

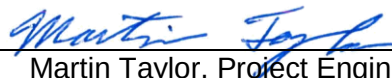
RF Test Report

Project Number: 4364134**Proposal Number:** 6939**Report Number:** 4364134EMC05**Revision Level:** 0**Client:** Persistent Systems LLC**Equipment Under Test:** S-Band Interchangeable Frequency Module**Model:** RF-2150**FCC ID:** 2AG3J-RF2150**Applicable Standards:** ANSI C63.10:2013

FCC Part 15 Subpart C, § 15.247

Report issued on: 19 March 2020**Test Result:** Compliant

Tested by:

A handwritten signature in blue ink, appearing to read 'Martin Taylor', is written over a horizontal line.

Martin Taylor, Project Engineer

Reviewed by:

A handwritten signature in blue ink, appearing to read 'David Schramm', is written over a horizontal line.

David Schramm, Operations Manager

Remarks: This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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1 Summary of Test Results

Test Description	Test Specification		Test Result
DTS / Occupied bandwidth	§15.247(a) (2)	RSS-247 5.2a RSS-GEN 6.7	Compliant
Fundamental output power	§15.247(b) (3)	RSS-247 5.4d	Compliant
Power spectral density	§15.247(e)	RSS-247 5.2b	Compliant
Emissions in non-restricted frequency bands	§15.247(d)	RSS-247 5.5	Compliant
Emissions in restricted frequency bands	§15.205, §15.209	RSS-GEN 8.9	Compliant
Field strength of spurious radiation	§15.205, §15.209	RSS-GEN 8.9	Compliant
AC Mains Conducted Emission	§15.207	RSS-GEN 8.8	Compliant

1.1 Modifications Required for Compliance

None

2 General Information

2.1 Client Information

Name:	Persistent Systems LLC
Address:	303 Fifth Ave. Suite 306
City, State, Zip, Country:	New York, New York 10016, USA

2.1 Test Laboratory

Name:	SGS North America, Inc.
Address:	620 Old Peachtree Road NW, Suite 100
City, State, Zip, Country:	Suwanee, GA 30024, USA
Accrediting Body:	A2LA
Type of lab:	Testing Laboratory
Certificate Number:	3212.01
FCC Designation:	US1126
ISED Registration:	9984A-1, 9984A-2

2.2 General Information of EUT

Equipment Under Test:	S-Band Interchangeable Frequency Module
Model:	RF-2150
Serial Number:	33079

Host Marketing Name:	MPU5
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Antenna:	ANT-2005 (2.15dBi) – Antenna configuration 1 ANT-2012 (4.1-4.6 dBi) – Antenna configuration 2 ANT-2010 (8.5 dBi) – Antenna configuration 3
§15.203 Requirement:	Unique coupling: Complies using reverse polarity TNC

Rated Voltage:	Battery nominal is 10.8 V
Tested Voltage:	Fully charged battery or 12 V through power adapter
Sample Received Date:	17 September 2018
Dates of testing:	19 September to 25 February 2019

Tx Frequency Range:	2412 to 2462 MHz
Modulations:	802.11 bgn
Bandwidths:	20 MHz
Number of Tx Chains:	1, 2 and 3

2.2.1 Device Air Interfaces

The device under test has the following capabilities:

- 802.11b WLAN (20 MHz)
 - SISO, CDD
 - Data rates (Mbps): 1, 2, 5.5, 11
- 802.11g WLAN
 - SISO, CDD
 - Data rates (Mbps): 6, 9, 12, 18, 24, 36, 48, 54
- 802.11n WLAN
 - SISO, CDD, SDM
 - 20 MHz BW Data rates (Mbps): 6.5/7, 13/14.4, 19.5/21.7, 26/28.9, 39/43.3, 52/57.8, 58.5/65, 65/72
- SISO=Single Input Single Output
- CDD=Cyclic Delay Diversity (2 Tx)
- SDM=Spatial Diversity Multiplexing (MIMO)

2.3 Operating Modes and Conditions

Testing was performed as specified in KDB 558074 D01 v05.

- The software allowed configuration and operation on all available unlicensed wireless device channels.
- The software allowed configuration and operation using all available modulations and data rates
- The software allowed configuration and operation on all available power out levels

Test Software: Atheros Radio Test 2 (ART2-GUI) Version 2.28.6

2.4 EUT Power Tables

The following tables show the power settings for each mode, channel and transmit chain configuration.

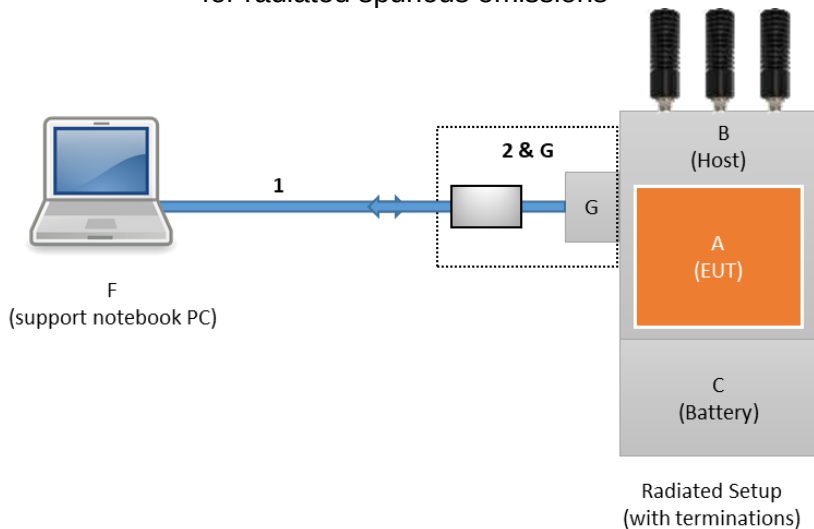
RF-2150 Power Table											
Frequency MHz	Channel WLAN	802.11 mode	ANT 2005 2.15 dBi			ANT 2012 4 dBi			ANT 2010 8.5 dBi		
			1tx	2tx	3tx	1tx	2tx	3tx	1tx	2tx	3tx
2412	1	b	21.5	21.0	20.0	21.0	20.5	19.5	20.5	19.5	17.0
2417	2	b	22.5	21.5	21.0	22.0	21.5	21.0	21.5	20.5	17.0
2422	3	b	24.5	24.0	22.0	24.0	23.5	21.0	23.5	21.0	17.0
2427	4	b	24.5	23.5	22.0	24.5	23.5	20.5	23.5	20.5	17.0
2432	5	b	27.5	26.5	24.0	27.5	25.5	21.0	26.0	21.0	17.0
2437	6	b	27.5	26.0	24.0	27.0	25.0	21.5	25.5	21.0	17.0
2442	7	b	28.5	26.0	24.0	28.0	25.0	22.0	27.5	21.0	17.5
2447	8	b	25.5	25.5	24.0	25.5	25.0	22.0	25.0	21.0	17.0
2452	9	b	25.5	25.5	23.5	25.5	25.0	22.0	25.0	20.5	17.0
2457	10	b	22.5	22.0	21.5	22.5	22.0	21.5	21.0	21.0	17.5
2462	11	b	22.0	21.5	21.0	22.0	21.0	20.5	21.0	20.0	17.5
Frequency MHz	Channel WLAN	802.11 mode	ANT 2005 2.15 dBi			ANT 2012 4 dBi			ANT 2010 8.5 dBi		
			1tx	2tx	3tx	1tx	2tx	3tx	1tx	2tx	3tx
2412	1	g	14.0	13.0	11.0	12.5	12.5	10.0	12.5	11.0	8.0
2417	2	g	17.5	16.5	15.5	17.0	16.5	15.0	16.0	15.0	14.0
2422	3	g	18.5	17.5	17.0	18.0	17.0	16.5	17.5	16.5	15.0
2427	4	g	19.5	20.0	19.0	19.5	19.5	18.5	19.5	17.5	15.5
2432	5	g	23.0	21.0	20.0	22.0	21.0	20.0	21.0	19.5	15.5
2437	6	g	23.5	22.5	21.5	22.5	22.0	21.5	22.0	20.5	16.0
2442	7	g	23.5	23.0	22.0	23.0	22.5	21.5	22.5	20.5	16.0
2447	8	g	22.0	22.0	20.5	21.5	21.0	20.5	20.5	17.5	15.5
2452	9	g	20.5	20.0	18.0	19.0	19.0	17.5	19.0	16.5	15.0
2457	10	g	18.0	17.5	16.5	17.5	17.0	16.0	17.0	16.0	15.0
2462	11	g	14.0	14.0	11.5	13.5	13.5	11.0	13.0	11.5	9.0
Frequency MHz	Channel WLAN	802.11 mode	ANT 2005 2.15 dBi			ANT 2012 4 dBi			ANT 2010 8.5 dBi		
			1tx	2tx	3tx	1tx	2tx	3tx	1tx	2tx	3tx
2412	1	n	14.0	12.5	9.5	12.5	11.0	9.0	10.0	9.0	7.0
2417	2	n	17.5	17.0	15.5	17.0	15.5	14.5	16.0	14.5	14.0
2422	3	n	18.5	18.0	16.0	18.0	17.5	16.0	16.5	16.0	14.5
2427	4	n	19.5	18.5	17.5	19.5	18.0	17.0	19.0	16.5	15.0
2432	5	n	23.0	21.0	19.5	22.0	20.5	19.0	20.0	18.5	15.0
2437	6	n	23.5	22.5	21.0	22.5	22.0	20.5	21.0	20.0	15.5
2442	7	n	23.5	23.0	21.5	23.0	22.5	21.0	21.5	20.0	15.5
2447	8	n	22.0	21.0	20.0	21.5	21.0	19.5	21.0	16.5	15.0
2452	9	n	21.0	19.0	17.5	20.0	19.0	17.0	18.0	16.0	15.0
2457	10	n	19.5	17.0	16.5	18.0	17.0	16.0	16.5	15.5	14.5
2462	11	n	14.5	13.0	10.0	14.0	12.5	9.5	12.5	9.5	8.0

2.5 EUT Connection Block Diagram

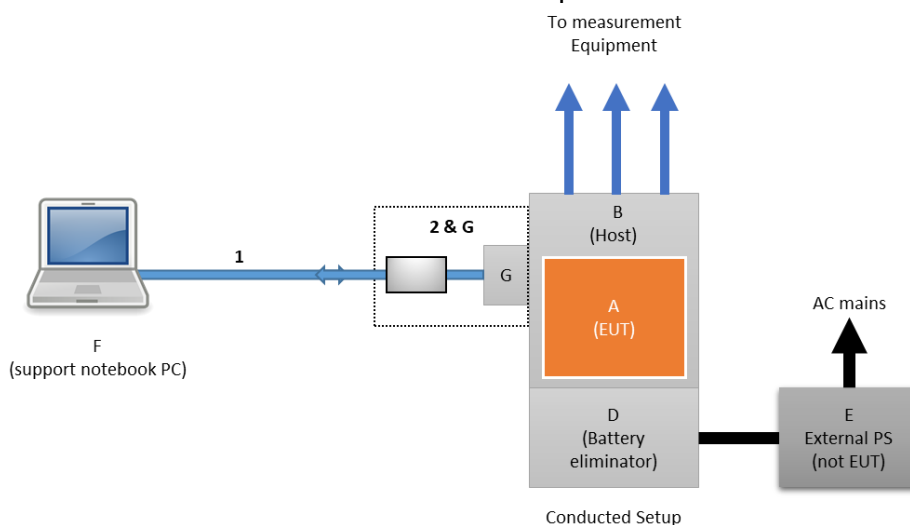
In accordance with Clause 6.1 of RSS-GEN, auxiliary equipment and accessories normally used with the transmitter and/or receiver were connected before the equipment was tested.

The emission tests were performed with the device and auxiliary equipment and accessories configured to produce the maximum level of emissions that can be expected under normal operating conditions.

Radiated Setup
for radiated spurious emissions



Conducted Setup



2.6 System Component Identification

Device reference	Manufacturer	Description	Model Number	Serial Number
A (EUT)	Persistent Systems	EUT 3x3 WLAN module	RF-2150	33079
B (Host)	Persistent Systems	Radio Host	MPU-5	5975-01-6
C	Bren-Tronics	Battery Pack	BT-70716BG-PS	7494
D	Persistent Systems	Battery Eliminator	WR-PWR-0001 Rev D 0817	Not labeled
E	Mean Well	External Power Supply	GSM90B12	EB77B45323
F	Dell	Notebook PC	Latitude E5530	BPPMTZ1
G	Persistent Systems	Data Port Adapter	CBL-DATA-2001 Rev. B	00001DDBC7AA2D

2.7 Cable List

Cable reference	Port Name	Start	End	Cable Length (m)	Ferrite installed?	Shielded?
1	Ethernet	Data Port Adapter	Laptop	1.0	No	No
2	Data	EUT	Data Port Adapter	0.3	Yes	Yes
3	Power	Battery Eliminator	External Power Supply	1.1	Yes	No

3 Bandwidth

3.1 Test Result

Test Description	Regulatory Reference	Test Method	Test Result
6dB Bandwidth for DTS	15.247(a) (2) RSS-247 5.2a	ANSI C63.10 Clause 11.8.2 Option 1	Compliant
99% Bandwidth	RSS-GEN 6.7	ANSI C63.10 Clause 6.9.3	Reported

3.2 Test Methods

For measuring the DTS 6dB bandwidth:

- 1) RBW = 100 kHz
- 2) VBW $\geq [3 \times \text{RBW}]$
- 3) Detector = peak
- 4) Trace mode = max hold
- 5) Sweep = auto couple
- 6) Allow the trace to stabilize
- 7) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

For each operating mode, the bandwidth was measured on one channel and on one chain of a MIMO system. Since the measured bandwidth was greater than 150% of the minimum bandwidth:

- ✓ It was not necessary to measure the bandwidth on the high and low channels
- ✓ It was not necessary to repeat testing on the other chains

For measuring the 99% bandwidth:

- 1) The transmitter was operated at its maximum carrier power
- 2) RBW = 1% to 5% of the 99% bandwidth
- 3) VBW = $\geq [3 \times \text{RBW}]$
- 4) The span of the spectrum analyzer was set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- 5) Detector = Peak
- 6) Trace mode = max hold
- 7) The 99% bandwidth function of the spectrum analyzer was used

All data rates were investigated, and the worst-case configuration results are reported in this section.

3.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 21.7 to 22.9 °C

Relative Humidity: 47.3 to 52.7 %

3.4 Test Equipment

Test End Date: 12-Dec-2018

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER (TS8997)	FSV30	ROHDE & SCHWARZ	B085749	1-Nov-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095585	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095591	25-Jul-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095586	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095592	25-Jul-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095587	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095593	25-Jul-2019
RF SWITCH (TS8997)	OSP	ROHDE & SCHWARZ	15039	15-Dec-2019
POWER METER (TS8997)	OSP-B157	ROHDE & SCHWARZ	15040	15-Dec-2019

Note: The equipment calibration period is 1 year.

3.5 Test Setup Photographs

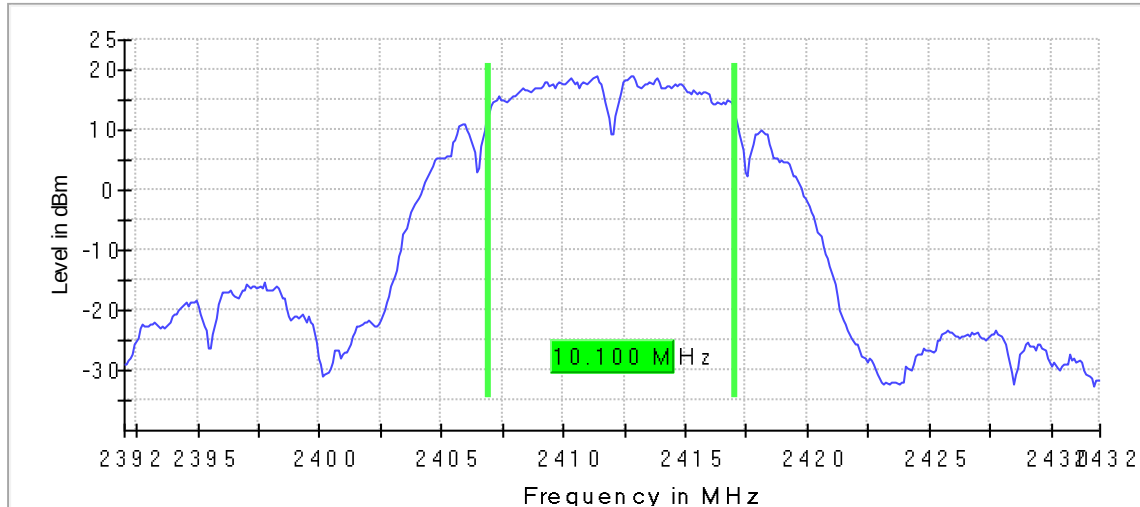
Test setup photographs are located in a separate exhibit.

3.6 Test Data

Frequency MHz	Channel WLAN	802.11 mode	Data Rate MHz	Pwr Setting dBm	6dB Bandwidth MHz	6dB Minimum Limit MHz	99% Bandwidth MHz	Result
2412	1	b	1	30	10.3	0.5	15.8	PASS
2412	1	b	2	30	10.1	0.5	15.8	PASS
2412	1	b	5.5	30	11.3	0.5	15.8	PASS
2412	1	b	11	30	11.3	0.5	15.8	PASS
2412	1	g	6	30	16.5	0.5	18.0	PASS
2412	1	g	9	30	16.5	0.5	18.2	PASS
2412	1	g	12	30	16.6	0.5	17.9	PASS
2412	1	g	18	30	16.6	0.5	18.1	PASS
2412	1	g	24	30	16.7	0.5	18.0	PASS
2412	1	g	36	30	16.7	0.5	18.2	PASS
2412	1	g	48	30	16.7	0.5	18.1	PASS
2412	1	g	54	30	16.7	0.5	18.2	PASS
2412	1	n	6.5	30	17.7	0.5	19.2	PASS
2412	1	n	13	30	17.9	0.5	19.3	PASS
2412	1	n	19.5	30	17.9	0.5	19.1	PASS
2412	1	n	26	30	17.9	0.5	19.2	PASS
2412	1	n	39	30	17.9	0.5	19.2	PASS
2412	1	n	52	30	17.9	0.5	19.0	PASS
2412	1	n	58.5	30	17.9	0.5	19.2	PASS
2412	1	n	65	30	17.9	0.5	19.1	PASS

3.7 Plots – 6dB Bandwidth

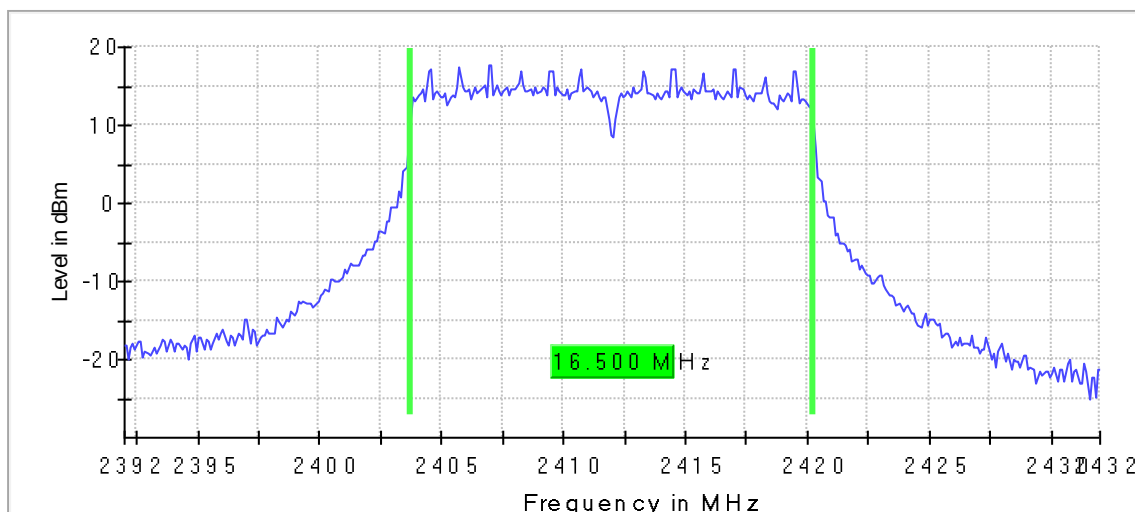
802.11b, 2Mbps
Channel 1



Measurement Settings

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	400	~ 400
SweepTime	56.886 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	12 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.17 dB	0.50 dB

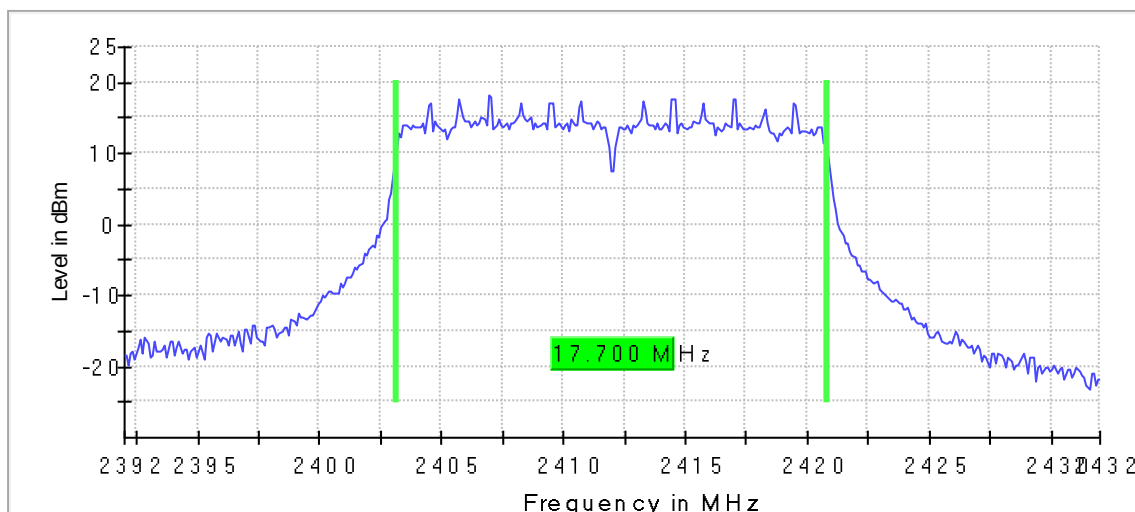
802.11g, 6 Mbps Channel 1



Measurement Settings

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	400	~ 400
SweepTime	56.886 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	37 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.14 dB	0.50 dB

6 dB Bandwidth Plots, 802.11n, 6.5 Mbps Channel 1

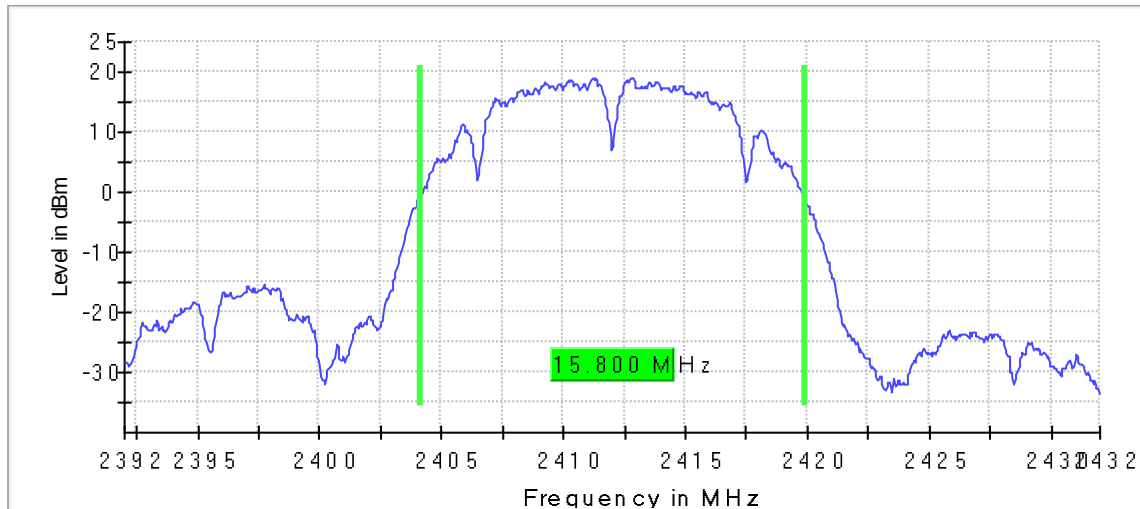


Measurement settings

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	400	~ 400
SweepTime	56.886 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	61 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.00 dB	0.50 dB

3.8 Plots – 99% Bandwidth

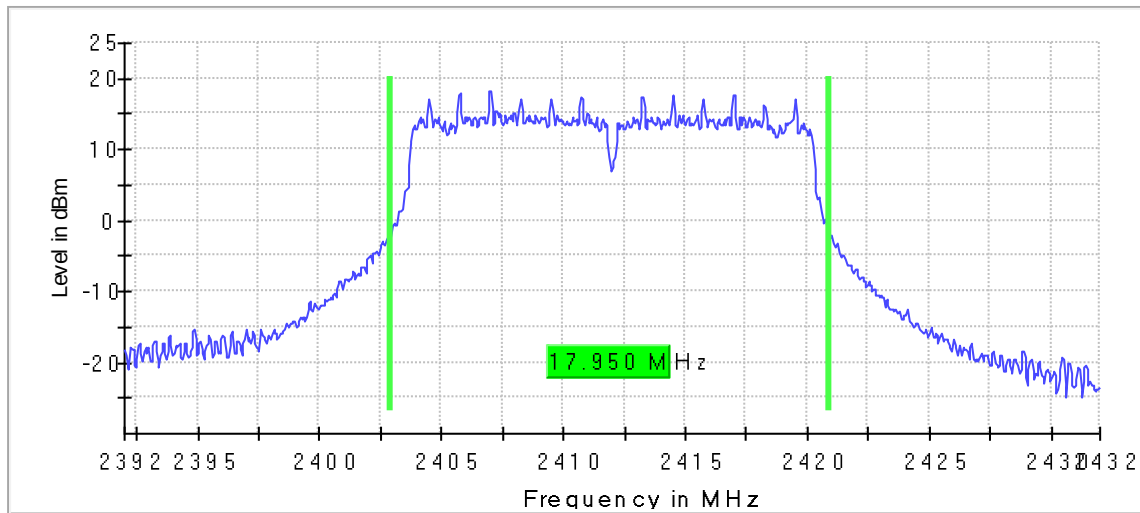
802.11b, 2 Mbps
Channel 1



Measurement settings

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	800	~ 800
SweepTime	56.836 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	21 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.00 dB	0.50 dB

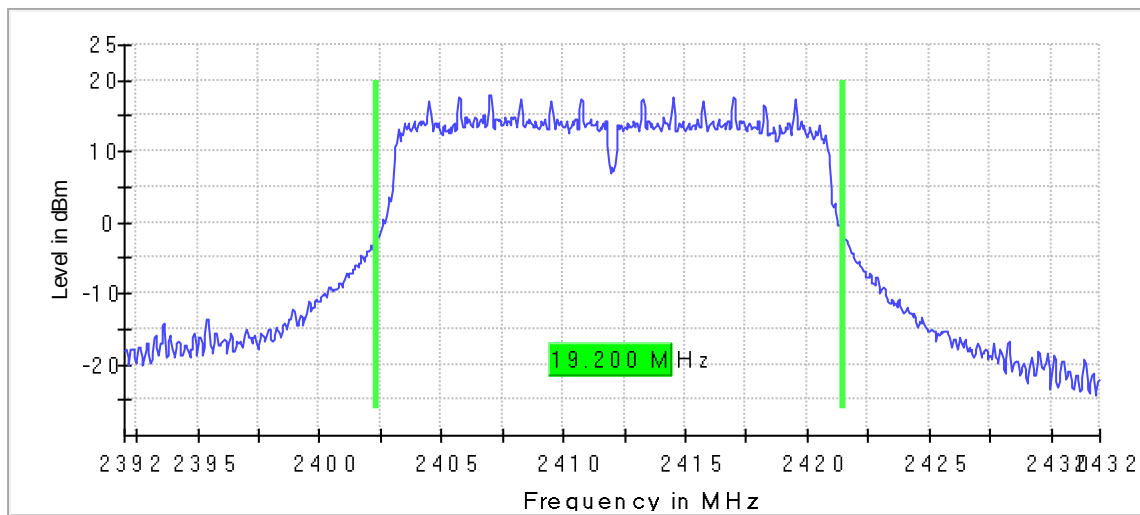
802.11g, 6 Mbps Channel 1



Measurement settings

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	800	~ 800
SweepTime	56.836 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	47 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.18 dB	0.50 dB

802.11n, 6.5 Mbps Channel 1



Measurement settings

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	800	~ 800
SweepTime	56.836 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	66 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.36 dB	0.50 dB

4 Fundamental emission output power

4.1 Test Result

Test Description	Regulatory Reference	Test Method	Test Result
Fundamental emission output power	15.247(b) (3) RSS-247 5.4	ANSI C63.10 Clause 11.9.2.3.2	Compliant

4.2 Test Method

Measurements were performed using a wideband gated RF power meter with gate parameters adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

Limit

The conducted power shall not exceed 1 Watt (30 dBm).

The e.i.r.p. shall not exceed 4 Watts (36 dBm).

4.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 19.9 to 24.5 °C

Relative Humidity: 25 to 55 %

4.4 Test Equipment

Test End Date: 12-Dec-2018

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER (TS8997)	FSV30	ROHDE & SCHWARZ	B085749	1-Nov-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095585	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095591	25-Jul-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095586	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095592	25-Jul-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095587	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095593	25-Jul-2019
RF SWITCH (TS8997)	OSP	ROHDE & SCHWARZ	15039	15-Dec-2019
POWER METER (TS8997)	OSP-B157	ROHDE & SCHWARZ	15040	15-Dec-2019

Note: The equipment calibration period is 1 year.

4.5 Test Setup Photographs

Test setup photographs are in a separate exhibit.

