HEADQUARTERS: 914 WEST PATAPSCO AVENUE • BALTIMORE, MARYLAND 21230 • PHONE (410) 354-3300 • FAX (410) 354-3313

May 16, 2019

Polycom Inc.
6001 America Center Drive
San Jose, CA 95002

Dear Tony Griffiths,

Enclosed is the EMC Wireless test report for compliance testing of the Polycom Inc., P011 as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Part 15 Subpart C for Intentional Radiators.

Thank you for using the services of Eurofins MET Labs. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
EUROFINS MET LABS

Jennifer Warnell
Documentation Department

Reference: (\Polycom Inc.\ EMCA102119C-FCC247 DTS Wi-Fi Rev. 2)

Electromagnetic Compatibility Criteria
Test Report

for the

Polycom Inc.
P011

Tested under
the FCC Certification Rules
contained in
15.247 Subpart C for Intentional Radiators

MET Report: EMCA102119C-FCC247 DTS Wi-Fi Rev. 2

May 16, 2019

Prepared For:

Polycom Inc.
6001 America Center Drive
San Jose, CA 95002

Prepared By:
Eurofins MET Labs
914 W. Patapsco Ave.
Baltimore, MD 21230

Electromagnetic Compatibility Criteria
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Giuliano Messina, Project Engineer
Electromagnetic Compatibility Lab

Jennifer Warnell
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules Part 15.247 under normal use and maintenance.

Jonathan Tavira,
Manager, Austin Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
∅	April 26, 2019	Initial Issue.
1	May 2, 2019	Combined output power correction.
2	May 16, 2019	Corrected power.

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List of Terms and Abbreviations

AC	**A**lternating **C**urrent
ACF	**A**ntenna **C**orrection **F**actor
Cal	**Cal**ibration
d	**M**easurement **D**istance
dB	**D**eci**b**els
dBµA	**D**eci**b**els above one **micro**amp
dBµV	**D**eci**b**els above one **micro**volt
dBµA/m	**D**eci**b**els above one **micro**amp **per m**eter
dBµV/m	**D**eci**b**els above one **micro**volt **per m**eter
DC	**D**irect **C**urrent
E	**E**lectric Field
DSL	**D**igital **S**ubscriber **L**ine
ESD	**E**lectro**s**tatic **D**ischarge
EUT	**E**quipment **U**nder **T**est
f	**F**requency
FCC	**F**ederal **C**ommunications **C**ommission
GRP	**G**round **R**eference **P**lane
H	Magnetic Field
HCP	**H**orizontal **C**oupling **P**lane
Hz	**H**ert**z**
IEC	**I**nternational **E**lectrotechnical **C**ommission
kHz	**k**ilo**h**ert**z**
kPa	**k**ilo**pa**scal
kV	**k**ilo**v**olt
LISN	**L**ine **I**mpedance **S**tabilization **N**etwork
MHz	**M**ega**h**ertz
µH	**microh**enry
µ	**microf**arad
µs	**micros**econds
NEBS	**N**etwork **E**quipment-**B**uilding **S**ystem
PRF	**P**ulse **R**epetition **F**requency
RF	**R**adio **F**requency
RMS	**R**oot-**M**ean-**S**quare
TWT	**T**raveling **W**ave **T**ube
V/m	**V**olts **per m**eter
VCP	**V**ertical **C**oupling **P**lane

I. Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Polycom Inc. P011, with the requirements of Part 15, §15.247. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the P011. Polycom Inc. should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the P011, has been **permanently** discontinued.

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, §15.247, in accordance with Polycom Inc., purchase order number 6090003000. All tests were conducted using measurement procedure ANSI C63.4-2014 and ANSI C63.10-2013.

FCC Reference 47 CFR Part 15.247:2005	Description	Compliance
Title 47 of the CFR, Part 15 §15.203	Antenna Requirement	Compliant
Title 47 of the CFR, Part 15 §15.207(a)	Conducted Emission Limits	Compliant
Title 47 of the CFR, Part 15 §15.247(a)(2)	6dB Occupied Bandwidth	Compliant
Title 47 of the CFR, Part 15 §15.247(b)	Peak Power Output	Compliant
Title 47 of the CFR, Part 15 §15.247(d); §15.209; §15.205	Radiated Spurious Emissions Requirements	Compliant
Title 47 of the CFR, Part 15 §15.247(d)	RF Conducted Spurious Emissions Requirements	Compliant
Title 47 of the CFR, Part 15 §15.247(d)	RF Conducted Band Edge	Compliant
Title 47 of the CFR, Part 15; §15.247(e)	Peak Power Spectral Density	Compliant
Title 47 of the CFR, Part 15 §15.247(i)	Maximum Permissible Exposure (MPE)	Compliant

Table 1. Executive Summary of EMC Part 15.247 Compliance Testing

II. Equipment Configuration

A. Overview

Eurofins MET Labs was contracted by Polycom Inc. to perform testing on the P011, under Polycom Inc.'s purchase order number 6090003000.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Polycom Inc., P011.

The results obtained relate only to the item(s) tested.

Model(s) Tested:	P011	
Model(s) Covered:	P011	
EUT Specifications:	Primary Power: 120VAC	
	FCC ID: M72-P011	
	Type of Modulations:	CCK, OFDM
	Equipment Code:	DTS
	Peak RF Output Power:	16.245 dBm
	EUT Frequency Ranges:	2412-2462 MHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35º C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Giuliano Messina	
Report Date(s):	May 16, 2019	

Table 2. EUT Summary Table

B. References

CFR 47, Part 15, Subpart C	Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies
ANSI C63.4:2014	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ISO/IEC 17025:2017	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Table 3. References

C. Test Site

All testing was performed at Eurofins MET Labs, 13501 McCallen Pass, Austin, TX 78753. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Radiated Emissions measurements were performed in a 10 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

D. Measurement Uncertainty

Test Method	Typical Expanded Uncertainty	K	Confidence Level
RF Frequencies	±4.52 Hz	2	95%
RF Power Conducted Emissions	±2.97 dB	2	95%
RF Power Radiated Emissions	±2.95 dB	2	95%

Table 4. Uncertainty Calculations Summary

E. Description of Test Sample

The Polycom Inc. P011, Equipment Under Test (EUT), is a video CODEC with Wi-Fi and Bluetooth functions. It is intended to be used in enterprise environments.

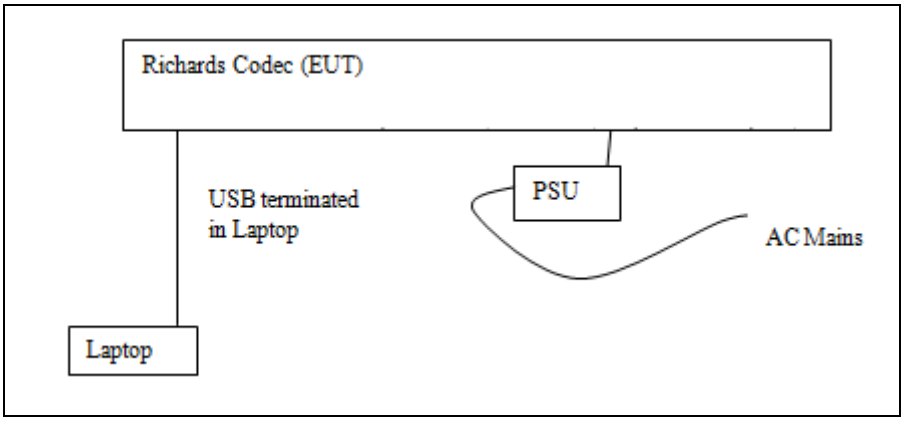


Figure 1. Block Diagram of Test Configuration

F. Equipment Configuration

The EUT was set up as outlined in Figure 1, Block Diagram of Test Setup. All cards, racks, etc., incorporated as part of the EUT is included in the following list.

Ref. ID	Name / Description	Model Number	Part Number	Serial Number	Revision
1	P011 CODEC	--	2201-85340-001	8219024D0080F2	--

Table 5. Equipment Configuration

G. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

Ref. ID	Name / Description	Manufacturer	Model Number	Customer Supplied Calibration Data
1	PSU	Sparkle FSP180-AWAN3	9NA1804503	--
2	Laptop	ASUS	X200M	--

Table 6. Support Equipment

H. Ports and Cabling Information

Ref. ID	Port name on EUT	Cable Description or reason for no cable	Qty	Length as tested (m)	Max Length (m)	Shielded ? (Y/N)	Termination Box ID & Port Name
1	DC In	--	1	--	--	N	DC In
2	USB Type C	USB	1	--	--	--	Control system from laptop

Table 7. Ports and Cabling Information

I. Mode of Operation

The support laptop provided a direct means of controlling transmitter parameters.

J. Method of Monitoring EUT Operation

A spectrum analyzer was used to confirm proper transmitter operation.

K. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

L. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Polycom Inc. upon completion of testing.

III. Electromagnetic Compatibility Criteria for Intentional Radiators

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.203 Antenna Requirement

Test Requirement: **§ 15.203:** An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

a.) Antenna must be permanently attached to the unit.

b.) Antenna must use a unique type of connector to attach to the EUT.

c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Results: The EUT as tested is compliant the criteria of §15.203. Antennas are not accessible by the end user.

Test Engineer(s): Giuliano Messina

Test Date(s): 02/04/19

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.207(a) Conducted Emissions Limits

Test Requirement(s): **§ 15.207 (a):** For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 Ω line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency range (MHz)	§ 15.207(a), Conducted Limit (dBμV)	
	Quasi-Peak	Average
0.15-0.5	66 - 56	56 - 46
0.5-5	56	46
5-30	60	50

Table 8. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a)

Test Procedure: The EUT was placed on a 0.8 m-high wooden table. The EUT was situated such that the back of the EUT was 0.4 m from one wall of the vertical ground plane, and the remaining sides of the EUT were no closer than 0.8 m from any other conductive surface. The EUT was powered from a 50 Ω/50 μH Line Impedance Stabilization Network (LISN). The EMC receiver scanned the frequency range from 150 kHz to 30 MHz. Conducted Emissions measurements were made in accordance with *ANSI C63.4-2014 "Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz"*. The measurements were performed using a 50 Ω/50 μH LISN as the input transducer to an EMI receiver. For the purpose of this testing, the transmitter was turned on.

Test Results: The EUT was compliant with this requirement.

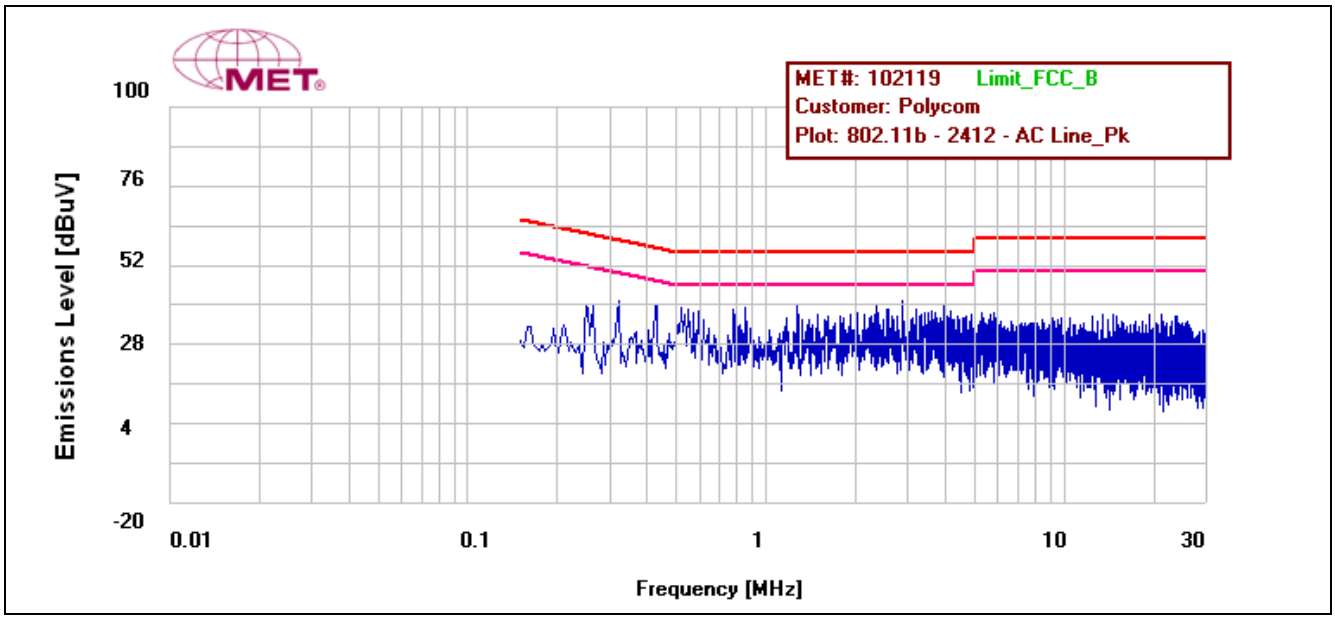
Test Engineer(s): Giuliano Messina

Test Date(s): 02/19/19

15.207(a) Conducted Emissions Test Results, 802.11b

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
802.11b - 2412 - AC Line	0.250	38.3	61.769	-23.469	Pass	37.4	51.769	-14.369	Pass
802.11b - 2412 - AC Line	0.262	38.7	61.38	-22.68	Pass	28.7	51.38	-22.68	Pass
802.11b - 2412 - AC Line	0.322	40.4	59.672	-19.272	Pass	33.9	49.672	-15.772	Pass
802.11b - 2412 - AC Line	0.430	39.6	57.277	-17.677	Pass	32.3	47.277	-14.977	Pass
802.11b - 2412 - AC Line	2.874	35.1	56	-20.9	Pass	28.1	46	-17.9	Pass
802.11b - 2412 - AC Line	3.966	34.1	56	-21.9	Pass	26.6	46	-19.4	Pass

Table 9. Conducted Emissions, 15.207(a), Phase Line, Test Results, 802.11b

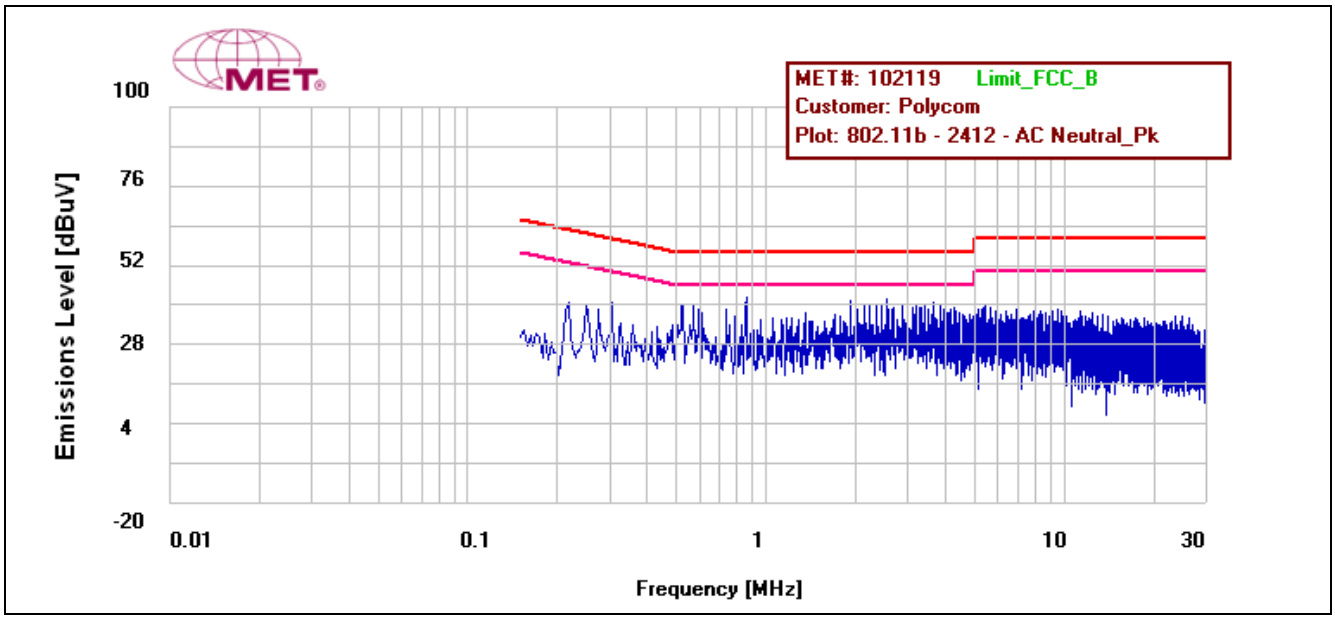


Plot 1. Conducted Emissions, 15.207(a), Phase Line, 802.11b

15.207(a) Conducted Emissions Test Results, 802.11b

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
802.11b - 2412 - AC Neutral	0.218	38.1	62.903	-24.803	Pass	31.2	52.903	-21.703	Pass
802.11b - 2412 - AC Neutral	0.306	39.3	60.095	-20.795	Pass	25	50.095	-25.095	Pass
802.11b - 2412 - AC Neutral	0.862	40.7	56	-15.3	Pass	29.7	46	-16.3	Pass
802.11b - 2412 - AC Neutral	1.930	37.5	56	-18.5	Pass	29.2	46	-16.8	Pass
802.11b - 2412 - AC Neutral	2.570	39	56	-17	Pass	29.6	46	-16.4	Pass
802.11b - 2412 - AC Neutral	3.662	35.5	56	-20.5	Pass	29.4	46	-16.6	Pass

