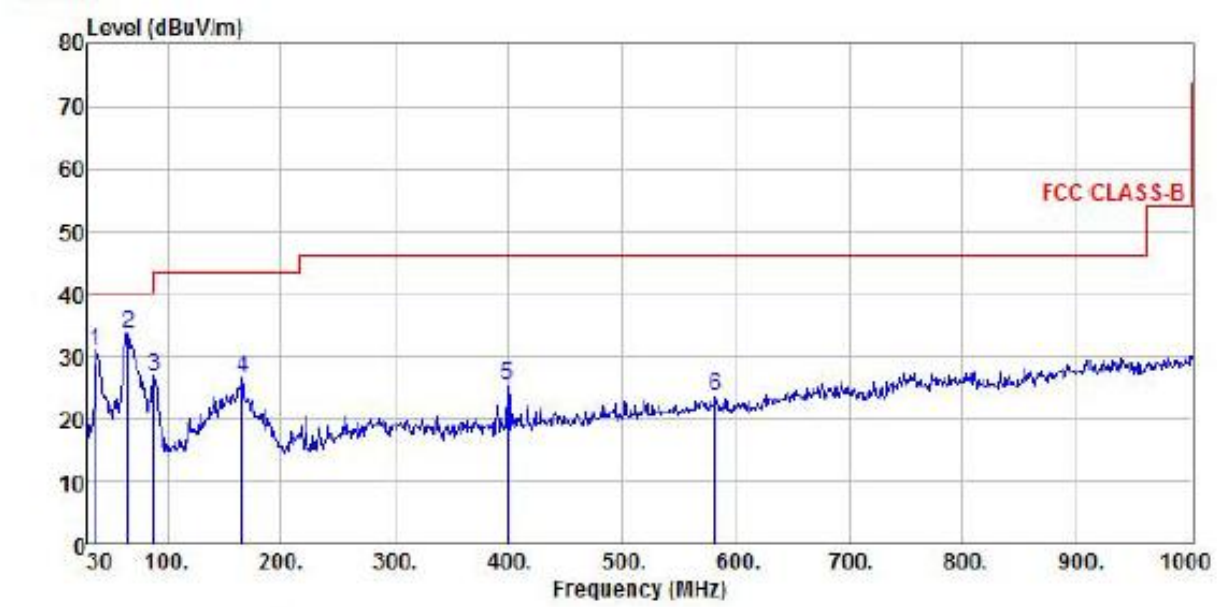
802.11b; traffic mode; Ch11
Antenna Polarity :Horizontal



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	64.92	8.35	12.34	1.08	0.00	21.77	40.00	-18.23	Peak
2	192.96	11.56	10.96	1.89	0.00	24.41	43.50	-19.09	Peak
3	253.10	13.08	11.96	2.16	0.00	27.20	46.00	-18.80	Peak
4	399.57	6.28	15.32	2.65	0.00	24.25	46.00	-21.75	Peak
5	528.58	4.76	17.47	3.14	0.00	25.37	46.00	-20.63	Peak
6	690.57	3.62	20.02	3.60	0.00	27.24	46.00	-18.76	Peak

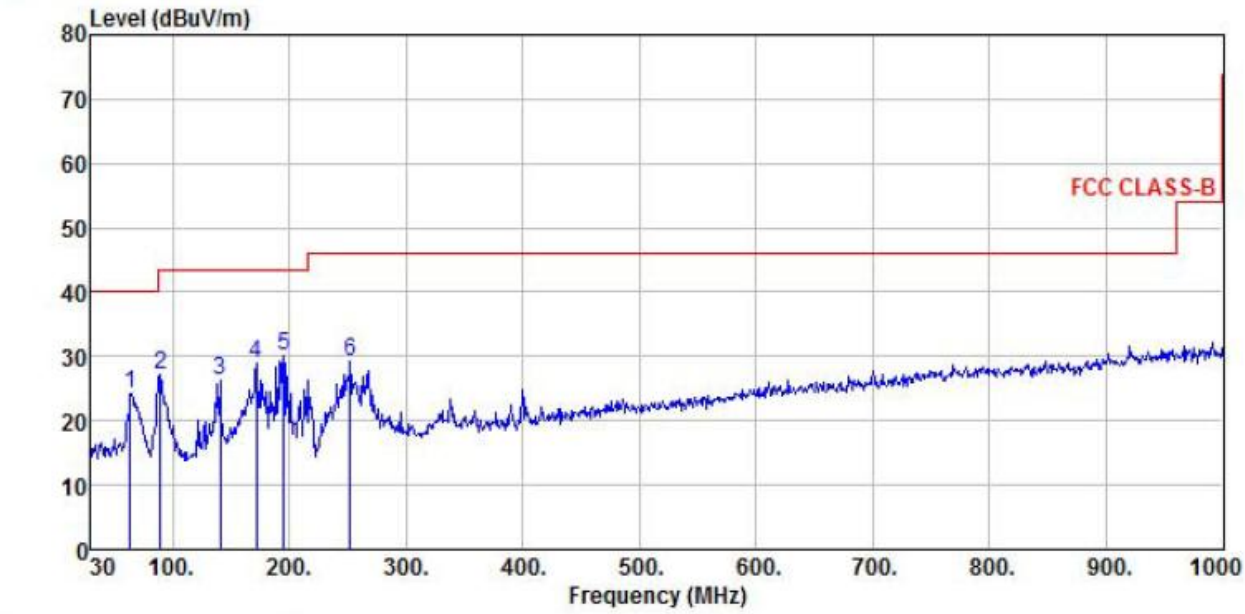
802.11b; traffic mode; Ch11
Antenna Polarity : Vertical



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11b ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	36.79	17.78	12.51	0.77	0.00	31.06	40.00	-8.94	Peak
2 pp	64.92	20.27	12.34	1.08	0.00	33.69	40.00	-6.31	Peak
3	88.20	16.57	9.09	1.09	0.00	26.75	43.50	-16.75	Peak
4	165.80	11.33	13.55	1.77	0.00	26.65	43.50	-16.85	Peak
5	399.57	7.28	15.32	2.65	0.00	25.25	46.00	-20.75	Peak
6	581.93	1.81	18.67	3.26	0.00	23.74	46.00	-22.26	Peak

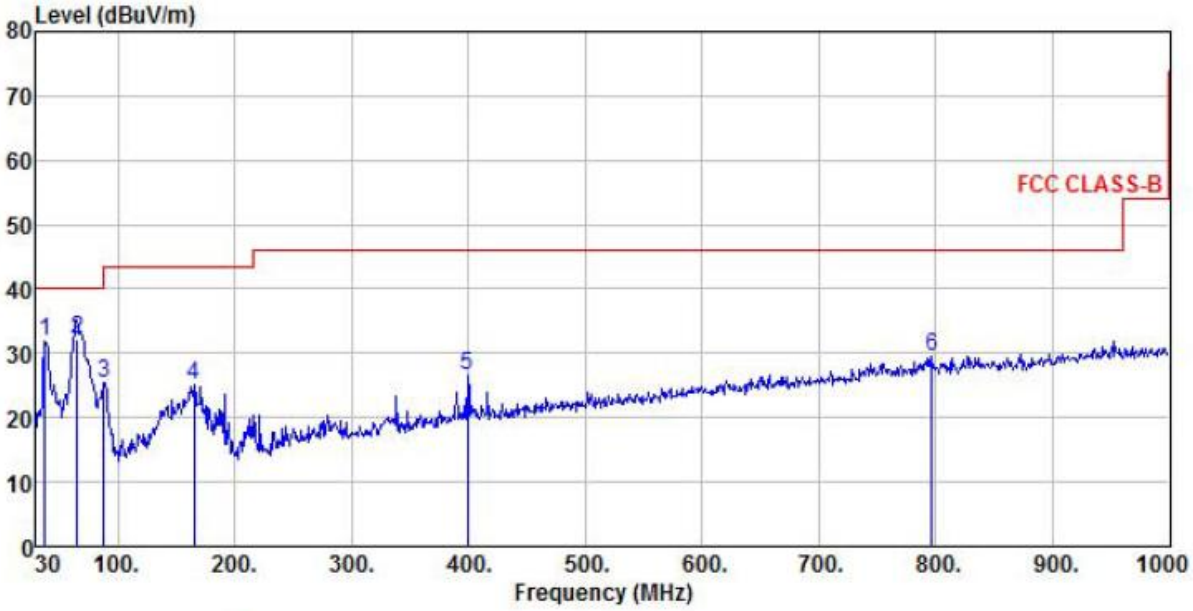
802.11g; traffic mode; Ch1
Antenna Polarity : Horizontal



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	63.95	10.92	12.34	1.07	0.00	24.33	40.00	-15.67	Peak
2	89.17	16.95	9.09	1.09	0.00	27.13	43.50	-16.37	Peak
3	140.58	11.14	13.47	1.62	0.00	26.23	43.50	-17.27	Peak
4	171.62	14.00	13.15	1.86	0.00	29.01	43.50	-14.49	Peak
5 pp	194.90	17.47	10.81	1.89	0.00	30.17	43.50	-13.33	Peak
6	252.13	15.06	11.96	2.16	0.00	29.18	46.00	-16.82	Peak