4.6 Test Data – ANT-2005 (2.15dBi) – Antenna configuration 1

4.6.1 802.11b

Freq MHz	CH	802.11 mode	Data Rate MHz	Pwr Setting dBm	TX chains	Ant Config	Conducted Power				EIRP		Result
							Max Output Power dBm	Power Limit dBm	Power Margin dB	Power in Watts	Directional Gain dBi	Max EIRP dBm	
2412	1	b	1	21.5	1	1	21.2	30.0	-8.8	0.132	2.15	23.4	PASS
2417	2	b	1	22.5	1	1	22.2	30.0	-7.8	0.166	2.15	24.4	PASS
2422	3	b	1	24.5	1	1	24.9	30.0	-5.1	0.309	2.15	27.1	PASS
2427	4	b	1	24.5	1	1	24.6	30.0	-5.4	0.288	2.15	26.8	PASS
2432	5	b	1	27.5	1	1	26.8	30.0	-3.2	0.479	2.15	29.0	PASS
2437	6	b	1	27.5	1	1	27.7	30.0	-2.3	0.589	2.15	29.9	PASS
2442	7	b	1	28.5	1	1	28.6	30.0	-1.4	0.724	2.15	30.8	PASS
2447	8	b	1	25.5	1	1	25.8	30.0	-4.2	0.380	2.15	28.0	PASS
2452	9	b	1	25.5	1	1	25.8	30.0	-4.2	0.380	2.15	28.0	PASS
2457	10	b	1	22.5	1	1	22.5	30.0	-7.5	0.178	2.15	24.7	PASS
2462	11	b	1	22.0	1	1	22.0	30.0	-8.0	0.158	2.15	24.2	PASS
2412	1	b	1	21.0	2	1	23.9	30.0	-6.1	0.245	5.16	29.1	PASS
2417	2	b	1	21.5	2	1	24.3	30.0	-5.7	0.269	5.16	29.5	PASS
2422	3	b	1	24.0	2	1	26.8	30.0	-3.2	0.479	5.16	32.0	PASS
2427	4	b	1	23.5	2	1	26.7	30.0	-3.3	0.468	5.16	31.9	PASS
2432	5	b	1	26.5	2	1	29.8	30.0	-0.2	0.955	5.16	35.0	PASS
2437	6	b	1	26.0	2	1	29.5	30.0	-0.5	0.891	5.16	34.7	PASS
2442	7	b	1	26.0	2	1	29.4	30.0	-0.6	0.871	5.16	34.6	PASS
2447	8	b	1	25.5	2	1	28.9	30.0	-1.1	0.776	5.16	34.1	PASS
2452	9	b	1	25.5	2	1	29.1	30.0	-0.9	0.813	5.16	34.3	PASS
2457	10	b	1	22.0	2	1	25.5	30.0	-4.5	0.355	5.16	30.7	PASS
2462	11	b	1	21.5	2	1	24.8	30.0	-5.2	0.302	5.16	30.0	PASS
2412	1	b	1	20.0	3	1	25.3	29.1	-3.8	0.339	6.92	32.2	PASS
2417	2	b	1	21.0	3	1	26.2	29.1	-2.9	0.417	6.92	33.1	PASS
2422	3	b	1	22.0	3	1	27.2	29.1	-1.9	0.525	6.92	34.1	PASS
2427	4	b	1	22.0	3	1	27.2	29.1	-1.9	0.525	6.92	34.1	PASS
2432	5	b	1	24.0	3	1	29.0	29.1	-0.1	0.794	6.92	35.9	PASS
2437	6	b	1	24.0	3	1	28.9	29.1	-0.2	0.776	6.92	35.8	PASS
2442	7	b	1	24.0	3	1	29.1	29.1	0.0	0.809	6.92	36.0	PASS
2447	8	b	1	24.0	3	1	28.8	29.1	-0.3	0.759	6.92	35.7	PASS
2452	9	b	1	23.5	3	1	28.9	29.1	-0.2	0.776	6.92	35.8	PASS
2457	10	b	1	21.5	3	1	26.0	29.1	-3.1	0.398	6.92	32.9	PASS
2462	11	b	1	21.0	3	1	25.9	29.1	-3.2	0.389	6.92	32.8	PASS

4.6.2 802.11g

Freq MHz	CH	802.11 mode	Data Rate MHz	Pwr Setting dBm	TX chains	Ant Config	Conducted Power				EIRP		Result
							Max Output Power dBm	Power Limit dBm	Power Margin dB	Power in Watts	Directional Gain dBi	Max EIRP dBm	
2412	1	g	6	14.0	1	1	14.6	30.0	-15.4	0.029	2.15	16.8	PASS
2417	2	g	6	17.5	1	1	18.4	30.0	-11.6	0.069	2.15	20.6	PASS
2422	3	g	6	18.5	1	1	19.4	30.0	-10.6	0.087	2.15	21.6	PASS
2427	4	g	6	19.5	1	1	20.2	30.0	-9.8	0.105	2.15	22.4	PASS
2432	5	g	6	23.0	1	1	23.4	30.0	-6.6	0.219	2.15	25.6	PASS
2437	6	g	6	23.5	1	1	23.8	30.0	-6.2	0.240	2.15	26.0	PASS
2442	7	g	6	23.5	1	1	23.9	30.0	-6.1	0.245	2.15	26.1	PASS
2447	8	g	6	22.0	1	1	22.8	30.0	-7.2	0.191	2.15	25.0	PASS
2452	9	g	6	20.5	1	1	20.9	30.0	-9.1	0.123	2.15	23.1	PASS
2457	10	g	6	18.0	1	1	19.0	30.0	-11.0	0.079	2.15	21.2	PASS
2462	11	g	6	14.0	1	1	14.9	30.0	-15.1	0.031	2.15	17.1	PASS
2412	1	g	6	13.0	2	1	16.6	30.0	-13.4	0.046	5.16	21.8	PASS
2417	2	g	6	16.5	2	1	20.3	30.0	-9.7	0.107	5.16	25.5	PASS
2422	3	g	6	17.5	2	1	22.2	30.0	-7.8	0.166	5.16	27.4	PASS
2427	4	g	6	20.0	2	1	23.8	30.0	-6.2	0.240	5.16	29.0	PASS
2432	5	g	6	21.0	2	1	24.5	30.0	-5.5	0.282	5.16	29.7	PASS
2437	6	g	6	22.5	2	1	26.5	30.0	-3.5	0.447	5.16	31.7	PASS
2442	7	g	6	23.0	2	1	26.9	30.0	-3.1	0.490	5.16	32.1	PASS
2447	8	g	6	22.0	2	1	25.8	30.0	-4.2	0.380	5.16	31.0	PASS
2452	9	g	6	20.0	2	1	23.9	30.0	-6.1	0.245	5.16	29.1	PASS
2457	10	g	6	17.5	2	1	21.7	30.0	-8.3	0.148	5.16	26.9	PASS
2462	11	g	6	14.0	2	1	17.9	30.0	-12.1	0.062	5.16	23.1	PASS
2412	1	g	6	11.0	3	1	16.7	29.1	-12.4	0.047	6.92	23.6	PASS
2417	2	g	6	15.5	3	1	21.4	29.1	-7.7	0.138	6.92	28.3	PASS
2422	3	g	6	17.0	3	1	23.1	29.1	-6.0	0.204	6.92	30.0	PASS
2427	4	g	6	19.0	3	1	24.8	29.1	-4.3	0.302	6.92	31.7	PASS
2432	5	g	6	20.0	3	1	25.3	29.1	-3.8	0.339	6.92	32.2	PASS
2437	6	g	6	21.5	3	1	26.4	29.1	-2.7	0.437	6.92	33.3	PASS
2442	7	g	6	22.0	3	1	27.0	29.1	-2.1	0.501	6.92	33.9	PASS
2447	8	g	6	20.5	3	1	25.3	29.1	-3.8	0.339	6.92	32.2	PASS
2452	9	g	6	18.0	3	1	24.1	29.1	-5.0	0.257	6.92	31.0	PASS
2457	10	g	6	16.5	3	1	22.3	29.1	-6.8	0.170	6.92	29.2	PASS
2462	11	g	6	11.5	3	1	17.0	29.1	-12.1	0.050	6.92	23.9	PASS

4.6.3 802.11n

Freq MHz	CH	802.11 mode	Data Rate MHz	Pwr Setting dBm	TX chains	Ant Config	Conducted Power				EIRP		Result
							Max Output Power dBm	Power Limit dBm	Power Margin dB	Power in Watts	Directional Gain dBi	Max EIRP dBm	
2412	1	n	6.5	14.0	1	1	14.8	30.0	-15.2	0.030	2.15	17.0	PASS
2417	2	n	6.5	17.5	1	1	18.0	30.0	-12.0	0.063	2.15	20.2	PASS
2422	3	n	6.5	18.5	1	1	19.4	30.0	-10.6	0.087	2.15	21.6	PASS
2427	4	n	6.5	19.5	1	1	20.4	30.0	-9.6	0.110	2.15	22.6	PASS
2432	5	n	6.5	23.0	1	1	23.4	30.0	-6.6	0.219	2.15	25.6	PASS
2437	6	n	6.5	23.5	1	1	23.9	30.0	-6.1	0.245	2.15	26.1	PASS
2442	7	n	6.5	23.5	1	1	23.9	30.0	-6.1	0.245	2.15	26.1	PASS
2447	8	n	6.5	22.0	1	1	22.4	30.0	-7.6	0.174	2.15	24.6	PASS
2452	9	n	6.5	21.0	1	1	21.3	30.0	-8.7	0.135	2.15	23.5	PASS
2457	10	n	6.5	19.5	1	1	19.8	30.0	-10.2	0.095	2.15	22.0	PASS
2462	11	n	6.5	14.5	1	1	15.4	30.0	-14.6	0.035	2.15	17.6	PASS
2412	1	n	6.5	12.5	2	1	16.3	30.0	-13.7	0.043	5.16	21.5	PASS
2417	2	n	6.5	17.0	2	1	20.9	30.0	-9.1	0.123	5.16	26.1	PASS
2422	3	n	6.5	18.0	2	1	21.8	30.0	-8.2	0.151	5.16	27.0	PASS
2427	4	n	6.5	18.5	2	1	22.9	30.0	-7.1	0.195	5.16	28.1	PASS
2432	5	n	6.5	21.0	2	1	24.5	30.0	-5.5	0.282	5.16	29.7	PASS
2437	6	n	6.5	22.5	2	1	26.4	30.0	-3.6	0.437	5.16	31.6	PASS
2442	7	n	6.5	23.0	2	1	26.8	30.0	-3.2	0.479	5.16	32.0	PASS
2447	8	n	6.5	21.0	2	1	24.8	30.0	-5.2	0.302	5.16	30.0	PASS
2452	9	n	6.5	19.0	2	1	23.0	30.0	-7.0	0.200	5.16	28.2	PASS
2457	10	n	6.5	17.0	2	1	21.1	30.0	-8.9	0.129	5.16	26.3	PASS
2462	11	n	6.5	13.0	2	1	16.9	30.0	-13.1	0.049	5.16	22.1	PASS
2412	1	n	6.5	9.5	3	1	15.5	29.1	-13.6	0.035	6.92	22.4	PASS
2417	2	n	6.5	15.5	3	1	21.3	29.1	-7.8	0.135	6.92	28.2	PASS
2422	3	n	6.5	16.0	3	1	22.3	29.1	-6.8	0.170	6.92	29.2	PASS
2427	4	n	6.5	17.5	3	1	23.9	29.1	-5.2	0.245	6.92	30.8	PASS
2432	5	n	6.5	19.5	3	1	25.1	29.1	-4.0	0.324	6.92	32.0	PASS
2437	6	n	6.5	21.0	3	1	26.1	29.1	-3.0	0.407	6.92	33.0	PASS
2442	7	n	6.5	21.5	3	1	26.2	29.1	-2.9	0.417	6.92	33.1	PASS
2447	8	n	6.5	20.0	3	1	25.2	29.1	-3.9	0.331	6.92	32.1	PASS
2452	9	n	6.5	17.5	3	1	23.7	29.1	-5.4	0.234	6.92	30.6	PASS
2457	10	n	6.5	16.5	3	1	22.4	29.1	-6.7	0.174	6.92	29.3	PASS
2462	11	n	6.5	10.0	3	1	15.8	29.1	-13.3	0.038	6.92	22.7	PASS

4.7 Test Data – ANT-2012 (4.1-4.6 dBi) – Antenna configuration 2

4.7.1 802.11b

Freq MHz	CH	802.11 mode	Data Rate MHz	Pwr Setting dBm	TX chains	Ant Config	Conducted Power				EIRP		Result
							Max Output Power dBm	Power Limit dBm	Power Margin dB	Power in Watts	Directional Gain dBi	Max EIRP dBm	
2412	1	b	1	21.0	1	2	21.0	30.0	-9.0	0.126	4.42	25.4	PASS
2417	2	b	1	22.0	1	2	21.9	30.0	-8.1	0.155	4.38	26.3	PASS
2422	3	b	1	24.0	1	2	23.9	30.0	-6.1	0.245	4.33	28.2	PASS
2427	4	b	1	24.5	1	2	24.5	30.0	-5.5	0.282	4.29	28.8	PASS
2432	5	b	1	27.5	1	2	27.8	30.0	-2.2	0.603	4.25	32.1	PASS
2437	6	b	1	27.0	1	2	27.1	30.0	-2.9	0.513	4.21	31.3	PASS
2442	7	b	1	28.0	1	2	28.2	30.0	-1.8	0.661	4.13	32.3	PASS
2447	8	b	1	25.5	1	2	25.6	30.0	-4.4	0.363	4.10	29.7	PASS
2452	9	b	1	25.5	1	2	25.6	30.0	-4.4	0.363	4.10	29.7	PASS
2457	10	b	1	22.5	1	2	22.5	30.0	-7.5	0.178	4.10	26.6	PASS
2462	11	b	1	22.0	1	2	22.0	30.0	-8.0	0.158	4.10	26.1	PASS
2412	1	b	1	20.5	2	2	23.4	28.6	-5.2	0.219	7.43	30.8	PASS
2417	2	b	1	21.5	2	2	24.3	28.6	-4.3	0.269	7.39	31.7	PASS
2422	3	b	1	23.5	2	2	26.5	28.7	-2.2	0.447	7.34	33.8	PASS
2427	4	b	1	23.5	2	2	26.7	28.7	-2.0	0.468	7.30	34.0	PASS
2432	5	b	1	25.5	2	2	28.6	28.8	-0.2	0.724	7.26	35.9	PASS
2437	6	b	1	25.0	2	2	28.5	28.8	-0.3	0.708	7.22	35.7	PASS
2442	7	b	1	25.0	2	2	28.5	28.9	-0.4	0.708	7.14	35.6	PASS
2447	8	b	1	25.0	2	2	28.8	28.9	-0.1	0.759	7.11	35.9	PASS
2452	9	b	1	25.0	2	2	28.6	28.9	-0.3	0.724	7.11	35.7	PASS
2457	10	b	1	22.0	2	2	25.5	28.9	-3.4	0.355	7.11	32.6	PASS
2462	11	b	1	21.0	2	2	24.2	28.9	-4.7	0.263	7.11	31.3	PASS
2412	1	b	1	19.5	3	2	24.3	26.8	-2.5	0.269	9.19	33.5	PASS
2417	2	b	1	21.0	3	2	26.2	26.9	-0.7	0.417	9.15	35.4	PASS
2422	3	b	1	21.0	3	2	26.3	26.9	-0.6	0.427	9.10	35.4	PASS
2427	4	b	1	20.5	3	2	25.6	27.0	-1.4	0.363	9.06	34.7	PASS
2432	5	b	1	21.0	3	2	26.3	27.0	-0.7	0.427	9.02	35.3	PASS
2437	6	b	1	21.5	3	2	26.7	27.0	-0.3	0.468	8.98	35.7	PASS
2442	7	b	1	22.0	3	2	26.8	27.1	-0.3	0.479	8.90	35.7	PASS
2447	8	b	1	22.0	3	2	27.1	27.1	0.0	0.513	8.87	36.0	PASS
2452	9	b	1	22.0	3	2	27.0	27.1	-0.1	0.501	8.87	35.9	PASS
2457	10	b	1	21.5	3	2	26.0	27.1	-1.1	0.398	8.87	34.9	PASS
2462	11	b	1	20.5	3	2	25.4	27.1	-1.7	0.347	8.87	34.3	PASS

4.7.2 802.11g

Freq MHz	CH	802.11 mode	Data Rate MHz	Pwr Setting dBm	TX chains	Ant Config	Conducted Power				EIRP		Result
							Max Output Power dBm	Power Limit dBm	Power Margin dB	Power in Watts	Directional Gain dBi	Max EIRP dBm	
2412	1	g	6	12.5	1	2	13.0	30.0	-17.0	0.020	4.42	17.4	PASS
2417	2	g	6	17.0	1	2	17.7	30.0	-12.3	0.059	4.38	22.1	PASS
2422	3	g	6	18.0	1	2	18.9	30.0	-11.1	0.078	4.33	23.2	PASS
2427	4	g	6	19.5	1	2	20.2	30.0	-9.8	0.105	4.29	24.5	PASS
2432	5	g	6	22.0	1	2	22.4	30.0	-7.6	0.174	4.25	26.7	PASS
2437	6	g	6	22.5	1	2	23.5	30.0	-6.5	0.224	4.21	27.7	PASS
2442	7	g	6	23.0	1	2	23.5	30.0	-6.5	0.224	4.13	27.6	PASS
2447	8	g	6	21.5	1	2	22.3	30.0	-7.7	0.170	4.10	26.4	PASS
2452	9	g	6	19.0	1	2	20.0	30.0	-10.0	0.100	4.10	24.1	PASS
2457	10	g	6	17.5	1	2	18.6	30.0	-11.4	0.072	4.10	22.7	PASS
2462	11	g	6	13.5	1	2	14.4	30.0	-15.6	0.028	4.10	18.5	PASS
2412	1	g	6	12.5	2	2	16.1	28.6	-12.5	0.041	7.43	23.5	PASS
2417	2	g	6	16.5	2	2	20.3	28.6	-8.3	0.107	7.39	27.7	PASS
2422	3	g	6	17.0	2	2	21.4	28.7	-7.3	0.138	7.34	28.7	PASS
2427	4	g	6	19.5	2	2	23.3	28.7	-5.4	0.214	7.30	30.6	PASS
2432	5	g	6	21.0	2	2	24.5	28.8	-4.3	0.282	7.26	31.8	PASS
2437	6	g	6	22.0	2	2	25.8	28.8	-3.0	0.380	7.22	33.0	PASS
2442	7	g	6	22.5	2	2	26.1	28.9	-2.8	0.407	7.14	33.2	PASS
2447	8	g	6	21.0	2	2	24.7	28.9	-4.2	0.295	7.11	31.8	PASS
2452	9	g	6	19.0	2	2	23.0	28.9	-5.9	0.200	7.11	30.1	PASS
2457	10	g	6	17.0	2	2	21.2	28.9	-7.7	0.132	7.11	28.3	PASS
2462	11	g	6	13.5	2	2	17.4	28.9	-11.5	0.055	7.11	24.5	PASS
2412	1	g	6	10.0	3	2	16.1	26.8	-10.7	0.041	9.19	25.3	PASS
2417	2	g	6	15.0	3	2	20.7	26.9	-6.2	0.117	9.15	29.9	PASS
2422	3	g	6	16.5	3	2	22.7	26.9	-4.2	0.186	9.10	31.8	PASS
2427	4	g	6	18.5	3	2	24.5	27.0	-2.5	0.282	9.06	33.6	PASS
2432	5	g	6	20.0	3	2	25.3	27.0	-1.7	0.339	9.02	34.3	PASS
2437	6	g	6	21.5	3	2	26.4	27.0	-0.6	0.437	8.98	35.4	PASS
2442	7	g	6	21.5	3	2	26.2	27.1	-0.9	0.417	8.90	35.1	PASS
2447	8	g	6	20.5	3	2	25.3	27.1	-1.8	0.339	8.87	34.2	PASS
2452	9	g	6	17.5	3	2	23.7	27.1	-3.4	0.234	8.87	32.6	PASS
2457	10	g	6	16.0	3	2	21.6	27.1	-5.5	0.145	8.87	30.5	PASS
2462	11	g	6	11.0	3	2	16.3	27.1	-10.8	0.043	8.87	25.2	PASS

4.7.3 802.11n

Freq MHz	CH	802.11 mode	Data Rate MHz	Pwr Setting dBm	TX chains	Ant Config	Conducted Power				EIRP		Result
							Max Output Power dBm	Power Limit dBm	Power Margin dB	Power in Watts	Directional Gain dBi	Max EIRP dBm	
2412	1	n	6.5	12.5	1	2	13.4	30.0	-16.6	0.022	4.42	17.8	PASS
2417	2	n	6.5	17.0	1	2	17.6	30.0	-12.4	0.058	4.38	22.0	PASS
2422	3	n	6.5	18.0	1	2	18.9	30.0	-11.1	0.078	4.33	23.2	PASS
2427	4	n	6.5	19.5	1	2	20.4	30.0	-9.6	0.110	4.29	24.7	PASS
2432	5	n	6.5	22.0	1	2	21.9	30.0	-8.1	0.155	4.25	26.2	PASS
2437	6	n	6.5	22.5	1	2	22.7	30.0	-7.3	0.186	4.21	26.9	PASS
2442	7	n	6.5	23.0	1	2	23.4	30.0	-6.6	0.219	4.13	27.5	PASS
2447	8	n	6.5	21.5	1	2	21.8	30.0	-8.2	0.151	4.10	25.9	PASS
2452	9	n	6.5	20.0	1	2	20.6	30.0	-9.4	0.115	4.10	24.7	PASS
2457	10	n	6.5	18.0	1	2	18.9	30.0	-11.1	0.078	4.10	23.0	PASS
2462	11	n	6.5	14.0	1	2	15.1	30.0	-14.9	0.032	4.10	19.2	PASS
2412	1	n	6.5	11.0	2	2	14.9	28.6	-13.7	0.031	7.43	22.3	PASS
2417	2	n	6.5	15.5	2	2	19.4	28.6	-9.2	0.087	7.39	26.8	PASS
2422	3	n	6.5	17.5	2	2	21.4	28.7	-7.3	0.138	7.34	28.7	PASS
2427	4	n	6.5	18.0	2	2	22.6	28.7	-6.1	0.182	7.30	29.9	PASS
2432	5	n	6.5	20.5	2	2	24.2	28.8	-4.6	0.263	7.26	31.5	PASS
2437	6	n	6.5	22.0	2	2	25.7	28.8	-3.1	0.372	7.22	32.9	PASS
2442	7	n	6.5	22.5	2	2	26.0	28.9	-2.9	0.398	7.14	33.1	PASS
2447	8	n	6.5	21.0	2	2	24.8	28.9	-4.1	0.302	7.11	31.9	PASS
2452	9	n	6.5	19.0	2	2	23.0	28.9	-5.9	0.200	7.11	30.1	PASS
2457	10	n	6.5	17.0	2	2	21.1	28.9	-7.8	0.129	7.11	28.2	PASS
2462	11	n	6.5	12.5	2	2	16.3	28.9	-12.6	0.043	7.11	23.4	PASS
2412	1	n	6.5	9.0	3	2	15.1	26.8	-11.7	0.032	9.19	24.3	PASS
2417	2	n	6.5	14.5	3	2	20.1	26.9	-6.8	0.102	9.15	29.3	PASS
2422	3	n	6.5	16.0	3	2	22.3	26.9	-4.6	0.170	9.10	31.4	PASS
2427	4	n	6.5	17.0	3	2	23.4	27.0	-3.6	0.219	9.06	32.5	PASS
2432	5	n	6.5	19.0	3	2	24.6	27.0	-2.4	0.288	9.02	33.6	PASS
2437	6	n	6.5	20.5	3	2	25.6	27.0	-1.4	0.363	8.98	34.6	PASS
2442	7	n	6.5	21.0	3	2	25.9	27.1	-1.2	0.389	8.90	34.8	PASS
2447	8	n	6.5	19.5	3	2	24.9	27.1	-2.2	0.309	8.87	33.8	PASS
2452	9	n	6.5	17.0	3	2	23.2	27.1	-3.9	0.209	8.87	32.1	PASS
2457	10	n	6.5	16.0	3	2	21.9	27.1	-5.2	0.155	8.87	30.8	PASS
2462	11	n	6.5	9.5	3	2	15.4	27.1	-11.7	0.035	8.87	24.3	PASS

4.8 Test Data – ANT-2010 (8.5 dBi) – Antenna configuration 3

4.8.1 802.11b

Freq MHz	CH	802.11 mode	Data Rate MHz	Pwr Setting dBm	TX chains	Ant Config	Conducted Power				EIRP		Result
							Max Output Power dBm	Power Limit dBm	Power Margin dB	Power in Watts	Directional Gain dBi	Max EIRP dBm	
2412	1	b	1	20.5	1	3	20.4	27.5	-7.1	0.110	8.50	28.9	PASS
2417	2	b	1	21.5	1	3	21.4	27.5	-6.1	0.138	8.50	29.9	PASS
2422	3	b	1	23.5	1	3	23.4	27.5	-4.1	0.219	8.50	31.9	PASS
2427	4	b	1	23.5	1	3	23.4	27.5	-4.1	0.219	8.50	31.9	PASS
2432	5	b	1	26.0	1	3	26.1	27.5	-1.4	0.407	8.50	34.6	PASS
2437	6	b	1	25.5	1	3	25.7	27.5	-1.8	0.372	8.50	34.2	PASS
2442	7	b	1	27.5	1	3	27.4	27.5	-0.1	0.550	8.50	35.9	PASS
2447	8	b	1	25.0	1	3	25.2	27.5	-2.3	0.331	8.50	33.7	PASS
2452	9	b	1	25.0	1	3	25.1	27.5	-2.4	0.324	8.50	33.6	PASS
2457	10	b	1	21.0	1	3	21.1	27.5	-6.4	0.129	8.50	29.6	PASS
2462	11	b	1	21.0	1	3	21.1	27.5	-6.4	0.129	8.50	29.6	PASS
2412	1	b	1	19.5	2	3	22.5	24.5	-2.0	0.178	11.51	34.0	PASS
2417	2	b	1	20.5	2	3	23.5	24.5	-1.0	0.224	11.51	35.0	PASS
2422	3	b	1	21.0	2	3	24.1	24.5	-0.4	0.257	11.51	35.6	PASS
2427	4	b	1	20.5	2	3	23.4	24.5	-1.1	0.219	11.51	34.9	PASS
2432	5	b	1	21.0	2	3	24.5	24.5	0.0	0.282	11.51	36.0	PASS
2437	6	b	1	21.0	2	3	24.4	24.5	-0.1	0.275	11.51	35.9	PASS
2442	7	b	1	21.0	2	3	24.5	24.5	0.0	0.282	11.51	36.0	PASS
2447	8	b	1	21.0	2	3	24.5	24.5	0.0	0.282	11.51	36.0	PASS
2452	9	b	1	20.5	2	3	24.1	24.5	-0.4	0.257	11.51	35.6	PASS
2457	10	b	1	21.0	2	3	24.5	24.5	0.0	0.282	11.51	36.0	PASS
2462	11	b	1	20.0	2	3	23.4	24.5	-1.1	0.219	11.51	34.9	PASS
2412	1	b	1	17.0	3	3	22.3	22.7	-0.4	0.170	13.27	35.6	PASS
2417	2	b	1	17.0	3	3	22.0	22.7	-0.7	0.158	13.27	35.3	PASS
2422	3	b	1	17.0	3	3	22.1	22.7	-0.6	0.162	13.27	35.4	PASS
2427	4	b	1	17.0	3	3	22.6	22.7	-0.1	0.182	13.27	35.9	PASS
2432	5	b	1	17.0	3	3	22.6	22.7	-0.1	0.182	13.27	35.9	PASS
2437	6	b	1	17.0	3	3	22.5	22.7	-0.2	0.178	13.27	35.8	PASS
2442	7	b	1	17.5	3	3	22.7	22.7	0.0	0.186	13.27	36.0	PASS
2447	8	b	1	17.0	3	3	22.1	22.7	-0.6	0.162	13.27	35.4	PASS
2452	9	b	1	17.0	3	3	22.4	22.7	-0.3	0.174	13.27	35.7	PASS
2457	10	b	1	17.5	3	3	22.0	22.7	-0.7	0.158	13.27	35.3	PASS
2462	11	b	1	17.5	3	3	22.5	22.7	-0.2	0.178	13.27	35.8	PASS

4.8.2 802.11g

Freq MHz	CH	802.11 mode	Data Rate MHz	Pwr Setting dBm	TX chains	Ant Config	Conducted Power				EIRP		Result
							Max Output Power dBm	Power Limit dBm	Power Margin dB	Power in Watts	Directional Gain dBi	Max EIRP dBm	
2412	1	g	6	12.5	1	3	13.0	27.5	-14.5	0.020	8.50	21.5	PASS
2417	2	g	6	16.0	1	3	16.8	27.5	-10.7	0.048	8.50	25.3	PASS
2422	3	g	6	17.5	1	3	18.5	27.5	-9.0	0.071	8.50	27.0	PASS
2427	4	g	6	19.5	1	3	20.2	27.5	-7.3	0.105	8.50	28.7	PASS
2432	5	g	6	21.0	1	3	21.5	27.5	-6.0	0.141	8.50	30.0	PASS
2437	6	g	6	22.0	1	3	22.7	27.5	-4.8	0.186	8.50	31.2	PASS
2442	7	g	6	22.5	1	3	23.0	27.5	-4.5	0.200	8.50	31.5	PASS
2447	8	g	6	20.5	1	3	21.2	27.5	-6.3	0.132	8.50	29.7	PASS
2452	9	g	6	19.0	1	3	20.0	27.5	-7.5	0.100	8.50	28.5	PASS
2457	10	g	6	17.0	1	3	18.1	27.5	-9.4	0.065	8.50	26.6	PASS
2462	11	g	6	13.0	1	3	13.8	27.5	-13.7	0.024	8.50	22.3	PASS
2412	1	g	6	11.0	2	3	14.7	24.5	-9.8	0.030	11.51	26.2	PASS
2417	2	g	6	15.0	2	3	19.2	24.5	-5.3	0.083	11.51	30.7	PASS
2422	3	g	6	16.5	2	3	20.6	24.5	-3.9	0.115	11.51	32.1	PASS
2427	4	g	6	17.5	2	3	22.0	24.5	-2.5	0.158	11.51	33.5	PASS
2432	5	g	6	19.5	2	3	23.2	24.5	-1.3	0.209	11.51	34.7	PASS
2437	6	g	6	20.5	2	3	24.4	24.5	-0.1	0.275	11.51	35.9	PASS
2442	7	g	6	20.5	2	3	24.1	24.5	-0.4	0.257	11.51	35.6	PASS
2447	8	g	6	17.5	2	3	22.0	24.5	-2.5	0.158	11.51	33.5	PASS
2452	9	g	6	16.5	2	3	21.1	24.5	-3.4	0.129	11.51	32.6	PASS
2457	10	g	6	16.0	2	3	20.4	24.5	-4.1	0.110	11.51	31.9	PASS
2462	11	g	6	11.5	2	3	15.3	24.5	-9.2	0.034	11.51	26.8	PASS
2412	1	g	6	8.0	3	3	14.1	22.7	-8.6	0.026	13.27	27.4	PASS
2417	2	g	6	14.0	3	3	19.7	22.7	-3.0	0.093	13.27	33.0	PASS
2422	3	g	6	15.0	3	3	20.8	22.7	-1.9	0.120	13.27	34.1	PASS
2427	4	g	6	15.5	3	3	21.3	22.7	-1.4	0.135	13.27	34.6	PASS
2432	5	g	6	15.5	3	3	21.4	22.7	-1.3	0.138	13.27	34.7	PASS
2437	6	g	6	16.0	3	3	22.4	22.7	-0.3	0.174	13.27	35.7	PASS
2442	7	g	6	16.0	3	3	21.7	22.7	-1.0	0.148	13.27	35.0	PASS
2447	8	g	6	15.5	3	3	21.5	22.7	-1.2	0.141	13.27	34.8	PASS
2452	9	g	6	15.0	3	3	21.3	22.7	-1.4	0.135	13.27	34.6	PASS
2457	10	g	6	15.0	3	3	20.6	22.7	-2.1	0.115	13.27	33.9	PASS
2462	11	g	6	9.0	3	3	14.8	22.7	-7.9	0.030	13.27	28.1	PASS

4.8.3 802.11n

Freq MHz	CH	802.11 mode	Data Rate MHz	Pwr Setting dBm	TX chains	Ant Config	Conducted Power				EIRP		Result
							Max Output Power dBm	Power Limit dBm	Power Margin dB	Power in Watts	Directional Gain dBi	Max EIRP dBm	
2412	1	n	6.5	10.0	1	3	11.6	27.5	-15.9	0.014	8.50	20.1	PASS
2417	2	n	6.5	16.0	1	3	16.5	27.5	-11.0	0.045	8.50	25.0	PASS
2422	3	n	6.5	16.5	1	3	17.6	27.5	-9.9	0.058	8.50	26.1	PASS
2427	4	n	6.5	19.0	1	3	19.9	27.5	-7.6	0.098	8.50	28.4	PASS
2432	5	n	6.5	20.0	1	3	20.4	27.5	-7.1	0.110	8.50	28.9	PASS
2437	6	n	6.5	21.0	1	3	21.3	27.5	-6.2	0.135	8.50	29.8	PASS
2442	7	n	6.5	21.5	1	3	21.7	27.5	-5.8	0.148	8.50	30.2	PASS
2447	8	n	6.5	21.0	1	3	21.3	27.5	-6.2	0.135	8.50	29.8	PASS
2452	9	n	6.5	18.0	1	3	19.4	27.5	-8.1	0.087	8.50	27.9	PASS
2457	10	n	6.5	16.5	1	3	17.2	27.5	-10.3	0.052	8.50	25.7	PASS
2462	11	n	6.5	12.5	1	3	13.1	27.5	-14.4	0.020	8.50	21.6	PASS
2412	1	n	6.5	9.0	2	3	12.9	24.5	-11.6	0.019	11.51	24.4	PASS
2417	2	n	6.5	14.5	2	3	18.4	24.5	-6.1	0.069	11.51	29.9	PASS
2422	3	n	6.5	16.0	2	3	19.9	24.5	-4.6	0.098	11.51	31.4	PASS
2427	4	n	6.5	16.5	2	3	20.6	24.5	-3.9	0.115	11.51	32.1	PASS
2432	5	n	6.5	18.5	2	3	22.4	24.5	-2.1	0.174	11.51	33.9	PASS
2437	6	n	6.5	20.0	2	3	24.3	24.5	-0.2	0.269	11.51	35.8	PASS
2442	7	n	6.5	20.0	2	3	23.4	24.5	-1.1	0.219	11.51	34.9	PASS
2447	8	n	6.5	16.5	2	3	20.3	24.5	-4.2	0.107	11.51	31.8	PASS
2452	9	n	6.5	16.0	2	3	19.9	24.5	-4.6	0.098	11.51	31.4	PASS
2457	10	n	6.5	15.5	2	3	19.4	24.5	-5.1	0.087	11.51	30.9	PASS
2462	11	n	6.5	9.5	2	3	13.3	24.5	-11.2	0.021	11.51	24.8	PASS
2412	1	n	6.5	7.0	3	3	13.3	22.7	-9.4	0.021	13.27	26.6	PASS
2417	2	n	6.5	14.0	3	3	19.7	22.7	-3.0	0.093	13.27	33.0	PASS
2422	3	n	6.5	14.5	3	3	20.2	22.7	-2.5	0.105	13.27	33.5	PASS
2427	4	n	6.5	15.0	3	3	20.8	22.7	-1.9	0.120	13.27	34.1	PASS
2432	5	n	6.5	15.0	3	3	20.7	22.7	-2.0	0.117	13.27	34.0	PASS
2437	6	n	6.5	15.5	3	3	21.6	22.7	-1.1	0.145	13.27	34.9	PASS
2442	7	n	6.5	15.5	3	3	21.3	22.7	-1.4	0.135	13.27	34.6	PASS
2447	8	n	6.5	15.0	3	3	21.0	22.7	-1.7	0.126	13.27	34.3	PASS
2452	9	n	6.5	15.0	3	3	21.3	22.7	-1.4	0.135	13.27	34.6	PASS
2457	10	n	6.5	14.5	3	3	20.1	22.7	-2.6	0.102	13.27	33.4	PASS
2462	11	n	6.5	8.0	3	3	14.3	22.7	-8.4	0.027	13.27	27.6	PASS

5 Power Spectral Density

5.1 Test Result

Test Description	Regulatory Reference	Test Method	Test Result
Power Spectral Density	15.247(e) RSS-247 5.2b	ANSI C63.10 Clause 11.10	Compliant

5.2 Test Method

Since the fundamental emission output power was measured using an average technique, the average power spectral density method of ANSI C63.10 Clause 11.10 was used. All modes and data rates were investigated. The modes and data rates that produced the highest measurement are shown.

The limit is 8 dBm in any 3 kHz band.

For multiple transmitter outputs, the spectra were measured and summed across the outputs per ANSI C63.10 Clause 14.3.2.2

5.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 21.7 to 22.9 °C

Relative Humidity: 47.3 to 52.7 %

5.4 Test Equipment

Test End Date: 12-Dec-2018

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER (TS8997)	FSV30	ROHDE & SCHWARZ	B085749	1-Nov-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095585	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095591	25-Jul-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095586	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095592	25-Jul-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095587	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095593	25-Jul-2019
RF SWITCH (TS8997)	OSP	ROHDE & SCHWARZ	15039	15-Dec-2019
POWER METER (TS8997)	OSP-B157	ROHDE & SCHWARZ	15040	15-Dec-2019

Note: The equipment calibration period is 1 year.

