Nemko Korea Co., Ltd.

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FCC and IC EVALUATION REPORT FOR CERTIFICATION

Applicant :
YAMAHA CORPORATION
10-1, Nakazawa-Cho, NaKa-Ku, Hamamatsu -Shi, Shizuoka-Ken, 430-8650, Japan
Attn. : Naohiro Emoto

Dates of Issue : July 28, 2022
Test Report No. : NK-21-R-025-3
Test Site : Nemko Korea Co., Ltd.

FCC ID	**A6RCS500**
IC	**740B-CS500**
Brand Name	YAMAHA
Contact Person	**YAMAHA CORPORATION** **10-1, Nakazawa-Cho, Naka-Ku, Hamamatsu-Shi, Shizuoka-Ken, 430-8650, Japan** **Naohiro Emoto** **Telephone No. : +81-53-460-2812**

Applied Standard:	FCC 47 CFR Part 15.247 IC RSS-247 Issue 2 and IC RSS-GEN Issue 5
Classification:	Digital Transmission System (DTS)
EUT Type:	VIDEO CONFERENCE SYSTEM

The device bearing the brand name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. The client should not use it to claim product endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample.

I attest to the accuracy of data and all measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Tested By : Yonghwan Kim
Test Engineer

Reviewed By : Hoonpyo Lee
Technical Manager

Revision History

Rev.	Issue Date	Revisions	Revised By
00	July 28, 2022	Initial issue	

TABLE OF CONTENTS

1. SCOPE

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC part 15 and IC RSS-247 Issue2.

Responsible Party :	YAMAHA CORPORATION 10-1, Nakazawa-Cho, Naka-Ku, Hamamatsu-Shi, Shizuoka-Ken, 430-8650, Japan
Contact Person :	Naohiro Emoto
Manufacturer :	YAMAHA CORPORATION 10-1, Nakazawa-Cho, Naka-Ku, Hamamatsu-Shi, Shizuoka-Ken, 430-8650, Japan

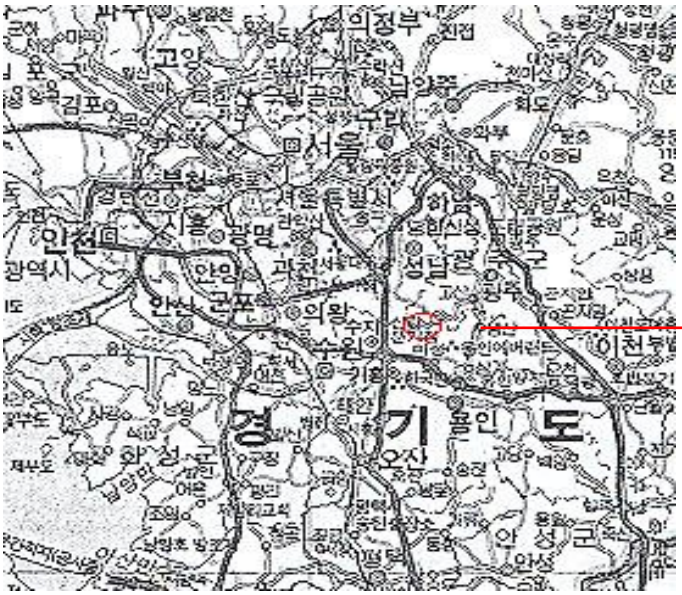
- FCC ID: A6RCS500
- IC: 740B-CS500
- Model: CS-500
- HVIN: CS-500
- Brand Name: YAMAHA
- EUT Type: VIDEO CONFERENCE SYSTEM
- Classification: Digital Transmission System (DTS)
- Applied Standard: FCC 47 CFR Part 15.247
  IC RSS-247 Issue 2 and IC RSS-GEN Issue 5
- Test Procedure(s): ANSI C63.10-2013
  KDB 558074 D01 15.247 Meas Guidance v05r02
- Dates of Test: June 13, 2022 ~ July 18, 2022
- Place of Test: Nemko Korea Co., Ltd.

2. INTRODUCTION

2.1 Test facility

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ANSI C63.4-2014), the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013) was used in determining radiated and conducted emissions emanating from **YAMAHA CORPORATION FCC ID : A6RCS500** and **IC : 740B-CS500.**

These measurement tests were conducted at ***Nemko Korea Co., Ltd. EMC Laboratory*** .
The site address 155 & 159, Osan-Ro, Mohyeon-Eup, Cheoin-Gu, Yongin-Si, Gyeonggi-Do 16885 KOREA, REPULIC OF.
The area of Nemko Korea Corporation Ltd. EMC Test Site is located in a mountain area at 80 km (48 miles) southeast and Incheon International Airport (Incheon Airport), 30 km (18miles) south-southeast from central Seoul.
It is located in the valley surrounded by mountains in all directions where ambient radio signal conditions are quiet and a favorable area to measure the radio frequency interference on open field test site for the computing and ISM devices manufactures.
The detailed description of the measurement facility was found to be in compliance with the requirements of ANSI C63.4-2014 according to §2.948.



Nemko Korea Co., Ltd.
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Fig. 1. The map above shows the Seoul in Korea vicinity area.
The map also shows Nemko Korea Corporation Ltd. EMC Lab. and Incheon Airport.

2.2 Accreditation and listing

Accreditation type		Accreditation number
	CAB Accreditation for DOC	Designation No. KR0026
	KOLAS Accredited Lab. (Korea Laboratory Accreditation Scheme)	Registration No. KT155
	Canada IC Registered site	Site No. 2040E
	VCCI registration site(RE/CE/Telecom CE)	Member No. 2118
	EMC CBTL	TL124
	KCC(RRL)Designated Lab.	Registration No. KR0026

3. TEST CONDITIONS & EUT INFORMATION

3.1 Operation During Test

The EUT is the transceiver which is WiFi supporting 802.11b/g/n(20, 40MHz) mode.
The Laptop was used to control the EUT to transmit the wanted TX channel constantly (duty cycle< 98%) by the testing program (QRCT) supported by manufacturer.
The operating voltage of EUT was 20 Vdc supplied from AC/DC adapter

The EUT was tested at the lowest, middle and the highest channels with the maximum output power in accordance with the manufacturer's specifications. The worst data were recorded in the report.

3.1.1 Table of test power setting

Frequency	Mode	Power setting Level (1TX)
2 412 MHz	802.11b	5
	802.11g	7
	802.11n (20 MHz)	7
2 437 MHz	802.11b	5
	802.11g	7
	802.11n (20 MHz)	7
2 462 MHz	802.11b	5
	802.11g	7
	802.11n (20 MHz)	7
2 422MHz	802.11n (40 MHz)	7
2 437 MHz		7
2 452 MHz		7

3.1.2 Table of test frequency

Frequency band	Mode	Test Channel (CH)	Frequency (MHz)
2.4 GHz	802.11b,g,n (20 MHz)	1	2 412
		6	2 437
		11	2 462
	802.11n (40 MHz)	3	2 422
		6	2 437
		9	2 452

3.1.3 Antenna information

Frequency band	Mode	Data rate	Antenna TX mode	Beamforming
2.4 GHz	802.11b	All	■ 1TX, □ 2TX	□Yes, ■No
	802.11g	All	■ 1TX, □ 2TX	□Yes, ■No
	802.11n (20 MHz)	MCS 0~7	■ 1TX, □ 2TX	□Yes, ■No
	802.11n (40 MHz)	MCS 0~7	■ 1TX, □ 2TX	□Yes, ■No

3.1.4 Additional Information Related to Testing

The cable and attenuator loss from 30MHz to 26.5GHz was reflected in spectrum analyzer with correction factor for all conducted testing.

3.1.5 Table of test modes

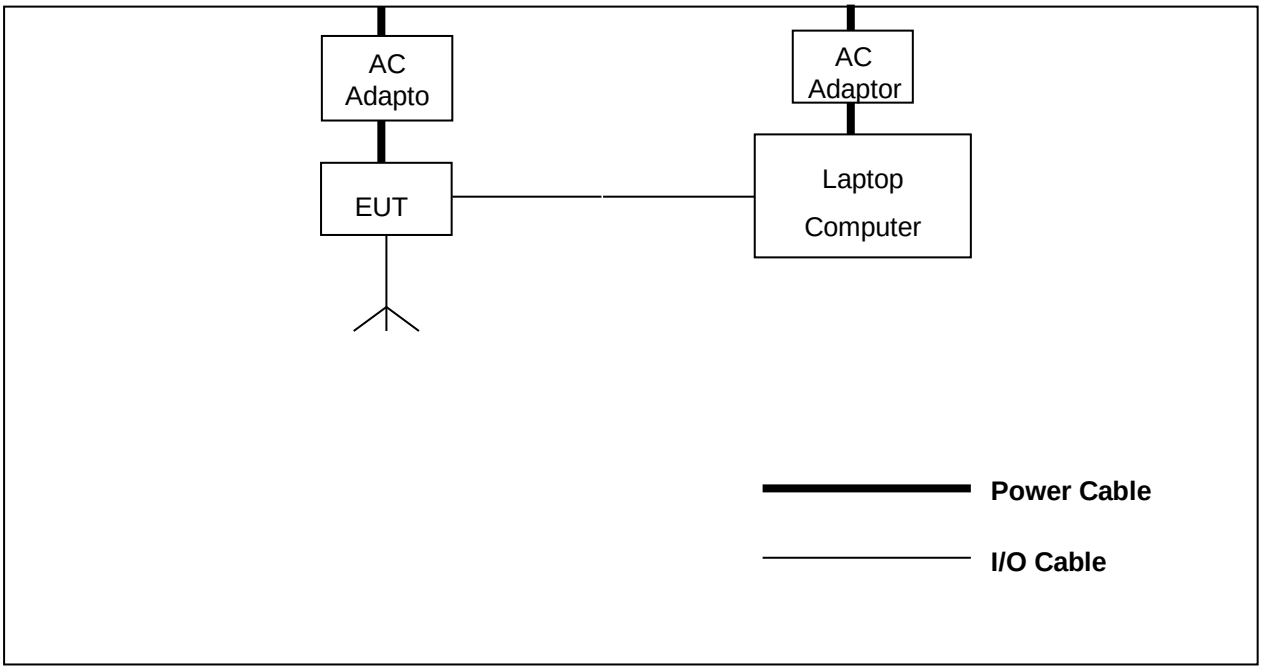
2.4GHz - Part 15.247, RSS-247 Issue 2 and RSS-GEN Issue 5			
Test Items	Mode	*Data rate (Mbps)	Test Channel (CH)
Conducted Emissions	802.11n (20 MHz)	MCS7	1
Radiated Emissions	802.11g	54	1
6 dB Bandwidth	802.11b	11	1/6/11
	802.11g	54	1/6/11
	802.11n (20 MHz)	MCS7	1/6/11
	802.11n (40 MHz)	MCS7	3/6/9
Maximum Conducted Output Power	802.11b	11	1/6/11
	802.11g	54	1/6/11
	802.11n (20 MHz)	MCS7	1/6/11
	802.11n (40 MHz)	MCS7	3/6/9
Power Spectral Density	802.11b	11	1/6/11
	802.11g	54	1/6/11
	802.11n (20 MHz)	MCS7	1/6/11
	802.11n (40 MHz)	MCS7	3/6/9
Conducted Spurious Emission, Radiated Spurious Emission, Band edge Emission	802.11b	11	1/6/11
	802.11g	54	1/6/11
	802.11n (20 MHz)	MCS7	1/6/11
	802.11n (40 MHz)	MCS7	3/6/9

*The worst data rate was determined by the conducted output power that generates the highest emission performing pre-scan testing in all data rates of each mode.

3.2 Support Equipment

EUT	YAMAHA CORPORATION Model : CS-500	S/N: Z83000387
Laptop Computer	HP Model : G62-355TU	FCC DOC S/N : CNF0489WDT
AC/DC Adapter	HP Model : PPP009D 1.5 m unshielded power cable	FCC DOC S/N : WBGSV0ACXZH162

3.3 Setup Drawing



3.4 EUT Information

The EUT is the **YAMAHA CORPORATION VIDEO CONFERENCE SYSTEM FCC ID: A6RCS500, IC: 740B-CS500.**

Specifications:

EUT Type	VIDEO CONFERENCE SYSTEM
Model Name	CS-500
Brand Name	YAMAHA
Frequency of Operation	802.11b,g,n (20 MHz) : 2 412 MHz ~ 2 462 MHz 802.11n (40 MHz) : 2 422 MHz ~ 2 452 MHz
Maximum Conducted Output Power	802.11b : 13.40 dBm 802.11g : 13.74 dBm 802.11n (20 MHz) : 13.80 dBm 802.11n (40 MHz) : 13.73 dBm
FCC Classification	Digital Transmission System (DTS)
Number of Channels	802.11b,g,n (20 MHz): 11 CH 802.11n (40 MHz): 7 CH
Modulations	DSSS(BPSK,QPSK,CCK) for 802.11b OFDM(BPSK,QPSK,16QAM,64QAM) for 802.11g/n
Antenna Gain (peak)	Ant : 2.5 dBi
Antenna Setup	802.11b/g/n (20, 40 MHz) : 1TX / 1RX
EUT Rated Voltage	20 Vdc, 2.1 A, 42 W
EUT Test Voltage	20 Vdc, 2.1 A, 42 W
Temperature Range	-10 ℃ ~ +70 ℃
HVIN (Hardware Version Number)	CS-500
FVIN (Firmware Version Identification Number)	CS-500
Remarks	-

4. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specification:

Name of Test	FCC Paragraph No.	IC Paragraph No.	Result	Remark
Conducted Emission	15.207	RSS-GEN Issue 5 8.8	Complies	
Radiated Emission	15.209	RSS-GEN Issue 5 8.9	Complies	
6 dB Bandwidth	15.247(a)(2)	RSS-247 Issue 2 5.2	Complies	
Maximum Conducted Output Power	15.247(b)(3)	RSS-247 Issue 2 5.4	Complies	
Power Spectral Density	15.247(e)	RSS-247 Issue 2 5.2	Complies	
Conducted Spurious Emission	15.247(d)	RSS-247 Issue 2 5.5	Complies	
Radiated Spurious Emission	15.247(d)	RSS-247 Issue 2 5.5	Complies	
Maximum Permissible Exposure	1.1307(b)	RSS-102 Issue 5	Complies	

5. RECOMMENDATION/CONCLUSION

The data collected shows that the **YAMAHA CORPORATION VIDEO CONFERENCE SYSTEM FCC ID: A6RCS500, IC: 740B-CS500** is in compliance with Part 15.247 of the FCC Rule and RSS-247 Issue 2 of the IC Specification.

6. ANTENNA REQUIREMENTS

§15.203 of the FCC Rules part 15 Subpart C

: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The antenna of the **YAMAHA CORPORATION VIDEO CONFERENCE SYSTEM FCC ID: A6RCS500, IC: 740B-CS500** is **permanently attached** and there are no provisions for connection to an external antenna. It complies with the requirement of §15.203.

Used Antenna	
Model name	Max. gain (dBi)
	2.4 GHz
AFPBTCS8HOP	2.5

7. DESCRIPTION OF TESTS

7.1 Conducted Emissions

The Line conducted emission test facility is located inside a 4 x 7 x 2.5 meter shielded enclosure. It is manufactured by EM engineering. The shielding effectiveness of the shielded room is in accordance with MIL-STD-285 or NSA 65-6. A 1 m x 1.5 m wooden table 0.8 m height is placed 0.4 m away from the vertical wall and 1.5 m away from the side of wall of the shielded room. Rohde & Schwarz (ENV216) of the 50 ohm/50 µH Line Impedance Stabilization Network (LISN) are bonded to the shielded room. The EUT is powered from the Rohde & Schwarz LISN (ENV216). Power to the LISNs are filtered by high-current high insertion loss Power line filters. The purpose of filter is to attenuate ambient signal interference and this filter is also bonded to shielded enclosure. All electrical cables are shielded by tinned copper zipper tubing with inner diameter of 1 / 2 ". If DC power device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the LISNs, All interconnecting cables more than 1 meter were shortened by non-inductive bundling (serpentinefashion) to a 1 meter length. Sufficient time for EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer to determine the frequency producing the maximum EME from the EUT. The spectrum was scanned from 150 kHz to 30 MHz with 200 msec sweep time. The frequency producing the maximum level was re-examined using the EMI test receiver. (Rohde & Schwarz ESCI). The detector functions were set to CISPR quasi-peak mode & average mode. The bandwidth of receiver was set to 9 kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission. Each emission was maximized by; switching power lines; varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and of support equipment, and powering the monitor from the floor mounted outlet box and computer aux AC outlet, if applicable; whichever determined the worst case emission.
Each EME reported was calibrated using the R&S signal generator.

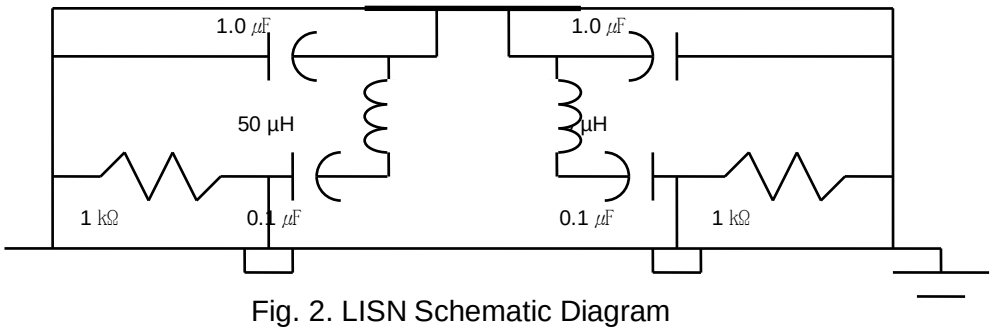


Fig. 2. LISN Schematic Diagram

7.2 Radiated Emissions

The measurement was performed at the test site that is specified in accordance with ANSI C63.10-2013.
The spurious emission was scanned from 9 kHz to 30 MHz using Loop Antenna(Rohde&Schwarz, HFH2-Z2) and 30 to 1000 MHz using Trilog broadband test antenna(Schwarzbeck, VULB 9163). Above 1 GHz, Horn antenna (Schwarzbeck HF907: up to 18 GHz, Q-par Angus QMS-00225 : 18 to 26.5 GHz) was used.
For emissions testing at below 1GHz, The test equipment was placed on turntable with 0.8 m above ground. For emission measurements above 1 GHz, The test equipment was placed on turntable with 1.5 m above ground. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The EUT, cable, wire arrangement and mode of operation that has the highest amplitude relative to the limit was selected. Then, the turn table was rotated from 0˚ to 360˚ and an antenna mast was moved from 1 m to 4 m height to maximize the suspected highest amplitude signal. The final maximized level was recorded.

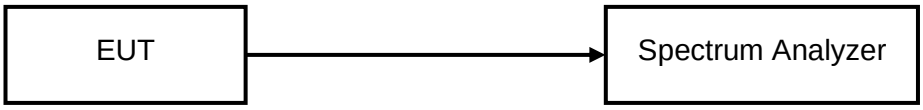
At frequencies below 1000 MHz, measurements performed using the CISPR quasi-peak detection. At frequencies above 1000 MHz, measurements performed using the peak and average measurement procedures described in ANSI 63.10-2013 section 11.12. Peak emission levels were measured by setting the analyzer RBW = 1 MHz, VBW = 3 MHz, Detector = Peak, Trace mode = max hold. Average emission levels were measured by setting the analyzer RBW = 1 MHz, VBW = 10 kHz, Detector = Peak, Trace mode = max hold. Allow max hold to run for at least 50 times (1/duty cycle) traces.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100	3
88–216	150	3
216–960	200	3
Above 960	500	3

Radiated Emissions Limits per 47 CFR 15.209(a) and RSS-GEN Issue 5 8.9

7.3 6 dB Bandwidth

Test Setup

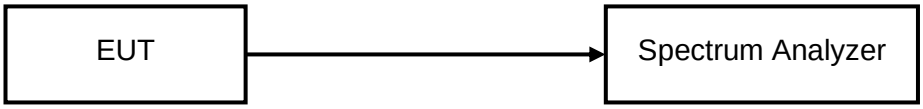


Test Procedure

EUTs 6 dB bandwidth is measured at low, middle, high channels with a spectrum analyzer connected to the antenna terminal while the EUTs operating at its maximum power control level.
The spectrum analyzer setting is as follows.
RBW = 100 kHz
VBW > 3 x RBW
Detector = Peak
Trace mode = max hold
Sweep = auto couple
The bandwidth measurement function on the spectrum analyzer is used to measure the 6 dB bandwidth.

7.4 Maximum Conducted Output Power (average)

Test Setup

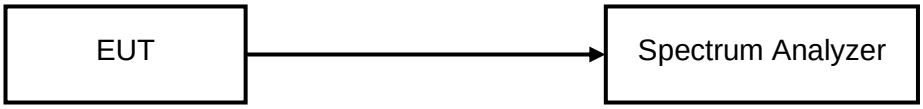


Test Procedure

EUTs Maximum Conducted Output Power (average) is measured at low, middle, high channels with a spectrum analyzer connected to the antenna terminal while the EUTs operating at its maximum power control level.
The spectrum analyzer setting is as follows.
Measure the duty cycle, x, of the transmitter output signal
Span to at least 1.5 times the OBW.
RBW = 1 – 5 % of the OBW, not to exceed 1MHz
VBW ≥ 3 x RBW.
Number of points in sweep ≥ 2 x span / RBW
Sweep time = auto couple
Detector = RMS
Trace average at least 100 traces in power averaging mode.
Add 10 log (1/x), where x is the duty cycle
Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with band limits set equal to the OBW band edges.

7.5 Maximum Power Spectral Density (average)

Test Setup

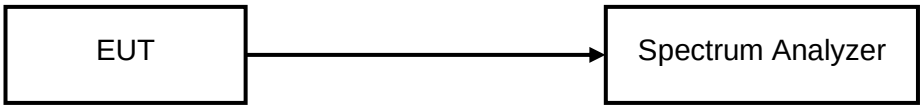


Test Procedure

EUTs Maximum Power Spectral Density (average) is measured at low, middle, high channels with a spectrum analyzer connected to the antenna terminal while the EUTs operating at its maximum power control level.
The spectrum analyzer setting is as follows.
Center frequency = DTS channel center frequency
Span = at least 1.5 times the DTS bandwidth
RBW : 3 kHz $\leq$ RBW $\leq$ 100 kHz
VBW $\geq$ 3 x RBW
Detector = power averaging (RMS)
Ensure that the number of measurement points = sweep $\geq$ 2 x span / RBW
Sweep time = auto couple
Employ trace averaging (RMS) = minimum of 100 traces
Add 10 log (1/x), where x is the duty cycle
Use the peak marker function to determine the maximum amplitude level.
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

7.6 Conducted Spurious Emissions

Test Setup



Test Procedure

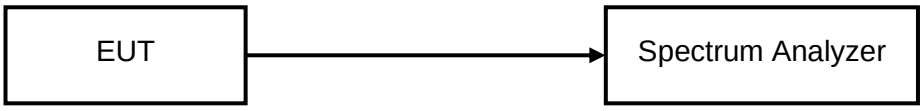
EUTs Conducted spurious emissions are measured at low, middle, high channels with a spectrum analyzer connected to the antenna terminal while the EUTs operating at its maximum power control level. The spectrum analyzer setting is as follows.

1) Reference Level
Center frequency = DTS channel center frequency
Span ≥ 1.5 x DTS bandwidth
RBW = 100 kHz
VBW ≥ 3 x RBW
Detector = peak
Sweep time = auto couple
Trace mode = max hold
Allow trace to fully stabilize.
Use the peak marker function to determine the maximum PSD level.
Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

2) Unwanted Emissions
Set the center frequency and span to encompass frequency range to be measured.
RBW = 100 kHz
VBW ≥ 3 x RBW
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.

7.7 Duty Cycle

Test Setup



Test Procedure

EUTs duty cycle are measured at lowest channel with a spectrum analyzer connected to the antenna terminal while the EUTs operating at its maximum power control level. The spectrum analyzer setting is as follows.

Center frequency = Center frequency of the transmission
Span = zero
RBW = 8 MHz
VBW = 8 MHz
Detector = peak
Sweep time = at least 3 ms
Sweep mode = Single
The marker function on the spectrum analyzer is used to determine the duty cycle.

The results of the duty cycle measurement according to the above test procedure.

	Data rate	On time (ms)	On + Off time (ms)	Duty Cycle (%)	Duty Factor (dB)
b mode	11Mbps	0.913	1.116	81.8	0.872
g mode	54Mbps	0.170	0.370	45.9	3.378
n(20 MHz)mode	MCS7	0.157	0.358	43.9	3.580
n(40 MHz)mode	MCS7	0.094	0.295	32.0	4.967

8. TEST DATA

8.1 Conducted Emissions

FCC §15.207, RSS-GEN Issue 5 8.8

Result

Frequency	Level (dBμV)		*) Factor	**) Line	Limit (dBμV)		Margin (dB)	
(MHz)	Q-Peak	Average	(dB)		Q-Peak	Average	Q-Peak	Average
0.16	52.4	32.0	9.90	L	65.6	55.6	13.2	23.6
0.17	49.6	30.0	10.00	N	64.8	54.7	15.2	24.7
0.25	39.4	21.6	9.70	N	61.7	51.6	22.3	30.0
0.36	40.6	29.9	9.80	L	58.5	48.5	17.9	18.6
0.40	47.8	38.5	9.90	L	57.7	47.7	9.9	9.2
21.72	40.2	35.4	10.20	N	60.0	50.0	19.8	14.6

Line Conducted Emissions Tabulated Data

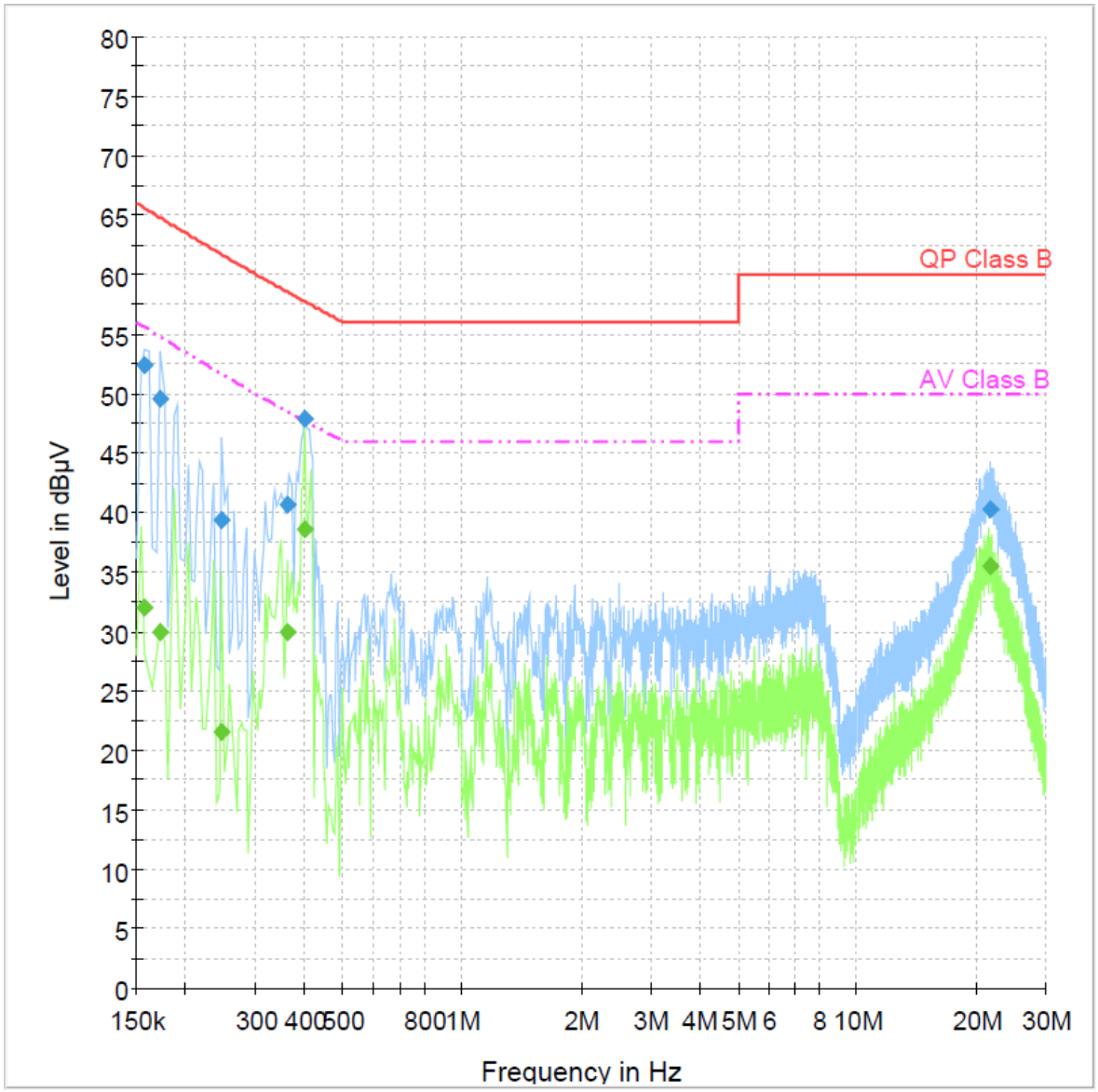
Notes:

1. Measurements using CISPR quasi-peak mode & average mode.
2. All modes of operation were investigated and the worst -case emission are reported. See attached Plots.
3. 1 channel (2 412MHz) in 802.11n (20 MHz) mode is the worst case.
*4. *) Factor = LISN + Cable Loss*
*5. **) LINE : L = Line , N = Neutral*
6. The limit is on the FCC §15.207(a) and IC RSS-GEN issue5 8.8.