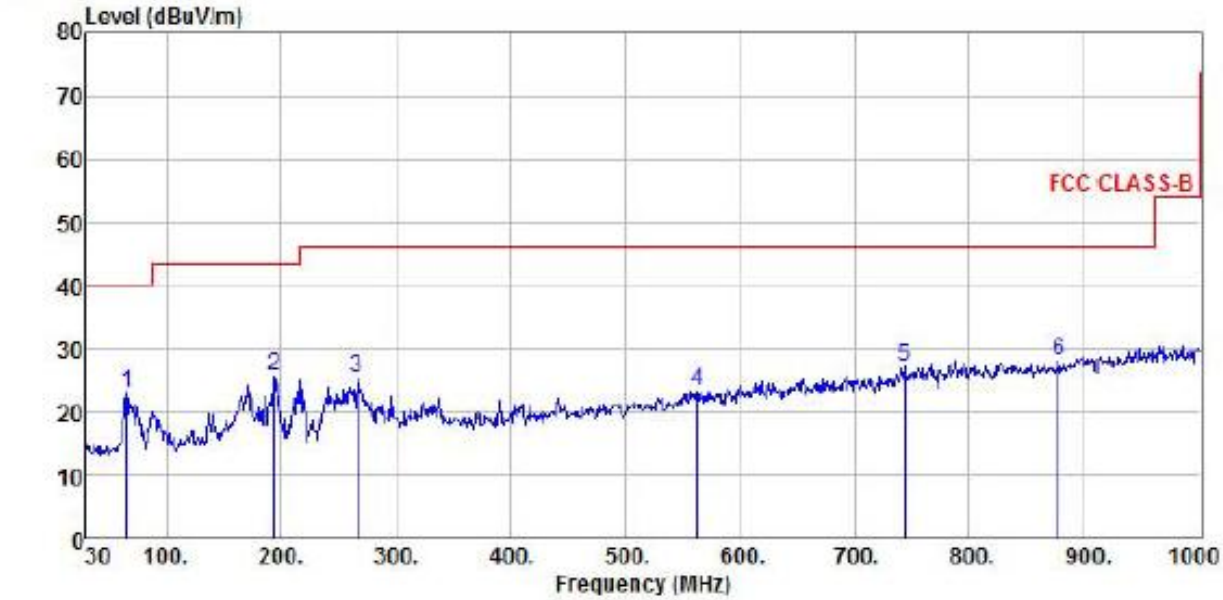
802.11g; traffic mode; Ch1
Antenna Polarity : Vertical



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	pk 37.76	18.51	12.51	0.79	0.00	31.81	40.00	-8.19	Peak
2	pp 64.92	18.76	12.34	1.08	0.00	32.18	40.00	-7.82	QP
3	88.20	15.24	9.09	1.09	0.00	25.42	43.50	-18.08	Peak
4	164.83	9.92	13.55	1.76	0.00	25.23	43.50	-18.27	Peak
5	399.57	8.72	15.32	2.65	0.00	26.69	46.00	-19.31	Peak
6	796.30	4.09	21.73	3.82	0.00	29.64	46.00	-16.36	Peak

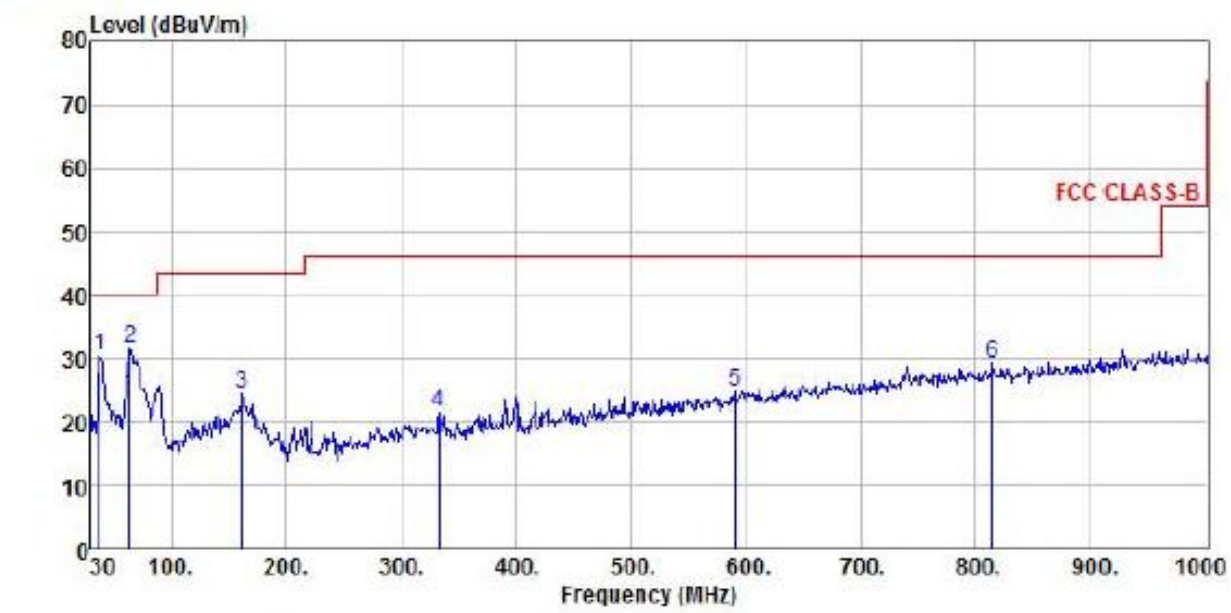
802.11g; traffic mode; Ch6
Antenna Polarity : Horizontal



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch6
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	64.92	9.50	12.34	1.08	0.00	22.92	40.00	-17.08	Peak
2	193.93	13.06	10.81	1.89	0.00	25.76	43.50	-17.74	Peak
3	265.71	10.96	12.33	2.20	0.00	25.49	46.00	-20.51	Peak
4	562.53	1.86	18.22	3.24	0.00	23.32	46.00	-22.68	Peak
5	743.92	2.11	21.18	3.78	0.00	27.07	46.00	-18.93	Peak
6	877.78	2.08	22.13	3.96	0.00	28.17	46.00	-17.83	Peak

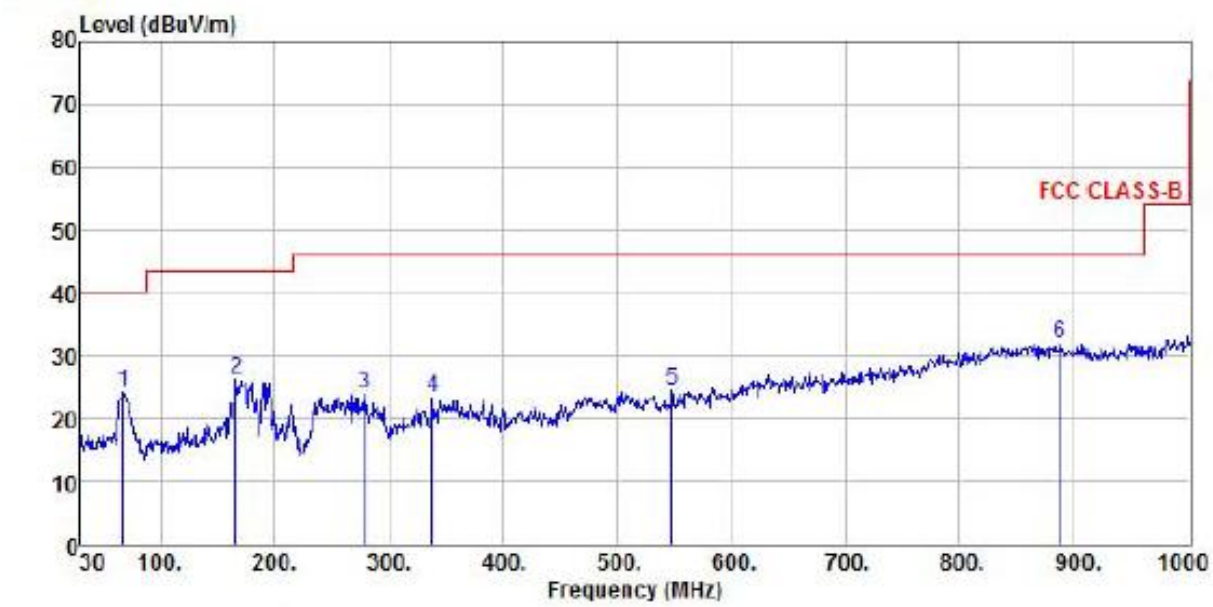
802.11g; traffic mode; Ch6
Antenna Polarity : Vertical



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch6
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	37.76	17.22	12.51	0.79	0.00	30.52	40.00	-9.48	Peak
2 pp	63.95	18.11	12.34	1.07	0.00	31.52	40.00	-8.48	Peak
3	160.95	8.96	13.77	1.69	0.00	24.42	43.50	-19.08	Peak
4	332.64	5.08	13.96	2.49	0.00	21.53	46.00	-24.47	Peak
5	590.66	2.72	18.89	3.33	0.00	24.94	46.00	-21.06	Peak
6	814.73	3.62	21.86	3.79	0.00	29.27	46.00	-16.73	Peak