Table 10. Conducted Emissions, 15.207(a), Neutral Line, Test Results, 802.11b

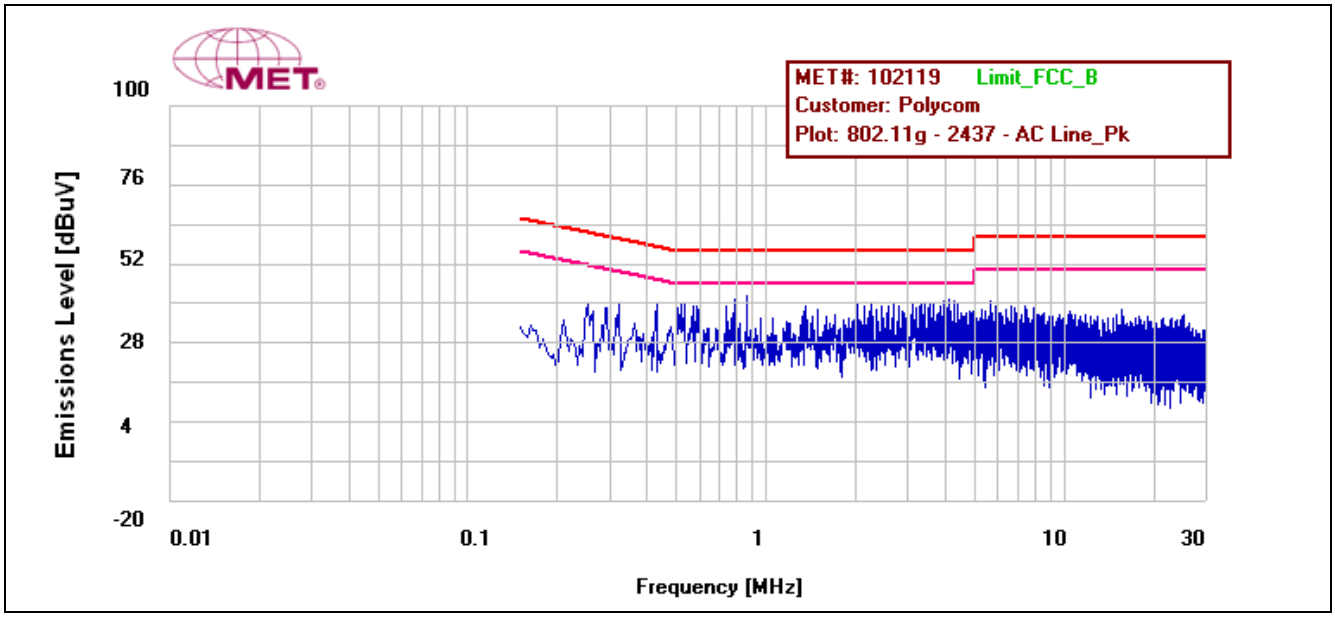


Plot 2. Conducted Emissions, 15.207(a), Neutral Line, 802.11b

15.207(a) Conducted Emissions Test Results, 802.11g

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
802.11g - 2437 - AC Line	0.430	40.1	57.277	-17.177	Pass	33.7	47.277	-13.577	Pass
802.11g - 2437 - AC Line	0.786	39.6	56	-16.4	Pass	28	46	-18	Pass
802.11g - 2437 - AC Line	0.862	41.7	56	-14.3	Pass	32.5	46	-13.5	Pass
802.11g - 2437 - AC Line	4.154	34.5	56	-21.5	Pass	27.8	46	-18.2	Pass
802.11g - 2437 - AC Line	4.422	35.4	56	-20.6	Pass	29.1	46	-16.9	Pass
802.11g - 2437 - AC Line	5.654	35.3	60	-24.7	Pass	28.5	50	-21.5	Pass

Table 11. Conducted Emissions, 15.207(a), Phase Line, Test Results, 802.11g

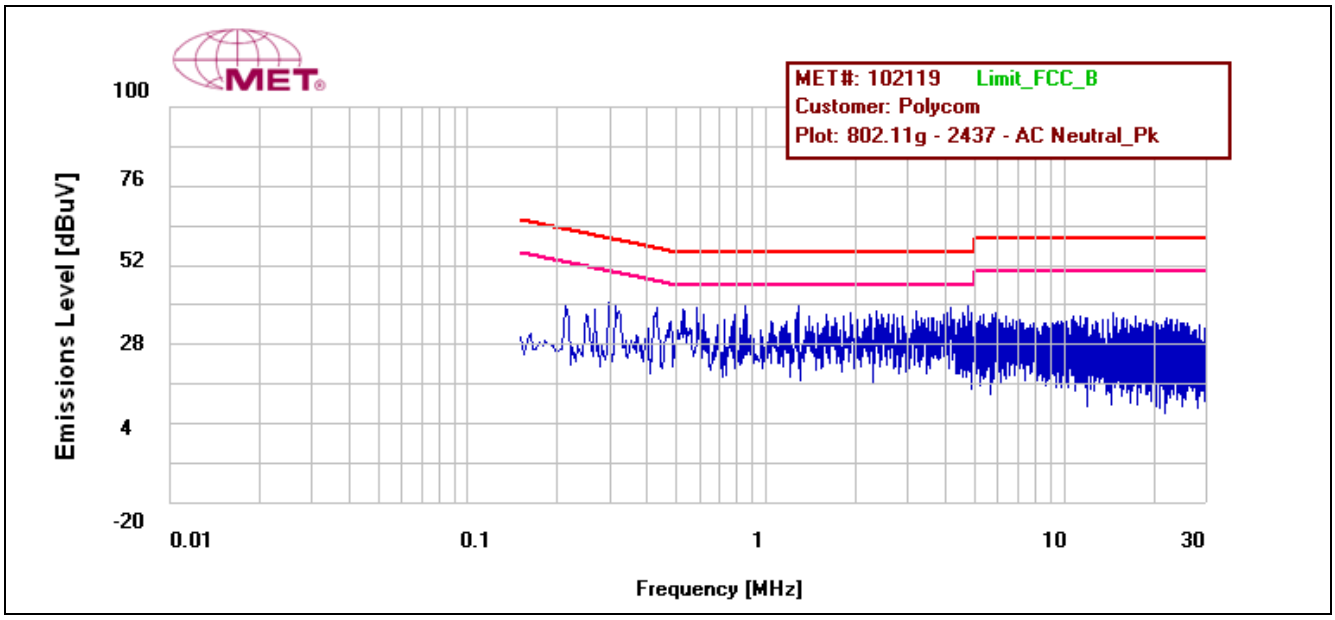


Plot 3. Conducted Emissions, 15.207(a), Phase Line, 802.11g

15.207(a) Conducted Emissions Test Results, 802.11g

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
802.11g - 2437 - AC Neutral	0.214	42.3	63.057	-20.757	Pass	34.5	53.057	-18.557	Pass
802.11g - 2437 - AC Neutral	0.298	39.1	60.314	-21.214	Pass	24.6	50.314	-25.714	Pass
802.11g - 2437 - AC Neutral	0.314	40.1	59.881	-19.781	Pass	26.7	49.881	-23.181	Pass
802.11g - 2437 - AC Neutral	0.858	39.8	56	-16.2	Pass	32.5	46	-13.5	Pass
802.11g - 2437 - AC Neutral	1.286	37.2	56	-18.8	Pass	29.1	46	-16.9	Pass
802.11g - 2437 - AC Neutral	4.810	34.2	56	-21.8	Pass	26.5	46	-19.5	Pass

Table 12. Conducted Emissions, 15.207(a), Neutral Line, Test Results, 802.11g

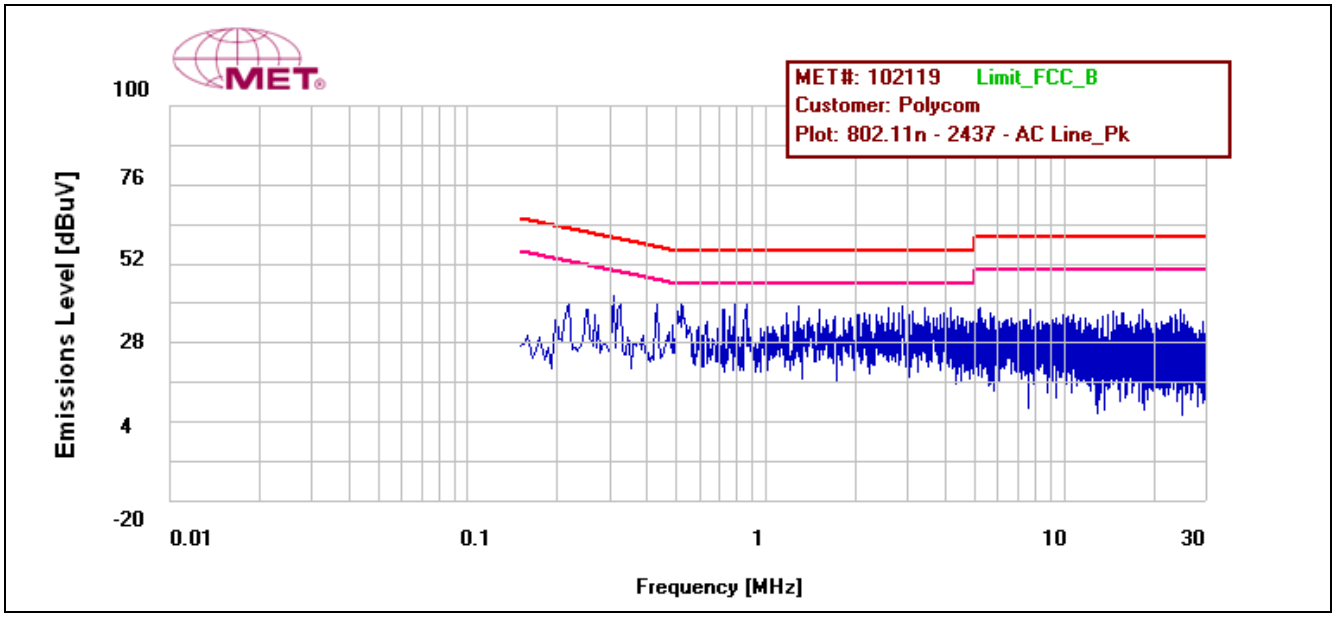


Plot 4. Conducted Emissions, 15.207(a), Neutral Line, 802.11g

15.207(a) Conducted Emissions Test Results, 802.11n

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
802.11n - 2437 - AC Line	0.218	38.6	62.903	-24.303	Pass	31.1	52.903	-21.803	Pass
802.11n - 2437 - AC Line	0.310	40.1	59.987	-19.887	Pass	25	49.987	-24.987	Pass
802.11n - 2437 - AC Line	0.522	39.3	56	-16.7	Pass	30.8	46	-15.2	Pass
802.11n - 2437 - AC Line	0.790	37.8	56	-18.2	Pass	25.2	46	-20.8	Pass
802.11n - 2437 - AC Line	0.862	40.2	56	-15.8	Pass	31.3	46	-14.7	Pass
802.11n - 2437 - AC Line	2.894	35.7	56	-20.3	Pass	28.3	46	-17.7	Pass

Table 13. Conducted Emissions, 15.207(a), Phase Line, Test Results, 802.11n

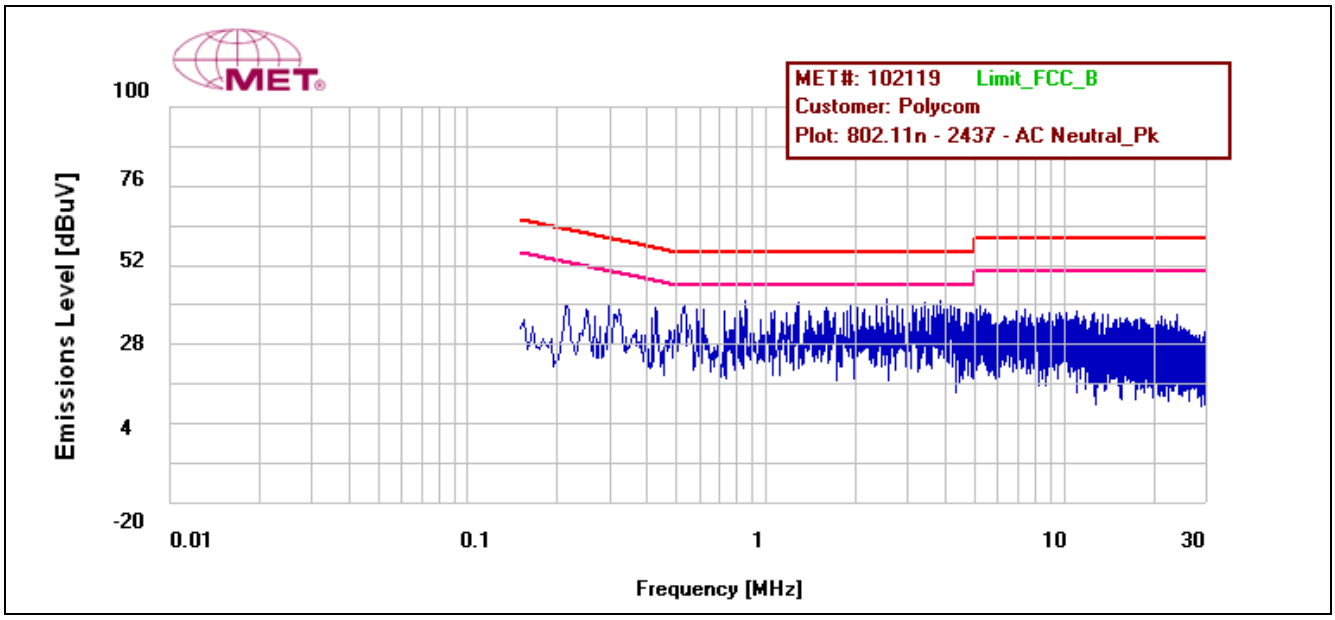


Plot 5. Conducted Emissions, 15.207(a), Phase Line, 802.11n

15.207(a) Conducted Emissions Test Results, 802.11n

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
802.11n - 2437 - AC Neutral	0.602	36.2	56	-19.8	Pass	24	46	-22	Pass
802.11n - 2437 - AC Neutral	0.858	41.4	56	-14.6	Pass	34.2	46	-11.8	Pass
802.11n - 2437 - AC Neutral	1.290	38.9	56	-17.1	Pass	30.2	46	-15.8	Pass
802.11n - 2437 - AC Neutral	2.570	38.8	56	-17.2	Pass	29.8	46	-16.2	Pass
802.11n - 2437 - AC Neutral	3.422	38.2	56	-17.8	Pass	30.1	46	-15.9	Pass
802.11n - 2437 - AC Neutral	3.838	33.9	56	-22.1	Pass	25.2	46	-20.8	Pass

Table 14. Conducted Emissions, 15.207(a), Neutral Line, Test Results, 802.11n



Plot 6. Conducted Emissions, 15.207(a), Neutral Line, 802.11n

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(a)(2) 6 dB Bandwidth

Test Requirements: **§ 15.247(a)(2):** Operation under the provisions of this section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

For systems using digital modulation techniques, the EUT may operate in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

Test Procedure: The transmitter was on and transmitting at the highest output power. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using a RBW approximately 1% of the total emission bandwidth, VBW > RBW. The 6 dB Bandwidth was measured and recorded. The measurements were performed on the low, mid and high channels.

Test Results The EUT was compliant with § 15.247 (a)(2).

The 6 dB Bandwidth was determined from the plots on the following pages.