PLOTS OF EMISSIONS

Worst Case

Conducted Emission at the Mains port (Line + Neutral)



TEST DATA

8.2 Radiated Emissions

FCC §15.209, IC RSS-Gen Issue 5 8.9

Result

Frequency (MHz)	Reading (dBµV)	Pol* (H/V)	mode	AF+CL+Amp (dB)**	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
30.16	60.22	V	QP	-24.4	35.82	40.0	4.18
138.10	66.41	V	QP	-27.9	38.51	43.5	4.99
222.60	47.08	V	QP	-23.8	23.28	46.0	22.72
275.63	56.90	V	QP	-22.0	34.90	46.0	11.10
720.05	44.03	H	QP	-12.2	31.83	46.0	14.17
960.01	45.40	V	QP	-9.8	35.60	56.0	20.40

Radiated Measurements at 3meters

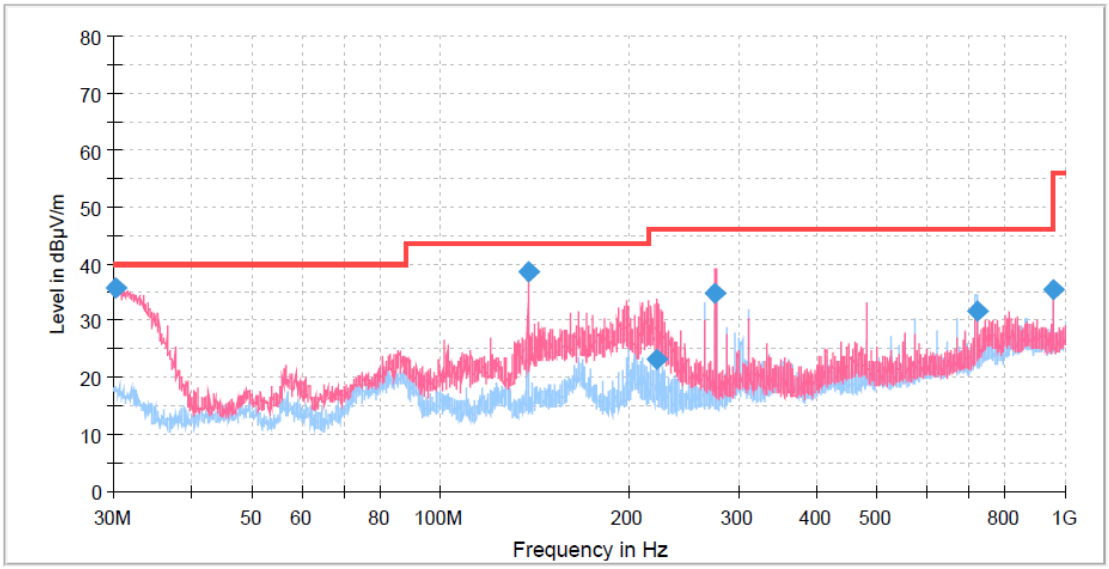
Notes:

1. *The worst-case emission was reported.*
2. **Pol. H = Horizontal, V = Vertical*
3. ***AF + CL + Amp. = Antenna Factor + Cable Loss + Amplifier.*
4. *Measurements using CISPR quasi-peak mode below 1 GHz.*
5. *The radiated emissions testing were made by rotating EUT through three orthogonal axes and rotating the receive antenna with horizontal, Vertical polarization. The worst data was recorded.*
6. *1 channel (2 412 MHz) in 802.11g mode is the worst case.*
7. *No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).*
8. *The limit is on the FCC §15.209 and RSS-Gen Issue5 8.9.*

PLOTS OF EMISSIONS

Worst Case

Radiated emission below 1GHz_ 802.11g mode 2 412 MHz



8.3 6 dB Bandwidth

FCC §15.247(a)(2), IC RSS-247 Issue 2 5.2

Test Mode : Set to Lowest channel, Middle channel and Highest channel,

802.11b mode

Channel	Frequency (MHz)	6 dB modulated bandwidth (MHz)	Limit (MHz)	Margin (MHz)	99% emission bandwidth (MHz)
Lowest	2 412	8.85	0.50	8.35	13.03
Middle	2 437	8.97	0.50	8.47	13.07
Highest	2 462	8.51	0.50	8.01	13.02

802.11g mode

Channel	Frequency (MHz)	6 dB modulated bandwidth (MHz)	Limit (MHz)	Margin (MHz)	99% emission bandwidth (MHz)
Lowest	2 412	16.48	0.50	15.98	16.48
Middle	2 437	16.48	0.50	15.98	16.47
Highest	2 462	16.48	0.50	15.98	16.47

802.11n (20 MHz) mode

Channel	Frequency (MHz)	6 dB modulated bandwidth (MHz)	Limit (MHz)	Margin (MHz)	99% emission bandwidth (MHz)
Lowest	2 412	17.71	0.50	17.21	17.67
Middle	2 437	17.71	0.50	17.21	17.67
Highest	2 462	17.69	0.50	17.19	17.66

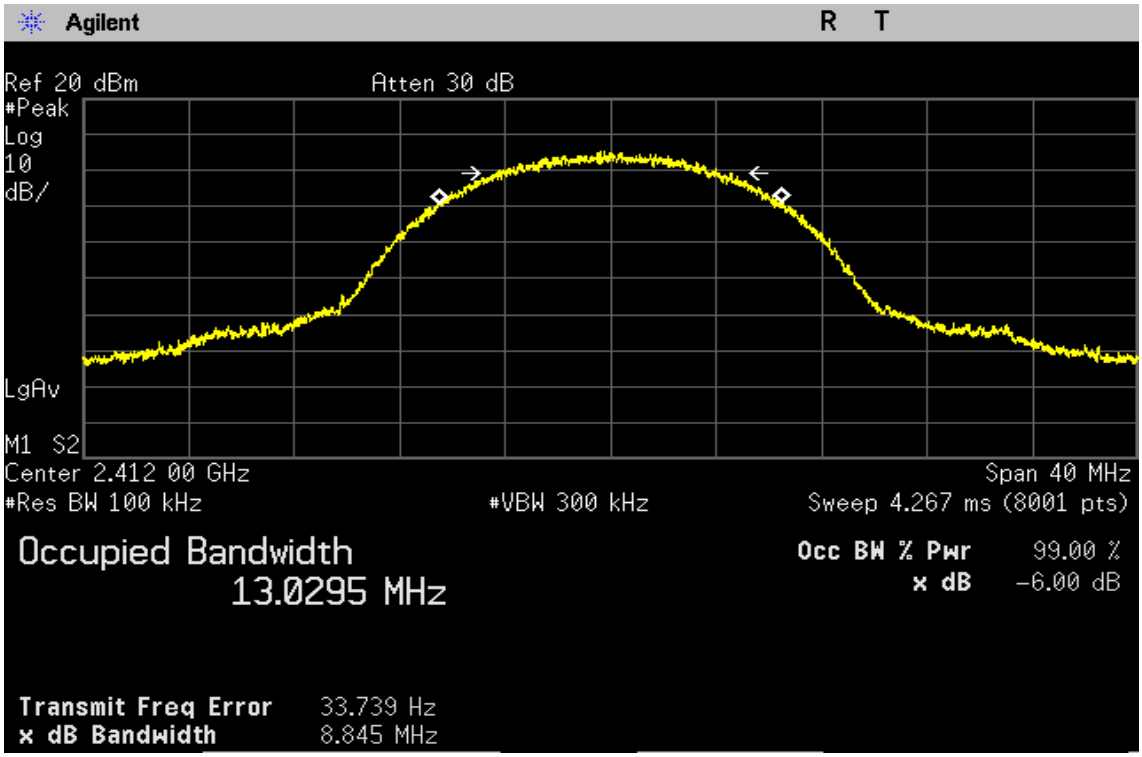
802.11n (40 MHz) mode

Channel	Frequency (MHz)	6 dB modulated bandwidth (MHz)	Limit (MHz)	Margin (MHz)	99% emission bandwidth (MHz)
Lowest	2 422	36.26	0.50	35.76	36.06
Middle	2 437	36.00	0.50	35.50	36.04
Highest	2 452	35.98	0.50	35.48	36.00

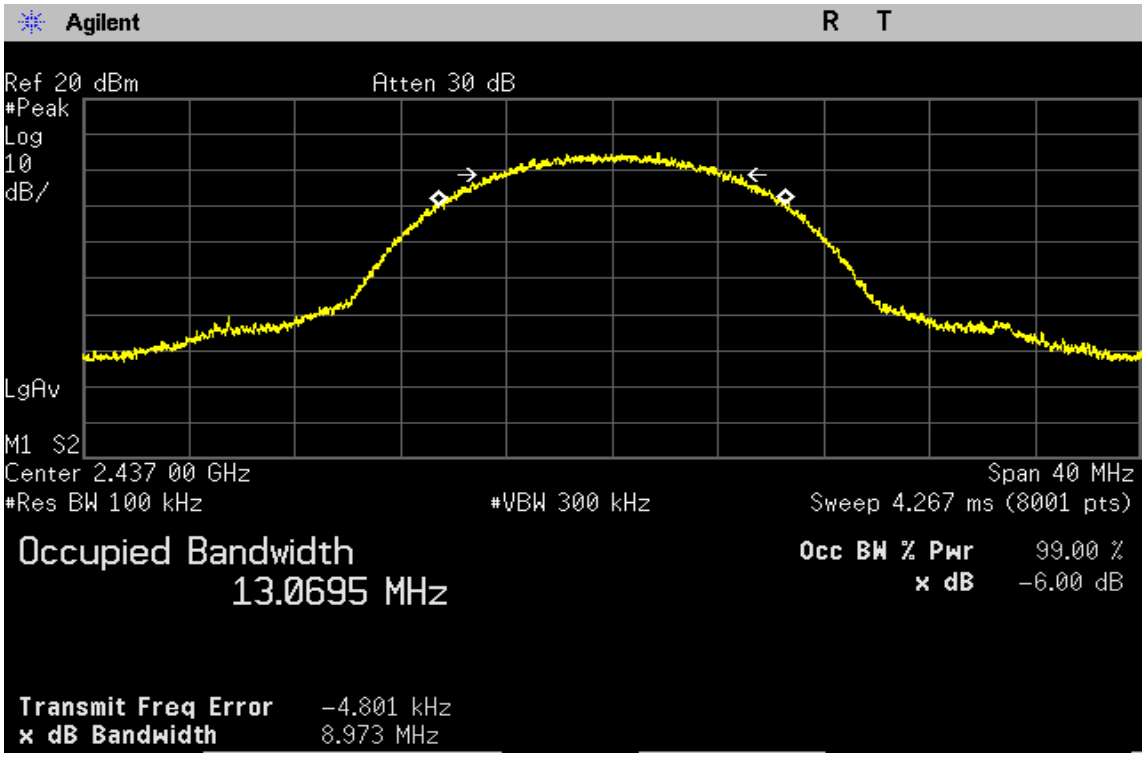
PLOTS OF EMISSIONS

802.11b mode

6 dB Bandwidth, 1 Channel (2 412 MHz)

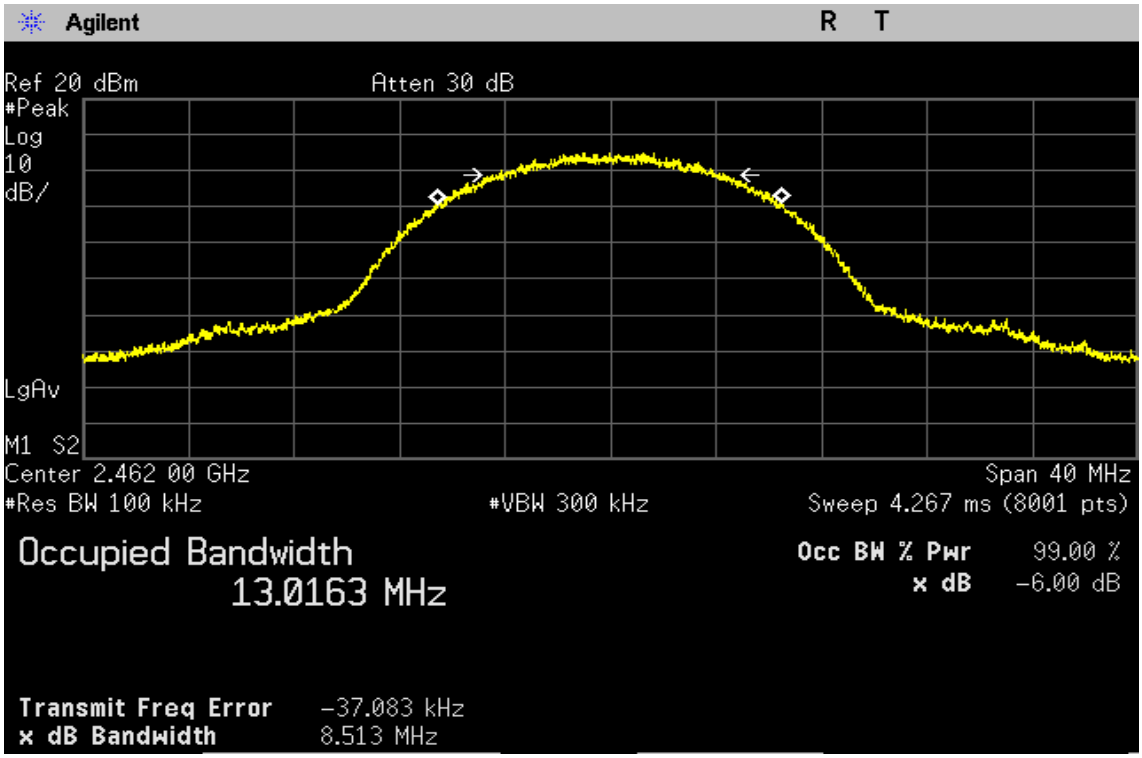


6 dB Bandwidth, 6 Channel (2 437 MHz)



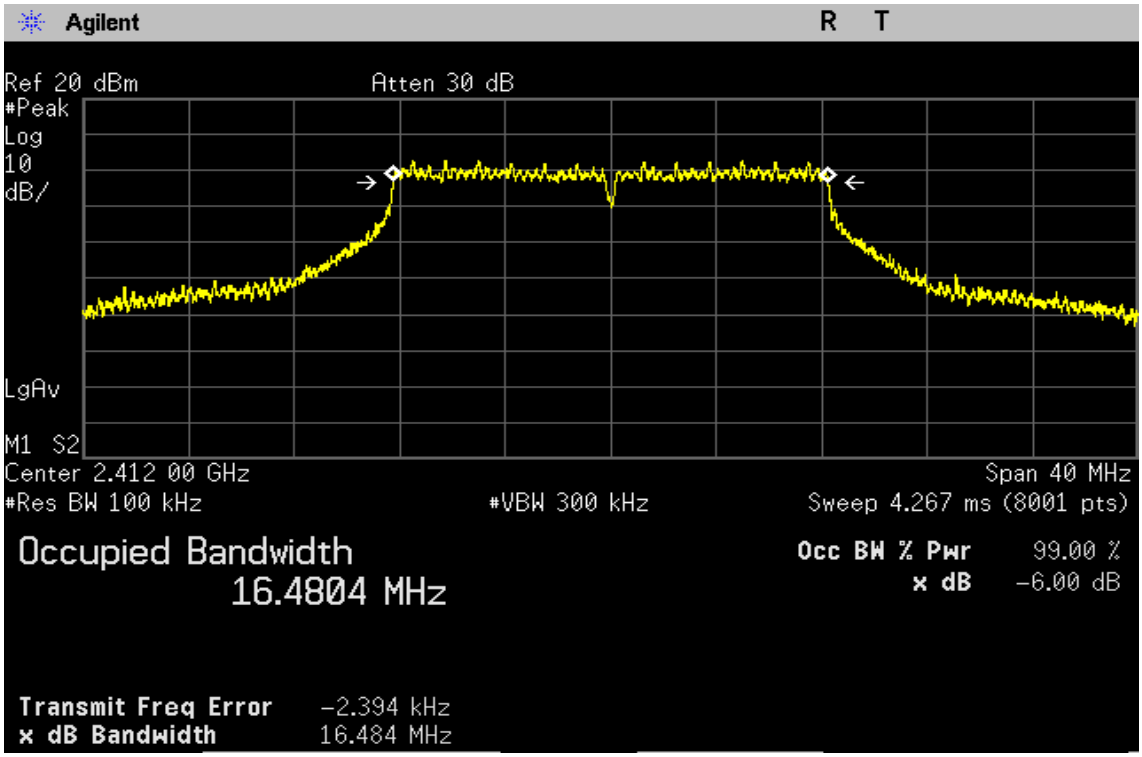
PLOTS OF EMISSIONS

6 dB Bandwidth, 11 Channel (2 462 MHz)



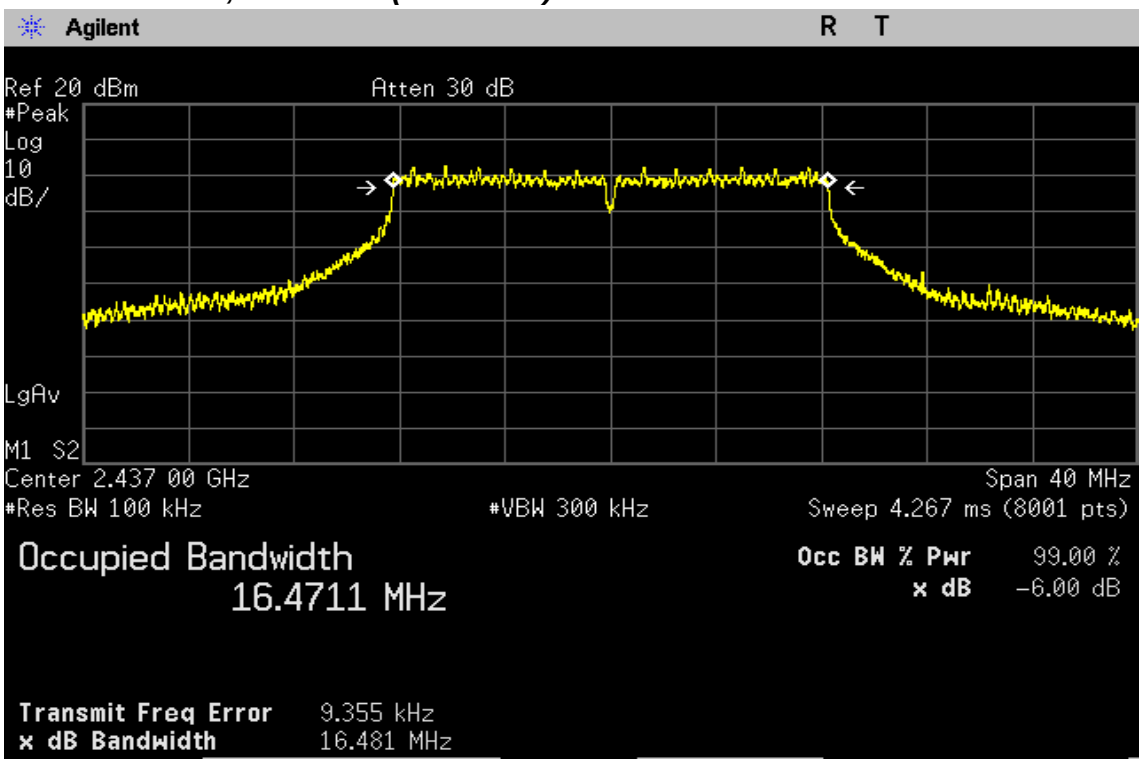
802.11g mode

6 dB Bandwidth, 1 Channel (2 412 MHz)

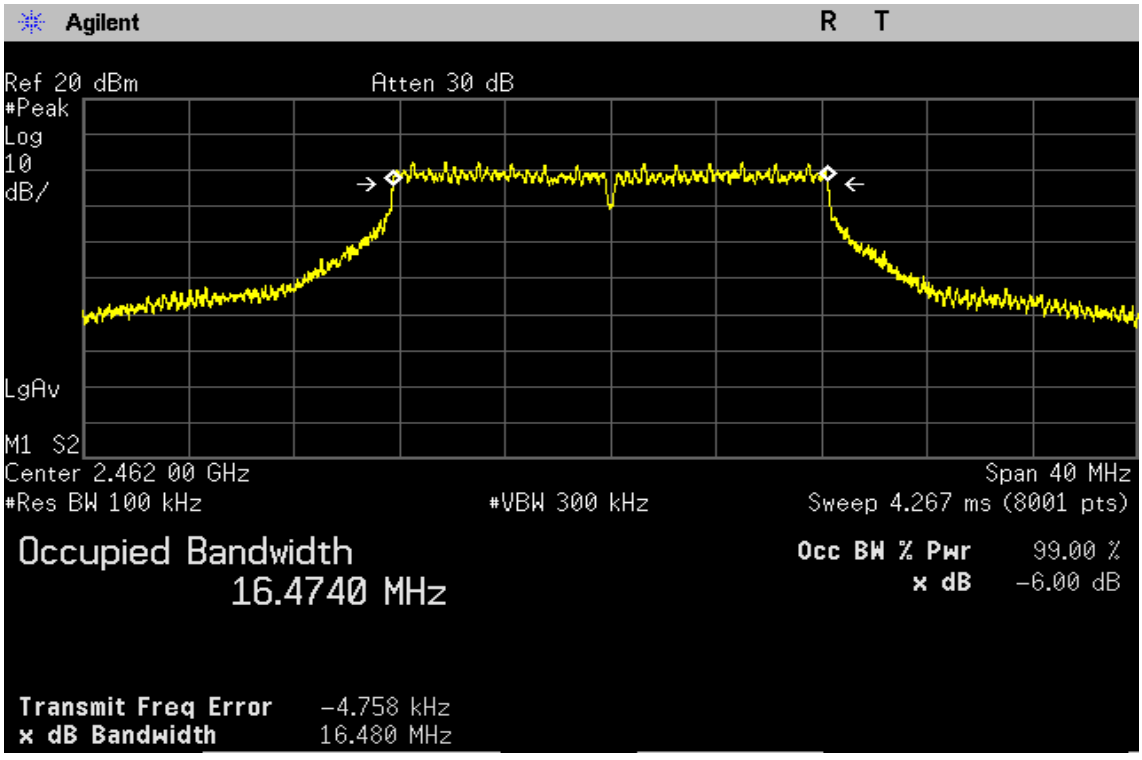


PLOTS OF EMISSIONS

6 dB Bandwidth, 6 Channel (2 437 MHz)



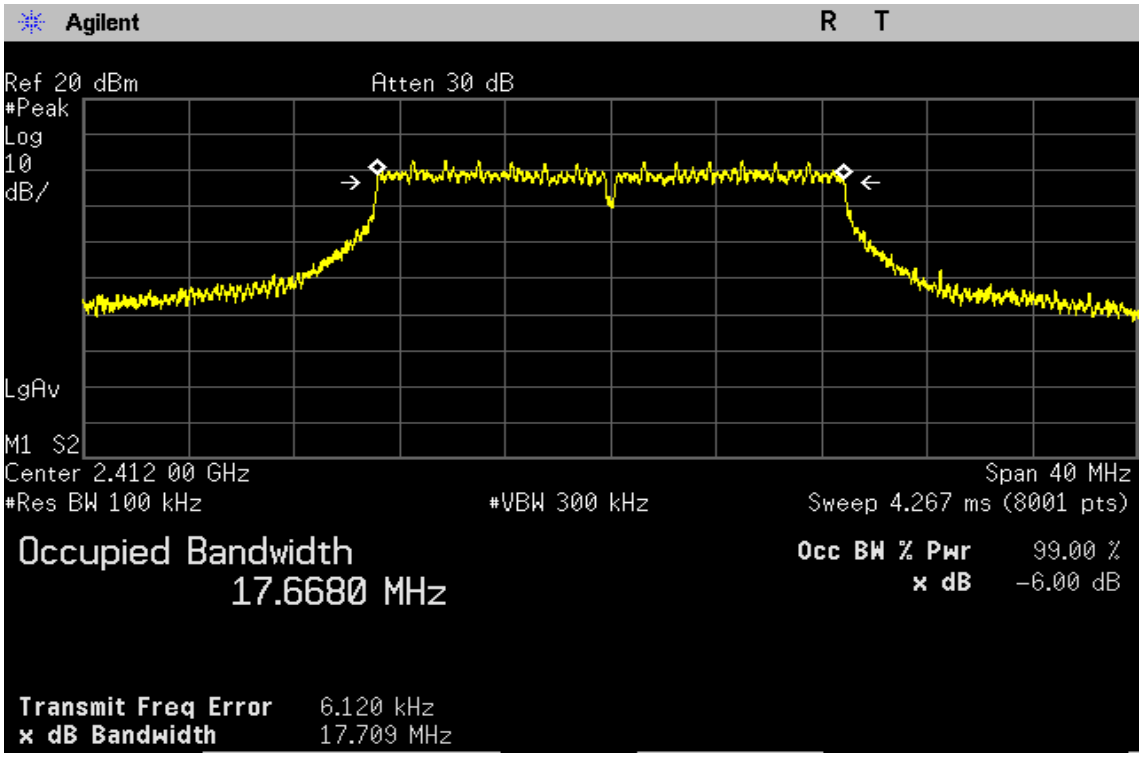
6 dB Bandwidth, 11 Channel (2 462 MHz)



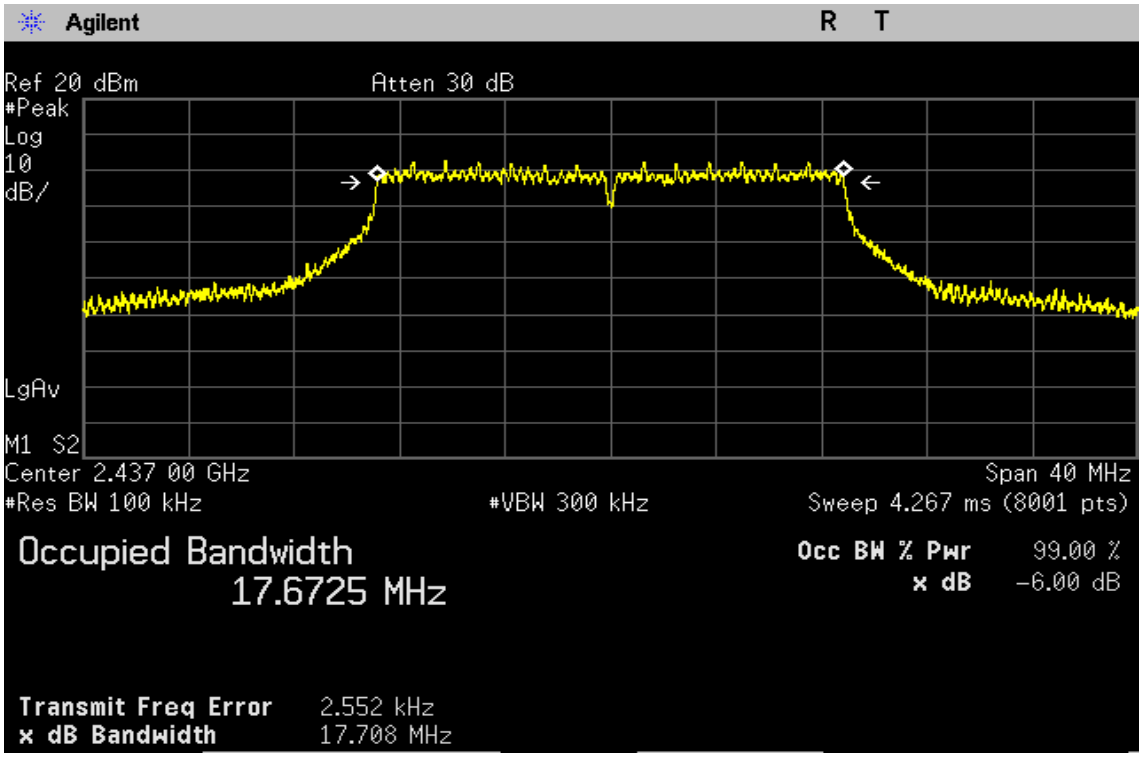
PLOTS OF EMISSIONS

802.11n (20 MHz) mode

6 dB Bandwidth, 1 Channel (2 412 MHz)

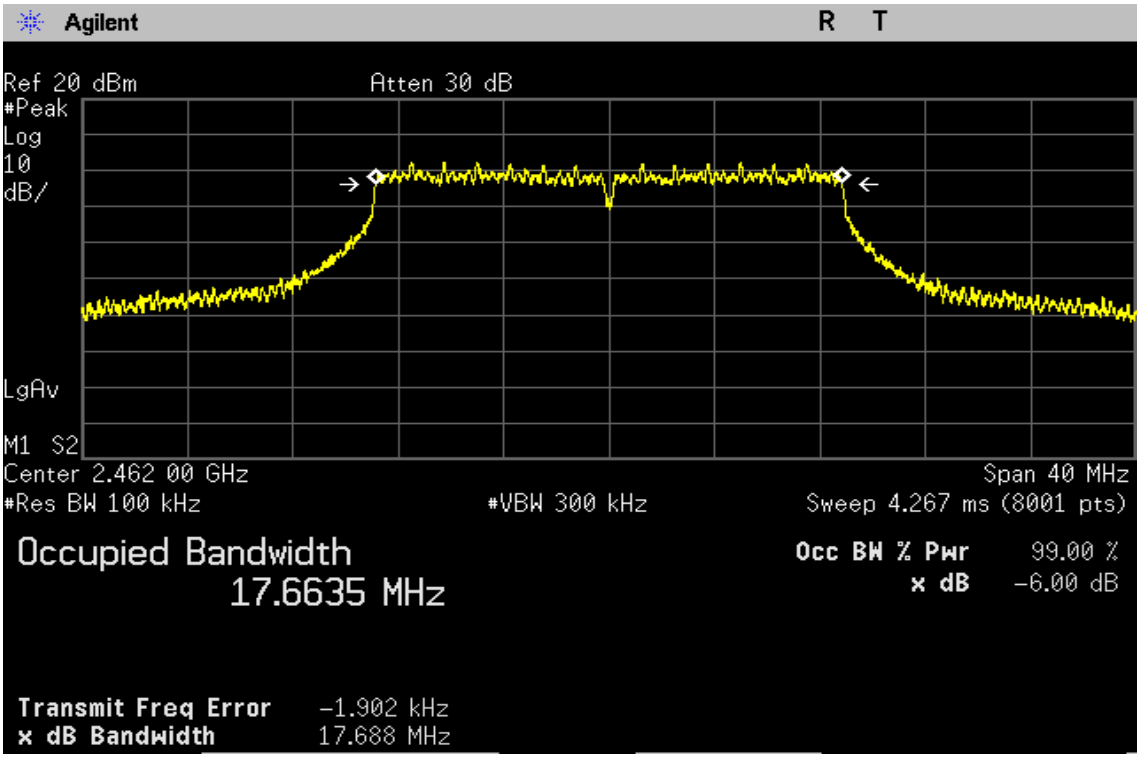


6 dB Bandwidth, 6 Channel (2 437 MHz)



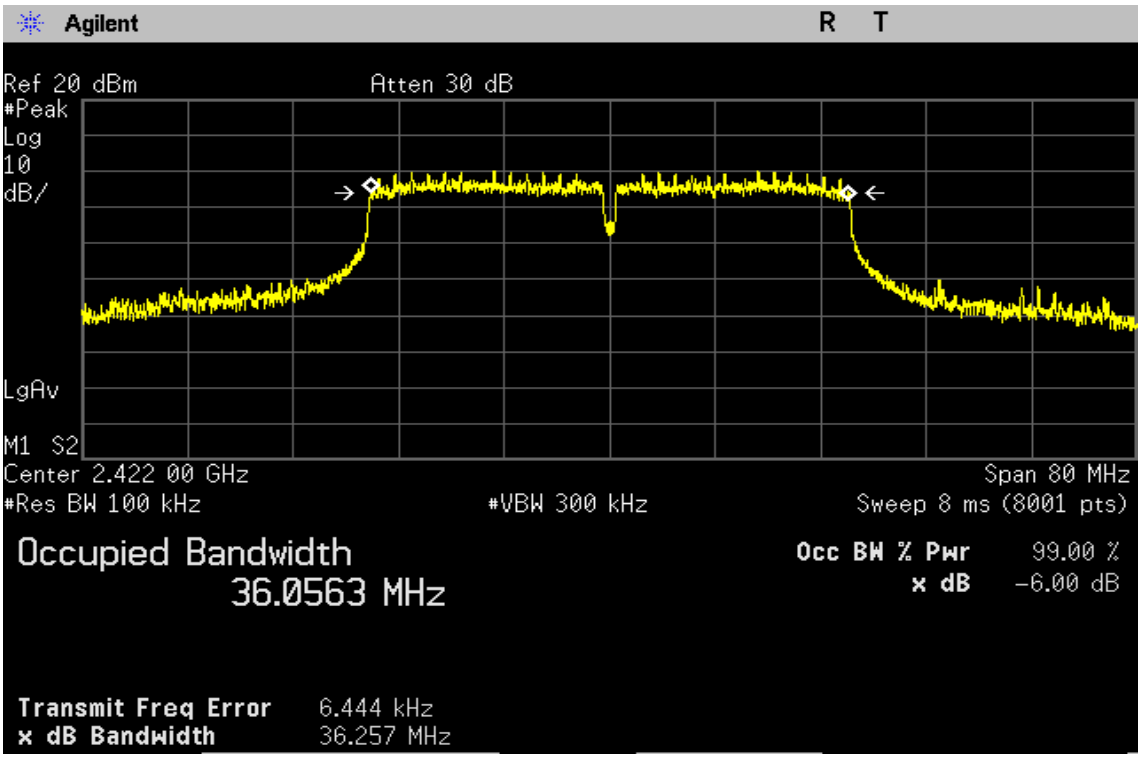
PLOTS OF EMISSIONS

6 dB Bandwidth, 11 Channel (2 462 MHz)