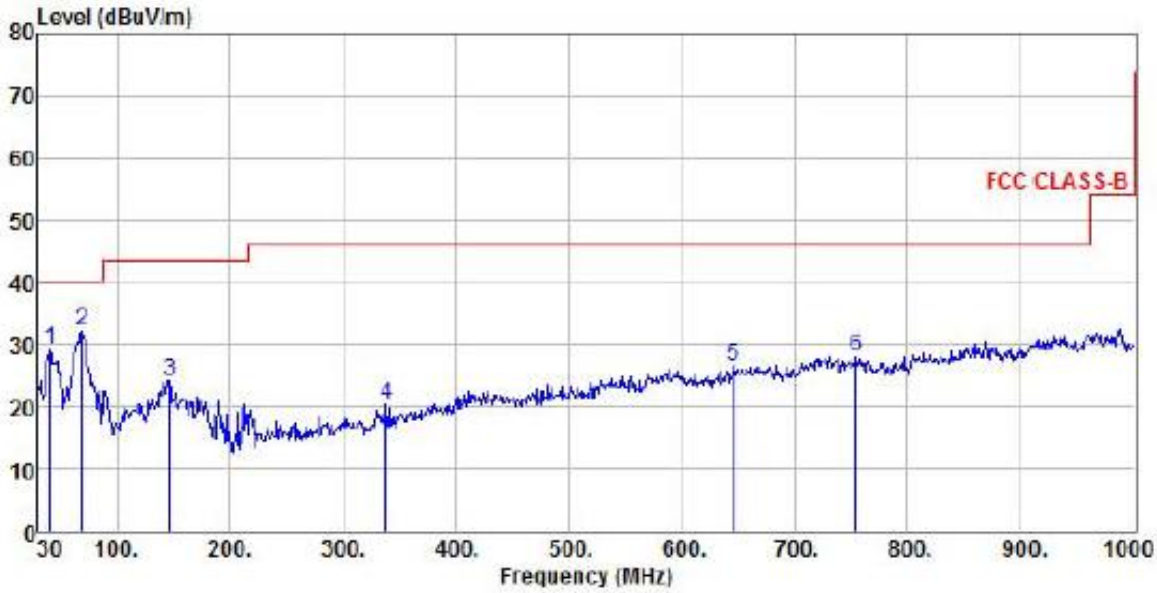
802.11g; traffic mode; Ch11
Antenna Polarity : Horizontal



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	66.86	11.17	11.89	1.10	0.00	24.16	40.00	-15.84	Peak
2	165.80	10.85	13.55	1.77	0.00	26.17	43.50	-17.33	Peak
3	279.29	8.87	12.81	2.20	0.00	23.88	46.00	-22.12	Peak
4	338.46	6.65	14.09	2.51	0.00	23.25	46.00	-22.75	Peak
5	547.98	3.35	17.88	3.16	0.00	24.39	46.00	-21.61	Peak
6 pp	888.45	5.47	22.34	4.00	0.00	31.81	46.00	-14.19	Peak

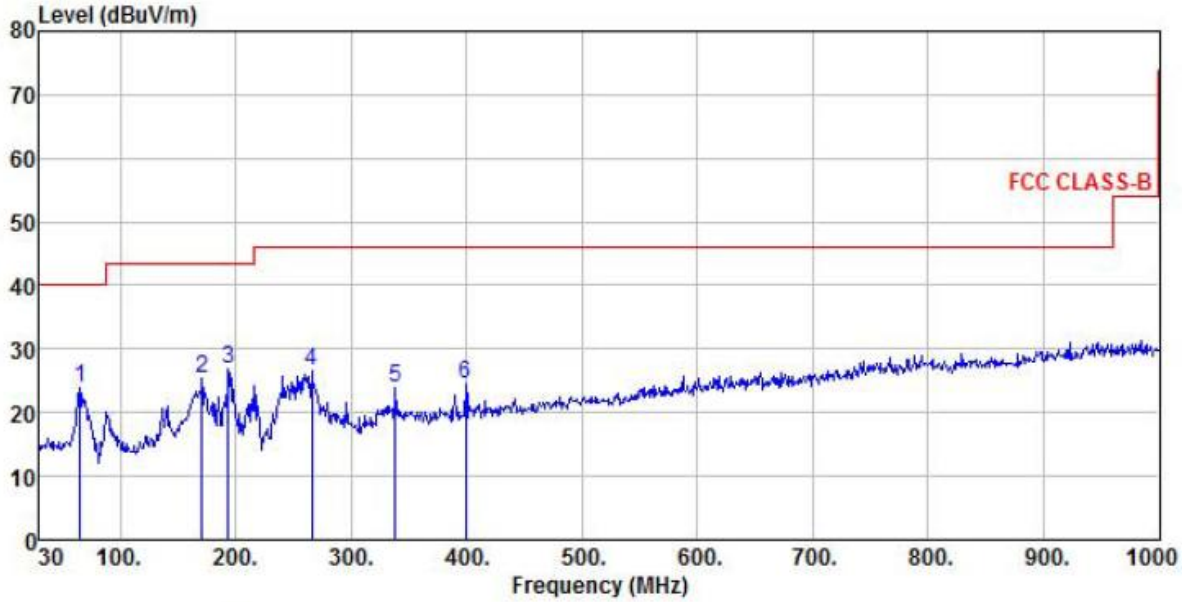
802.11g; traffic mode; Ch11
Antenna Polarity : Vertical



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11g ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	40.67	15.65	12.71	0.83	0.00	29.19	40.00	-10.81	Peak
2 pp	68.80	19.75	11.44	1.11	0.00	32.30	40.00	-7.70	Peak
3	146.40	8.94	13.68	1.63	0.00	24.25	43.50	-19.25	Peak
4	338.46	3.89	14.09	2.51	0.00	20.49	46.00	-25.51	Peak
5	645.95	3.50	19.53	3.53	0.00	26.56	46.00	-19.44	Peak
6	754.59	3.06	21.36	3.76	0.00	28.18	46.00	-17.82	Peak

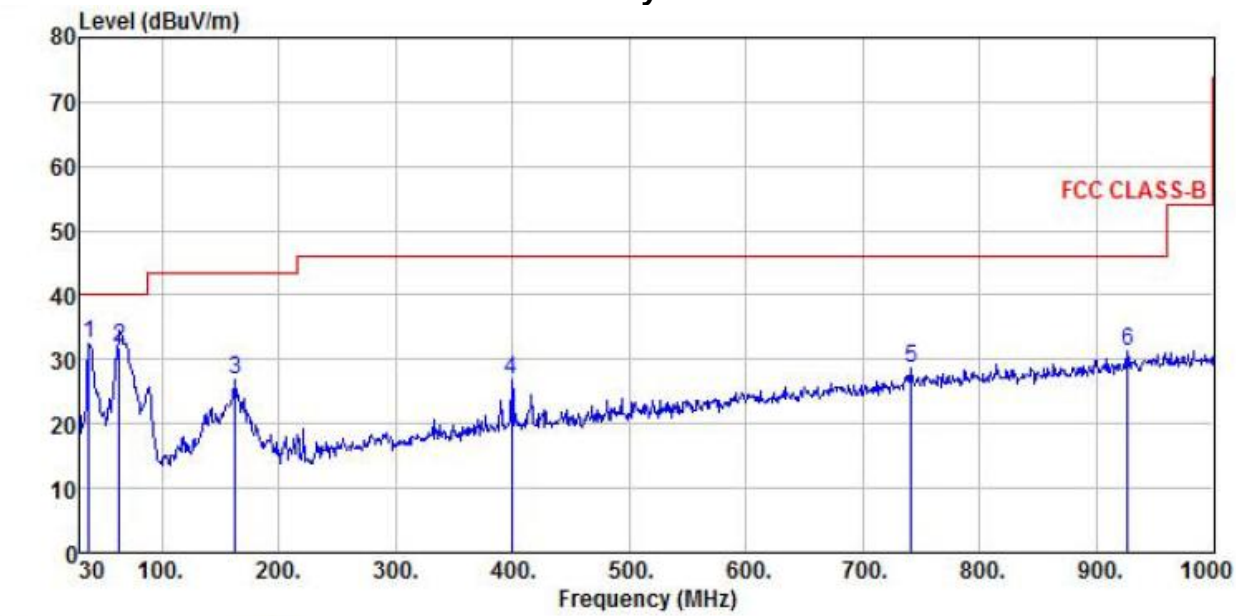
802.11n; traffic mode; Ch1
Antenna Polarity : Horizontal