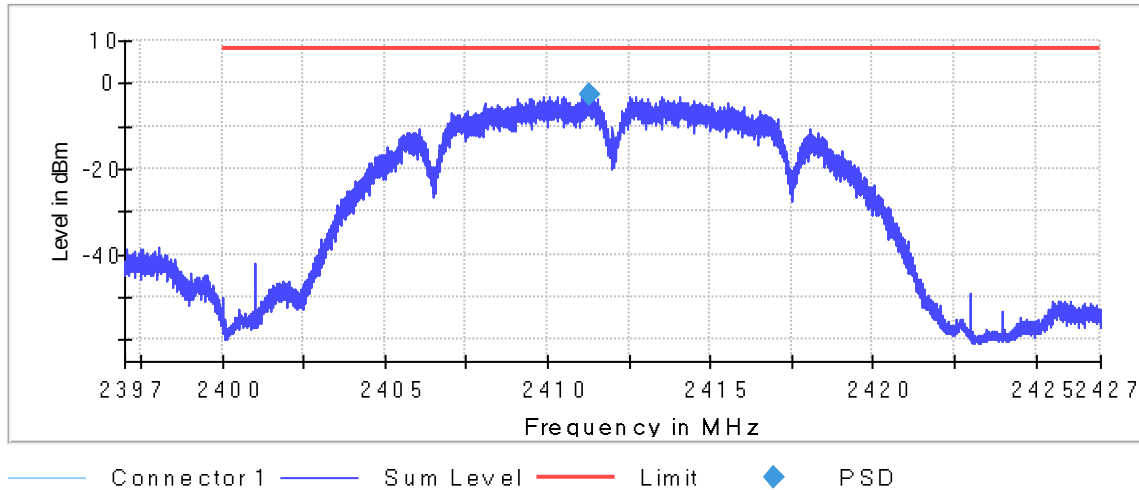
5.5 Test Setup Photographs

Test setup photographs are in a separate exhibit.

5.6 Test Data

Frequency MHz	Channel WLAN	802.11 mode	Data Rate MHz	Tx Chains	Pwr Setting dBm	PSD Frequency MHz	PSD dBm	Limit dBm	Result
2412	1	b	2	1	29.5	2411.3	-2.7	8.0	PASS
2437	6	b	2	1	29.5	2436.1	-2.6	8.0	PASS
2462	11	b	2	1	29.5	2461.1	-3.3	8.0	PASS
2412	1	g	48	1	29.5	2405.5	0.0	8.0	PASS
2437	6	g	48	1	29.5	2430.5	-0.3	8.0	PASS
2462	11	g	48	1	29.5	2455.5	0.2	8.0	PASS
2412	1	n	39.0	1	29.5	2405.6	0.6	8.0	PASS
2437	6	n	39.0	1	29.5	2430.5	0.7	8.0	PASS
2462	11	n	39.0	1	29.5	2455.5	1.0	8.0	PASS
2412	1	b	2	2	27.0	2412.0	6.2	8.0	PASS
2437	6	b	2	2	27.0	2436.1	-1.5	8.0	PASS
2462	11	b	2	2	27.0	2461.1	-2.3	8.0	PASS
2412	1	g	48	2	27.0	2405.5	1.0	8.0	PASS
2437	6	g	48	2	27.0	2430.5	-1.1	8.0	PASS
2462	11	g	48	2	27.0	2455.5	1.0	8.0	PASS
2412	1	n	39.0	2	27.0	2405.5	1.5	8.0	PASS
2437	6	n	39.0	2	27.0	2430.5	1.7	8.0	PASS
2462	11	n	39.0	2	27.0	2455.5	1.8	8.0	PASS
2412	1	b	2	3	25.5	2411.1	-1.9	8.0	PASS
2437	6	b	2	3	25.5	2436.1	-1.8	8.0	PASS
2462	11	b	2	3	25.5	2461.1	-1.0	8.0	PASS
2412	1	g	48	3	25.5	2405.5	1.9	8.0	PASS
2437	6	g	48	3	25.5	2430.5	1.9	8.0	PASS
2462	11	g	48	3	25.5	2444.5	1.5	8.0	PASS
2412	1	n	6.5	3	25.5	2414.2	-3.4	8.0	PASS
2412	1	n	39.0	3	25.5	2405.5	1.5	8.0	PASS
2437	6	n	6.5	3	25.5	2439.2	-3.4	8.0	PASS
2437	6	n	39.0	3	25.5	2430.5	1.4	8.0	PASS
2462	11	n	6.5	3	25.5	2455.4	-3.6	8.0	PASS
2462	11	n	39.0	3	25.5	2455.5	1.3	8.0	PASS

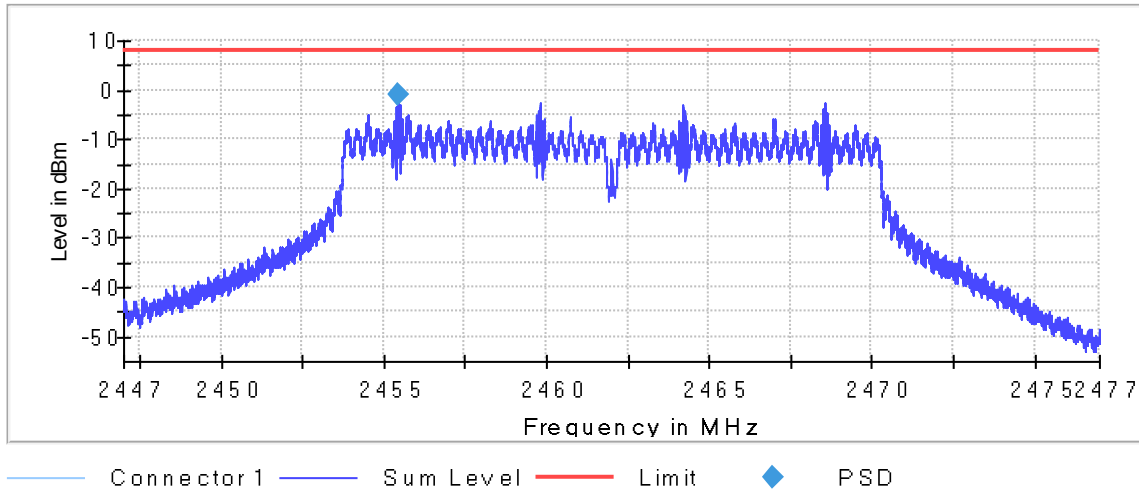
802.11b (1Tx)
Representative Plot
Channel 1, 2Mbps
Power Spectral Density



Measurement Settings

Setting	Instrument Value	Target Value
Start Frequency	2.42200 GHz	2.42200 GHz
Stop Frequency	2.45200 GHz	2.45200 GHz
Span	30.000 MHz	30.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	20000	~ 20000
Sweeptime	4.424 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	RMS	RMS
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Average	Average
SweepType	FFT	AUTO
Preamp	off	off

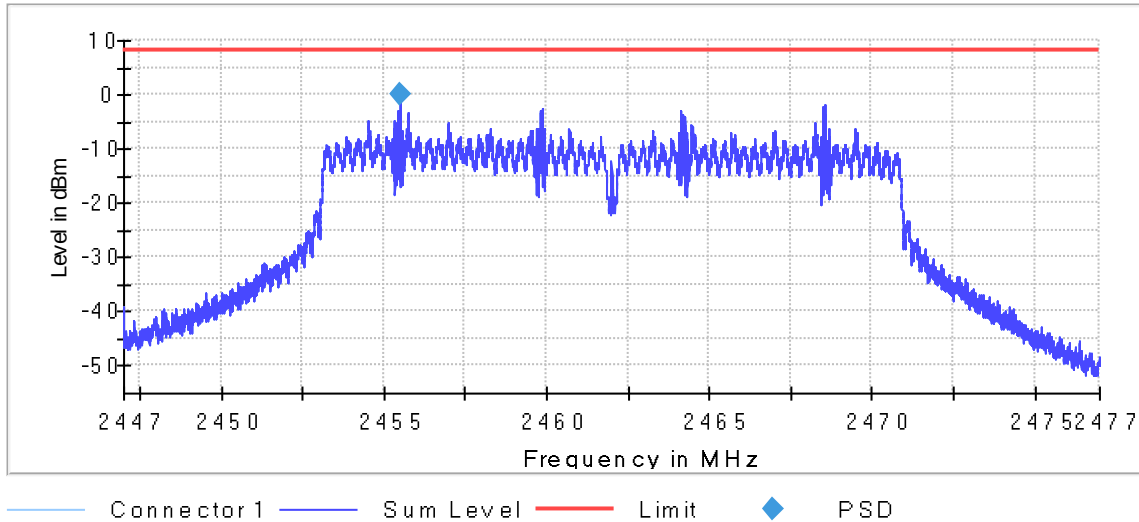
802.11g (1Tx)
Representative Plot
Channel 11, 48 Mbps
Power Spectral Density



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44700 GHz	2.44700 GHz
Stop Frequency	2.47700 GHz	2.47700 GHz
Span	30.000 MHz	30.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	20000	~ 20000
SweepTime	4.424 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	RMS	RMS
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Average	Average
SweepType	FFT	AUTO
Preamplifier	off	off

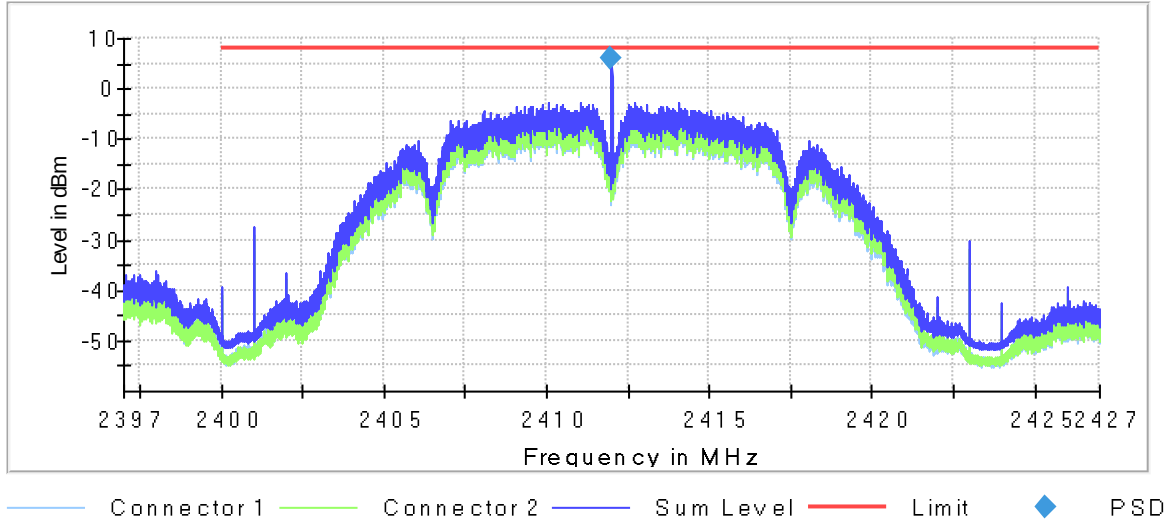
802.11n (1Tx)
Representative Plot
Channel 11, 39 Mbps
Worst case PSD



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44700 GHz	2.44700 GHz
Stop Frequency	2.47700 GHz	2.47700 GHz
Span	30.000 MHz	30.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	20000	~ 20000
Sweeptime	4.424 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	RMS	RMS
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Average	Average
SweepType	FFT	AUTO
Preamp	off	off

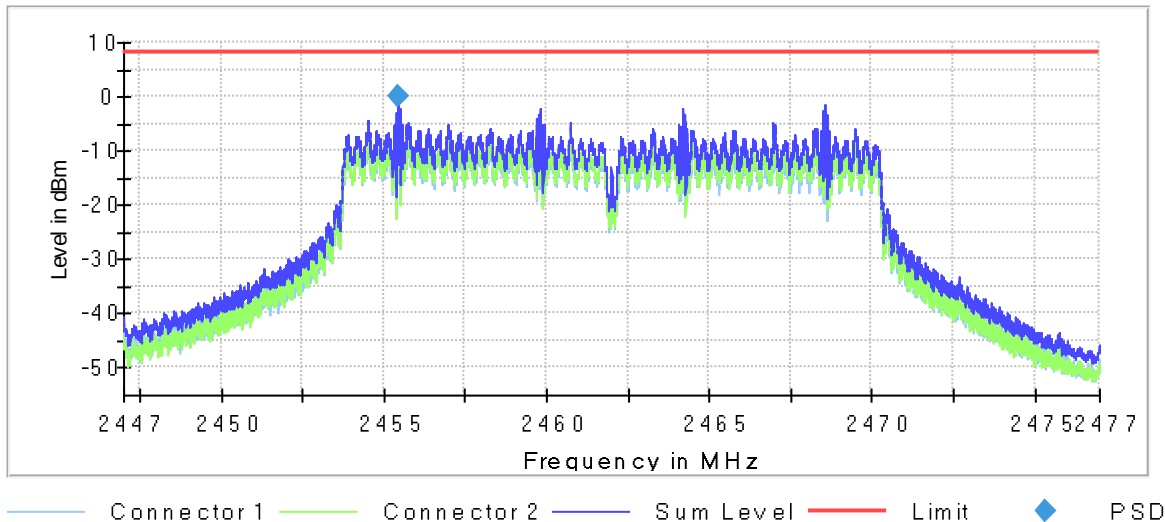
802.11b (2Tx)
Representative Plot
Channel 1, 2Mbps
Worst case PSD



Measurement Settings

Setting	Instrument Value	Target Value
Start Frequency	2.39700 GHz	2.39700 GHz
Stop Frequency	2.42700 GHz	2.42700 GHz
Span	30.000 MHz	30.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	20000	~ 20000
Sweeptime	4.424 ms	AUTO
Reference Level	20.000 dBm	20.000 dBm
Attenuation	40.000 dB	AUTO
Detector	RMS	RMS
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Average	Average
SweepType	FFT	AUTO
Preamp	off	off

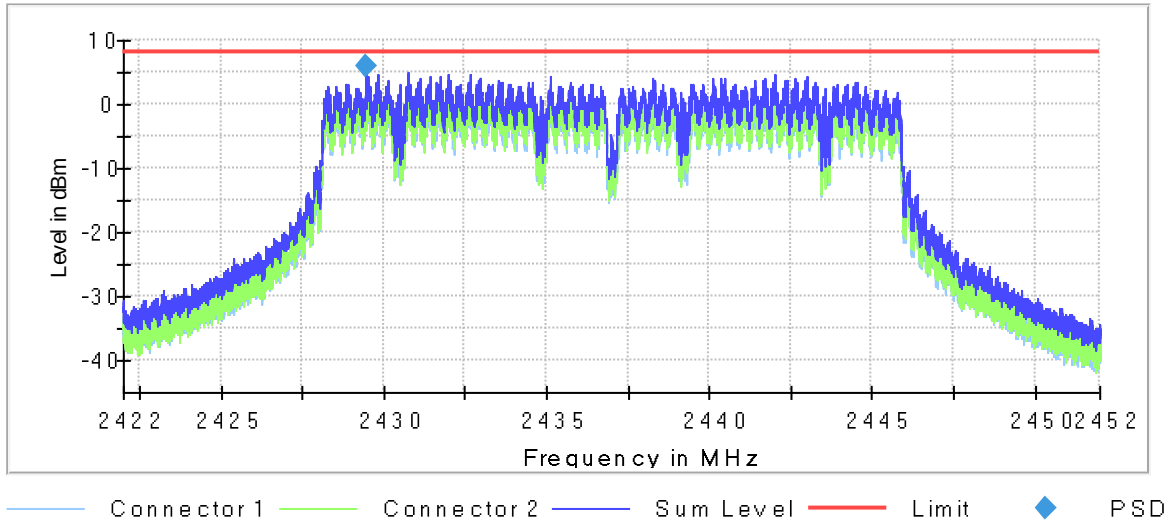
802.11g (2Tx)
Representative Plot
Channel 11, 48 Mbps
Worst case PSD



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44700 GHz	2.44700 GHz
Stop Frequency	2.47700 GHz	2.47700 GHz
Span	30.000 MHz	30.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	20000	~ 20000
SweepTime	4.424 ms	AUTO
Reference Level	20.000 dBm	20.000 dBm
Attenuation	40.000 dB	AUTO
Detector	RMS	RMS
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Average	Average
SweepType	FFT	AUTO
Preamplifier	off	off

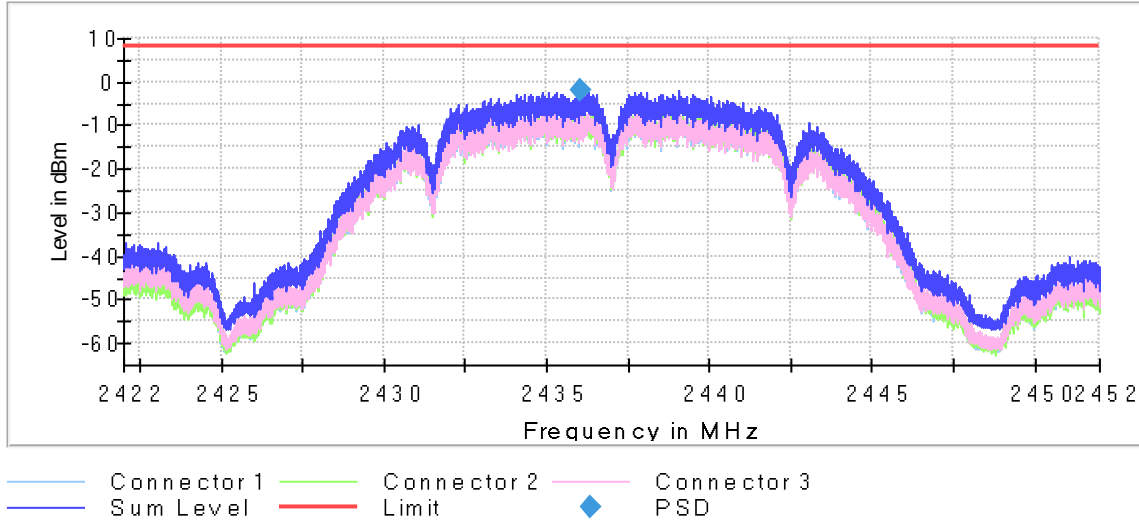
802.11n (2Tx)
Representative Plot
Channel 1, 39 Mbps
Worst case PSD



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.42200 GHz	2.42200 GHz
Stop Frequency	2.45200 GHz	2.45200 GHz
Span	30.000 MHz	30.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	20000	~ 20000
SweepTime	4.424 ms	AUTO
Reference Level	20.000 dBm	20.000 dBm
Attenuation	40.000 dB	AUTO
Detector	RMS	RMS
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Average	Average
SweepType	FFT	AUTO
Preamp	off	off

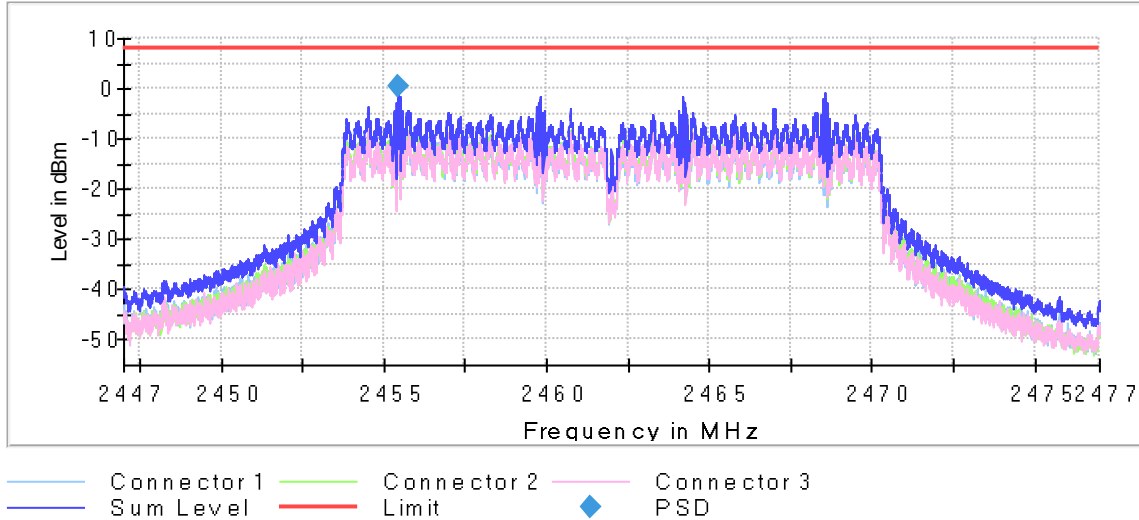
802.11b (3Tx)
Representative Plot
Channel 6, 2Mbps
Worst case PSD



Measurement Settings

Setting	Instrument Value	Target Value
Start Frequency	2.42200 GHz	2.42200 GHz
Stop Frequency	2.45200 GHz	2.45200 GHz
Span	30.000 MHz	30.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	20000	~ 20000
SweepTime	4.424 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	RMS	RMS
SweepCount	120	120
Filter	3 dB	3 dB
Trace Mode	Average	Average
SweepType	FFT	AUTO
Preamp	off	off

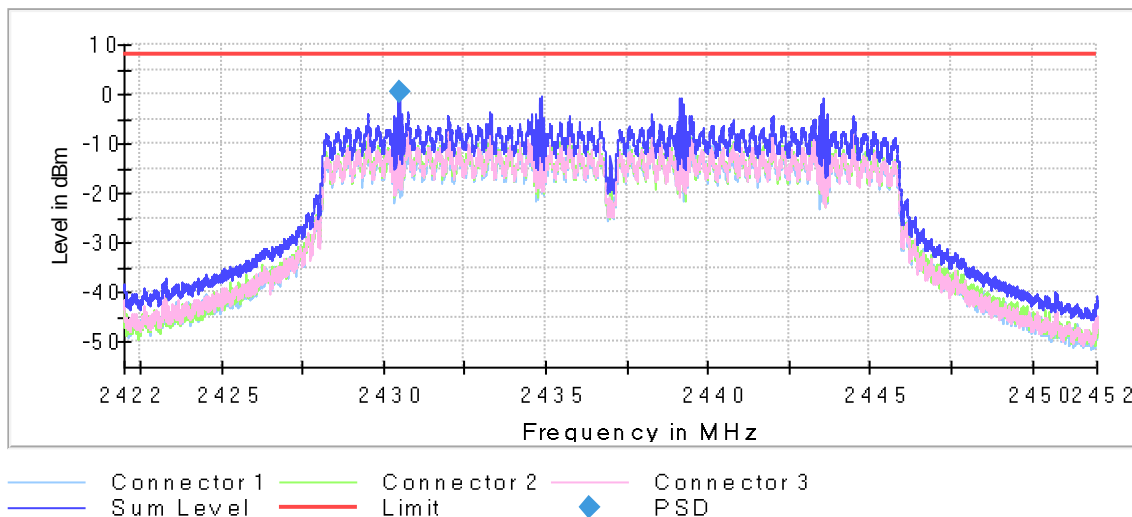
802.11g (3Tx)
Representative Plot
Channel 11, 48 Mbps
Worst case PSD



Measurement Settings

Setting	Instrument Value	Target Value
Start Frequency	2.44700 GHz	2.44700 GHz
Stop Frequency	2.47700 GHz	2.47700 GHz
Span	30.000 MHz	30.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	20000	~ 20000
SweepTime	4.424 ms	AUTO
Reference Level	20.000 dBm	20.000 dBm
Attenuation	40.000 dB	AUTO
Detector	RMS	RMS
SweepCount	120	120
Filter	3 dB	3 dB
Trace Mode	Average	Average
SweepType	FFT	AUTO
Preamp	off	off

802.11n (3Tx)
Representative Plot
Channel 1, 58.5 Mbps
Worst case PSD



Measurement Settings

Setting	Instrument Value	Target Value
Start Frequency	2.42200 GHz	2.42200 GHz
Stop Frequency	2.45200 GHz	2.45200 GHz
Span	30.000 MHz	30.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	20000	~ 20000
Sweeptime	4.424 ms	AUTO
Reference Level	20.000 dBm	20.000 dBm
Attenuation	40.000 dB	AUTO
Detector	RMS	RMS
SweepCount	120	120
Filter	3 dB	3 dB
Trace Mode	Average	Average
Sweeptype	FFT	AUTO
Preamp	off	off

6 Emissions in non-restricted frequency bands

6.1 Test Result

Test Description	Regulatory Reference	Test Method	Test Result
Emissions in non-restricted frequency bands	15.247(d) RSS-247 5.5	ANSI C63.10 Clause 11.11	Compliant

6.2 Test Method

The antenna port of the EUT was connected to a spectrum analyzer with

- Peak detector, max hold
- Resolution bandwidth of at least 100 kHz
 - o A larger RBW may be used to reduce test duration
- Video bandwidth at least 3x RBW
- Frequency range: 30 MHz to 25 GHz

Since the power is measured based on the use of the RMS averaging, the limit is 30 dB below that measured in the 100 kHz bandwidth within the band that contains the highest level of the desired power. All modes and data rates were investigated. Only the worst-case for each modulation was reported.

ANSI C63.10, Clause 14.3.3 allows for relative emissions testing to be performed on each output individually without summing or adding $10 \log(N_{\text{ant}})$ when measurements are made relative to the in-band emissions on the individual outputs.

6.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions: 10/29 to 11/7/2018

Temperature: 21.7 to 23.4 °C

Relative Humidity: 32.6 to 52.7 %

6.4 Test Equipment

Test End Date: 12-Dec-2018

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER (TS8997)	FSV30	ROHDE & SCHWARZ	B085749	1-Nov-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095585	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095591	25-Jul-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095586	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095592	25-Jul-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095587	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095593	25-Jul-2019
RF SWITCH (TS8997)	OSP	ROHDE & SCHWARZ	15039	15-Dec-2019
POWER METER (TS8997)	OSP-B157	ROHDE & SCHWARZ	15040	15-Dec-2019

Note: The equipment calibration period is 1 year.

6.5 Test Setup Photographs

Test setup photographs are located in a separate exhibit.

6.6 Test Data

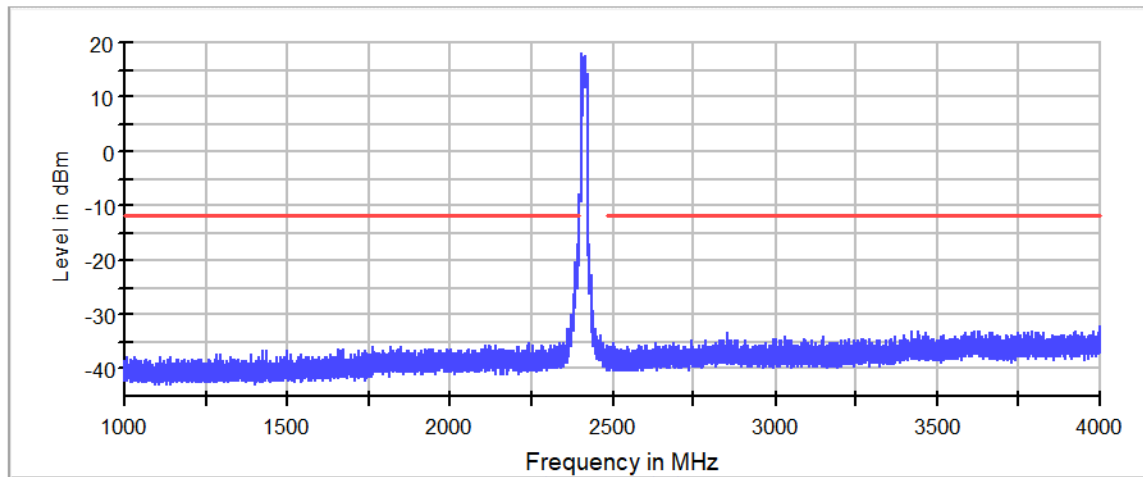
Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Tx Chains	Power Setting	Inband Peak dBm	Frequency MHz	Level dBm	Limit dBm	Margin dB	Result
2412	1	b	11	1	29.5	19.7	2397.475	-16.1	-10.3	5.8	Pass
2462	11	b	11	1	29.5	19.0	2487.475	-27.7	-11.0	16.7	Pass
2412	1	g	48	1	29.5	18.2	2399.925	-12.9	-11.8	1.1	Pass
2462	11	g	48	1	29.5	18.7	2484.525	-28.0	-11.3	16.7	Pass
2412	1	n	39	1	29.5	18.2	2400.000	-12.8	-11.8	1.0	Pass
2462	11	n	39	1	29.5	18.7	2483.875	-25.9	-11.3	14.6	Pass
2412	1	b	11	2	27	21.8	2397.475	-14.2	-8.2	6.0	Pass
2462	11	b	11	2	27	22.1	3802.425	-20.6	-7.9	12.7	Pass
2412	1	g	48	2	27	21.5	2400.000	-11.8	-8.5	3.3	Pass
2462	11	g	48	2	27	21.6	3814.425	-19.6	-8.4	11.2	Pass
2412	1	n	39	2	27	21.3	2400.000	-11.8	-8.7	3.1	Pass
2462	11	n	39	2	27	21.3	3748.175	-20.3	-8.7	11.6	Pass
2412	1	b	11	3	25.5	20.8	2397.475	-12.9	-9.2	3.7	Pass
2462	11	b	11	3	25.5	20.7	2487.475	-28.7	-9.3	19.4	Pass
2412	1	g	48	3	25.5	20.0	2396.875	-10.1	-10.0	0.1	Pass
2462	11	g	48	3	25.5	20.0	2483.575	-23.2	-10.0	13.2	Pass
2412	1	n	39	3	25.5	20.6	2399.525	-10.2	-9.4	0.8	Pass
2462	11	n	39	3	25.5	20.0	3920.325	-22.0	-10.0	12.0	Pass

Measurement Settings

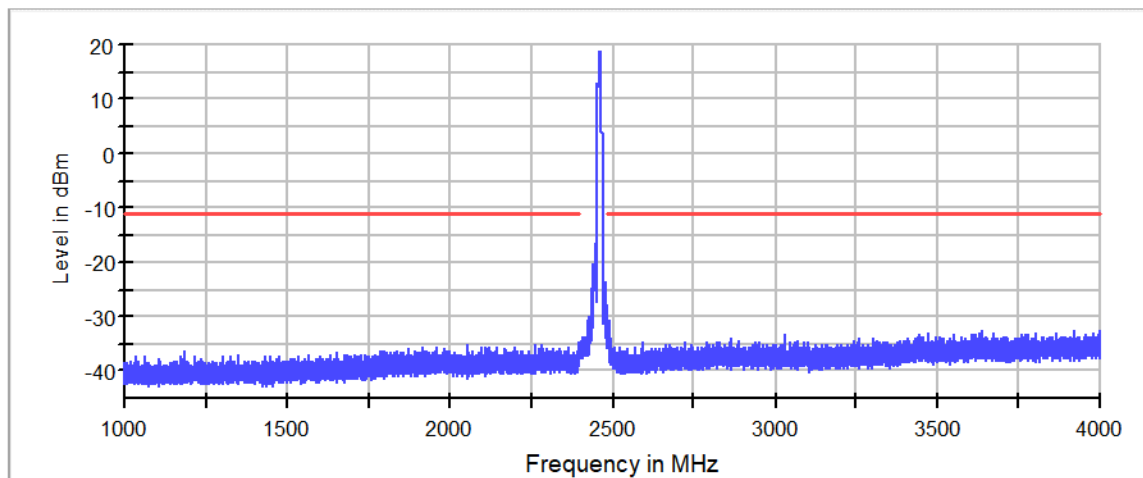
Setting	Range 1 Instrument Value	Range 2 Instrument Value
Start Frequency	1.00000 GHz	2.48350 GHz
Stop Frequency	2.48350 GHz	4.00000 GHz
Span	1.484 GHz	1.517 GHz
RBW	100.000 kHz	100.000 kHz
VBW	300.000 kHz	300.000 kHz
SweepPoints	29670	30330
SweepTime	29.700 ms	30.400 ms
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	3 / max. 3	3 / max. 3
Stable	0 / 3	2 / 3
Max Stable Difference	2.00 dB	0.00 dB

6.7 Plots – emissions at band edge – 1 transmit chain

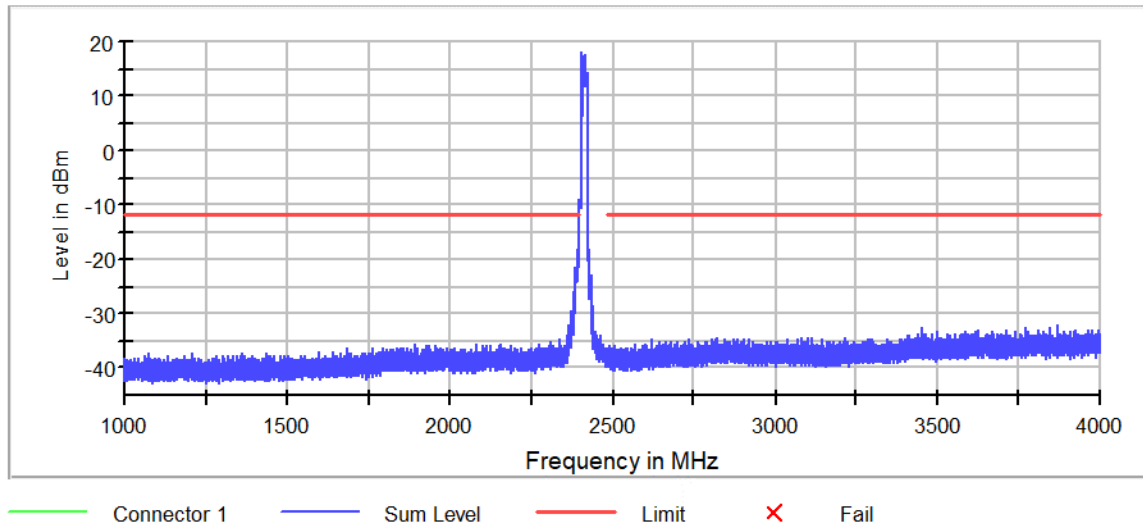
Conducted Spurs – 802.11b, 11Mbit/s, Channel 1