Test Engineer(s): Giuliano Messina

Test Date(s): 02/04/19

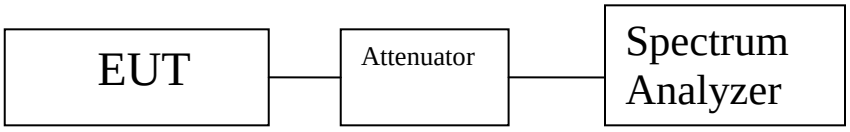
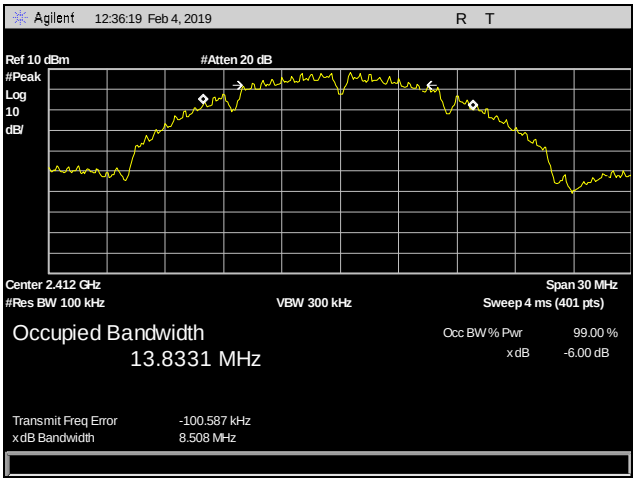


Figure 2. Block Diagram, Occupied Bandwidth Test Setup

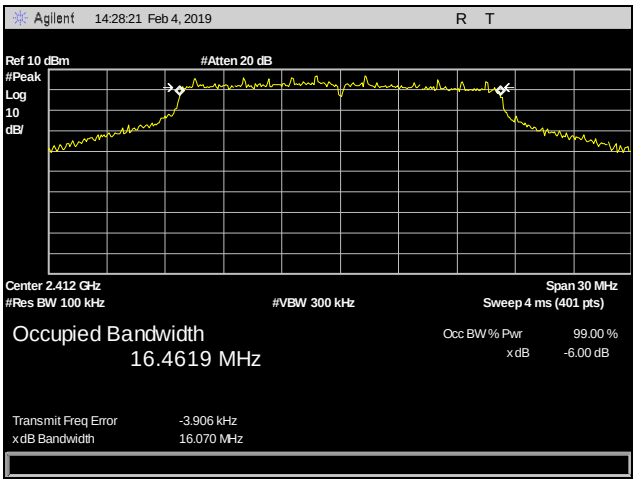
Mode	Chain	Freq. (MHz)	6dB Occupied Bandwidth (MHz)
b	1	2412	8.506
b	1	2437	8.62
b	1	2462	9.058
b	2	2412	9.094
b	2	2437	8.608
b	2	2462	8.6
g	1	2412	16.07
g	1	2437	16.13
g	1	2462	16.359
g	2	2412	16.035
g	2	2437	15.953
g	2	2462	15.739
n	1	2412	16.117
n	1	2437	16.901
n	1	2462	16.36
n	2	2412	16.447
n	2	2437	16.669
n	2	2462	16.68

Table 15. 6 dB Occupied Bandwidth, Test Results

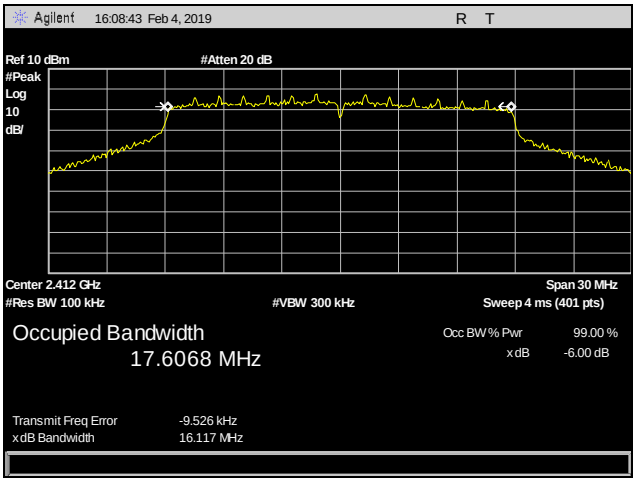
6 dB Occupied Bandwidth Test Results



Plot 7. 6 dB Occupied Bandwidth, Low Channel, 802.11b, Antenna 1



Plot 8. 6 dB Occupied Bandwidth, Low Channel, 802.11g, Antenna 1



Plot 9. 6 dB Occupied Bandwidth, Low Channel, 802.11n, Antenna 1

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(b) Power Output

Test Requirements: **§15.247(b):** The maximum peak output power of the intentional radiator shall not exceed the following:

Digital Transmission Systems (MHz)	Output Limit (Watts)
902-928	1.000
2400–2483.5	1.000
5725– 5850	1.000

Table 16. Output Power Requirements from §15.247(b)

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

Test Procedure: The transmitter was connected to a calibrated spectrum analyzer. The EUT was measured at the low, mid and high channels of each band and mode at the maximum power level.

Test Results: The EUT was compliant with the Power Output limits of **§15.247(b)**.

Test Engineer(s): Giuliano Messina

Test Date(s): 02/04/19

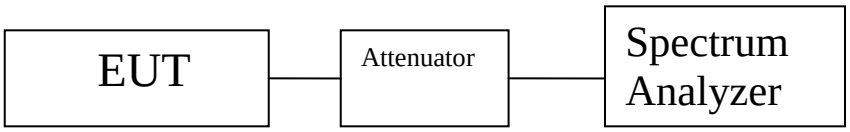


Figure 3. Power Output Test Setup

Power Output Test Results

Mode	Freq. (MHz)	Average Conducted Output Pwr, Chain 1 (dBm)	Average Conducted Output Pwr, Chain 2 (dBm)	Combined Average Conducted Output Pwr (dBm)
b	2412	13.51	12.93	16.23998
b	2437	13.68	12.74	16.24568
b	2462	13.53	12.56	16.08233
g	2412	6.35	5.36	8.893449
g	2437	13.35	12.39	15.90677
g	2462	10.17	8.95	12.613
n	2412	6.13	5.09	8.651357
n	2437	13.09	12.13	15.64677
n	2462	8.83	7.81	11.36018

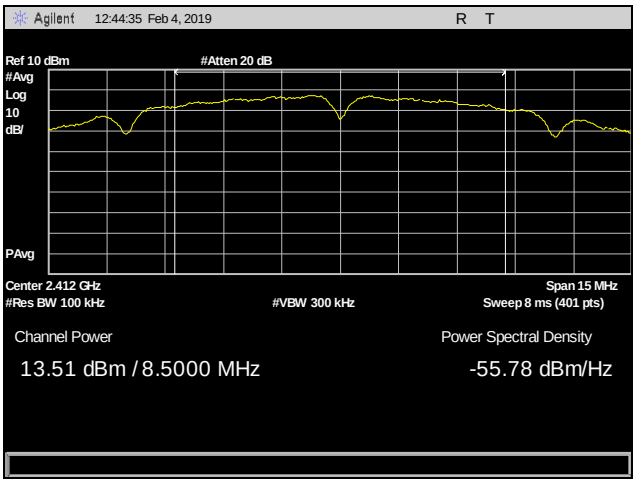
Table 17. Power Output, Test Results

Max Combined Power =

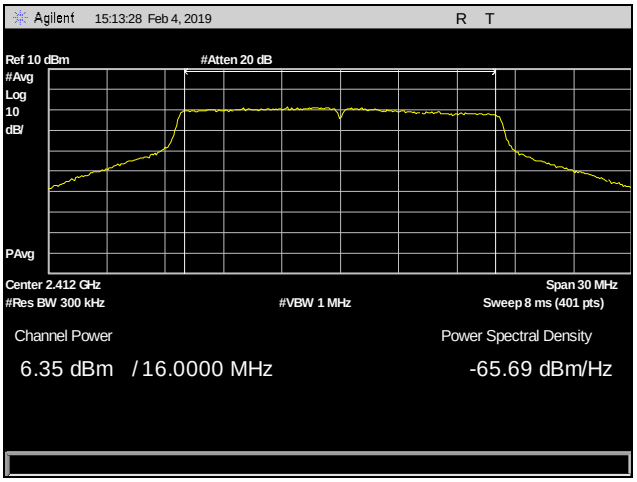
10 * log (10^(Ant1dBm/10) + 10^(Ant2dBm/10))

Max Combined Power = 16.245 dBm

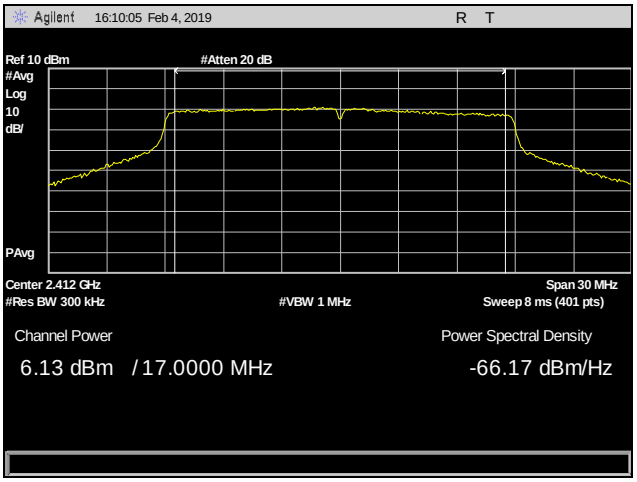
Power Output Test Results



Plot 10. Power Output, Low Channel, 802.11b, Antenna 1



Plot 11. Power Output, Low Channel, 802.11g, Antenna 1



Plot 12. Power Output, Low Channel, 802.11n, Antenna 1

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(d) Radiated Spurious Emissions Requirements and Band Edge

Test Requirements: **§15.247(d); §15.205:** Emissions outside the frequency band.

§15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. 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 in § 15.209(a).

§15.205(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----------	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293----------	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025----------	240–285	3345.8–3358 36.	43–36.5
12.57675–12.57725----------	322–335.4	3600–4400	([2])

Table 18. Restricted Bands of Operation

[1] Until February 1, 1999, this restricted band shall be 0.490 – 0.510 MHz.
[2] Above 38.6

Test Requirement(s): **§ 15.209 (a):** Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in Table 19.

Frequency (MHz)	§ 15.209(a),Radiated Emission Limits (dBµV) @ 3m
30 - 88	40.00
88 - 216	43.50
216 - 960	46.00
Above 960	54.00

Table 19. Radiated Emissions Limits Calculated from FCC Part 15, § 15.209 (a)

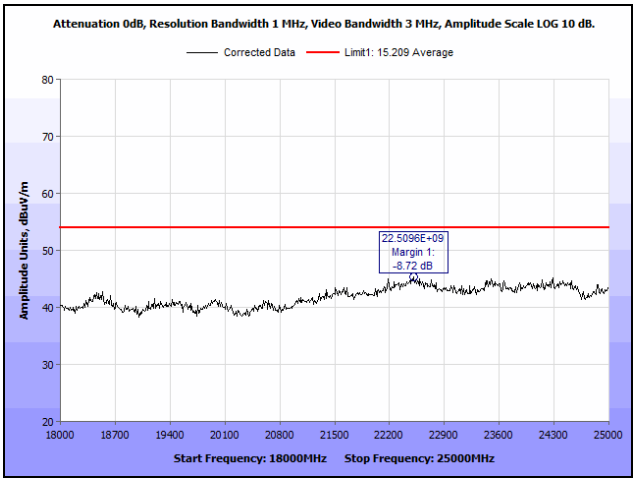
Test Procedures: The transmitter was turned on. Measurements were performed of the low, mid and high Channels. The EUT was rotated orthogonally through all three axes. Plots shown are corrected for both antenna correction factor and distance and compared to a 3 m limit line. Only noise floor was measured above 18 GHz.

Test Results: The EUT was compliant with the Radiated Spurious Emission limits of **§ 15.247(d)**.

Test Engineer(s): Giuliano Messina

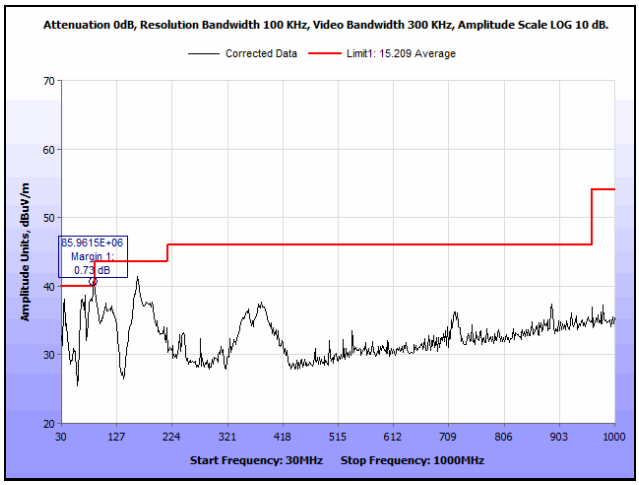
Test Date(s): 02/05/19

Radiated Spurious Emissions Test Results

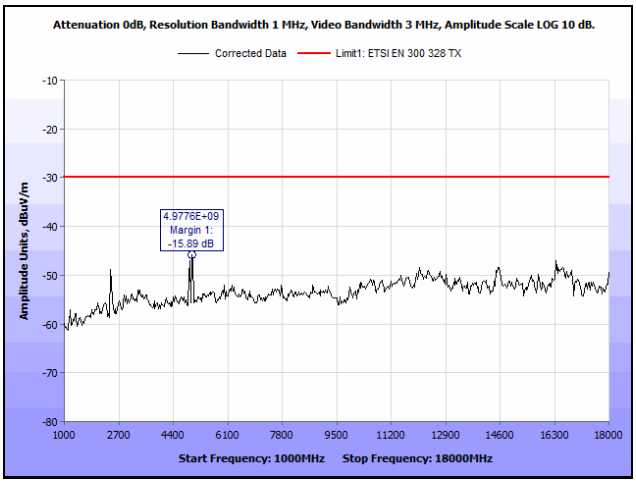


Plot 13. Radiated Spurious Emissions, 18 GHz – 25 GHz

Note: The above plot represents the 18-25GHz measurement for all modes, where no measureable emissions above ambient were observed.

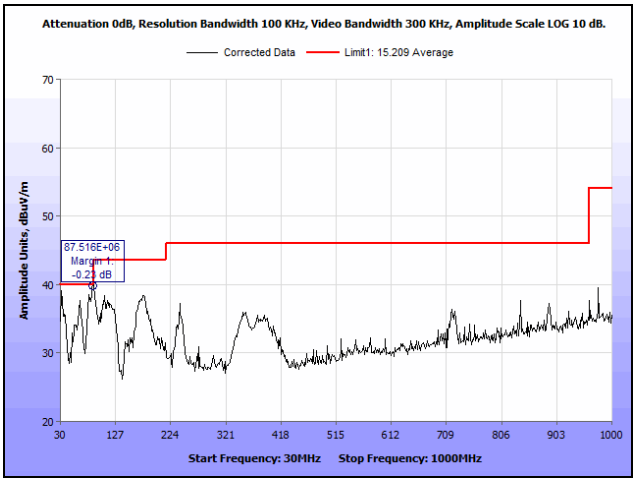


Plot 14. Radiated Spurious Emissions, Transmitter Off, 30 MHz - 1GHz



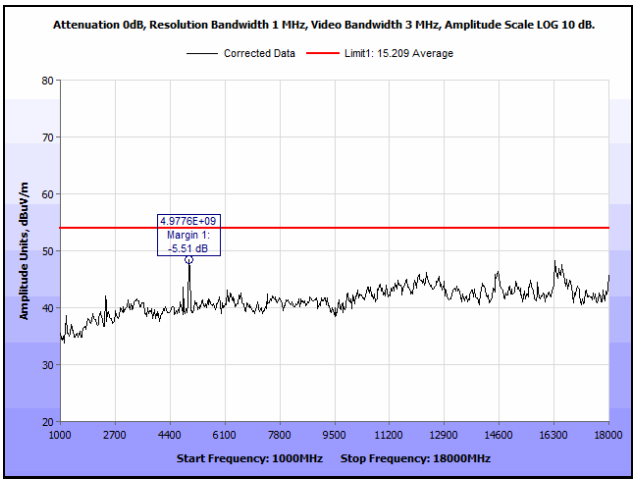
Plot 15. Radiated Spurious Emissions, Transmitter Off, 1 GHz – 18 GHz

Radiated Spurious Emissions Test Results, 802.11b

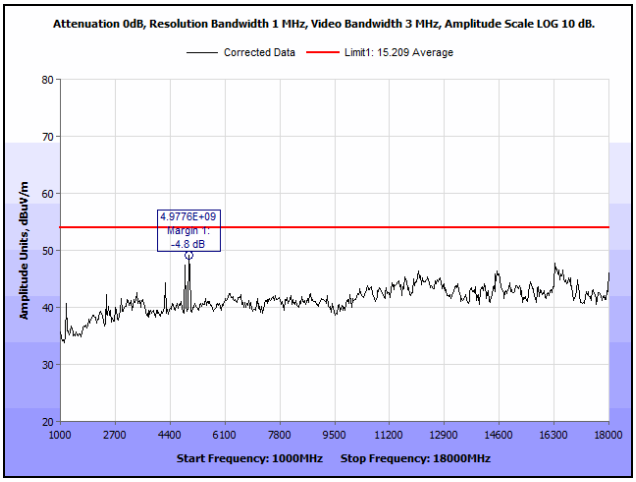


Plot 16. Radiated Spurious Emissions, 30 MHz – 1 GHz, 802.11b

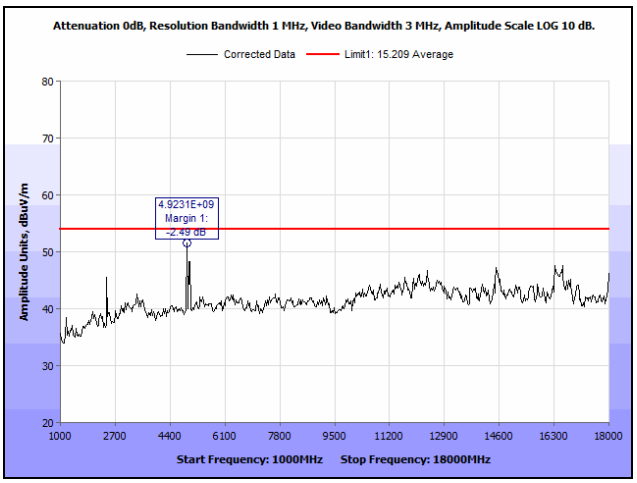
Note: The above plot represents 30 MHz – 1GHz for all mode 802.11b channels, which showed no measurable difference between TX on or off.