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	64.92	10.50	12.34	1.08	0.00	23.92	40.00	-16.08	Peak
2	170.65	10.29	13.15	1.86	0.00	25.30	43.50	-18.20	Peak
3	193.93	14.06	10.81	1.89	0.00	26.76	43.50	-16.74	Peak
4	265.71	11.96	12.33	2.20	0.00	26.49	46.00	-19.51	Peak
5	338.46	7.40	14.09	2.51	0.00	24.00	46.00	-22.00	Peak
6	399.57	6.53	15.32	2.65	0.00	24.50	46.00	-21.50	Peak

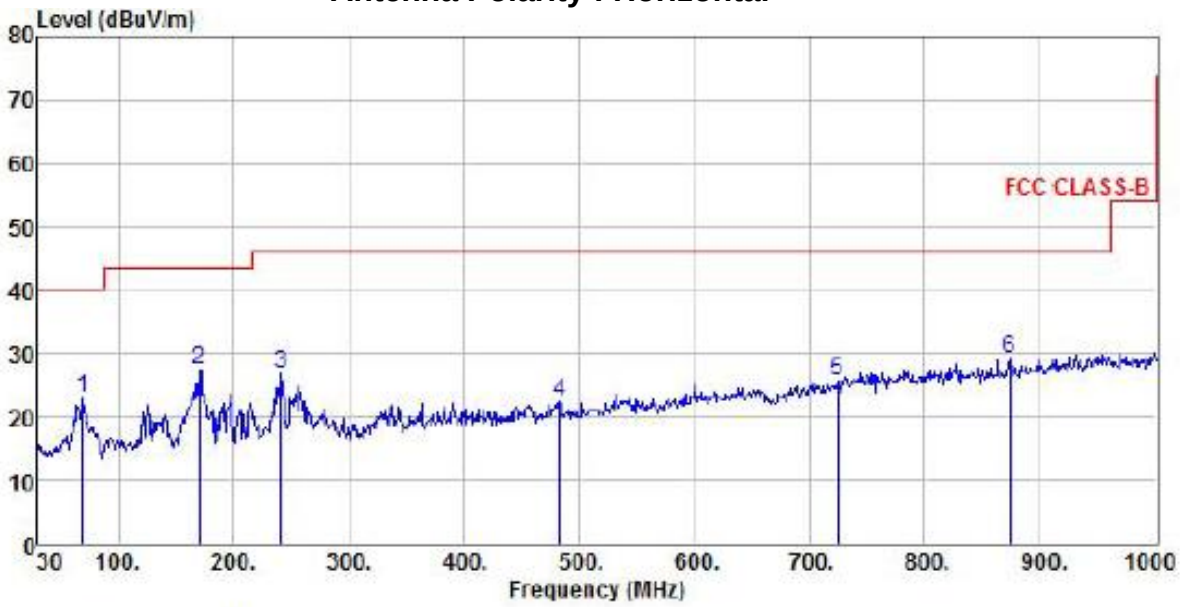
802.11n; traffic mode; Ch1
Antenna Polarity : Vertical



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch1
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	37.76	19.22	12.51	0.79	0.00	32.52	40.00	-7.48	Peak
2 qp	63.59	18.35	12.34	1.07	0.00	31.76	40.00	-8.24	QP
3	162.89	11.46	13.66	1.72	0.00	26.84	43.50	-16.66	Peak
4	399.57	9.00	15.32	2.65	0.00	26.97	46.00	-19.03	Peak
5	741.01	3.83	21.12	3.77	0.00	28.72	46.00	-17.28	Peak
6	926.28	4.30	22.95	4.10	0.00	31.35	46.00	-14.65	Peak

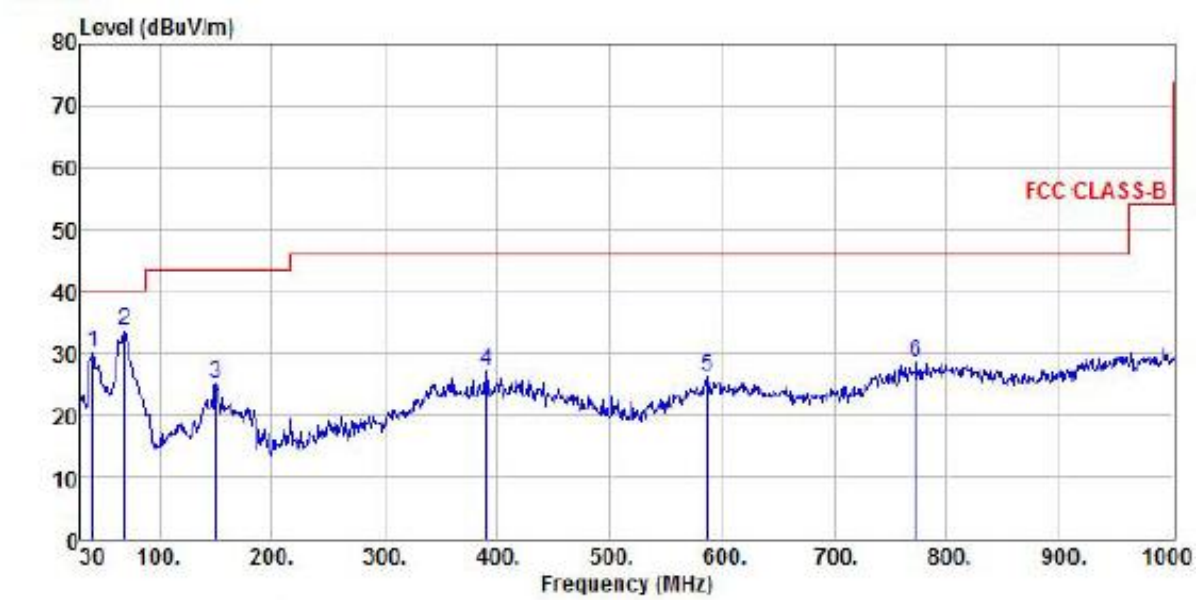
802.11n; traffic mode; Ch6
Antenna Polarity : Horizontal



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch6
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	68.80	10.59	11.44	1.11	0.00	23.14	40.00	-16.86	Peak
2 pp	169.68	12.38	13.33	1.84	0.00	27.55	43.50	-15.95	Peak
3	240.49	13.06	11.71	2.12	0.00	26.89	46.00	-19.11	Peak
4	482.99	2.53	16.92	3.02	0.00	22.47	46.00	-23.53	Peak
5	724.52	1.54	20.60	3.64	0.00	25.78	46.00	-20.22	Peak
6	873.90	3.26	22.05	3.96	0.00	29.27	46.00	-16.73	Peak

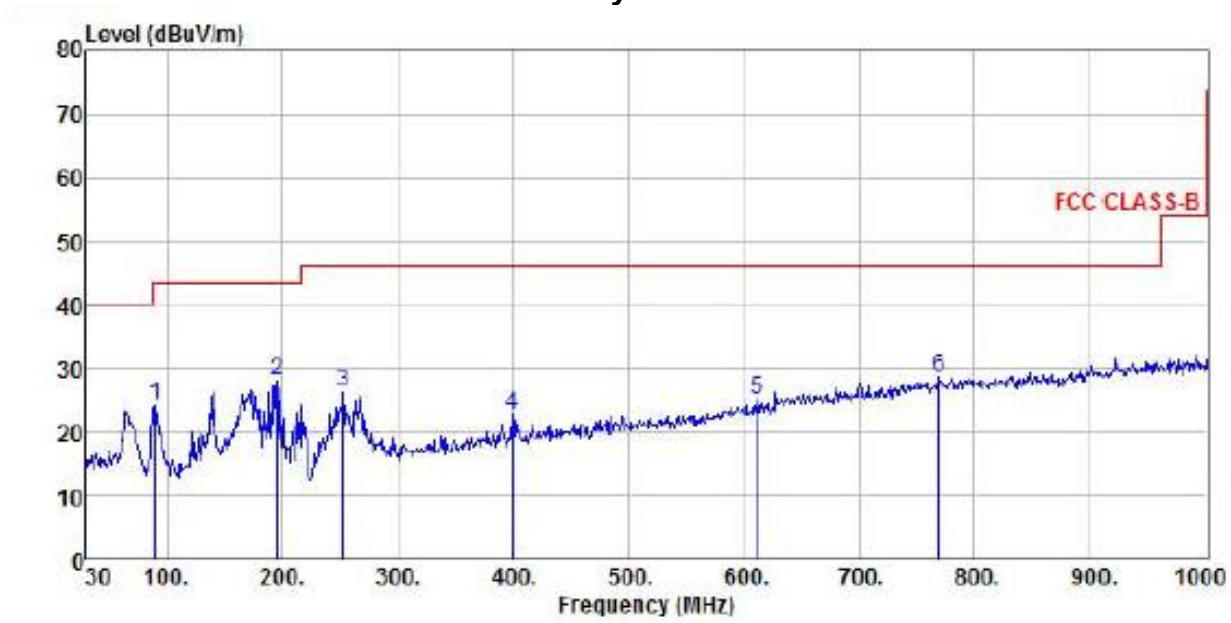
802.11n; traffic mode; Ch6
Antenna Polarity : Vertical



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch6
Memo :