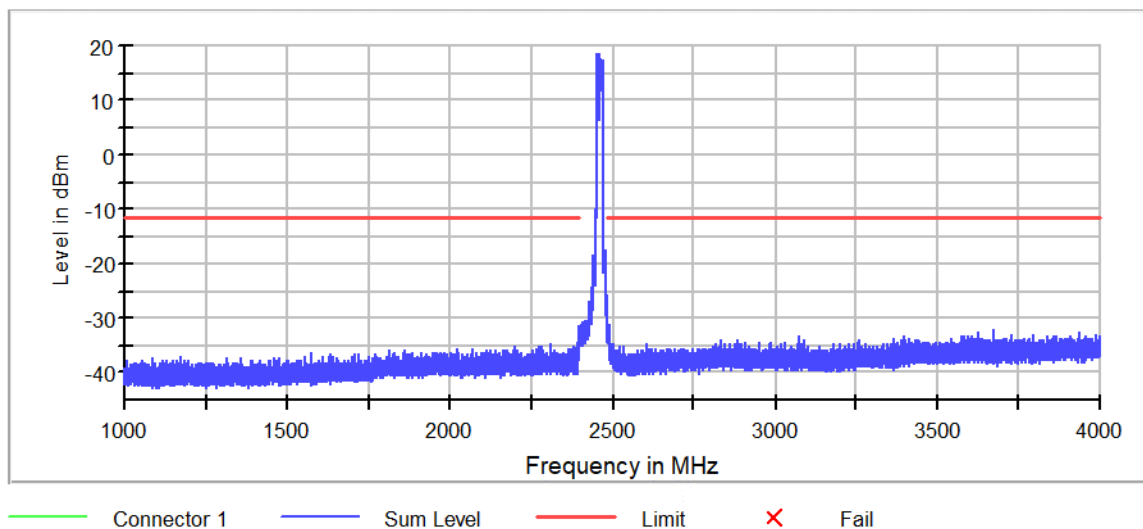
Conducted Spurs – 802.11b, 11bit/s, Channel 11



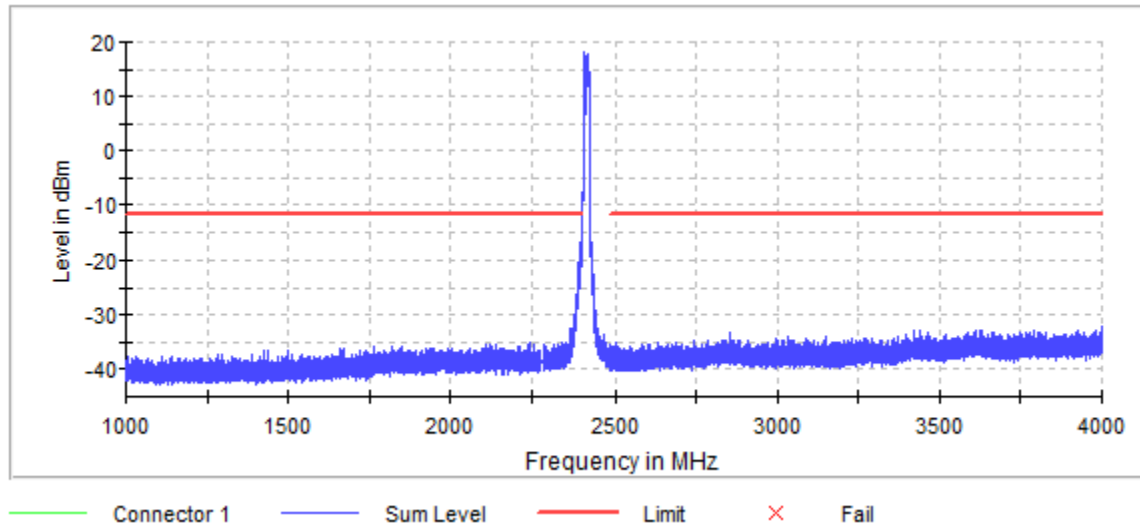
Conducted Spurs – 802.11g, 48 Mbit/s, Channel 1



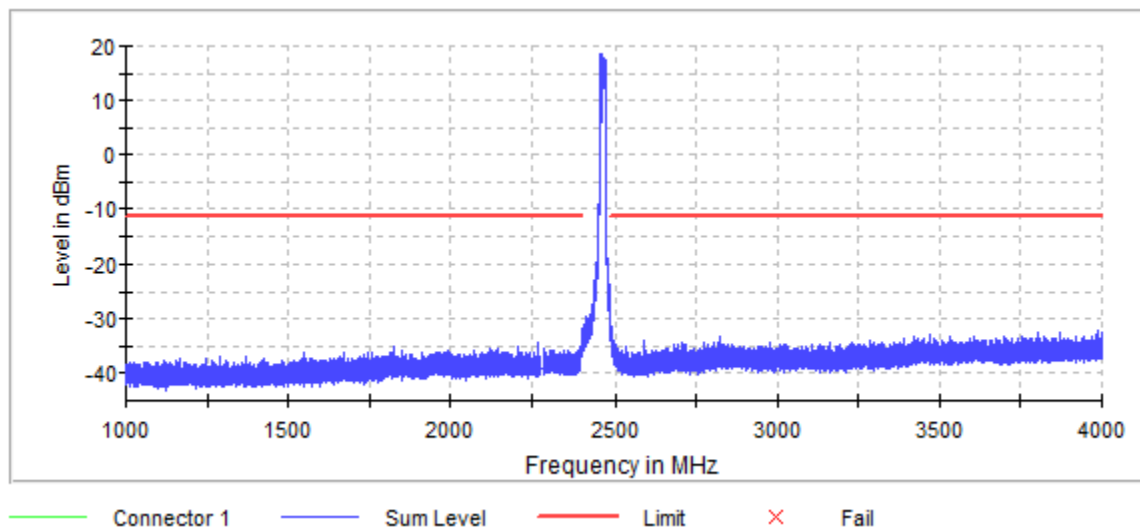
Conducted Spurs – 802.11g, 48 Mbit/s, Channel 11



Conducted Spurs – 802.11n, 39 Mbit/s, Channel 1

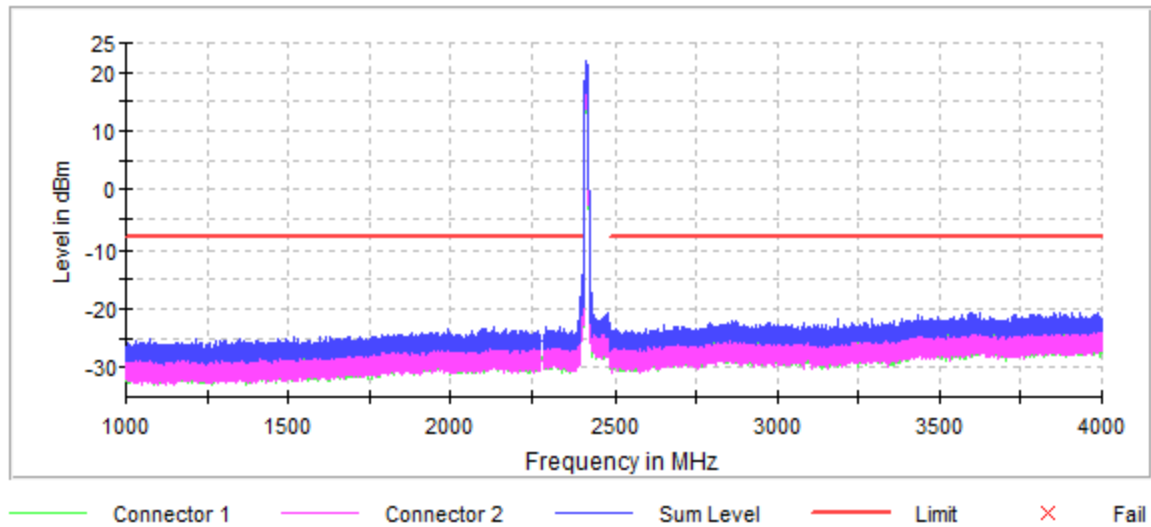


Conducted Spurs – 802.11n, 39 Mbit/s, Channel 11

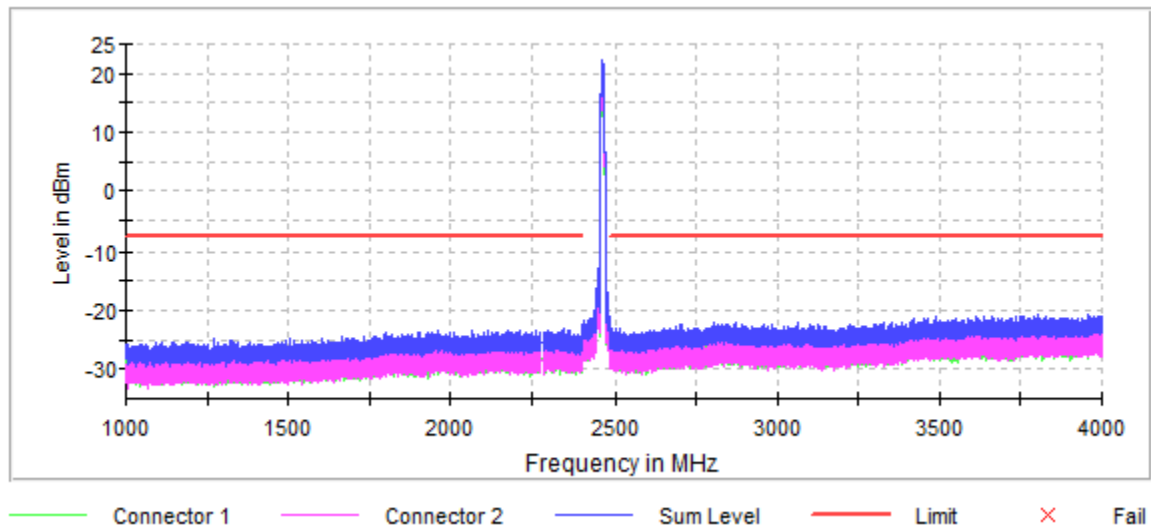


6.8 Plots – emissions at band edge – 2 transmit chains

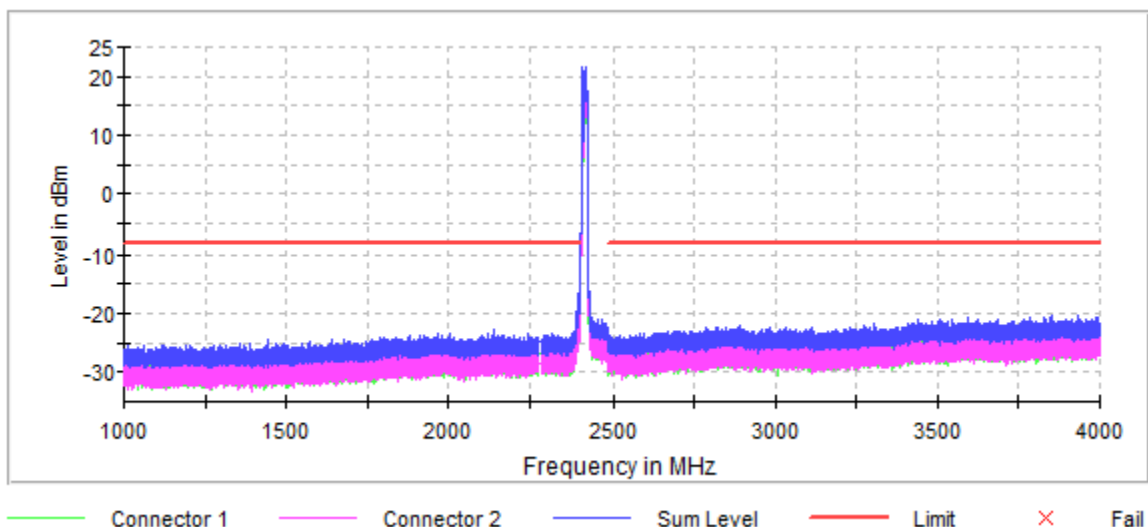
Conducted Spurs – 802.11b, 11 Mbit/s, Channel 1



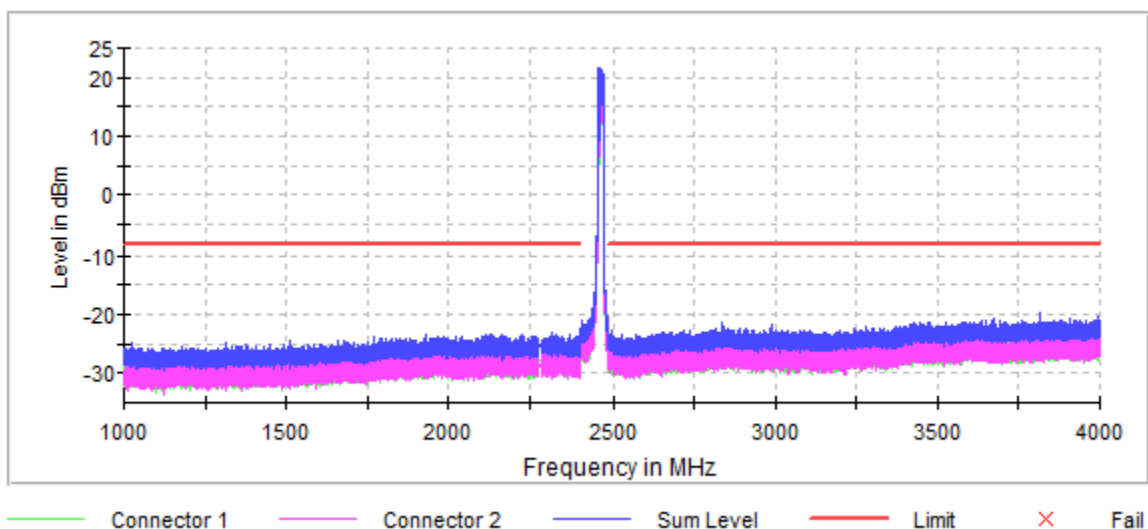
Conducted Spurs – 802.11b, 11 Mbit/s, Channel 11



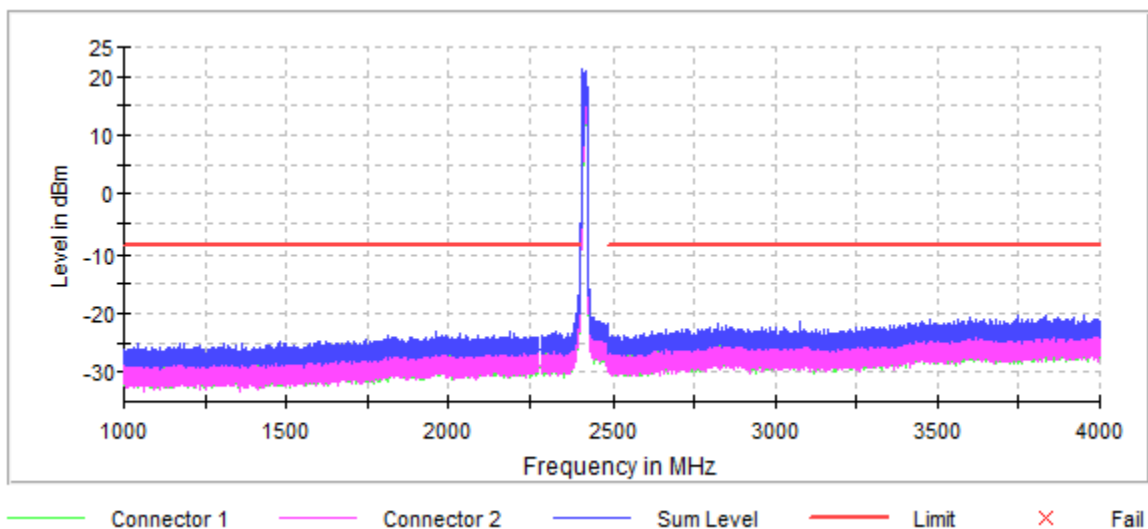
Conducted Spurs – 802.11g, 48 Mbit/s, Channel 1



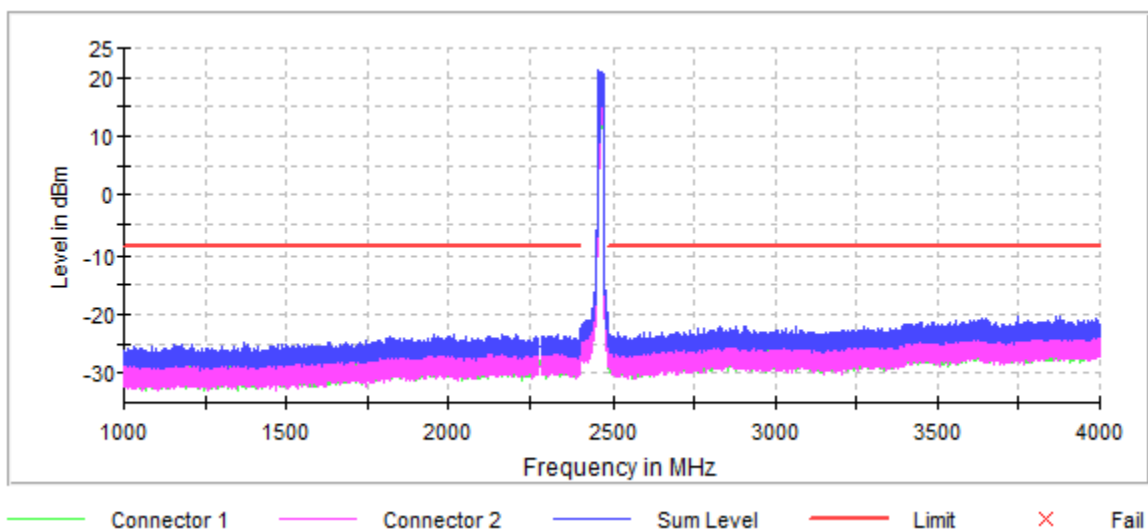
Conducted Spurs – 802.11g, 48 bit/s, Channel 11



Conducted Spurs – 802.11n, 39Mbit/s, Channel 1

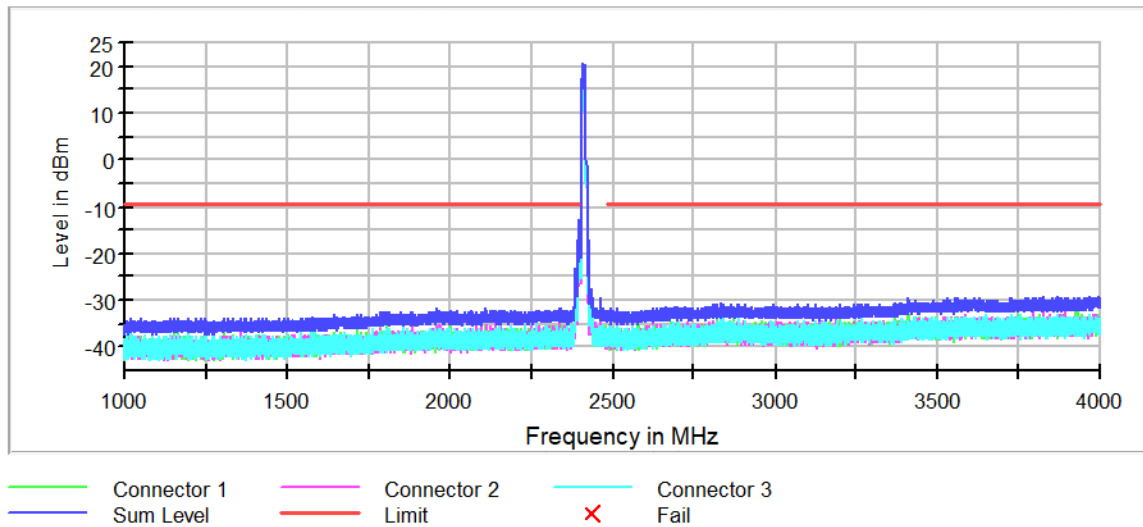


Conducted Spurs – 802.11n, 39Mbit/s, Channel 11

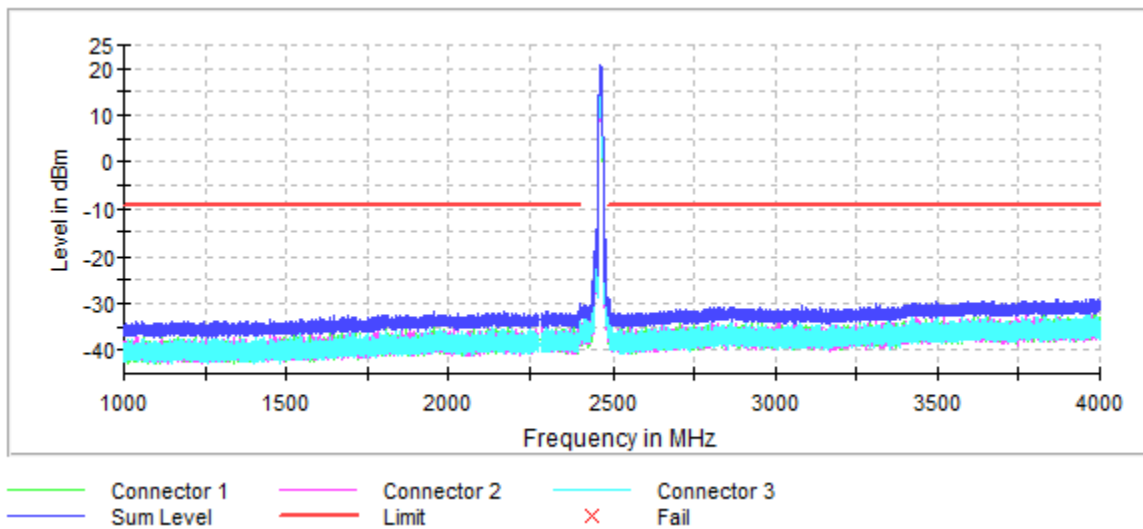


6.9 Plots – emissions at band edge – 3 transmit chains

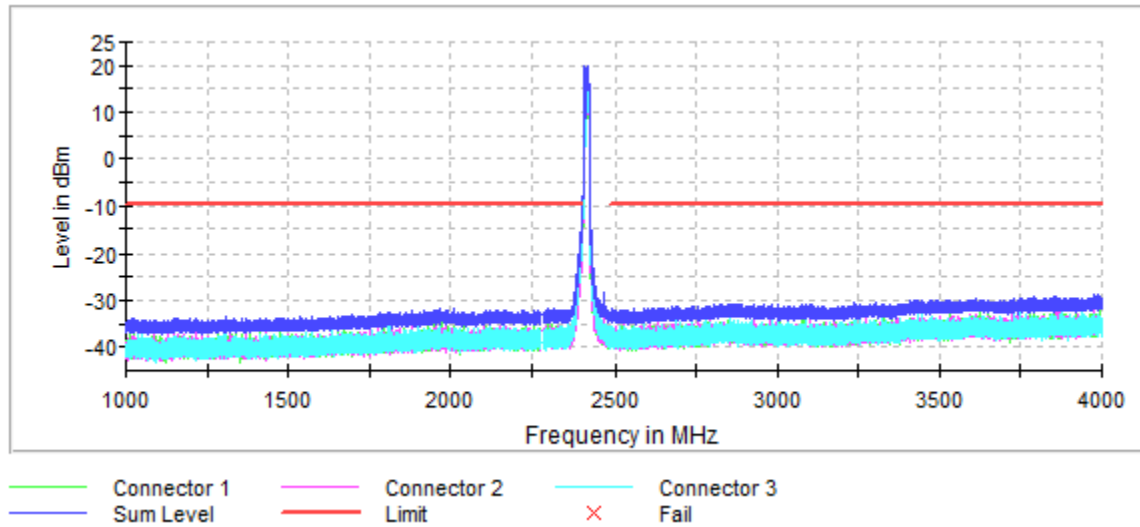
Conducted Spurs – 802.11b, 11 Mbit/s, Channel 1



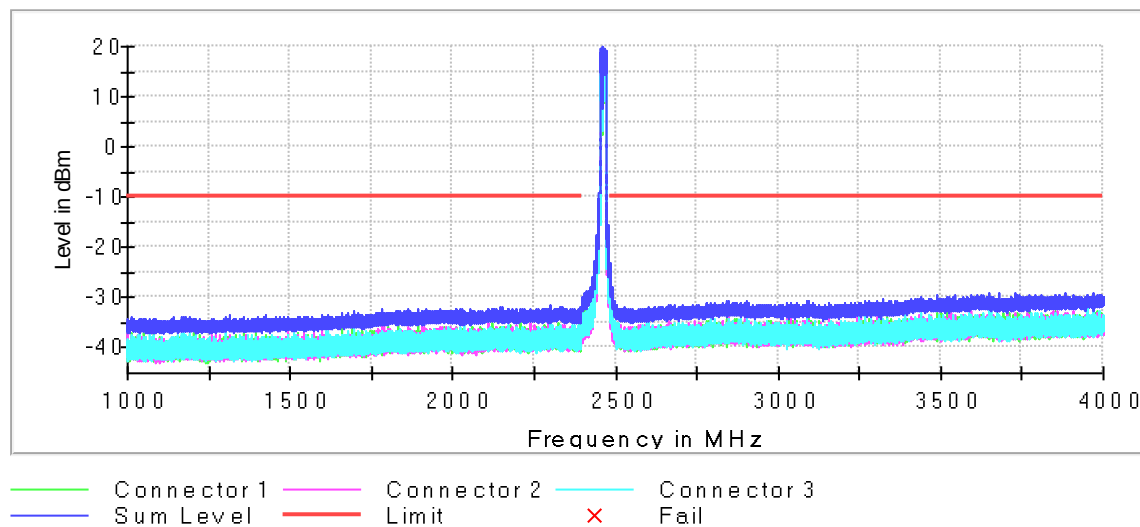
Conducted Spurs – 802.11b, 11 Mbit/s, Channel 11



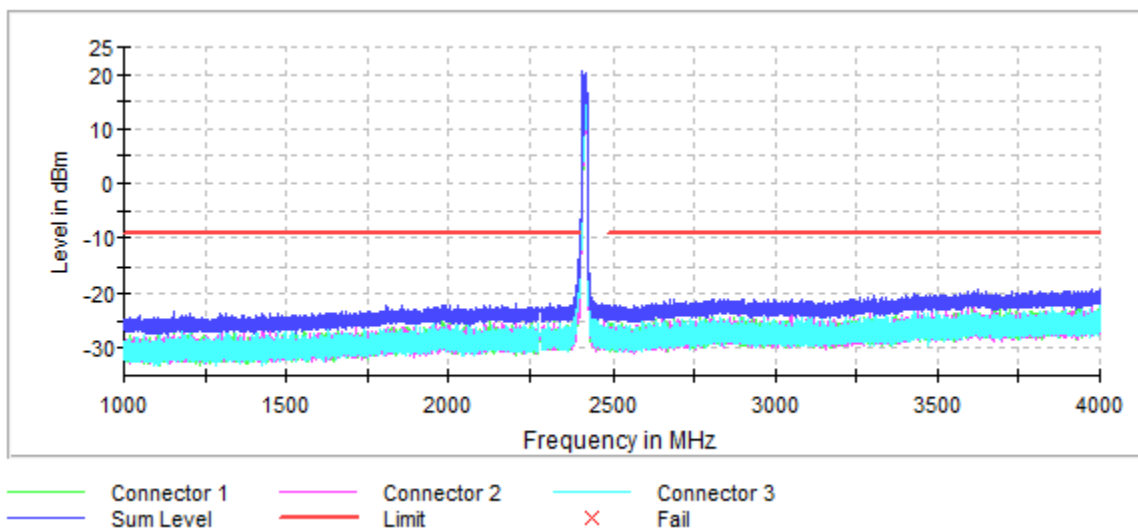
Conducted Spurs – 802.11g, 48 Mbit/s, Channel 1



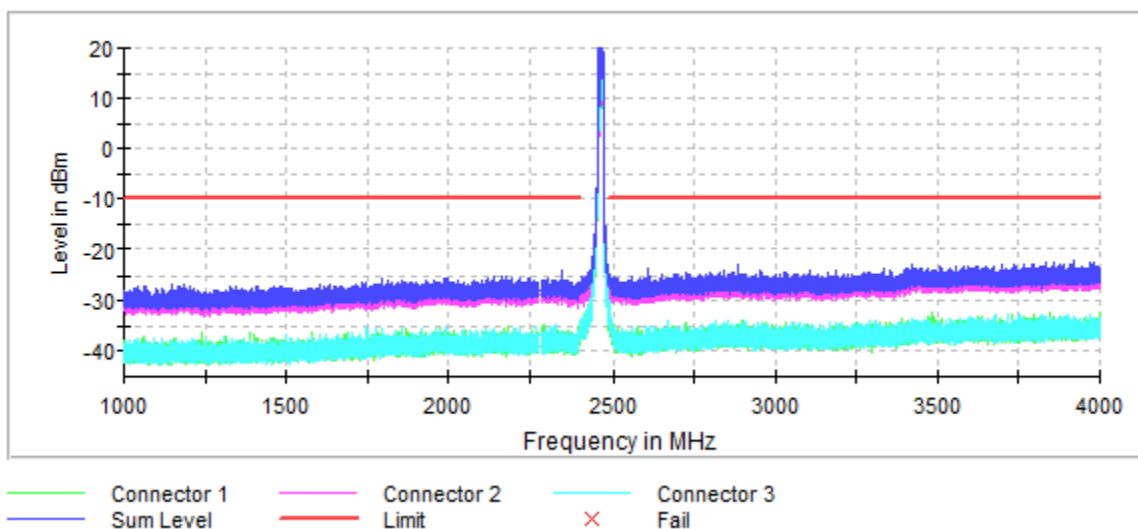
Conducted Spurs – 802.11g, 48 bit/s, Channel 11



Conducted Spurs – 802.11n, 39Mbit/s, Channel 1



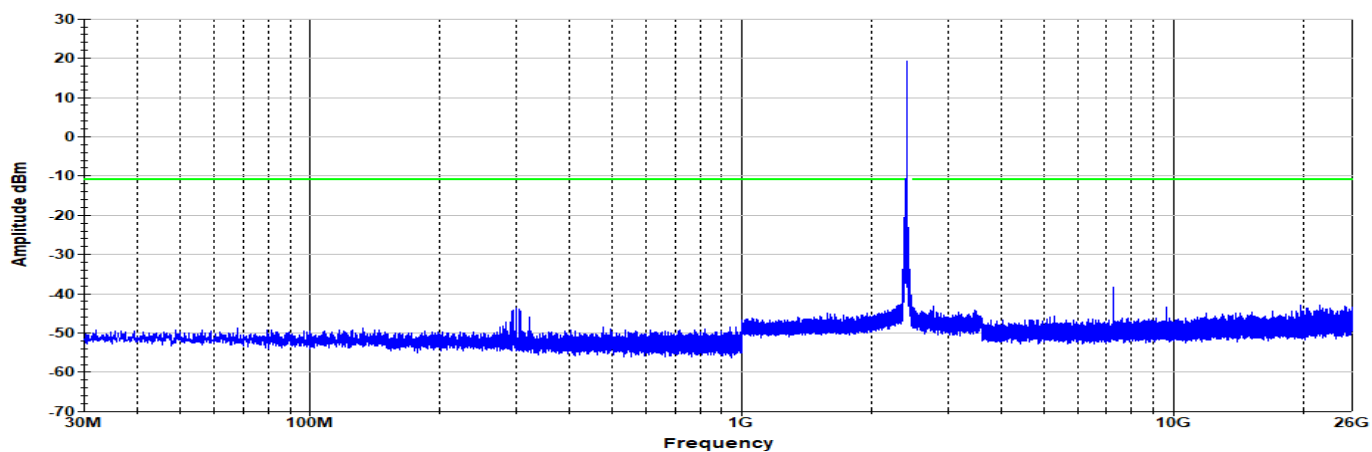
Conducted Spurs – 802.11n, 39Mbit/s, Channel 11