Plot 17. Radiated Spurious Emissions, Low Channel, 1 GHz – 18 GHz, 802.11b

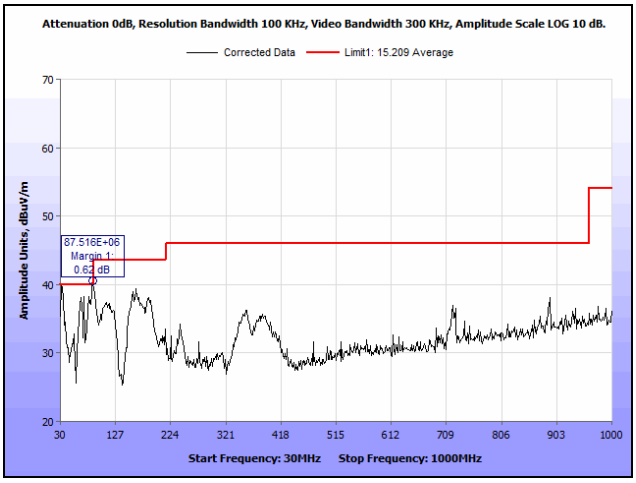


Plot 18. Radiated Spurious Emissions, Mid Channel, 1 GHz – 18 GHz, 802.11b



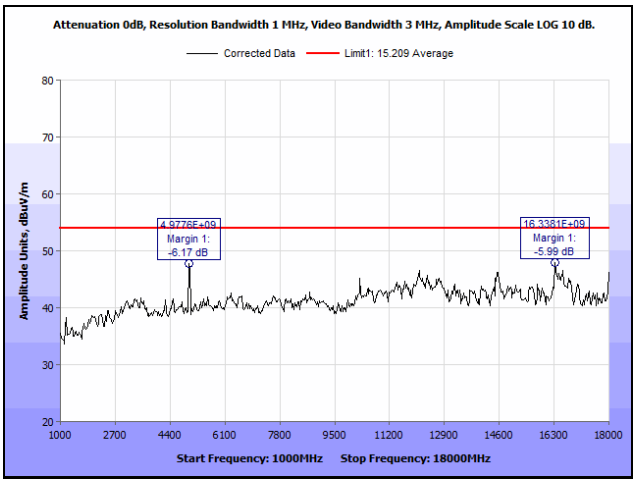
Plot 19. Radiated Spurious Emissions, High Channel, 1 GHz – 18 GHz, 802.11b

Radiated Spurious Emissions Test Results, 802.11g

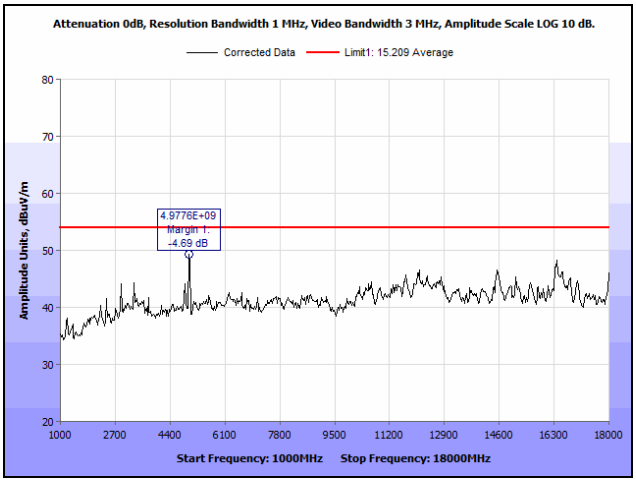


Plot 20. Radiated Spurious Emissions, 30 MHz – 1 GHz, 802.11g

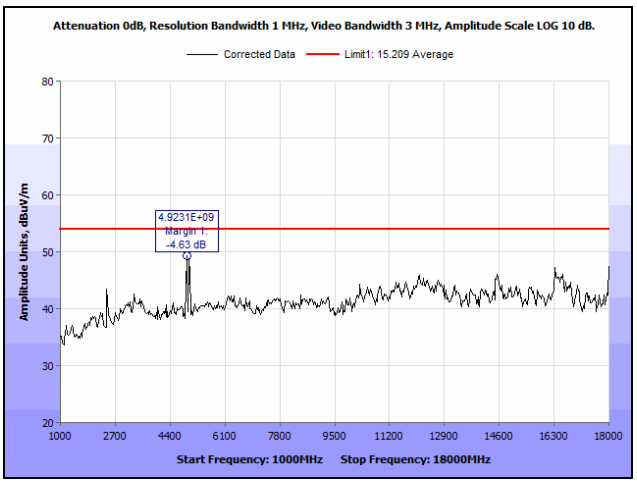
Note: The above plot represents 30 MHz – 1GHz for all mode 802.11g channels, which showed no measurable difference between TX on or off.



Plot 21. Radiated Spurious Emissions, Low Channel, 1 GHz – 18 GHz, 802.11g

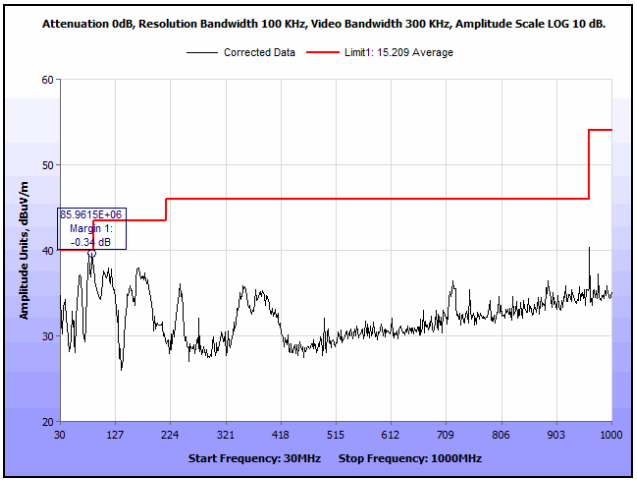


Plot 22. Radiated Spurious Emissions, Mid Channel, 1 GHz – 18 GHz, 802.11g



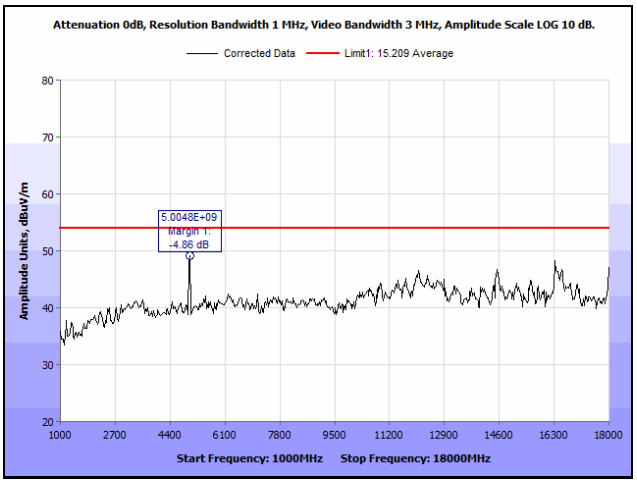
Plot 23. Radiated Spurious Emissions, High Channel, 1 GHz – 18 GHz, 802.11g

Radiated Spurious Emissions Test Results, 802.11n

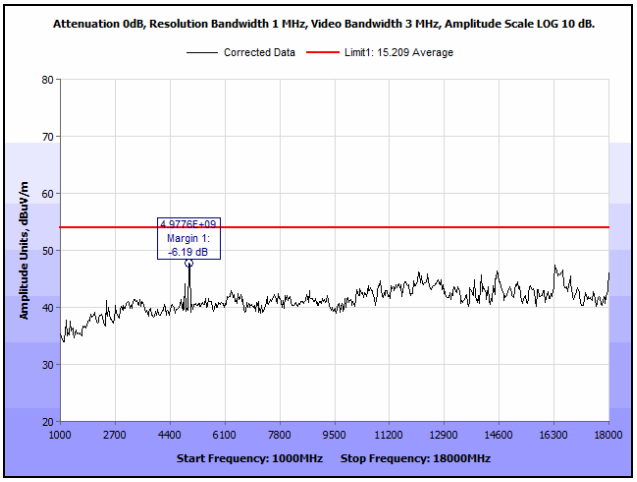


Plot 24. Radiated Spurious Emissions, 30 MHz – 1 GHz, 802.11n

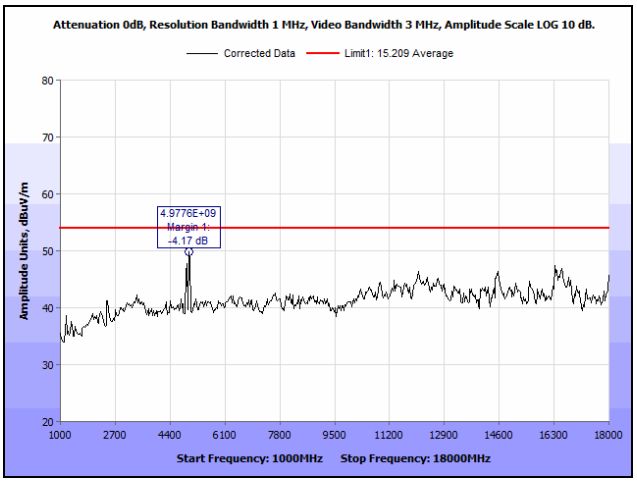
Note: The above plot represents 30 MHz – 1GHz for all mode 802.11n channels, which showed no measurable difference between TX on or off.



Plot 25. Radiated Spurious Emissions, Low Channel, 1 GHz – 18 GHz, 802.11n



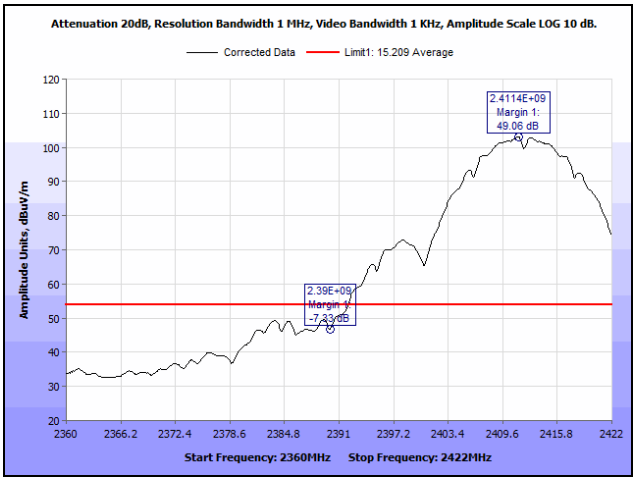
Plot 26. Radiated Spurious Emissions, Mid Channel, 1 GHz – 18 GHz, 802.11n



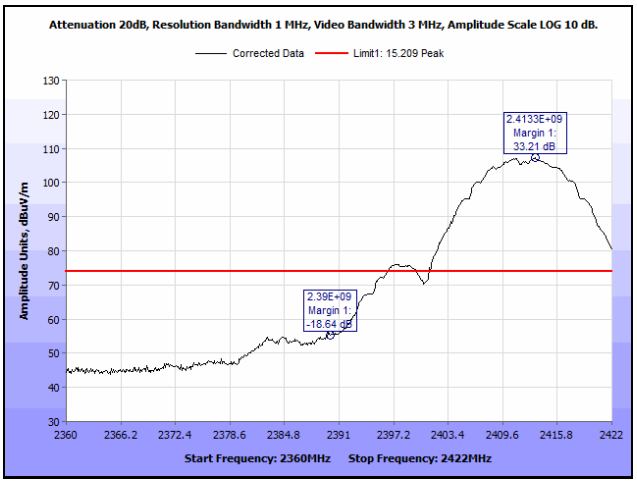
Plot 27. Radiated Spurious Emissions, High Channel, 1 GHz – 18 GHz, 802.11n

Radiated Band Edge Measurements, 802.11b

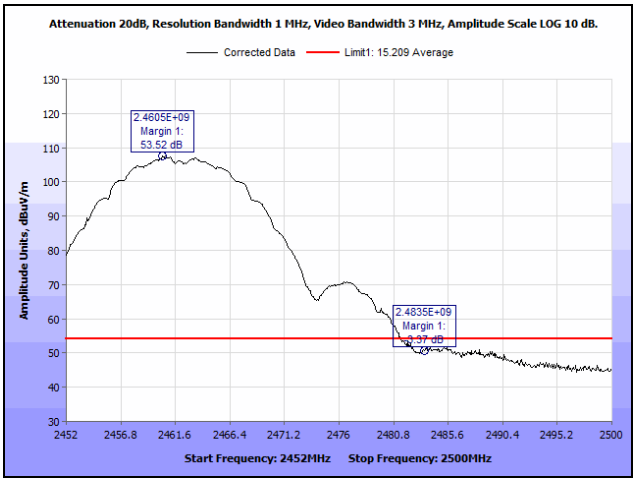
Test Procedure: The transmitter was turned on. Maximized measurements were performed of the bandedge channels. Plots shown are corrected for both antenna correction factor and distance.