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	40.67	16.44	12.71	0.83	0.00	29.98	40.00	-10.02	Peak
2 pp	68.80	21.11	11.44	1.11	0.00	33.66	40.00	-6.34	Peak
3	149.31	9.45	13.90	1.63	0.00	24.98	43.50	-18.52	Peak
4	389.87	9.20	15.10	2.71	0.00	27.01	46.00	-18.99	Peak
5	586.78	4.05	18.78	3.30	0.00	26.13	46.00	-19.87	Peak
6	772.05	3.59	21.40	3.74	0.00	28.73	46.00	-17.27	Peak

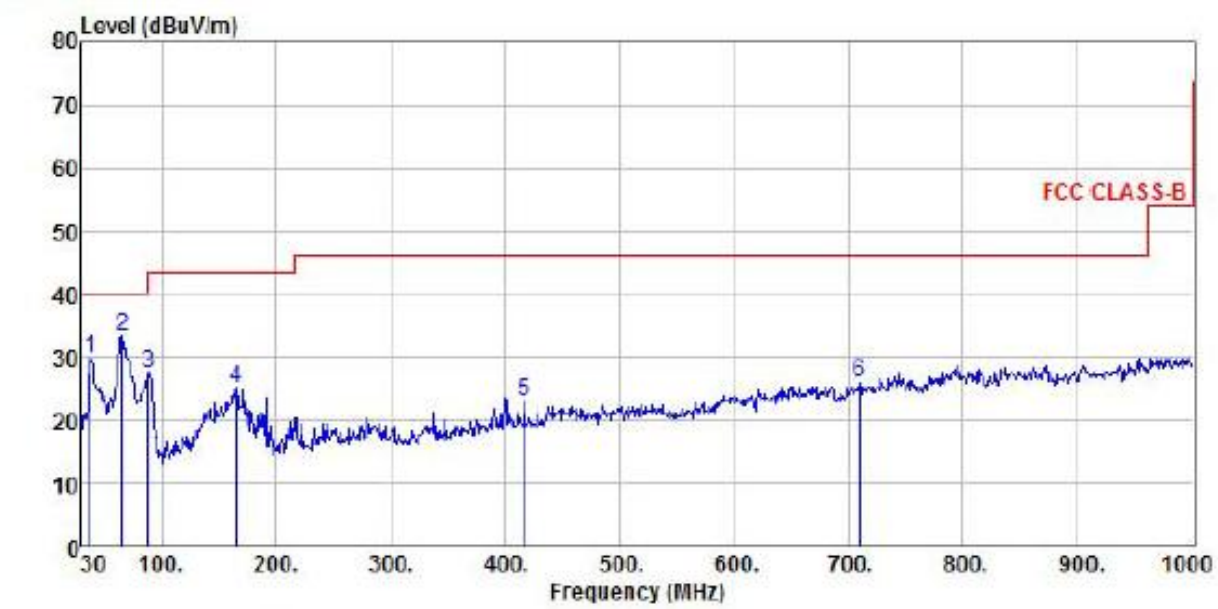
802.11n; traffic mode; Ch11
Antenna Polarity : Horizontal



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 HORIZONTAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch11
Memo :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	89.17	13.95	9.09	1.09	0.00	24.13	43.50	-19.37	Peak
2 pp	194.90	15.47	10.81	1.89	0.00	28.17	43.50	-15.33	Peak
3	252.13	12.06	11.96	2.16	0.00	26.18	46.00	-19.82	Peak
4	399.57	4.88	15.32	2.65	0.00	22.85	46.00	-23.15	Peak
5	611.03	2.41	19.19	3.37	0.00	24.97	46.00	-21.03	Peak
6	769.14	3.63	21.40	3.71	0.00	28.74	46.00	-17.26	Peak

802.11n; traffic mode; Ch11
Antenna Polarity : Vertical



Site : chamber
Condition : FCC CLASS-B 3m VULB9160 VERTICAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : 11n ch11
Memo :

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	37.76	16.51	12.51	0.79	0.00	29.81	40.00	-10.19	Peak
2 pp	64.92	19.85	12.34	1.08	0.00	33.27	40.00	-6.73	Peak
3	88.20	17.24	9.09	1.09	0.00	27.42	43.50	-16.08	Peak
4	164.83	9.92	13.55	1.76	0.00	25.23	43.50	-18.27	Peak
5	416.06	4.44	15.62	2.83	0.00	22.89	46.00	-23.11	Peak
6	709.97	2.11	20.33	3.60	0.00	26.04	46.00	-19.96	Peak

From 1GHz to 25GHz:

802.11b; traffic mode; Ch1

Frequency (MHz)	Reading (dBuV)	Correct factor(dB)	Antenna Polarity	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2412	99.38	-3.54	Horizontal	95.84	/	/	PEAK
2412	97.57	-3.54	H	94.03	/	/	AV
4824	61.92	4.76	H	66.68	74	7.32	PEAK
4824	47.86	4.76	H	52.62	54	1.38	AV
7236	50.84	11.24	H	62.08	74	11.92	PEAK
7236	38.07	11.24	H	49.31	54	4.69	AV
2412	98.57	-3.54	Vertical	95.03	/	/	PEAK
2412	97.86	-3.54	V	94.32	/	/	AV
4824	61.99	4.76	V	66.75	74	7.25	PEAK
4824	47.50	4.76	V	52.26	54	1.74	AV
7236	51.18	11.24	V	62.42	74	11.58	PEAK
7236	36.92	11.24	V	48.16	54	5.84	AV

Note:1: Total=Reading+Correct factor
2: 2412 MHz was fundamental signal which can be ignored.
3: Other harmonics are lower than background noise.

802.11b; traffic mode; Ch6

Frequency (MHz)	Reading (dBuV)	Correct factor(dB)	Antenna Polarity	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2437	98.59	-3.49	Horizontal	95.10	/	/	PEAK
2437	95.22	-3.49	H	91.73	/	/	AV
4874	59.63	4.81	H	64.44	74	9.56	PEAK
4874	47.37	4.81	H	52.18	54	1.82	AV
7311	51.16	11.56	H	62.72	74	11.28	PEAK
7311	37.28	11.56	H	48.84	54	5.16	AV
2437	97.17	-3.49	Vertical	93.68	/	/	PEAK
2437	96.28	-3.49	V	92.79	/	/	AV
4874	60.11	4.81	V	64.92	74	9.08	PEAK
4874	47.05	4.81	V	51.86	54	2.14	AV
7311	52.38	11.56	V	63.94	74	10.06	PEAK
7311	37.25	11.56	V	48.81	54	5.19	AV

Note:1: Total=Reading+Correct factor
2: 2412 MHz was fundamental signal which can be ignored.
3: Other harmonics are lower than background noise.

802.11b; traffic mode; Ch11

Frequency (MHz)	Reading (dBuV)	Correct factor(dB)	Antenna Polarity	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2462	99.15	-3.13	Horizontal	96.02	/	/	PEAK
2462	97.24	-3.13	H	94.11	/	/	AV
4924	58.42	5.15	H	63.57	74	10.43	PEAK
4924	47.05	5.15	H	52.20	54	1.80	AV
7386	50.28	12.01	H	62.29	74	11.71	PEAK
7386	36.58	12.01	H	48.59	54	5.41	AV
2462	98.93	-3.13	Vertical	95.62	/	/	PEAK
2462	97.54	-3.13	V	94.23	/	/	AV
4924	61.28	5.15	V	66.43	74	7.57	PEAK
4924	47.18	5.15	V	52.33	54	1.67	AV
7386	52.42	12.01	V	64.43	74	9.57	PEAK
7386	36.85	12.01	V	48.86	54	5.14	AV

Note:1: Total=Reading+Correct factor
2: 2412 MHz was fundamental signal which can be ignored.
3: Other harmonics are lower than background noise.

802.11g; traffic mode; Ch1

Frequency (MHz)	Reading (dBuV)	Correct factor(dB)	Antenna Polarity	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2412	102.35	-3.54	Horizontal	98.81	/	/	PEAK
2412	100.58	-3.54	H	97.04	/	/	AV
4824	63.15	4.76	H	67.91	74	6.09	PEAK
4824	46.53	4.76	H	51.29	54	2.71	AV
7236	52.07	11.24	H	63.31	74	10.69	PEAK
7236	38.53	11.24	H	49.77	54	4.23	AV
2412	102.12	-3.54	Vertical	98.58	/	/	PEAK
2412	99.95	-3.54	V	96.41	/	/	AV
4824	61.54	4.76	V	66.30	74	7.70	PEAK
4824	46.44	4.76	V	51.20	54	2.80	AV
7236	51.15	11.24	V	62.39	74	11.61	PEAK
7236	36.37	11.24	V	47.61	54	6.39	AV

Note:1: Total=Reading+Correct factor.
2: 2462 MHz was fundamental signal which can be ignored.
3: Other harmonics are lower than background noise.