6.10 Plots – spurious emissions – 1st transmit chain

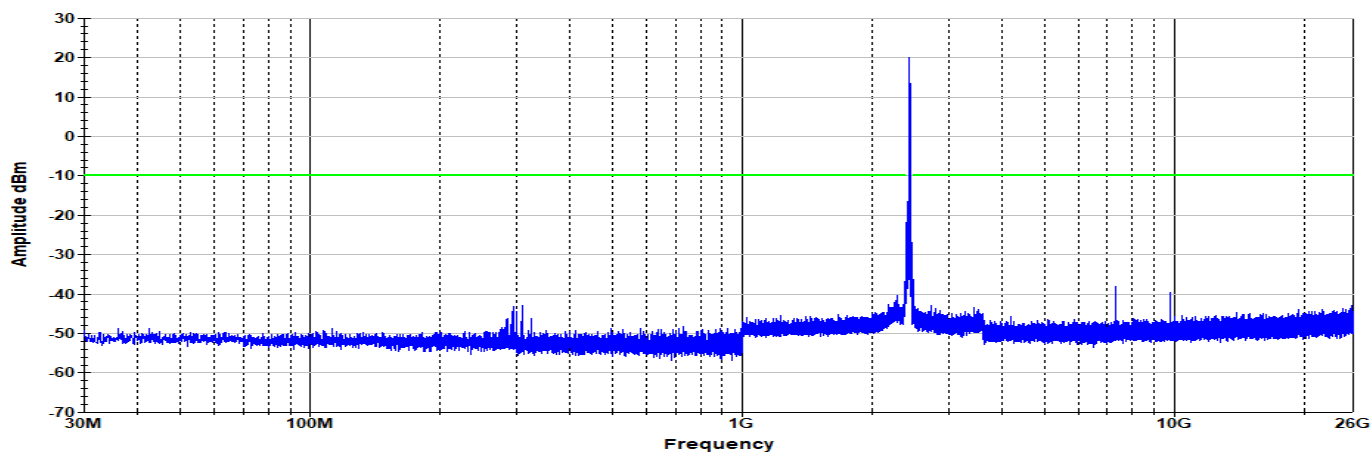
802.11b, 2 Mbps, Channel 1

Conducted Spurious Emissions



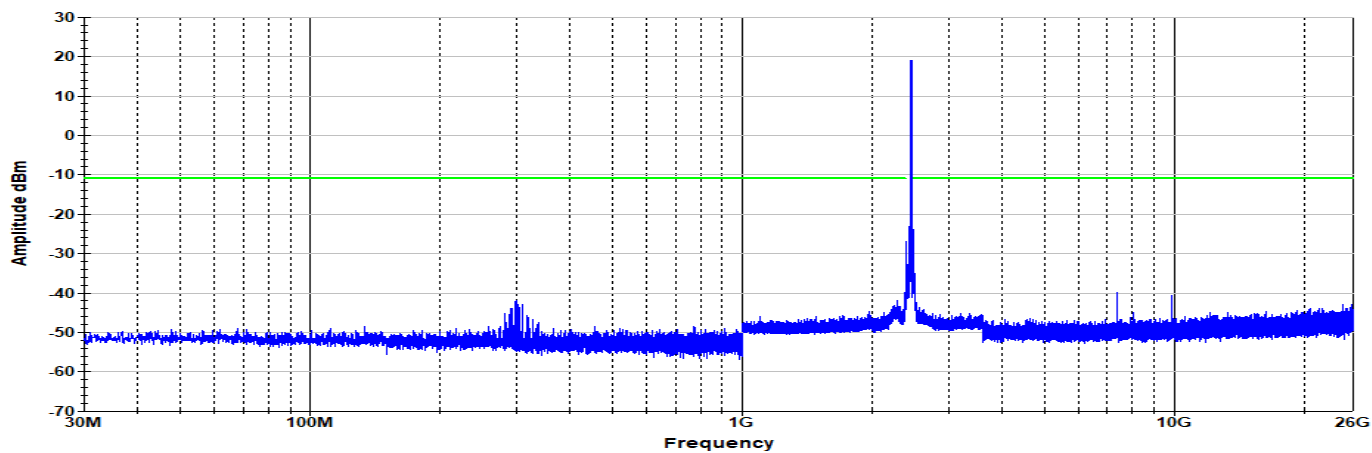
802.11b, 2 Mbps, Channel 6

Conducted Spurious Emissions



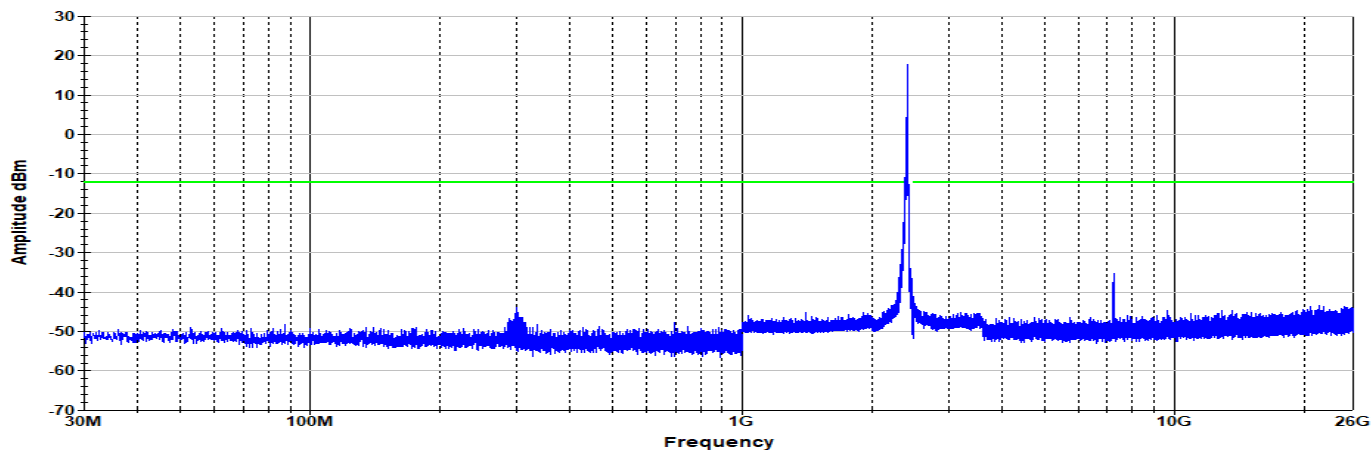
802.11b, 2 Mbps, Channel 11

Conducted Spurious Emissions



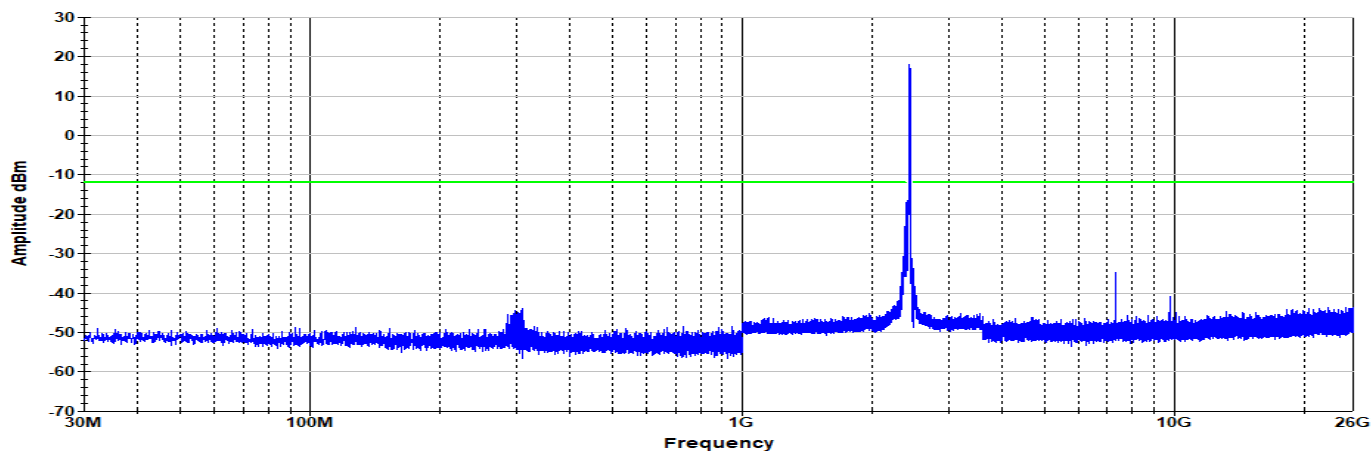
802.11g, 6 Mbps, Channel 1

Conducted Spurious Emissions



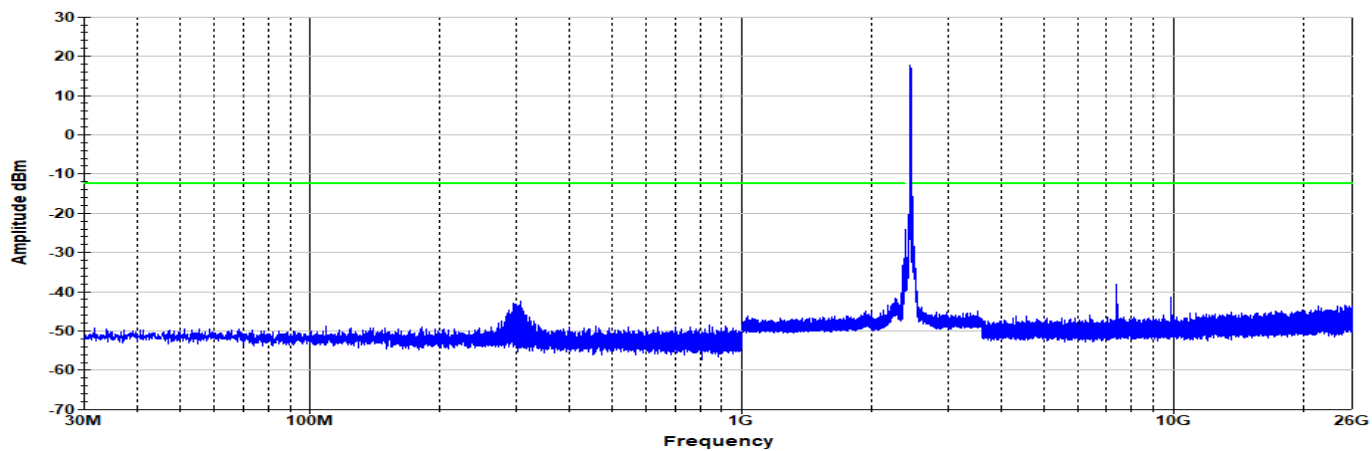
802.11g, 6 Mbps, Channel 6

Conducted Spurious Emissions



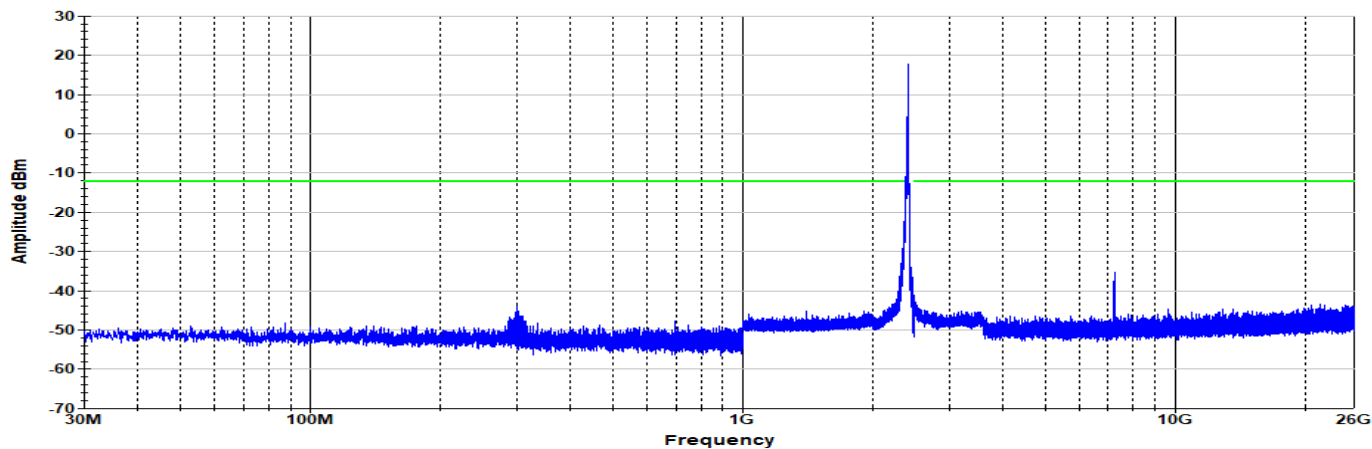
802.11g, 6 Mbps, Channel 11

Conducted Spurious Emissions



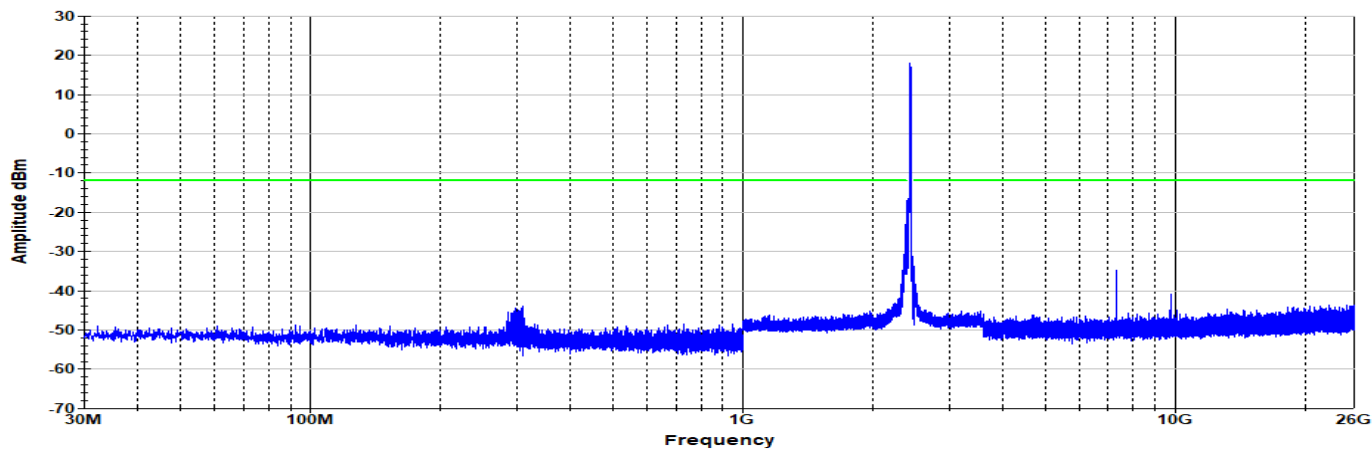
802.11n, 6.5 Mbps, Channel 1

Conducted Spurious Emissions



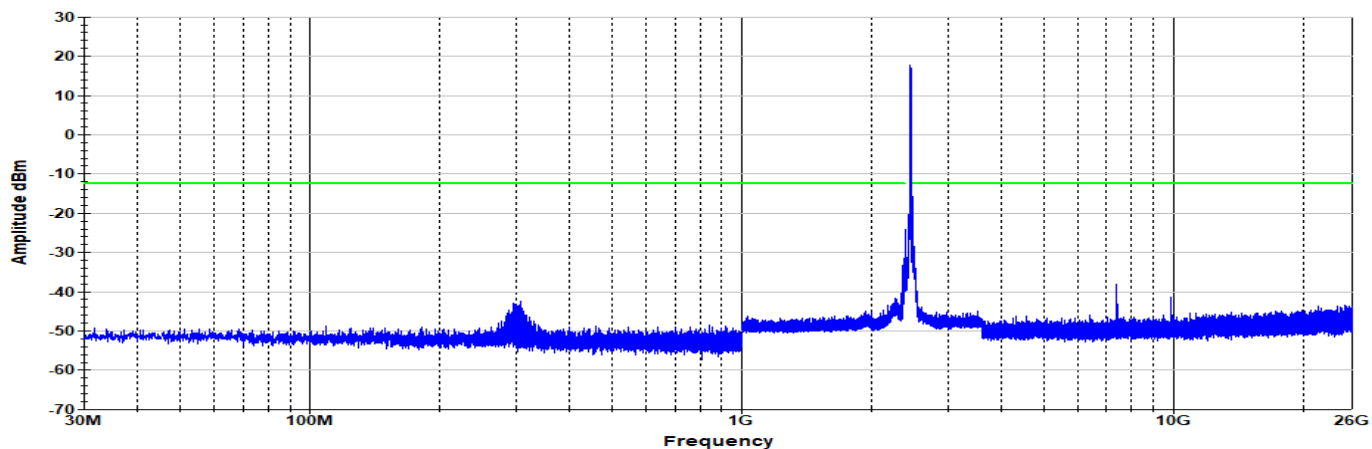
802.11n, 6.5 Mbps, Channel 6

Conducted Spurious Emissions



802.11n, 66.5 Mbps, Channel 11

Conducted Spurious Emissions



Note: Chain 1 is representative of Chains 2 and 3 in all test modes.

7 Emissions in restricted frequency bands

7.1 Test Result

Test Description	Regulatory Reference	Test Method	Test Result
Emissions in restricted frequency bands	15.209 / 15.205 RSS-GEN 8.9	ANSI C63.10 Clause 11.12.2	Compliant

7.2 Test Method

Measurements were made using the conducted methods defined in ANSI C63.10, Clause 11.12.2.2. The measurements were converted to a radiated field strength equivalent using the equations defined in that section. Both peak and average measurements were performed at the antenna port.

A reference level offset was applied to the spectrum analyzer so that conducted measurements in dBμV represent field strength measurements in dBμV/m.

Example calculations:

Offset = $-20\log(D) + 104.8 - 107 + CL + DC + AG$

Offset at 3m = $-11.7 + CL + DC + AG$

Where,

D = Distance

CL = Cable Loss

DC = Duty Cycle Correction Factor, which is $10\log(1/d)$ for rms mode

d = Duty Cycle

AG = The actual antenna gain or 2 dBi, whichever is lower.

All data rates and modes were investigated. Only the plots from the configuration which produced the worst-case emissions are included in this report.

ANSI C63.10, Clause 14.3.3 allows for emissions testing to be performed on each output individually and combined by adding $10\log(N_{ant})$ to the measured value as described in Clause 14.3.2.3.

If measurements performed using the method described in 14.3.2.3 exceed the emission limit, then the test will be repeated using the method described in 14.3.2.2.

ANSI C63.10, Clause 14.4.4, requires the measurement be combined with directional gain to compute the radiated levels of the out-of-band and spurious emissions.

Data tables reflect the average values while the plots reflect the peak values.

7.3 Limits

Frequency	Limits ⁽¹⁾ Microvolts/m	Measured distance Meters
9 to 490 kHz	2400/F(kHz)	300 ⁽²⁾⁽⁴⁾
490 kHz to 1.705 MHz	24000/F(kHz)	30 ⁽²⁾
1.705 to 30 MHz	30	30 ⁽²⁾
30 to 88 MHz	100	3 ⁽²⁾
88 to 216 MHz	150	3 ⁽²⁾
216 to 960 MHz	200	3 ⁽²⁾
960 to 1000 MHz	500	3 ⁽²⁾
1 to 40 GHz	500	3 ⁽³⁾

(1) These limits are applicable to emissions outside of the intentional transmit frequency band.

(2) Quasi-peak limit

(3) Average limit. Peak limit is 20 dB above average

(4) Peak detector from 9-90 kHz and 110-490 kHz

7.4 Test Site

EMC Lab, Suwanee, GA

Environmental Conditions

Temperature: 23.8 °C

Relative Humidity: 46.6 %

7.5 Test Equipment

Test End Date: 12-Dec-2018

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER (TS8997)	FSV30	ROHDE & SCHWARZ	B085749	1-Nov-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095585	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095591	25-Jul-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095586	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095592	25-Jul-2019
RF CABLE (TS8997)	141	HUBER & SUHNER	B095587	25-Jul-2019
ATTENUATOR, 10DB (TS8997)	10DB	ROHDE & SCHWARZ	B095593	25-Jul-2019
RF SWITCH (TS8997)	OSP	ROHDE & SCHWARZ	15039	15-Dec-2019
POWER METER (TS8997)	OSP-B157	ROHDE & SCHWARZ	15040	15-Dec-2019

Note: The equipment calibration period is 1 year.

7.6 Test Setup Photographs

Test setup photographs are located in a separate exhibit.

7.7 Data using Antenna Configuration 1 – ANT-2005 (2.15dBi)

7.7.1 Bandedge – 1 Transmit Chain

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Margin dB	Result
2412	1	b	1	21.5	1	1	2386.25	52.0	54.0	2.1	Pass
2412	1	g	6	14.0	1	1	2390.00	53.7	54.0	0.3	Pass
2412	1	n	6.5	14.0	1	1	2390.00	53.7	54.0	0.3	Pass
2417	2	b	1	22.5	1	1	2390.00	53.0	54.0	1.1	Pass
2417	2	g	6	17.5	1	1	2390.00	53.4	54.0	0.6	Pass
2417	2	n	6.5	17.5	1	1	2390.00	53.4	54.0	0.6	Pass
2422	3	b	1	24.5	1	1	2385.25	53.4	54.0	0.6	Pass
2422	3	g	6	18.5	1	1	2390.00	53.8	54.0	0.2	Pass
2422	3	n	6.5	18.5	1	1	2390.00	53.8	54.0	0.2	Pass
2427	4	b	1	24.5	1	1	2390.00	51.8	54.0	2.3	Pass
2427	4	g	6	19.5	1	1	2390.00	51.4	54.0	2.6	Pass
2427	4	n	6.5	19.5	1	1	2390.00	51.4	54.0	2.6	Pass
2432	5	b	1	27.5	1	1	2384.25	50.1	54.0	3.9	Pass
2432	5	g	6	23.0	1	1	2390.00	53.7	54.0	0.3	Pass
2432	5	n	6.5	23.0	1	1	2390.00	53.7	54.0	0.3	Pass
2437	6	b	1	27.5	1	1	2390.00	53.9	54.0	0.1	Pass
2437	6	g	6	23.5	1	1	2390.00	52.3	54.0	1.7	Pass
2437	6	n	6.5	23.5	1	1	2390.00	52.3	54.0	1.7	Pass
2442	7	b	1	28.5	1	1	2485.44	52.6	54.0	1.5	Pass
2442	7	g	6	23.5	1	1	2483.50	53.1	54.0	0.9	Pass
2442	7	n	6.5	23.5	1	1	2483.50	53.1	54.0	0.9	Pass
2447	8	b	1	25.5	1	1	2483.59	50.8	54.0	3.3	Pass
2447	8	g	6	22.0	1	1	2483.50	52.8	54.0	1.2	Pass
2447	8	n	6.5	22.0	1	1	2483.50	52.8	54.0	1.2	Pass
2452	9	b	1	25.5	1	1	2488.64	50.7	54.0	3.4	Pass
2452	9	g	6	20.5	1	1	2483.50	53.9	54.0	0.1	Pass
2452	9	n	6.5	21.0	1	1	2483.50	53.3	54.0	0.7	Pass
2457	10	b	1	22.5	1	1	2483.50	51.6	54.0	2.5	Pass
2457	10	g	6	18.0	1	1	2483.50	52.4	54.0	1.6	Pass
2457	10	n	6.5	19.5	1	1	2483.50	53.8	54.0	0.2	Pass
2462	11	b	1	22.0	1	1	2487.80	51.9	54.0	2.2	Pass
2462	11	g	6	14.0	1	1	2483.50	53.5	54.0	0.5	Pass
2462	11	n	6.5	14.5	1	1	2483.50	52.8	54.0	1.2	Pass

7.7.2 Spurious Emissions – 1 Transmit Chain

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Result
2412	1	b	2	28.5	1	1	7250.00	30.8	54.0	Pass
2412	1	g	6	28.5	1	1	7250.00	43.9	54.0	Pass
2412	1	n	6.5	28.5	1	1	7250.00	44.2	54.0	Pass
2417	2	b	2	28.5	1	1	7252.00	52.4	54.0	Pass
2417	2	g	6	28.5	1	1	7252.00	49.7	54.0	Pass
2417	2	n	6.5	28.5	1	1	7252.00	49.4	54.0	Pass
2437	6	b	2	28.5	1	1	7311.00	49.1	54.0	Pass
2437	6	g	6	28.5	1	1	7311.00	49.2	54.0	Pass
2437	6	n	6.5	28.5	1	1	7311.00	49.6	54.0	Pass
2462	11	b	2	28.5	1	1	7386.00	51.7	54.0	Pass
2462	11	g	6	28.5	1	1	7386.00	48.0	54.0	Pass
2462	11	n	6.5	28.5	1	1	7386.00	47.6	54.0	Pass

7.7.3 Bandedge – 2 Transmit Chains

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Margin dB	Result
2412	1	b	1	21.0	2	1	2390.00	52.0	54.0	2.0	Pass
2412	1	g	6	13.0	2	1	2390.00	51.7	54.0	2.3	Pass
2412	1	n	6.5	12.5	2	1	2390.00	53.0	54.0	1.0	Pass
2417	2	b	1	21.5	2	1	2390.00	50.4	54.0	3.6	Pass
2417	2	g	6	16.5	2	1	2390.00	50.8	54.0	3.2	Pass
2417	2	n	6.5	17.0	2	1	2390.00	53.6	54.0	0.4	Pass
2422	3	b	1	24.0	2	1	2390.00	53.1	54.0	0.9	Pass
2422	3	g	6	17.5	2	1	2390.00	52.7	54.0	1.3	Pass
2422	3	n	6.5	18.0	2	1	2390.00	53.5	54.0	0.5	Pass
2427	4	b	1	23.5	2	1	2390.00	50.6	54.0	3.4	Pass
2427	4	g	6	20.0	2	1	2390.00	52.0	54.0	2.0	Pass
2427	4	n	6.5	19.0	2	1	2390.00	51.9	54.0	2.1	Pass
2432	5	b	1	27.5	2	1	2390.00	53.1	54.0	0.9	Pass
2432	5	g	6	21.0	2	1	2390.00	50.4	54.0	3.6	Pass
2432	5	n	6.5	21.0	2	1	2390.00	53.0	54.0	1.0	Pass
2437	6	b	1	26.0	2	1	2390.00	51.2	54.0	2.8	Pass
2437	6	g	6	22.5	2	1	2390.00	52.7	54.0	1.3	Pass
2437	6	n	6.5	22.5	2	1	2390.00	52.3	54.0	1.7	Pass
2442	7	b	1	28.0	2	1	2390.00	53.7	54.0	0.3	Pass
2442	7	g	6	23.0	2	1	2483.50	53.3	54.0	0.7	Pass
2442	7	n	6.5	23.0	2	1	2483.50	53.1	54.0	0.9	Pass
2447	8	b	1	25.5	2	1	2390.00	53.8	54.0	0.2	Pass
2447	8	g	6	22.0	2	1	2483.50	53.9	54.0	0.1	Pass
2447	8	n	6.5	21.0	2	1	2483.50	51.7	54.0	2.3	Pass
2452	9	b	1	25.5	2	1	2390.00	53.7	54.0	0.3	Pass
2452	9	g	6	20.0	2	1	2483.50	53.8	54.0	0.2	Pass
2452	9	n	6.5	19.0	2	1	2483.50	51.4	54.0	2.6	Pass
2457	10	b	1	22.0	2	1	2390.00	51.9	54.0	2.1	Pass
2457	10	g	6	17.5	2	1	2483.50	53.4	54.0	0.6	Pass
2457	10	n	6.5	17.0	2	1	2483.50	51.1	54.0	2.9	Pass
2462	11	b	1	21.5	2	1	2390.00	52.2	54.0	1.8	Pass
2462	11	g	6	14.0	2	1	2483.50	53.1	54.0	0.9	Pass
2462	11	n	6.5	13.0	2	1	2483.50	53.4	54.0	0.6	Pass

7.7.4 Spurious Emissions – 2 Transmit Chains

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurioius Level dBuV/m	Limit dBuV/m	Result
2412	1	b	2	28.5	2	1	7250.00	33.8	54.0	Pass
2412	1	g	6	28.5	2	1	7250.00	46.9	54.0	Pass
2412	1	n	6.5	28.5	2	1	7250.00	47.2	54.0	Pass
2417	2	b	2	27.5	2	1	7251.00	53.8	54.0	Pass
2417	2	g	6	28.5	2	1	7251.00	52.7	54.0	Pass
2417	2	n	6.5	28.5	2	1	7251.00	52.4	54.0	Pass
2437	6	b	2	27.5	2	1	7311.00	53.8	54.0	Pass
2437	6	g	6	28.5	2	1	7311.00	52.2	54.0	Pass
2437	6	n	6.5	28.5	2	1	7311.00	52.6	54.0	Pass
2462	11	b	2	27.5	2	1	7386.00	53.3	54.0	Pass
2462	11	g	6	28.5	2	1	7386.00	51.0	54.0	Pass
2462	11	n	6.5	28.5	2	1	7386.00	50.6	54.0	Pass

7.7.5 Bandedge – 3 Transmit Chains

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Margin dB	Result
2412	1	b	1	20.0	3	1	2386.25	53.0	54.0	1.0	Pass
2412	1	g	6	11.0	3	1	2390.00	52.9	54.0	1.1	Pass
2412	1	n	6.5	9.5	3	1	2390.00	52.5	54.0	1.5	Pass
2417	2	b	1	21.0	3	1	2390.00	52.4	54.0	1.6	Pass
2417	2	g	6	15.5	3	1	2390.00	53.7	54.0	0.3	Pass
2417	2	n	6.5	15.5	3	1	2390.00	53.6	54.0	0.4	Pass
2422	3	b	1	22.0	3	1	2390.00	53.3	54.0	0.7	Pass
2422	3	g	6	17.0	3	1	2390.00	53.3	54.0	0.7	Pass
2422	3	n	6.5	16.0	3	1	2390.00	51.4	54.0	2.6	Pass
2427	4	b	1	22.0	3	1	2390.00	53.6	54.0	0.4	Pass
2427	4	g	6	19.0	3	1	2390.00	52.7	54.0	1.3	Pass
2427	4	n	6.5	17.5	3	1	2390.00	53.1	54.0	0.9	Pass
2432	5	b	1	24.0	3	1	2390.00	52.2	54.0	1.8	Pass
2432	5	g	6	20.0	3	1	2390.00	51.8	54.0	2.2	Pass
2432	5	n	6.5	19.5	3	1	2390.00	52.7	54.0	1.3	Pass
2437	6	b	1	24.0	3	1	2390.00	52.3	54.0	1.7	Pass
2437	6	g	6	21.5	3	1	2390.00	51.8	54.0	2.2	Pass
2437	6	n	6.5	21.0	3	1	2390.00	53.0	54.0	1.0	Pass
2442	7	b	1	24.5	3	1	2483.50	50.3	54.0	3.7	Pass
2442	7	g	6	22.0	3	1	2483.50	52.7	54.0	1.3	Pass
2442	7	n	6.5	21.5	3	1	2483.50	52.4	54.0	1.6	Pass
2447	8	b	1	24.5	3	1	2483.50	52.6	54.0	1.4	Pass
2447	8	g	6	20.5	3	1	2483.50	52.0	54.0	2.0	Pass
2447	8	n	6.5	20.0	3	1	2483.50	52.4	54.0	1.6	Pass
2452	9	b	1	24.0	3	1	2483.50	51.2	54.0	2.8	Pass
2452	9	g	6	18.0	3	1	2483.76	52.4	54.0	1.6	Pass
2452	9	n	6.5	17.5	3	1	2483.50	52.8	54.0	1.2	Pass
2457	10	b	1	21.5	3	1	2483.50	52.4	54.0	1.6	Pass
2457	10	g	6	16.5	3	1	2483.50	53.1	54.0	0.9	Pass
2457	10	n	6.5	16.5	3	1	2483.50	53.2	54.0	0.8	Pass
2462	11	b	1	21.0	3	1	2483.50	52.2	54.0	1.8	Pass
2462	11	g	6	11.5	3	1	2483.50	52.8	54.0	1.2	Pass
2462	11	n	6.5	10.0	3	1	2483.50	52.2	54.0	1.8	Pass

7.7.6 Spurious Emissions – 3 Transmit Chains

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Result
2412	1	b	2	28.5	3	1	7250.00	35.6	54.0	Pass
2412	1	g	6	28.5	3	1	7250.00	48.6	54.0	Pass
2412	1	n	6.5	28.5	3	1	7250.00	48.9	54.0	Pass
2417	2	b	2	25.5	3	1	7251.00	53.2	54.0	Pass
2417	2	g	6	28.0	3	1	7251.00	53.6	54.0	Pass
2417	2	n	6.5	28.0	3	1	7251.00	52.9	54.0	Pass
2437	6	b	2	26.0	3	1	7311.00	53.9	54.0	Pass
2437	6	g	6	28.5	3	1	7311.00	53.9	54.0	Pass
2437	6	n	6.5	27.5	3	1	7311.00	52.1	54.0	Pass
2462	11	b	2	26.0	3	1	7386.00	53.7	54.0	Pass
2462	11	g	6	28.5	3	1	7386.00	52.7	54.0	Pass
2462	11	n	6.5	28.5	3	1	7386.00	52.4	54.0	Pass

7.8 Data using Antenna Configuration 2 – ANT-2012 (4.6 dBi)

7.8.1 Bandedge - 1 Transmit Chain

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Margin dB	Result
2412	1	b	1	21.0	1	2	2390.00	51.2	54.0	2.8	Pass
2412	1	g	6	12.5	1	2	2390.00	52.2	54.0	1.8	Pass
2412	1	n	6.5	12.5	1	2	2390.00	52.3	54.0	1.7	Pass
2417	2	b	1	22.0	1	2	2390.00	53.9	54.0	0.1	Pass
2417	2	g	6	17.0	1	2	2390.00	52.8	54.0	1.2	Pass
2417	2	n	6.5	17.0	1	2	2390.00	52.9	54.0	1.1	Pass
2422	3	b	1	24.0	1	2	2390.00	52.2	54.0	1.8	Pass
2422	3	g	6	18.0	1	2	2390.00	52.6	54.0	1.4	Pass
2422	3	n	6.5	18.0	1	2	2390.00	52.7	54.0	1.3	Pass
2427	4	b	1	24.5	1	2	2390.00	53.9	54.0	0.1	Pass
2427	4	g	6	19.5	1	2	2390.00	53.5	54.0	0.5	Pass
2427	4	n	6.5	19.5	1	2	2390.00	53.6	54.0	0.4	Pass
2432	5	b	1	27.5	1	2	2390.00	52.2	54.0	1.8	Pass
2432	5	g	6	22.0	1	2	2390.00	53.0	54.0	1.0	Pass
2432	5	n	6.5	22.0	1	2	2390.00	53.0	54.0	1.0	Pass
2437	6	b	1	27.0	1	2	2390.00	51.4	54.0	2.6	Pass
2437	6	g	6	22.5	1	2	2390.00	51.3	54.0	2.7	Pass
2437	6	n	6.5	22.5	1	2	2390.00	51.4	54.0	2.6	Pass
2442	7	b	1	28.0	1	2	2483.50	52.6	54.0	1.4	Pass
2442	7	g	6	23.0	1	2	2483.50	52.0	54.0	2.0	Pass
2442	7	n	6.5	23.0	1	2	2483.50	52.1	54.0	1.9	Pass
2447	8	b	1	25.5	1	2	2483.50	52.7	54.0	1.3	Pass
2447	8	g	6	21.5	1	2	2483.50	53.5	54.0	0.5	Pass
2447	8	n	6.5	21.5	1	2	2483.50	53.6	54.0	0.4	Pass
2452	9	b	1	25.5	1	2	2483.50	52.6	54.0	1.4	Pass
2452	9	g	6	19.0	1	2	2483.50	50.3	54.0	3.7	Pass
2452	9	n	6.5	20.0	1	2	2483.50	53.3	54.0	0.7	Pass
2457	10	b	1	22.5	1	2	2483.50	53.5	54.0	0.5	Pass
2457	10	g	6	17.5	1	2	2483.50	53.3	54.0	0.7	Pass
2457	10	n	6.5	18.0	1	2	2483.50	52.2	54.0	1.8	Pass
2462	11	b	1	22.0	1	2	2483.50	53.8	54.0	0.2	Pass
2462	11	g	6	13.5	1	2	2483.50	53.7	54.0	0.3	Pass
2462	11	n	6.5	14.0	1	2	2483.50	53.8	54.0	0.2	Pass