Plot 28. Radiated Restricted Band Edge, Low Channel, Average, 802.11b

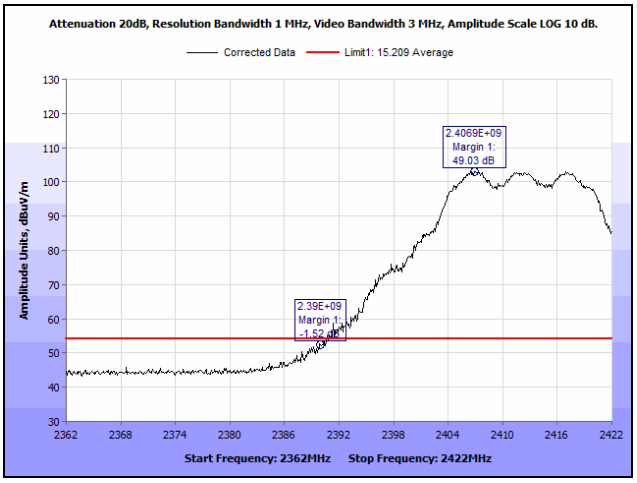


Plot 29. Radiated Restricted Band Edge, Low Channel, Peak, 802.11b

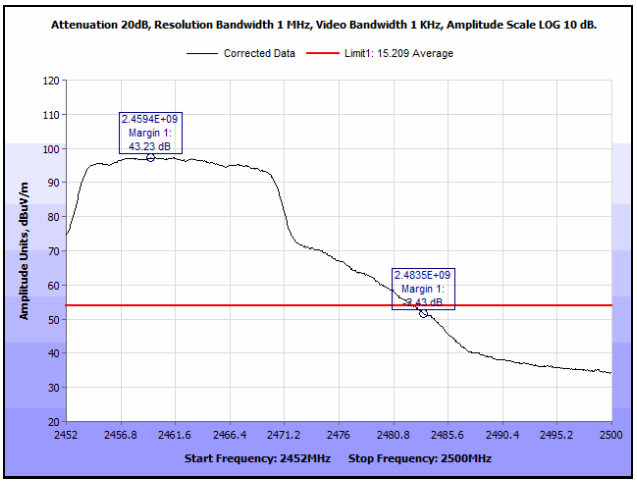


Plot 30. Radiated Restricted Band Edge, High Channel, 802.11b

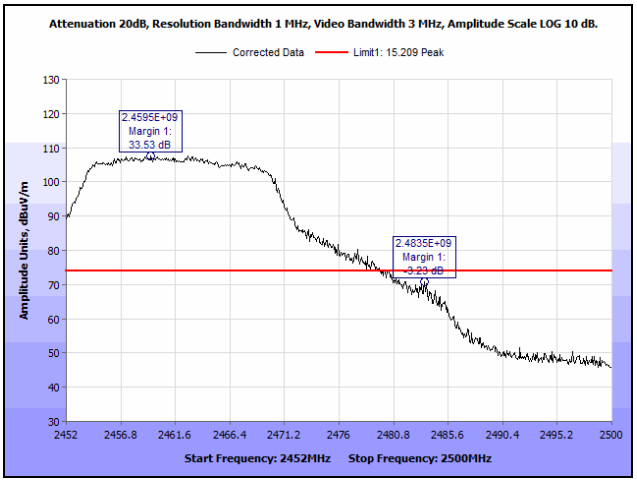
Radiated Band Edge Measurements, 802.11g



Plot 31. Radiated Restricted Band Edge, Low Channel, 802.11g

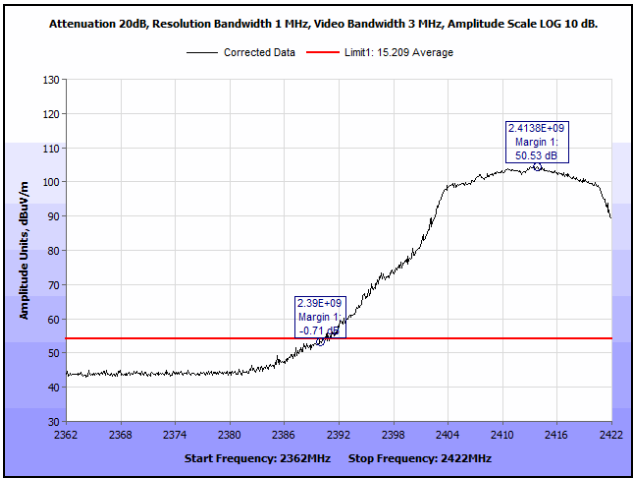


Plot 32. Radiated Restricted Band Edge, High Channel, Average, 802.11g

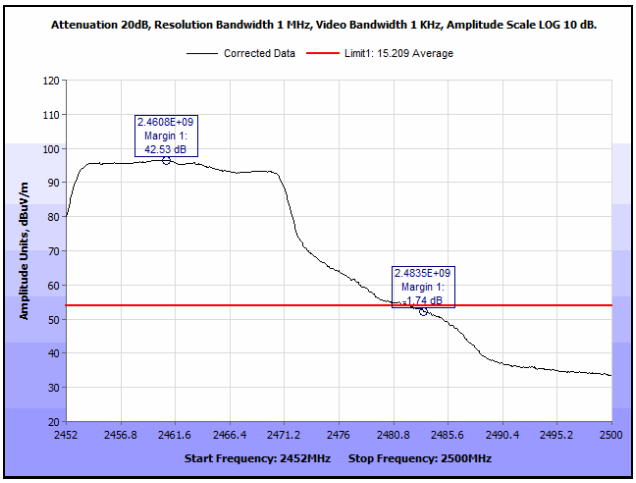


Plot 33. Radiated Restricted Band Edge, High Channel, Peak, 802.11g

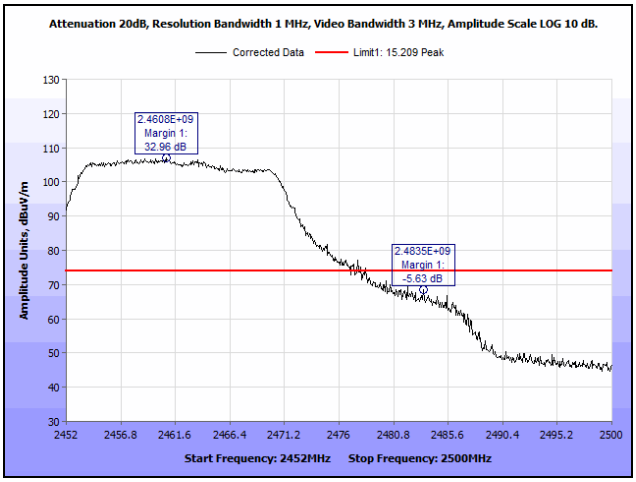
Radiated Band Edge Measurements, 802.11n



Plot 34. Radiated Restricted Band Edge, Low Channel, 802.11n



Plot 35. Radiated Restricted Band Edge, High Channel, Average, 802.11n



Plot 36. Radiated Restricted Band Edge, High Channel, Peak, 802.11n

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(d) RF Conducted Spurious Emissions Requirements and Band Edge

Test Requirement: **15.247(d)** In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Test Procedure: For intentional radiators with a digital device portion which operates below 10 GHz, the spectrum was investigated as per §15.33(a)(1) and §15.33(a)(4); i.e., the lowest RF signal generated or used in the device up to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

Test Results: The EUT was compliant with the Conducted Spurious Emission limits of **§15.247(d)**.

Test Engineer(s): Giuliano Messina

Test Date(s): 02/05/19

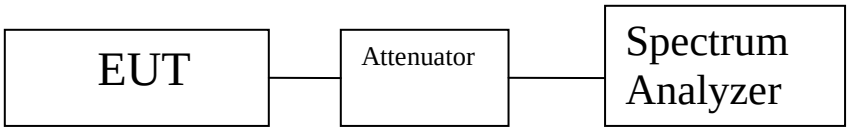
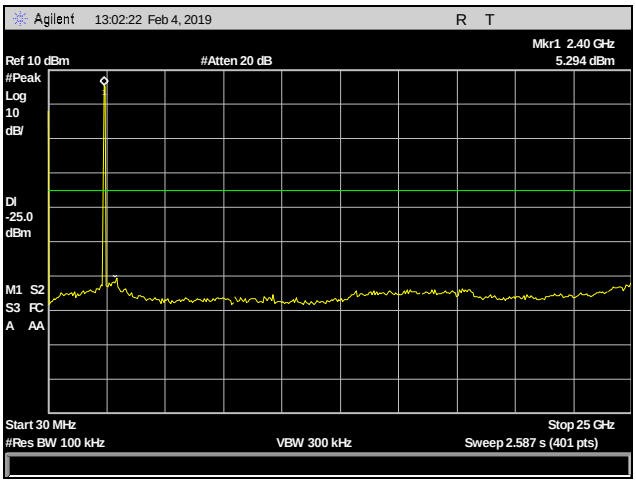
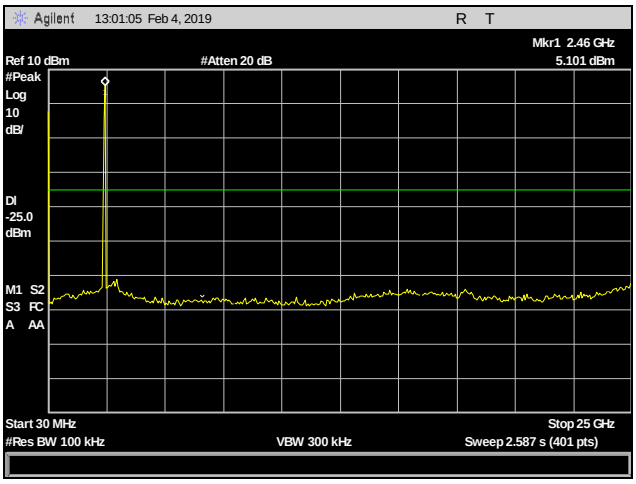


Figure 4. Block Diagram, Conducted Spurious Emissions Test Setup

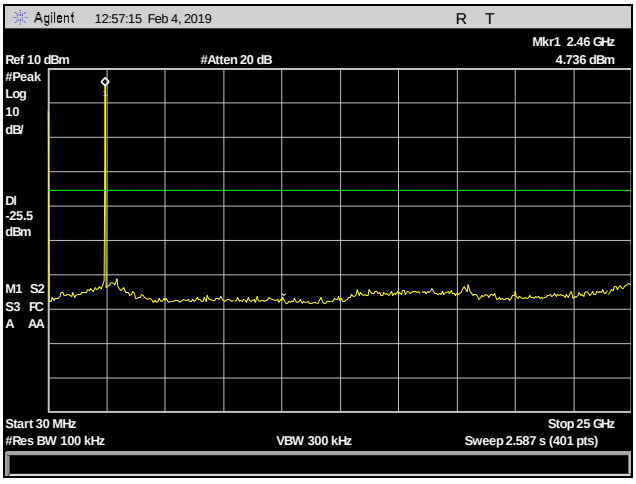
Conducted Spurious Emissions Test Results, 802.11b, Antenna 1



Plot 37. Conducted Spurious Emissions, Low Channel, 802.11b, Antenna 1, 30 MHz – 25 GHz

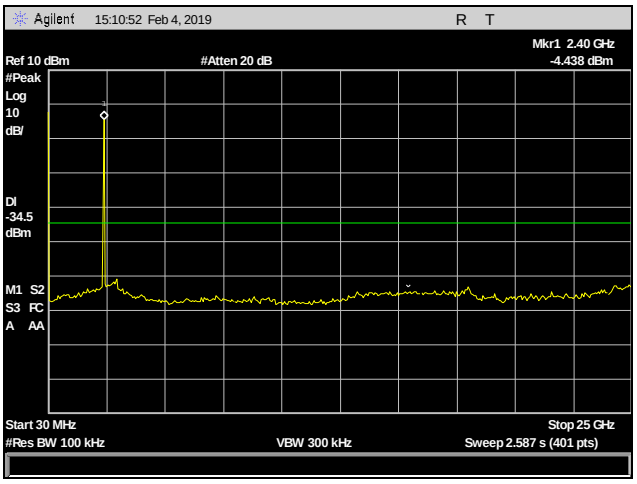


Plot 38. Conducted Spurious Emissions, Mid Channel, 802.11b, Antenna 1, 30 MHz – 25 GHz

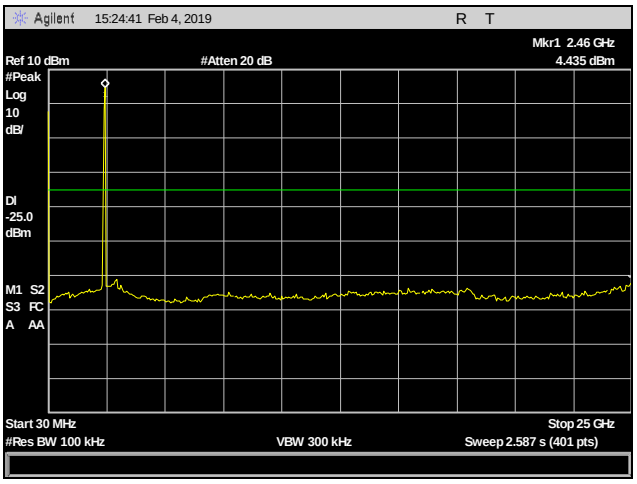


Plot 39. Conducted Spurious Emissions, High Channel, 802.11b, Antenna 1, 30 MHz – 25 GHz

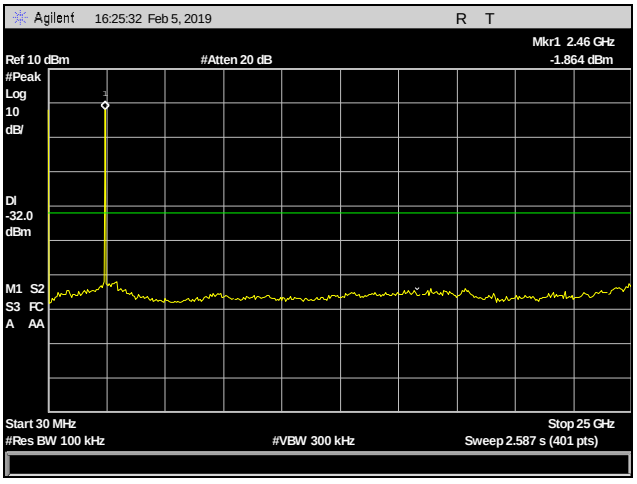
Conducted Spurious Emissions Test Results, 802.11g, Antenna 1



Plot 40. Conducted Spurious Emissions, Low Channel, 802.11g, Antenna 1, 30 MHz – 25 GHz

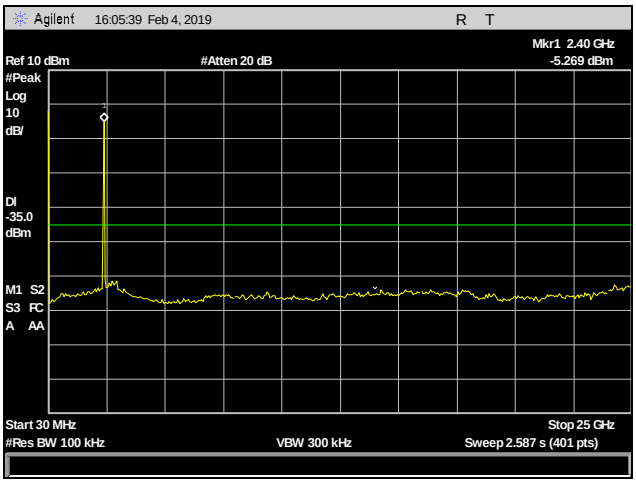


Plot 41. Conducted Spurious Emissions, Mid Channel, 802.11g, Antenna 1, 30 MHz – 25 GHz

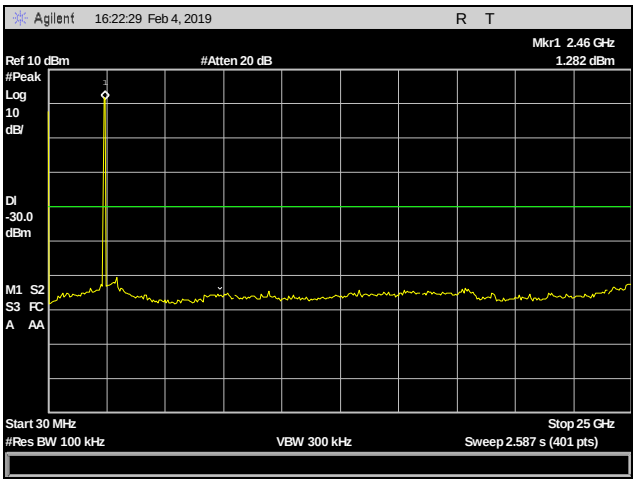


Plot 42. Conducted Spurious Emissions, High Channel, 802.11g, Antenna 1, 30 MHz – 25 GHz

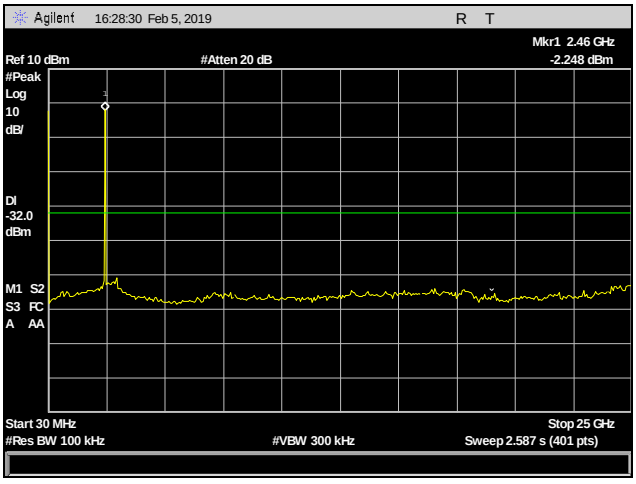
Conducted Spurious Emissions Test Results, 802.11n, Antenna 1



Plot 43. Conducted Spurious Emissions, Low Channel, 802.11n, Antenna 1, 30 MHz – 25 GHz

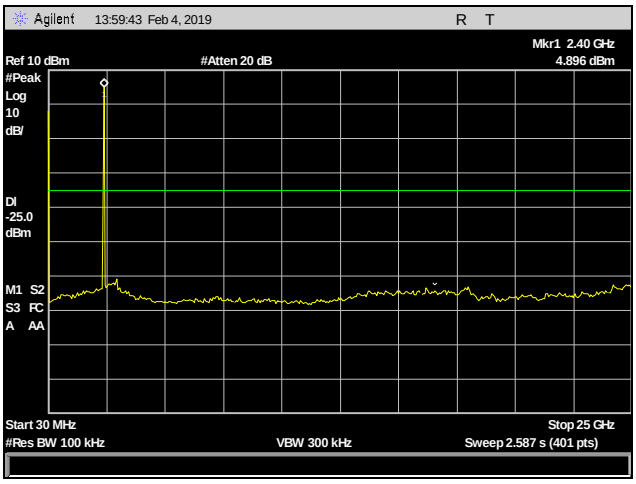


Plot 44. Conducted Spurious Emissions, Mid Channel, 802.11n, Antenna 1, 30 MHz – 25 GHz