802.11g; traffic mode; Ch6

Frequency (MHz)	Reading (dBuV)	Correct factor(dB)	Antenna Polarity	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2437	102.46	-3.49	Horizontal	98.97	/	/	PEAK
2437	101.12	-3.49	H	97.63	/	/	AV
4874	62.86	4.81	H	67.67	74	6.33	PEAK
4874	47.02	4.81	H	51.83	54	2.17	AV
7311	53.15	11.56	H	64.71	74	9.29	PEAK
7311	37.14	11.56	H	48.70	54	5.30	AV
2437	101.74	-3.49	Vertical	98.25	/	/	PEAK
2437	100.02	-3.49	V	96.53	/	/	AV
4874	60.95	4.81	V	65.76	74	8.24	PEAK
4874	45.13	4.81	V	49.94	54	2.06	AV
7311	52.28	11.56	V	63.84	74	10.16	PEAK
7311	36.12	11.56	V	47.68	54	6.32	AV

Note:1: Total=Reading+Correct factor.
2: 2462 MHz was fundamental signal which can be ignored.
3: Other harmonics are lower than background noise.

802.11g; traffic mode; Ch11

Frequency (MHz)	Reading (dBuV)	Correct factor(dB)	Antenna Polarity	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2462	102.32	-3.13	Horizontal	99.19	/	/	PEAK
2462	100.65	-3.13	H	97.52	/	/	AV
4924	62.70	5.15	H	67.85	74	6.15	PEAK
4924	47.73	5.15	H	52.88	54	1.12	AV
7386	51.40	12.01	H	63.41	74	10.59	PEAK
7386	37.63	12.01	H	49.64	54	4.36	AV
2462	101.42	-3.13	Vertical	94.03	/	/	PEAK
2462	98.93	-3.13	V	93.32	/	/	AV
4924	62.67	5.15	V	67.82	74	6.18	PEAK
4924	47.38	5.15	V	52.53	54	1.47	AV
7386	51.62	12.01	V	63.63	74	10.37	PEAK
7386	36.98	12.01	V	48.99	54	5.01	AV

Note:1: Total=Reading+Correct factor.
2: 2462 MHz was fundamental signal which can be ignored.
3: Other harmonics are lower than background noise.

802.11n; traffic mode; Ch1

Frequency (MHz)	Reading (dBuV)	Correct factor(dB)	Antenna Polarity	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2412	99.38	-3.54	Horizontal	95.84	/	/	PEAK
2412	97.57	-3.54	H	94.03	/	/	AV
4824	62.23	4.76	H	66.99	74	7.01	PEAK
4824	47.67	4.76	H	52.43	54	1.57	AV
7236	50.41	11.24	H	61.65	74	12.35	PEAK
7236	37.50	11.24	H	48.74	54	5.26	AV
2412	98.57	-3.54	Vertical	95.03	/	/	PEAK
2412	97.86	-3.54	V	94.32	/	/	AV
4824	61.67	4.76	V	66.43	74	7.57	PEAK
4824	47.38	4.76	V	52.14	54	1.86	AV
7236	50.58	11.24	V	61.82	74	12.18	PEAK
7236	36.78	11.24	V	48.02	54	5.98	AV

Note:1: Total=Reading+Correct factor.
2: 2412 MHz was fundamental signal which can be ignored.
3: Other harmonics are lower than background noise.

802.11n; traffic mode; Ch6

Frequency (MHz)	Reading (dBuV)	Correct factor(dB)	Antenna Polarity	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2437	100.21	-3.49	Horizontal	96.72	/	/	PEAK
2437	98.68	-3.49	H	95.19	/	/	AV
4874	63.02	4.81	H	67.83	74	6.17	PEAK
4874	47.16	4.81	H	51.97	54	2.03	AV
7311	51.33	11.56	H	62.89	74	11.11	PEAK
7311	36.72	11.56	H	48.28	54	5.72	AV
2437	99.46	-3.49	Vertical	95.97	/	/	PEAK
2437	98.15	-3.49	V	94.66	/	/	AV
4874	60.98	4.81	V	65.79	74	8.21	PEAK
4874	46.74	4.81	V	51.55	54	2.45	AV
7311	51.23	11.56	V	62.79	74	11.21	PEAK
7311	35.95	11.56	V	47.51	54	6.49	AV

Note:1: Total=Reading+Correct factor.
2: 2412 MHz was fundamental signal which can be ignored.
3: Other harmonics are lower than background noise.

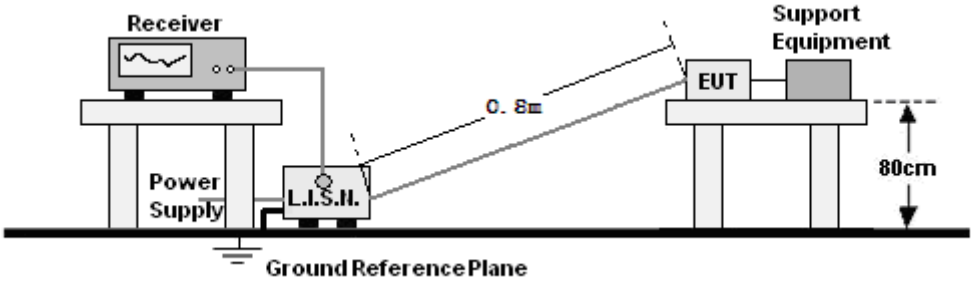
802.11n; traffic mode; Ch11

Frequency (MHz)	Reading (dBuV)	Correct factor(dB)	Antenna Polarity	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2462	100.54	-3.13	Horizontal	97.41	/	/	PEAK
2462	99.53	-3.13	H	96.23	/	/	AV
4924	63.25	5.15	H	68.40	74	5.60	PEAK
4924	46.84	5.15	H	51.99	54	2.01	AV
7386	52.38	12.01	H	64.39	74	9.61	PEAK
7386	35.49	12.01	H	47.50	54	6.50	AV
2462	99.58	-3.13	Vertical	95.03	/	/	PEAK
2462	97.87	-3.13	V	94.32	/	/	AV
4924	60.13	5.15	V	65.28	74	8.72	PEAK
4924	46.05	5.15	V	51.20	54	2.80	AV
7386	52.35	12.01	V	64.36	74	9.64	PEAK
7386	34.81	12.01	V	46.82	54	7.18	AV

Note:1: Total=Reading+Correct factor.
2: 2412 MHz was fundamental signal which can be ignored.
3: Other harmonics are lower than background noise.

11. AC POWER LINE CONDUCTED EMISSIONS

11.1 TEST SETUP



11.2 LIMITS

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

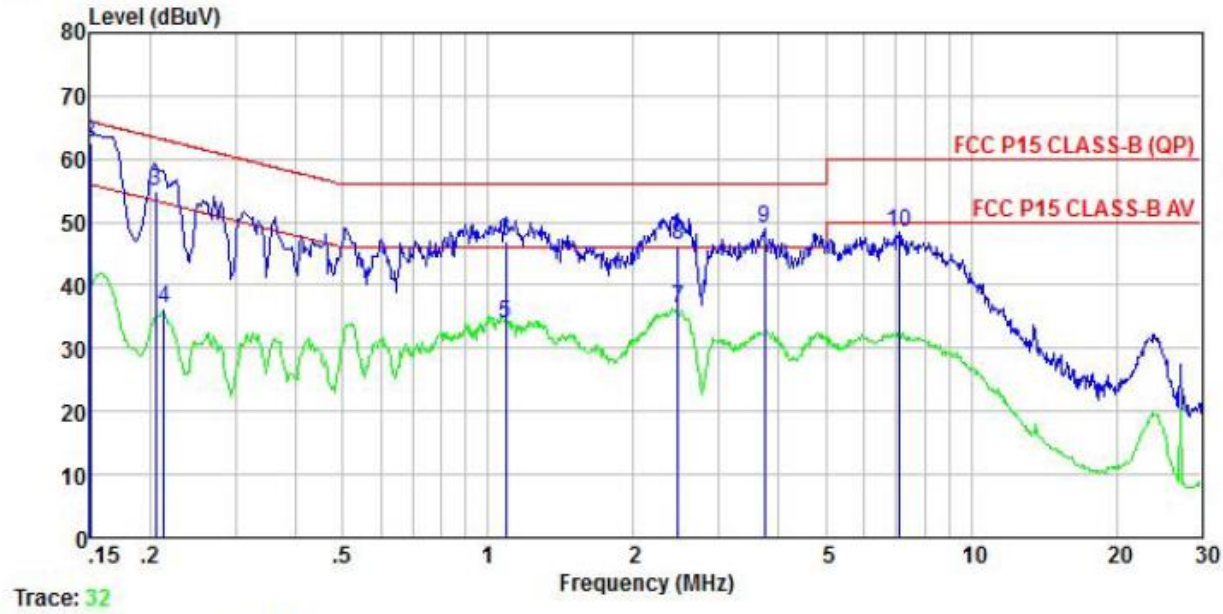
11.3 TEST PROCEDURE

According to description of ANSI C63.4: 2009 sec.13.3, the AC power line preliminary conducted emissions measurements were carried out. The preliminary conducted measurements were performed using the spectrum analyzer to observe the emission characteristics of the EUT.The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for final AC power line conducted emissions measurements.The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The EUT is connected to LISN and LISN is connected to the reference ground. All other supplemental devices are connected with EUT through other LISN. The distance between EUT and LISN is 80cm. A radio link is established between EUT and the tester. The output power of the EUT is controlled by the tester and driven to maximum value. An initial pre-scan was performed on the live L line and neutral line with peak detector (9kHz RBW). Both average detector and qausi-peak detector are performed at the frequencies with maximized peak emission.Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

11.4 RESULTS & PERFORMANCE

Only show the worst test data when eut was operated on different mode.
EUT operation mode : 11b(Ch1/Ch6/Ch11); 11g(Ch1/Ch6/Ch11); 11n(Ch1/Ch6/Ch11).