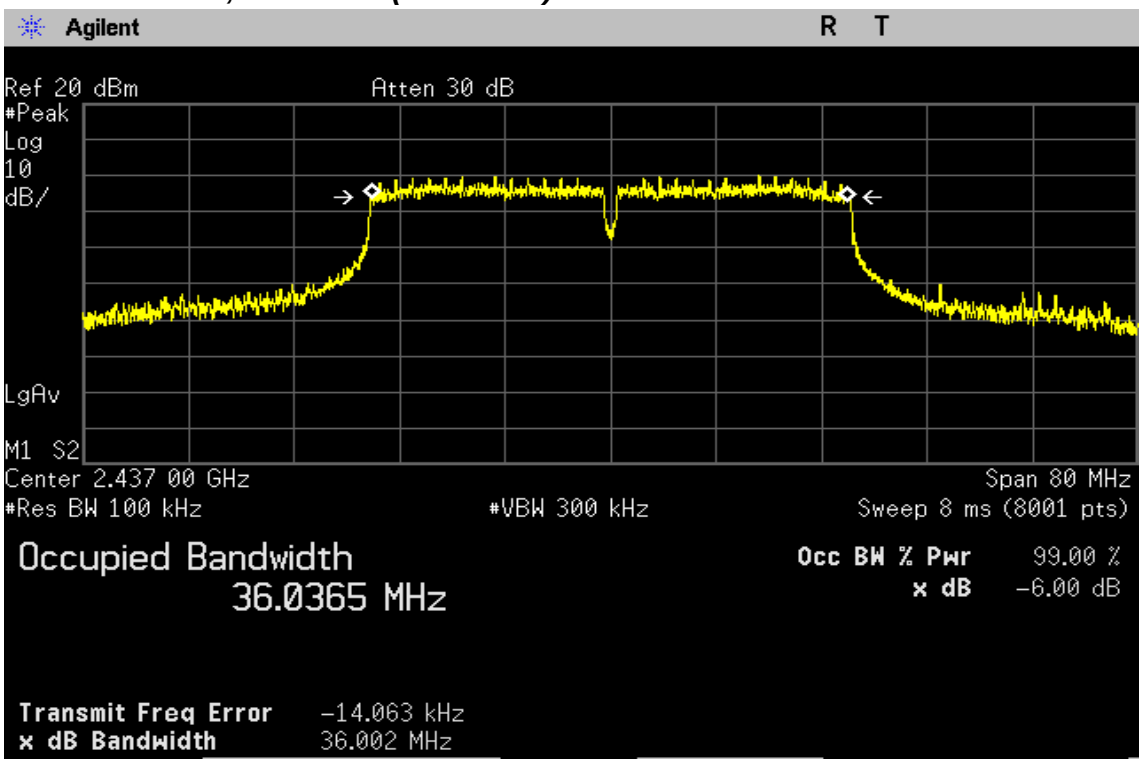
802.11n (40 MHz) mode

6 dB Bandwidth, 3 Channel (2 422 MHz)

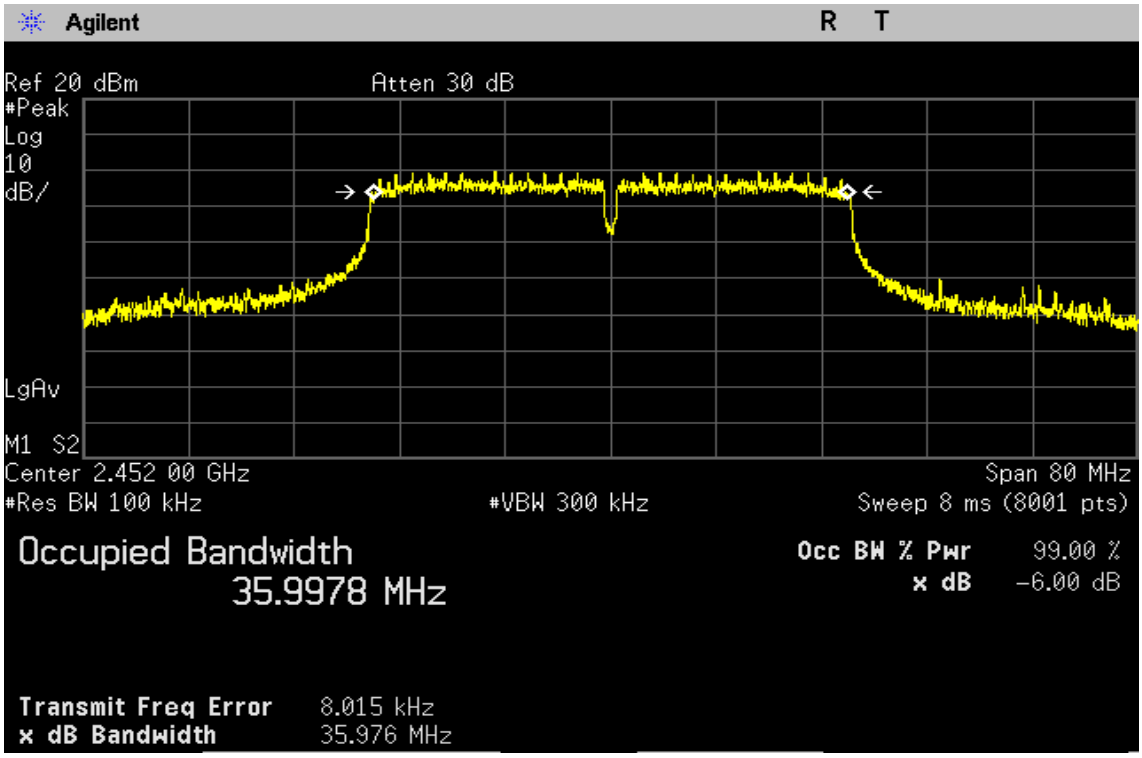


PLOTS OF EMISSIONS

6 dB Bandwidth, 6 Channel (2 437 MHz)



6 dB Bandwidth, 9 Channel (2 452 MHz)



8.4 Maximum Conducted Output Power (average) and E.I.R.P.

FCC §15.247(b)(3), IC RSS-247 Issue 2 5.4

Test Mode : Set to Lowest channel, Middle channel and Highest channel,

802.11b mode

Channel	Frequency (MHz)	Measured conducted power (dBm)	Duty Factor (dB)	*Maximum Conducted Power (dBm)	Limit (dBm)	E.I.R.P (dBm)	E.I.R.P Limit (dBm)
1	2 412	12.55	0.87	13.43	30.00	15.93	36.00
6	2 437	12.39	0.87	13.26	30.00	15.76	36.00
11	2 462	12.04	0.87	12.92	30.00	15.42	36.00

802.11g mode

Channel	Frequency (MHz)	Measured conducted power (dBm)	Duty Factor (dB)	*Maximum Conducted Power (dBm)	Limit (dBm)	E.I.R.P (dBm)	E.I.R.P Limit (dBm)
1	2 412	10.33	3.38	13.71	30.00	16.21	36.00
6	2 437	10.14	3.38	13.52	30.00	16.02	36.00
11	2 462	9.93	3.38	13.30	30.00	15.80	36.00

TEST DATA

802.11n (20 MHz) mode

Channel	Frequency (MHz)	Measured conducted power (dBm)	Duty Factor (dB)	*Maximum Conducted Power (dBm)	Limit (dBm)	E.I.R.P (dBm)	E.I.R.P Limit (dBm)
1	2 412	10.29	3.58	13.87	30.00	16.37	36.00
6	2 437	10.07	3.58	13.65	30.00	16.15	36.00
11	2 462	9.82	3.58	13.40	30.00	15.90	36.00

802.11n (40 MHz) mode

Channel	Frequency (MHz)	Measured conducted power (dBm)	Duty Factor (dB)	*Maximum Conducted Power (dBm)	Limit (dBm)	E.I.R.P (dBm)	E.I.R.P Limit (dBm)
3	2 422	8.84	4.97	13.81	30.00	16.31	36.00
6	2 437	8.75	4.97	13.72	30.00	16.22	36.00
9	2 452	8.58	4.97	13.55	30.00	16.05	36.00

Note:

*1. *Maximum Conducted (average) Power = Measured conducted power + Duty Factor*

2. E.I.R.P was calculated by following equation according to KDB412172 D01 Determining ERP and EIRP v01r01.

$E.I.R.P = P_T + G_T – Lc$

P_T = Peak outputpower (dBm)

*G_T = Gain of the transmitting antenna in dBi, Directional antenna gain is **2.5 dBi.***

L_C = Signal attenuation in the connecting cable between the transmitter and antenna in dB. This factor of an integral antenna is negligible.

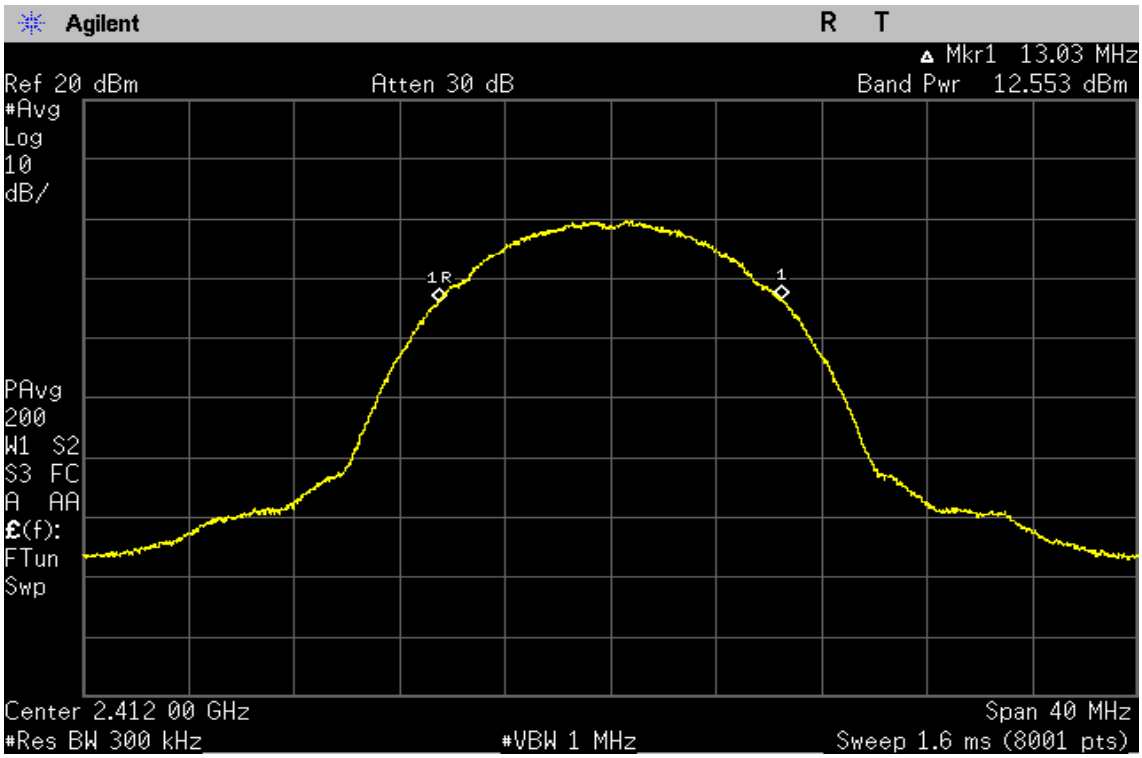
3. The following equation was used for spectrum offset:

Spectrum offset (dB) = Attenuator (dB) + Cable Loss (dB) + SMA Type Connector Loss (dB)

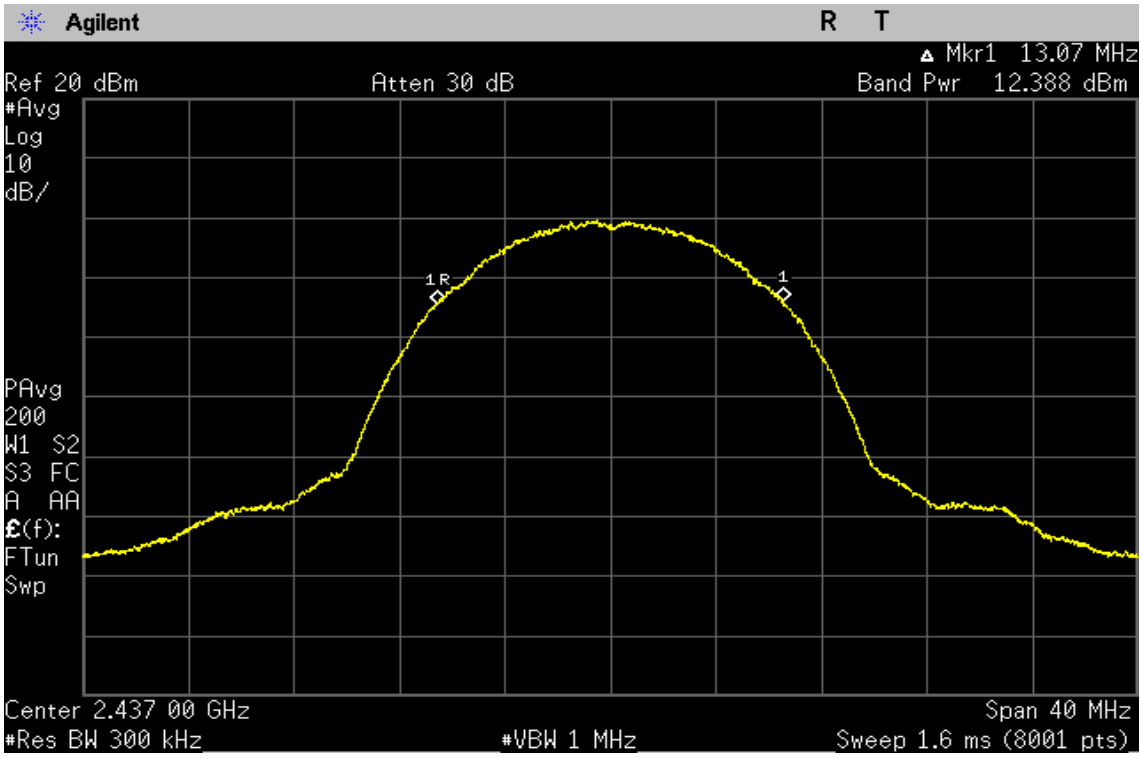
PLOTS OF EMISSIONS

802.11b mode

Maximum Conducted Output Power, 1 Channel (2 412 MHz)

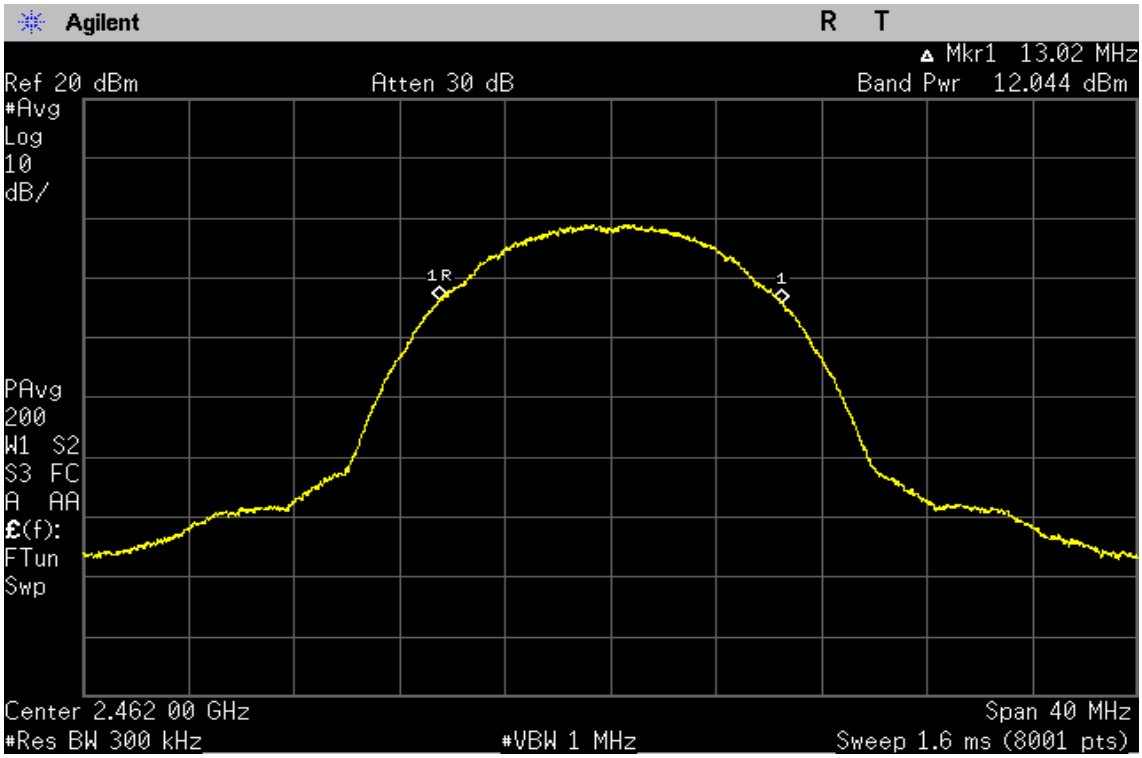


Maximum Conducted Output Power, 6 Channel (2 437 MHz)



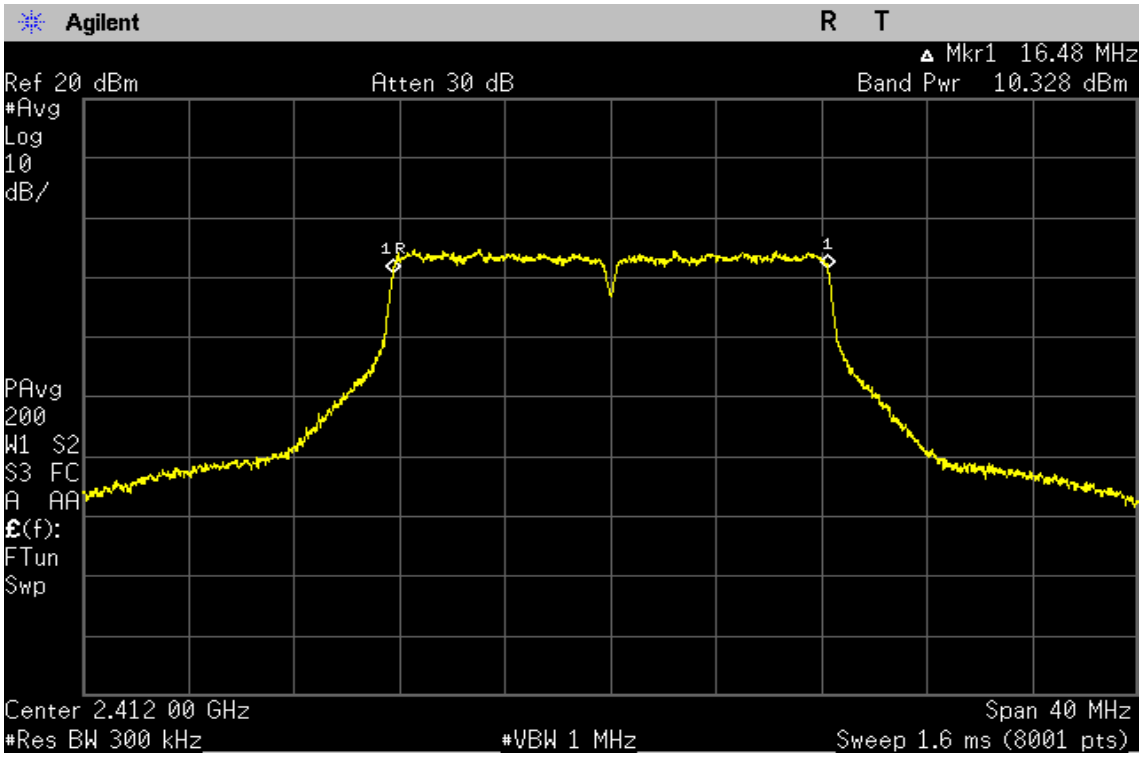
PLOTS OF EMISSIONS

Maximum Conducted Output Power, 11 Channel (2 462 MHz)



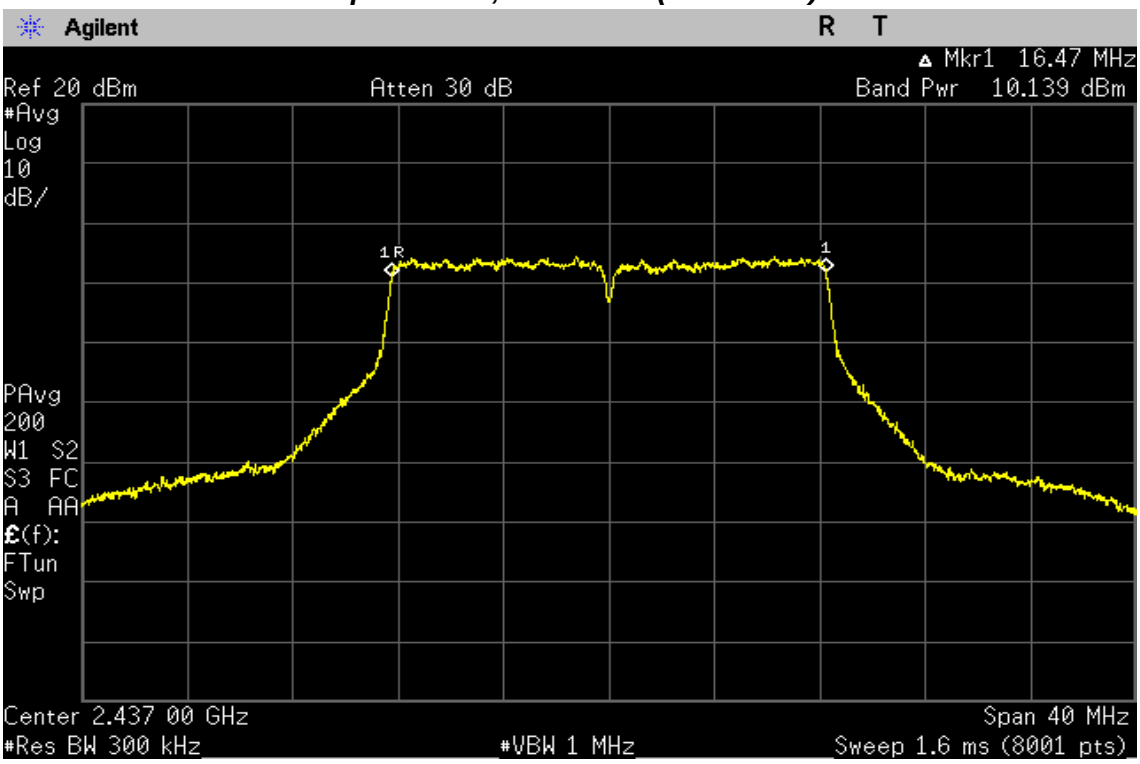
802.11g mode

Maximum Conducted Output Power, 1 Channel (2 412 MHz)

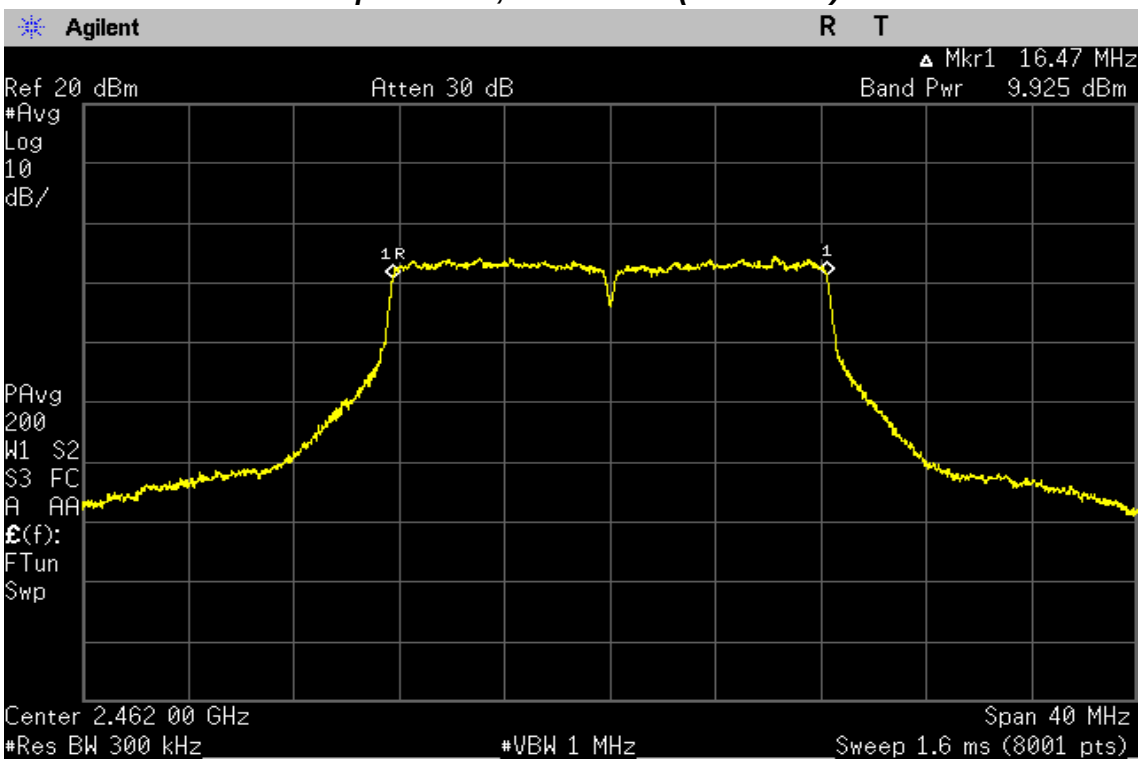


PLOTS OF EMISSIONS

Maximum Conducted Output Power, 6 Channel (2 437 MHz)



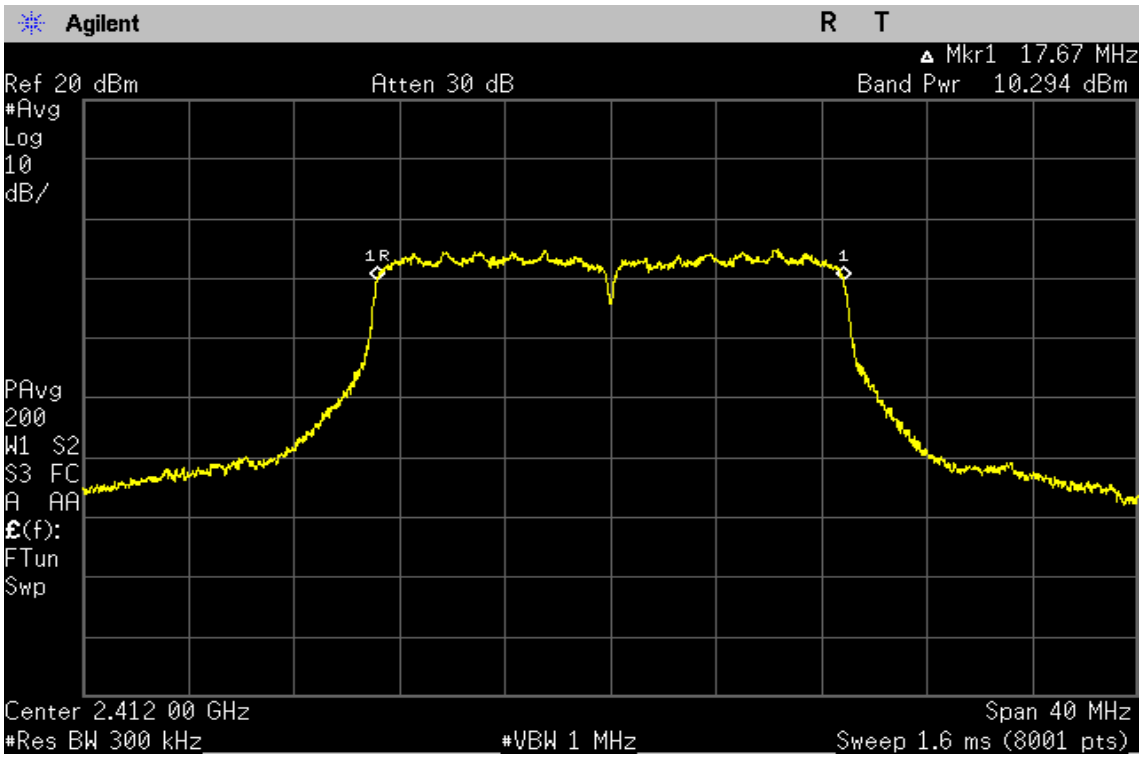
Maximum Conducted Output Power, 11 Channel (2 462 MHz)



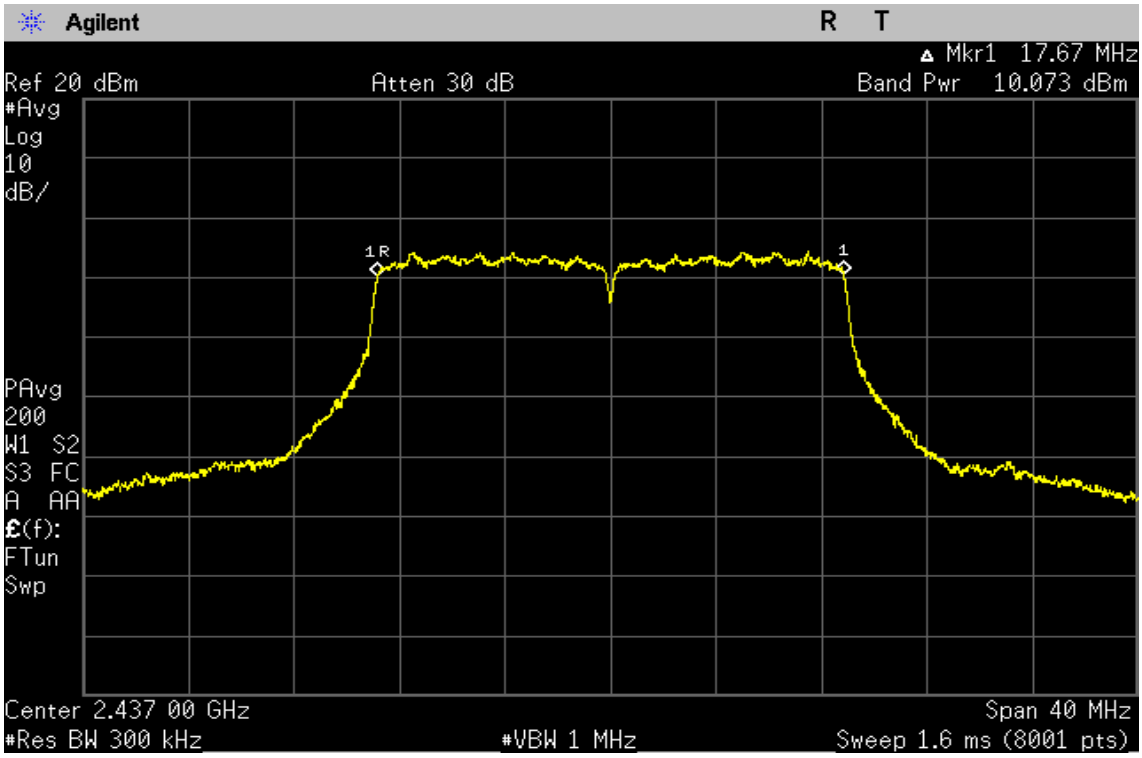
PLOTS OF EMISSIONS

802.11n (20 MHz) mode

Maximum Conducted Output Power, 1 Channel (2 412 MHz)

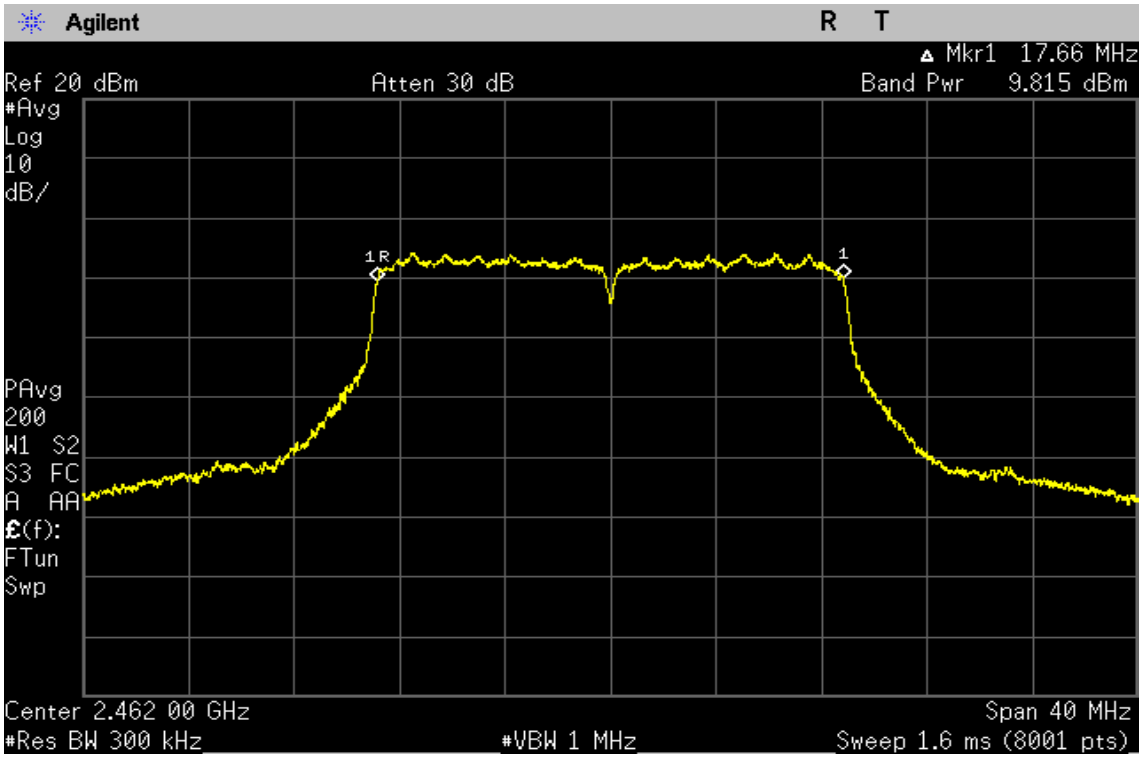


Maximum Conducted Output Power, 6 Channel (2 437 MHz)