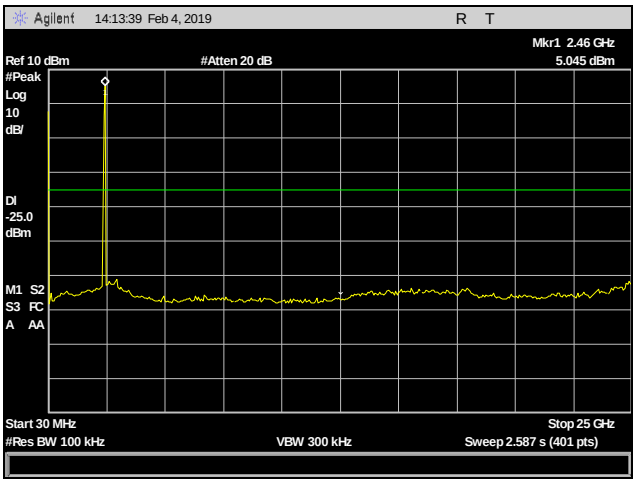


Plot 45. Conducted Spurious Emissions, High Channel, 802.11n, Antenna 1, 30 MHz – 25 GHz

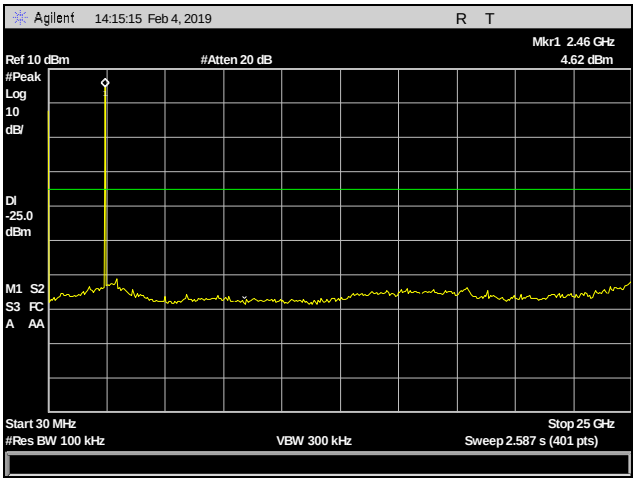
Conducted Spurious Emissions Test Results, 802.11b, Antenna 2



Plot 46. Conducted Spurious Emissions, Low Channel, 802.11b, Antenna 2, 30 MHz – 25 GHz

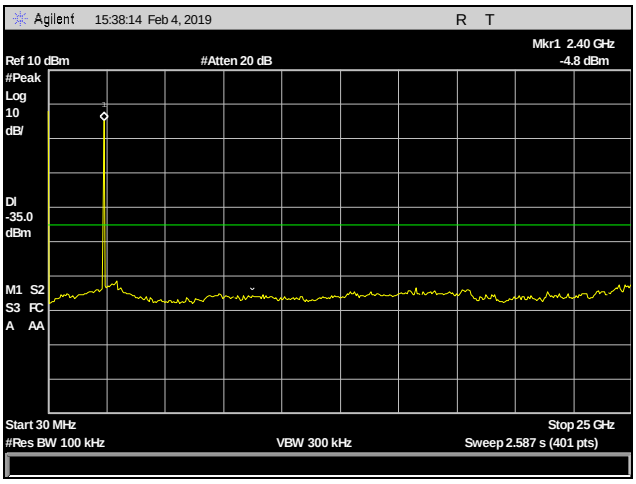


Plot 47. Conducted Spurious Emissions, Mid Channel, 802.11b, Antenna 2, 30 MHz – 25 GHz

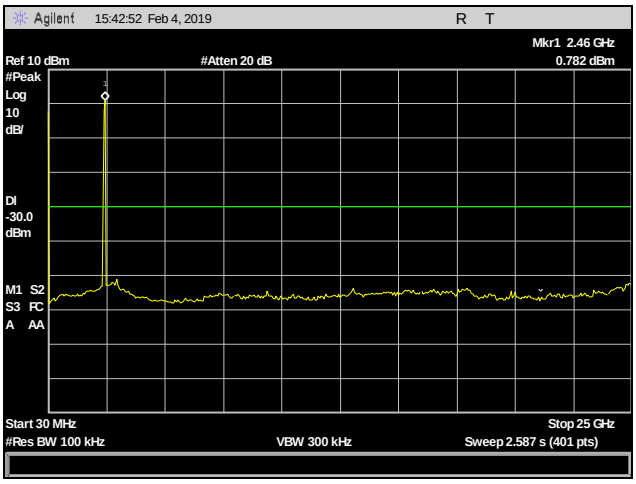


Plot 48. Conducted Spurious Emissions, High Channel, 802.11b, Antenna 2, 30 MHz – 25 GHz

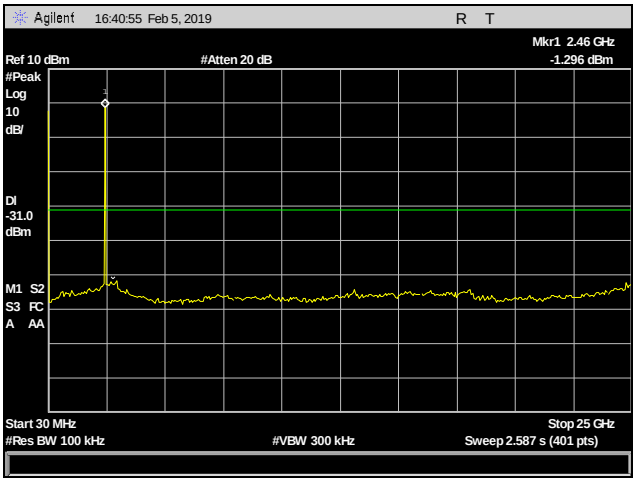
Conducted Spurious Emissions Test Results, 802.11g, Antenna 2



Plot 49. Conducted Spurious Emissions, Low Channel, 802.11g, Antenna 2, 30 MHz – 25 GHz

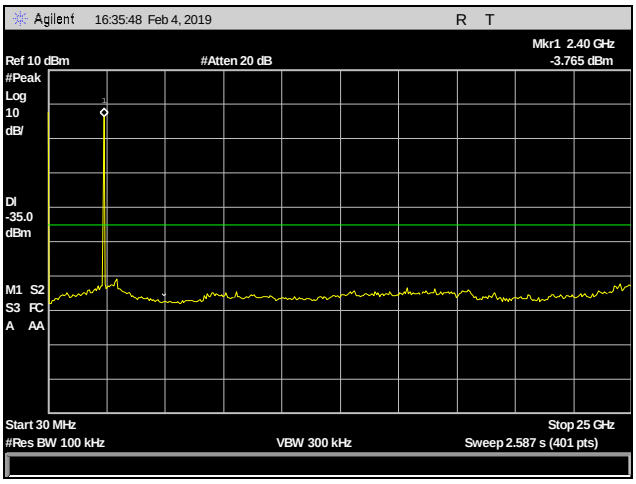


Plot 50. Conducted Spurious Emissions, Mid Channel, 802.11g, Antenna 2, 30 MHz – 25 GHz

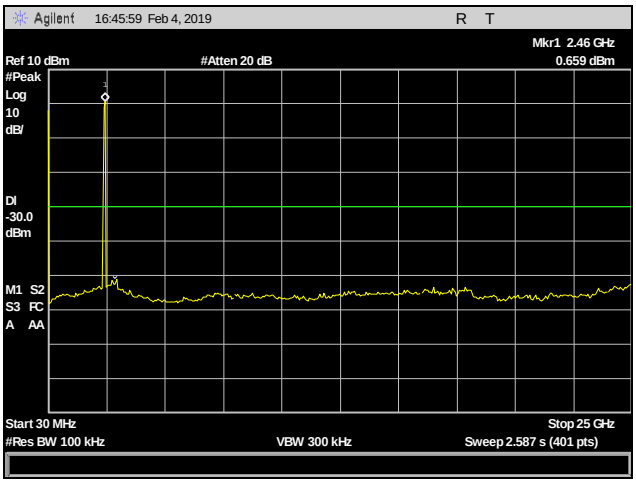


Plot 51. Conducted Spurious Emissions, High Channel, 802.11g, Antenna 2, 30 MHz – 25 GHz

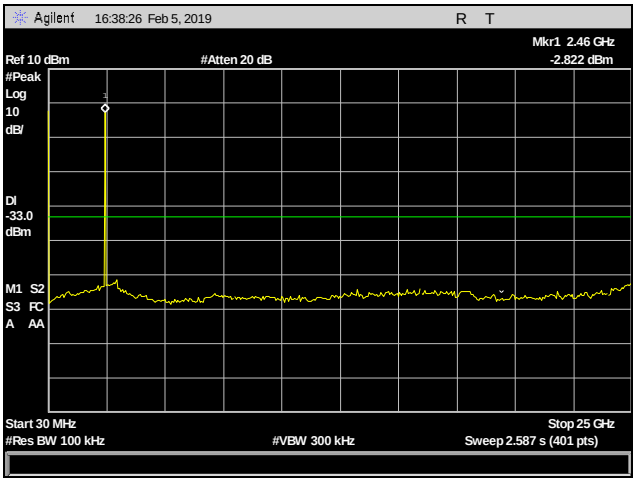
Conducted Spurious Emissions Test Results, 802.11n, Antenna 2



Plot 52. Conducted Spurious Emissions, Low Channel, 802.11n, Antenna 2, 30 MHz – 25 GHz

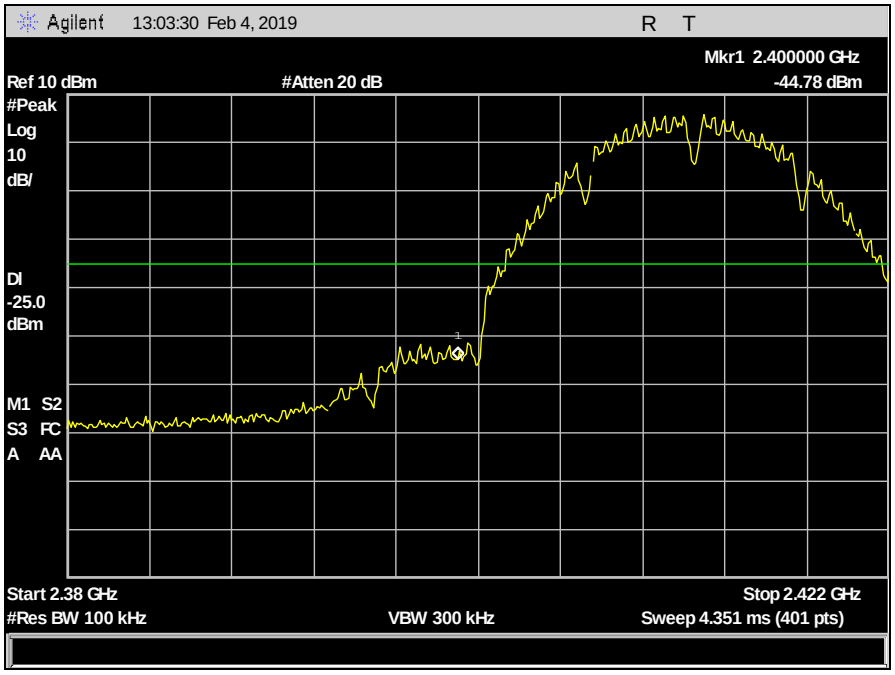


Plot 53. Conducted Spurious Emissions, Mid Channel, 802.11n, Antenna 2, 30 MHz – 25 GHz

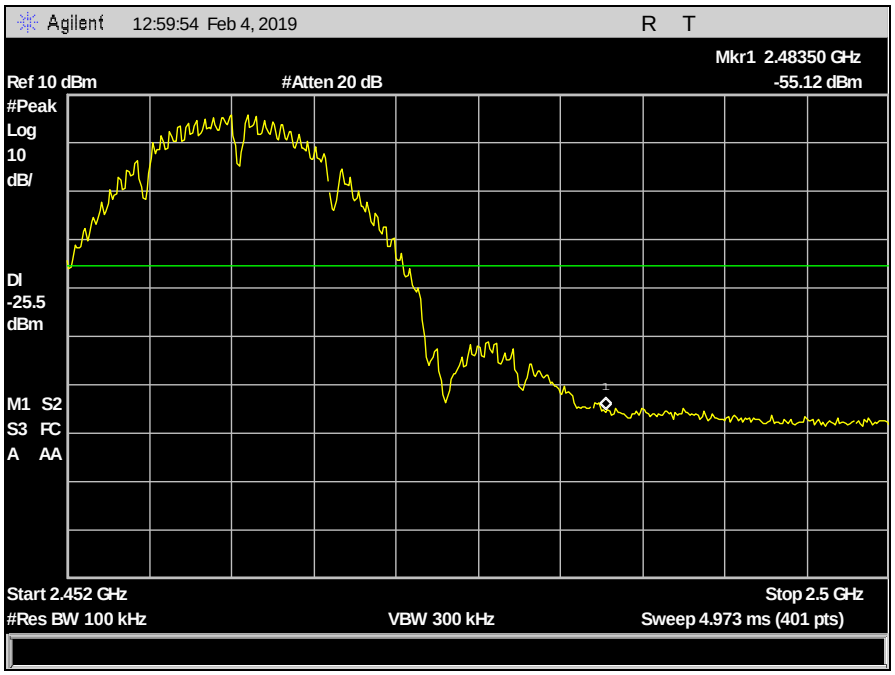


Plot 54. Conducted Spurious Emissions, High Channel, 802.11n, Antenna 2, 30 MHz – 25 GHz