802.11b; traffic mode; Ch1
LISN:LINE

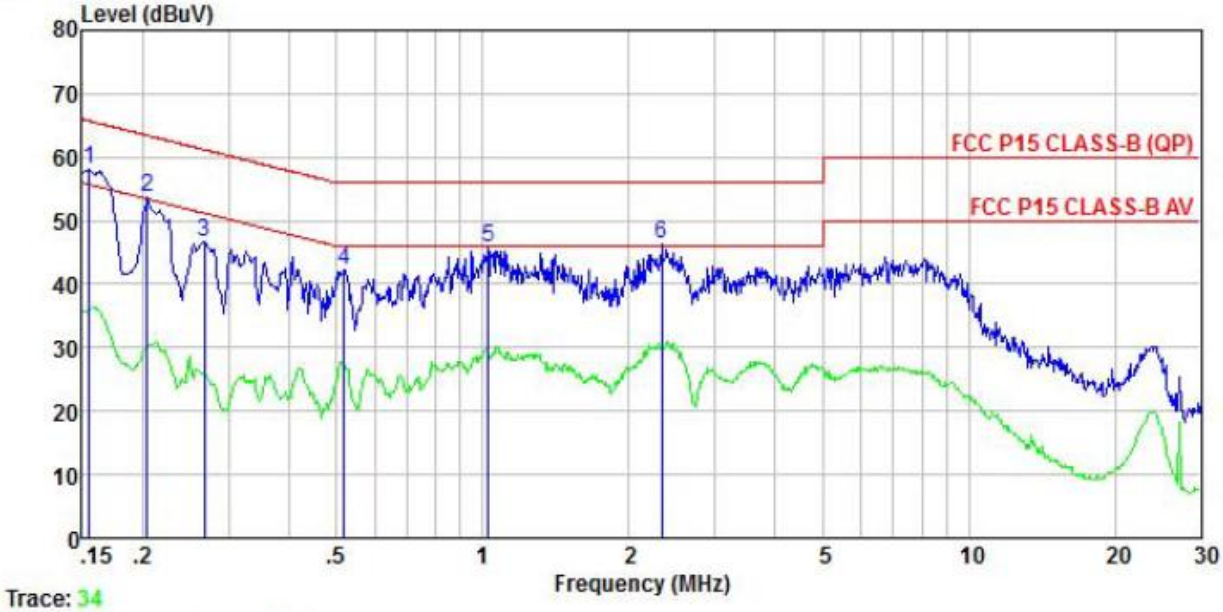


Trace: 32

Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(L)-20120730 LINE
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : wifi 11b ch1
Memo :

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.15	29.00	10.36	0.09	0.00	39.45	56.00	-16.55	Average
2 pp	0.15	52.16	10.36	0.09	0.00	62.61	66.00	-3.39	QP
3	0.21	44.35	10.42	0.22	0.00	54.99	63.41	-8.42	QP
4	0.21	25.54	10.43	0.22	0.00	36.19	53.09	-16.90	Average
5	1.09	23.38	10.52	0.14	0.00	34.04	46.00	-11.96	Average
6	1.09	36.29	10.52	0.14	0.00	46.95	56.00	-9.05	QP
7 av	2.47	25.57	10.52	0.15	0.00	36.24	46.00	-9.76	Average
8	2.47	35.62	10.52	0.15	0.00	46.29	56.00	-9.71	QP
9 pk	3.74	38.43	10.52	0.14	0.00	49.09	56.00	-6.91	Peak
10	7.10	37.76	10.46	0.32	0.00	48.54	60.00	-11.46	Peak

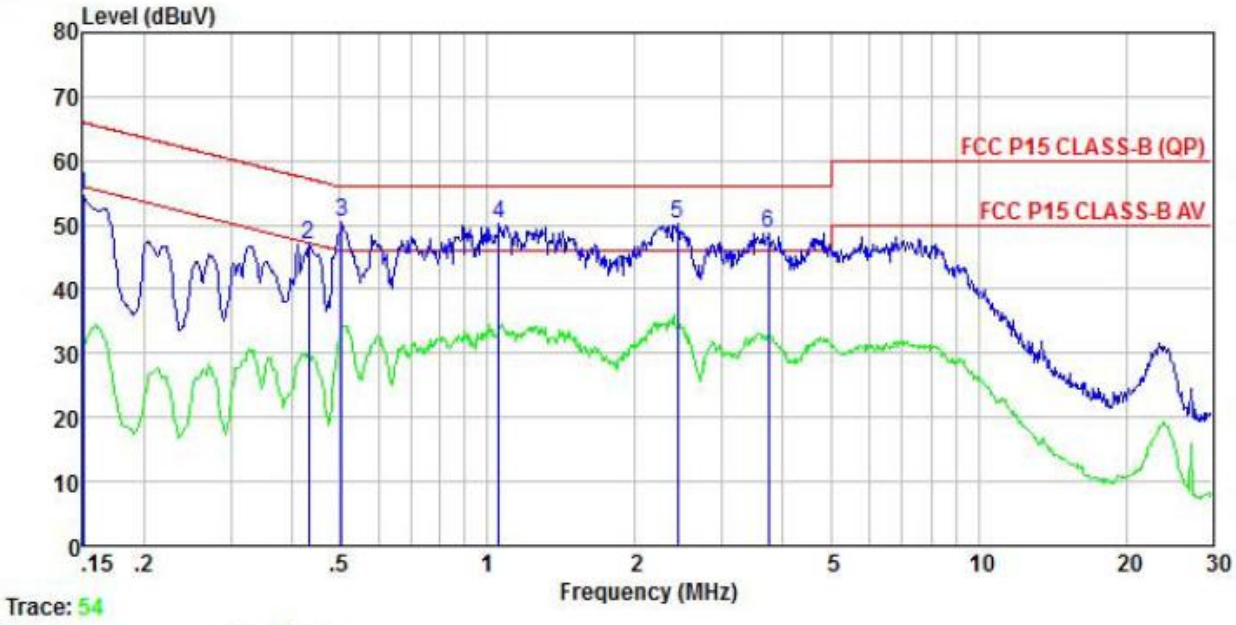
802.11b; traffic mode; Ch1
LISN:NEUTRAL



Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(N)-20120730 NEUTRAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : wifi 11b ch1
Memo :

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1 pp	0.15	47.71	10.29	0.09	0.00	58.09	65.74	-7.65	Peak
2	0.20	42.97	10.43	0.22	0.00	53.62	63.45	-9.83	Peak
3	0.27	36.09	10.43	0.19	0.00	46.71	61.20	-14.49	Peak
4	0.52	31.62	10.41	0.10	0.00	42.13	56.00	-13.87	Peak
5	1.03	35.43	10.31	0.14	0.00	45.88	56.00	-10.12	Peak
6	2.33	35.76	10.32	0.15	0.00	46.23	56.00	-9.77	Peak

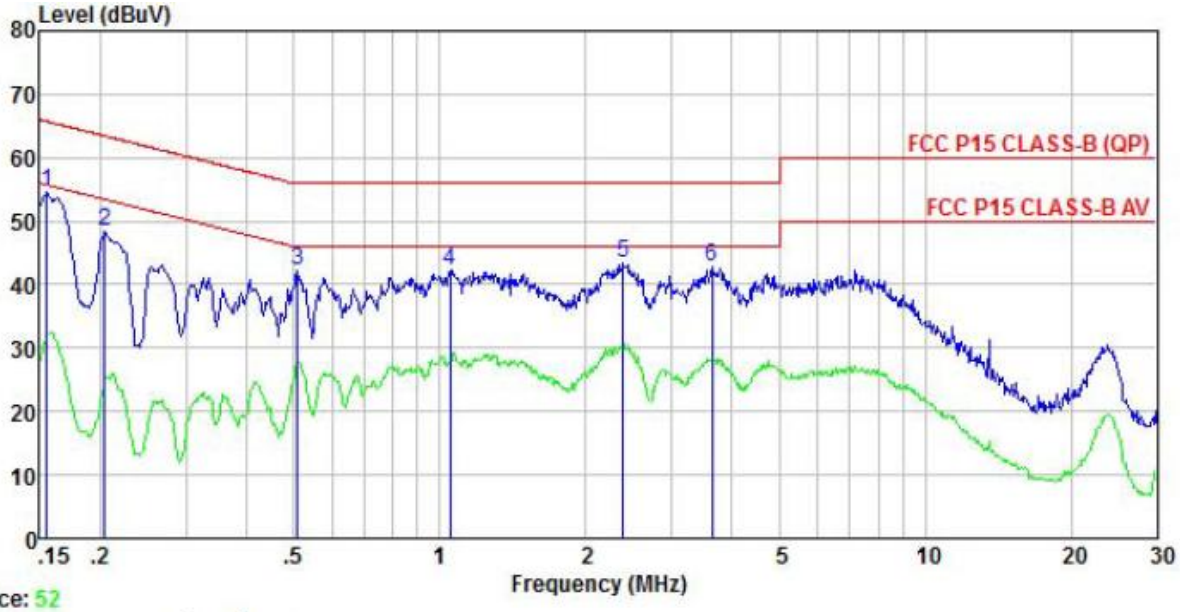
802.11g; traffic mode; Ch11
LISN:LINE



Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(L)-20120730 LINE
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : wifi 11g ch11
Memo :