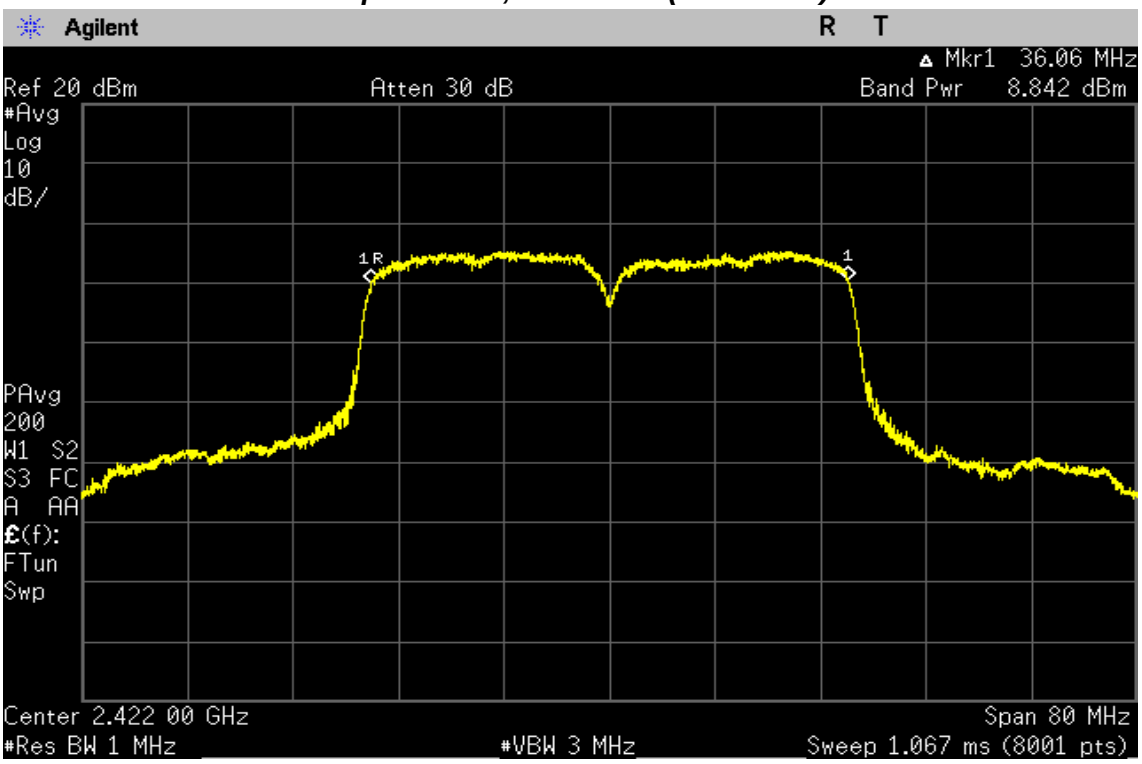
PLOTS OF EMISSIONS

Maximum Conducted Output Power, 11 Channel (2 462 MHz)



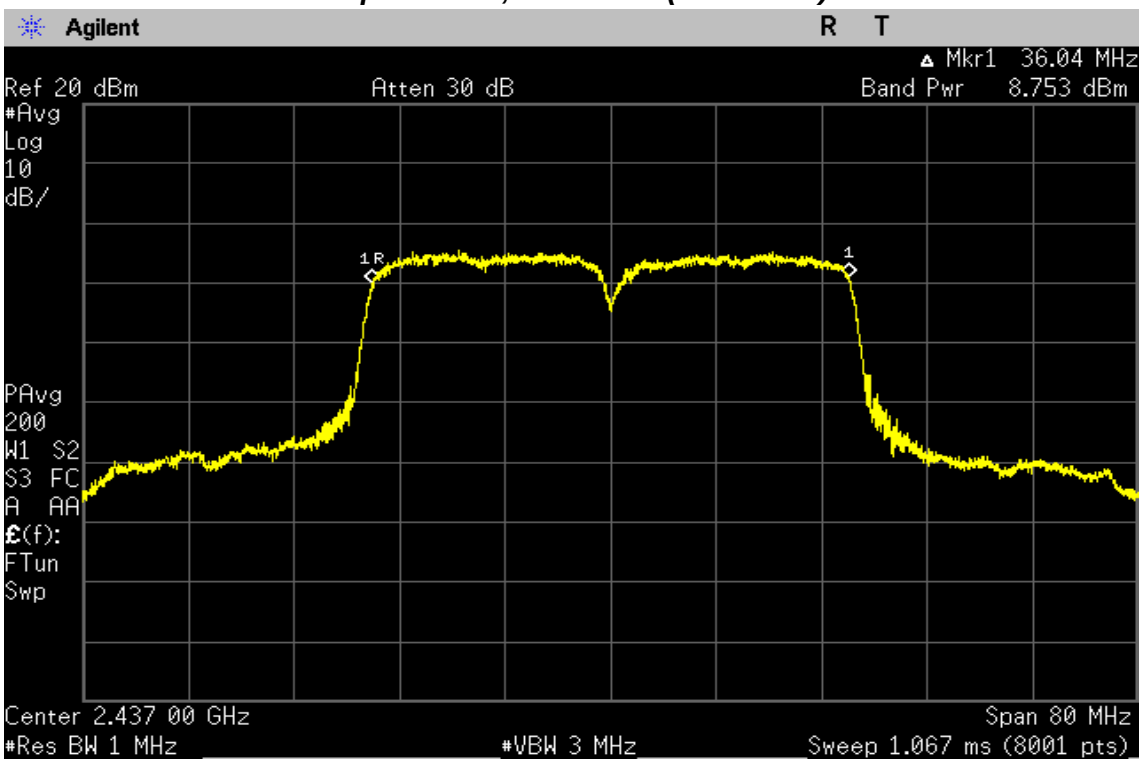
802.11n (40 MHz) mode

Maximum Conducted Output Power, 3 Channel (2 422 MHz)

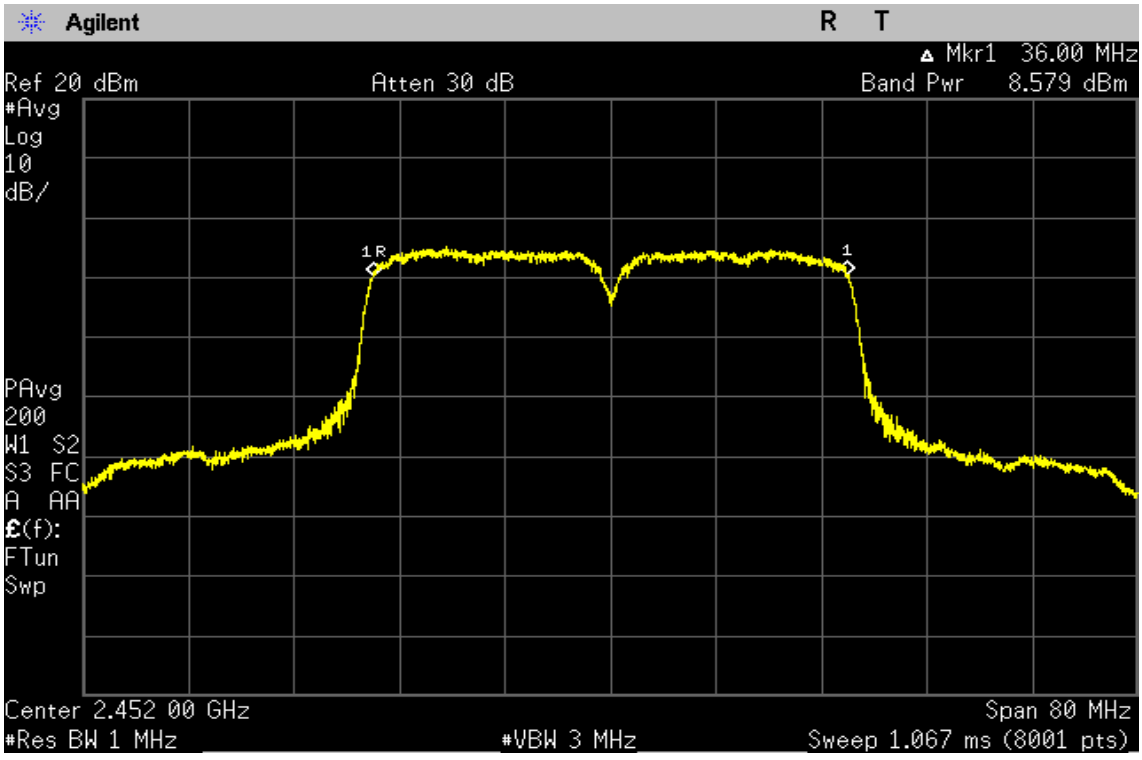


PLOTS OF EMISSIONS

Maximum Conducted Output Power, 6 Channel (2 437 MHz)



Maximum Conducted Output Power, 9 Channel (2 452 MHz)



8.5 Maximum Power Spectral Density (average)

FCC §15.247(e), IC RSS-247 Issue 2 5.2

Test Mode : Set to Lowest channel, Middle channel and Highest channel,

802.11b mode

Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Duty Factor (dB)	*Maximum PSD (dBm/100kHz)	Limit (dBm/3kHz)
1	2 412	-4.84	0.87	-3.97	8.00
6	2 437	-4.89	0.87	-4.02	8.00
11	2 462	-4.97	0.87	-4.10	8.00

802.11g mode

Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Duty Factor (dB)	*Maximum PSD (dBm/100kHz)	Limit (dBm/3kHz)
1	2 412	-8.37	3.38	-4.99	8.00
6	2 437	-8.68	3.38	-5.30	8.00
11	2 462	-8.17	3.38	-4.80	8.00

TEST DATA

802.11n (20 MHz) mode

Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Duty Factor (dB)	*Maximum PSD (dBm/100kHz)	Limit (dBm/3kHz)
1	2 412	-7.94	3.58	-4.36	8.00
6	2 437	-8.81	3.58	-5.23	8.00
11	2 462	-8.40	3.58	-4.82	8.00

802.11n (40 MHz) mode

Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Duty Factor (dB)	*Maximum PSD (dBm/100kHz)	Limit (dBm/3kHz)
3	2 422	-11.56	4.97	-6.59	8.00
6	2 437	-11.34	4.97	-6.37	8.00
9	2 452	-10.95	4.97	-5.98	8.00

Note:

*1. *Maximum PSD = Measured PSD + Duty Factor*

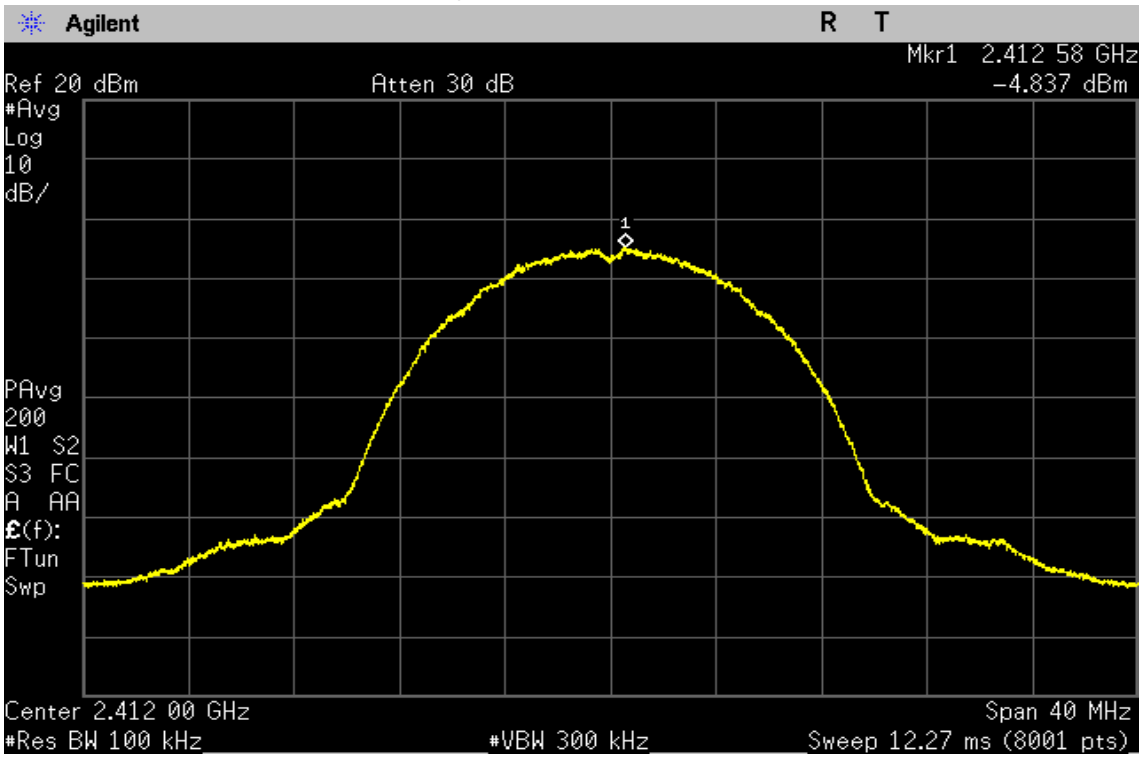
2. The following equation was used for spectrum offset:

Spectrum offset (dB) = Attenuator (dB) + Cable Loss (dB) + SMA Type Connector Loss (dB)

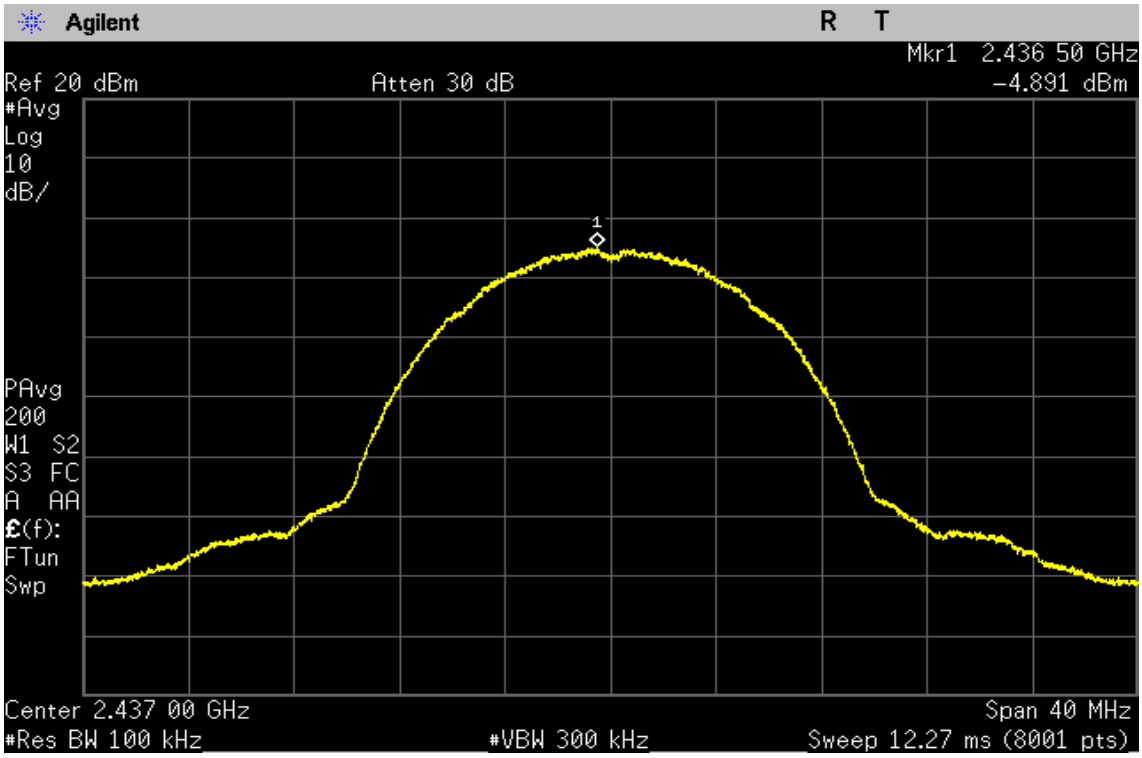
PLOTS OF EMISSIONS

802.11b mode

Maximum Power Spectral Density, 1 Channel (2 412 MHz)

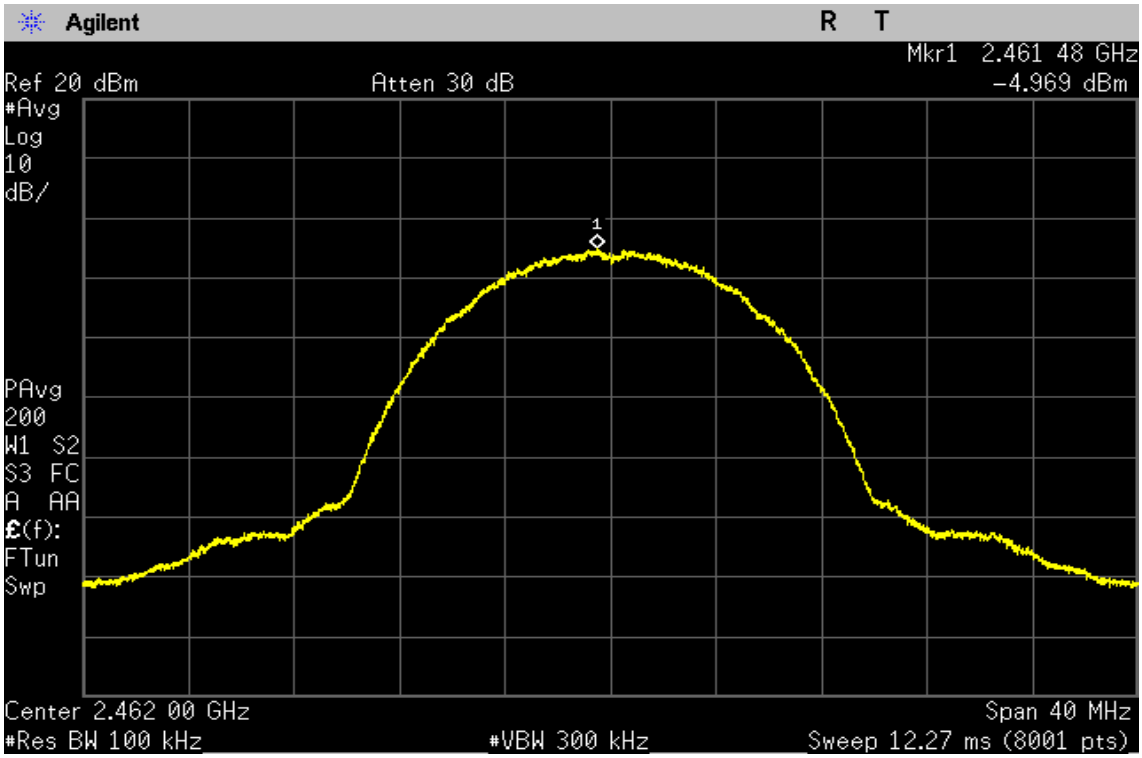


Maximum Power Spectral Density, 6 Channel (2 437 MHz)



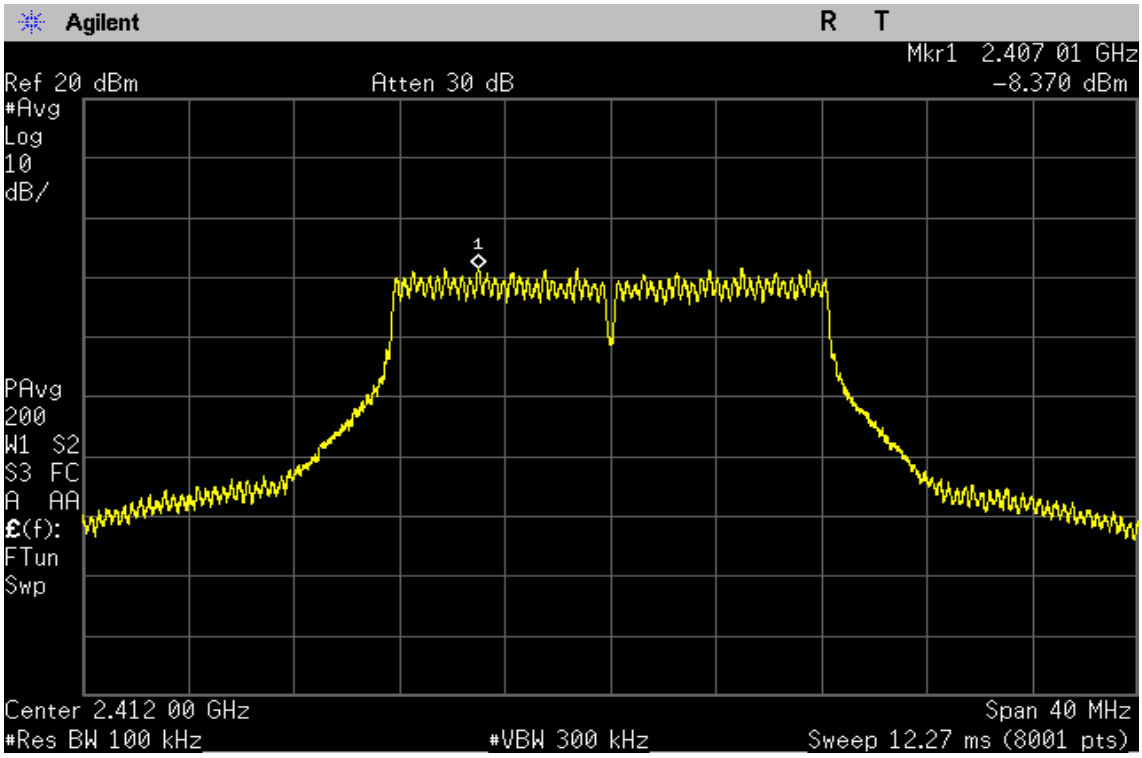
PLOTS OF EMISSIONS

Maximum Power Spectral Density, 11 Channel (2 462 MHz)



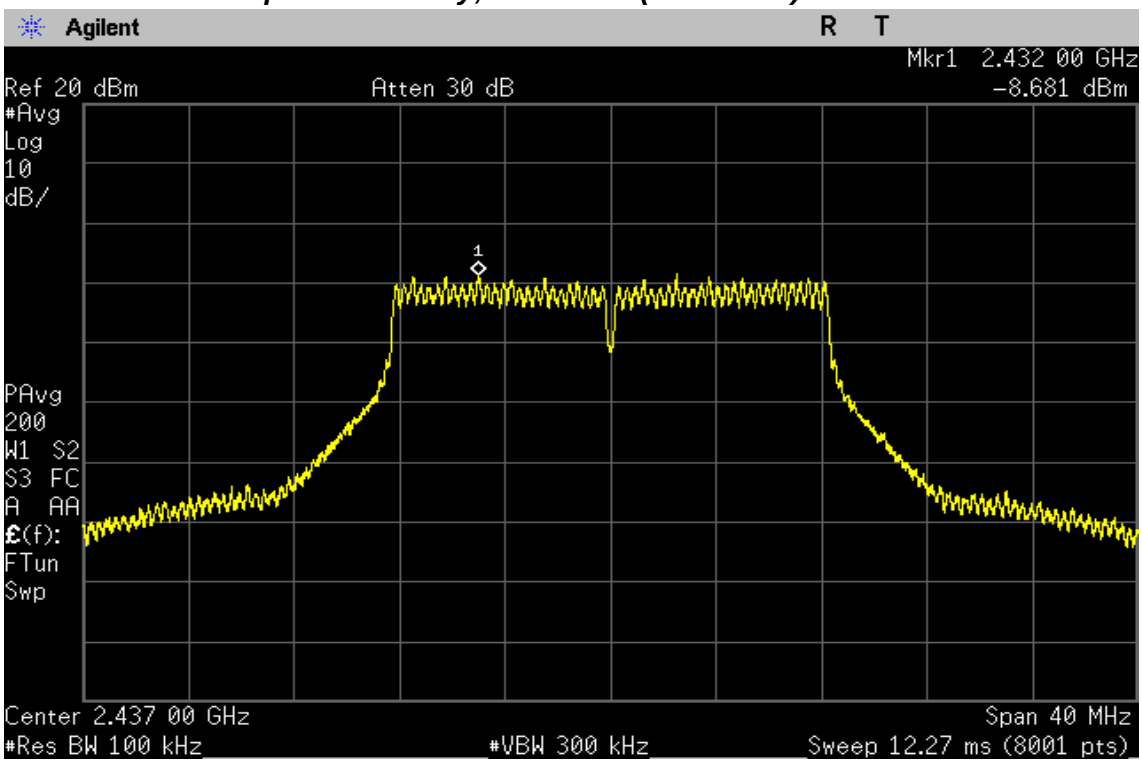
802.11g mode

Maximum Power Spectral Density, 1 Channel (2 412 MHz)

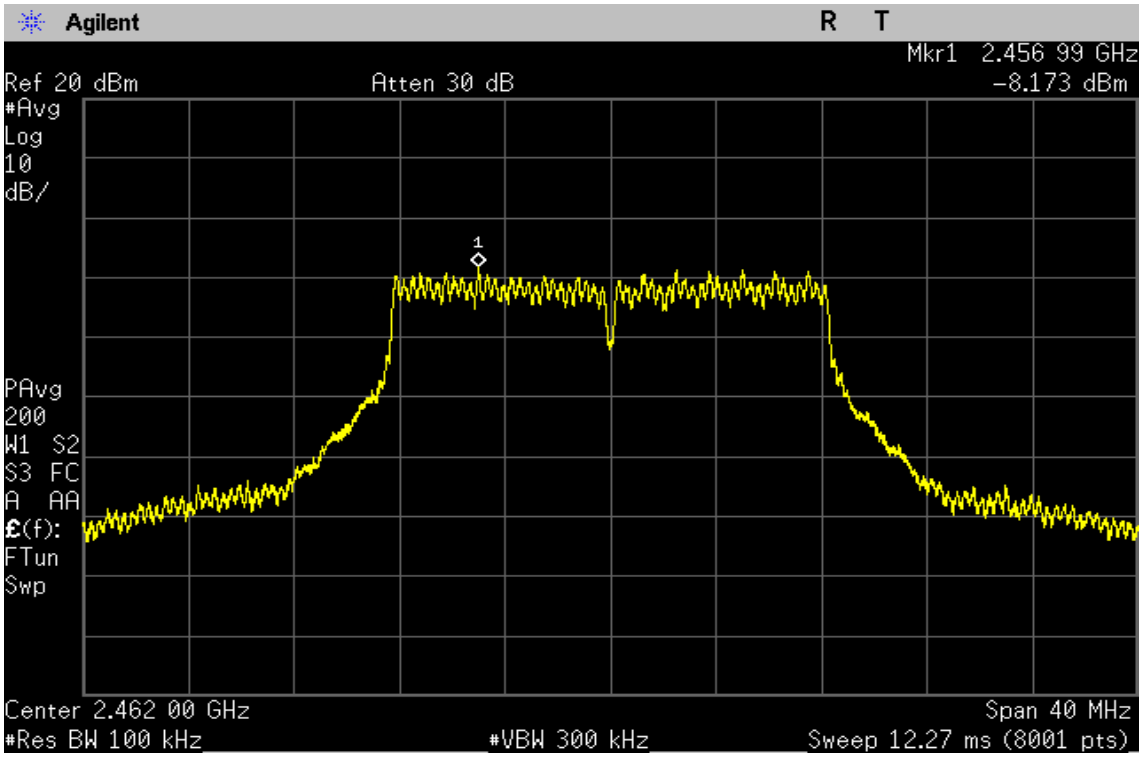


PLOTS OF EMISSIONS

Maximum Power Spectral Density, 6 Channel (2 437 MHz)



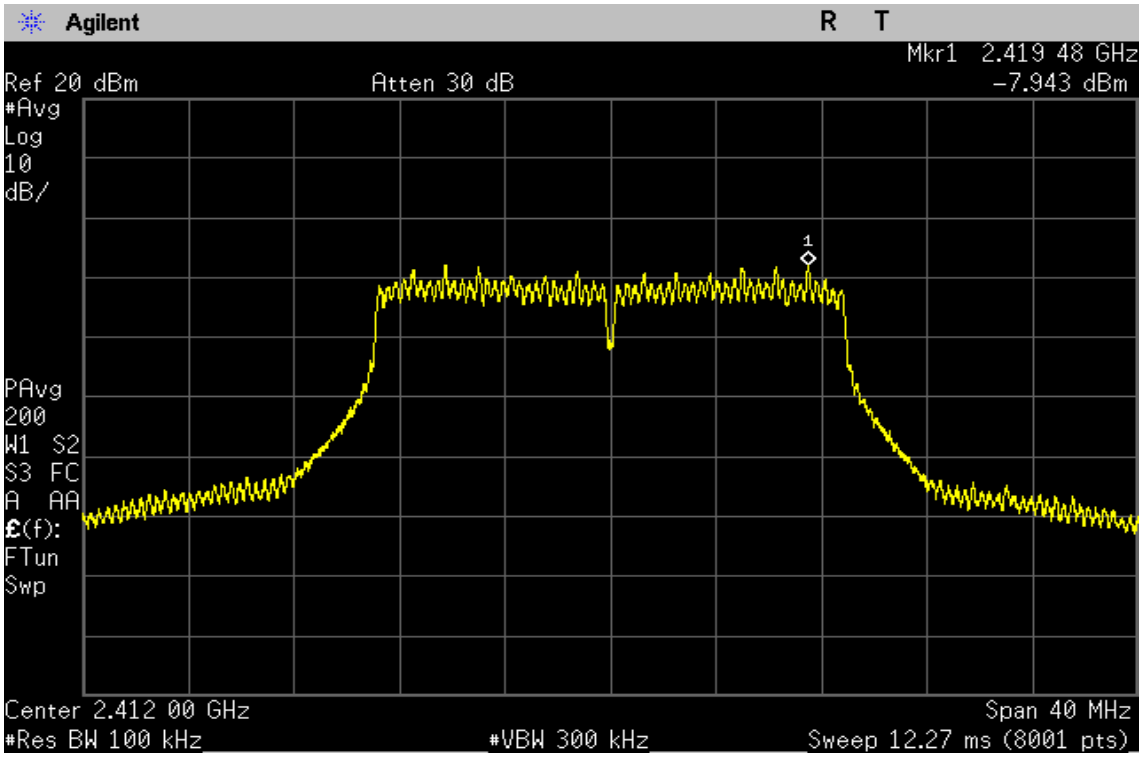
Maximum Power Spectral Density, 11 Channel (2 462 MHz)