7.8.2 Spurious Emissions – 1 Transmit Chain

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Result
2412	1	b	2	28.5	1	2	7250.00	33.1	54.0	Pass
2412	1	g	6	28.5	1	2	7250.00	46.1	54.0	Pass
2412	1	n	6.5	28.5	1	2	7250.00	46.4	54.0	Pass
2417	2	b	2	28.0	1	2	7251.00	53.4	54.0	Pass
2417	2	g	6	28.5	1	2	7251.00	51.9	54.0	Pass
2417	2	n	6.5	28.5	1	2	7251.00	51.6	54.0	Pass
2437	6	b	2	27.5	1	2	7311.00	52.9	54.0	Pass
2437	6	g	6	28.5	1	2	7311.00	51.2	54.0	Pass
2437	6	n	6.5	28.5	1	2	7311.00	51.7	54.0	Pass
2462	11	b	2	28.5	1	2	7386.00	53.7	54.0	Pass
2462	11	g	6	28.5	1	2	7386.00	49.9	54.0	Pass
2462	11	n	6.5	28.5	1	2	7386.00	49.6	54.0	Pass

7.8.3 Bandedge – 2 Transmit Chains

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Margin dB	Result
2412	1	b	1	20.5	2	2	2390.00	51.6	54.0	2.4	Pass
2412	1	g	6	12.5	2	2	2390.00	52.5	54.0	1.5	Pass
2412	1	n	6.5	11.0	2	2	2390.00	53.7	54.0	0.3	Pass
2417	2	b	1	21.5	2	2	2390.00	52.6	54.0	1.4	Pass
2417	2	g	6	16.5	2	2	2390.00	53.1	54.0	0.9	Pass
2417	2	n	6.5	15.5	2	2	2390.00	52.7	54.0	1.3	Pass
2422	3	b	1	23.5	2	2	2390.00	52.7	54.0	1.3	Pass
2422	3	g	6	17.0	2	2	2390.00	52.3	54.0	1.7	Pass
2422	3	n	6.5	17.5	2	2	2390.00	53.7	54.0	0.3	Pass
2427	4	b	1	23.5	2	2	2390.00	52.7	54.0	1.3	Pass
2427	4	g	6	19.5	2	2	2390.00	52.6	54.0	1.4	Pass
2427	4	n	6.5	18.0	2	2	2390.00	52.9	54.0	1.1	Pass
2432	5	b	1	26.5	2	2	2390.00	52.8	54.0	1.2	Pass
2432	5	g	6	21.0	2	2	2390.00	52.5	54.0	1.5	Pass
2432	5	n	6.5	20.5	2	2	2390.00	53.6	54.0	0.4	Pass
2437	6	b	1	26.0	2	2	2390.00	53.2	54.0	0.8	Pass
2437	6	g	6	22.0	2	2	2390.00	52.0	54.0	2.0	Pass
2437	6	n	6.5	22.0	2	2	2390.00	52.5	54.0	1.5	Pass
2442	7	b	1	27.5	2	2	2390.00	52.2	54.0	1.8	Pass
2442	7	g	6	22.5	2	2	2483.50	53.6	54.0	0.4	Pass
2442	7	n	6.5	22.5	2	2	2483.50	52.9	54.0	1.1	Pass
2447	8	b	1	25.0	2	2	2483.50	52.1	54.0	1.9	Pass
2447	8	g	6	21.0	2	2	2483.50	53.2	54.0	0.8	Pass
2447	8	n	6.5	21.0	2	2	2483.50	53.7	54.0	0.3	Pass
2452	9	b	1	25.0	2	2	2483.50	52.5	54.0	1.5	Pass
2452	9	g	6	19.0	2	2	2483.50	53.5	54.0	0.5	Pass
2452	9	n	6.5	19.0	2	2	2483.50	53.4	54.0	0.6	Pass
2457	10	b	1	22.0	2	2	2483.50	53.8	54.0	0.2	Pass
2457	10	g	6	17.0	2	2	2483.50	53.9	54.0	0.1	Pass
2457	10	n	6.5	17.0	2	2	2483.50	53.1	54.0	0.9	Pass
2462	11	b	1	21.0	2	2	2483.50	51.1	54.0	2.9	Pass
2462	11	g	6	13.5	2	2	2483.50	53.7	54.0	0.3	Pass
2462	11	n	6.5	12.5	2	2	2483.50	51.9	54.0	2.1	Pass

7.8.4 Spurious Emissions – 2 Transmit Chains

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurioius Level dBuV/m	Limit dBuV/m	Result
2412	1	b	2	28.5	2	2	7250.00	36.1	54.0	Pass
2412	1	g	6	28.5	2	2	7250.00	49.1	54.0	Pass
2412	1	n	6.5	28.5	2	2	7250.00	49.4	54.0	Pass
2417	2	b	2	25.5	2	2	7251.00	53.7	54.0	Pass
2417	2	g	6	27.5	2	2	7251.00	53.1	54.0	Pass
2417	2	n	6.5	27.5	2	2	7251.00	53.6	54.0	Pass
2437	6	b	2	25.5	2	2	7311.00	53.0	54.0	Pass
2437	6	g	6	28.0	2	2	7311.00	53.4	54.0	Pass
2437	6	n	6.5	27.5	2	2	7311.00	52.4	54.0	Pass
2462	11	b	2	26.0	2	2	7386.00	53.9	54.0	Pass
2462	11	g	6	28.5	2	2	7386.00	52.9	54.0	Pass
2462	11	n	6.5	28.5	2	2	7386.00	52.6	54.0	Pass

7.8.5 Bandedge – 3 Transmit Chains

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Margin dB	Result
2412	1	b	1	19.5	3	2	2390.00	52.1	54.0	1.9	Pass
2412	1	g	6	10.0	3	2	2390.00	53.6	54.0	0.4	Pass
2412	1	n	6.5	9.0	3	2	2390.00	53.4	54.0	0.6	Pass
2417	2	b	1	21.0	3	2	2384.75	53.8	54.0	0.2	Pass
2417	2	g	6	15.0	3	2	2390.00	53.9	54.0	0.1	Pass
2417	2	n	6.5	14.5	3	2	2390.00	52.7	54.0	1.3	Pass
2422	3	b	1	21.0	3	2	2390.00	53.3	54.0	0.7	Pass
2422	3	g	6	16.5	3	2	2390.00	53.9	54.0	0.1	Pass
2422	3	n	6.5	16.0	3	2	2390.00	53.6	54.0	0.4	Pass
2427	4	b	1	21.0	3	2	2390.00	53.2	54.0	0.8	Pass
2427	4	g	6	18.5	3	2	2390.00	53.8	54.0	0.2	Pass
2427	4	n	6.5	17.0	3	2	2390.00	53.8	54.0	0.2	Pass
2432	5	b	1	21.5	3	2	2390.00	50.7	54.0	3.3	Pass
2432	5	g	6	20.0	3	2	2390.00	53.9	54.0	0.1	Pass
2432	5	n	6.5	19.0	3	2	2390.00	53.2	54.0	0.8	Pass
2437	6	b	1	21.5	3	2	2390.00	50.1	54.0	3.9	Pass
2437	6	g	6	21.5	3	2	2390.00	53.8	54.0	0.2	Pass
2437	6	n	6.5	20.5	3	2	2390.00	53.2	54.0	0.8	Pass
2442	7	b	1	22.0	3	2	2382.75	49.9	54.0	4.1	Pass
2442	7	g	6	21.5	3	2	2483.50	53.6	54.0	0.4	Pass
2442	7	n	6.5	21.0	3	2	2483.50	52.8	54.0	1.2	Pass
2447	8	b	1	22.0	3	2	2483.50	49.9	54.0	4.1	Pass
2447	8	g	6	20.5	3	2	2483.50	53.9	54.0	0.1	Pass
2447	8	n	6.5	19.5	3	2	2483.50	53.2	54.0	0.8	Pass
2452	9	b	1	22.0	3	2	2483.50	50.4	54.0	3.6	Pass
2452	9	g	6	17.5	3	2	2483.50	52.9	54.0	1.1	Pass
2452	9	n	6.5	17.0	3	2	2483.50	53.0	54.0	1.0	Pass
2457	10	b	1	21.5	3	2	2483.59	51.7	54.0	2.3	Pass
2457	10	g	6	16.0	3	2	2483.50	52.9	54.0	1.1	Pass
2457	10	n	6.5	16.0	3	2	2483.50	53.7	54.0	0.3	Pass
2462	11	b	1	20.5	3	2	2483.59	52.7	54.0	1.3	Pass
2462	11	g	6	11.0	3	2	2483.50	53.2	54.0	0.8	Pass
2462	11	n	6.5	9.5	3	2	2483.50	52.4	54.0	1.6	Pass

7.8.6 Spurious Emissions – 3 Transmit Chains

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Result
2412	1	b	2	28.5	3	2	7250.00	37.9	54.0	Pass
2412	1	g	6	28.5	3	2	7250.00	50.9	54.0	Pass
2412	1	n	6.5	28.5	3	2	7250.00	51.2	54.0	Pass
2417	2	b	2	24.0	3	2	7251.00	53.8	54.0	Pass
2417	2	g	6	25.5	3	2	7251.00	52.7	54.0	Pass
2417	2	n	6.5	26.0	3	2	7251.00	53.4	54.0	Pass
2437	6	b	2	24.0	3	2	7311.00	53.4	54.0	Pass
2437	6	g	6	27.0	3	2	7311.00	53.8	54.0	Pass
2437	6	n	6.5	27.0	3	2	7311.00	53.5	54.0	Pass
2462	11	b	2	25.0	3	2	7386.00	53.6	54.0	Pass
2462	11	g	6	28.0	3	2	7386.00	54.0	54.0	Pass
2462	11	n	6.5	28.0	3	2	7386.00	53.7	54.0	Pass

7.9 Data using Antenna Configuration 3 – ANT-2010 (8.5 dBi)

7.9.1 Bandedge – 1 Transmit Chain

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Margin dB	Result
2412	1	b	1	20.5	1	3	2390.00	52.7	54.0	1.3	Pass
2412	1	g	6	12.5	1	3	2390.00	53.3	54.0	0.7	Pass
2412	1	n	6.5	10.0	1	3	2390.00	53.6	54.0	0.4	Pass
2417	2	b	1	21.5	1	3	2390.00	53.7	54.0	0.3	Pass
2417	2	g	6	16.0	1	3	2390.00	53.1	54.0	0.9	Pass
2417	2	n	6.5	16.0	1	3	2390.00	53.3	54.0	0.7	Pass
2422	3	b	1	23.5	1	3	2390.00	53.9	54.0	0.1	Pass
2422	3	g	6	17.5	1	3	2390.00	53.2	54.0	0.8	Pass
2422	3	n	6.5	16.5	1	3	2390.00	52.9	54.0	1.1	Pass
2427	4	b	1	23.5	1	3	2390.00	53.9	54.0	0.1	Pass
2427	4	g	6	19.5	1	3	2390.00	53.4	54.0	0.6	Pass
2427	4	n	6.5	19.0	1	3	2390.00	52.2	54.0	1.8	Pass
2432	5	b	1	26.0	1	3	2390.00	53.2	54.0	0.8	Pass
2432	5	g	6	21.0	1	3	2390.00	53.8	54.0	0.2	Pass
2432	5	n	6.5	20.0	1	3	2390.00	53.2	54.0	0.8	Pass
2437	6	b	1	25.5	1	3	2390.00	54.0	54.0	0.0	Pass
2437	6	g	6	22.0	1	3	2390.00	53.3	54.0	0.7	Pass
2437	6	n	6.5	21.0	1	3	2390.00	52.6	54.0	1.4	Pass
2442	7	b	1	27.5	1	3	2390.00	53.6	54.0	0.4	Pass
2442	7	g	6	22.5	1	3	2483.50	53.2	54.0	0.8	Pass
2442	7	n	6.5	21.5	1	3	2483.50	53.2	54.0	0.8	Pass
2447	8	b	1	25.0	1	3	2483.50	53.5	54.0	0.5	Pass
2447	8	g	6	20.5	1	3	2483.50	52.1	54.0	1.9	Pass
2447	8	n	6.5	21.0	1	3	2483.50	53.6	54.0	0.4	Pass
2452	9	b	1	25.0	1	3	2483.50	53.9	54.0	0.1	Pass
2452	9	g	6	19.0	1	3	2483.50	53.6	54.0	0.4	Pass
2452	9	n	6.5	18.0	1	3	2483.50	53.7	54.0	0.3	Pass
2457	10	b	1	21.0	1	3	2483.50	50.7	54.0	3.3	Pass
2457	10	g	6	17.0	1	3	2483.50	53.4	54.0	0.6	Pass
2457	10	n	6.5	16.5	1	3	2483.50	51.5	54.0	2.5	Pass
2462	11	b	1	21.0	1	3	2483.50	52.5	54.0	1.5	Pass
2462	11	g	6	13.0	1	3	2483.50	53.1	54.0	0.9	Pass
2462	11	n	6.5	12.5	1	3	2483.50	52.6	54.0	1.4	Pass

7.9.2 Spurious Emissions – 1 Transmit Chain

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Result
2412	1	b	2	28.5	1	3	7250.00	37.2	54.0	Pass
2412	1	g	6	28.5	1	3	7250.00	50.2	54.0	Pass
2412	1	n	6.5	28.5	1	3	7250.00	50.5	54.0	Pass
2417	2	b	2	25.0	1	3	7251.00	53.5	54.0	Pass
2417	2	g	6	26.5	1	3	7251.00	53.6	54.0	Pass
2417	2	n	6.5	26.5	1	3	7251.00	53.7	54.0	Pass
2437	6	b	2	25.0	1	3	7311.00	53.7	54.0	Pass
2437	6	g	6	27.5	1	3	7311.00	53.9	54.0	Pass
2437	6	n	6.5	27.0	1	3	7311.00	53.0	54.0	Pass
2462	11	b	2	25.5	1	3	7386.00	54.0	54.0	Pass
2462	11	g	6	28.0	1	3	7386.00	53.6	54.0	Pass
2462	11	n	6.5	28.0	1	3	7386.00	53.3	54.0	Pass

7.9.3 Bandedge – 2 Transmit Chains

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Margin dB	Result
2412	1	b	1	19.5	2	3	2386.75	53.8	54.0	0.2	Pass
2412	1	g	6	11.0	2	3	2390.00	53.7	54.0	0.3	Pass
2412	1	n	6.5	9.0	2	3	2390.00	53.7	54.0	0.3	Pass
2417	2	b	1	20.5	2	3	2388.75	53.4	54.0	0.6	Pass
2417	2	g	6	15.0	2	3	2390.00	53.1	54.0	0.9	Pass
2417	2	n	6.5	14.5	2	3	2390.00	51.6	54.0	2.4	Pass
2422	3	b	1	21.0	2	3	2483.25	53.6	54.1	0.5	Pass
2422	3	g	6	16.5	2	3	2390.00	53.4	54.0	0.6	Pass
2422	3	n	6.5	16.0	2	3	2390.00	53.3	54.0	0.7	Pass
2427	4	b	1	21.0	2	3	2390.00	53.7	54.0	0.3	Pass
2427	4	g	6	17.5	2	3	2390.00	53.0	54.0	1.0	Pass
2427	4	n	6.5	16.5	2	3	2390.00	50.4	54.0	3.6	Pass
2432	5	b	1	23.0	2	3	2390.00	53.8	54.0	0.2	Pass
2432	5	g	6	19.5	2	3	2390.00	53.0	54.0	1.0	Pass
2432	5	n	6.5	18.5	2	3	2390.00	53.8	54.0	0.2	Pass
2437	6	b	1	23.0	2	3	2390.00	53.6	54.0	0.4	Pass
2437	6	g	6	21.0	2	3	2390.00	53.6	54.0	0.4	Pass
2437	6	n	6.5	20.0	2	3	2390.00	53.5	54.0	0.5	Pass
2442	7	b	1	24.0	2	3	2483.76	52.5	54.0	1.5	Pass
2442	7	g	6	20.5	2	3	2483.50	52.4	54.0	1.6	Pass
2442	7	n	6.5	20.0	2	3	2483.50	52.3	54.0	1.7	Pass
2447	8	b	1	23.5	2	3	2483.50	52.6	54.0	1.4	Pass
2447	8	g	6	17.5	2	3	2483.50	52.8	54.0	1.2	Pass
2447	8	n	6.5	16.5	2	3	2483.50	51.4	54.0	2.6	Pass
2452	9	b	1	24.0	2	3	2483.50	53.4	54.0	0.6	Pass
2452	9	g	6	16.5	2	3	2483.50	51.6	54.0	2.4	Pass
2452	9	n	6.5	16.0	2	3	2483.50	52.7	54.0	1.3	Pass
2457	10	b	1	21.0	2	3	2483.50	53.4	54.0	0.6	Pass
2457	10	g	6	16.0	2	3	2483.50	53.8	54.0	0.2	Pass
2457	10	n	6.5	15.5	2	3	2483.50	53.5	54.0	0.5	Pass
2462	11	b	1	20.0	2	3	2483.59	53.3	54.0	0.7	Pass
2462	11	g	6	11.5	2	3	2483.50	52.9	54.0	1.1	Pass
2462	11	n	6.5	9.5	2	3	2483.50	51.1	54.0	2.9	Pass

7.9.4 Spurious Emissions – 2 Transmit Chains

Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Result
2412	1	b	2	28.5	2	3	7250.00	40.2	54.0	Pass
2412	1	g	6	28.5	2	3	7250.00	53.2	54.0	Pass
2412	1	n	6.5	28.5	2	3	7250.00	53.5	54.0	Pass
2417	2	b	2	22.5	2	3	7251.00	52.4	54.0	Pass
2417	2	g	6	25.0	2	3	7251.00	53.9	54.0	Pass
2417	2	n	6.5	25.0	2	3	7251.00	53.4	54.0	Pass
2437	6	b	2	22.5	2	3	7311.00	53.3	54.0	Pass
2437	6	g	6	24.5	2	3	7311.00	53.5	54.0	Pass
2437	6	n	6.5	23.0	2	3	7311.00	49.7	54.0	Pass
2462	11	b	2	23.0	2	3	7386.00	53.1	54.0	Pass
2462	11	g	6	25.5	2	3	7386.00	53.4	54.0	Pass
2462	11	n	6.5	25.0	2	3	7386.00	52.7	54.0	Pass

7.9.5 Bandedge – 3 Transmit Chains

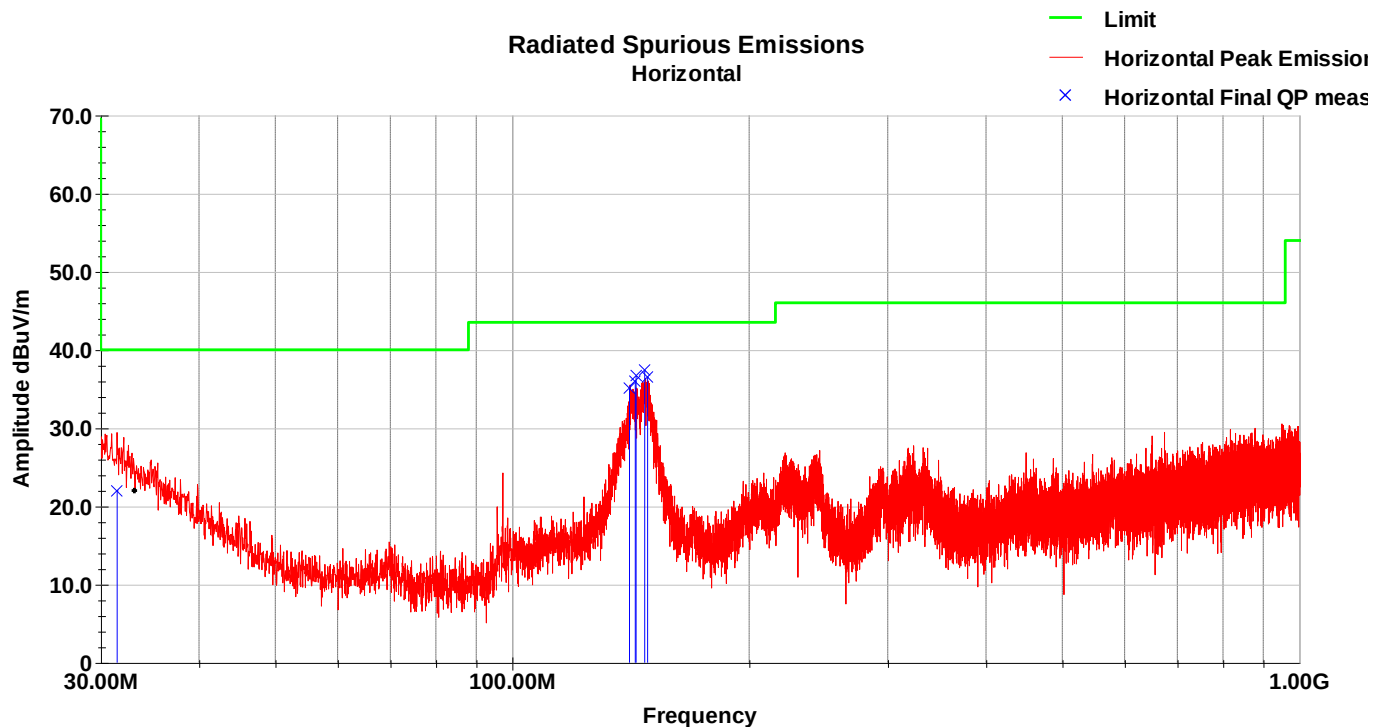
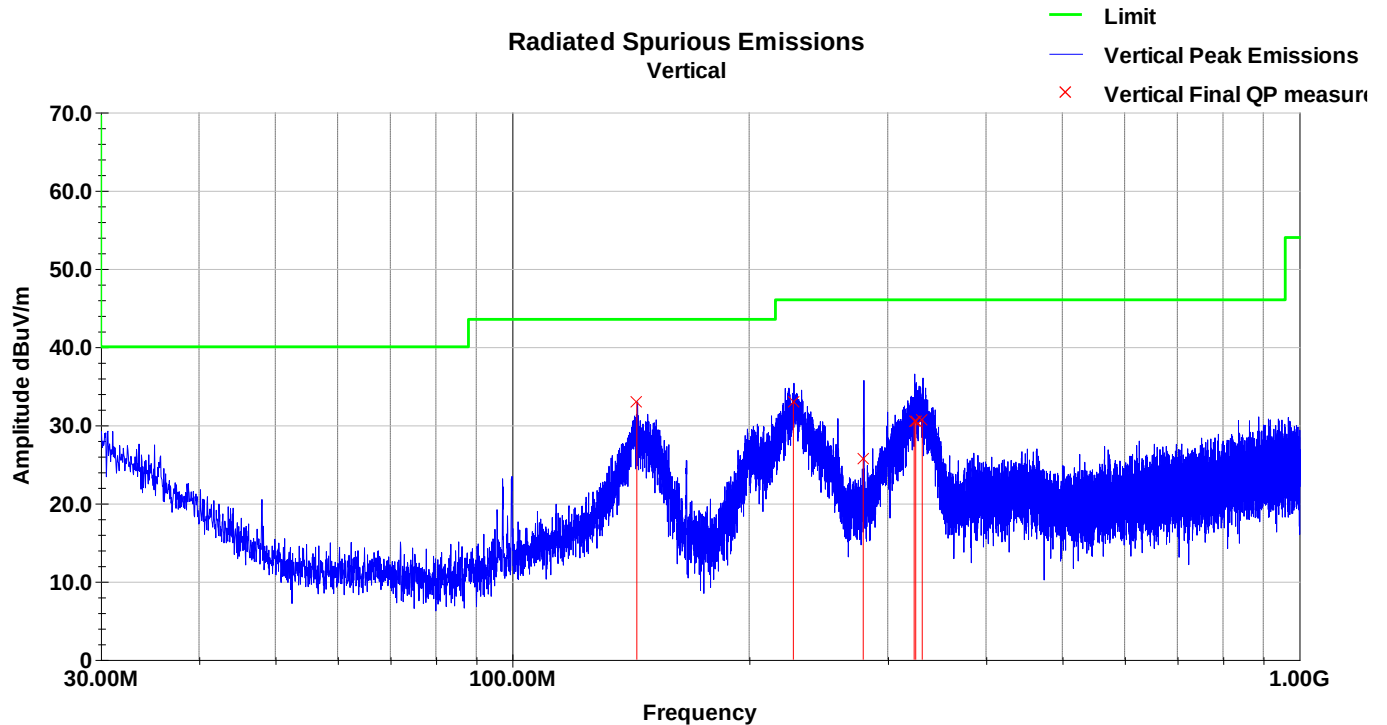
Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Margin dB	Result
2412	1	b	1	17.0	3	3	2390.00	53.3	54.0	0.7	Pass
2412	1	g	6	8.0	3	3	2390.00	53.9	54.0	0.1	Pass
2412	1	n	6.5	7.0	3	3	2390.00	53.2	54.0	0.8	Pass
2417	2	b	1	17.0	3	3	2382.25	53.0	54.0	1.0	Pass
2417	2	g	6	14.0	3	3	2390.00	52.7	54.0	1.3	Pass
2417	2	n	6.5	14.0	3	3	2390.00	53.8	54.0	0.2	Pass
2422	3	b	1	17.0	3	3	2382.75	53.3	54.0	0.7	Pass
2422	3	g	6	15.0	3	3	2382.25	53.9	54.0	0.1	Pass
2422	3	n	6.5	14.5	3	3	2390.00	53.4	54.0	0.6	Pass
2427	4	b	1	17.5	3	3	2382.25	53.4	54.0	0.6	Pass
2427	4	g	6	15.5	3	3	2390.00	53.4	54.0	0.6	Pass
2427	4	n	6.5	15.0	3	3	2390.00	53.6	54.0	0.4	Pass
2432	5	b	1	17.0	3	3	2382.75	53.1	54.0	0.9	Pass
2432	5	g	6	15.5	3	3	2382.25	53.5	54.0	0.5	Pass
2432	5	n	6.5	15.0	3	3	2390.00	53.4	54.0	0.6	Pass
2437	6	b	1	17.0	3	3	2383.75	53.0	54.0	1.0	Pass
2437	6	g	6	16.0	3	3	2390.00	54.0	54.0	0.0	Pass
2437	6	n	6.5	15.5	3	3	2390.00	53.6	54.0	0.4	Pass
2442	7	b	1	17.5	3	3	2375.25	53.0	54.0	1.0	Pass
2442	7	g	6	16.0	3	3	2483.50	53.8	54.0	0.2	Pass
2442	7	n	6.5	15.5	3	3	2483.50	53.3	54.0	0.7	Pass
2447	8	b	1	17.0	3	3	2483.50	52.9	54.0	1.1	Pass
2447	8	g	6	15.5	3	3	2483.50	53.7	54.0	0.3	Pass
2447	8	n	6.5	15.0	3	3	2483.50	53.1	54.0	0.9	Pass
2452	9	b	1	17.0	3	3	2483.50	53.1	54.0	0.9	Pass
2452	9	g	6	15.0	3	3	2483.50	53.8	54.0	0.2	Pass
2452	9	n	6.5	15.0	3	3	2483.50	53.7	54.0	0.3	Pass
2457	10	b	1	17.5	3	3	2483.50	53.1	54.0	0.9	Pass
2457	10	g	6	15.0	3	3	2483.50	52.9	54.0	1.1	Pass
2457	10	n	6.5	14.5	3	3	2483.50	52.8	54.0	1.2	Pass
2462	11	b	1	17.5	3	3	2483.50	53.4	54.0	0.6	Pass
2462	11	g	6	9.0	3	3	2483.50	53.5	54.0	0.5	Pass
2462	11	n	6.5	8.0	3	3	2483.50	52.9	54.0	1.1	Pass

7.9.6 Bandedge – 3 Transmit Chains

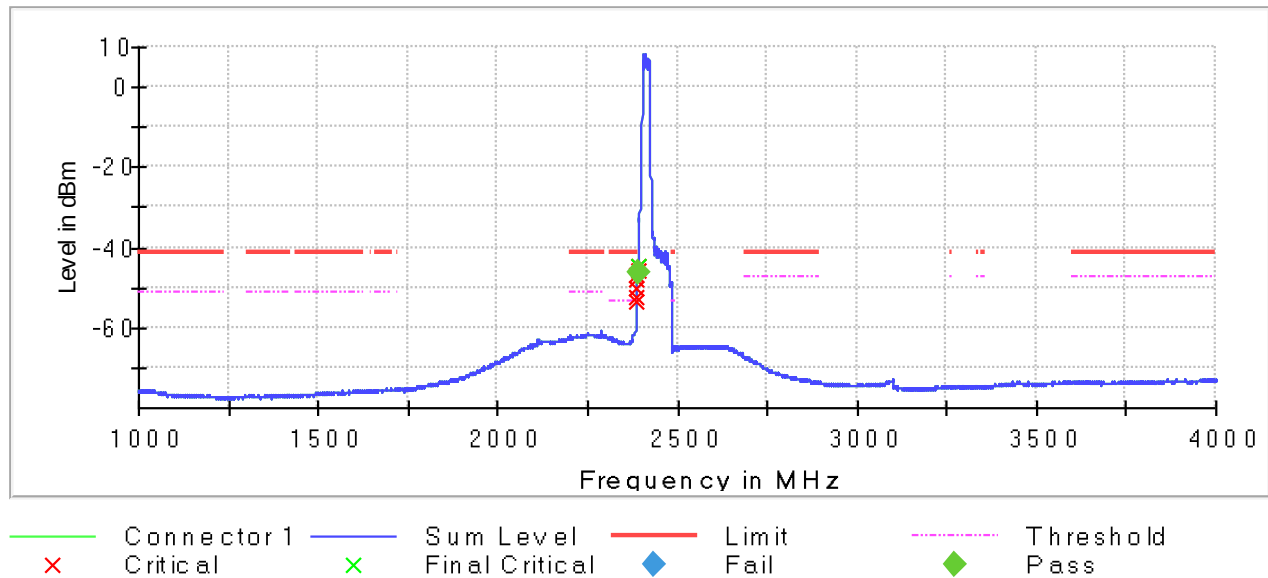
Frequency MHz	Channel WLAN	802.11 mode	Data Rate Mbps	Power Setting dBm	TX chains	Ant Config	Max Spurious Frequency MHz	Spurious Level dBuV/m	Limit dBuV/m	Result
2412	1	b	2	28.5	3	3	7250.00	41.9	54.0	Pass
2412	1	g	6	27.0	3	3	7250.00	53.2	54.0	Pass
2412	1	n	6.5	27.0	3	3	7250.00	53.1	54.0	Pass
2417	2	b	2	22.0	3	3	7251.00	53.3	54.0	Pass
2417	2	g	6	24.0	3	3	7251.00	53.9	54.0	Pass
2417	2	n	6.5	23.5	3	3	7251.00	53.3	54.0	Pass
2437	6	b	2	21.5	3	3	7311.00	52.5	54.0	Pass
2437	6	g	6	22.5	3	3	7311.00	51.3	54.0	Pass
2437	6	n	6.5	23.0	3	3	7311.00	51.5	54.0	Pass
2462	11	b	2	22.0	3	3	7386.00	53.1	54.0	Pass
2462	11	g	6	24.5	3	3	7386.00	53.7	54.0	Pass
2462	11	n	6.5	24.5	3	3	7386.00	53.3	54.0	Pass

7.10 Plots

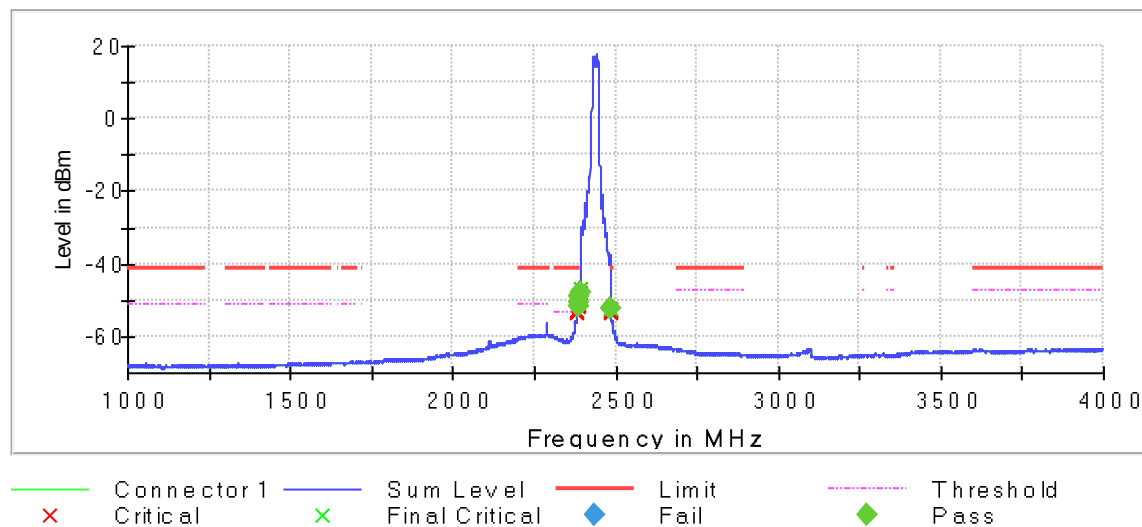
Below 1 GHz, there was no discernable difference between modes of operation or RF power levels.