Conducted Band Edge Test Results, 802.11b, Antenna 1

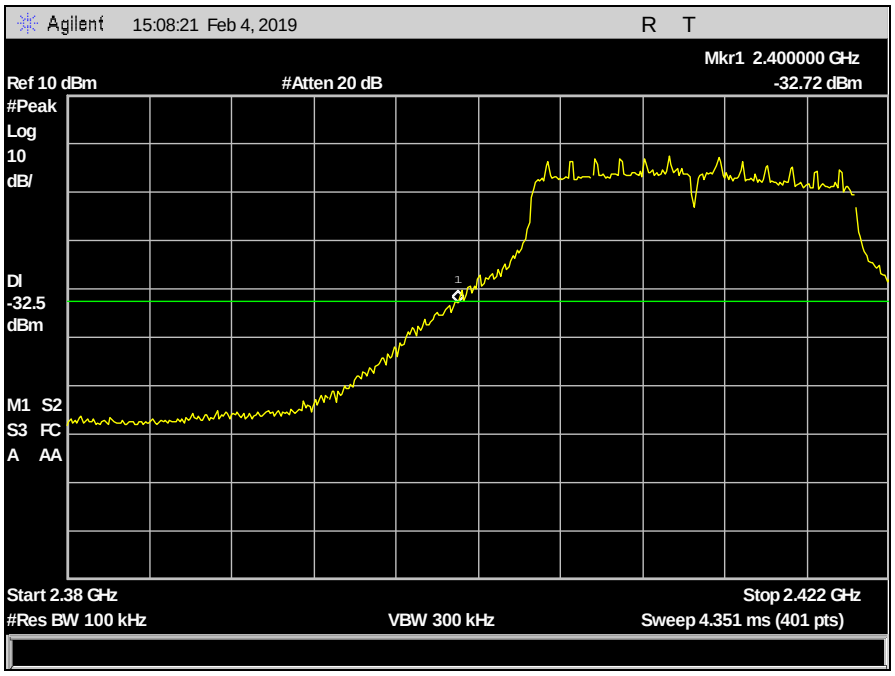


Plot 55. Conducted Band Edge, Low Channel, 802.11b, Antenna 1

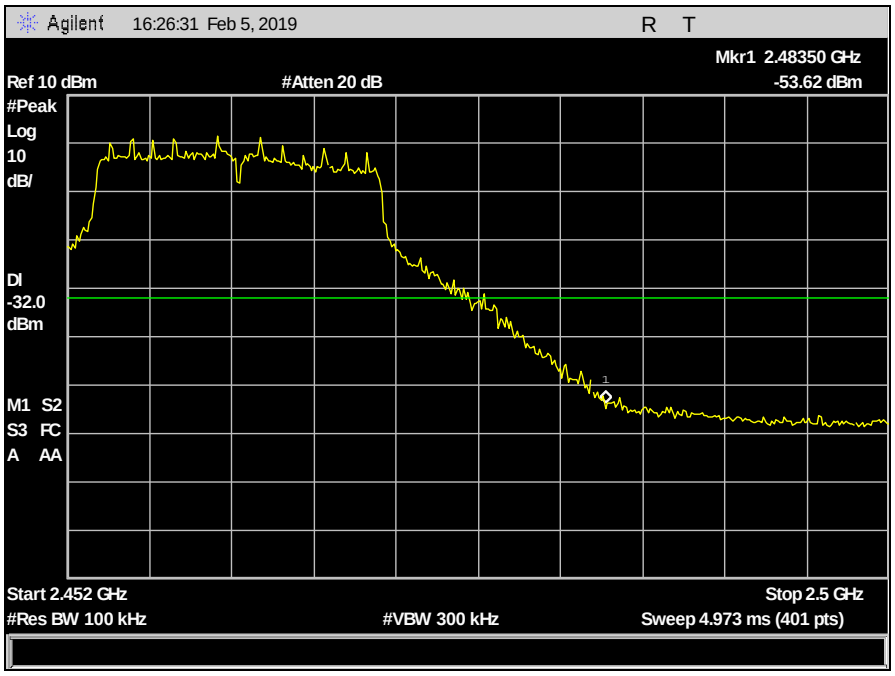


Plot 56. Conducted Band Edge, High Channel, 802.11b, Antenna 1

Conducted Band Edge Test Results, 802.11g, Antenna 1

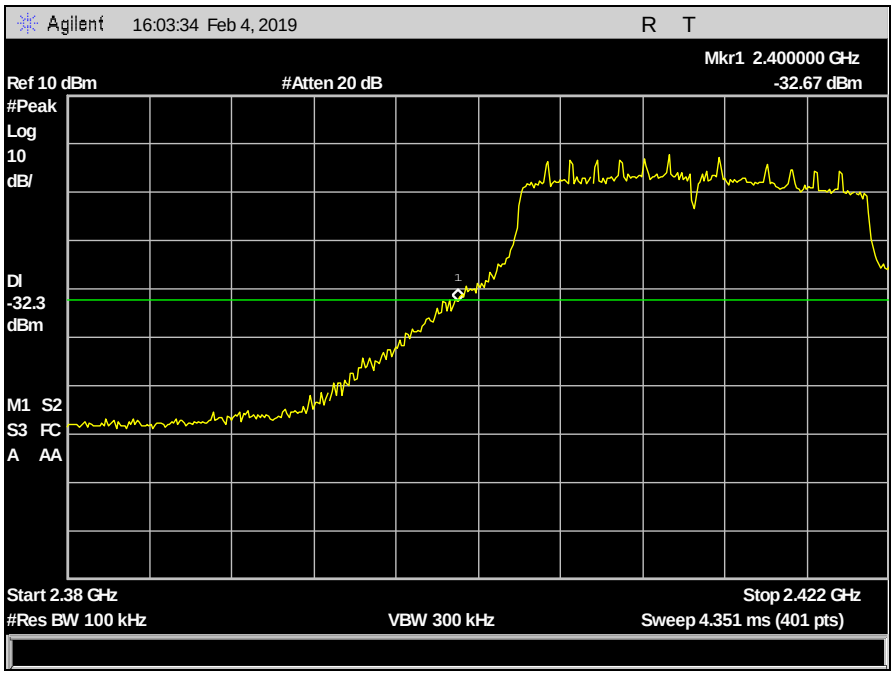


Plot 57. Conducted Band Edge, Low Channel, 802.11g, Antenna 1

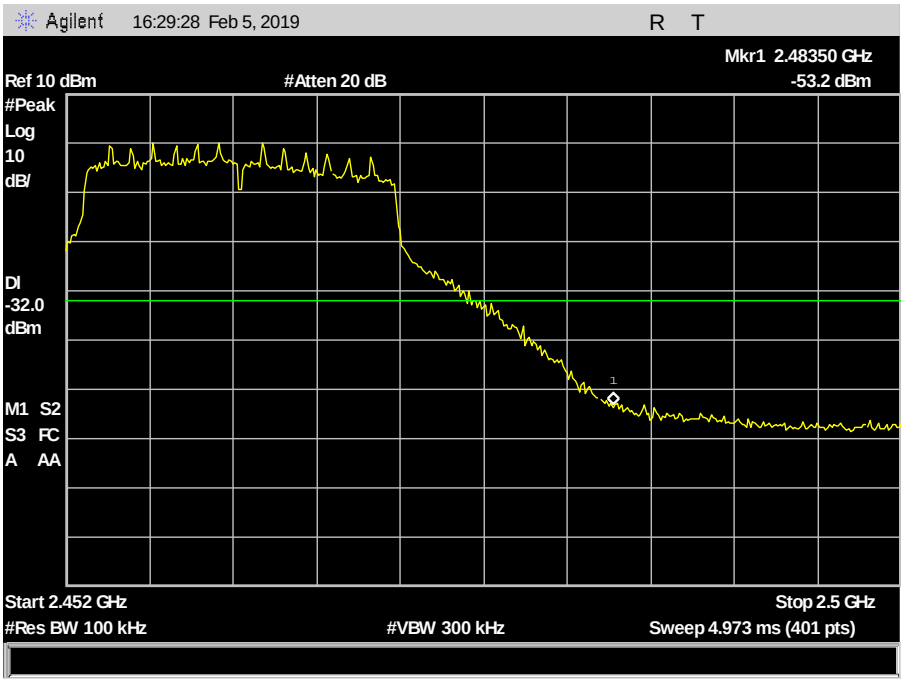


Plot 58. Conducted Band Edge, High Channel, 802.11g, Antenna 1

Conducted Band Edge Test Results, 802.11n, Antenna 1

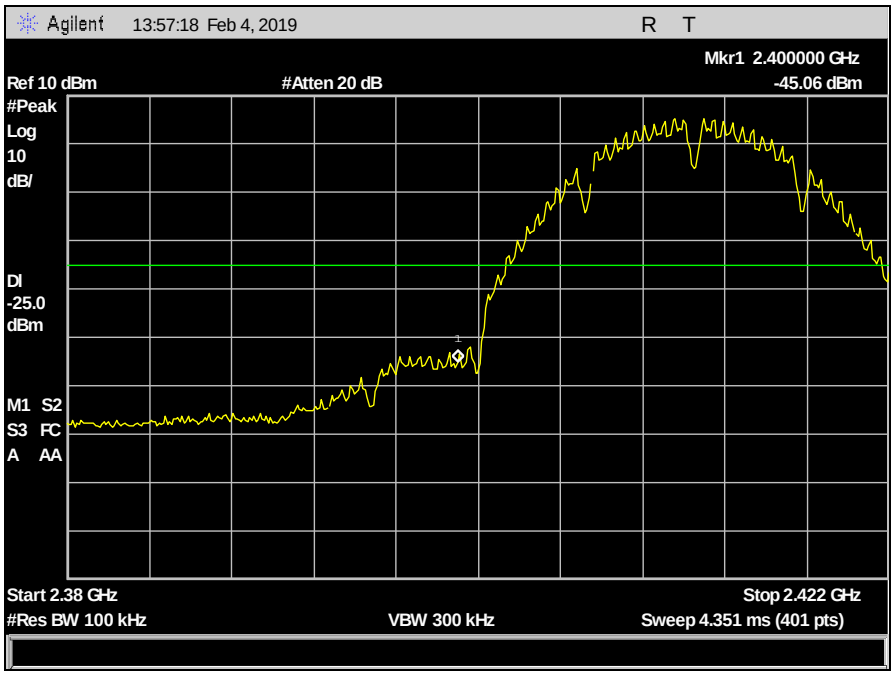


Plot 59. Conducted Band Edge, Low Channel, 802.11n, Antenna 1

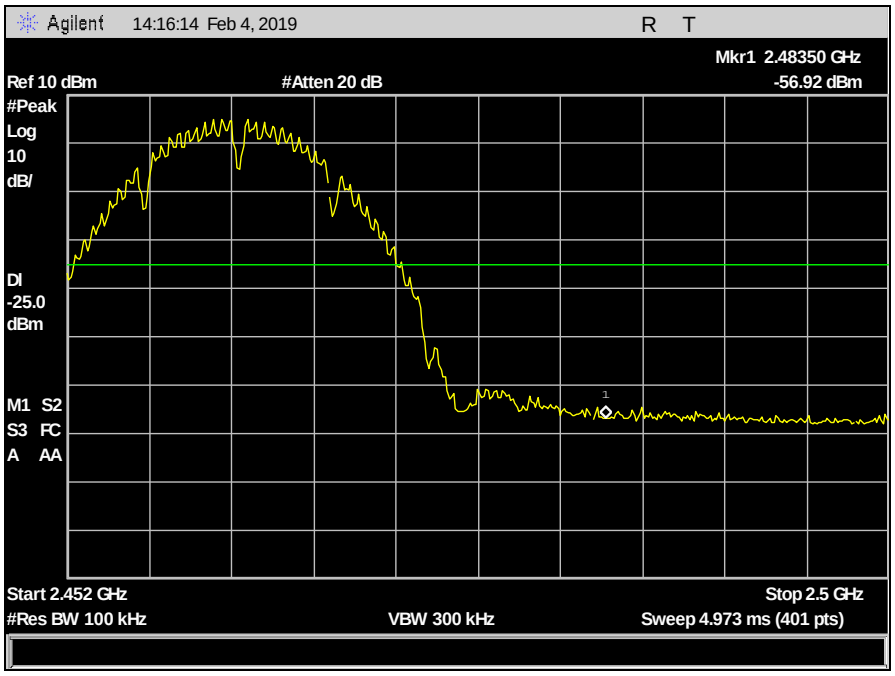


Plot 60. Conducted Band Edge, High Channel, 802.11n, Antenna 1

Conducted Band Edge Test Results, 802.11b, Antenna 2

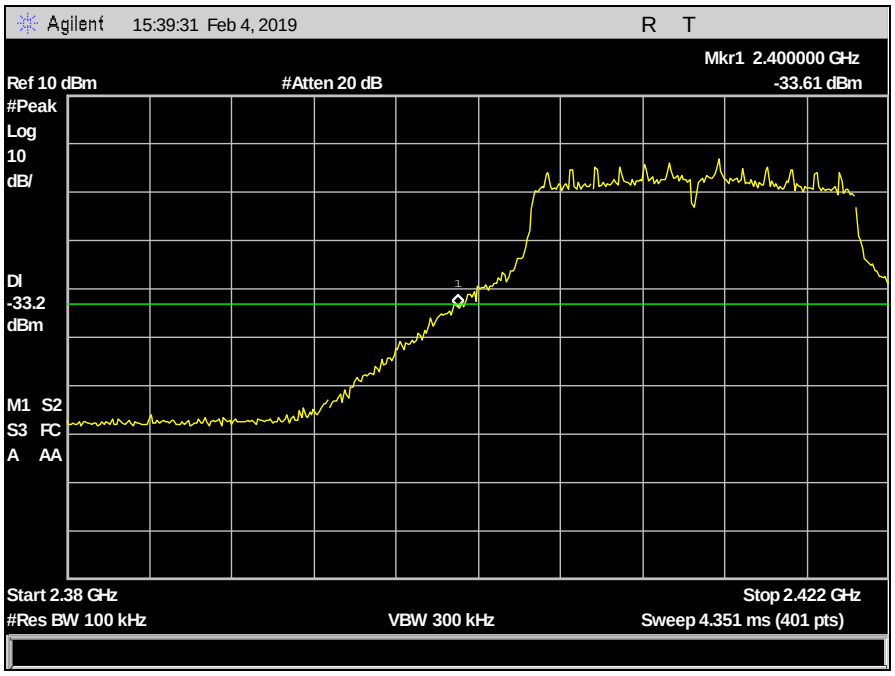


Plot 61. Conducted Band Edge, Low Channel, 802.11b, Antenna 2

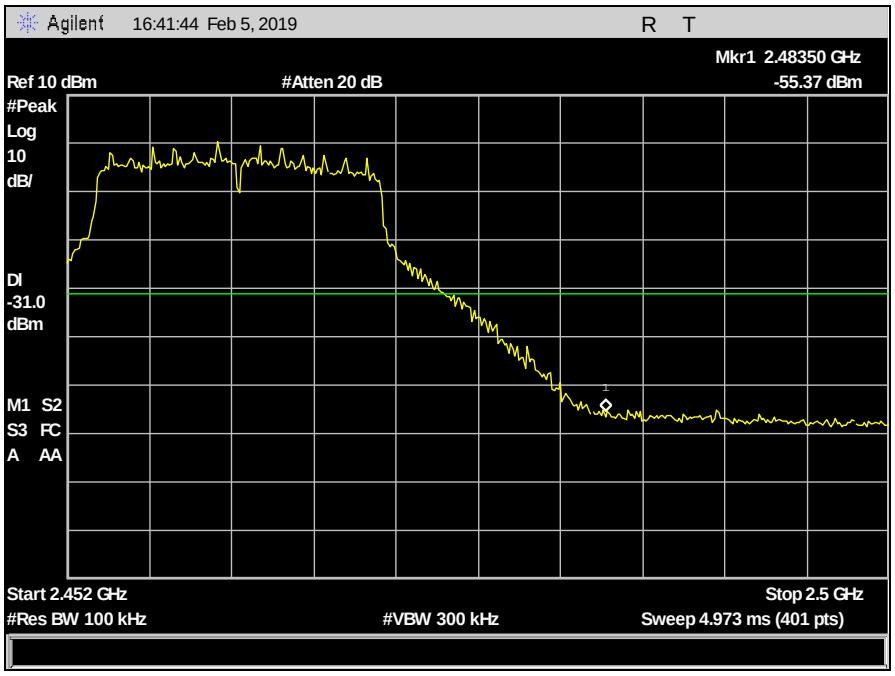


Plot 62. Conducted Band Edge, High Channel, 802.11b, Antenna 2

Conducted Band Edge Test Results, 802.11g, Antenna 2

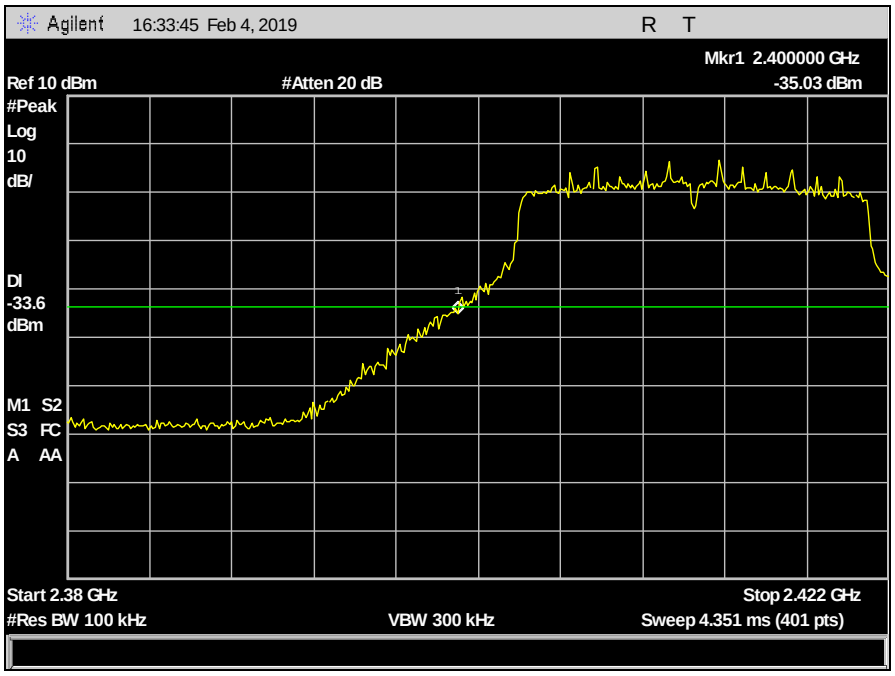


Plot 63. Conducted Band Edge, Low Channel, 802.11g, Antenna 2

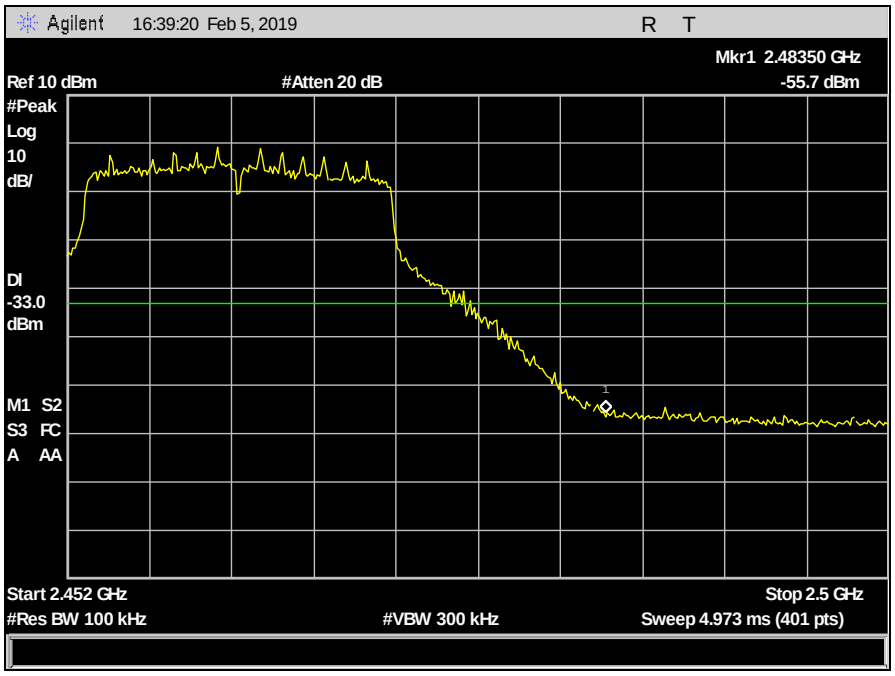


Plot 64. Conducted Band Edge, High Channel, 802.11g, Antenna 2

Conducted Band Edge Test Results, 802.11n, Antenna 2



Plot 65. Conducted Band Edge, Low Channel, 802.11n, Antenna 2



Plot 66. Conducted Band Edge, High Channel, 802.11n, Antenna 2

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(e) Peak Power Spectral Density

Test Requirements: **§15.247(e):** For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

Test Procedure: The transmitter was connected directly to a Spectrum Analyzer through an attenuator. The power level was set to the maximum level throughout each of the 100 sweeps of power averaging. The RBW was set to 100 kHz and a VBW set to 300 kHz. The spectrum analyzer was set to an auto sweep time and an average detector was used. Measurements were carried out at the low, mid and high channels.