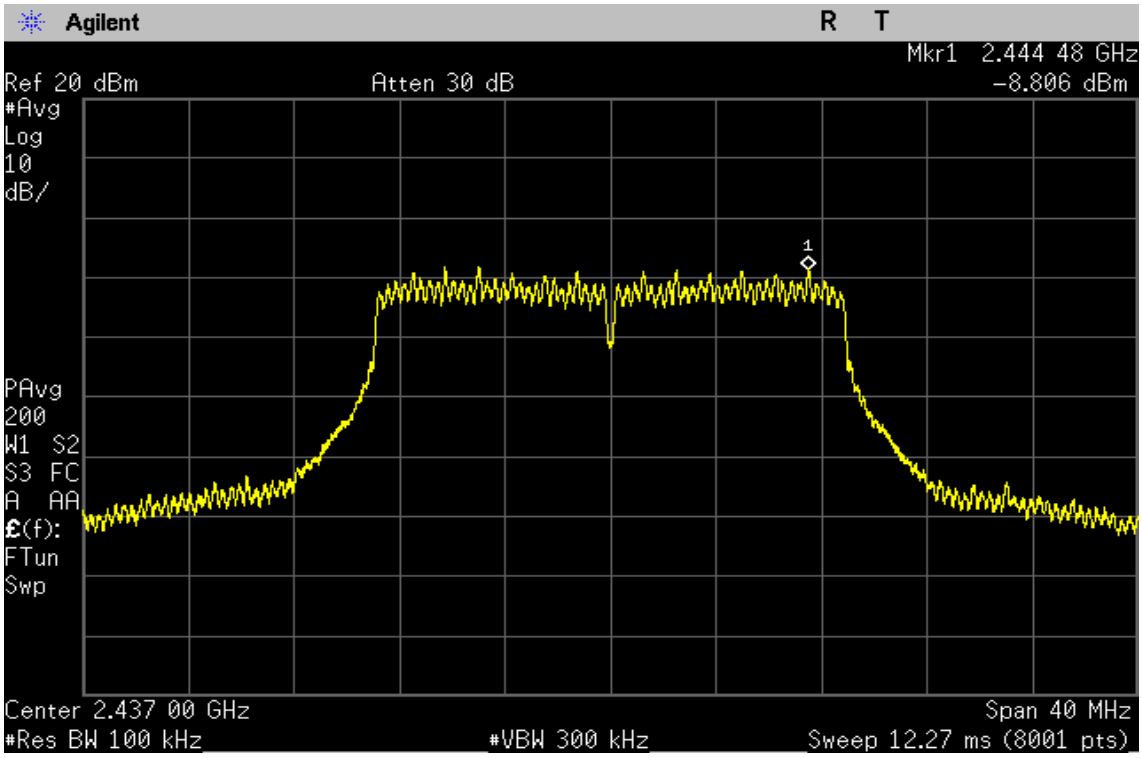
PLOTS OF EMISSIONS

802.11n (20 MHz) mode

Maximum Power Spectral Density, 1 Channel (2 412 MHz)

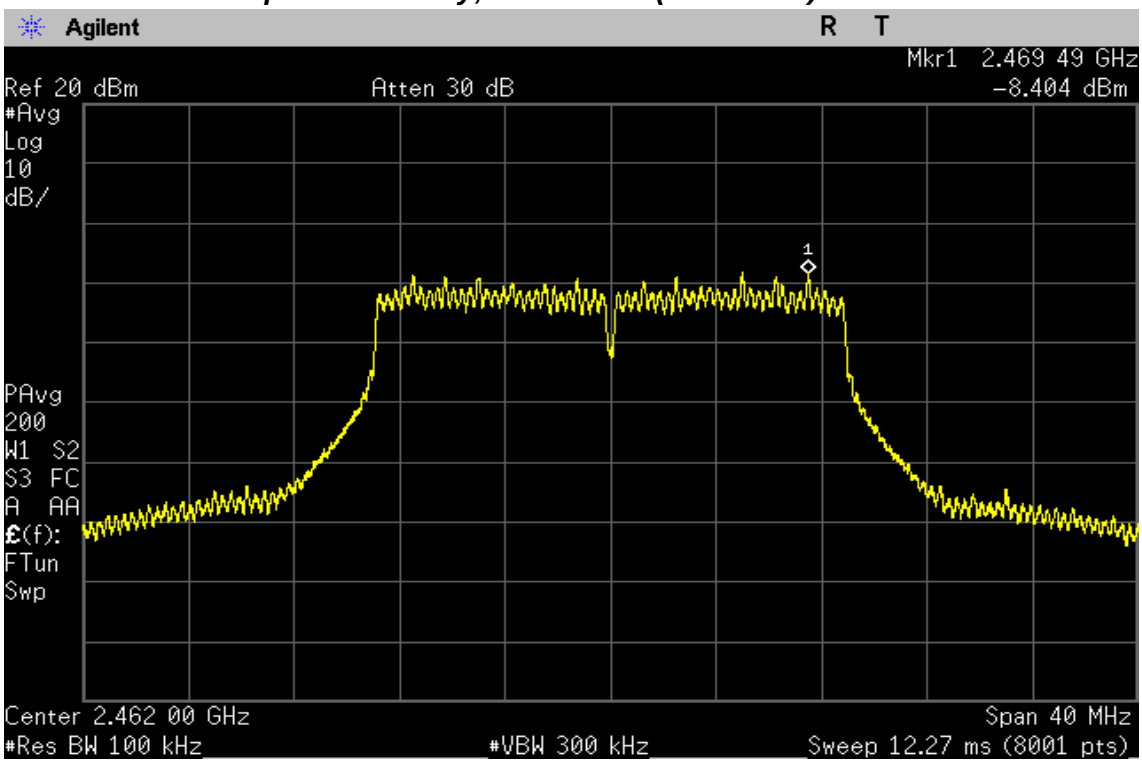


Maximum Power Spectral Density, 6 Channel (2 437 MHz)



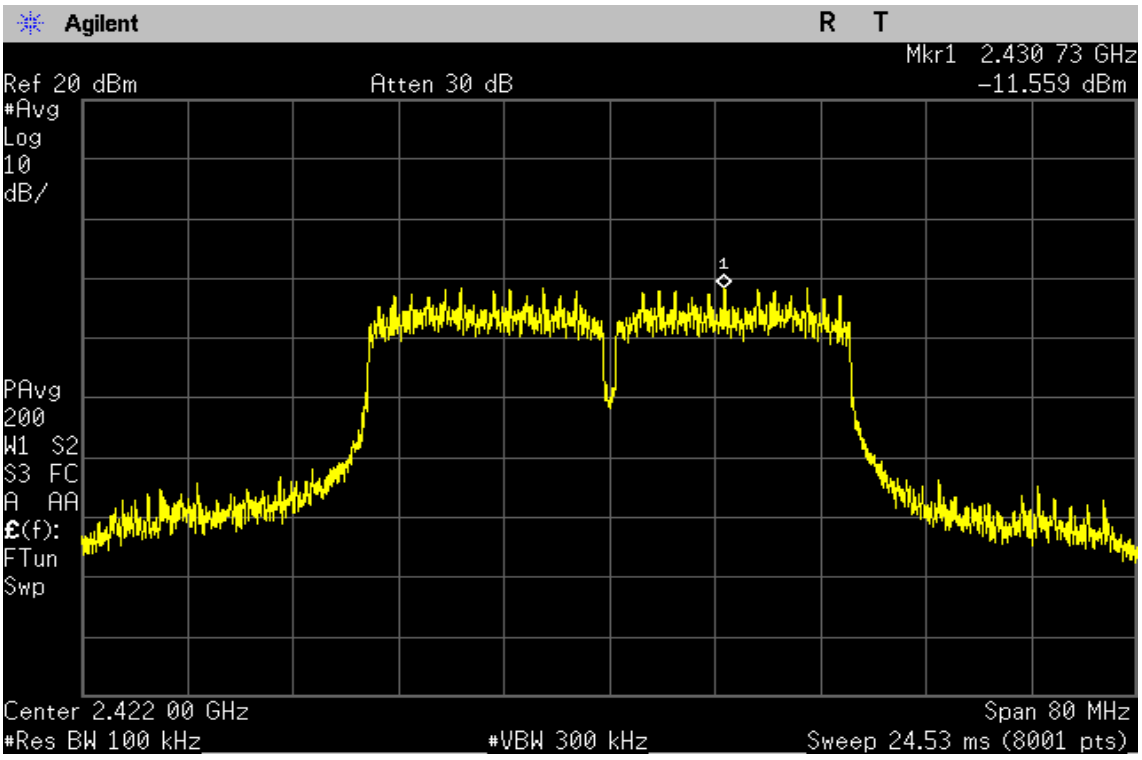
PLOT OF EMISSIONS

Maximum Power Spectral Density, 11 Channel (2 462 MHz)



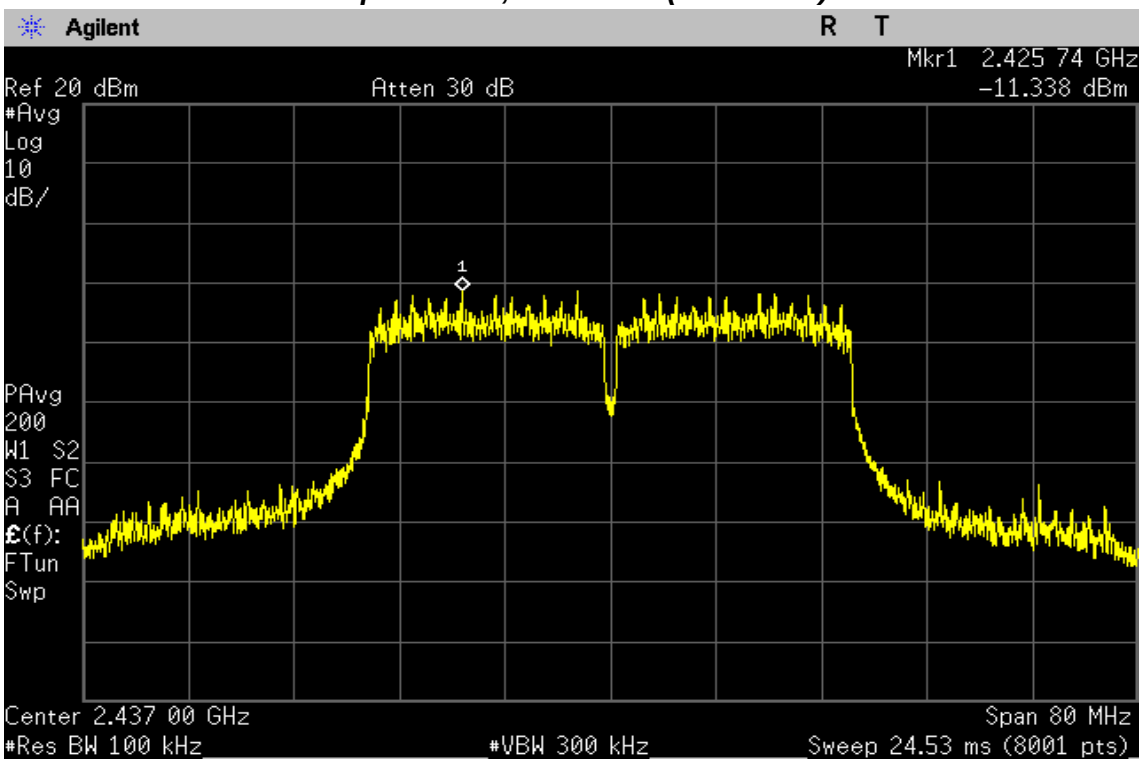
802.11n (40 MHz) mode

Maximum Conducted Output Power, 3 Channel (2 422 MHz)

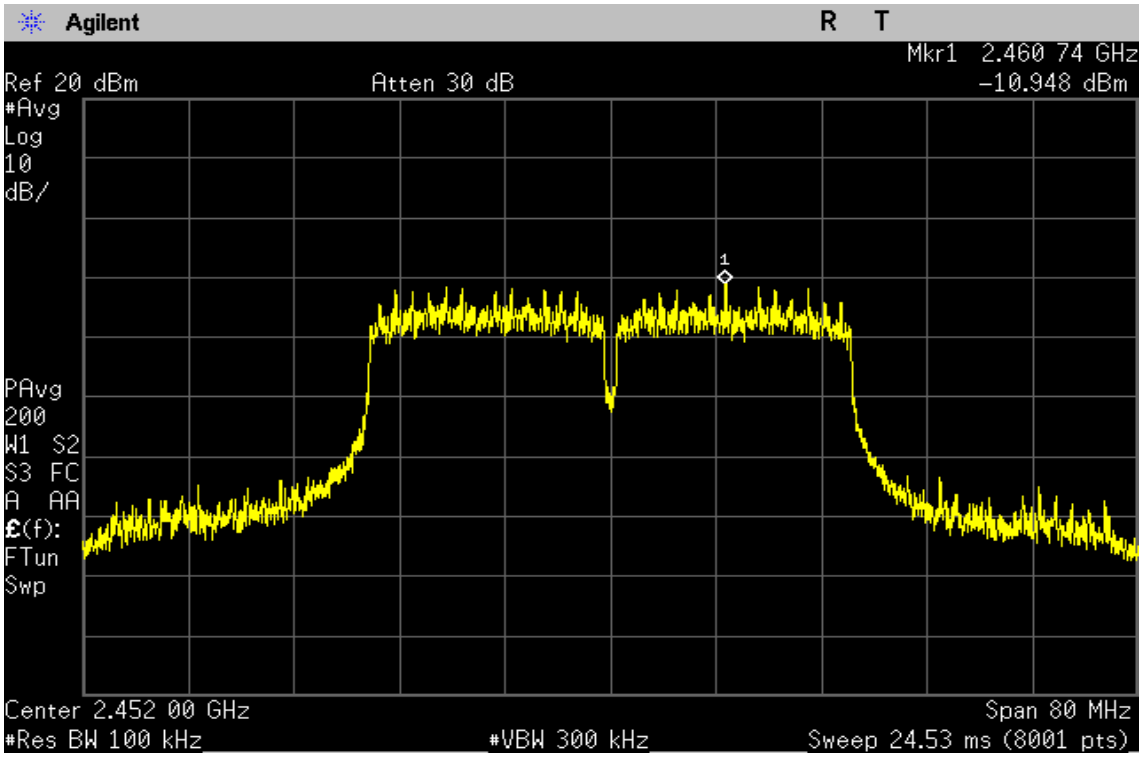


PLOTS OF EMISSIONS

Maximum Conducted Output Power, 6 Channel (2 437 MHz)



Maximum Conducted Output Power, 9 Channel (2 452 MHz)



8.6 Conducted Spurious Emissions

FCC §15.247(d), IC RSS-247 Issue 2 5.5

Test Mode : Set to Lowest channel, Middle channel and Highest channel,

802.11b mode

Channel	Frequency (MHz)	Reference Level (dBm/100kHz)	Conducted Spurious Emissions (dBc)	Limit (dBc)
1	2 412	5.17	More than 30 dBc	30
6	2 437	5.07	More than 30 dBc	30
11	2 462	4.97	More than 30 dBc	30

802.11g mode

Channel	Frequency (MHz)	Reference Level (dBm/100kHz)	Conducted Spurious Emissions (dBc)	Limit (dBc)
1	2 412	2.74	More than 30 dBc	30
6	2 437	2.51	More than 30 dBc	30
11	2 462	2.36	More than 30 dBc	30

TEST DATA

802.11n (20 MHz) mode

Channel	Frequency (MHz)	Reference Level (dBm/100kHz)	Conducted Spurious Emissions (dBc)	Limit (dBc)
1	2 412	2.75	More than 30 dBc	30
6	2 437	2.55	More than 30 dBc	30
11	2 462	2.39	More than 30 dBc	30

802.11n (40 MHz) mode

Channel	Frequency (MHz)	Reference Level (dBm/100kHz)	Conducted Spurious Emissions (dBc)	Limit (dBc)
3	2 422	0.03	More than 30 dBc	30
6	2 437	-0.05	More than 30 dBc	30
9	2 452	-0.17	More than 30 dBc	30

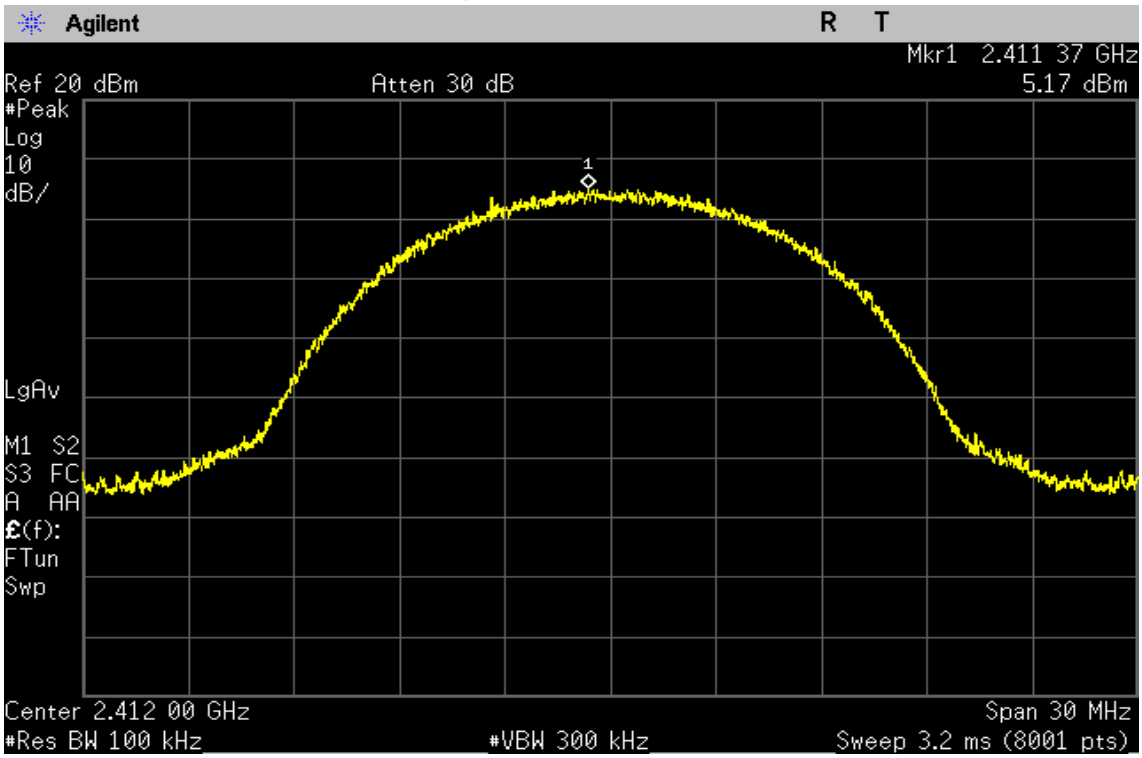
Notes:

The cable and attenuator loss from 30 MHz to 26.5 GHz was reflected in spectrum analyzer with correction factor for the spurious emissions test.

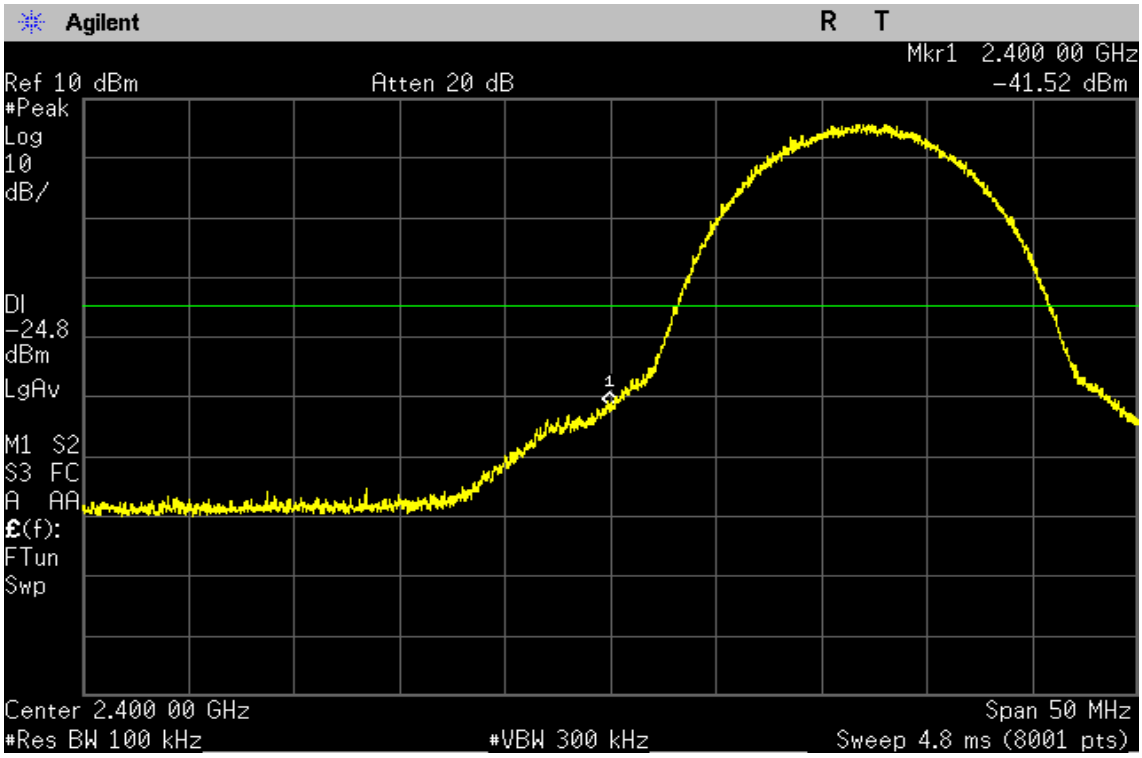
PLOTS OF EMISSIONS

802.11b mode

Reference Power Spectral Density, 1 Channel (2 412 MHz)

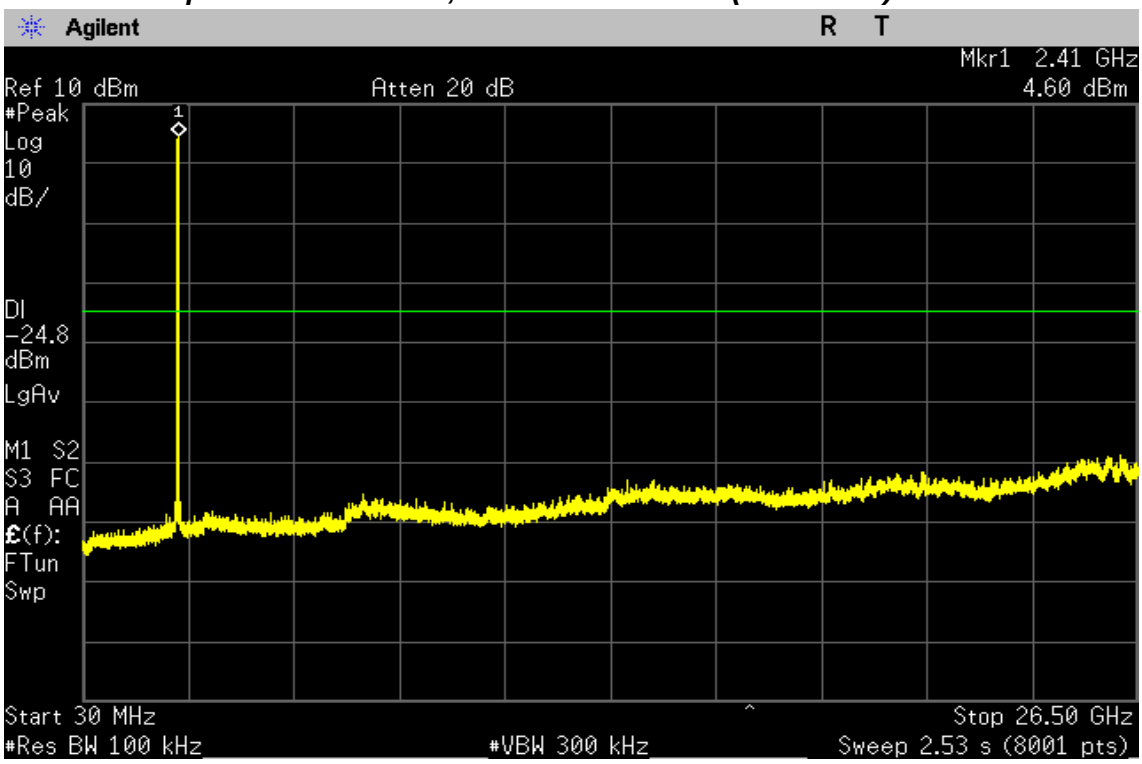


Band Edge, 1 Channel (2 412 MHz)

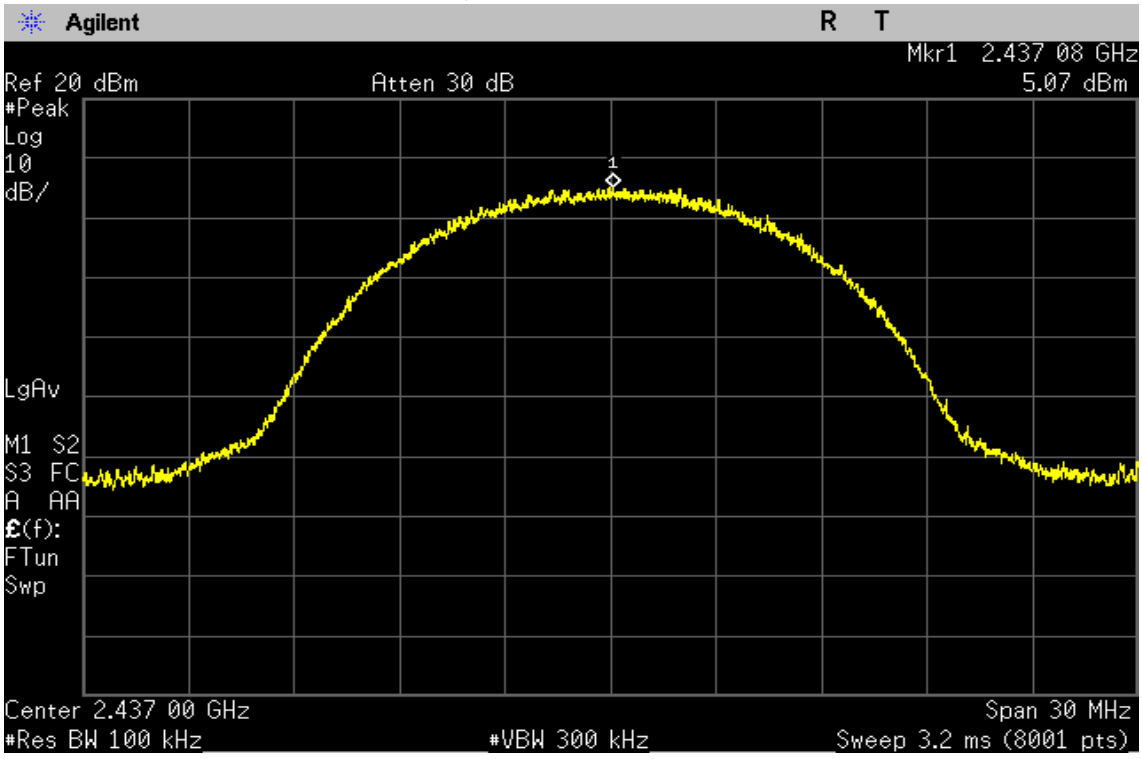


PLOTS OF EMISSIONS

Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 412 MHz)

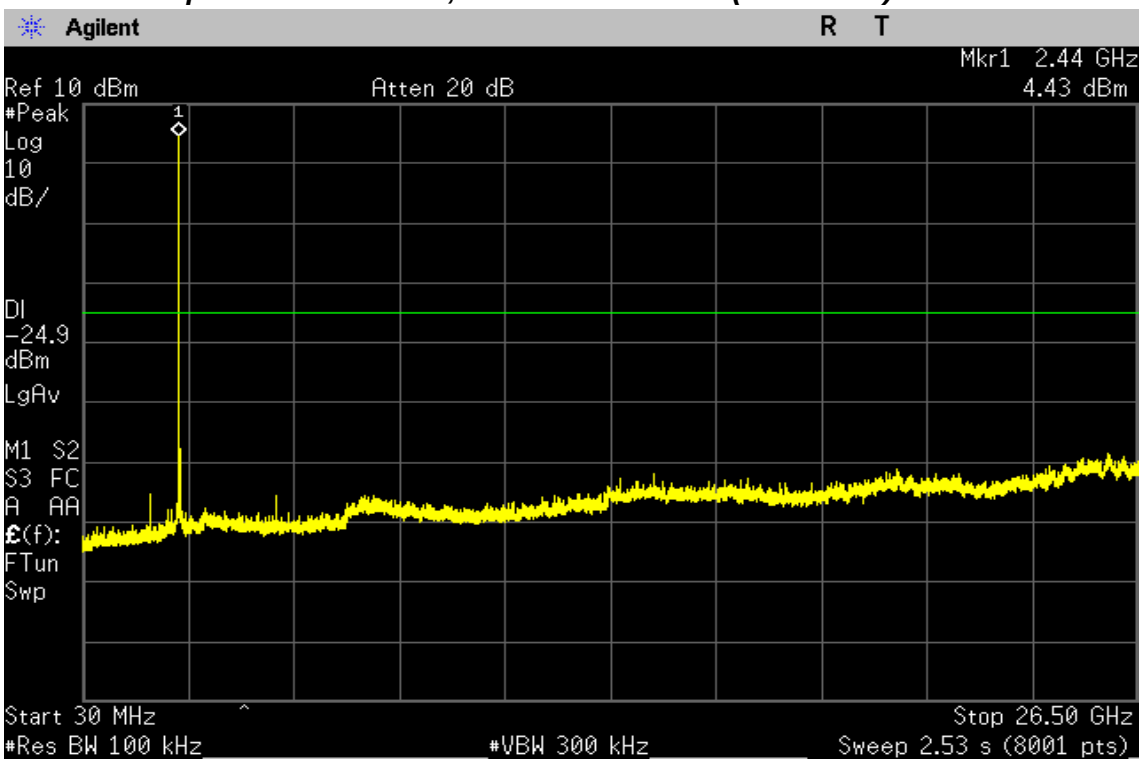


Reference Power Spectral Density, 6 Channel (2 437 MHz)

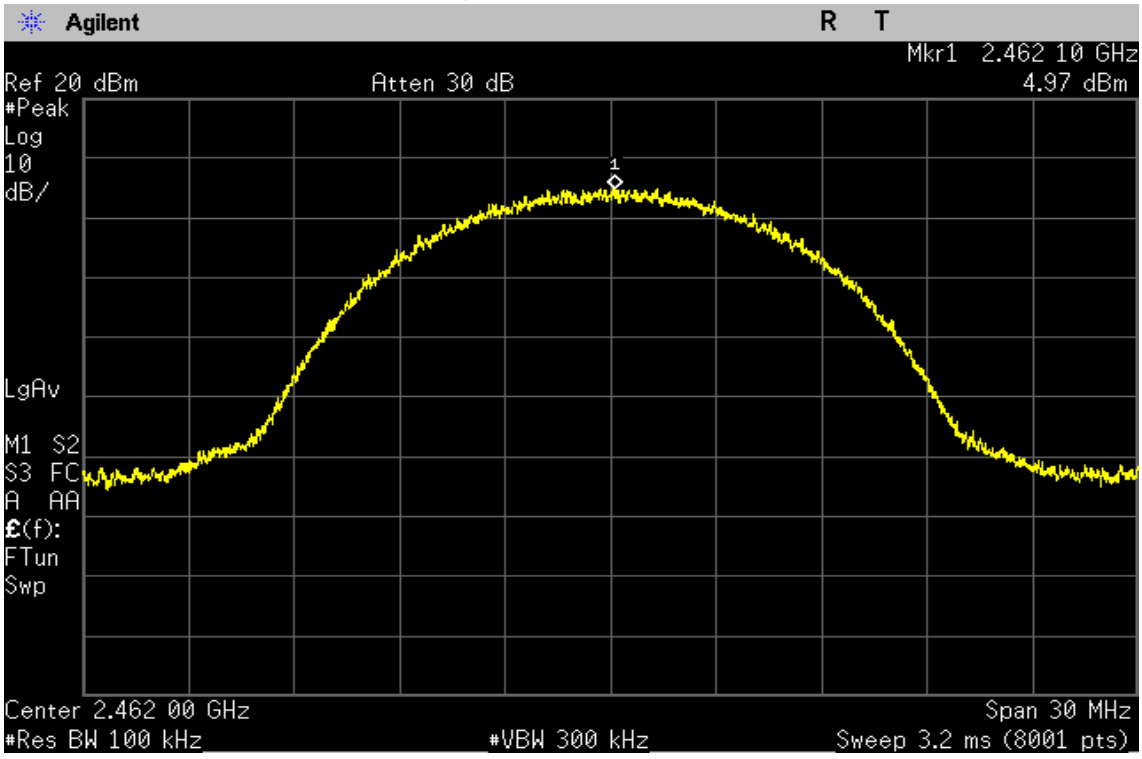


PLOTS OF EMISSIONS

Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 437 MHz)