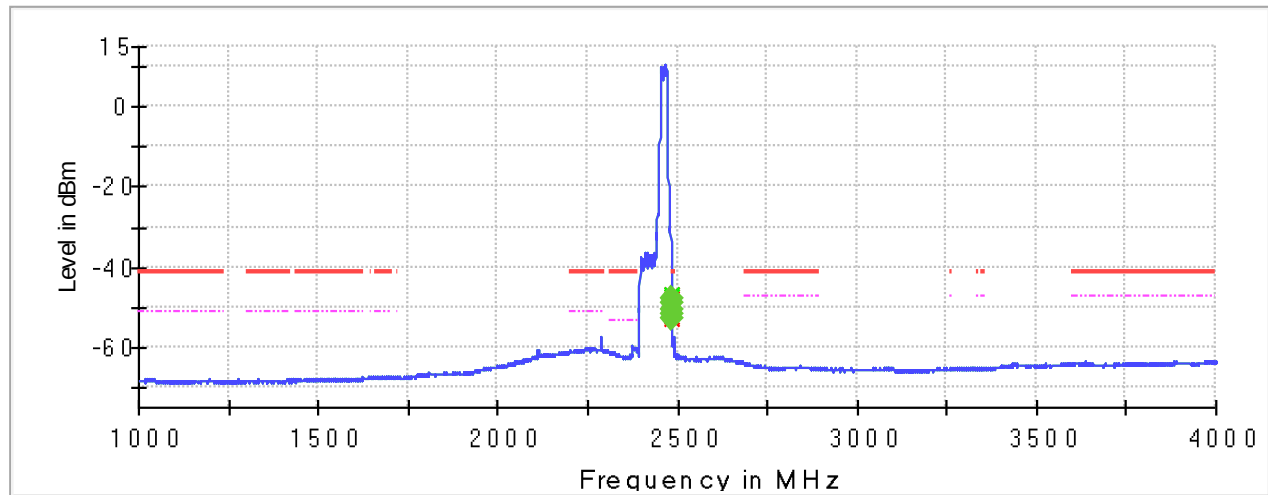
Representative plots (1-4 GHz)
802.11n, Tx Spurious Emissions, 2412 MHz, 14 dBm setting



802.11n, Tx Spurious Emissions, 2437 MHz, 22 dBm setting

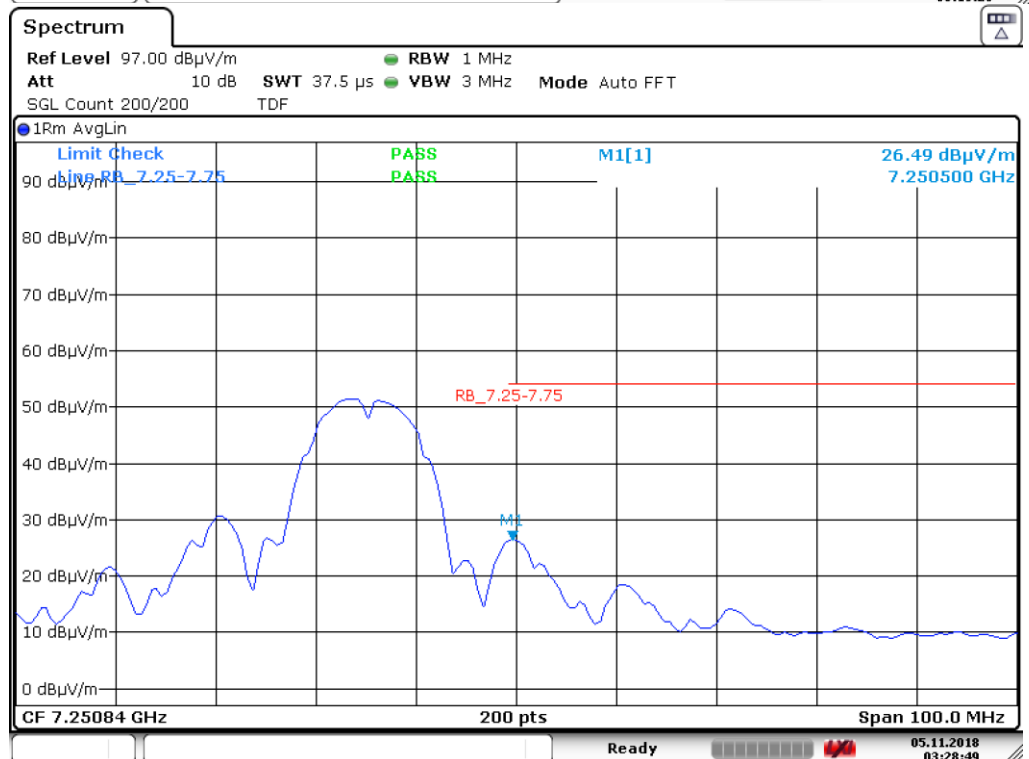
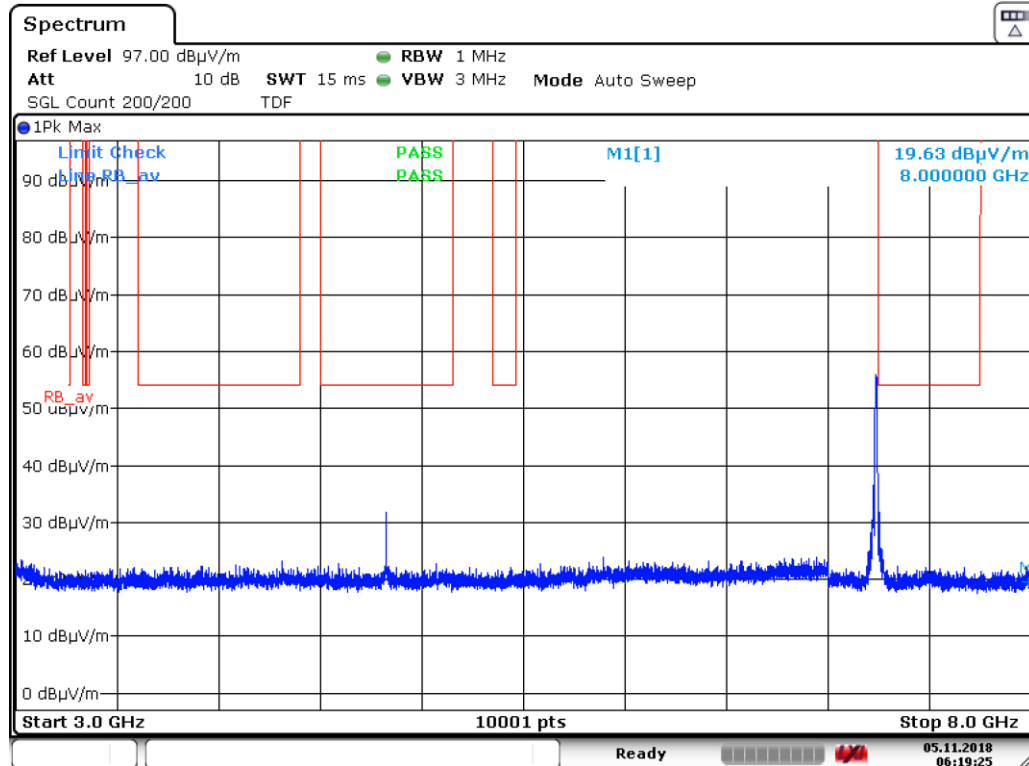


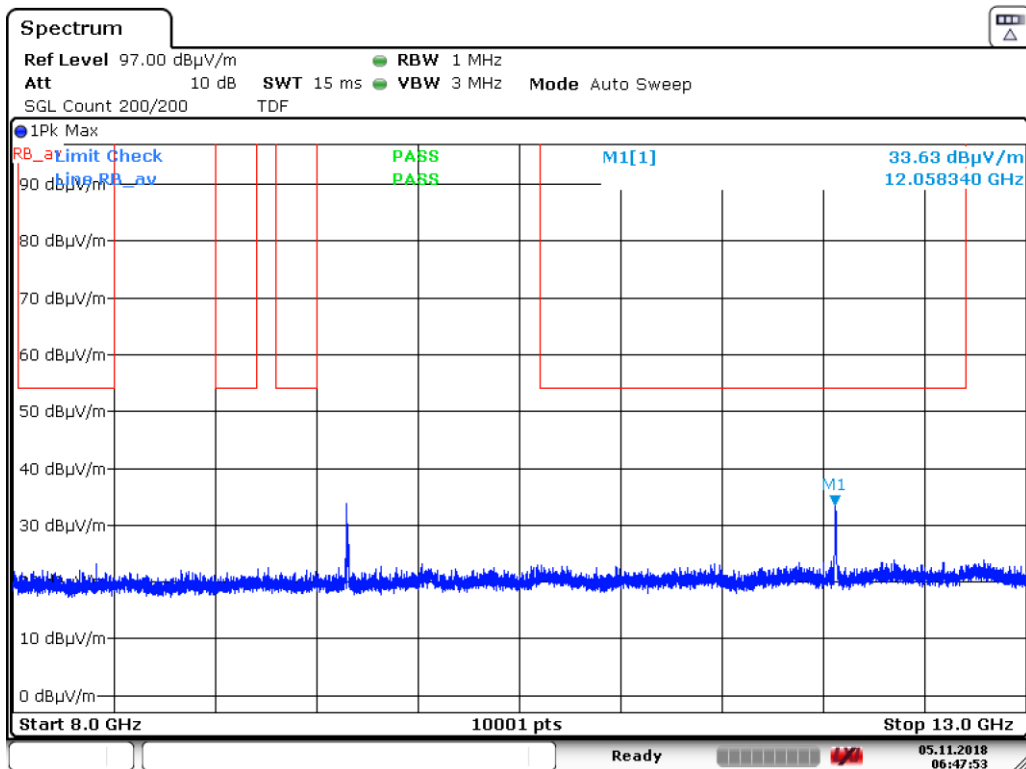
802.11n, Tx Spurious Emissions, 2462 MHz, 14 dBm setting

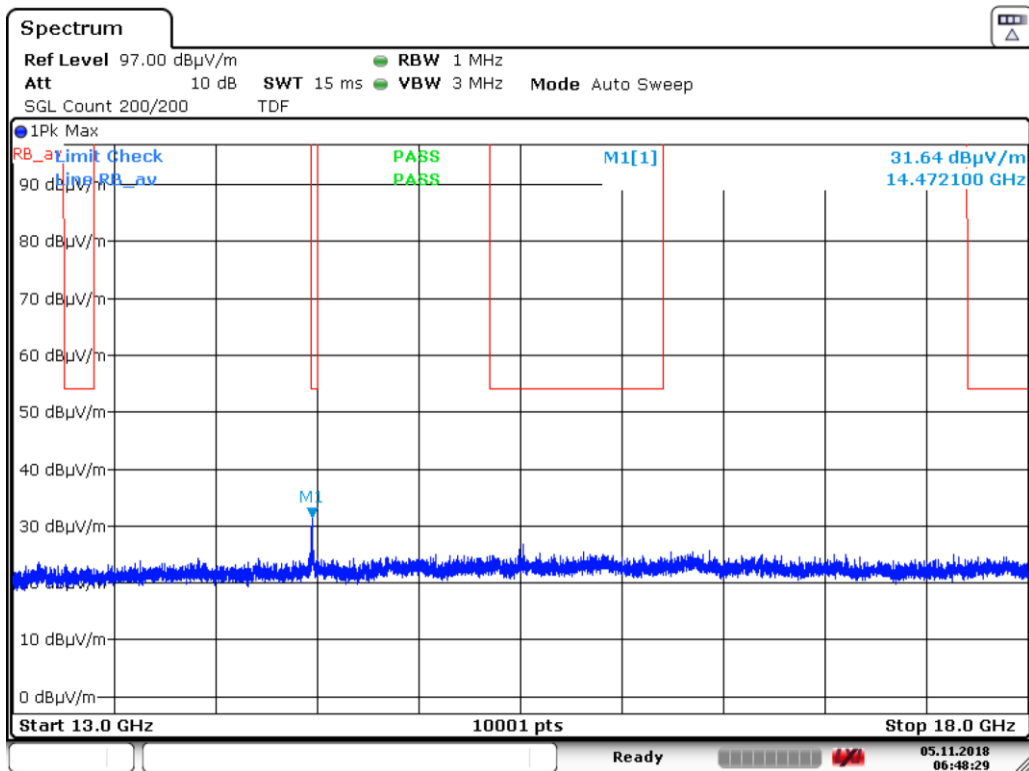


Representative Plots, 3 to 26 GHz

802.11b, Tx Spurious emissions, 2412 MHz, 28.5 dBm setting







There were no emissions detected above 18 GHz.

8 Field Strength of Spurious Radiation

8.1 Test Result

Test Description	Regulatory Reference	Test Method	Test Result
Cabinet Radiation	15.209 / 15.205 RSS-GEN 8.9	ANSI C63.10 Clause 6.5 ANSI C63.10 Clause 6.6	Compliant

8.2 Test Method

Exploratory scans were performed over the frequency range as indicated in the tables below using the peak detection and max hold function and automated using TILE! software. Results were measured using a Quasi-Peak detector below 1GHz and a Peak detector above 1GHz. For harmonics of the fundamental, Average measurements were made by correcting the peak value with the duty cycle correction factor. For emissions other than harmonics of the fundamental, the Average measurements were made using the Average detector. The receiver's resolution bandwidth was set to 120 kHz for measurements taken in the 30MHz to 1GHz frequency range and 1MHz for measurements for 1GHz and higher. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency. The radiated measurements were recorded and compared to the limits indicated in the table below.

The antenna ports of the DUT were terminated. Measurements of cabinet radiation were made in the following modes of operation: 802.11b,g,n at high, mid and low channels at the worst-case data rate for each. Plots are shown for the worst-case mode of operation.

Test distance:

30 MHz to 1 GHz - The EUT to measurement antenna distance is 3 meters

1 to 18 GHz - The EUT to measurement antenna distance is 3 meters

18 to 40 GHz - The EUT to measurement antenna distance is 1 meter

Frequency	Limits ⁽¹⁾		Peak Limits dBuV/m
	Microvolts/m	dBuV/m	
30 - 88 MHz	100	40 ⁽²⁾	--
88 - 216 MHz	150	43.5 ⁽²⁾	--
216 - 960 MHz	200	46 ⁽²⁾	--
960 - 1000 MHz	500	54 ⁽²⁾	--
1 - 40 GHz	500	54 ⁽³⁾	74

(5) These limits are applicable to emissions outside of the intentional transmit frequency band.

(6) Quasi-peak limit

(7) Average limit

8.3 Test Site

10m Absorber Lined Shielded Enclosure (ALSE), Suwanee, GA

Environmental Conditions

Temperature: 22.7 to 23.9 °C

Relative Humidity: 48.4 to 55.2 %

8.4 Test Equipment

Test End Date: 5-Oct-2018

Tester: MT

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
ANTENNA, BILOG	JB6	SUNOL	B079690	29-Nov-2018
ANTENNA, DRG HORN (MEDIUM)	3117	ETS LINDGREN	B079691	10-Aug-2019
ANTENNA, HORN (SMALL)	LB-180400-20-C-KF	A-INFO	15007	30-Mar-2019
RF CABLE	SF106	HUBER & SUHNER	B079661	23-Jul-2019
RF CABLE	SF106	HUBER & SUHNER	B079713	24-Jul-2019
RF CABLE	UC-N-MM-78	MAURY MICROWAVE	17017	24-Jul-2019
RF CABLE	104PE	HUBER & SUHNER	B079793	24-Jul-2019
RF CABLE	SUCOFLEX 100	HUBER & SUHNER	B108523	24-Jul-2019
RF CABLE	SF102	HUBER & SUHNER	B079822	25-Jul-2019
RF CABLE	SF102	HUBER & SUHNER	B079824	25-Jul-2019
LOW NOISE AMPLIFIER	TS-PR18	ROHDE & SCHWARZ	15003	27-Jul-2019
LOW NOISE AMPLIFIER	TS-PR18	ROHDE & SCHWARZ	B094463	6-Mar-2019
LOW NOISE AMPLIFIER	NSP1840-HG	MITEQ	B087572	27-Jul-2019
EMI TEST RECEIVER	ESU8	ROHDE & SCHWARZ	B085759	17-Aug-2019
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	2-Jul-2019
FILTER, BAND REJECT (2450MHZ)	BRM50709	MICRO-TRONICS	B079790	26-Jul-2019

Note: The equipment calibration period is 1 year.

Software:

“RSE 30-1000 MHz T7 180823” dated 23 August 2018

“RSE 1-18 GHz T7 180716” dated 16 July 2018

“RSE 18-26 GHz T7 180814” dated 14 August 2018

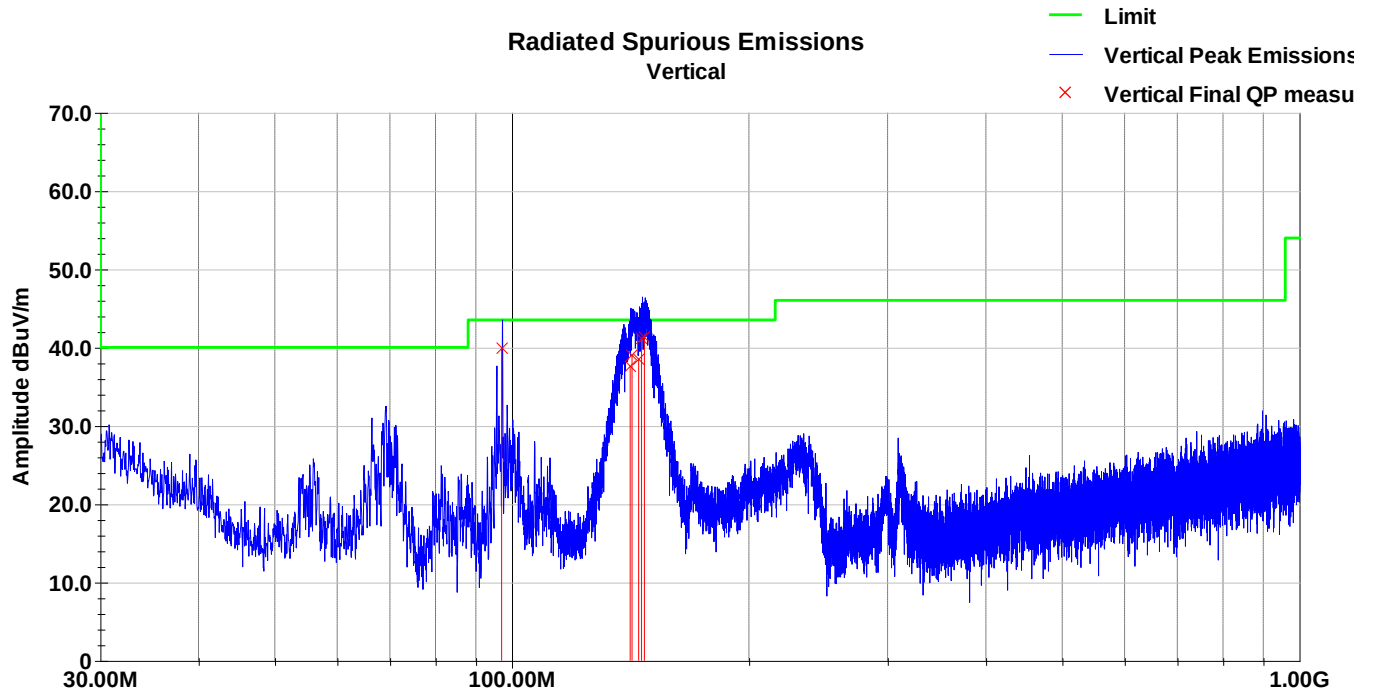
8.5 Test Setup Photographs

Test setup photographs are located in a separate exhibit.

8.6 Test Data

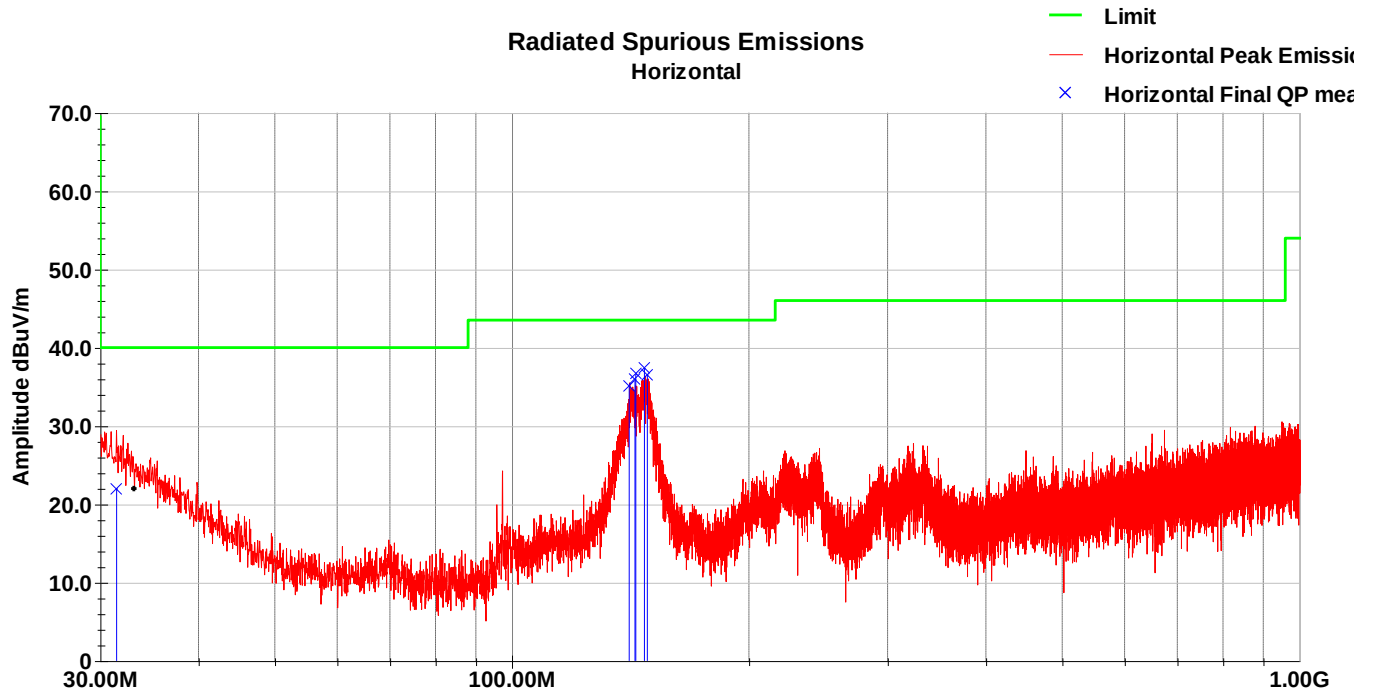
8.6.1 30-1000 MHz

CH1



Frequency MHz	Raw QP (dBuV)	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	QP Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)
97.05	58.6	V	5.0	250.0	9.5	5.7	33.8	39.9	43.5	-3.6
141.34	52.5	V	0.0	250.0	13.1	5.9	33.8	37.6	43.5	-5.9
142.11	53.9	V	0.0	250.0	13.1	5.9	33.8	39.0	43.5	-4.5
144.87	53.5	V	20.0	250.0	12.9	5.9	33.8	38.5	43.5	-5.0
146.14	56.1	V	7.0	250.0	12.9	5.9	33.8	41.1	43.5	-2.4
147.35	56.3	V	10.0	250.0	12.9	5.9	33.8	41.3	43.5	-2.2
QP Value = Level + AF + CL - Amp										
Margin = QP Value - Limit										

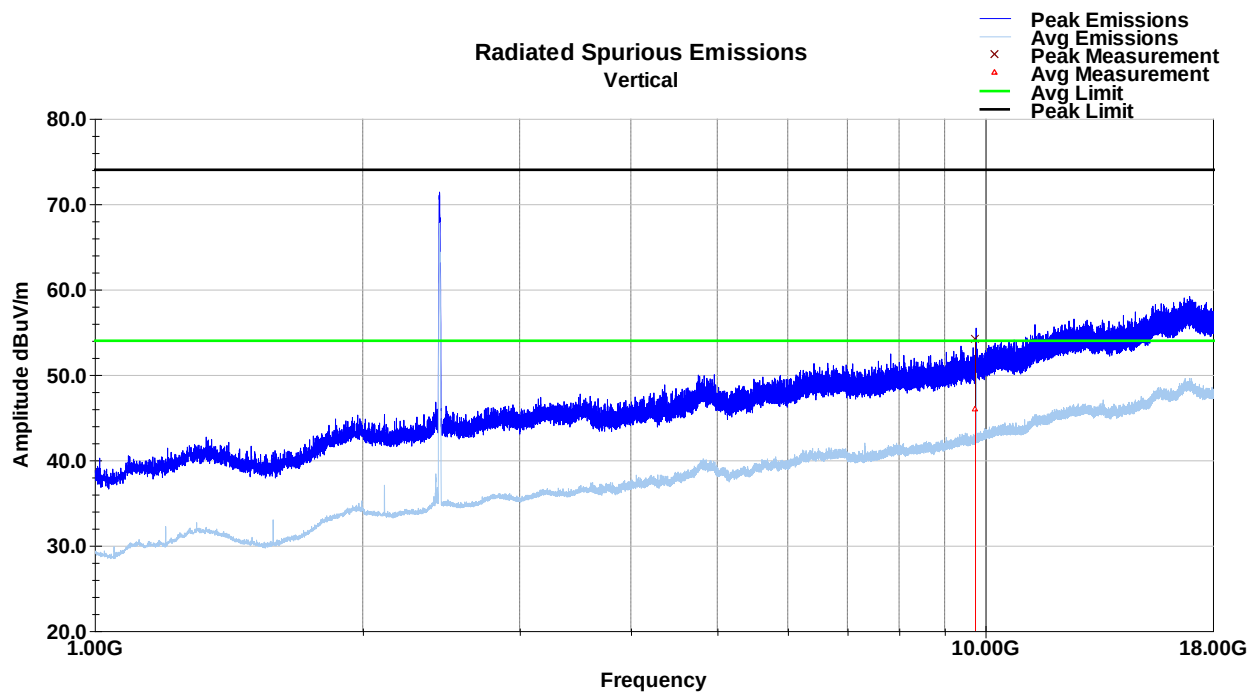
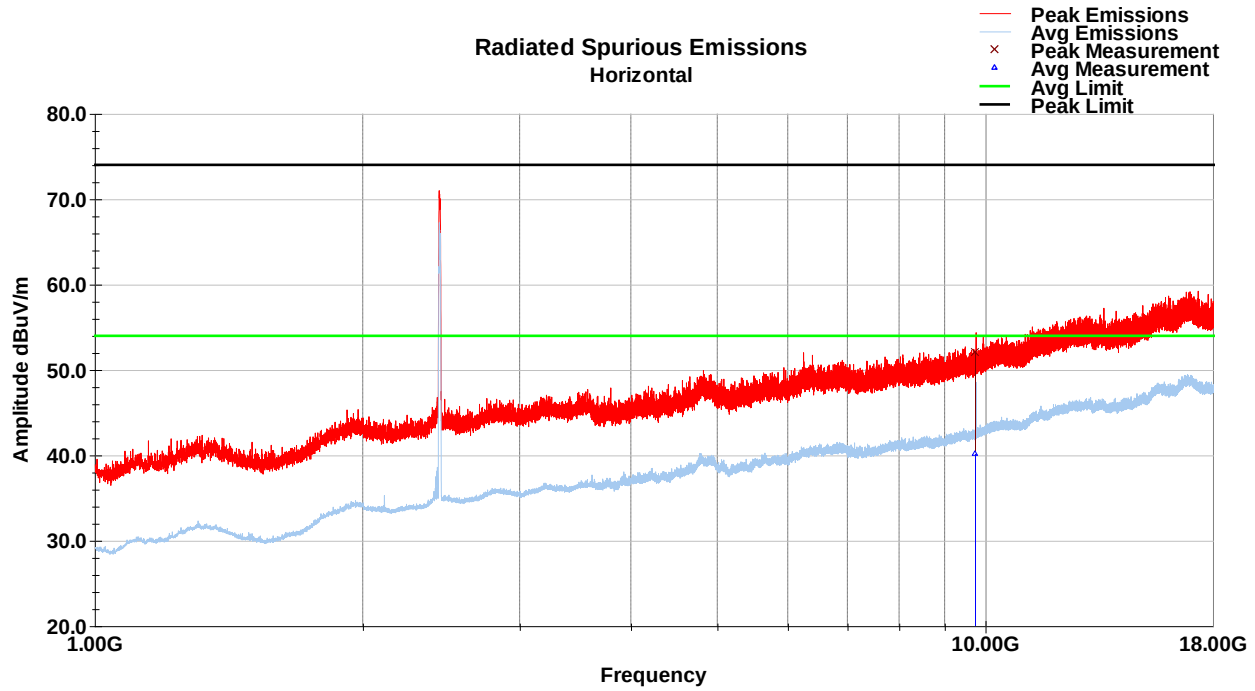
CH1



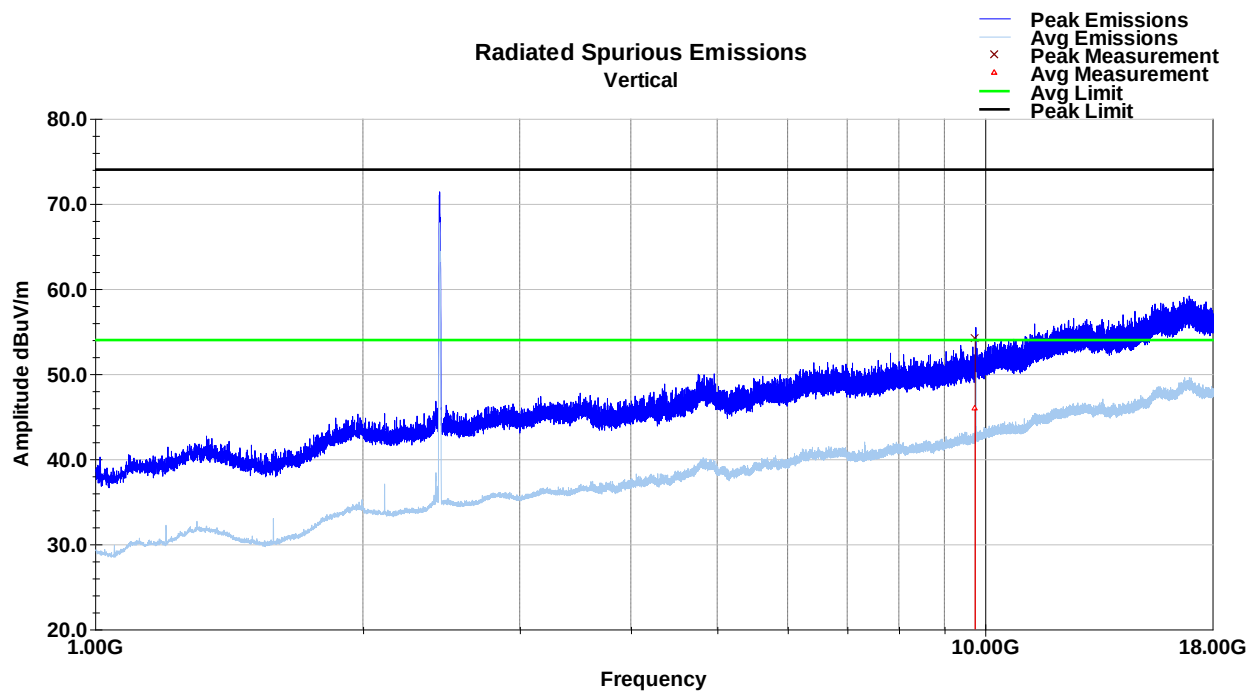
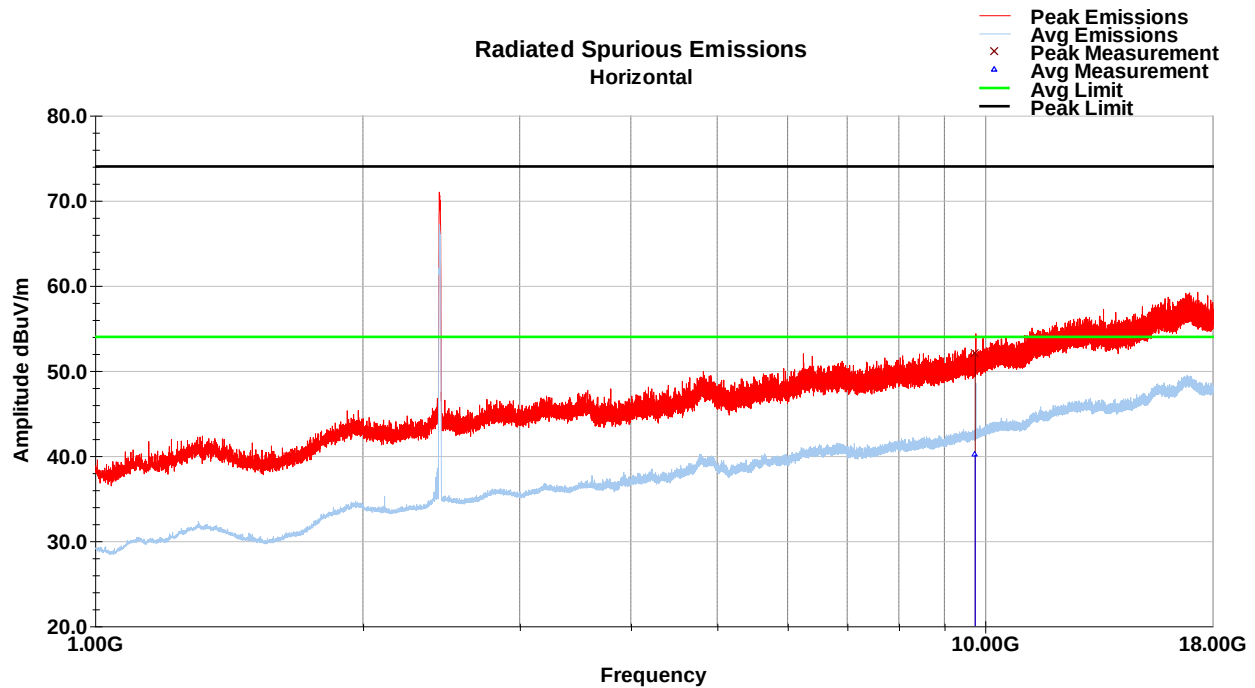
Frequency MHz	Raw QP (dBuV)	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	QP Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)
31.49	26.8	H	10.0	162.0	21.2	5.3	31.2	22.0	40.0	-18.0
140.95	49.9	H	20.0	172.0	13.1	5.9	33.8	35.1	43.5	-8.4
143.32	50.9	H	20.0	191.0	13.0	5.9	33.8	36.0	43.5	-7.5
143.71	51.6	H	20.0	209.0	13.0	5.9	33.8	36.7	43.5	-6.8
147.35	52.4	H	20.0	104.0	12.9	5.9	33.8	37.4	43.5	-6.1
148.61	51.7	H	20.0	175.0	12.8	5.9	33.8	36.6	43.5	-6.9
QP Value = Level + AF + CL - Amp										
Margin = QP Value - Limit										