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.15	44.07	10.36	0.09	0.00	54.52	66.00	-11.48	Peak
2	0.43	36.27	10.55	0.13	0.00	46.95	57.20	-10.25	Peak
3 pp	0.50	39.85	10.56	0.10	0.00	50.51	56.00	-5.49	Peak
4	1.05	39.44	10.52	0.14	0.00	50.10	56.00	-5.90	Peak
5	2.43	39.40	10.52	0.15	0.00	50.07	56.00	-5.93	Peak
6	3.74	38.19	10.52	0.14	0.00	48.85	56.00	-7.15	Peak

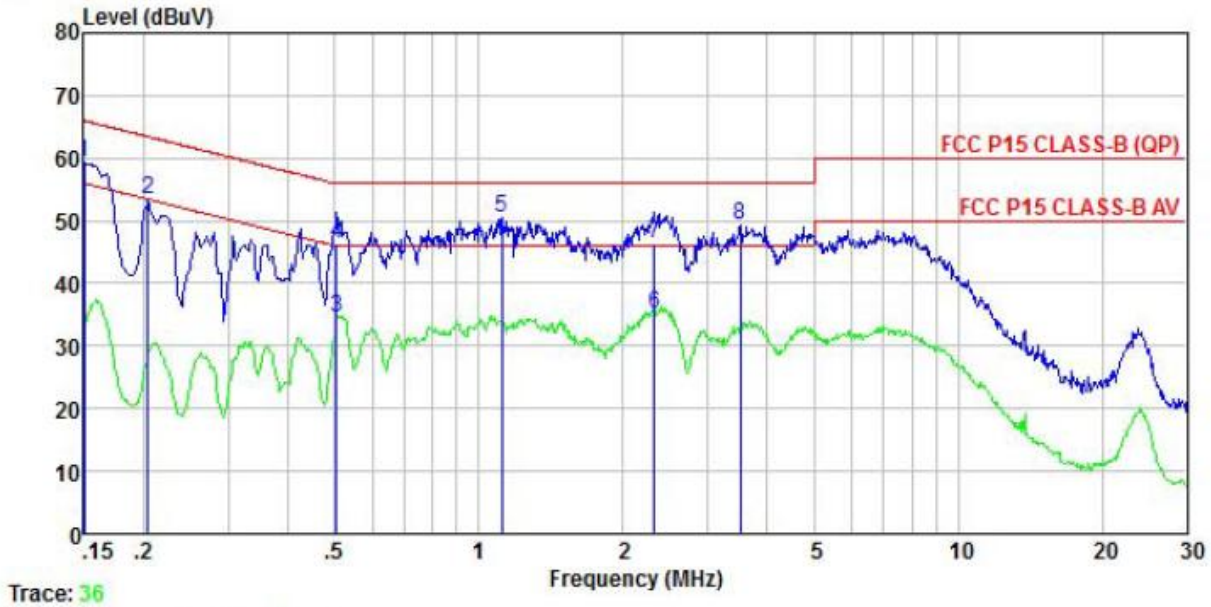
802.11g; traffic mode; Ch11
LISN:NEUTRAL



Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(N)-20120730 NEUTRAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : wifi 11g ch11
Memo :

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1 pp	0.15	44.13	10.29	0.09	0.00	54.51	65.74	-11.23	Peak
2	0.20	37.91	10.43	0.22	0.00	48.56	63.45	-14.89	Peak
3	0.51	31.59	10.41	0.10	0.00	42.10	56.00	-13.90	Peak
4	1.05	31.76	10.31	0.14	0.00	42.21	56.00	-13.79	Peak
5	2.38	32.79	10.32	0.15	0.00	43.26	56.00	-12.74	Peak
6	3.64	32.34	10.32	0.14	0.00	42.80	56.00	-13.20	Peak

802.11n; traffic mode; Ch6
LISN:LINE

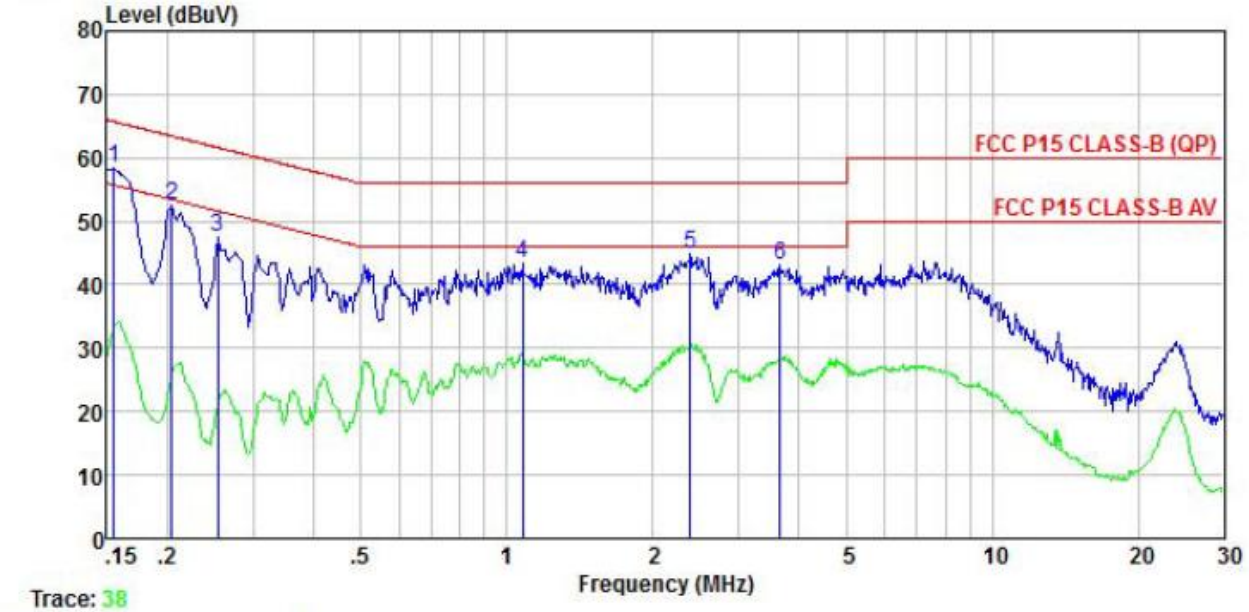


Trace: 36

Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(L)-20120730 LINE
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : wifi 11n ch6
Memo :

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.15	48.83	10.36	0.09	0.00	59.28	66.00	-6.72	Peak
2	0.20	42.78	10.42	0.22	0.00	53.42	63.45	-10.03	Peak
3	0.50	23.77	10.56	0.10	0.00	34.43	46.00	-11.57	Average
4	0.50	35.83	10.56	0.10	0.00	46.49	56.00	-9.51	Peak
5 pp	1.12	39.68	10.52	0.14	0.00	50.34	56.00	-5.66	Peak
6 av	2.32	24.38	10.52	0.15	0.00	35.05	46.00	-10.95	Average
7 qp	2.32	35.56	10.52	0.15	0.00	46.23	56.00	-9.77	QP
8	3.51	38.58	10.52	0.14	0.00	49.24	56.00	-6.76	Peak

802.11n; traffic mode; Ch6
LISN:NEUTRAL



Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(N)-20120730 NEUTRAL
EUT :
Model Name :
Temp/Humi : 23 ℃ /52 %
Power Rating: AC 120V/60Hz
Mode : wifi 11n ch6
Memo :

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1 pp	0.15	47.97	10.29	0.09	0.00	58.35	65.74	-7.39	Peak
2	0.20	41.95	10.43	0.22	0.00	52.60	63.45	-10.85	Peak
3	0.25	36.92	10.43	0.20	0.00	47.55	61.64	-14.09	Peak
4	1.08	33.07	10.31	0.14	0.00	43.52	56.00	-12.48	Peak
5	2.38	34.29	10.32	0.15	0.00	44.76	56.00	-11.24	Peak
6	3.66	32.69	10.32	0.14	0.00	43.15	56.00	-12.85	Peak

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Please refer to the file named “JNF-Z-220X _Part 15C Setup Photos”.

APPENDIX 2 PHOTOGRAPHS OF EUT

Please refer to the two files named “JNF-Z-220X _EUT External Photos” and “JNF-Z-220X _EUT Internal Photos”.

---End of the report----