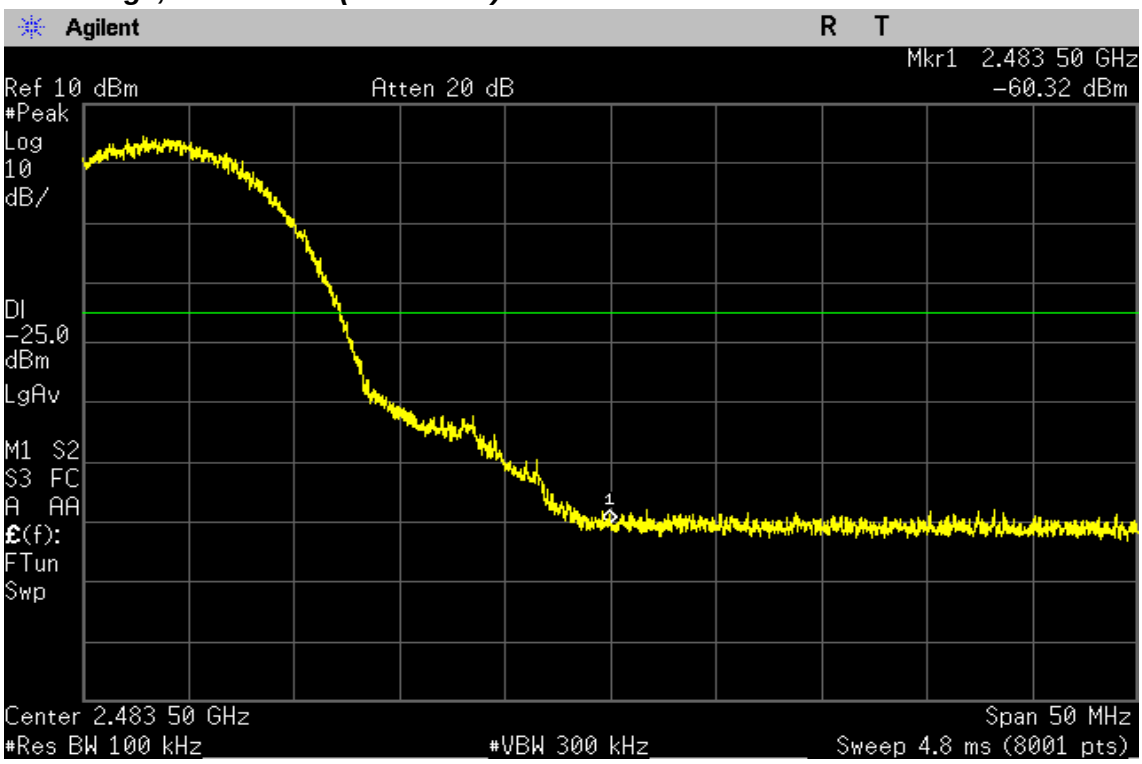


Reference Power Spectral Density, 11 Channel (2 462 MHz)

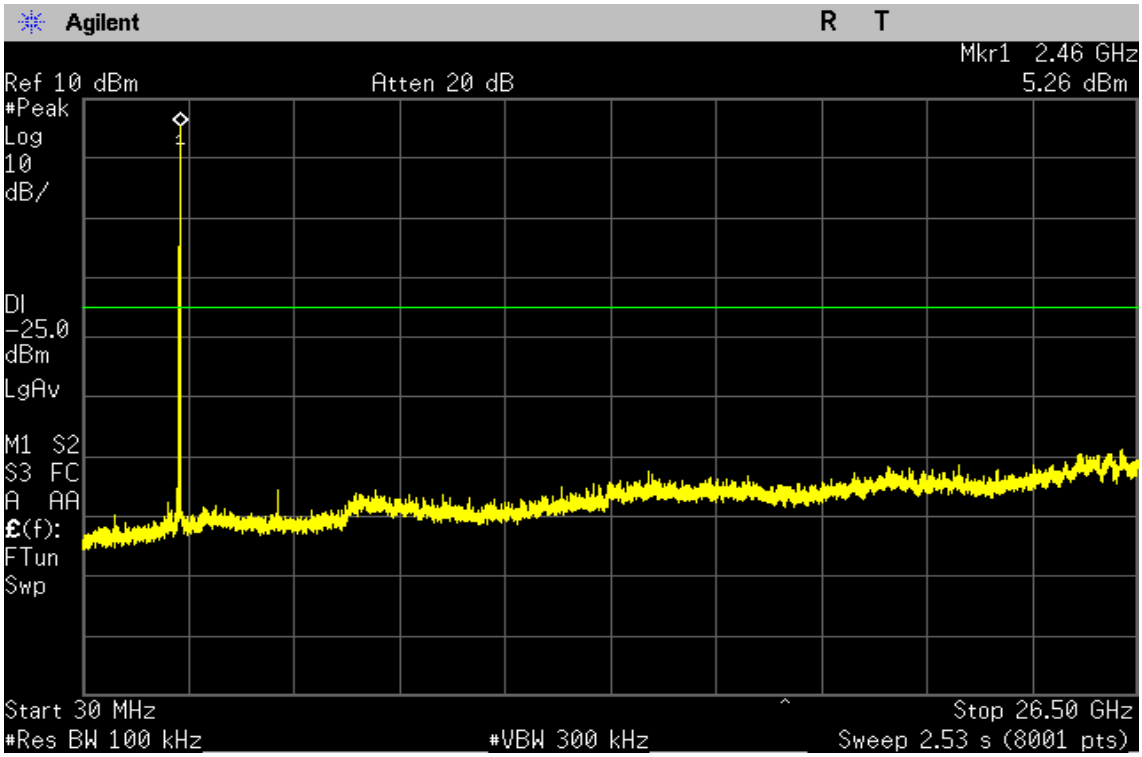


PLOTS OF EMISSIONS

Band Edge, 11 Channel (2 462 MHz)



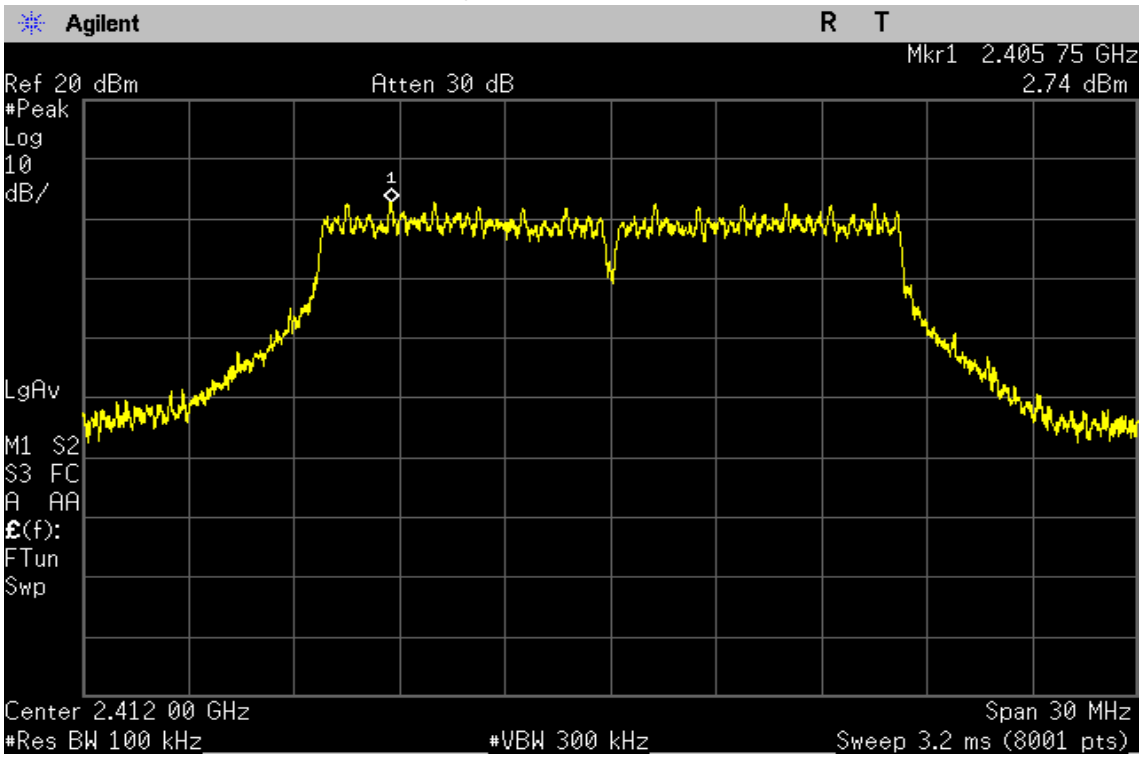
Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 462 MHz)



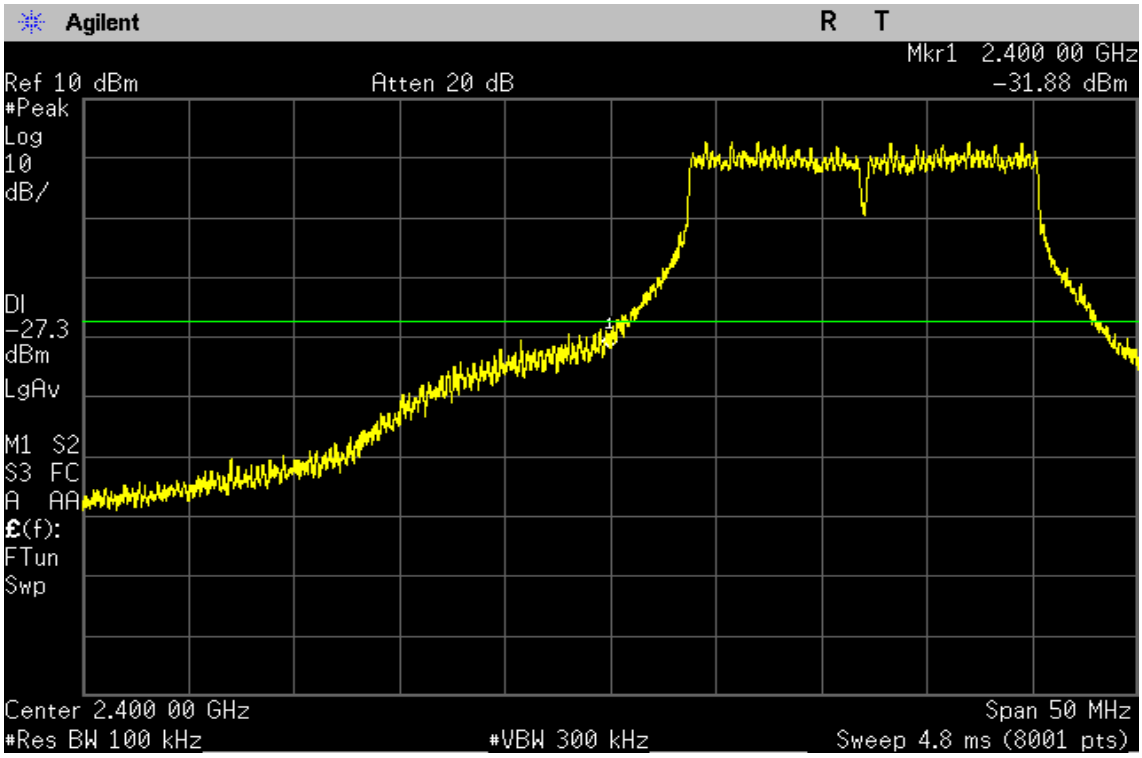
PLOTS OF EMISSIONS

802.11g mode

Reference Power Spectral Density, 1 Channel (2 412 MHz)

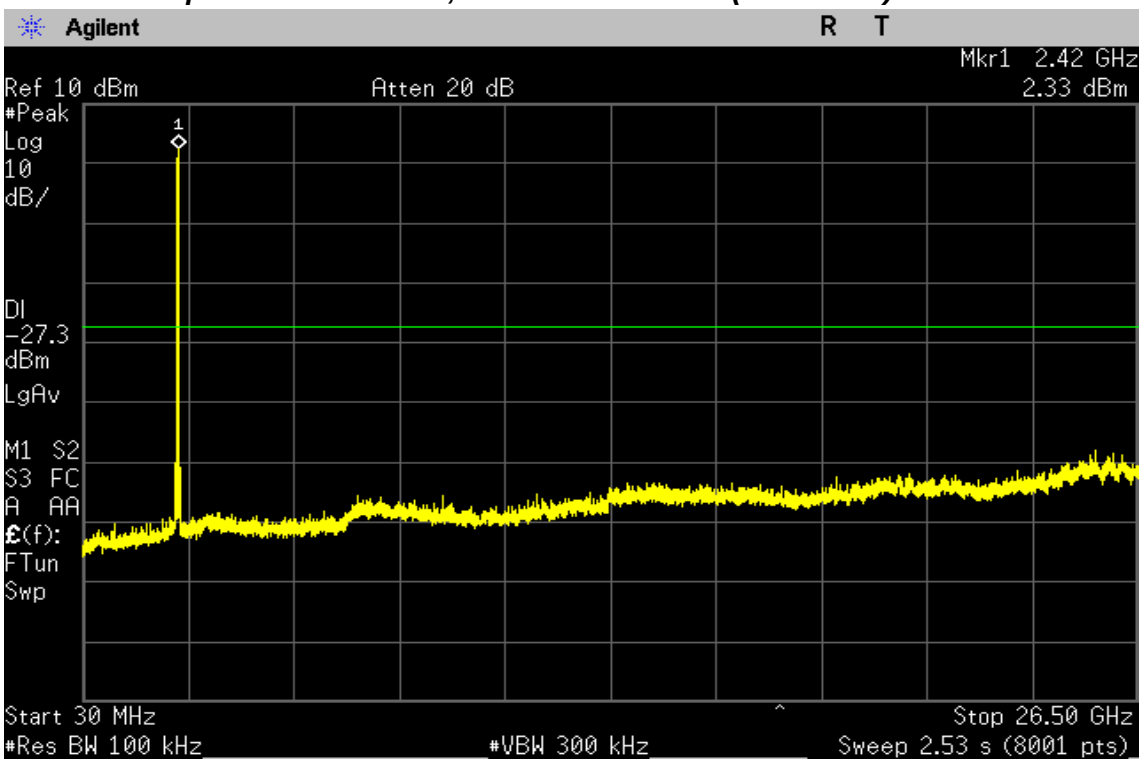


Band Edge, 1 Channel (2 412 MHz)

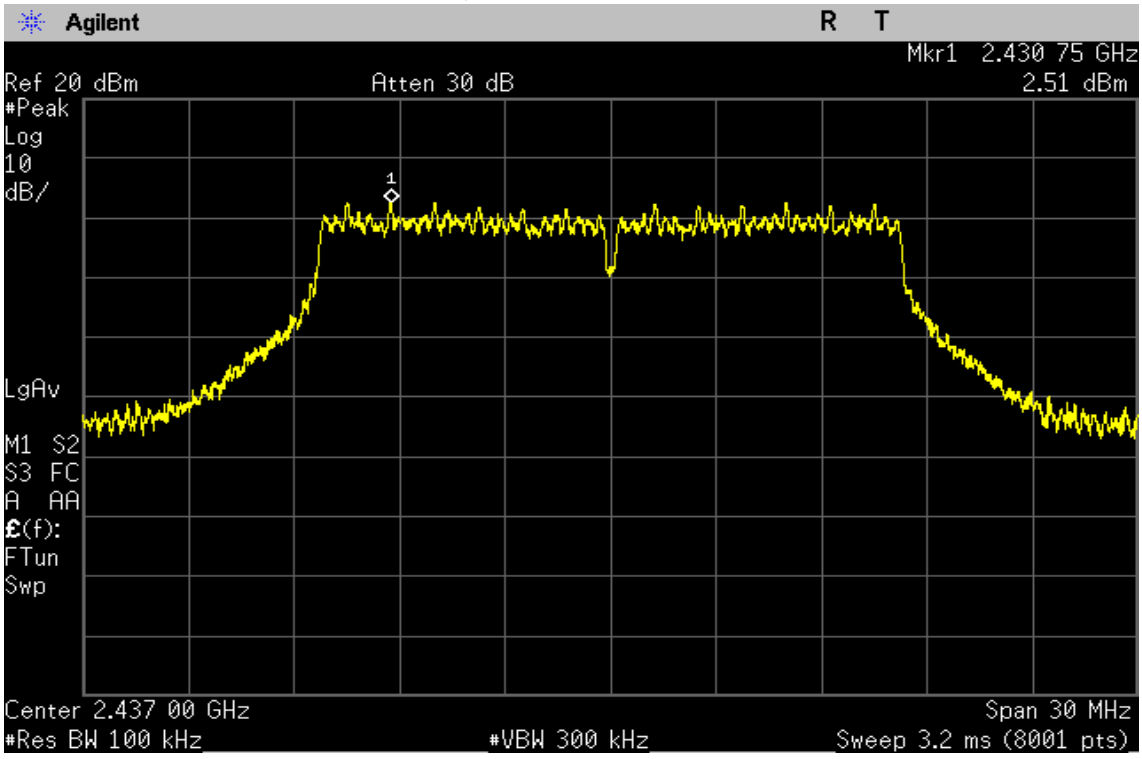


PLOTS OF EMISSIONS

Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 412 MHz)

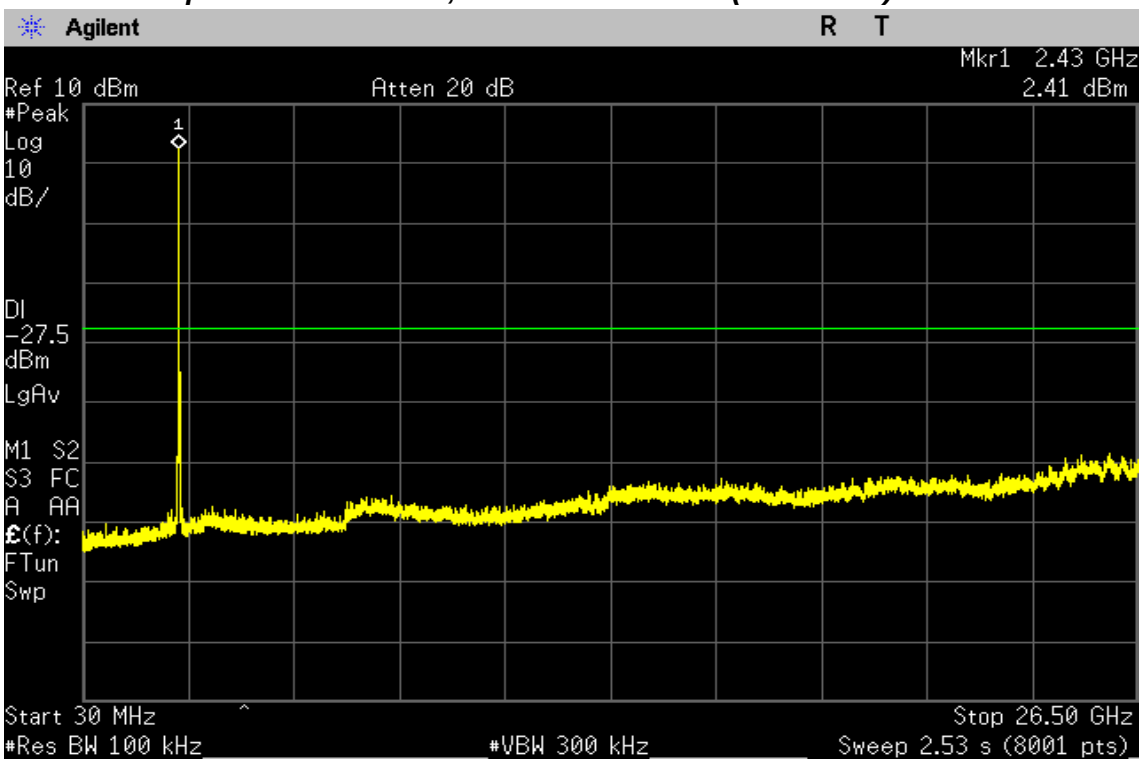


Reference Power Spectral Density, 6 Channel (2 437 MHz)

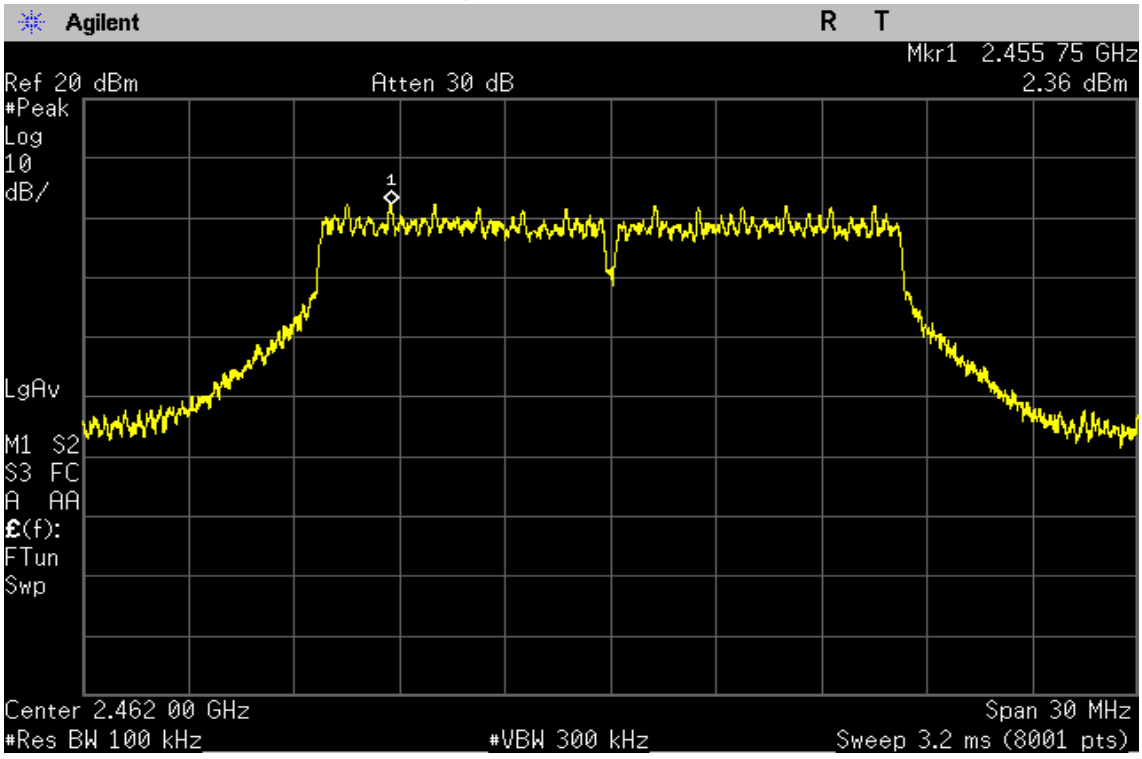


PLOTS OF EMISSIONS

Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 437 MHz)

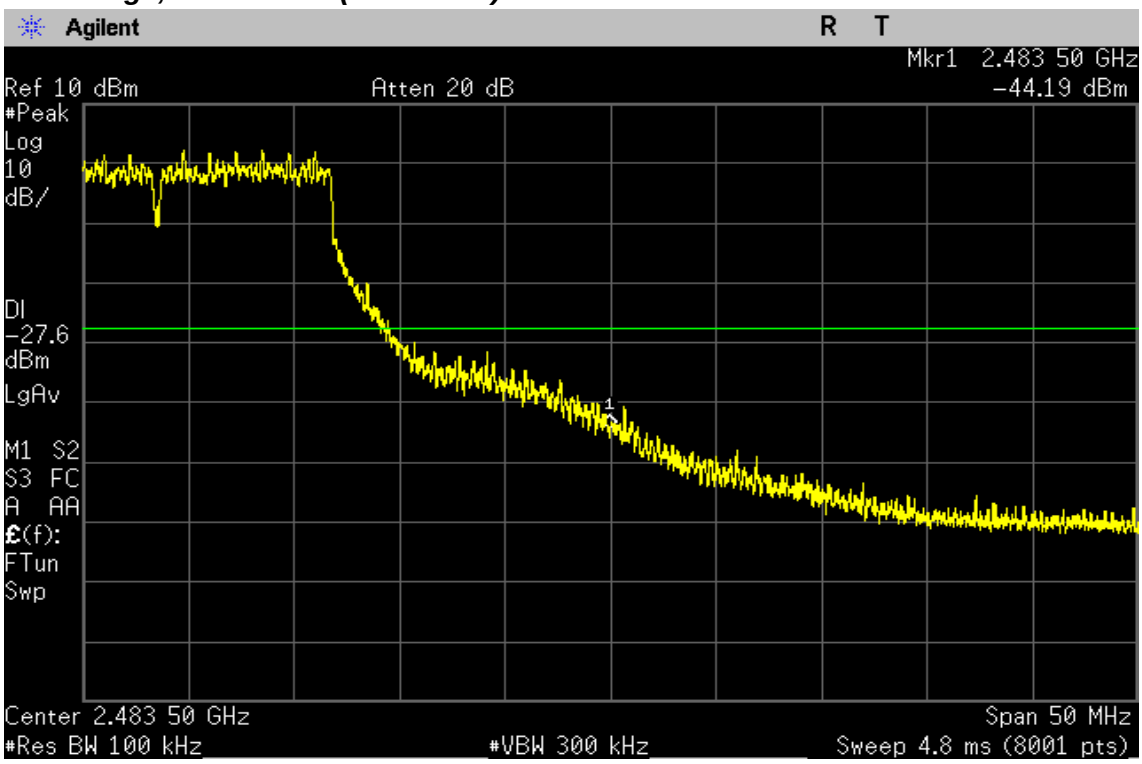


Reference Power Spectral Density, 11 Channel (2 462 MHz)

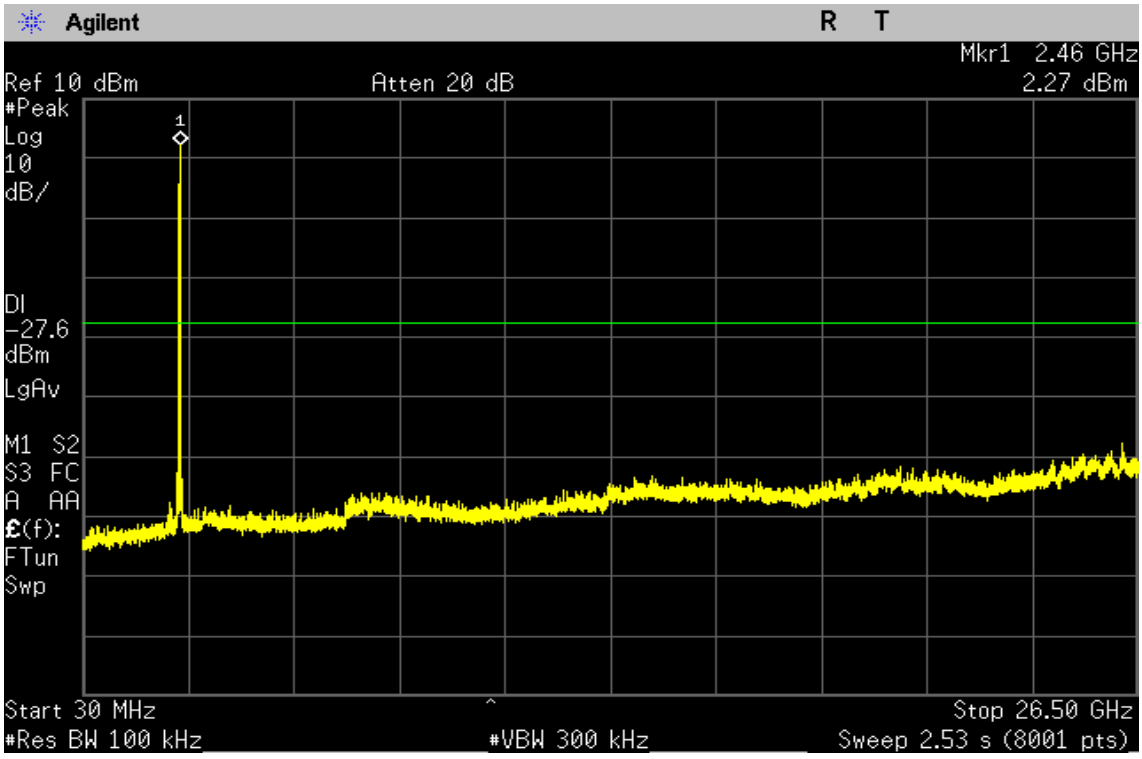


PLOTS OF EMISSIONS

Band Edge, 11 Channel (2 462 MHz)



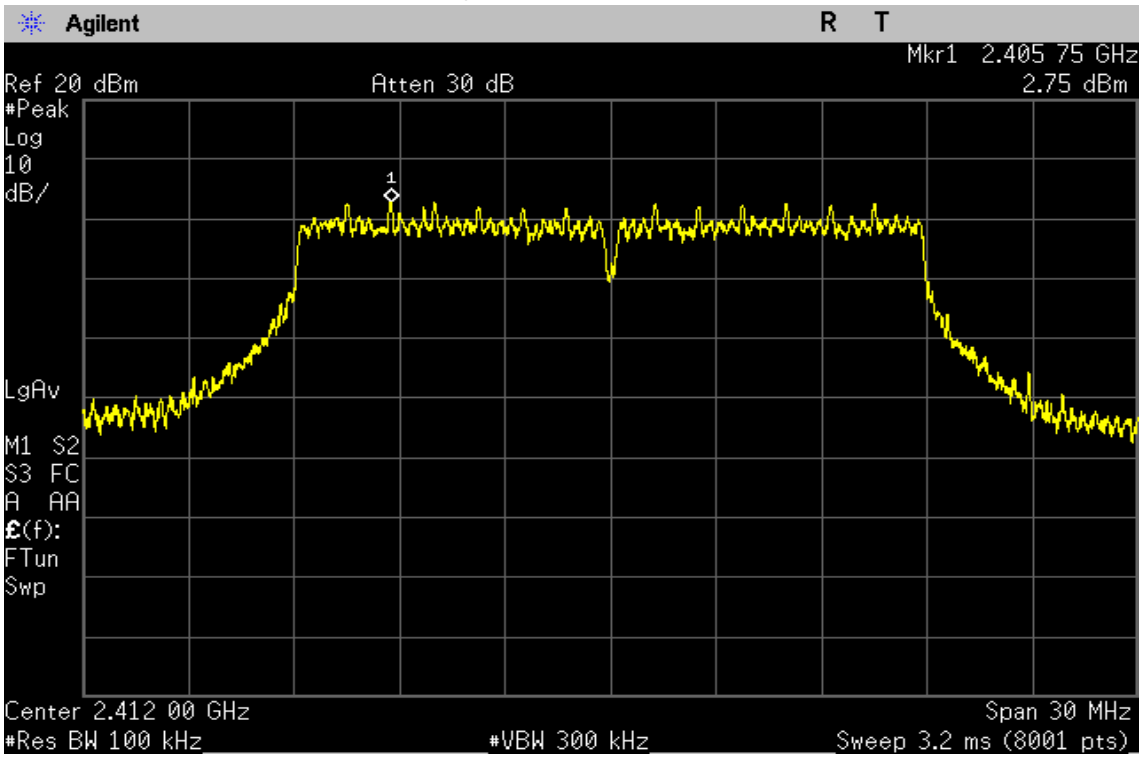
Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 462 MHz)