8.6.2 1-18 GHz

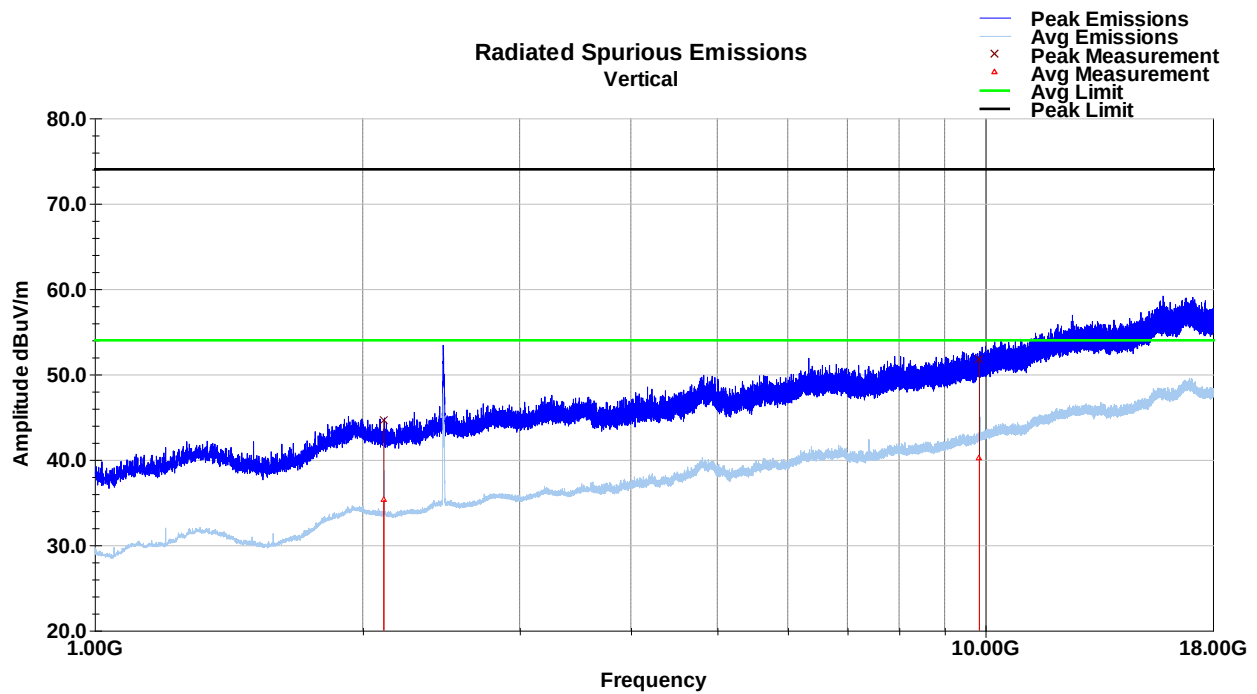
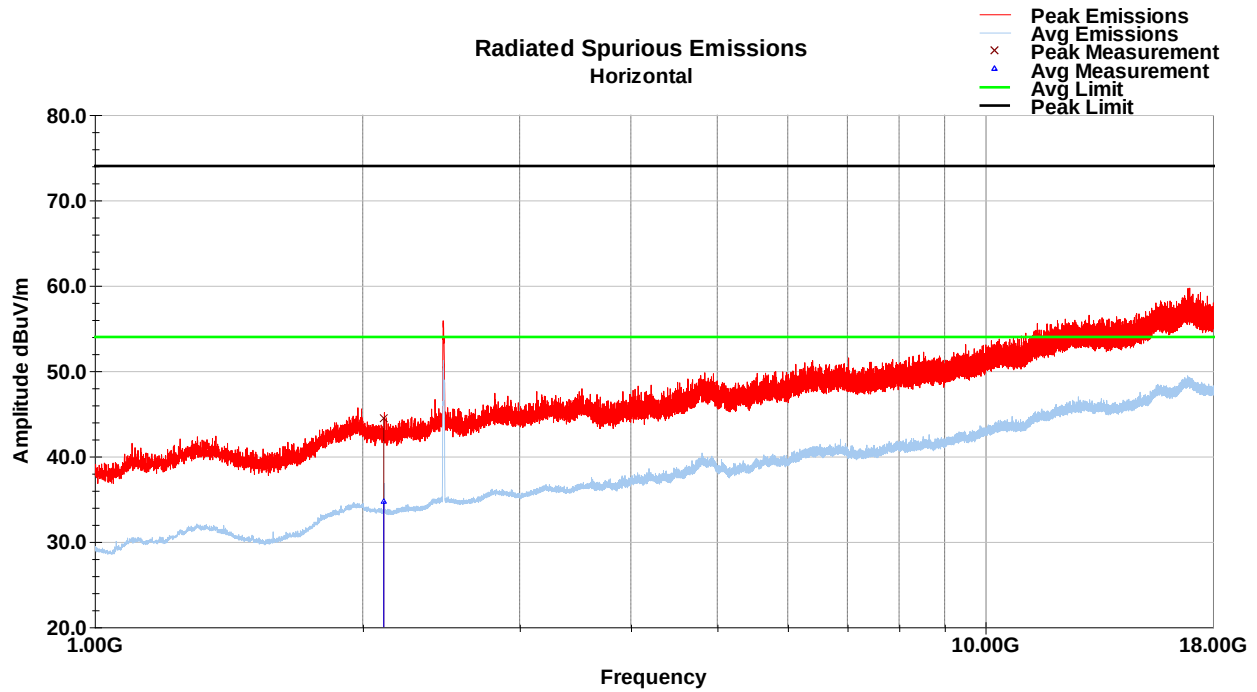
Channel 1 – 2412 MHz



Channel 6 – 2437 MHz

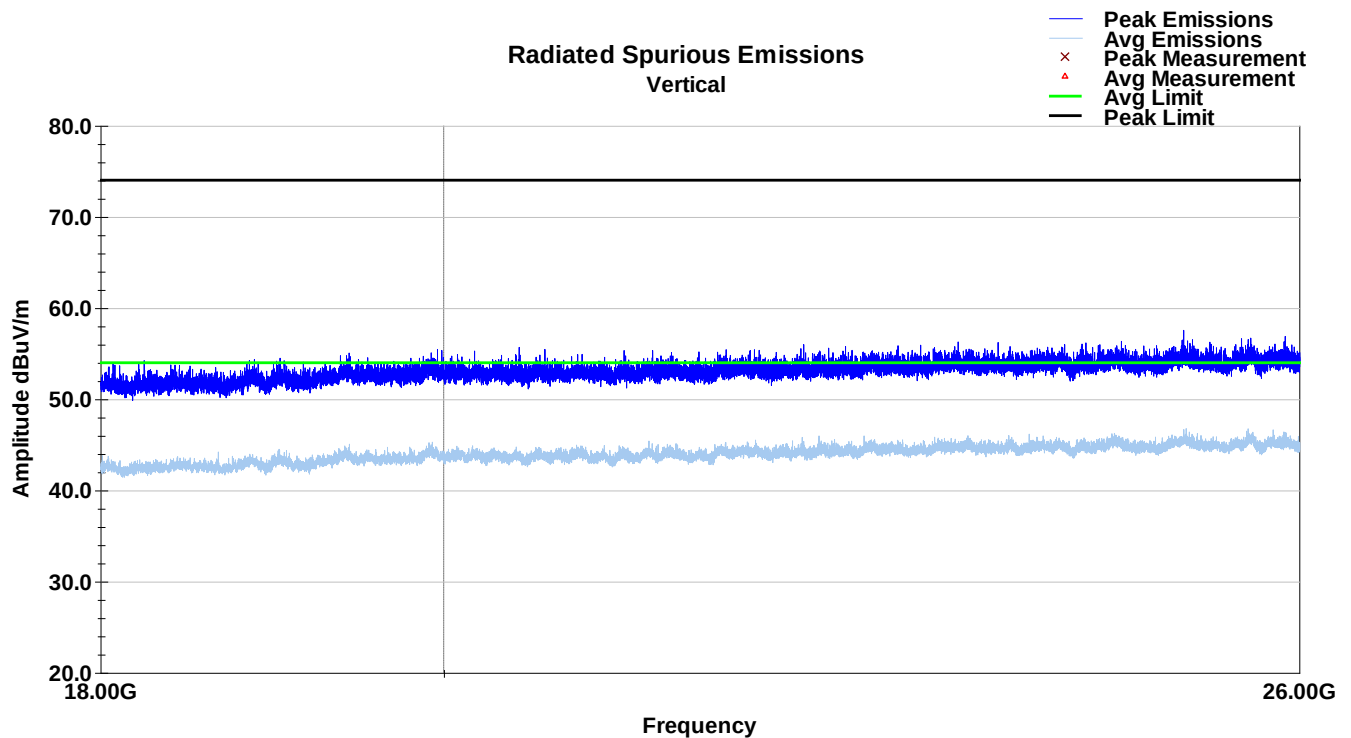
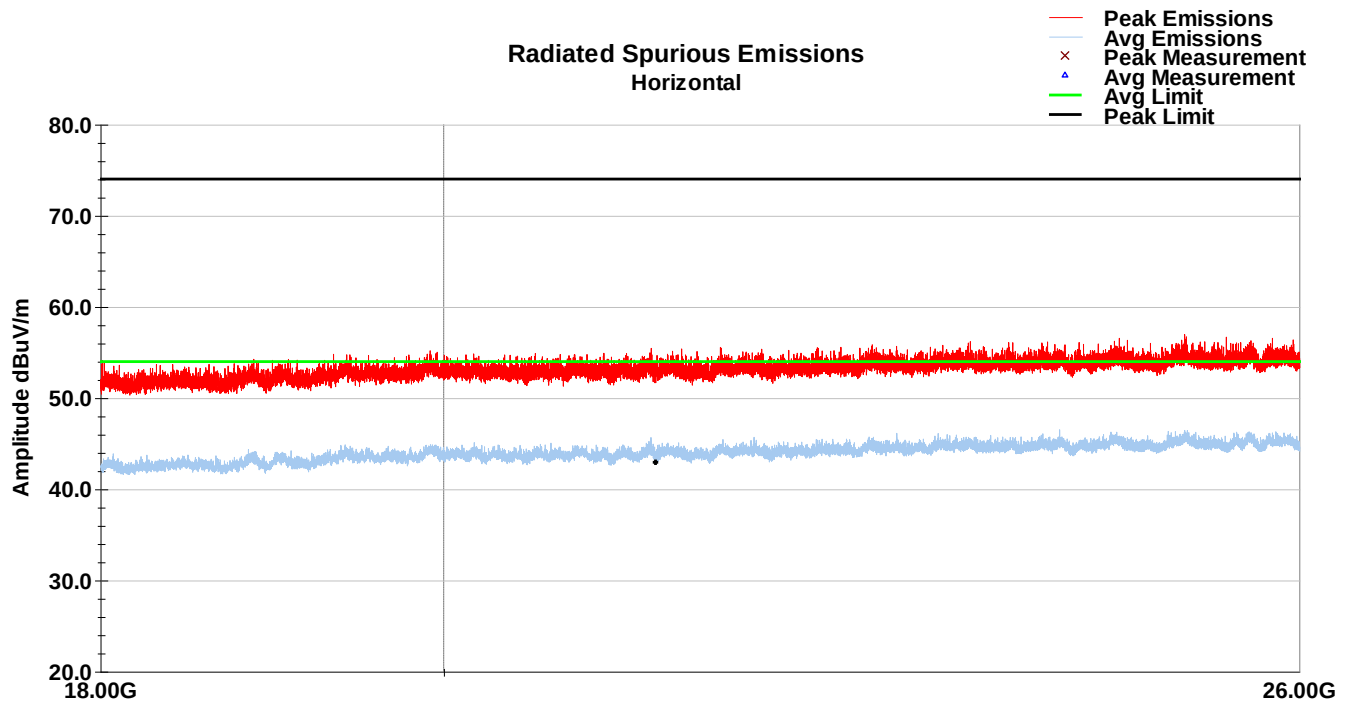


Channel 11 – 2462 MHz

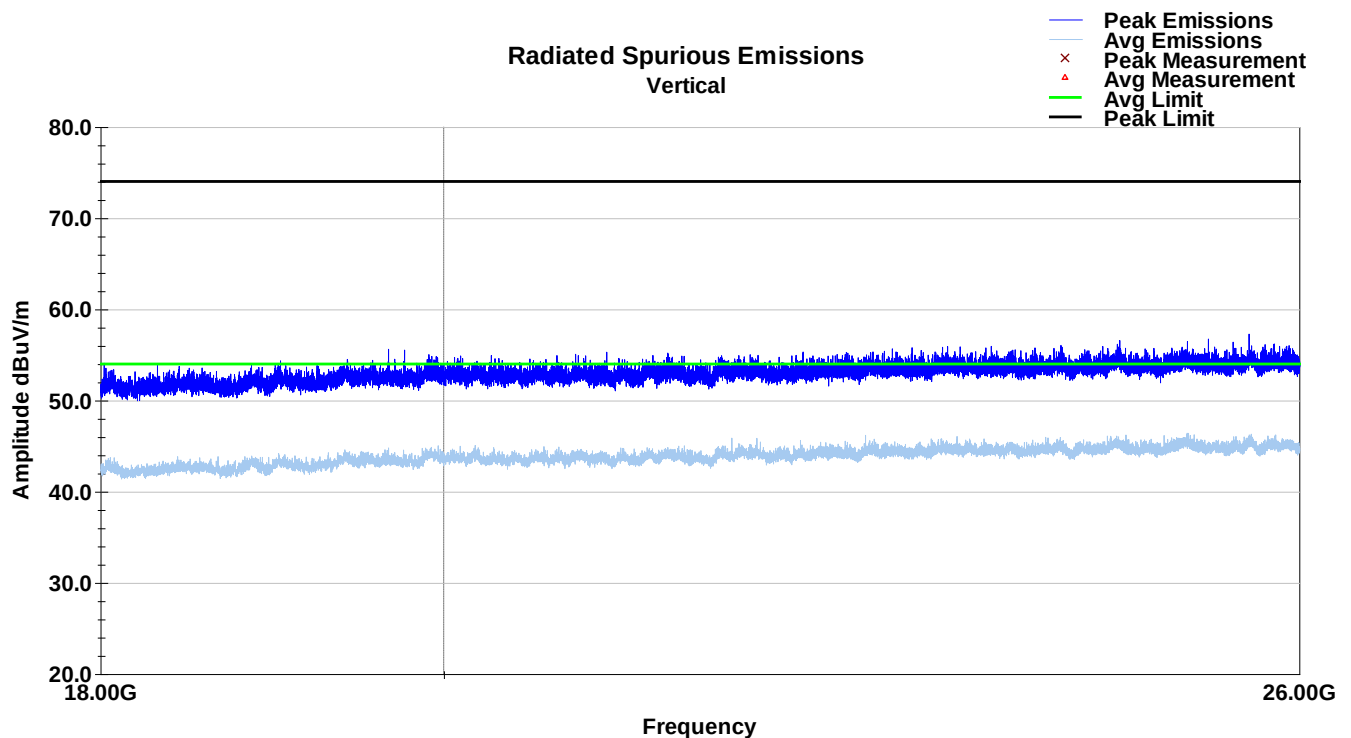
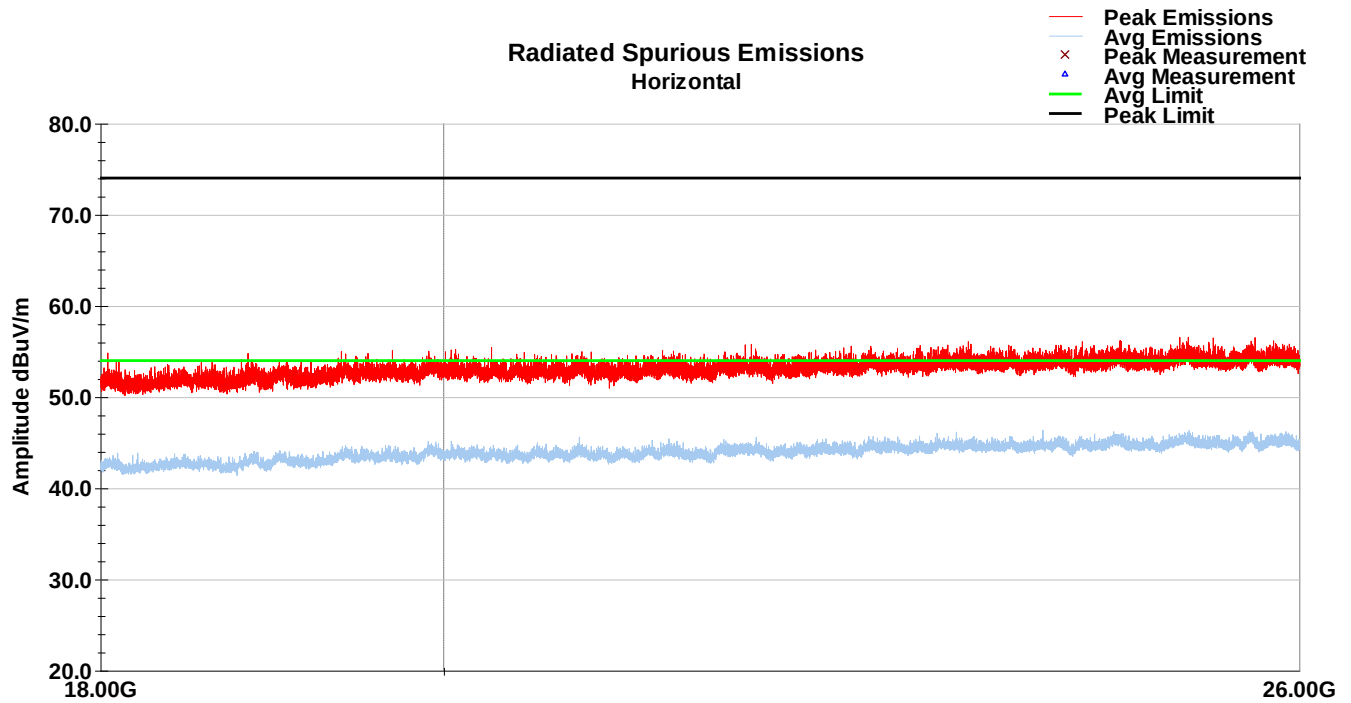


8.6.3 18-26 GHz

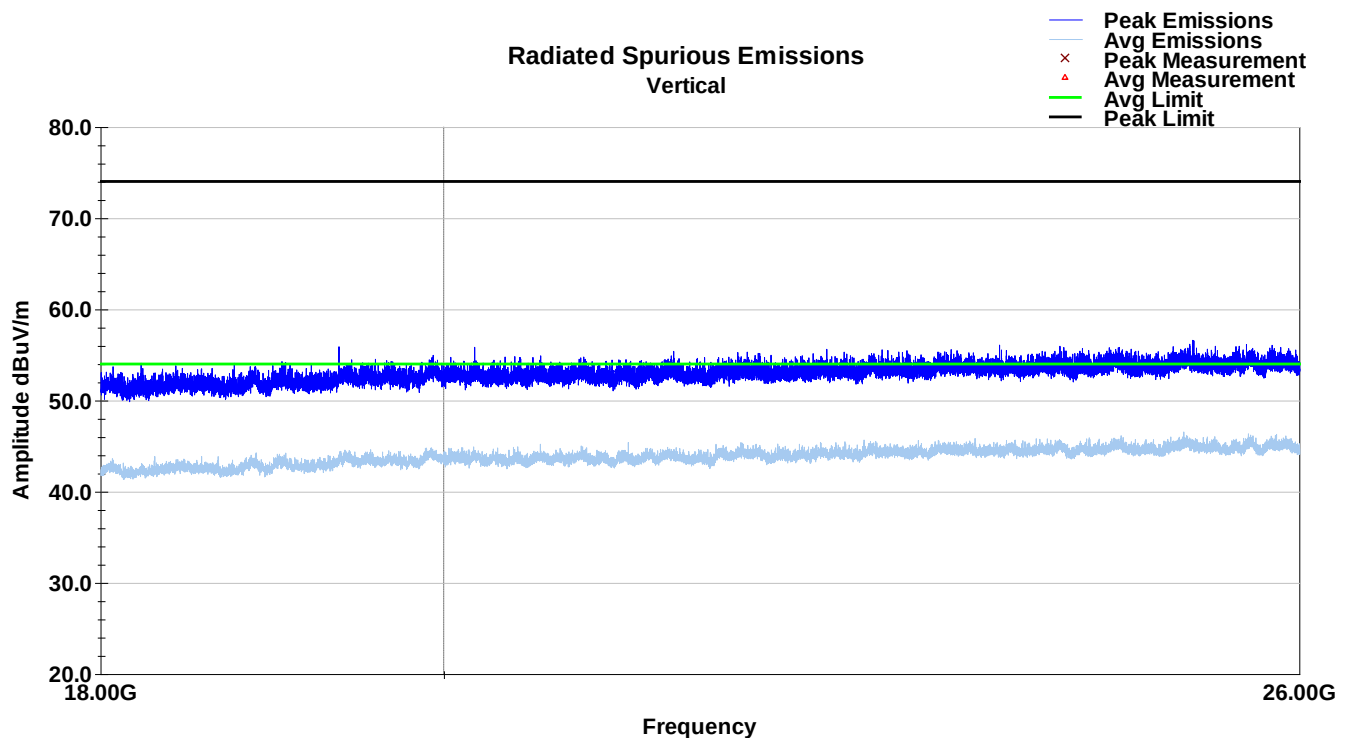
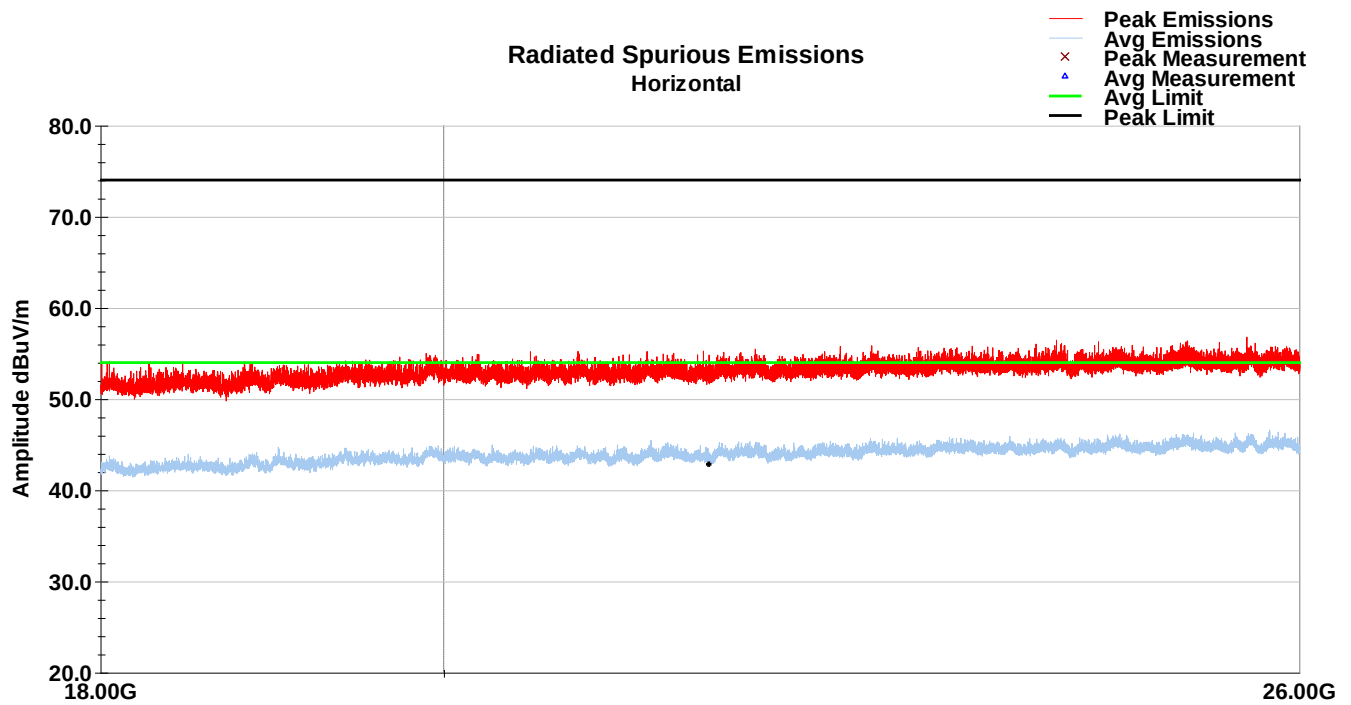
Channel 1 – 2412 MHz



Channel 6 – 2437 MHz



Channel 11 – 2462 MHz



9 AC Mains Conducted Emissions

9.1 Test Result

Test Description	Basic Standards	Test Result
Conducted Emissions	15.207 / RSS-GEN 8.8 ANSI C63.4:2014	Compliant

9.2 Test Method

With the receiver's resolution bandwidth set to 9 kHz the exploratory scans were performed over the measuring frequency range (0.15MHz to 30MHz) using a max hold mode incorporating a Peak detector and Average detector and using the TILE! software. The final test data was measured using a Quasi-Peak detector and Average detector and compared against the limits indicated in the table below.

Frequency Range	Class A Limits (dBuV)		Class B Limits (dBuV)	
	FCC	CISPR	FCC	CISPR
0.15 to 0.5 MHz		Avg 66 QP 79		Avg 56 to 46 QP 66 to 56
0.5 to 5 MHz		Avg 60 QP 73		Avg 46 Pk 56
5 to 30 MHz		Avg 60 QP 73		Avg 50 Pk 60

9.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.4 °C

Relative Humidity: 47.8 %

9.4 Test Equipment

Test End Date: 25-Feb-2019

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
EMI TEST RECEIVER	ESU8	ROHDE & SCHWARZ	B085759	17-Aug-2019
LINE IMPEDANCE STABILIZATION NETWORK	NNB 51	TESEQ	B085882	14-Nov-2019
RF CABLE	SF106	HUBER & SUHNER	B079661	23-Jul-2019

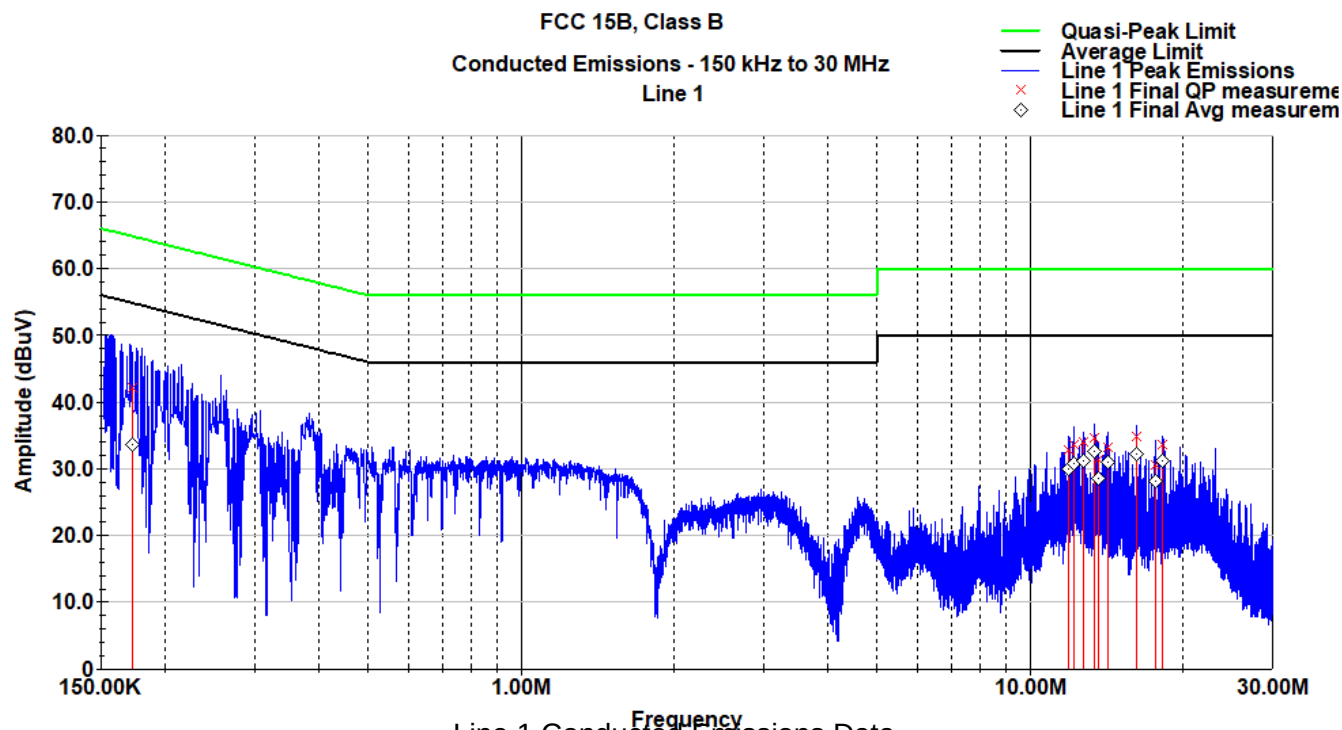
Note: The equipment calibration period is 1 year.

Software:

"181112 Conducted Emissions Tile7" dated 12 November 2018

9.5 Test Data

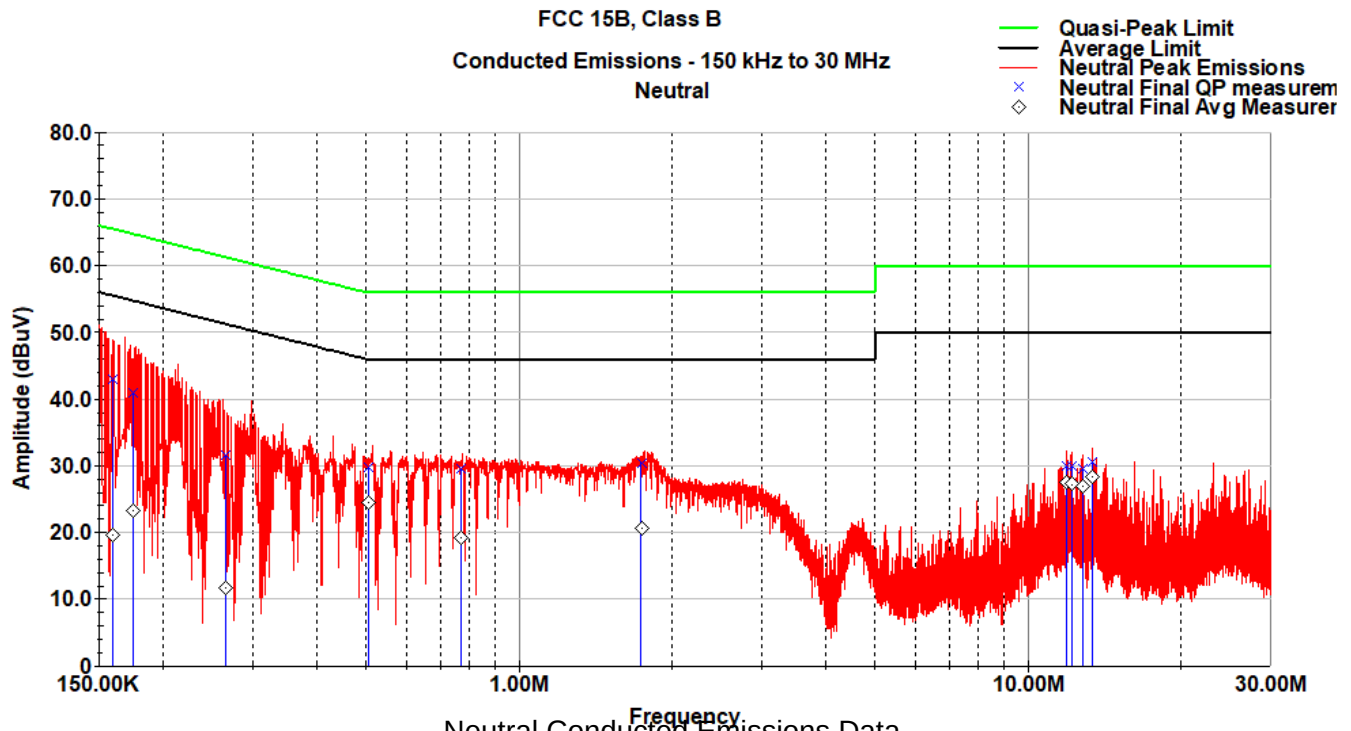
Line 1 Conducted Emissions Plot



Line 1 Conducted Emissions Data

Frequency MHz	QP Value dBuV	QP Limit dBuV	Margin dB	Avg Value dBuV	Avg Limit dBuV	Avg Margin dB
0.648	35.7	56.0	-20.3	26.3	46.0	-19.7
0.805	30.7	56.0	-25.3	22.8	46.0	-23.2
1.298	33.2	56.0	-22.8	26.0	46.0	-20.0
1.885	34.3	56.0	-21.7	24.5	46.0	-21.5
2.546	33.8	56.0	-22.2	24.6	46.0	-21.4
2.749	35.5	56.0	-20.5	26.5	46.0	-19.5
2.927	31.4	56.0	-24.6	23.2	46.0	-22.8
3.493	29.2	56.0	-26.8	17.7	46.0	-28.3
4.037	29.5	56.0	-26.5	19.9	46.0	-26.1
4.669	27.8	56.0	-28.2	17.1	46.0	-28.9

Neutral Conducted Emissions Plot



Neutral Conducted Emissions Data

Frequency MHz	QP Value dBuV	QP Limit dBuV	QP Margin dB	Avg Value dBuV	Avg Limit dBuV	Avg Margin dB
0.391	30.8	58.1	-27.3	23.1	48.1	-25.0
0.644	35.9	56.0	-20.1	27.8	46.0	-18.2
1.253	32.8	56.0	-23.2	23.1	46.0	-22.9
1.911	35.0	56.0	-21.0	27.2	46.0	-18.8
2.557	35.5	56.0	-20.5	28.1	46.0	-17.9
2.800	36.2	56.0	-19.8	25.8	46.0	-20.2
3.485	29.1	56.0	-26.9	18.1	46.0	-27.9
4.020	29.6	56.0	-26.4	19.0	46.0	-27.0
4.416	23.4	56.0	-32.6	15.1	46.0	-30.9
4.604	27.9	56.0	-28.1	16.0	46.0	-30.0

10 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	19 March 2020