Test Results: The EUT was compliant with the peak power spectral density limits of **§ 15.247 (e)**.

The peak power spectral density was determined from plots on the following page(s).

Test Engineer: Giuliano Messina

Test Date: 02/04/19

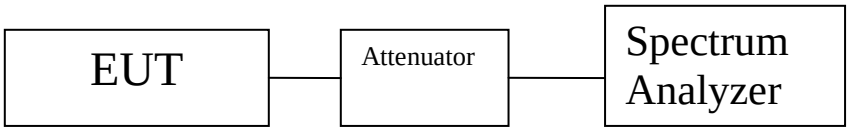


Figure 5. Block Diagram, Peak Power Spectral Density Test Setup

Peak Power Spectral Density Test Results

Mode	Freq. (MHz)	Power Spectral Density Chain 1 (dBm)	Power Spectral Density Chain 2 (dBm)	Combined Power Spectral Density (dBm)
b	2412	-2.839	-3.234	-0.02171
b	2437	-2.827	-2.195	0.510786
b	2462	-2.789	-3.632	-0.17978
g	2412	-12.75	-13.75	-10.211
g	2437	-5.799	-6.597	-3.1694
g	2462	-8.952	-10.19	-6.51674
n	2412	-12.11	-14.08	-9.97394
n	2437	-6.053	-7.084	-3.52768
n	2462	-10.27	-11.62	-7.88245

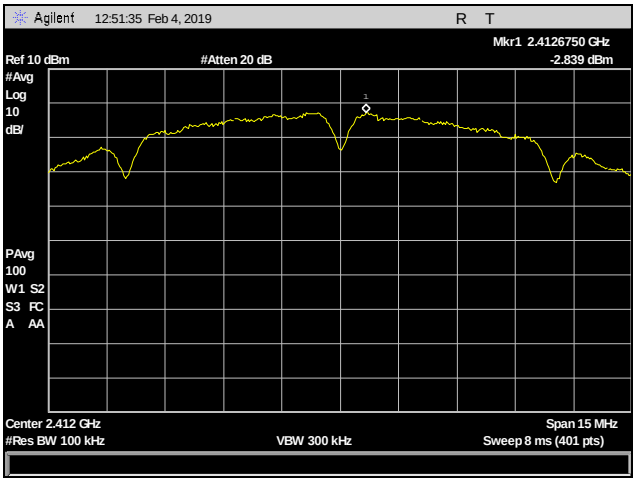
Table 20. Peak Power Spectral Density, Test Results

Max Combined PSD =

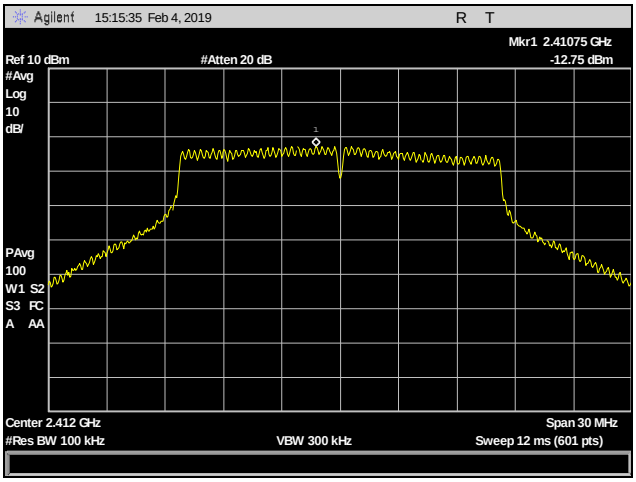
10 * log (10^(Ant1dBm/10) + 10^(Ant2dBm/10))

Max Combined PSD = 0.51 dBm

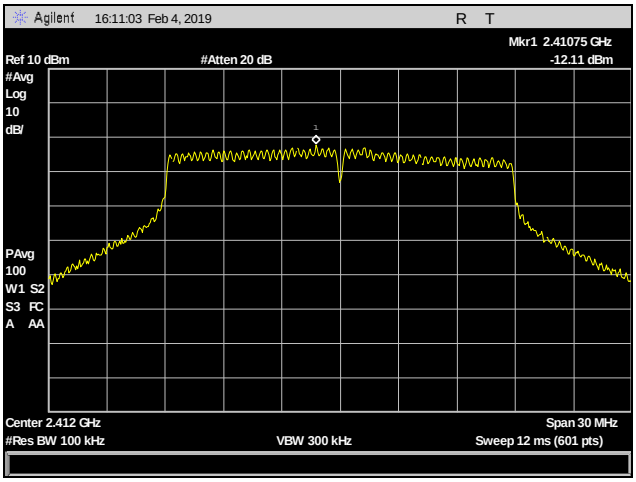
Peak Power Spectral Density



Plot 67. Peak Power Spectral Density, Low Channel, 802.11b, Antenna 1



Plot 68. Peak Power Spectral Density, Low Channel, 802.11g, Antenna 1



Plot 69. Peak Power Spectral Density, Low Channel, 802.11n, Antenna 1

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(i) Maximum Permissible Exposure

RF Exposure Requirements: **§1.1307(b)(1) and §1.1307(b)(2):** Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

RF Radiation Exposure Limit: **§1.1310:** As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1093 of this chapter.

MPE Limit: EUT's operating frequencies @ 2400-2483.5 MHz; **Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2**

Equation from page 18 of OET 65, Edition 97-01

$S = PG / 4\pi R^2$ or $R = \sqrt{(PG / 4\pi S)}$

where, S = Power Density (mW/cm^2)
P = Power Input to antenna (mW)
G = Antenna Gain (numeric value)
R = Distance (cm)

Test Results:

FCC									
Frequency (MHz)	**Con. Pwr. (dBm)**	**Con. Pwr. (mW)**	**Ant. Gain (dBi)**	**Ant. Gain numeric**	**Pwr. Density (mW/cm^2)**	**Limit (mW/cm^2)**	**Margin**	**Distance (cm)**	**Result**
2437	16.245	42.121	2.6	1.82	0.01525	1	0.98475	20	Pass

The safe distance where Power Density is less than the MPE Limit listed above was found to be 20 cm.

IV. Test Equipment

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2017.

MET Asset #	Nomenclature	Manufacturer	Model	Last Cal Date	Cal Due Date
1A1184	SPECTRUM ANALYZER	AGILENT	E4407B	4/20/2018	4/20/2019
1A1083	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESU40	10/17/2018	10/17/2019
1A1106	10M CHAMBER (FCC)	ETS	SEMI-ANECHOIC	12/2/2016	12/2/2019
1A1050	BILOG ANTENNA (30MHZ TO 1GHZ)	SCHAFFNER	CBL 6112D	8/29/2018	2/29/2020
1A1050-A	ATTENUATOR	FAIRVIEW MICROWAVE	SA6N5WA-04	8/29/2018	2/29/2020
1A1047	HORN ANTENNA	ETS	3117	10/30/2018	4/30/2020
1A1161	DRG HORN ANTENNA	ETS	3116C-PA	10/9/2018	4/9/2020
1A1099	GENERATOR	COM-POWER CORP	CGO-51000	SEE NOTE	
1A1088	PRE-AMP	ROHDE & SCHWARZ	TS-PR1	SEE NOTE	
1A1044	GENERATOR	COM-POWER CORP	CG-520	SEE NOTE	
1A1073	MULTI DEVICE CONTROLLER	ETS EMCO	2090	SEE NOTE	
1A1074	SYSTEM CONTROLLER	PANASONIC	WV-CU101	SEE NOTE	
1A1080	MULTI DEVICE CONTROLLER	ETS EMCO	2090	SEE NOTE	
1A1180	PRE-AMP	MITEQ	AMF-7D-01001800-22-10P	SEE NOTE	

Table 21. Test Equipment List

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.

V. Certification & User's Manual Information

Certification & User's Manual Information

A. Certification Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart I — Marketing of Radio frequency devices:

§ 2.801 Radio-frequency device defined.

As used in this part, a radio-frequency device is any device which in its operation is capable of Emitting radio-frequency energy by radiation, conduction, or other means. Radio- frequency devices include, but are not limited to:

(a) The various types of radio communication transmitting devices described throughout this chapter.

(b) The incidental, unintentional and intentional radiators defined in Part 15 of this chapter.

(c) The industrial, scientific, and medical equipment described in Part 18 of this chapter.

(d) Any part or component thereof which in use emits radio-frequency energy by radiation, conduction, or other means.

§ 2.803 Marketing of radio frequency devices prior to equipment authorization.

(a) Except as provided elsewhere in this chapter, no person shall sell or lease, or offer for sale or lease (including advertising for sale or lease), or import, ship or distribute for the purpose of selling or leasing or offering for sale or lease, any radio frequency device unless:

(1) In the case of a device subject to certification, such device has been authorized by the Commission in accordance with the rules in this chapter and is properly identified and labeled as required by §2.925 and other relevant sections in this chapter; or

(2) In the case of a device that is not required to have a grant of equipment authorization issued by the Commission, but which must comply with the specified technical standards prior to use, such device also complies with all applicable administrative (including verification of the equipment or authorization under a Declaration of Conformity, where required), technical, labeling and identification requirements specified in this chapter.

(d) Notwithstanding the provisions of paragraph (a) of this section, the offer for sale solely to business, commercial, industrial, scientific or medical users (but not an offer for sale to other parties or to end users located in a residential environment) of a radio frequency device that is in the conceptual, developmental, design or pre-production stage is permitted prior to equipment authorization or, for devices not subject to the equipment authorization requirements, prior to a determination of compliance with the applicable technical requirements *provided* that the prospective buyer is advised in writing at the time of the offer for sale that the equipment is subject to the FCC rules and that the equipment will comply with the appropriate rules before delivery to the buyer or to centers of distribution.

(e)(1) Notwithstanding the provisions of paragraph (a) of this section, prior to equipment authorization or determination of compliance with the applicable technical requirements any radio frequency device may be operated, but not marketed, for the following purposes and under the following conditions:

(i) Compliance testing;

(ii) Demonstrations at a trade show provided the notice contained in paragraph (c) of this section is displayed in a conspicuous location on, or immediately adjacent to, the device;

(iii) Demonstrations at an exhibition conducted at a business, commercial, industrial, scientific or medical location, but excluding locations in a residential environment, provided the notice contained in paragraphs (c) or (d) of this section, as appropriate, is displayed in a conspicuous location on, or immediately adjacent to, the device;

(iv) Evaluation of product performance and determination of customer acceptability, provided such operation takes place at the manufacturer's facilities during developmental, design or pre-production states; or

(v) Evaluation of product performance and determination of customer acceptability where customer acceptability of a radio frequency device cannot be determined at the manufacturer's facilities because of size or unique capability of the device, provided the device is operated at a business, commercial, industrial, scientific or medical user's site, but not at a residential site, during the development, design or pre-production stages.

(e)(2) For the purpose of paragraphs (e)(1)(iv) and (e)(1)(v) of this section, the term *manufacturer's facilities* includes the facilities of the party responsible for compliance with the regulations and the manufacturer's premises, as well as the facilities of other entities working under the authorization of the responsible party in connection with the development and manufacture, but not the marketing, of the equipment.

(f) For radio frequency devices subject to verification and sold solely to business, commercial, industrial, scientific and medical users (excluding products sold to other parties or for operation in a residential environment), parties responsible for verification of the devices shall have the option of ensuring compliance with the applicable technical specifications of this chapter at each end user's location after installation, provided that the purchase or lease agreement includes a proviso that such a determination of compliance be made and is the responsibility of the party responsible for verification of the equipment.

Certification & User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart J — Equipment Authorization Procedures:

§ 2.901 Basis and Purpose

(a) In order to carry out its responsibilities under the Communications Act and the various treaties and international regulations, and in order to promote efficient use of the radio spectrum, the Commission has developed technical standards for radio frequency equipment and parts or components thereof. The technical standards applicable to individual types of equipment are found in that part of the rules governing the service wherein the equipment is to be operated.[1] *In addition to the technical standards provided, the rules governing the service may require that such equipment be verified by the manufacturer or importer*, be authorized under a Declaration of Conformity, or receive an equipment authorization from the Commission by one of the following procedures: certification or registration.

(b) The following sections describe the verification procedure, the procedure for a Declaration of Conformity, and the procedures to be followed in obtaining certification from the Commission and the conditions attendant to such a grant.

§ 2.907 Certification.

(a) Certification is an equipment authorization issued by the Commission, based on representation and test data submitted by the applicant.

(b) Certification attaches to all units subsequently marketed by the grantee which are identical (see Section 2.908) to the sample tested except for permissive changes or other variations authorized by the Commission pursuant to Section 2.1043.

[1] In this case, the equipment is subject to the rules of Part 15. More specifically, the equipment falls under Subpart B (of Part 15), which deals with unintentional radiators.

Certification & User's Manual Information

§ 2.948 Description of measurement facilities.

(a) Each party making measurements of equipment that is subject to an equipment authorization under Part 15 or Part 18 of this chapter, regardless of whether the measurements are filed with the Commission or kept on file by the party responsible for compliance of equipment marketed within the U.S. or its possessions, shall compile a description of the measurement facilities employed.

(1) If the measured equipment is subject to the verification procedure, the description of the measurement facilities shall be retained by the party responsible for verification of the equipment.

(i) If the equipment is verified through measurements performed by an independent laboratory, it is acceptable for the party responsible for verification of the equipment to rely upon the description of the measurement facilities retained by or placed on file with the Commission by that laboratory. In this situation, the party responsible for the verification of the equipment is not required to retain a duplicate copy of the description of the measurement facilities.

(ii) If the equipment is verified based on measurements performed at the installation site of the equipment, no specific site calibration data is required. It is acceptable to retain the description of the measurement facilities at the site at which the measurements were performed.

(2) If the equipment is to be authorized by the Commission under the certification procedure, the description of the measurement facilities shall be filed with the Commission's Laboratory in Columbia, Maryland. The data describing the measurement facilities need only be filed once but must be updated as changes are made to the measurement facilities or as otherwise described in this section. At least every three years, the organization responsible for filing the data with the Commission shall certify that the data on file is current.

Certification & User's Manual Information

1. Label and User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart A — General:

§ 15.19 Labeling requirements.

(a) In addition to the requirements in Part 2 of this chapter, a device subject to certification or verification shall be labeled as follows:

(1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under Part 73 of this chapter, land mobile operation under Part 90, etc., shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

(2) A stand-alone cable input selector switch, shall bear the following statement in a conspicuous location on the device:

This device is verified to comply with Part 15 of the FCC Rules for use with cable television service.

(3) All other devices shall bear the following statement in a conspicuous location on the device:

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

(4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified under paragraph (a) of this section is required to be affixed only to the main control unit.

(5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

§ 15.21 Information to user.

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Verification & User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart B — Unintentional Radiators:

§ 15.105 Information to the user.

(a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.

– Increase the separation between the equipment and receiver.

– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

– Consult the dealer or an experienced radio/TV technician for help.

End of Report