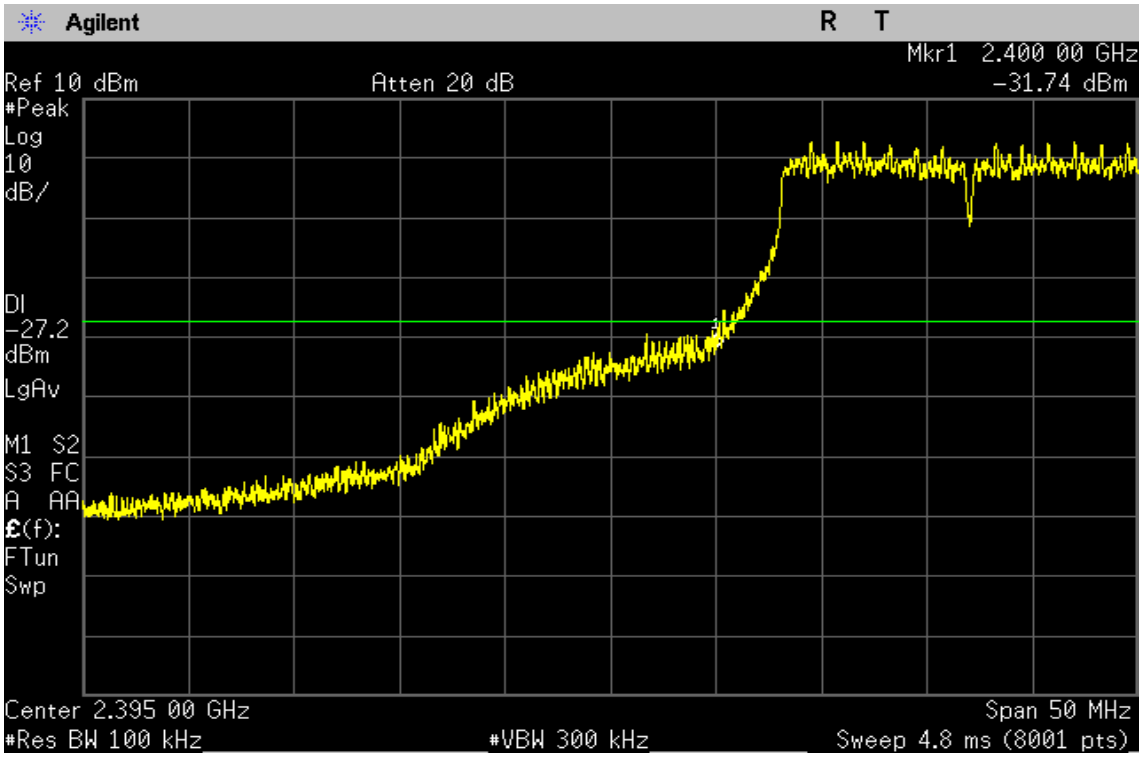
PLOTS OF EMISSIONS

802.11n (20 MHz) mode

Reference Power Spectral Density, 1 Channel (2 412 MHz)

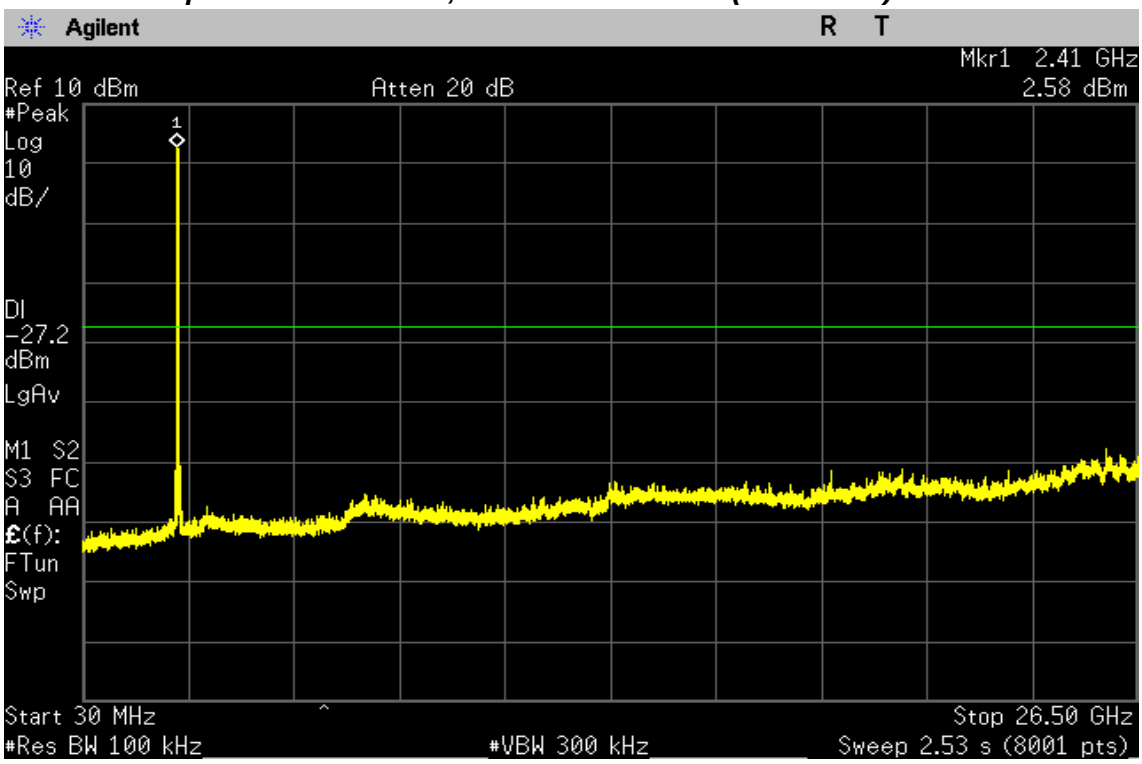


Band Edge, 1 Channel (2 412 MHz)

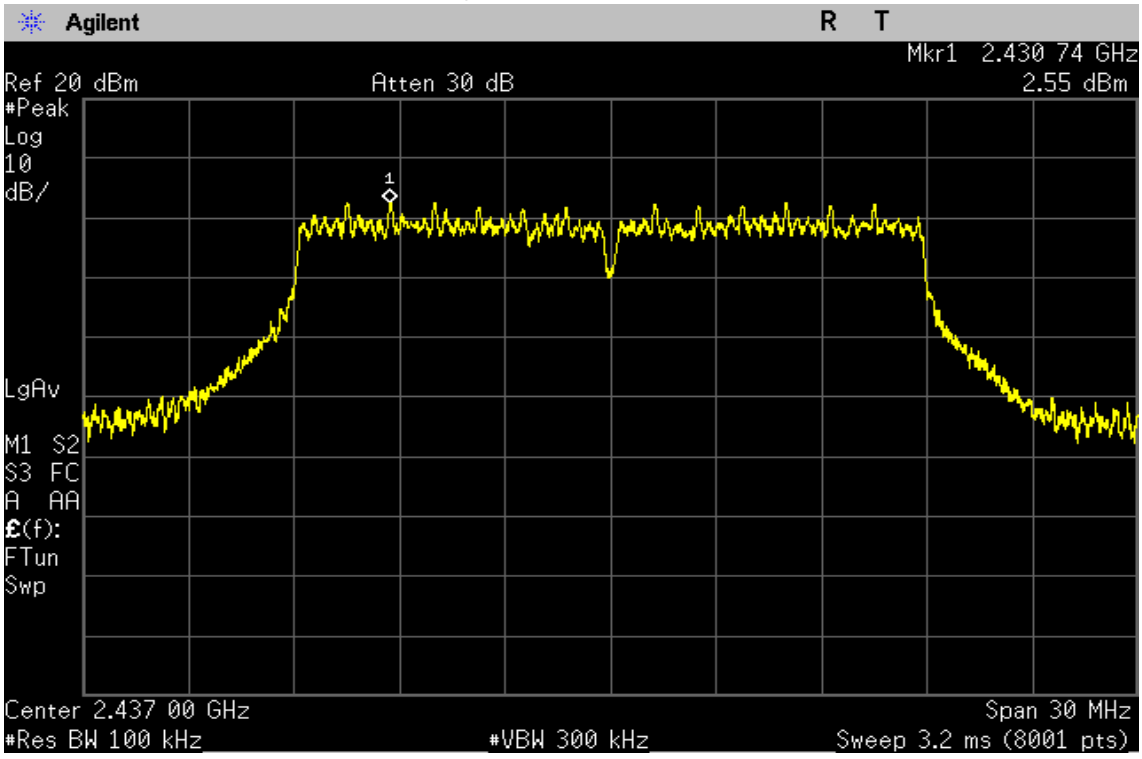


PLOTS OF EMISSIONS

Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 412 MHz)

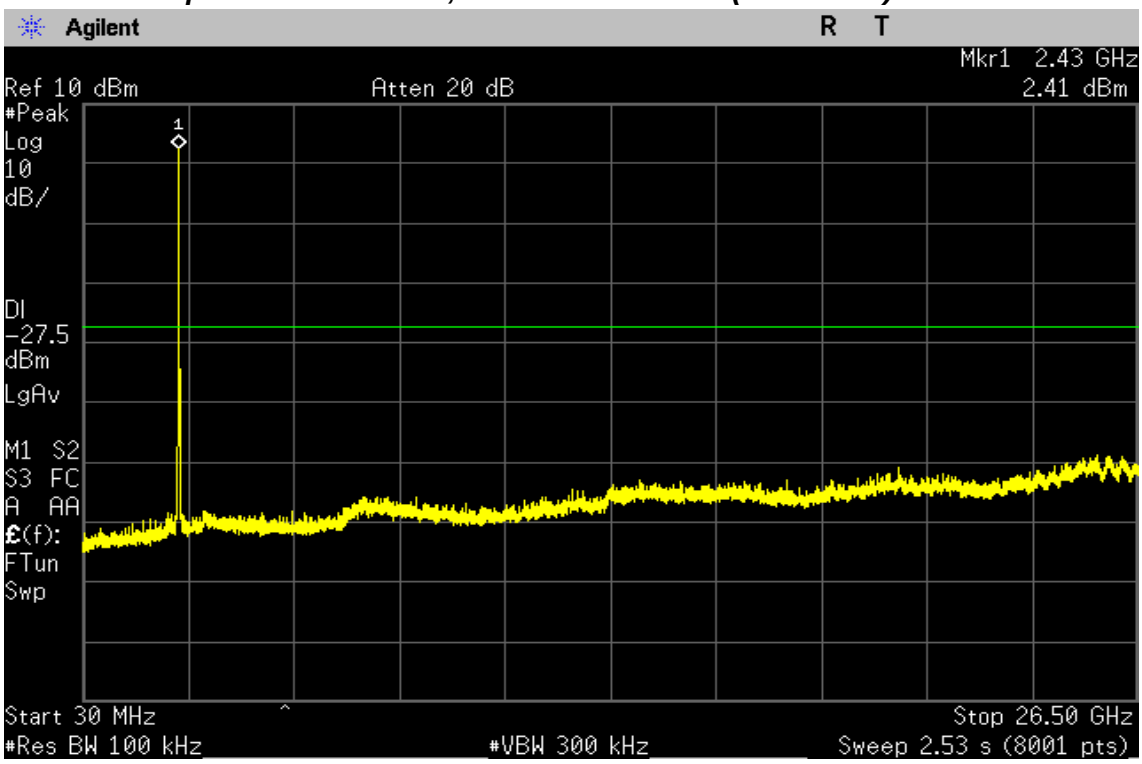


Reference Power Spectral Density, 6 Channel (2 437 MHz)

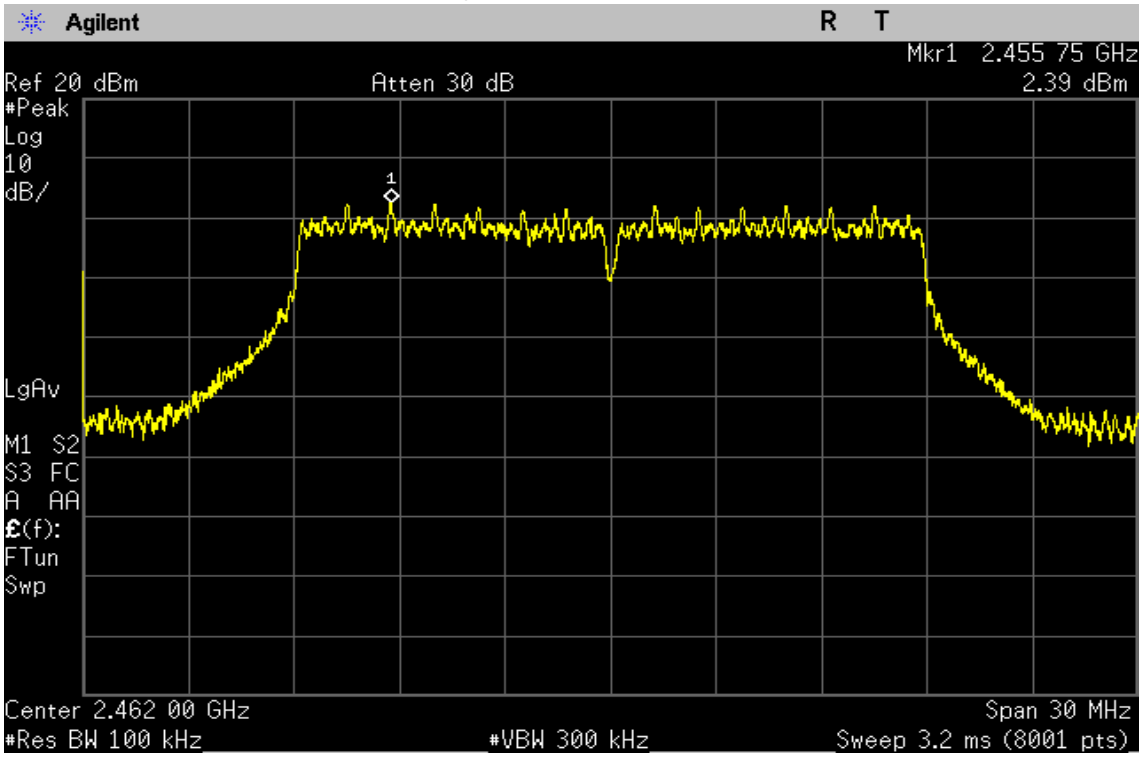


PLOTS OF EMISSIONS

Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 437 MHz)

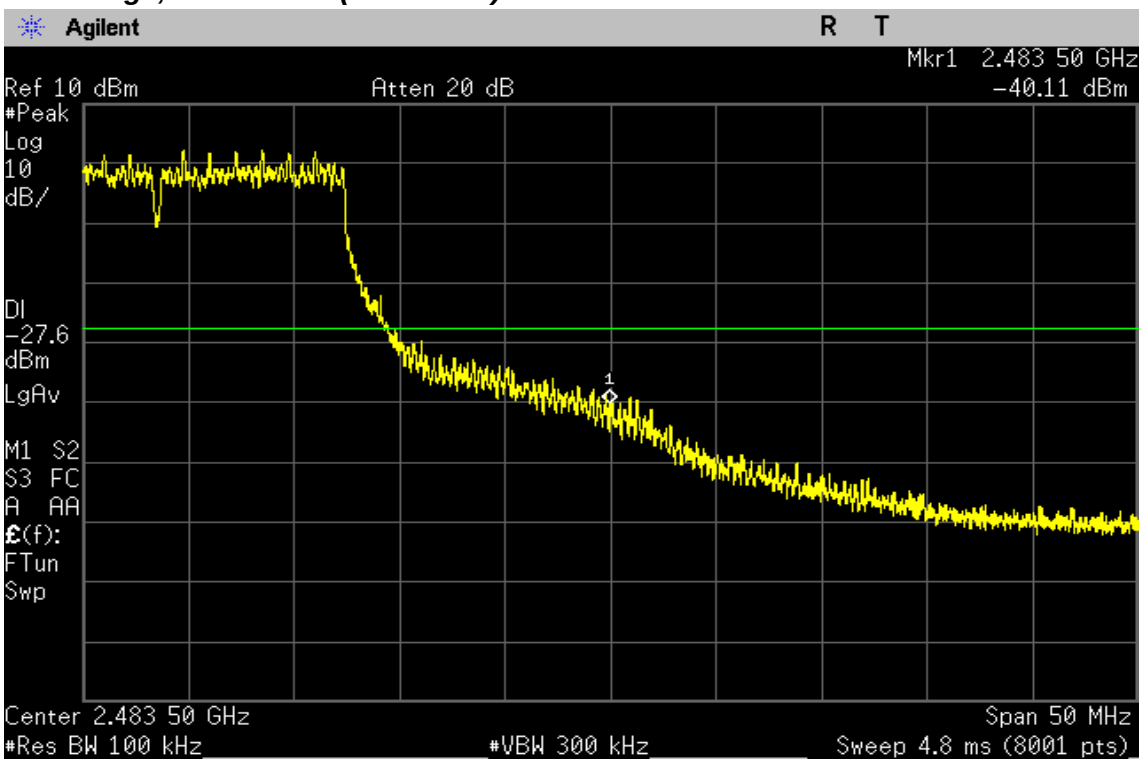


Reference Power Spectral Density, 11 Channel (2 462 MHz)

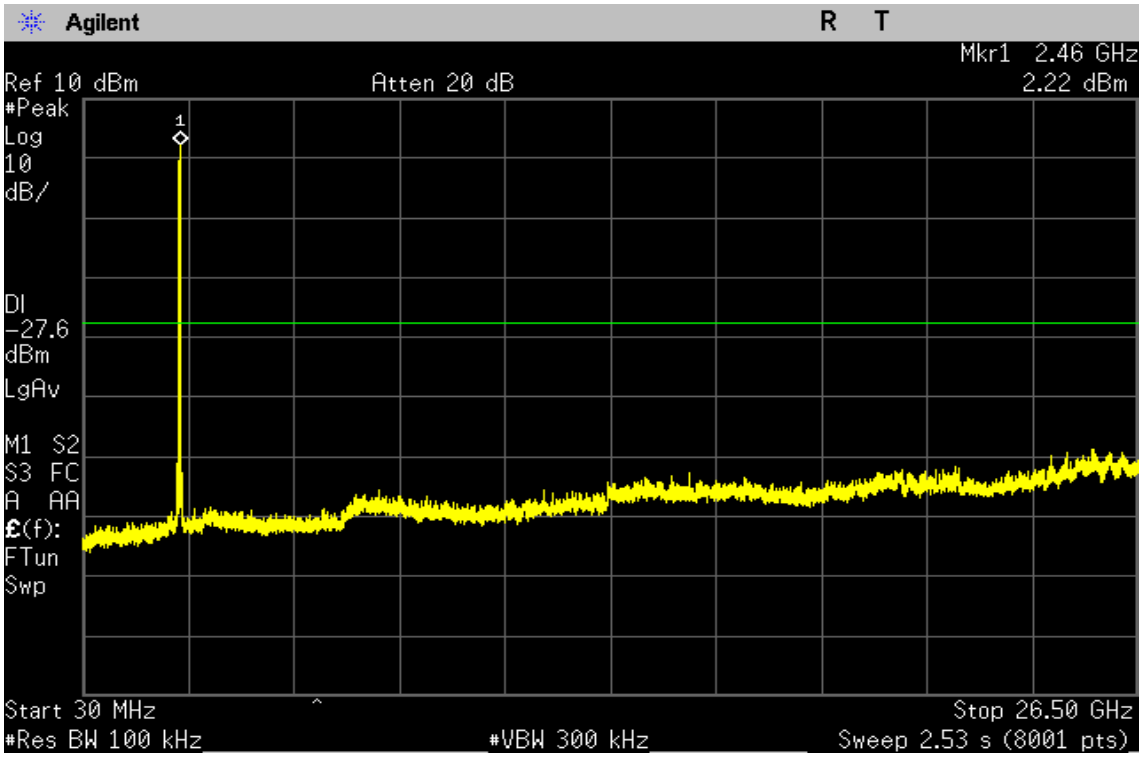


PLOTS OF EMISSIONS

Band Edge, 11 Channel (2 462 MHz)



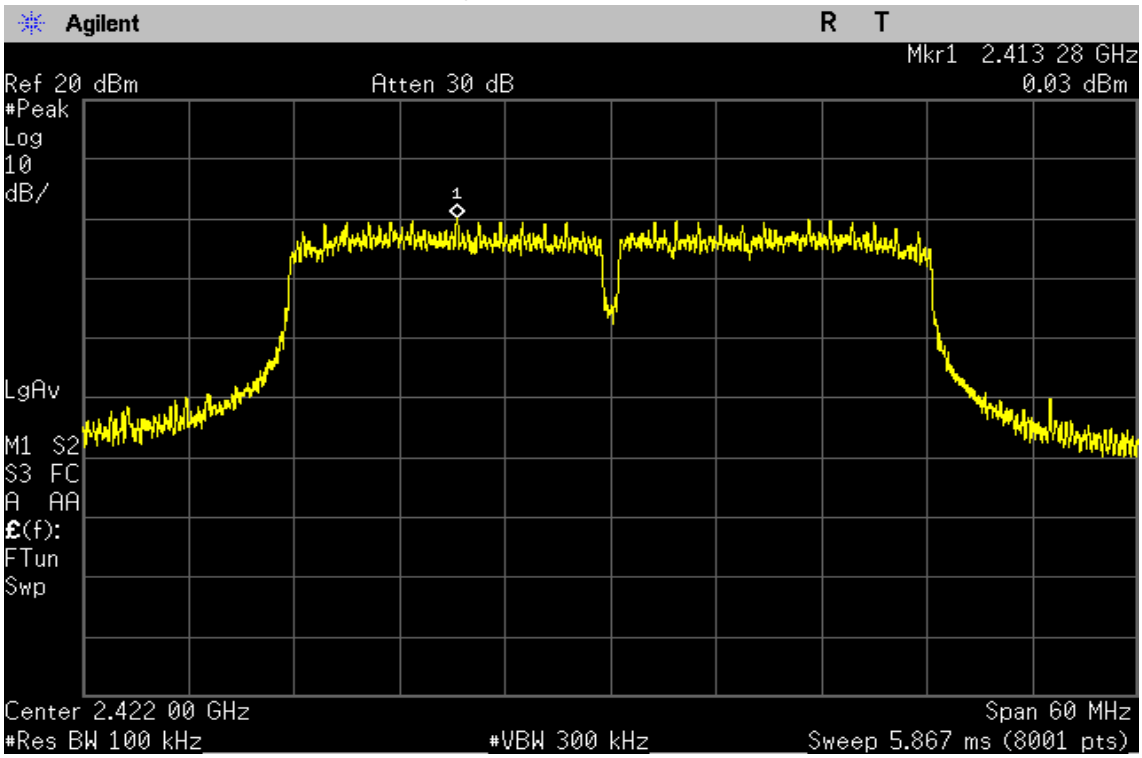
Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 462 MHz)



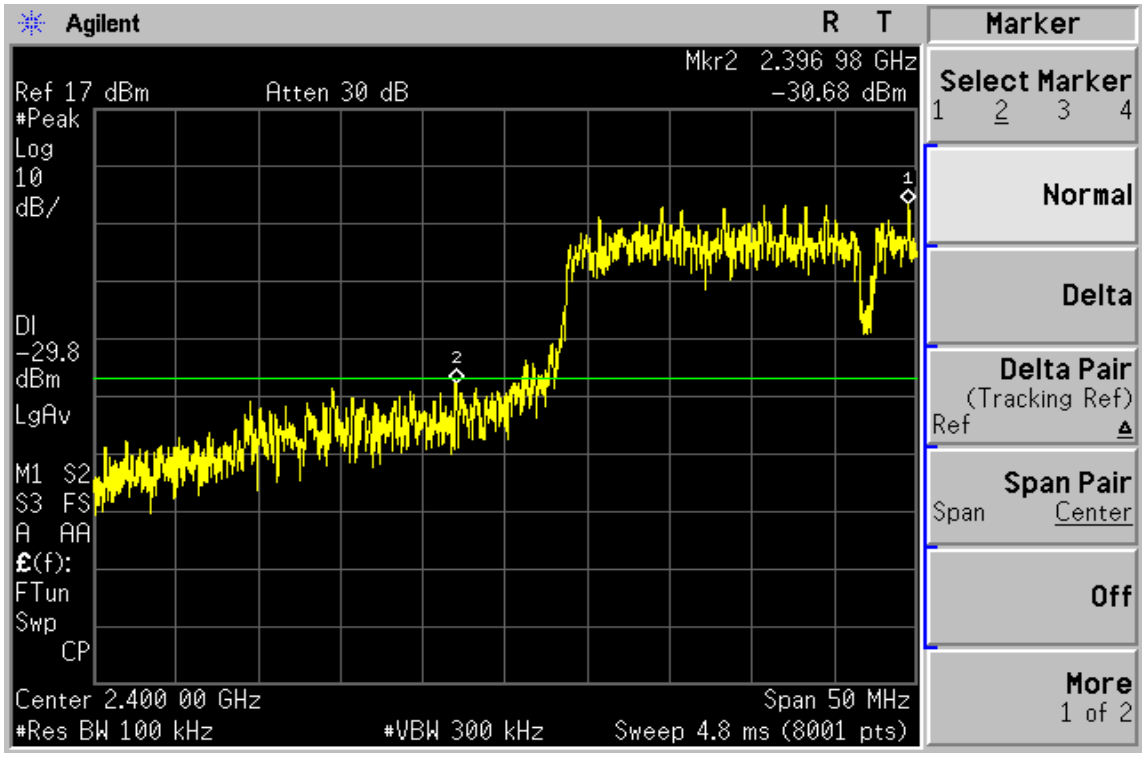
PLOTS OF EMISSIONS

802.11n (40 MHz) mode

Reference Power Spectral Density, 3 Channel (2 422 MHz)

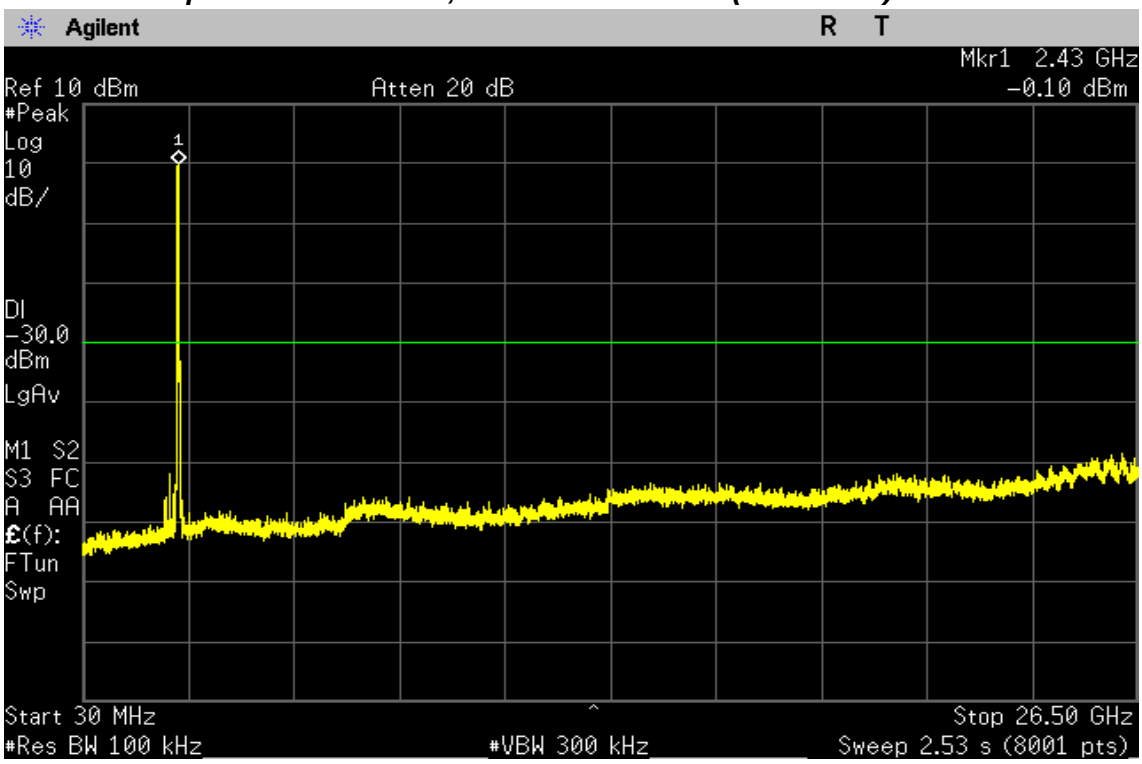


Band Edge, 3 Channel (2 422 MHz)

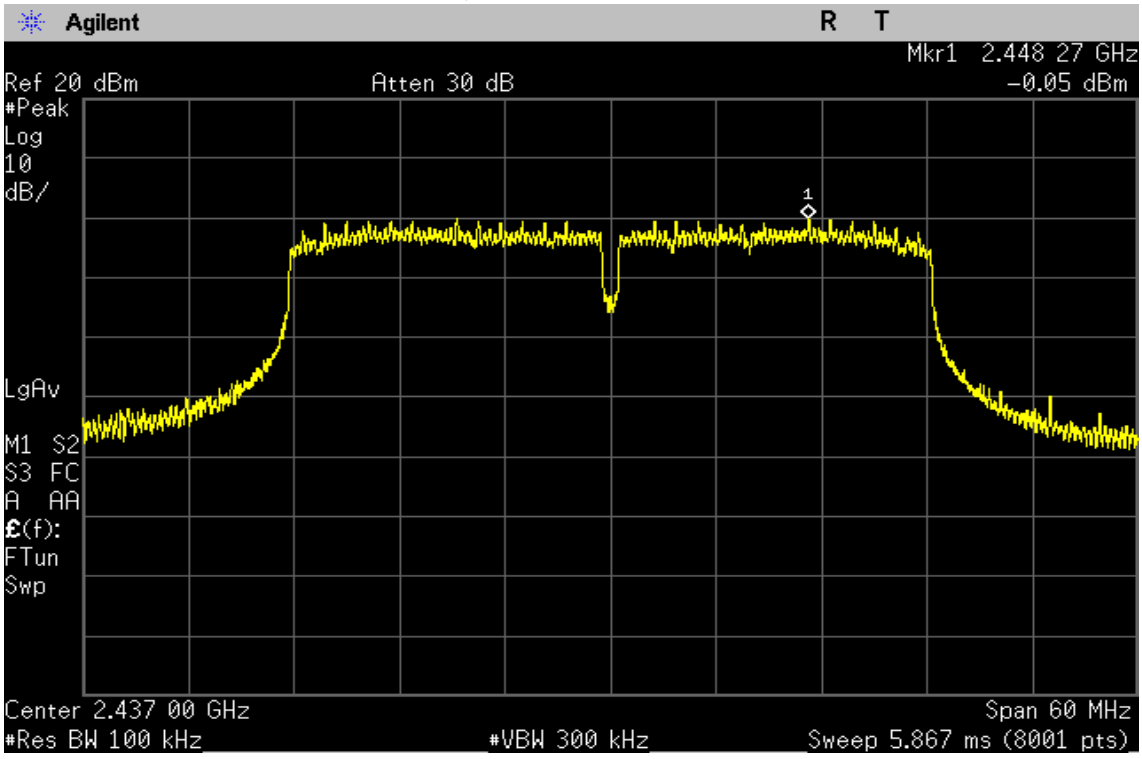


PLOTS OF EMISSIONS

Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 422 MHz)

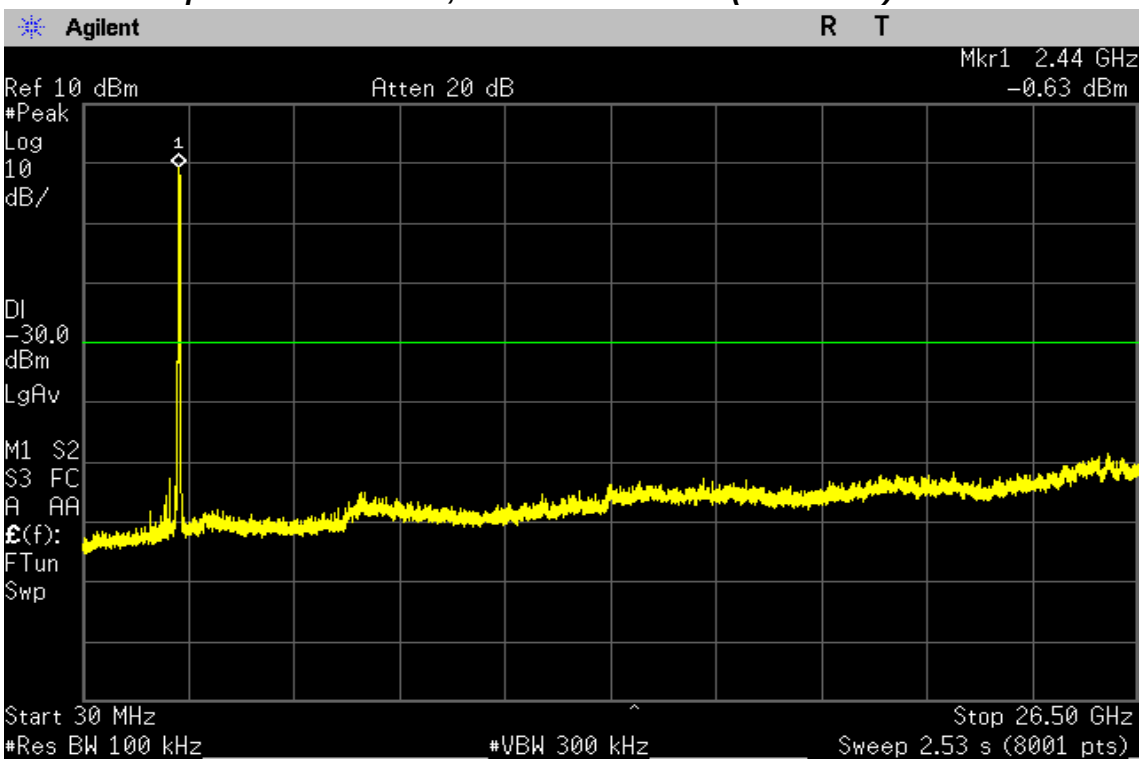


Reference Power Spectral Density, 6 Channel (2 437 MHz)

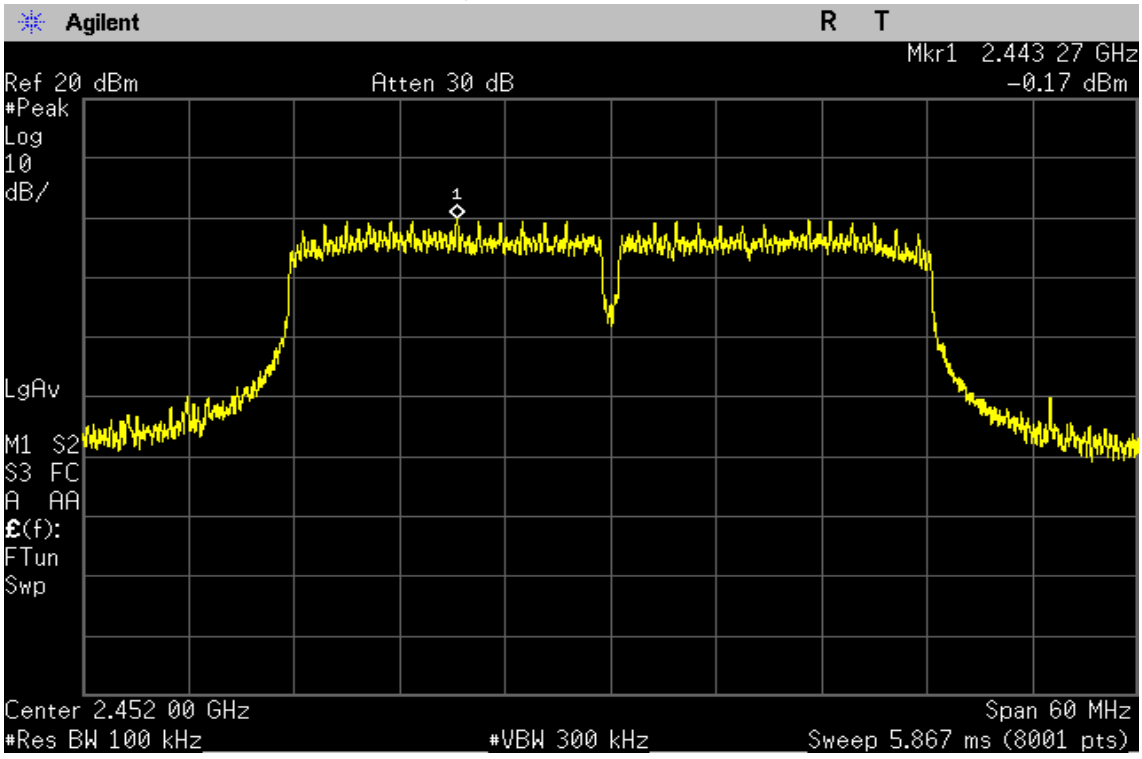


PLOTS OF EMISSIONS

Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 437 MHz)

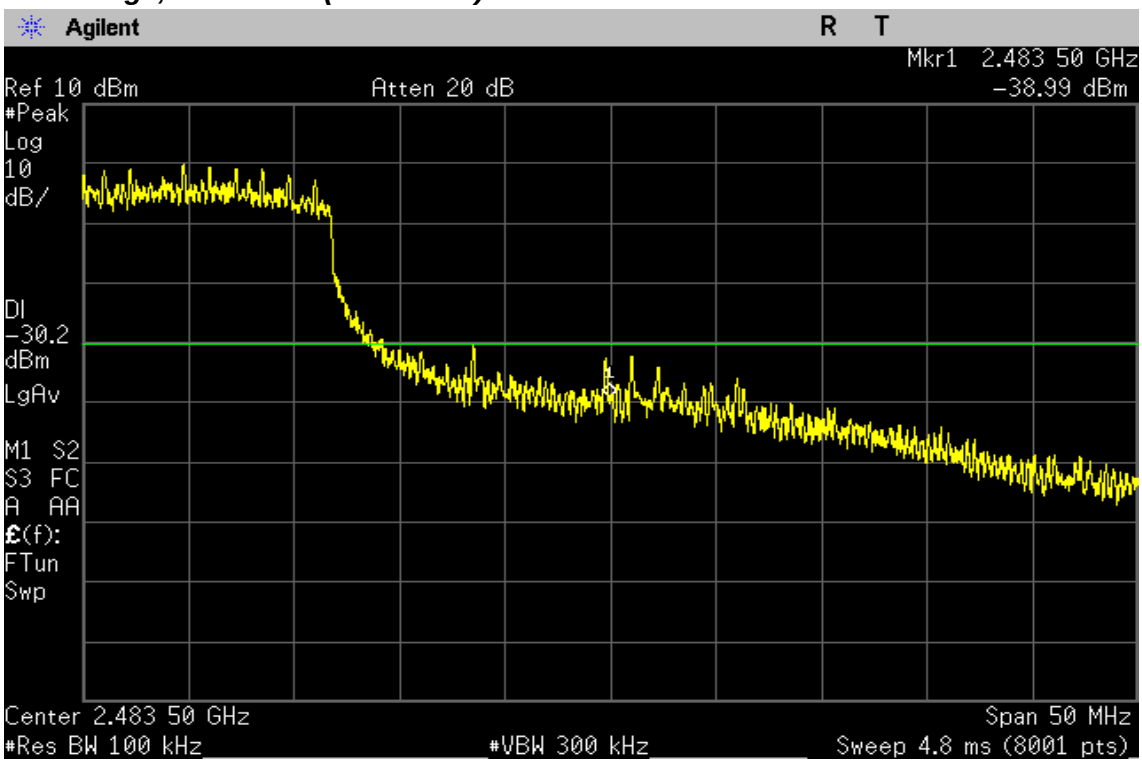


Reference Power Spectral Density, 9 Channel (2 452 MHz)

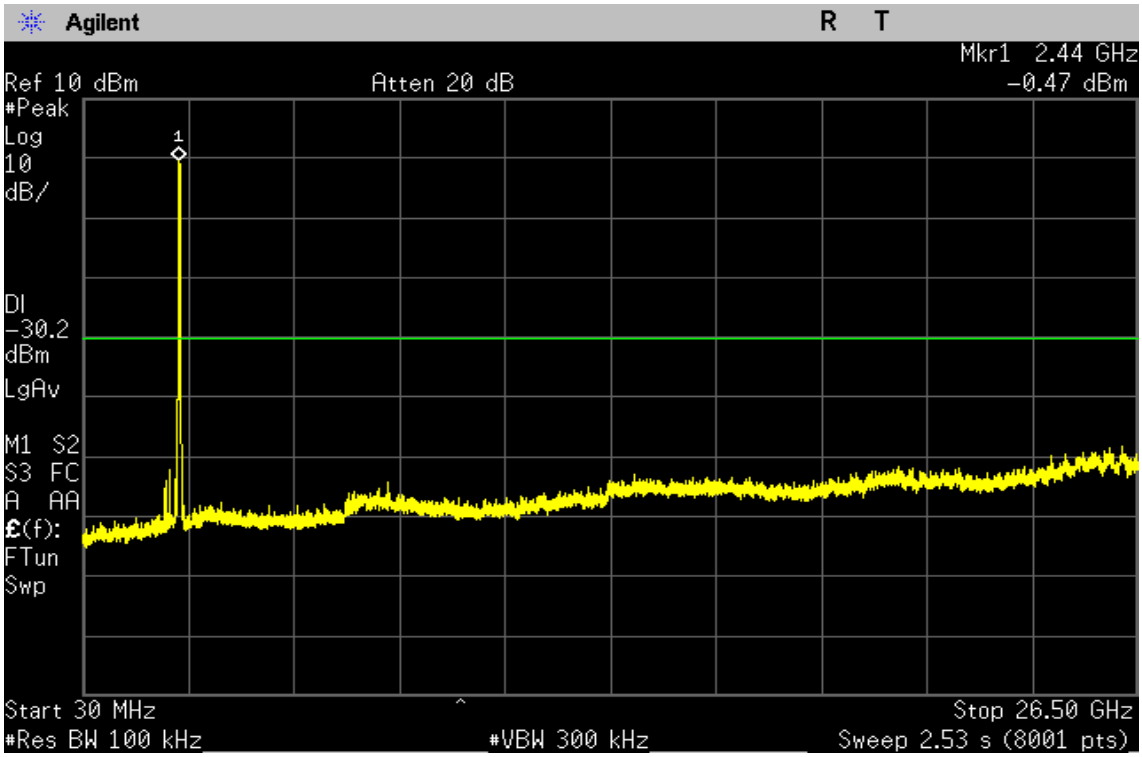


PLOTS OF EMISSIONS

Band Edge, 9 Channel (2 452 MHz)



Conducted Spurious Emissions, 30 MHz ~ 26.5 GHz (2 452 MHz)



8.7 Radiated Spurious Emissions

FCC §15.247(d), IC RSS-247 Issue 2 5.5

Test Mode : Set to Lowest channel, Middle channel and Highest channel,

802.11g mode

1 Channel

Frequency (MHz)	Reading (dBμV)	Pol* (H/V)	mode	AF+CL+Amp (dB)**	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5387.50	45.8	H	peak	3.4	49.17	74.0	24.83
7273.75	42.4	H	peak	6.0	48.39	74.0	25.61
7690.63	42.6	H	peak	7.4	50.00	74.0	24.00
14475.19	46.8	H	peak	16.2	63.00	74.0	11.00
14476.88	33.6	H	average	16.2	49.84	54.0	4.16

6 Channel

Frequency (MHz)	Reading (dBμV)	Pol* (H/V)	mode	AF+CL+Amp (dB)**	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4945.63	46.4	V	peak	2.3	48.70	74.0	25.30
7487.50	43.0	V	peak	6.6	49.63	74.0	24.37

11 Channel

Frequency (MHz)	Reading (dBμV)	Pol* (H/V)	mode	AF+CL+Amp (dB)**	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5433.13	44.6	H	peak	3.4	47.95	74.0	26.05
7261.88	42.6	H	peak	6.1	48.69	74.0	25.31
7626.25	42.0	V	peak	7.0	49.02	74.0	24.98

TEST DATA

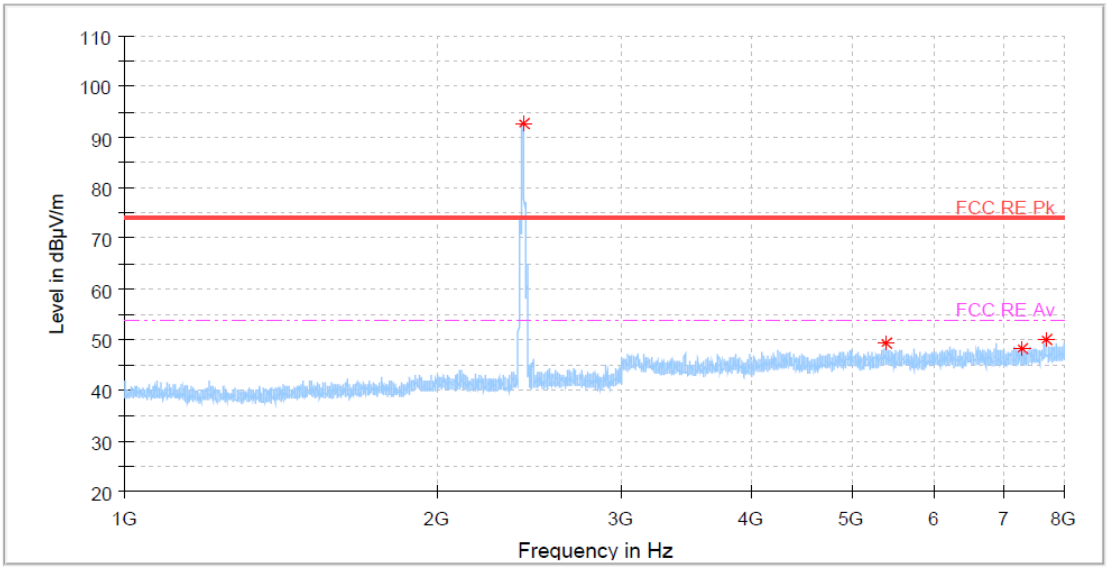
Note:

1. *Pol. H = Horizontal V = Vertical
2. **AF + CL + Amp. = Antenna Factor + Cable Loss + Amplifier.
3. Average measurement was not performed when peak-detected emission complies with the average limit.
4. Other spurious was under 30 dB below Fundamental.
5. 1 channel (2 412 MHz) in 802.11g mode was the worst condition. For other modes, peak-detected emissions have enough margin more than 20dBc, therefore the results were not recorded in this report
6. The radiated emissions testing were made by rotating the receive antenna with horizontal, Vertical polarization. The worst data was recorded.
7. Peak emissions were measured using RBW = 1 MHz, VBW = 3 MHz, Detector = Peak.
8. Average emissions were measured using RBW = 1 MHz, VBW = 10 kHz, Detector = Peak.
9. The spectrum was measured from 9 kHz to 10^{th} harmonic and the worst-case emissions were reported. No significant emissions were found beyond the 3rd harmonic for this device.

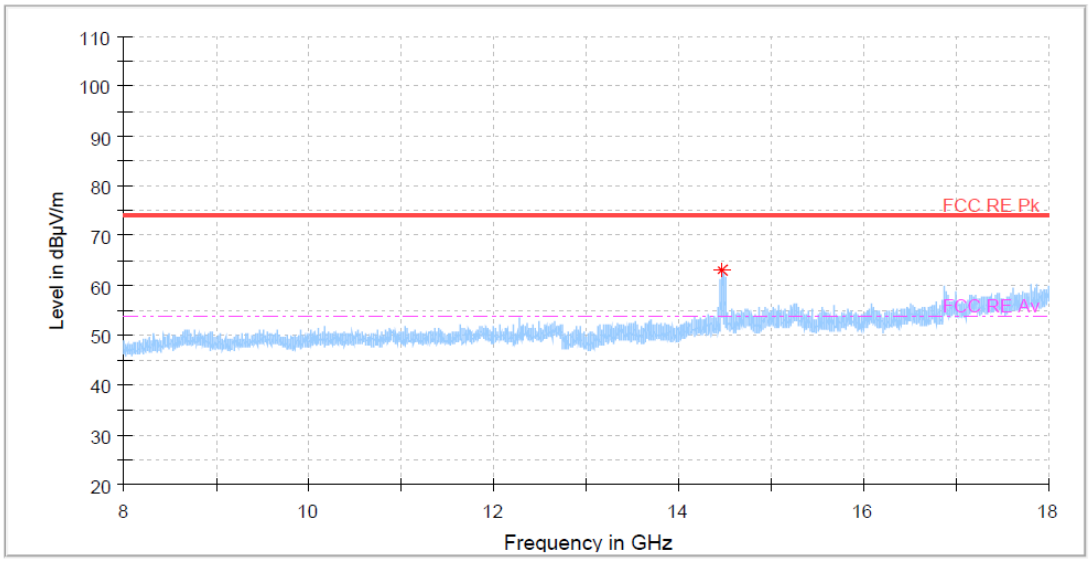
PLOTS OF EMISSIONS

Worst Case

1 channel : 1 GHz to 8 GHz_Peak

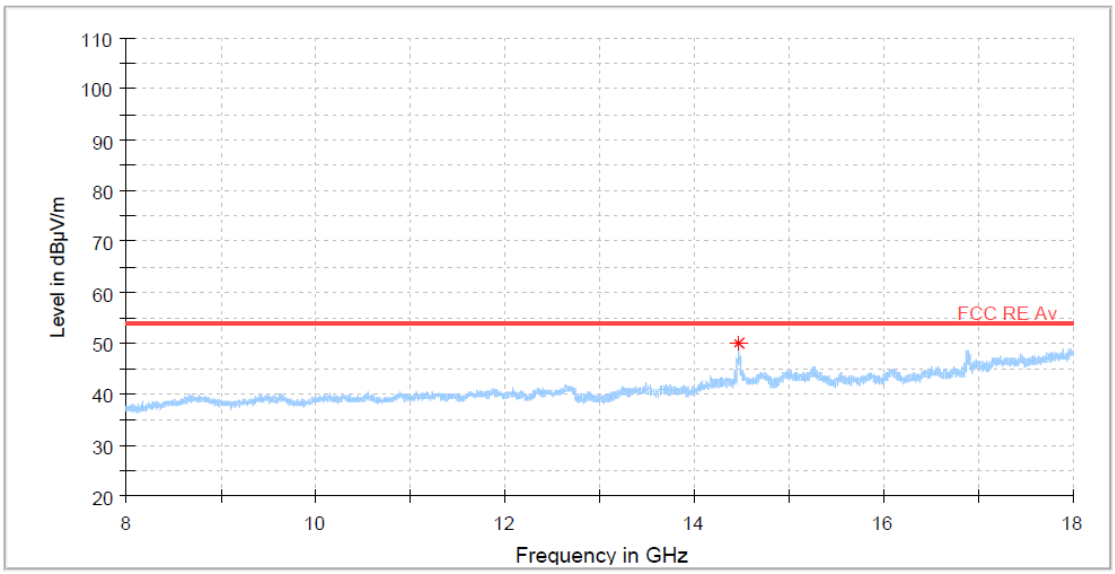


1 channel : 8 GHz to 18 GHz_Peak

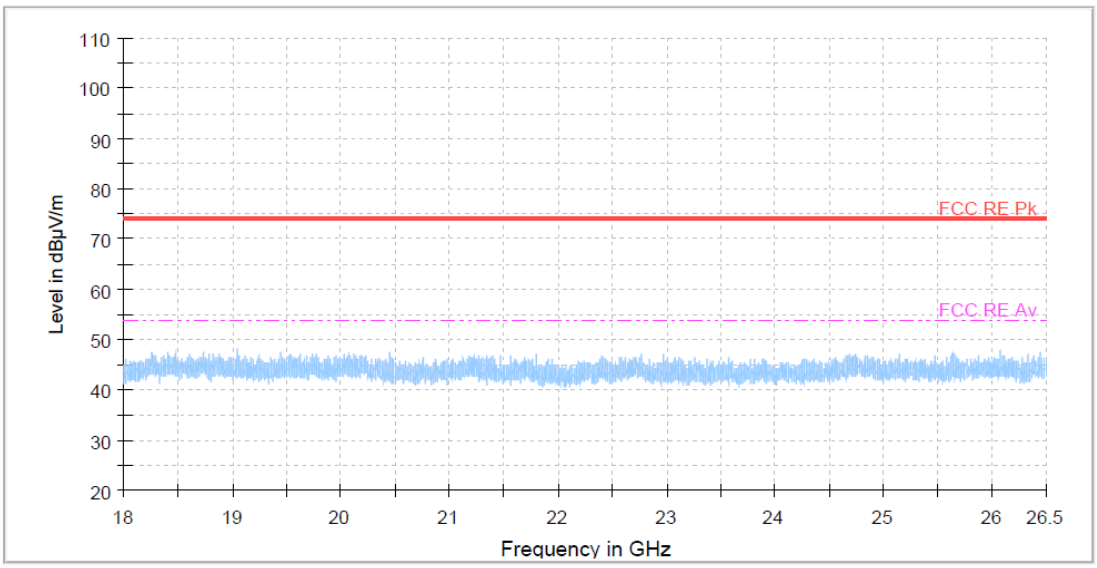


PLOTS OF EMISSIONS

1 channel : 8 GHz to 18 GHz_Average



1 channel : 18 GHz to 26.5 GHz_Peak



8.8 Radiated Band Edge

FCC §15.247(d), IC RSS-247 Issue 2 5.5

Test Mode : Set to Lowest channel and Highest channel

802.11n (40 MHz) mode

3 Channel

Frequency (MHz)	Reading (dBµV)	Pol* (H/V)	mode	AF+CL+Amp (dB)**	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2389.84	58.7	H	average	-7.9	50.75	54.0	3.25
2390.00	57.3	H	average	-7.9	49.41	54.0	4.59
2389.81	68.2	H	peak	-7.9	60.28	74.0	13.72
2390.00	67.8	H	peak	-7.9	59.88	74.0	14.12

9 Channel

Frequency (MHz)	Reading (dBµV)	Pol* (H/V)	mode	AF+CL+Amp (dB)**	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2483.50	57.2	H	average	-7.2	49.98	54.0	4.02
2483.53	57.8	H	average	-7.2	50.55	54.0	3.45
2483.50	67.6	H	peak	-7.2	60.39	74.0	13.61
2486.89	71.2	H	peak	-7.1	64.08	74.0	9.92

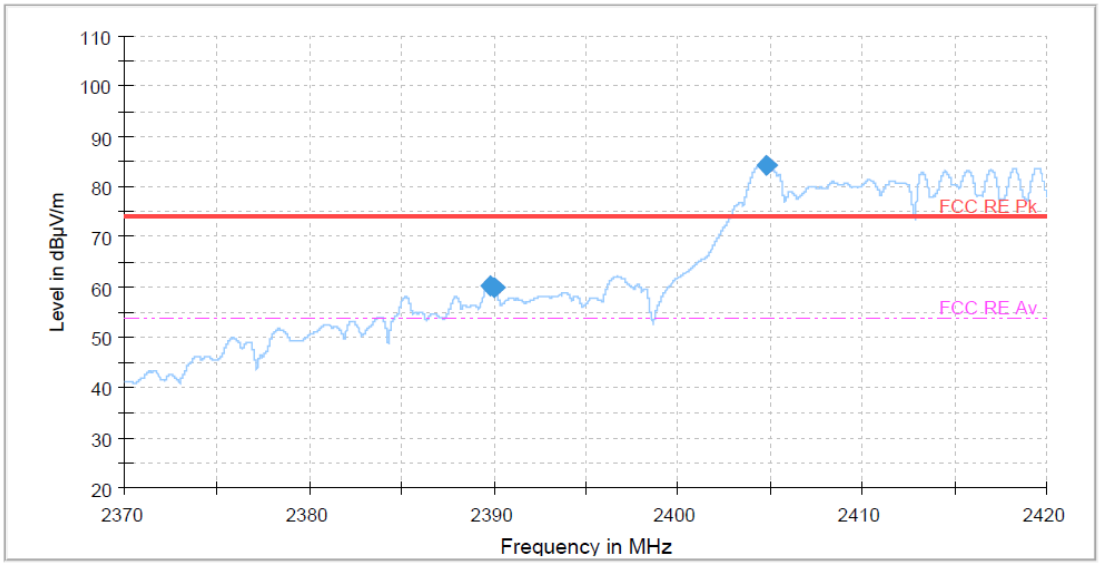
Note:

*1. *Pol. H = Horizontal V = Vertical*
*2. **AF + CL + Amp. = Antenna Factor + Cable Loss + Amplifier.*
3. Other spurious was under 30 dB below Fundamental.
4. 3 channel (2 422 MHz) in 802.11n(40 MHz) mode was the worst condition.
5. The radiated emissions testing were made by rotating the receive antenna with horizontal, Vertical polarization. The worst data was recorded.
6. Peak emissions were measured using RBW = 1 MHz, VBW = 3 MHz, Detector = Peak.
7. Average emissions were measured using RBW = 1 MHz, VBW = 10 kHz, Detector = Peak.

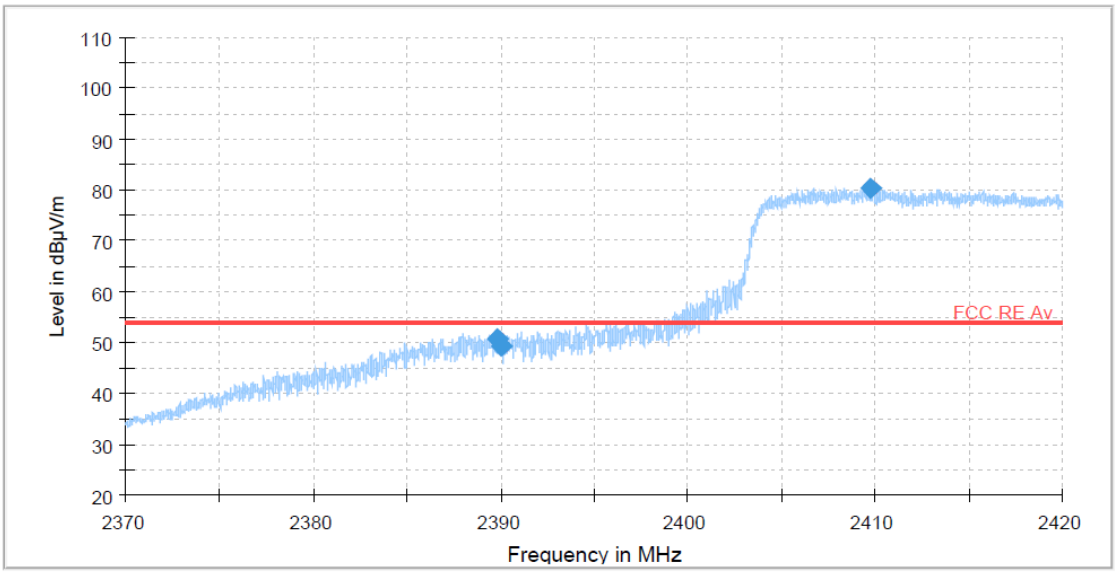
PLOT OF TEST DATA

Worst Case

3 channel_Peak



3 channel_Average



9. TEST EQUIPMENT

No.	Instrument	Manufacturer	Model	Serial No.	Calibration Date	Calibration Interval
1	*Test Receiver	R & S	ESW44	103091	May. 16 2022	1 year
2	*Test Receiver	R & S	ESCI	101041	Apr. 05 2022	1 year
3	*Attenuator	FAIRVIEW	SA3N5W-06	N/A	Apr. 06 2022	1 year
4	*Attenuator	FAIRVIEW	SA3N5W-10	N/A	Apr. 06 2022	1 year
5	*Attenuator	FAIRVIEW	SA26B-10	1643	Jul. 06 2022	1 year
6	*Amplifier	R & S	SCU 01	10029	Apr. 05 2022	1 year
7	*Amplifier	R & S	SCU 18	10065	Apr. 05 2022	1 year
8	*Amplifier	R & S	SCU26D	1984522	Jul. 08 2022	1 year
9	Amplifier	R & S	SCU40	100380	Jul. 08 2022	1 year
10	Spectrum Analyzer	R & S	FSW43	100732	Apr. 05 2022	1 year
11	*Spectrum Analyzer	Agilent	E4440A	MY44303257	Oct. 13 2021	1 year
12	*Loop Antenna	R & S	HFH2-Z2	100279	Mar. 14 2022	1 year
13	*Horn Antenna	R & S	HF907	102585	Jul. 08 2022	1 year
14	*Horn Antenna	Q-par Angus	QMS-00225	17637	Sep. 15 2021	1 year
15	Horn Antenna	Q-par Angus	QSH22K20	8180	Jul. 14 2022	1 year
16	*Trilog-Broadband Antenna	SCHWARZBECK	VULB 9163	01431	May. 11 2021	2 year
17	*LISN	R & S	ENV216	101156	Apr. 05 2022	1 year
18	Position Controller	INNCO	CO2000	12480406/L	N/A	N/A
19	*Controller	INNCO	CO3000	CO3000/937/38330516/L	N/A	N/A
20	Turn Table	INNCO	DS1200S	N/A	N/A	N/A
21	*Turn Table	INNCO	DT2000-2t	N/A	N/A	N/A
22	Antenna Mast	INNCO	MA4000	N/A	N/A	N/A
23	*TILT Antenna Mast	INNCO	MA4640-XP-EP	N/A	N/A	N/A
24	Open Switch And Control Unit	R & S	OSP-120	100081	N/A	N/A
25	*Open Switch And Control Unit	R & S	OSP-120	101766	N/A	N/A
26	Shielded Room	Seo-Young EMC	N/A	N/A	N/A	N/A
27	*Anechoic Chamber	Seo-Young EMC	N/A	N/A	N/A	N/A
28	WiFi Filter Bank	R & S	U083	N/A	N/A	N/A
29	*WiFi Filter Bank	R & S	U082	N/A	N/A	N/A

*) Test equipment used during the test

10. ACCURACY OF MEASUREMENT

The Measurement Uncertainties stated were calculated in accordance with the requirements of measurement uncertainty contained in CISPR 16-4-2 with the confidence level of 95%

1. Conducted Uncertainty Calculation

Source of Uncertainty	Xi	Uncertainty of Xi		Coverage factor k	u(Xi) (dB)	Ci	Ci u(Xi) (dB)
		Value (dB)	Probability Distribution				
Receiver reading	RI	± 0.1	normal 1	1.000	0.1	1	0.1
Attenuation AMN-Receiver	LC	± 0.08	normal 2	2.000	0.04	1	0.04
AMN Voltage division factor	LAMN	± 0.8	normal 2	2.000	0.4	1	0.4
Sine wave voltage	dVSW	± 2.00	normal 2	2.000	1.00	1	1.00
Pulse amplitude response	dVPA	± 1.50	rectangular	1.732	0.87	1	0.87
Pulse repetition rate response	dVPR	± 1.50	rectangular	1.732	0.87	1	0.87
Noise floor proximity	dVNF	± 0.00	-	-	0.00	1	0.00
AMN Impedance	dZ	± 1.80	triangular	2.449	0.73	1	0.73
ⓐ Mismatch	M	+ 0.70	U-Shaped	1.414	0.49	1	0.49
ⓑ Mismatch	M	- 0.80	U-Shaped	1.414	- 0.56	1	- 0.56
Measurement System Repeatability	RS	0.05	normal 1	1.000	0.05	1	0.05
Remark	ⓐ: AMN-Receiver Mismatch : + ⓑ: AMN-Receiver Mismatch : -						
Combined Standard Uncertainty	Normal			± 1.88			
Expended Uncertainty U	Normal (k = 2)			± 3.76			

2. Radiation Uncertainty Calculation

Source of Uncertainty	Xi	Uncertainty of Xi		Coverage factor k	u(Xi) (dB)	Ci	Ci u(Xi) (dB)
		Value (dB)	Probability Distribution				
Measurement System Repeatability	**RS**	0.34	normal 1	1.00	0.34	1	0.34
Receiver reading	**Ri**	± 0.02	normal 2	2.00	0.01	1	0.01
Sine wave voltage	**dVsw**	± 0.17	normal 2	2.00	0.09	1	0.09
Pulse amplitude response	**dVpa**	± 0.92	normal 2	2.00	0.46	1	0.46
Pulse repetition rate response	**dVpr**	± 0.35	normal 2	2.00	0.18	1	0.18
Noise floor proximity	**dVnf**	± 0.50	normal 2	2.00	0.25	1	0.25
Antenna Factor Calibration	**AF**	± 2.00	rectangular	$\sqrt{3}$	1.15	1	1.15
Cable Loss	**CL**	± 1.00	normal 2	2.00	0.50	1	0.50
Antenna Directivity	**AD**	± 0.00	rectangular	$\sqrt{3}$	0.00	1	0.00
Antenna Factor Height Dependence	**AH**	± 2.00	rectangular	$\sqrt{3}$	1.15	1	1.15
Antenna Phase Centre Variation	**AP**	± 0.20	rectangular	$\sqrt{3}$	0.12	1	0.12
Antenna Factor Frequency Interpolation	**Ai**	± 0.25	rectangular	$\sqrt{3}$	0.14	1	0.14
Site Imperfections	**Si**	± 4.00	triangular	$\sqrt{6}$	1.63	1	1.63
Measurement Distance Variation	**DV**	± 0.60	rectangular	$\sqrt{3}$	0.35	1	0.35
Antenna Balance	**Dbal**	± 0.90	rectangular	$\sqrt{3}$	0.52	1	0.52
Cross Polarisation	**DCross**	± 0.00	rectangular	$\sqrt{3}$	0.00	1	0.18
Mismatch	**M**	+ 0.98 - 1.11	U-Shaped	$\sqrt{2}$	0.74	1	0.74
EUT Volume Diameter	**Vd**	0.33	normal 1	1.00	0.33	1	0.11
Remark							
Combined Standard Uncertainty	Normal						
Expended Uncertainty U	Normal (k = 2)						